Department of Energy
Field Office, Albuquerque
Los Alamos Area Office
Los Alamos, New Mexico 87544

NOV 0 1 1995

HAND DELIVERED 11/1/95
~~CERTIFIED MAIL - RETURN RECEIPT REQUESTED~~

Ms. Barbara Hoditschek
Permit Program Manager
New Mexico Environment Department
Hazardous and Radioactive
Materials Bureau
2044 Galisteo St., Building A
P. O. Box 26110
Santa Fe, NM 87505

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NOV 1 1995

Dear Ms. Hoditschek:

Subject: Resource Conservation and Recovery Act (RCRA) Permit Modification Request, Technical Area (TA) 50 and TA-54 West

Enclosed is the draft of the RCRA permit modification request you asked for in our meeting of October 27, 1995. The draft permit modification package consists of a Part A Permit Application and Volumes I and II containing the required information for the requested container storage units. The draft request follows the format of a RCRA permit application to allow an organized and familiar presentation of the required information. The information for the TA-54 Radioassay and Nondestructive Testing (RANT) Facility is generally incorporated throughout the format with separate headings for those sections requiring specific discussion as indicated in the table of contents.

As discussed at the meeting, Los Alamos National Laboratory (LANL) is requesting a Class 2 permit modification. The permit modification is needed to provide LANL with short-term storage to facilitate non-RCRA regulated activities (e.g., waste characterization, segregation of lead from gloveboxes, size reduction). The permit modification is not intended to provide additional capacity for prolonged storage at LANL. The wastes to be staged at these facilities are currently stored in other storage areas or do not represent new or different waste streams in the case of future operational waste management. The storage activities to be performed at these facilities do not require different container management practices than those authorized in the LANL Hazardous Waste Management Facility Permit, the permit modifications for Storage Pads 1, 2, and 4; and Storage Domes A-D, TA-54, Area G, as approved by the Hazardous and Radioactive Materials Bureau, June 3, 1994, or as described in the Transuranic (TRU) Mixed Waste Analysis Plan, submitted to the New Mexico Environment Department (NMED), March 30, 1995, revising the permit modifications for the Area G storage pads and domes.

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These storage activities will support the waste characterization needs associated with the TRU mixed waste currently stored at TA-54, Pads 1, 2 and 4, and provide support for future operational waste characterizations. The RANT Facility waste characterization activities are subject to the waste characterization schedule submitted to NMED, March 30, 1995, as required by the Conditional Approval of RCRA Hazardous Waste Permit Modifications Notice from NMED of May 11, 1994. As such, these characterization activities support the requirement to provide inspectable storage of the affected containers, pursuant to the Hazardous Waste Act, as required by Compliance Order 93-03 issued by NMED to the Regents of the University of California, January 28, 1993, and the subsequent Compliance Agreement of December 9, 1993.

Originally, the container storage activities described in the permit modification package were planned to be performed in existing storage areas at the TA-50-69 Waste Characterization Reduction and Repackaging Facility and the TA-54 RANT Facility. The Hazardous Waste Bureau's recent decision to not approve the container storage areas at the RANT Facility based upon their omission in the January 25, 1991 Part A Permit Application for Mixed Waste requires that an alternative option be pursued to allow the timely use of these container storage areas for TRU mixed waste related waste characterization activities. It is hoped that the information contained in the draft permit modification request can be used to further this goal.

If you have any questions, please contact Gian Bacigalupa, LANL, at (505) 667-1579.

Sincerely,

for H. L. "Jody" Plum
Office of Environment and Projects

LAAMEP:6JP-005

Document:	**TA-50/54W Part A**
Revision No.:	**Final Draft**
Date:	**September 29, 1995**

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Technical Area 50 and Technical Area 54 West RCRA Part A Permit Application

DRAFT

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

September 1995

Summary of Changes to Technical Area (TA) 50 and TA-54 West Unit Descriptions

Old Description[a]	Description in this Part A Permit Application
None	Container storage area (CSA) for transuranic (TRU) mixed waste, low-level mixed waste, and hazardous waste (Technical Area [TA] 50, Building 1, [TA-50-1] Room 35 CSA)
None	Container storage area for TRU mixed waste, low-level mixed waste, and hazardous waste (TA-50-1, Room 36 CSA)
None	Container storage area for TRU mixed waste, low-level mixed waste, and hazardous waste (TA-50-1, Room 38/38A CSA)
Container storage area	Container storage area for TRU mixed waste, low-level mixed waste, and hazardous waste (TA-50-69; Waste Characterization, Reduction, and Repackaging Facility [WCRRF] Indoor CSA)
Container storage area	Container storage area for TRU mixed waste, low-level mixed waste, and hazardous waste (TA-50-69; WCRRF Outdoor CSA)
Container storage areas at the NDA/NDE[b] Facility	Container storage area for TRU mixed waste, low-level mixed waste, and hazardous waste (TA-54 West, Building 38 [TA-54-38], Radioassay and Nondestructive Testing [RANT] Facility High Bay CSA)
	Container storage area for TRU mixed waste, low-level mixed waste, and hazardous waste (RANT Facility Low Bay CSA)
	Container storage area for TRU mixed waste, low-level mixed waste, and hazardous waste (RANT Facility Loading Dock CSA)
	Container storage area for TRU mixed waste, low-level mixed waste, and hazardous waste (RANT Facility Outdoor CSA)

[a] As described in Los Alamos National Laboratory's (LANL's) "RCRA Part A Permit Application for Mixed Waste, Revision 2.0," 1994, Los Alamos National Laboratory, Los Alamos, New Mexico.

[b] The Nondestructive Assay/Nondestructive Examination (NDA/NDE) Facility was renamed the Radioassay and Nondestructive Testing (RANT) Facility.

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Summary of Increases in Design Capacity of Processes in the Technical Area (TA) 50 and TA-54 West Part A Permit Application
(Justification Required)

Los Alamos National Laboratory (LANL) is requesting the following design capacity changes pursuant to the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart IX, 270.72(a). Regulatory justifications for increases in design capacity are (i) a lack of available treatment, storage, or disposal capacity at other hazardous waste management facilities, and (ii) the change is necessary to comply with a federal, state, or local requirement. This information is being submitted with this Part A permit application, as required by 20 NMAC 4.1, Subpart IX, 270.72(a)(2).

	Old Capacity[a]	New Capacity	Justification
Container Storage:			
TA-50, Building 1 (TA-50-1), Basement, Room 35	None	250 gallons (gal)	Capacity necessary to comply with federal and state requirements
TA-50-1, Basement, Room 36	None	15 cubic yards	Capacity necessary to comply with federal and state requirements
TA-50-1, Basement, Room 38/38A	None	750 gal	Capacity necessary to comply with federal and state requirements
TA-54-38	7,260 gal	11,660 gal	Capacity necessary to comply with federal and state requirements

[a] As specified in Revision 2.0 of LANL's "RCRA Part A Permit Application for Mixed Waste," 1994, Los Alamos National Laboratory, Los Alamos, New Mexico.

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Form Approved. OMB No. 2050-0034 Expires 12-31-91
GSA No. 0246-EPA-OT

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For State Use Only

EPA

United States Environmental Protection Agency
Washington, DC 20460

Hazardous Waste Permit Application Part A

(Read the Instructions before starting)

Date Received
Month Day Year

I. ID Number(s)

A. EPA ID Number	B. Secondary ID Number *(if applicable)*
N M 0 8 9 0 0 1 0 5 1 5	

II. Name of Facility

L O S A L A M O S N A T I O N A L L A B O R A T O R Y

III. Facility Location *(Physical address not P.O. Box or Route Number)*

A. Street

Street *(continued)*

City or Town	State	ZIP Code
L O S A L A M O S	N M	8 7 5 4 5 -

County Code *(if known)*	County Name
0 2 8	L O S A L A M O S

B. Land Type	C. Geographic Location		D. Facility Existence Date
(enter code)	*LATITUDE (degrees, minutes, & seconds)*	*LONGITUDE (degrees, minutes, & seconds)*	Month Day Year
F	3 5 4 9 0 5 1	1 0 6 1 4 0 1 5	0 1 0 1 1 9 4 3

IV. Facility Mailing Address

Street or P.O. Box

P O B O X 1 6 6 3

City or Town	State	ZIP Code
L O S A L A M O S	N M	8 7 5 4 5 -

V. Facility Contact *(Person to be contacted regarding waste activities at facility)*

Name *(last)*	*(first)*
V O Z E L L A	J O S E P H

Job Title	Phone Number *(area code and number)*
A S S T. A R E A MANAGER	5 0 5 - 6 6 5 - 5 0 2 7

VI. Facility Contact Address *(See Instructions)*

A. Contact Address Location	Mailing	B. Street or P.O. Box
	X	5 2 8 3 5 T H S T R E E T

City or Town	State	ZIP Code
L O S A L A M O S	N M	8 7 5 4 4 -

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EPA I.D. Number (from page 1)	Secondary ID Number (enter from page 1)
NM0890010515	

VII. [illegible]

Name [illegible]
UNIVERSITY OF CALIFORNIA

Street [illegible]
PO BOX 1663

City or Town [illegible]	State	ZIP Code
LOS ALAMOS	NM	87545 -

Phone Number (area code and number)	B. Owner Type	C. Change of Owner Indicator	Date Changed (Month Day Year)
505-667-5061	F	Yes [ ] No [X]	

VIII. Facility [illegible] (see instructions)

A. Name [illegible] Owner
US DEPARTMENT OF ENERGY

Street or [illegible]
528 35TH STREET

City or Town	State	ZIP Code
LOS ALAMOS	NM	87544 -

Phone Number (area code and number)	B. Owner Type	C. Change of Owner Indicator	Date Changed (Month Day Year)
505-667-5061	F	Yes [ ] No [X]	

IX. SIC Codes (4-digit, in order of significance)

Primary		Secondary	
9711	(description) NATIONAL SECURITY		(description)
Secondary		**Secondary**	
	(description)		(description)

X. Other Environmental Permits (see instructions)

A. Permit Type (enter code)	B. Permit Number	C. Description
N	NMR00A384	NPDES Storm Water General Permit
N	NM0028355	NPDES
N	NM0028576	NPDES (Fenton Hill Geothermal Site)
R	NM0890010515 1	RCRA (Hazardous Waste Permit)
		RAD. NESHAPs Preconstr. Approvals:
E		Low-Level Waste/Mixed Waste Incin.
E		Dual Axis Radiographic Hydrotest Fac.
E		Ground Test Accelerator
E		Independent Management Activity

EPA I.D. Number
NM0890010515

X. Other Environmental Permits *(continued)*		
A. Permit Type	**B. Permit Number**	**C. Description**
		RAD. NESHAPS PRECONSTRUCTION APPROVALS (Cont'd)
E		Facilitywide Application for Existent Emissions
E		TA-21, D&D Activity
E		TA-50, Bldg. 83 - Mobile Decontamination Trailer
E		TA-54, TRU Retrieval Domes
		STATE AIR QUALITY PERMITS:
E	AQCR 301	Open Burning
E		TA-11 Fuel Fire Burn
E		TA-36 HE-Contaminated Wood Burning
E		TA-14 HE-Contaminated Material Burning
E		TA-16 HE-Contaminated Material Burning
E		TA-33 & TA-39 LIDAR Test Burning
E	AQCR 702	Beryllium Machining
E	#632	TA-35, Bldg. 213, Beryllium Machining Emissions
E	#634-M-1	TA-3, Bldg. 141, Beryllium Processing Emissions
E	#635	TA-3, Bldg. 39, Beryllium Machining Emissions
E	#741	TA-3, Bldg. 35, Planned Beryllium Machining Emissions
E	#1081-M-1	TA-55, Bldg. 4, Beryllium Machining Emissions
		STATE SEPTIC TANK PERMITS:
E	LA-01	State Septic Tank Permit
E	LA-02	State Septic Tank Permit
E	LA-03	State Septic Tank Permit
E	LA-04	State Septic Tank Permit

EPA I.D. Number
NM0890010515

X. Other Environmental Permits *(continued)*

A. Permit Type	B. Permit Number	C. Description
E	LA-05	State Septic Tank Permit
E	LA-06	State Septic Tank Permit
E	LA-07	State Septic Tank Permit
E	LA-08	State Septic Tank Permit
E	LA-09	State Septic Tank Permit
E	LA-11	State Septic Tank Permit
E	LA-12	State Septic Tank Permit
E	LA-13	State Septic Tank Permit
E	LA-14	State Septic Tank Permit
E	LA-15	State Septic Tank Permit
E	LA-16	State Septic Tank Permit
E	LA-17	State Septic Tank Permit
E	LA-18	State Septic Tank Permit
E	LA-19	State Septic Tank Permit
E	LA-21	State Septic Tank Permit
E	LA-22	State Septic Tank Permit
E	LA-23	State Septic Tank Permit
E	LA-24	State Septic Tank Permit
E	LA-25	State Septic Tank Permit
E	LA-26	State Septic Tank Permit
E	LA-27	State Septic Tank Permit
E	LA-28	State Septic Tank Permit
E	LA-29	State Septic Tank Permit
E	LA-30	State Septic Tank Permit

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EPA I.D. Number
NM0890010515

X. Other Environmental Permits *(continued)*

A. Permit Type	B. Permit Number	C. Description
E	LA-31	State Septic Tank Permit
E	LA-32	State Septic Tank Permit
E	LA-33	State Septic Tank Permit
E	LA-34	State Septic Tank Permit
E	LA-35	State Septic Tank Permit
E	LA-36	State Septic Tank Permit
E	LA-37	State Septic Tank Permit
E	LA-38	State Septic Tank Permit
E	LA-39	State Septic Tank Permit
E	LA-42	State Septic Tank Permit
E	LA-43	State Septic Tank Permit
E	LA-44	State Septic Tank Permit
E	LA-45	State Septic Tank Permit
E	LA-46	State Septic Tank Permit
E	LA-47	State Septic Tank Permit
E	LA-48	State Septic Tank Permit
E	LA-49	State Septic Tank Permit
E	LA-50	State Septic Tank Permit
E	LA-51	State Septic Tank Permit
E	LA-52	State Septic Tank Permit
E	LA-53	State Septic Tank Permit
E	LA-54	State Septic Tank Permit
E	LA-55	State Septic Tank Permit
E	LA-56	State Septic Tank Permit

EPA I.D. Number
NM0890010515

X. Other Environmental Permits *(continued)*

A. Permit Type	B. Permit Number	C. Description
E	LA-57	State Septic Tank Permit
E	LA-58	State Septic Tank Permit
E	LA-59	State Septic Tank Permit
E	LA-60	State Septic Tank Permit
E	LA-61	State Septic Tank Permit
E	LA-124	State Septic Tank Permit
E	SF880257	State Septic Tank Permit
E	SF880258	State Septic Tank Permit
E	SF880259	State Septic Tank Permit
E	SF880260	State Septic Tank Permit
E	SF880261	State Septic Tank Permit
E	SF890023	State Septic Tank Permit
E	SF890024	State Septic Tank Permit
E	SF890025	State Septic Tank Permit
E	SF89031R	State Septic Tank Permit
E	SF89032R	State Septic Tank Permit
E	SF89033R	State Septic Tank Permit
E	SF89034R	State Septic Tank Permit
E	SF89035R	State Septic Tank Permit
E	SF89036R	State Septic Tank Permit
E	SF890588	State Septic Tank Permit
E	SF890589	State Septic Tank Permit
E	SF890590	State Septic Tank Permit
E	SF900022	State Septic Tank Permit

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GSA No. 0246-EPA-GT

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N M 0 8 9 0 0 1 0 5 1 5	

XI. Nature of Business (provide a brief description)

The principal mission of LANL includes the research, design, development, and analysis of weapons components for the nation's nuclear arsenal. This effort is supported by research programs such as nuclear physics, hydrodynamics, conventional explosives, chemistry, metallurgy, radiochemistry, and biology. In addition to its defense program efforts, LANL supports energy research and environmental missions with programs including medium-energy physics; space nuclear systems; controlled thermonuclear fusion; laser research; environmental research; geothermal, solar, and fossil energy research; nuclear safeguards; biomedical research; and space physics. In 1992, LANL expanded its mission in support of environmental management to include development of new programs in the areas of health and biotechnology, environmental technologies, and industrial partnerships.

XII. Process - Codes and Design Capacities

A. **PROCESS CODE** – *Enter the code from the list of process codes below that best describes each process to be used at the facility. Twelve lines are provided for entering codes. If more lines are needed, attach a separate sheet of paper with the additional information. If a process will be used that is not included in the list of codes below, then describe the process (including its design capacity) in the space provided in Item XIII.*

B. **PROCESS DESIGN CAPACITY** – *For each code entered in column A, enter the capacity of the process.*

1. **AMOUNT** – *Enter the amount. In a case where design capacity is not applicable (such as in a closure/post-closure or enforcement action) enter the total amount of waste for that process unit.*
2. **UNIT OF MEASURE** – *For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.*

C. **PROCESS TOTAL NUMBER OF UNITS** – *Enter the total number of units used with the corresponding process code.*

PROCESS CODE	PROCESS	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
	DISPOSAL:	
D79	INJECTION WELL	GALLONS; LITERS; GALLONS PER DAY; OR LITERS PER DAY
D80	LANDFILL	ACRE-FEET OR HECTARE-METER
D81	LAND APPLICATION	ACRES OR HECTARES
D82	OCEAN DISPOSAL	GALLONS PER DAY OR LITERS PER DAY
D83	SURFACE IMPOUNDMENT	GALLONS OR LITERS
	STORAGE:	
S01	CONTAINER (barrel, drum, etc.)	GALLONS OR LITERS
S02	TANK	GALLONS OR LITERS
S03	WASTE PILE	CUBIC YARDS OR CUBIC METERS
S04	SURFACE IMPOUNDMENT	GALLONS OR LITERS
	TREATMENT:	
T01	TANK	GALLONS PER DAY OR LITERS PER DAY
T02	SURFACE IMPOUNDMENT	GALLONS PER DAY OR LITERS PER DAY
T03	INCINERATOR	SHORT TONS PER HOUR; METRIC TONS PER HOUR; GALLONS PER HOUR; LITERS PER HOUR; OR BTU'S PER HOUR
T04	OTHER TREATMENT (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundment or incinerators. Describe the processes in the space provided in Item XIII.)	GALLONS PER DAY; LITERS PER DAY; POUNDS PER HOUR; SHORT TONS PER HOUR; KILOGRAMS PER HOUR; METRIC TONS PER DAY; METRIC TONS PER HOUR; OR SHORT TONS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
GALLONS PER HOUR	E
GALLONS PER DAY	U
LITERS	L
LITERS PER HOUR	H
LITERS PER DAY	V
SHORT TONS PER HOUR	D
METRIC TONS PER HOUR	W
SHORT TONS PER DAY	N
METRIC TONS PER DAY	S
POUNDS PER HOUR	P
KILOGRAMS PER HOUR	R
CUBIC YARDS	Y
CUBIC METERS	C
ACRES	B
ACRE-FEET	A
HECTARES	Q
HECTARE-METER	F
BTU's PER HOUR	K

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EPA I.D. Number (enter from page 1)	Secondary ID Number (enter from page 1)
N M 0 8 9 0 0 1 0 5 1 5	

XII. Process - Codes and Design Capacities (continued)

EXAMPLE FOR COMPLETING ITEM XII (shown in line numbers X-1 and X-2 below): A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

Line Number		A. PROCESS CODE (from list above)			B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	C. PROCESS TOTAL NUMBER OF UNITS			FOR OFFICIAL USE ONLY
X	1	S	0	2	600	G	0	0	2	
X	2	T	0	3	20	E	0	0	1	
	1	S	0	1	44,160	G	0	0	8	
	2	S	0	1	15	Y	0	0	1	
	3									
	4									
	5									
	6									
	7									
	8									
	9									
1	0									
1	1									
1	2									

NOTE: If you need to list more than 12 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for additional treatment processes in Item XIII.

XIII. Additional Treatment Processes (follow instructions from Item XII)

Line Number (enter numbers in sequence with Item XII)	A. PROCESS CODE	B. TREATMENT PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. TREATMENT PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	C. PROCESS TOTAL NUMBER OF UNITS	D. DESCRIPTION OF PROCESS
	T 0 4				
	T 0 4				
	T 0 4				
	T 0 4				

EPA I.D. Number *(enter from page 1)*	Secondary ID Number *(enter from page 1)*
N M 0 8 9 0 0 1 0 5 1 5	

XIV. Description of Hazardous Wastes

A. **EPA HAZARDOUS WASTE NUMBER** - *Enter the four-digit number from 40 CFR, Part 261 Subpart D of each listed hazardous waste you will handle. For hazardous wastes which are not listed in 40 CFR, Part 261 Subpart D, enter the four-digit number(s) from 40 CFR, Part 261 Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.*

B. **ESTIMATED ANNUAL QUANTITY** - *For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.*

C. **UNIT OF MEASURE** - *For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:*

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. **PROCESSES**

1. **PROCESS CODES:**

For listed hazardous waste: For each listed hazardous waste entered in column A select the code(s) from the list of process codes contained in Item XII A. on page 3 to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non-listed hazardous waste: For each characteristic or toxic contaminant entered in column A, select the code(s) from the list of process codes contained in Item XII A. on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that processes that characteristic or toxic contaminant.

NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. IF MORE ARE NEEDED:

1. *Enter the first two as described above.*
2. *Enter "000" in the extreme right box of Item XIV-D(1).*
3. *Enter in the space provided on page 7, Item XIV-E, the line number and the additional code(s).*

2. **PROCESS DESCRIPTION:** *If a code is not listed for a process that will be used, describe the process in the space provided on the form (D.(2)).*

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER- Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. *Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.*
2. *In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "Included with above" and make no other entries on that line.*
3. *Repeat step 2 for each EPA Hazardous Waste Number that can be used to describe the hazardous waste.*

EXAMPLE FOR COMPLETING ITEM XIV (shown in line numbers X-1, X-2, X-3, and X-4 below) - A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

Line Number		A. EPA HAZARD WASTE NO. (enter code)				B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESS (1) PROCESS CODES (enter)									D. PROCESS (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
X	1	K	0	5	4	900	P	T	0	3	D	8	0				
X	2	D	0	0	2	400	P	T	0	3	D	8	0				
X	3	D	0	0	1	100	P	T	0	3	D	8	0				
X	4	D	0	0	2												Included With Above

EPA I.D. Number (enter from Page 1)
NM0890010515

Secondary ID Number (enter from Page 1)

XIV. Description of Hazardous Wastes (Continued)

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	D. Processes (1) Process Codes (enter)			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[a]	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
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

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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))
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
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

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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))
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
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

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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))
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
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

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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
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

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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))
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
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

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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])
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
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

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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))
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
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

[a] The Technical Area 50, Building 1, Room 36 Container Storage Area will only store Environmental Protection Agency (EPA) Hazardous Waste No. D008 waste.

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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
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

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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])
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
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

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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))
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
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

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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))
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
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

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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))
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
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

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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))
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
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
457	U033	10	K	S01			HW

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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))
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
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

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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])
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	U21[illegible]	100	K	S01			HW
511	U211	40	K	S01			HW
512	U213	10	K	S01			HW
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

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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))
524	U246	10	K	S01			HW

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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	330	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
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

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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))
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
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

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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])
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
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

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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))
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
635	U246	10	K	S01			LLMW and TRUMW
636	D001	91,290	K	S01			Hazardous Waste (HW)
637	D002	73,970	K	S01			HW
638	D003	4,300	K	S01			HW
639	D004	6,110	K	S01			HW
640	D005	6,900	K	S01			HW
641	D006	18,890	K	S01			HW
642	D007	33,760	K	S01			HW
643	D008	141,050	K	S01			HW
644	D009	58,800	K	S01			HW
645	D010	7,740	K	S01			HW
646	D011	42,110	K	S01			HW
647	D016	40	K	S01			HW
648	D017	50	K	S01			HW
649	D018	8,170	K	S01			HW
650	D019	130	K	S01			HW
651	D021	380	K	S01			HW
652	D022	5,190	K	S01			HW
653	D026	640	K	S01			HW

T F A R D

Hazardous waste will not be included for TA-50-3

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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))
654	D027	270	K	S01			HW
655	D028	66,230	K	S01			HW
656	D029	65,860	K	S01			HW
657	D030	2,600	K	S01			HW
658	D031	20	K	S01			HW
659	D032	1,050	K	S01			HW
660	D033	750	K	S01			HW
661	D034	410	K	S01			HW
662	D035	2,420	K	S01			HW
663	D036	170	K	S01			HW
664	D037	160	K	S01			HW
665	D038	2,060	K	S01			HW
666	D039	700	K	S01			HW
667	D040	2,050	K	S01			HW
668	D041	20	K	S01			HW
669	D042	350	K	S01			HW
670	D043	200	K	S01			HW
671	F001	184,220	K	S01			HW
672	F002	165,690	K	S01			HW
673	F003	45,970	K	S01			HW
674	F004	2,370	K	S01			HW
675	F005	221,670	K	S01			HW
676	F009	60	K	S01			HW
677	F027	60	K	S01			HW
678	P003	10	K	S01			HW
679	P006	10	K	S01			HW
680	P011	10	K	S01			HW
681	P012	10	K	S01			HW
682	P015	10	K	S01			HW
683	P029	10	K	S01			HW
684	P030	10	K	S01			HW
685	P031	30	K	S01			HW
686	P033	30	K	S01			HW

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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])
687	P038	10	K	S01			HW
688	P043	10	K	S01			HW
689	P048	10	K	S01			HW
690	P056	3,690	K	S01			HW
691	P063	10	K	S01			HW
692	P068	10	K	S01			HW
693	P073	10	K	S01			HW
694	P076	220	K	S01			HW
695	P078	240	K	S01			HW
696	P092	10	K	S01			HW
697	P095	20	K	S01			HW
698	P096	10	K	S01			HW
699	P098	10	K	S01			HW
700	P104	10	K	S01			HW
701	P105	10	K	S01			HW
702	P106	10	K	S01			HW
703	P112	10	K	S01			HW
704	P113	10	K	S01			HW
705	P119	10	K	S01			HW
706	P120	10	K	S01			HW
707	U001	10	K	S01			HW
708	U002	1,100	K	S01			HW
709	U003	20	K	S01			HW
710	U007	10	K	S01			HW
711	U008	10	K	S01			HW
712	U009	10	K	S01			HW
713	U012	10	K	S01			HW
714	U018	10	K	S01			HW
715	U019	310	K	S01			HW
716	U022	10	K	S01			HW
717	U029	10	K	S01			HW
718	U031	10	K	S01			HW
719	U033	10	K	S01			HW

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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])
720	U037	20	K	S01			HW
721	U041	10	K	S01			HW
722	U044	30	K	S01			HW
723	U045	10	K	S01			HW
724	U052	10	K	S01			HW
725	U055	20	K	S01			HW
726	U056	20	K	S01			HW
727	U057	10	K	S01			HW
728	U067	10	K	S01			HW
729	U068	10	K	S01			HW
730	U070	60	K	S01			HW
731	U075	180	K	S01			HW
732	U077	20	K	S01			HW
733	U080	6,080	K	S01			HW
734	U085	10	K	S01			HW
735	U091	640	K	S01			HW
736	U092	10	K	S01			HW
737	U103	10	K	S01			HW
738	U108	10	K	S01			HW
739	U109	10	K	S01			HW
740	U112	10	K	S01			HW
741	U115	10	K	S01			HW
742	U117	10	K	S01			HW
743	U121	30	K	S01			HW
744	U122	830	K	S01			HW
745	U123	10	K	S01			HW
746	U124	10	K	S01			HW
747	U131	40	K	S01			HW
748	U133	10	K	S01			HW
749	U134	640	K	S01			HW
750	U135	290	K	S01			HW
751	U136	10	K	S01			HW
752	U140	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))
753	U144	10	K	S01			HW
754	U145	10	K	S01			HW
755	U151	840	K	S01			HW
756	U153	10	K	S01			HW
757	U154	130	K	S01			HW
758	U159	70	K	S01			HW
759	U160	10	K	S01			HW
760	U161	300	K	S01			HW
761	U162	10	K	S01			HW
762	U163	10	K	S01			HW
763	U165	20	K	S01			HW
764	U167	20	K	S01			HW
765	U168	10	K	S01			HW
766	U169	10	K	S01			HW
767	U170	10	K	S01			HW
768	U188	20	K	S01			HW
769	U190	10	K	S01			HW
770	U196	40	K	S01			HW
771	U204	10	K	S01			HW
772	U210	350	K	S01			HW
773	U211	140	K	S01			HW
774	U213	40	K	S01			HW
775	U216	10	K	S01			HW
776	U218	10	K	S01			HW
777	U219	10	K	S01			HW
778	U220	350	K	S01			HW
779	U223	10	K	S01			HW
780	U225	10	K	S01			HW
781	U226	9,110	K	S01			HW
782	U227	10	K	S01			HW
783	U228	1,510	K	S01			HW
784	U239	620	K	S01			HW
785	U240	10	K	S01			HW

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved. OMB No. 2050-0034 Expires 12-31-91
GSA No. 0246-EPA-OT

EPA I.D. Number *(enter from page 1)*	Secondary ID Number *(enter from page 1)*
N M 0 8 9 0 0 1 0 5 1 5	

XIV. Description of Hazardous Waste *(continued)*

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 6.

Line Number	Additional Process Codes (enter)

XV. Map

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in this map area. See instructions for precise requirements.

XVI. Facility Drawing

All existing facilities must include a scale drawing of the facility (see instructions for more detail).

XVII. Photographs

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas (see instructions for more detail).

XVIII. Certification(s)

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 be 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.

Owner Signature	Date Signed

Name and Official Title *(type or print)*
LARRY D. KIRKMAN, ACTING AREA MANAGER, DOE LAAO

Operator Signature	Date Signed

Name and Official Title *(type or print)*
LARRY D. KIRKMAN, ACTING AREA MANAGER, DOE LAAO/DENNIS J. ERICKSON, DIVISION DIRECTOR, LANL ES&H DIV.

XIX. Comments

Note: Mail completed form to the appropriate EPA Regional or State Office. (refer to instructions for more information)

ATTACHMENT 1

EXPLANATION OF PROCESS CODE LISTINGS AND DESIGN CAPACITIES FOR HAZARDOUS AND MIXED WASTE UNITS AT TECHNICAL AREA (TA) 50 AND AT TA-54 WEST

DRAFT

EXPLANATION OF PROCESS CODE LISTINGS AND DESIGN CAPACITIES FOR HAZARDOUS AND MIXED WASTE UNITS AT TECHNICAL AREA (TA) 50 AND AT TA-54 WEST

Line 1 S01 Container Storage

Description	Capacity	SWMU[a] No.	Associated Structure No./Area
TA-50-1:			
Container storage area (CSA) for transuranic (TRU) mixed waste, low-level mixed waste, and hazardous waste (Room 35 CSA)	250 gallons	TBD[b]	TA-50-1, Basement, Room 35
Container storage area for TRU mixed waste, low-level mixed waste, and hazardous waste (Room 36 CSA)	15 cubic yards	TBD	TA-50-1, Basement, Room 36
Container storage area for TRU mixed waste, low-level mixed waste, and hazardous waste (Room 38/38A CSA)	750 gallons	TBD	TA-50-1, Basement, Room 38/38A
TOTAL S01	**1,000 gallons** **15 cubic yards**		

EXPLANATION OF PROCESS CODE LISTINGS AND DESIGN CAPACITIES FOR HAZARDOUS AND MIXED WASTE UNITS AT TECHNICAL AREA (TA) 50 AND AT TA-54 WEST (Continued)

Line 1 S01 Container Storage

Description	Capacity (gallons)	SWMU[a] No.	Associated Structure No./Area
TA-50-69:			
Container storage area for TRU mixed waste, low-level mixed waste, and hazardous waste (WCRRF[c] Indoor CSA)	1,500	50-008	TA-50-69 (Inside)
Container storage area for TRU mixed waste, low-level mixed waste, and hazardous waste (WCRRF Outdoor CSA)	30,000	TBD	TA-50-69 (Outside)
TOTAL S01	**31,500**		

DRAFT

EXPLANATION OF PROCESS CODE LISTINGS AND DESIGN CAPACITIES FOR HAZARDOUS AND MIXED WASTE UNITS AT TECHNICAL AREA (TA) 50 AND AT TA-54 WEST (Continued)

Line 1 S01 Container Storage

Description	Capacity (gallons)	SWMU[a] No.	Associated Structure No./Area
TA-54 West:			
Container storage area for TRU mixed waste, low-level mixed waste, and hazardous waste (RANT[d] High Bay CSA)	2,200	54-015(h)	TA-54-38
Container storage area for TRU mixed waste, low-level mixed waste, and hazardous waste (RANT Low Bay CSA)	880	54-015(h)	TA-54-38
Container storage area for TRU mixed waste, low-level mixed waste, and hazardous waste (RANT Loading Dock CSA)	660	54-015(h)	TA-54-38
Container storage area for TRU mixed waste, low-level mixed waste, and hazardous waste (RANT Outdoor CSA)	7,920	54-015(h)	TA-54-38 (Outside)
TOTAL S01	**11,660**		

DRAFT

Explanation of Symbols/Abbreviations

[a] SWMU = solid waste management unit.
[b] TBD = SWMU No. to be determined.
[c] WCRRF = Waste Characterization, Reduction, and Repackaging Facility
[d] RANT Facility = Radioassay and Nondestructive Testing Facility

ATTACHMENT 2

TOPOGRAPHIC MAPS

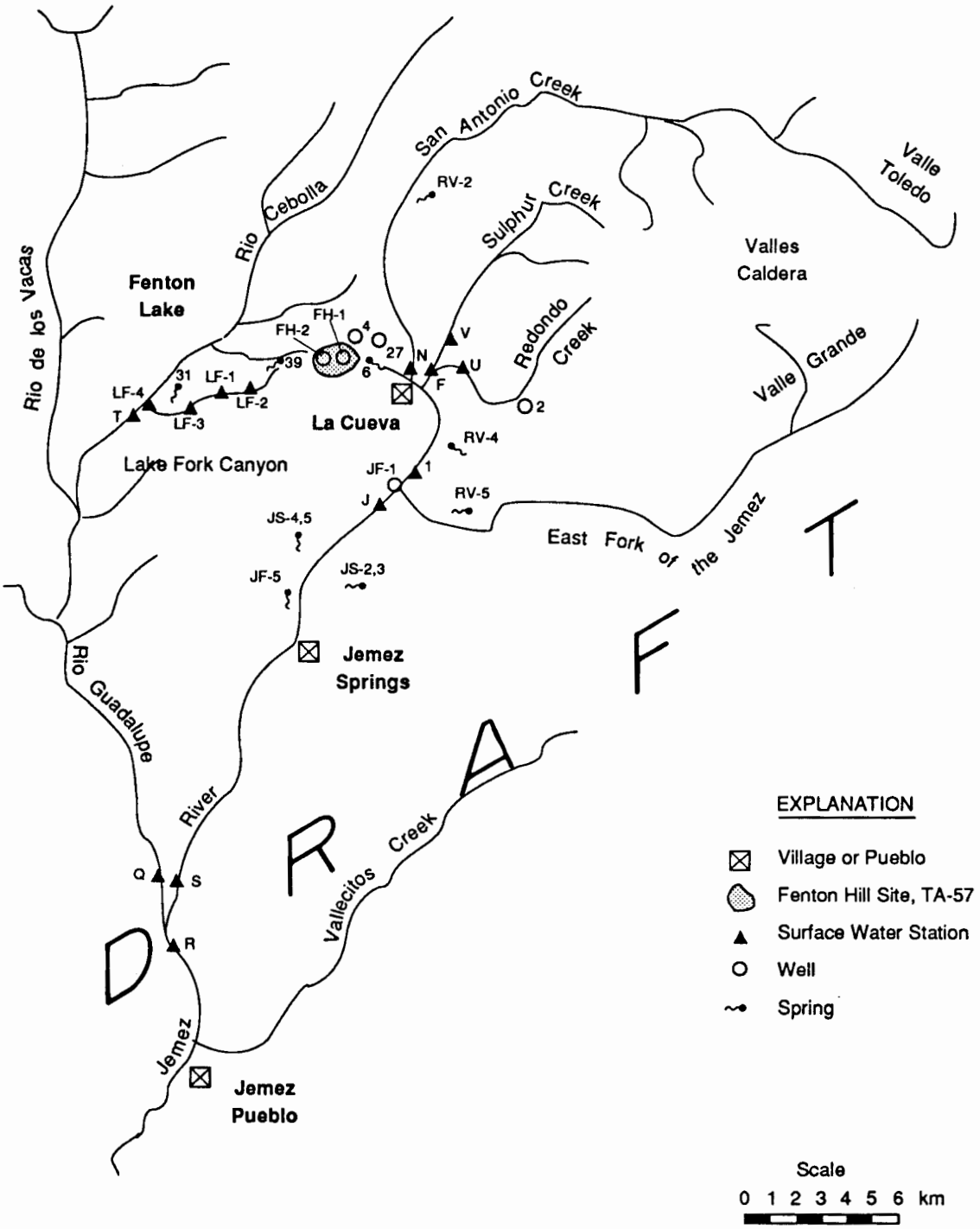
DRAFT

LIST OF TOPOGRAPHIC MAPS

MAP NO.	MAP TITLE
1	Contour Map Showing All Technical Areas (TA) at Los Alamos National Laboratory (LANL)
2	Contour Map Showing Hazardous and Mixed Waste Units at Technical Area (TA) 50
3	Contour Map Showing Hazardous and Mixed Waste Units at Technical Area (TA) 54 West
4	Location Map of Water Supply Wells, Monitoring Wells, Test Wells, Springs, and Surface Water Sampling Stations
5	Los Alamos National Laboratory National Pollutant Discharge Elimination System Outfall Locations
6	Location Map of Technical Area (TA) 57, Fenton Hill Geothermal Site

DRAFT

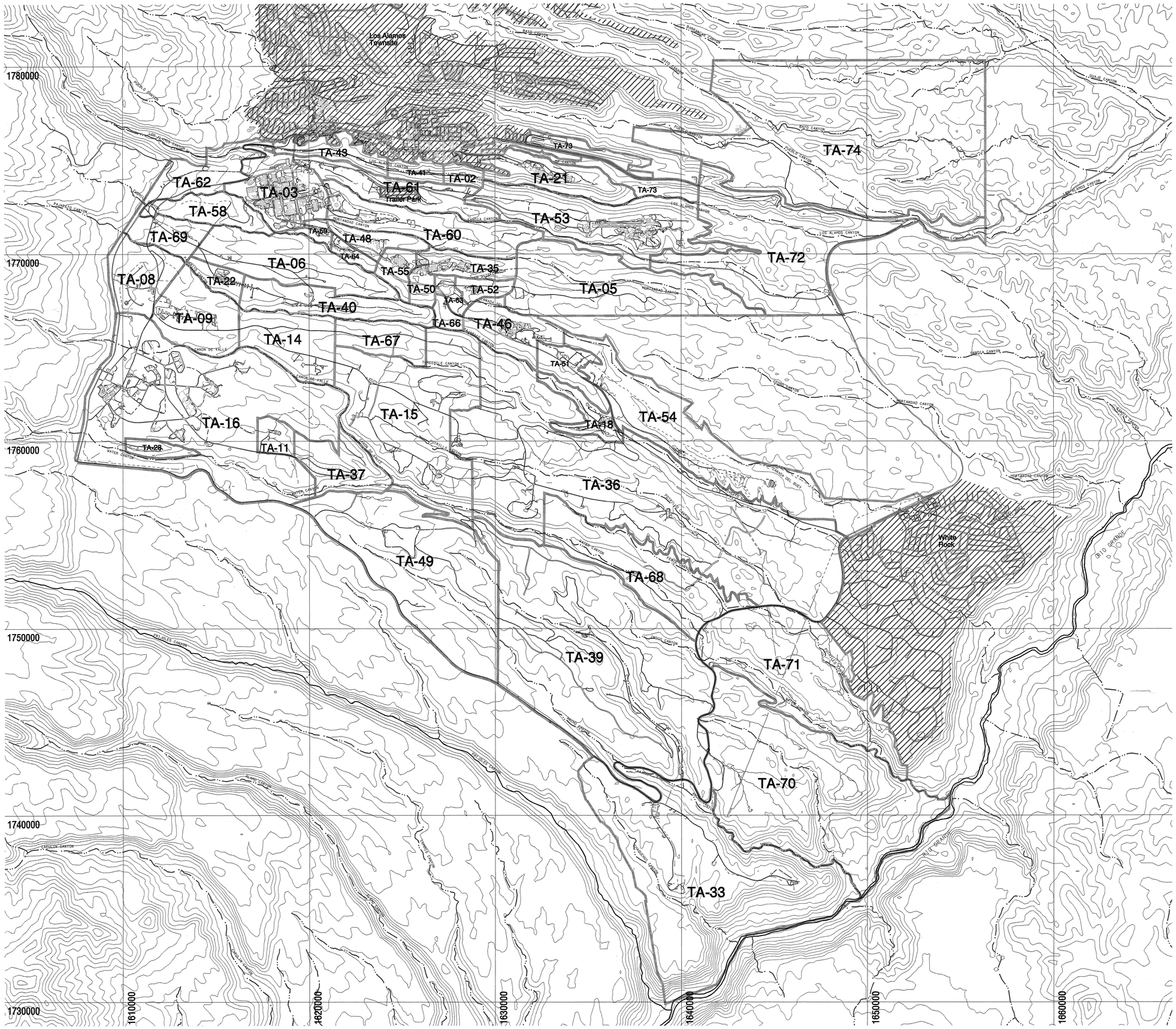
Note: For topographic maps showing LANL's other hazardous and mixed waste units, refer to the "RCRA Permit Modification Request for Technical Area 50 and Technical Area 54 West," 1995, Los Alamos National Laboratory, Los Alamos, New Mexico, which accompanies this Part A permit application submittal.



Reference: "Environmental Surveillance at Los Alamos During 1992," 1994, LA-12764-ENV, Los Alamos National Laboratory, Los Alamos, New Mexico.

Map 6

Location Map of Technical Area (TA) 57, Fenton Hill Geothermal Site



LEGEND

- Boundary, LANL
- Boundary, TA
- Contours, 100 foot
- Roads, Dirt
- Roads, Paved
- Road/Trail
- Stream, Intermittent
- Stream, Perennial
- Building
- Residential Areas

8755-A

MAP 1:
Contour Map Showing All Technical Areas (TA) at Los Alamos National Laboratory (LANL) (TA-57, Fenton Hill Site, not shown)

N

State Plane Coordinate System, New Mexico Central Zone.
1983 North American Datum

Grid provides NM State Plane coordinates in feet.
Grid interval, in feet: 10000
Feet per inch on map = 2500

SCALE 1:30000

0 762 1524 2286 3048

METERS

0 2500 5000 7500 10000

FEET

NOTICE: The information on this map is provisional. Feature locations are dependent on scale and symbology and their accuracy may not have been confirmed. Los Alamos National Laboratory boundary is based on legal description established in 1995. Other boundary, structure, and utility data are from Los Alamos National Laboratory Engineering Division and Los Alamos County Utility and Engineering Departments. Contour data are from Los Alamos National Laboratory Environmental Restoration Project aerial survey, September 1991.

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Earth and Environmental Sciences Division

FIMAD Facility for Information Management, Analysis, and Display
FIMAD is the electronic data repository for the Environmental Restoration Project at Los Alamos National Laboratory.

Produced by: Marcia Jones
Date: August 24, 1995 FIMAD Plot ID: G103688

LEGEND

- Contours, 100 ft
- Contours, 10 ft
- Fence, Industrial
- Fence, Security
- Retaining Wall
- Road/Parking, Dirt
- Road/Parking, Paved
- Building or Structure
  - 50-1 = Liquid Waste Treatment Plant
  - 50-37 = Incinerator
  - 50-69 = Waste Characterization, Reduction, and Repackaging Facility
- Disposal Pit (location approximate)

8755-B

MAP 2: Contour Map Showing Hazardous and Mixed Waste Units at Technical Area (TA) 50

N

State Plane Coordinate System, New Mexico Central Zone.
1983 North American Datum

Grid provides NM State Plane coordinates in feet.
Grid interval, in feet: 1000
Feet per inch on map = 200

SCALE 1:2400

0 61 122 183 244
METERS
0 200 400 600 800
FEET

NOTICE: The information on this map is provisional. Feature locations are dependent on scale and symbology and their accuracy may not have been confirmed. Los Alamos National Laboratory boundary is based on legal description established in 1995. Other boundary, structure, and utility data are from Los Alamos National Laboratory Engineering Division and Los Alamos County Utility and Engineering Departments. Contour data are from Los Alamos National Laboratory Environmental Restoration Project aerial survey, September 1991.

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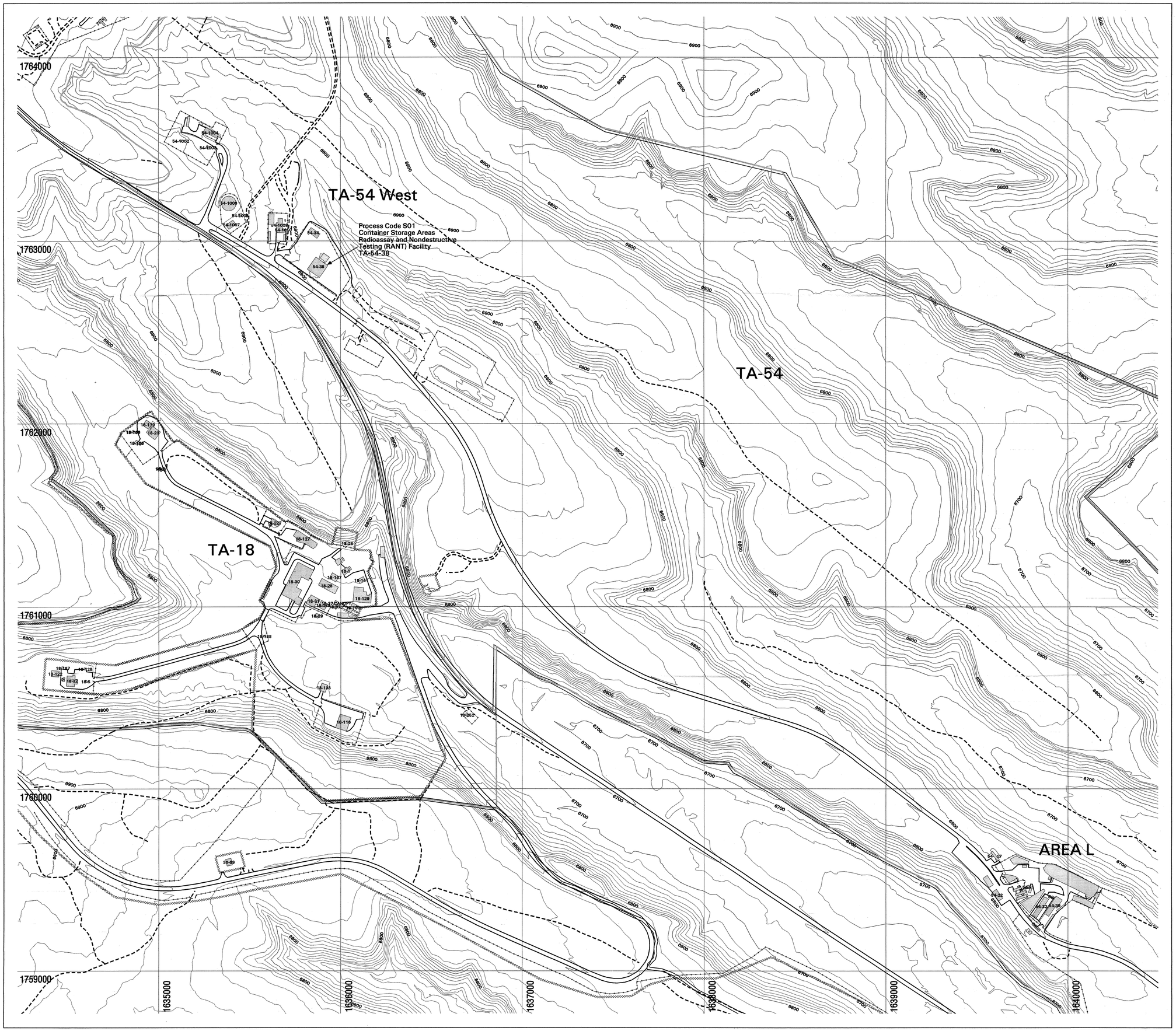
Produced by: Marcia Jones
Date: September 05, 1995 FIMAD Plot ID: G103689



LEGEND

- Boundary, OU
- Boundary, TA
- Contours, 100 ft
- Contours, 10 ft
- Fence, Industrial
- Fence, Security
- Road, Dirt
- Road, Paved
- Road/Trail
- Permanent Structure
- Temporary Structure

8755-C

MAP 3:
Contour Map Showing Hazardous and Mixed Waste Units at Technical Area (TA) 54 West

N

State Plane Coordinate System, New Mexico Central Zone.
1983 North American Datum

Grid provides NM State Plane coordinates in feet.
Grid interval, in feet: 1000
Feet per inch on map = 250

SCALE 1:3000

0 76 152 228 304 FEET

0 250 500 750 1000 METERS

NOTICE: The information on this map is provisional. Feature locations are dependent on scale and symbology and their accuracy may not have been confirmed. Los Alamos National Laboratory boundary is based on legal description established in 1995. Other boundary, structure, and utility data are from Los Alamos National Laboratory Engineering Division and Los Alamos County Utility and Engineering Departments. Contour data are from Los Alamos National Laboratory Environmental Restoration Project aerial survey, September 1991.

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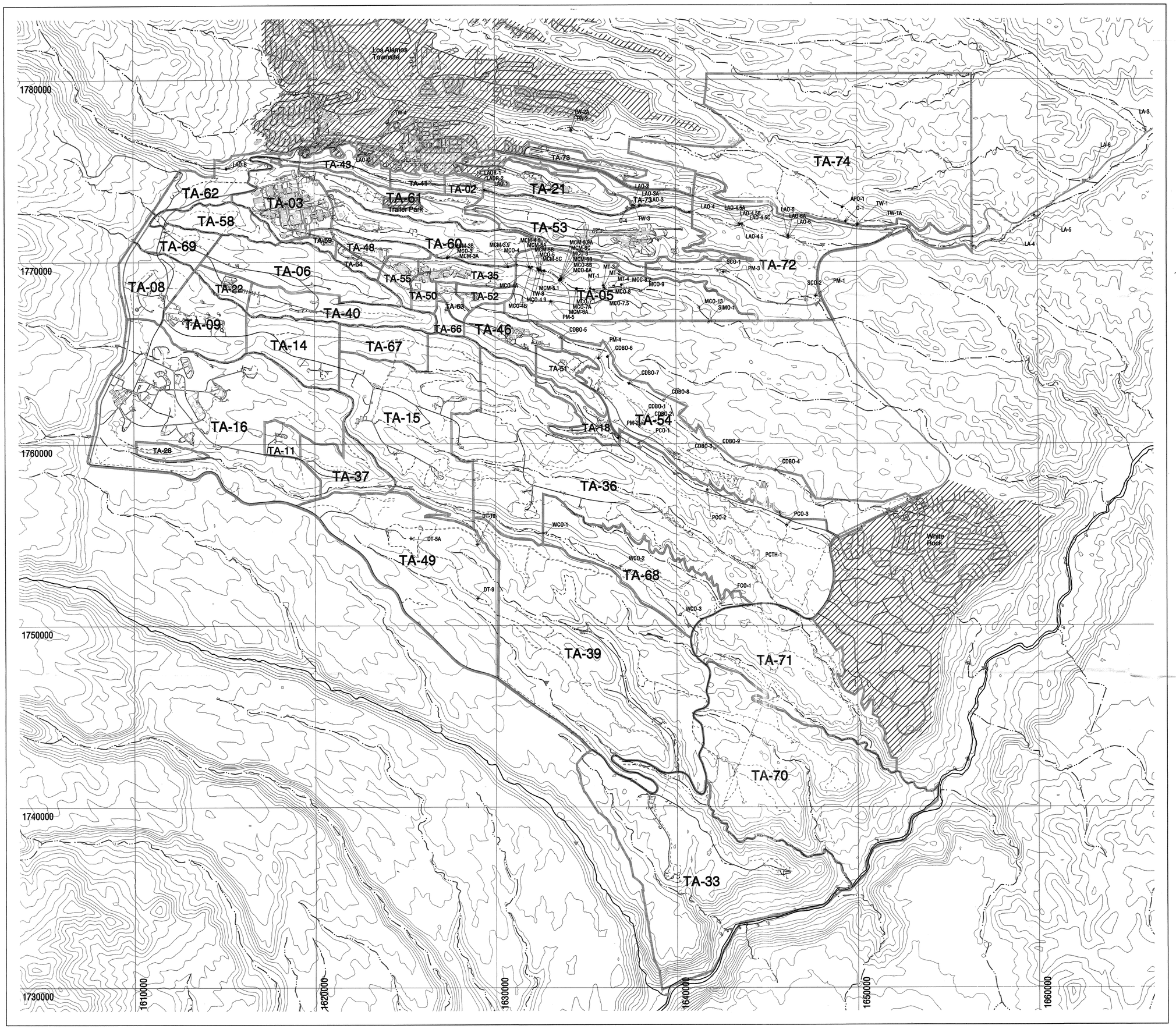
Produced by: Marcia Jones
Date: September 05, 1995 FIMAD Plot ID: G103690



LEGEND

- Boundary, LANL
- Boundary, TA
- Contours, 100 foot
- Roads, Dirt
- Roads, Paved
- Road/Trail
- Stream, Intermittent
- Stream, Perennial
- Building
- Residential Areas

PERCHED ALLUVIAL MONITORING WELLS
(Old wells are pre-1990, new wells installed since 1990 according to EPA guidelines)

- New Dry Well
- Old Dry Well
- New Saturated Well
- Old Saturated Well

MAIN AQUIFER WELLS

- Water Supply Well
- Test Well

OTHER

- LAOR Well
- Abandoned/Plugged Well

- Surface Water Sampling Station
- Spring

8755-D

MAP 4:
Location Map of Water Supply Wells, Monitoring Wells, Test Wells, Springs, and Surface Water Sampling Stations

N

State Plane Coordinate System, New Mexico Central Zone.
1983 North American Datum

Grid provides NM State Plane coordinates in feet.
Grid interval, in feet: 10000
Feet per inch on map = 2500

SCALE 1:30000

0 762 1524 2286 3048

METERS

0 2500 5000 7500 10000

FEET

NOTICE: The information on this map is provisional. Feature locations are dependent on scale and symbology and their accuracy may not have been confirmed. Los Alamos National Laboratory boundary is based on legal description established in 1995. Other boundary, structure, and utility data are from Los Alamos National Laboratory Engineering Division and Los Alamos County Utility and Engineering Departments. Contour data are from Los Alamos National Laboratory Environmental Restoration Project aerial survey, September 1991.

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Produced by: Marcia Jones
Date: August 24, 1995 FIMAD Plot ID: G103691

NPDES OUTFALL LOCATIONS

NPDES Outfall Locations

- County Boundary
- Drainage
- Laboratory Boundary
- Roads, Paved
- 100-ft Contours
- 20-ft Contours

OUTFALL CATEGORIES

- 01A
- 02A
- 03A
- 04A
- 05A
- 06A
- Miscellaneous

MAP 5: Los Alamos National Laboratory National Pollutant Discharge Elimination System Outfall Locations

8755-E

N

State Plane Coordinate System, New Mexico Central Zone.
1983 North American Datum

Grid provides NM State Plane coordinates in feet.
Grid interval, in feet: 10000
Feet per inch on map = 1750

SCALE 1:21000

0 533 1066 1599 2132

METERS

0 1750 3500 5250 7000

FEET

NOTICE: The information on this map is provisional. Feature locations are dependent on scale and symbology and their accuracy may not have been confirmed. Los Alamos National Laboratory boundary is based on legal description established in 1995. Other boundary, structure, and utility data are from Los Alamos National Laboratory Engineering Division and Los Alamos County Utility and Engineering Departments. Contour data are from Los Alamos National Laboratory Environmental Restoration Project aerial survey, September 1991.

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Produced by: Marcia Jones

Date: August 25, 1995 FIMAD Plot ID: G103692

FIMAD G103692 25 Aug 95

ATTACHMENT 3

FACILITY DRAWINGS

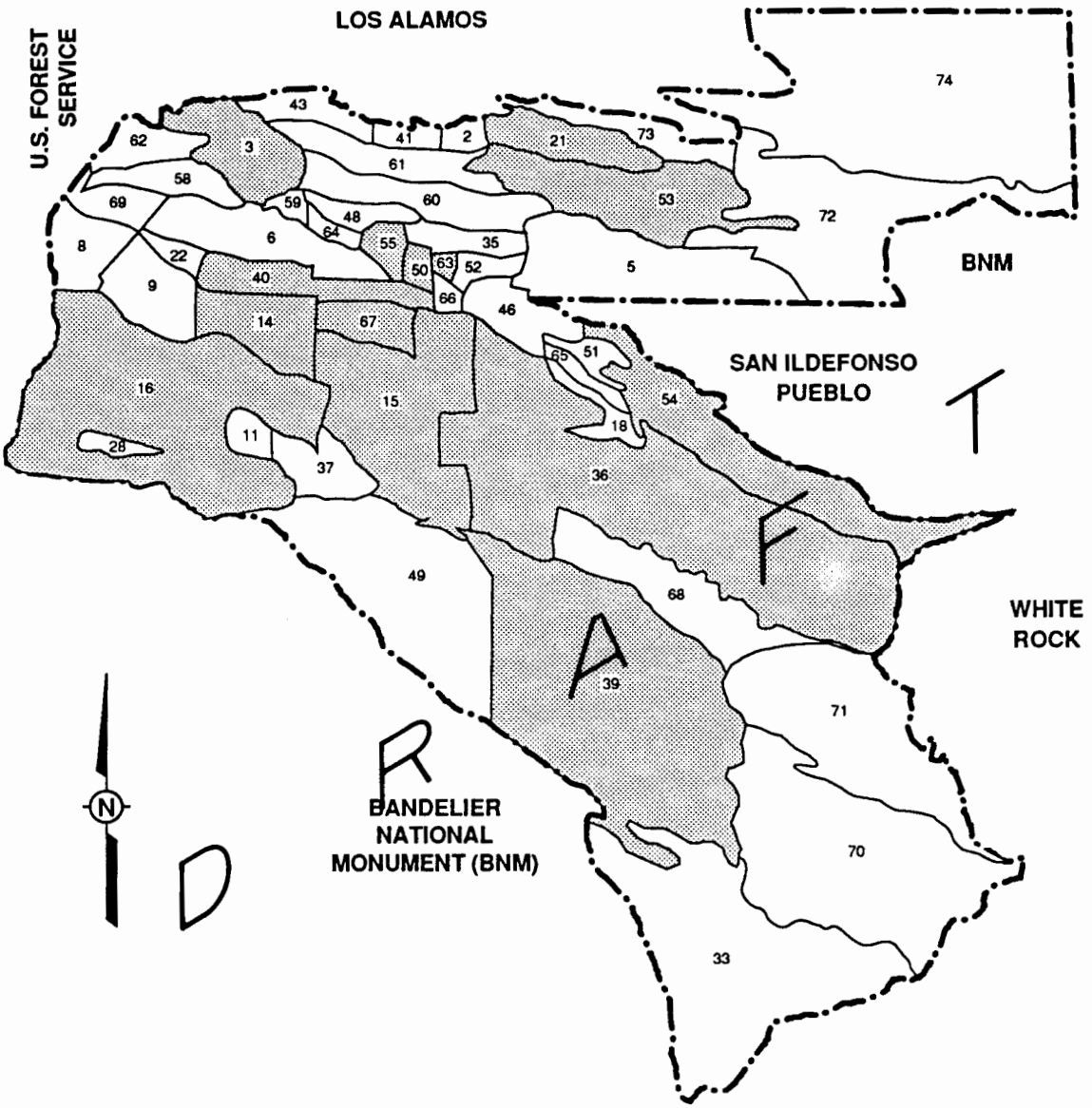
DRAFT

LIST OF FACILITY DRAWINGS

FIGURE NO.	TITLE
1	Location Map of Los Alamos National Laboratory Technical Areas
2	Technical Area (TA) 50 Site Location Map
3	Technical Area (TA) 50, Building 1, Basement Floor Plan
4	Technical Area (TA) 50, Building 69, First Floor Plan
5	Technical Area (TA) 54 Site Location Map
6	Technical Area (TA) 54 West, Building 38, First Floor Plan

DRAFT

Note: For facility drawings showing Los Alamos National Laboratory's other hazardous and mixed waste units, refer to the "RCRA Permit Modification Request for Technical Area 50 and Technical Area 54 West," 1995, Los Alamos National Laboratory, Los Alamos, New Mexico, which accompanies this Part A permit application submittal.



Shading indicates technical areas in which hazardous waste or mixed waste units are located or planned for construction.

4800 0 4800
Scale in Feet

Modified from: "Environmental Surveillance at Los Alamos During 1992," 1994, LA-12764-ENV, Los Alamos National Laboratory, Los Alamos, New Mexico.

Figure 1
Location Map of Los Alamos National Laboratory Technical Areas

Document: TA-50/54W Par
Revision No.: Final Draft
Date: September 29, 1995

761139\TA50/54.mod A24

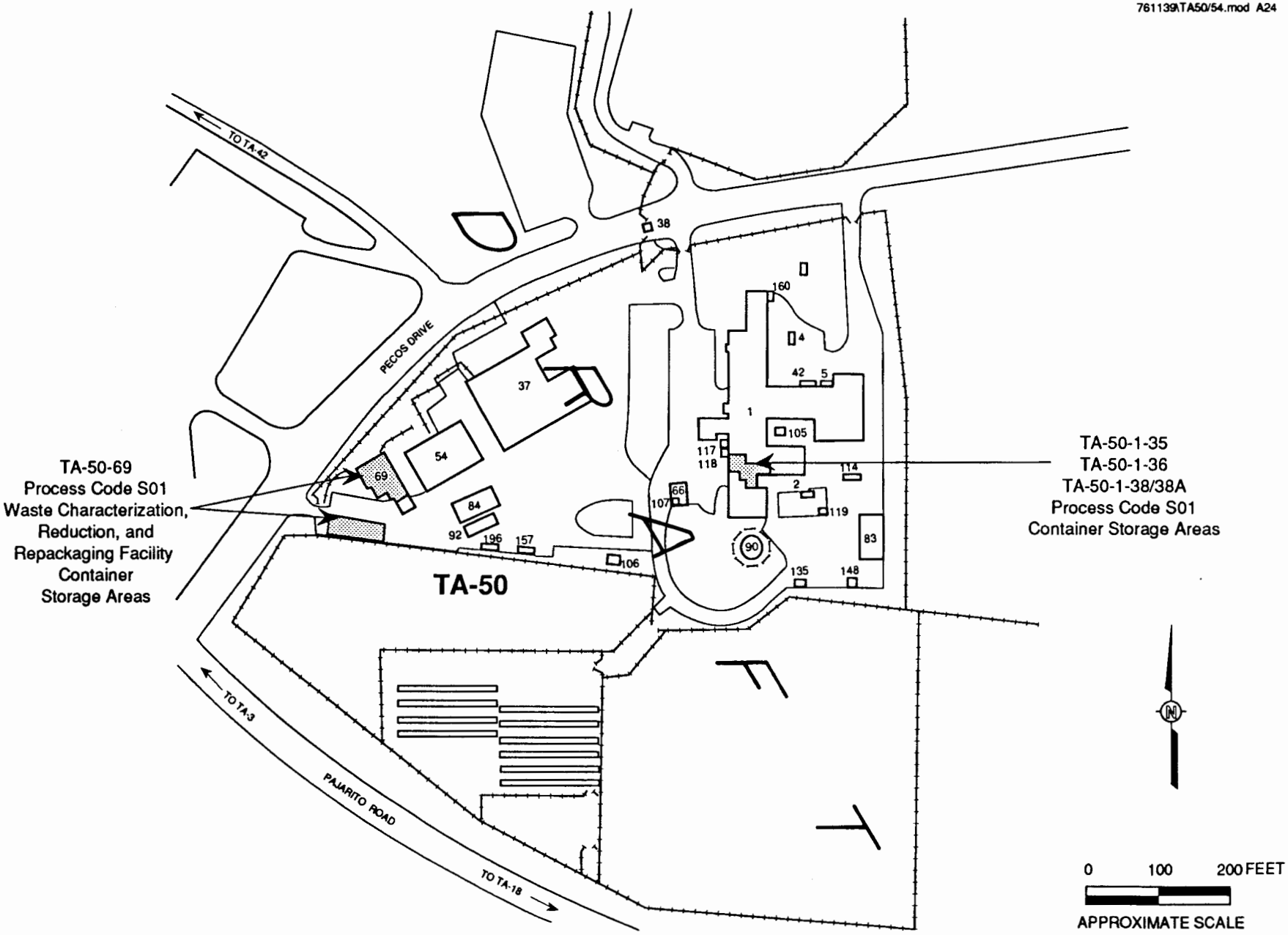


Figure 2
Technical Area (TA) 50 Site Location Map

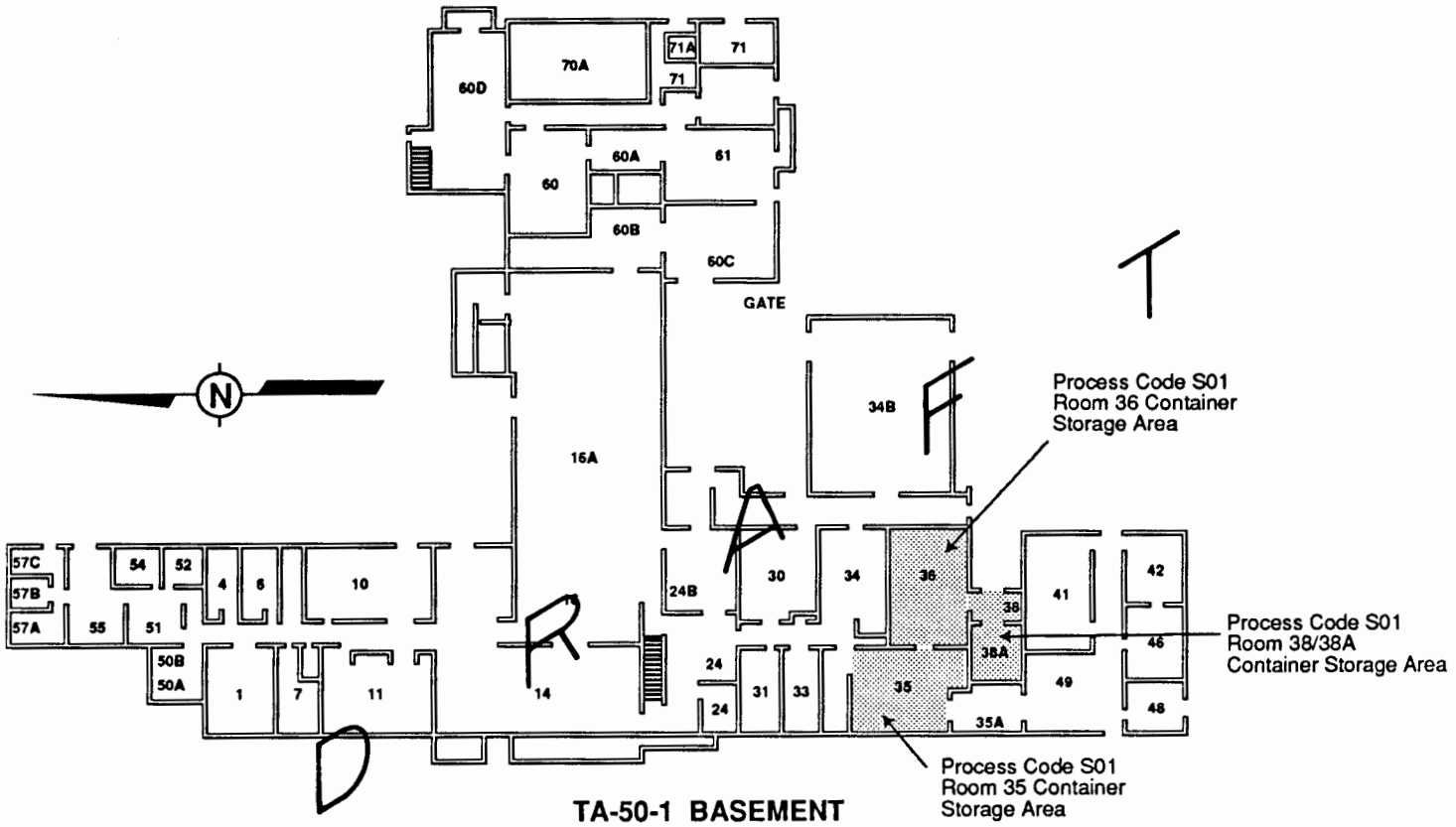
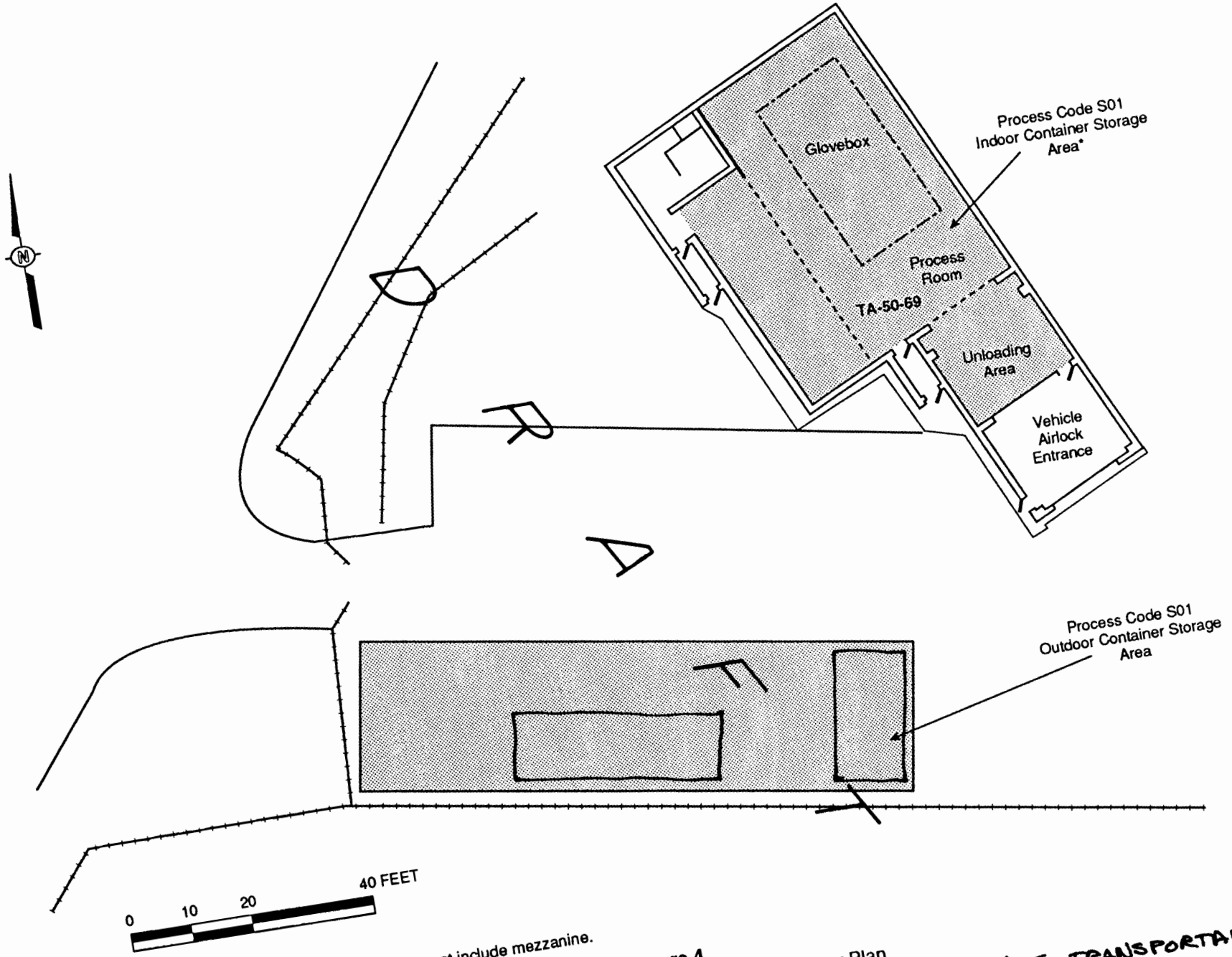


Figure 3
Technical Area (TA) 50, Building 1, Basement Floor Plan



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

Figure 4
Technical Area (TA) 50, Building 69, First Floor Plan

WILL INCLUDE TRANSPORTAINERS AS STRUCTURES

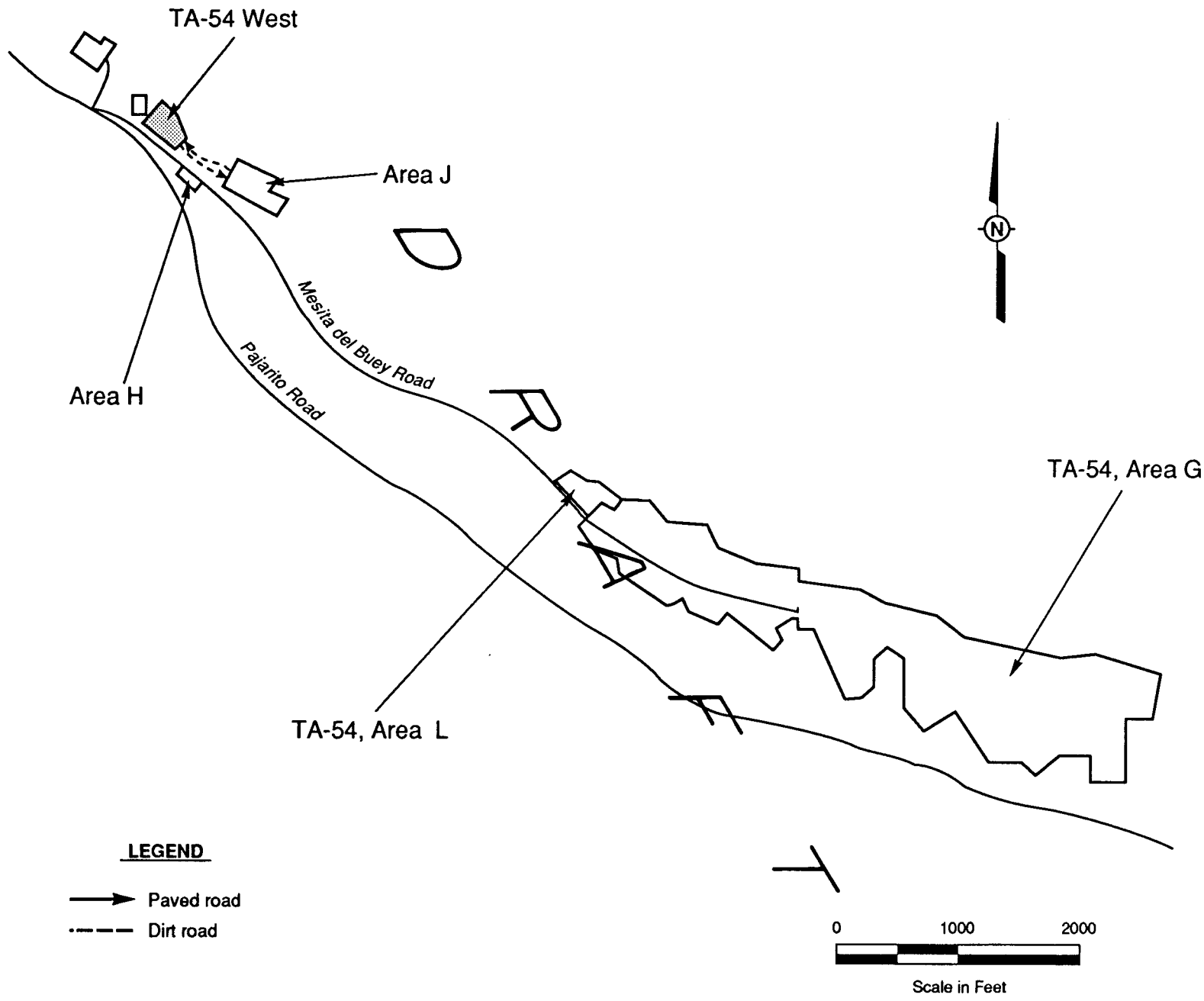


Figure 5
Technical Area (TA) 54 Site Location Map

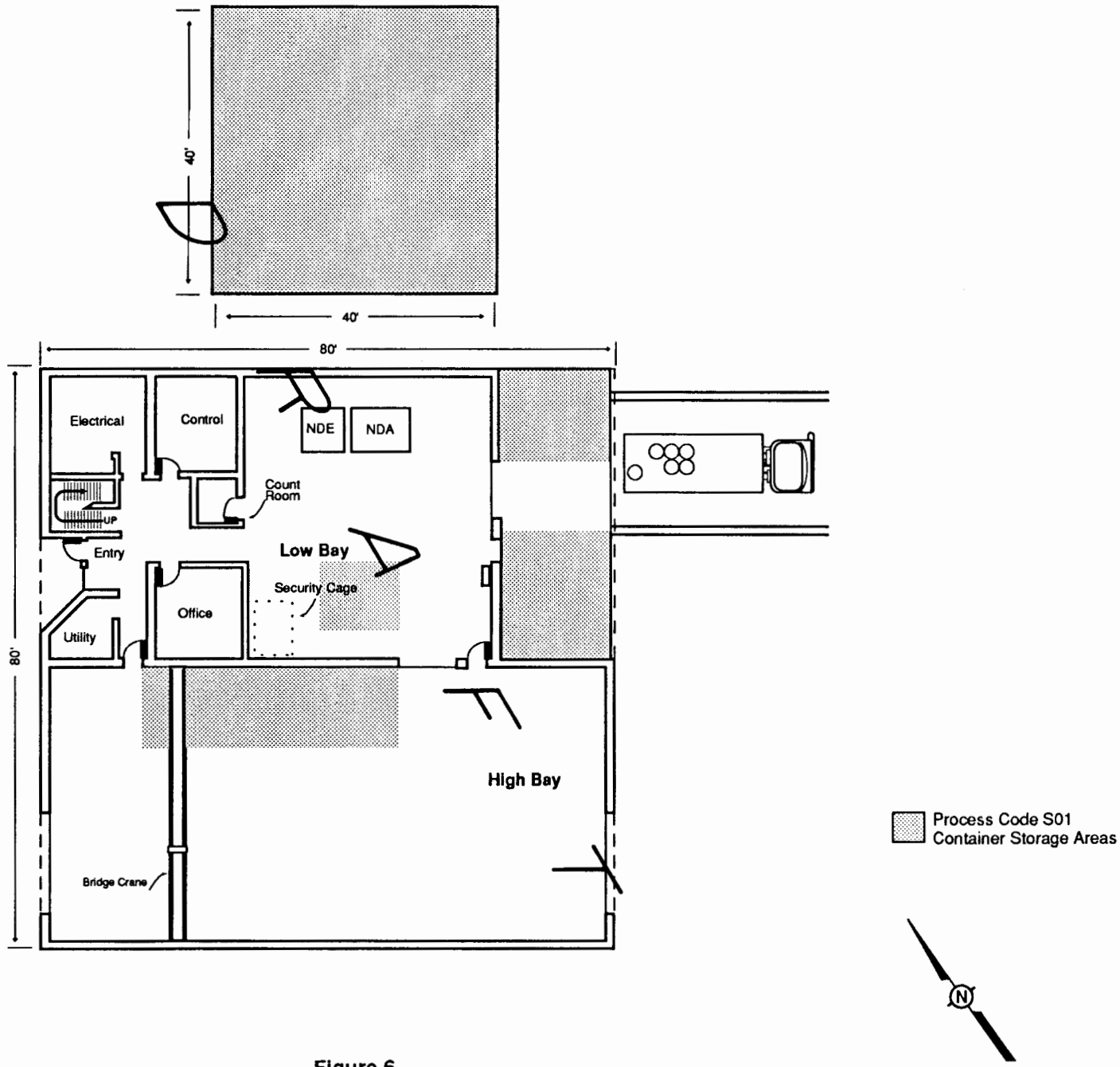


Figure 6
Technical Area (TA) 54 West, Building 38, First Floor Plan

ATTACHMENT 4

PHOTOGRAPHS

DRAFT

LIST OF PHOTOGRAPHS

PHOTOGRAPH CAPTION — PAGE

Technical Area 50, Building 1, Basement, Process Code S01, Container Storage Area (CSA) (Room 35 CSA) 4-1

Technical Area 50, Building 1, Basement, Process Code S01, Container Storage Area (Room 36 CSA) 4-1

Technical Area 50, Building 1, Basement, Process Code S01, Container Storage Area (Room 38/38A CSA) 4-2

Technical Area 50, Building 69, Process Code S01, Container Storage Area (Waste Characterization, Reduction, and Repackaging Facility [WCRRF] Indoor CSA) 4-2

Technical Area 50, Building 69, Process Code S01, Container Storage Area (WCRRF Outdoor CSA) 4-3

Technical Area 54 West, Building 38, Process Code S01, Container Storage Area (Radioassay and Nondestructive Testing [RANT] Facility High Bay CSA) 4-3

Technical Area 54 West, Building 38, Process Code S01, Container Storage Area (RANT Low Bay CSA) 4-4

Technical Area 54 West, Building 38, Process Code S01, Container Storage Area (RANT Loading Dock CSA) 4-4

Technical Area 54 West, Building 38, Process Code S01, Container Storage Area (RANT Outdoor CSA; to be constructed) 4-5

DRAFT

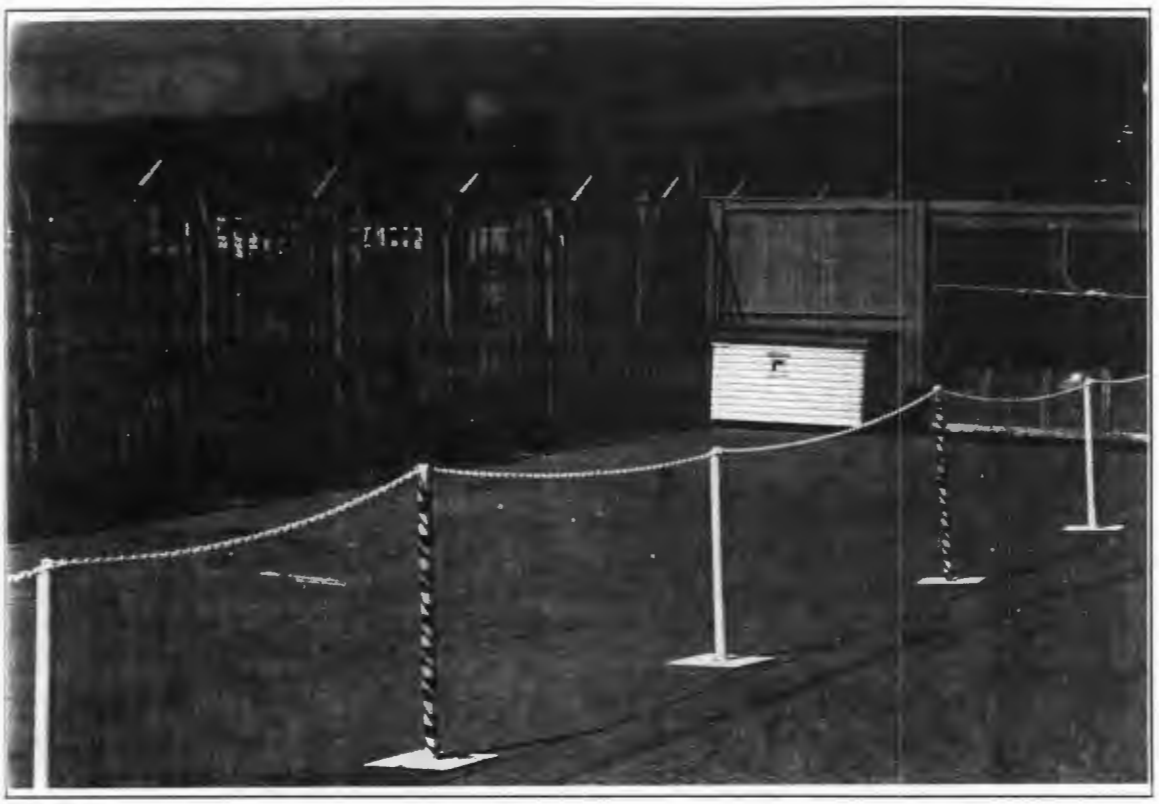
Note: For photographs showing Los Alamos National Laboratory's other hazardous and mixed waste units, refer to the "RCRA Part A Permit Application for Mixed Waste, Revision 2.0," 1994, Los Alamos National Laboratory, Los Alamos, New Mexico.

Technical Area 50, Building 1, Basement, Process Code S01, Container Storage Area (CSA) (Room 35 CSA)

Technical Area 50, Building 1, Basement, Process Code S01, Container Storage Area (Room 36 CSA)

Technical Area 50, Building 1, Basement, Process Code S01, Container Storage Area (Room 38/38A CSA)

Technical Area 50, Building 69, Process Code S01, Container Storage Area (Waste Characterization, Reduction, and Repackaging Facility [WCRRF] Indoor CSA)



Technical Area 50, Building 69, Process Code S01, Container Storage Area (WCRRF Outdoor CSA)

Technical Area 54 West, Building 38, Process Code S01, Container Storage Area (Radioassay and Nondestructive Testing [RANT] Facility High Bay CSA)

Technical Area 54 West, Building 38, Process Code S01, Container Storage Area (RANT Low Bay CSA)

Technical Area 54 West, Building 38, Process Code S01, Container Storage Area (RANT Loading Dock CSA)

IX.

Technical Area 54 West, Building 38, Process Code S01, Container Storage Area (RANT Outdoor CSA; to be constructed)

NOTE: Photograph will be included in Revision 0.0 of this Part A permit application.

Document:	**LANL CST Permit Mod**
Revision No.:	**Final Draft**
Date:	**September 29, 1995**

RCRA Permit Modification Request
Volume I

T

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

F

A

Technical Area 54 West

Building 38; Radioassay and Nondestructive Testing Facility High Bay,
Low Bay, Loading Dock, and Outdoor Container Storage Areas

R

D

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

September 29, 1995

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LIST OF ABBREVIATIONS/ACRONYMS

AASHTO	American Association of State Highway Transportation Officials
amsl	above mean sea level
"AR"	action required
ASTM	American Society for Testing and Materials
BEP	building emergency plan
BWTU	Batch Waste Treatment Unit
CAM	continuous air monitor
CAS	Central Alarm Station
CFR	Code of Federal Regulations
CL	clay loam
CL-ML	clay loam-loam
cm	centimeter
cm/hr	centimeters per hour
cm/s	centimeters per second
CSA	container storage area
CST	LANL's Chemical Science and Technology Division
CST-9	LANL's Inorganic Trace Analysis Group
DOE	U.S. Department of Energy
DOE/LAAO	DOE's Los Alamos Area Office
DOT	U.S. Department of Transportation
DPF	Drum Prep Facility
DX	LANL's Dynamic Experimentation Division
EDS	Employee Development System
EM&R	LANL's Emergency Management and Response Office

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LIST OF ABBREVIATIONS/ACRONYMS
(Continued)

EMP	Emergency Management Plan
EOC	Emergency Operations Center
EPA	U.S. Environmental Protection Agency
ER	environmental restoration
ESA	LANL's Engineering Sciences and Applications Division
ESH	LANL's Environment, Safety, and Health Division
ES&H	Environment, Safety, and Health
ESH-1	LANL's Health Physics Operations Group
ESH-2	LANL's Occupational Medicine Group
ESH-5	LANL's Industrial Hygiene and Safety Group
ESH-7	LANL's Occurrence Investigation Group
ESH-10	LANL's Hazardous Materials Response Group
ESH-13	LANL's ES&H Training Group
ESH-17	LANL's Air Quality Group
ESH-18	LANL's Water Quality and Hydrology Group
ESH-19	LANL's Hazardous and Solid Waste Group
ESH-20	LANL's Environmental Assessments and Resource Evaluations Group
FFCA	Federal Facility Compliance Agreement
FRP	fiberglass-reinforced plywood
FSS	LANL's Facilities, Security, and Safeguards Division
FSS-20	LANL's EM&R Office
ft	feet
GET	General Employee Training

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LIST OF ABBREVIATIONS/ACRONYMS
(Continued)

HAZMAT	Hazardous Materials
HE	high explosive
HEPA	high-efficiency particulate air
HMGS	Hazardous Materials Group Supervisor
HWF	Hazardous Waste Facility
IC	Incident Commander
ICG	Incident Control Group
IDC	item description code
INEL	Idaho National Engineering Laboratory
IRF	Inspection Record Form
IWP	Installation Work Plan
JCI	Johnson Controls World Services Inc.
kV	kilovolt
LAAO	DOE's Los Alamos Area Office
LACFD	Los Alamos County Fire Department
LACPD	Los Alamos County Police Department
LAMC	Los Alamos Medical Center
LANL	Los Alamos National Laboratory
LDR	land disposal restrictions
m	meter
MDA	material disposal area
ML	loam
MOU	memorandum of understanding

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LIST OF ABBREVIATIONS/ACRONYMS
(Continued)

mph	miles per hour
m/s	meters per second
MSDS	Material Safety Data Sheet
NAWAS	National Warning System
NFPA	National Fire Protection Association
20 NMAC 4.1	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
NMED	New Mexico Environment Department
NMT	LANL's Nuclear Materials Technology Division
No.	Number
NPDES	National Pollutant Discharge Elimination System
OJT	on-the-job training
OSHA	Occupational Safety and Health Administration
PA	public address
PN	property-numbered
PPE	personal protective equipment
PTLA	Protection Technology Los Alamos
QA	quality assurance
QAPP	quality assurance program plan
QA/QC	quality assurance/quality control
QC	quality control
RANT	Radioassay and Nondestructive Testing Facility
RCRA	Resource Conservation and Recovery Act
R&D	research and development

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LIST OF ABBREVIATIONS/ACRONYMS
(Continued)

RLWTF	Radioactive Liquid Waste Treatment Facility
RSWD	Radioactive Solid Waste Disposal
RTL	regulatory threshold limit
RTR	real-time radiography
SM	sandy loam
SM-409	ESH-2's central medical facility
SM-SC	sandy loam-sandy clay
SVOC	semivolatile organic compound
SW-846	EPA's "Test Methods for Evaluating Solid Waste"
SWB	standard waste box
SWMU	solid waste management unit
TA	technical area
TC	toxicity characteristic
TCLP	toxicity characteristic leaching procedure
TRUCON	TRUPACT-II Content
TRU	transuranic
TSD	treatment, storage, or disposal
UCC	Utilities Control Center
USC	United States Code
VOC	volatile organic compound
WAP	waste analysis plan
WCRRF	Waste Characterization, Reduction, and Repackaging Facility
WIPP	Waste Isolation Pilot Plant

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LIST OF ABBREVIATIONS/ACRONYMS
(Continued)

WPF	Waste Profile Form

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1.0 INTRODUCTION

This permit modification request has been prepared for submittal to the New Mexico Environment Department (NMED) to meet the requirements of the New Mexico Hazardous Waste Act, the Resource Conservation and Recovery Act (RCRA), and implementing regulations. This permit modification request follows the format of a RCRA permit application, as this format allows for an organized and familiar presentation of the required information.

Pursuant to the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart IX, 270.42(b)(1)(ii), Los Alamos National Laboratory (LANL) is requesting a Class 2 permit modification to their existing Hazardous Waste Facility Permit, ID Number NM0890010515, issued by the New Mexico Health and Environment Department Environmental Improvement Division in 1989. As required by 20 NMAC 4.1, Subpart IX, 270.42(b)(1)(i), the exact changes to be made to the permit conditions and supporting documents referenced by the permit are described in Table 1-1. Pursuant to 20 NMAC 4.1, Subpart IX, 270.42(b)(1)(iii), this permit modification is needed to provide LANL with short-term storage for containers of hazardous and mixed waste at nine container storage areas (CSA). The wastes will be stored at the CSAs to facilitate the performance of non-RCRA-regulated activities (e.g., waste characterization, segregation of lead from gloveboxes, size reduction). The permit modification is not intended to provide additional storage capacity for prolonged storage at LANL. As required by 20 NMAC 4.1, Subpart IX, 270.42(b)(1)(iv), the applicable information required by 20 NMAC 4.1, Subpart IX, 270.13, "Contents of Part A of the Permit Application;" 20 NMAC 4.1, 270.14, "Contents of Part B: General Requirements;" and 20 NMAC 4.1, 270.15, "Specific Part B Information Requirements for Containers" is provided in this permit modification request.

The Part B permit application requirements are addressed for 9 CSAs at LANL. The CSAs are located in Technical Area (TA) 50 and in TA-54 West, and include the following:

- **Three CSAs in TA-50-1** will be located in Rooms 35, 36, and 38/38A. The three CSAs are identified in this document as the Room 35 CSA, the Room 36 CSA, and the Room 38/38A CSA. These units will be used to store containers of transuranic (TRU) mixed waste, non-RCRA-regulated TRU waste, low-level mixed waste, non-RCRA-regulated low-level waste, and/or hazardous waste. (Definitions of TRU, TRU mixed, low-level, low-level mixed, and hazardous waste are provided in Section 3.0 of this document.)

- **Two CSAs at TA-50-69, the Waste Characterization, Reduction, and Repackaging Facility (WCRRF)**, were identified in LANL's original RCRA Part A permit application for mixed waste, submitted to NMED in January 1991 (LANL, 1991a), as an outside CSA and an inside CSA at the Size Reduction Facility (the WCRRF's former designation). These CSAs will be used to store containers of TRU mixed waste, non-RCRA-regulated TRU waste, low-level mixed waste, non-RCRA-regulated low-level waste, and/or hazardous waste.

- **Four CSAs at TA-54-38, the Radioassay and Nondestructive Testing (RANT) Facility** were identified in Revision 2.0 of the Part A permit application for mixed waste, submitted to NMED in 1994 (LANL, 1994a), as CSAs at the NDA/NDE Facility. The name of the NDA/NDE (Nondestructive Assay/Nondestructive Examination) Facility has since been changed to the RANT Facility. These CSAs will be used to store containers of TRU mixed waste, non-RCRA-regulated TRU waste, low-level mixed waste, non-RCRA-regulated low-level waste, and/or hazardous waste.

In addition to fulfilling RCRA permit modification requirements for the CSAs identified above, LANL is submitting the RCRA TA-50 and TA-54 West Part A permit application pursuant to 20 NMAC 4.1, Subpart IX, 270.42(b)(1)(iv). The TA-50 and TA-54 West Part A permit application presents general facility information for LANL and specific information for the units at TA-50 and TA-54 West. The TA-50 and TA-54 West Part A permit application is being submitted with this permit modification request, but as a separate document, to provide specific information on the wastes to be managed at these units.

In both the Part A and Part B portions of the permit modification request, a unit to be permitted may sometimes be referred to as a "facility" (e.g., the Drum Prep Facility, the RANT Facility). The term "facility," as it appears in this context, is used only to denote building names and does not imply the RCRA meaning of "facility" as defined in 20 NMAC 4.1, Subpart I, 260.10. However, pursuant to 20 NMAC 4.1, Subpart I, 260.10, the LANL facility as a whole does meet the RCRA definition of a facility.

An outline of the permit application with citations of the regulations covered by each section is given in Table 1-2. Where applicable, regulatory citations in this application reference 20 NMAC 4.1, which adopts, with a few limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 260 – 266, Part 268, and Part 270. Hereafter, the term "permit modification request" will be used when referring to the Part A and/or Part B permit application.

Table 1-1

Summary of Changes to be Made to Permit Conditions

Permit Section	Requested Change
Module I	Modify to include mixed waste.
Module II	Modify to include mixed waste.
Module III	Add new sections to Module III to address (1) container storage at Technical Area (TA) 50 and TA-54 West; (2) the capacity of mixed waste containers to be placed in storage at TA-50 and TA-54 West; and (3) the quantity of waste to be stored at TA-50 and TA-54 West.
Module IV	Not applicable; no changes needed.
Module V	Not applicable; no changes needed.
Module VI	Not applicable; no changes needed.
Module VII	Not applicable; no changes needed.
Module VIII	Not applicable; no changes needed.
Attachment A	Revise Attachment A by inserting Waste Analysis Plans (Section 3.0 of this submittal) for transuranic and low-level mixed waste.
Attachment B	Replace Attachment B with most recent Inspection Plan (Section 6.0 of this submittal).
Attachment C	Replace Attachment C with most recent Personnel Training Plan (Section 8.0 of this submittal).
Attachment D	To reflect that this plan applies to both hazardous and mixed waste emergencies, replace Attachment D with most recent Contingency Plan (Section 7.0 of this submittal). Keep the existing emergency equipment lists and augment with the emergency equipment list from this submittal (Attachment 7-1 of this submittal).
Attachment E	Revise Attachment E by inserting the Closure Plan for the units addressed in this submittal (Section 9.0 of this submittal).
Attachment F	Revise Attachment F by adding a new section that addresses container management at the container storage units addressed in this submittal.
Attachment G	Revise Attachment G by inserting the appropriate pages (i.e., from pages 6 of 7) from the TA-50 and TA-54 West Part A permit application included in this submittal. These pages address authorized waste codes, waste quantities, and process codes for mixed waste.
Attachment H	Not applicable; no changes needed.
Attachment I	Not applicable; no changes needed.
Attachment J	Not applicable; no changes needed.
Attachment K	Replace with the most recent version of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1).
Attachment L	Not applicable; no changes needed.

Table 1-2

Regulatory References and Corresponding Permit Application Location

RCRA Regulatory Reference[a]			
20 NMAC 4.1, Subpart IX	20 NMAC 4.1, Subpart V	Description of Requirement	Location in this Permit Application
270.42(b)	--	Permit modification request	1.0
270.10(g)(1)	--	Updating permit applications	1.0
270.11(a)	--	Signatories	12.0
270.11(d)	--	Certification	12.0
270.13	--	Contents of Part A permit application	Technical Area (TA) 50/TA-54 West Part A
270.13(a)	--	Activities conducted	TA-50/TA-54 West Part A
270.13(b)	--	Name, mailing address, and location	TA-50/TA-54 West Part A
270.13(c)	--	Principal SIC codes	TA-50/TA-54 West Part A
270.13(d)	--	Operator information	TA-50/TA-54 West Part A
270.13(e)	--	Owner information	TA-50/TA-54 West Part A
270.13(f)	--	Whether located on Indian lands	TA-50/TA-54 West Part A
270.13(g)	--	New or existing facility	TA-50/TA-54 West Part A
270.13(h)	--	Scale drawing and photographs	TA-50/TA-54 West Part A
270.13(i)	--	Description of waste processes	TA-50/TA-54 West Part A
270.13(j)	--	Specification and quantity of hazardous wastes	TA-50/TA-54 West Part A
270.13(k)	--	List of permits and construction approvals	TA-50/TA-54 West Part A
270.13(l)	--	Topographic maps	TA-50/TA-54 West Part A

See footnotes at end of table.

Table 1-2 (Continued)

Regulatory References and Corresponding Permit Application Location

RCRA Regulatory Reference[a]			
20 NMAC 4.1, Subpart IX	20 NMAC 4.1, Subpart V	Description of Requirement	Location in this Permit Application
270.13(m)	--	Description of nature of business	TA-50/TA-54 West Part A
270.14(b)(1)	--	General facility description	2.0
270.14(b)(2)	264.13(a)	Chemical and physical analyses	3.0
270.14(b)(3)	264.13(b)	Waste analysis plan	3.0
	264.13(b)(1)	Parameters and rationale	3.0
	264.13(b)(2)	Test methods	3.0
	264.13(b)(3)	Sampling methods	3.0
	264.13(b)(4)	Frequency of analyses	3.0
	264.13(b)(5)	Waste analysis information for off-site facilities	3.0
	264.13(b)(6)	Additional waste analysis requirements	3.0
270.14(b)(4)	264.14	Security procedures and equipment	5.1
270.14(b)(5)	264.15(b)	Inspection requirements	6.0
	264.174	Inspections	6.2
270.14(b)(7)	264 Subpart D	Contingency plan	7.0
	264.51	Contingency plan design and implementation	7.0 and 7.3.1
	264.52	Contingency plan content	7.0
	264.53	Contingency plan copies	7.1
	264.54	Contingency plan amendment	7.13
	264.55	Emergency coordinator	7.1.1
	264.56	Emergency procedures	7.3 – 7.12
270.14(b)(8)	264 Subpart C	Preparedness and prevention	5.2
	264.31	Design and operation of facility	5.0
	264.32	Required equipment	5.2 and 5.3

See footnotes at end of table.

Table 1-2 (Continued)

Regulatory References and Corresponding Permit Application Location

RCRA Regulatory Reference[a]			
20 NMAC 4.1, Subpart IX	20 NMAC 4.1, Subpart V	Description of Requirement	Location in this Permit Application
	264.33	Testing and maintenance of equipment	5.2.2 and 7.2.2.2
	264.34	Communications/alarm system	7.2
	264.35	Required aisle space	4.2.2 and 5.2.4
	264.37	Arrangements with local authorities	5.2.5, 7.1.5, and 7.1.7
270.14(b)(9)	264.17	Prevention of accidental ignition or reaction	5.4
270.14(b)(10)	--	Traffic pattern, volume, and controls	2.3
270.14(b)(11)(i)&(ii)	264.18(a)	Seismic standard	2.2.1
270.14(b)(11)(iii)	264.18(b)	Floodplain standard	2.2.2
270.14(b)(12)	264.16	Personnel training	8.0
270.14(b)(13)	264 Subpart G	Closure and post-closure plans	9.0
	264.111	Closure performance standard	9.1.1
	264.112(a)&(b)	Written content of closure plan	9.2 – 9.4
	264.112(c)	Amendment of closure plan	9.1.4
	264.112(d)	Notification of partial and final closure	9.1.2
	264.112(e)	Removal of wastes and decontamination/dismantling of equipment	9.2 – 9.4
	264.113	Time allowed for closure	9.1.3
	264.114	Disposal/decontamination	9.2 – 9.4
	264.115	Certification of closure	9.1.6
	264.117	Post-closure care and use of property	9.1.10
	264.120	Certification of post-closure	9.1.10
	264.178	Closure of containers/storage areas	9.2 – 9.4

See footnotes at end of table.

Table 1-2 (Continued)

Regulatory References and Corresponding Permit Application Location

RCRA Regulatory Reference[a]			
20 NMAC 4.1, Subpart IX	20 NMAC 4.1, Subpart V	Description of Requirement	Location in this Permit Application
270.14(b)(19) (i)(vi)(vii)&(x)	--	Topographic maps	2.1.3
270.14(b)(19)(ii)	264.18(b)	100-year floodplain	2.2.2
270.14(b)(19)(iii)	--	Surface waters	2.1.4
270.14(b)(19)(iv)	--	Land use	2.1.6
270.14(b)(19)(v)	--	Wind rose	2.1.5
270.14(b)(19)(viii)	264.14(b)	Access control	5.1
270.14(b)(19)(ix)	--	Wells	2.1.4
270.14(b)(19)(xi)	--	Drainage barriers	5.3
270.14(b)(19)(xii)	--	Location of operational units	2.1
270.14(b)(20)	--	Other federal laws	11.0
270.14(c)	264.90(a)	Ground-water monitoring	2.2.5
270.14(d)(1)	--	Requirements for solid waste management units (SWMU)	10.0
270.14(d)(1)(i)	--	Location of SWMUs on topographic map	Figures 10-1 and 10-2
270.14(d)(1)(ii)	--	Types of SWMUs	10.1
270.14(d)(1)(iii)	--	Structural description of SWMUs	Attachments 10-1 and 10-2
270.14(d)(1)(iv)	--	Dates of operation	Attachments 10-1 and 10-2
270.14(d)(1)(v)	--	Waste types managed at SWMU	Attachments 10-1 and 10-2
270.15	264 Subpart I	Containers	4.1
270.15(a)	264.175	Containment system	4.1
270.15(b)	264.175(c)	Free liquids	4.1
270.15(c)	264.176	Ignitable or reactive wastes	4.1, 4.2, and 5.4

See footnotes at end of table.

Table 1-2 (Continued)

Regulatory References and Corresponding Permit Application Location

RCRA Regulatory Reference[a]			
20 NMAC 4.1, Subpart IX	20 NMAC 4.1, Subpart V	Description of Requirement	Location in this Permit Application
270.15(d)	264.177	Incompatible wastes	4.1, 4.2, and 5.4

[a] RCRA = Resource Conservation and Recovery Act. The New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), adopts, with a few limited exceptions, Title 40 of the Code of Federal Regulations (40 CFR), Parts 260–266, Part 268, and Part 270 (1993). 20 NMAC 4.1, Subparts V and IX, contain equivalent regulations to 40 CFR Parts 264 and 270, respectively.

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2.0 FACILITY DESCRIPTION

The information provided in this section is submitted in accordance with the applicable requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart IX, 270.14(b)(1), 270.14(b)(10), 270.14(b)(11), and 270.14(b)(19), and 20 NMAC 4.1, Subpart V, 264.18(a). The following subject areas are addressed in this section: a general description of the Los Alamos National Laboratory (LANL) facility; traffic patterns, volume, and control; facility location information for compliance with the seismic standard and floodplain requirements; and topographic map requirements.

2.1 GENERAL DESCRIPTION [20 NMAC 4.1, Subpart IX, 270.14(b)(1) and 270.14(b)(19)(xii)] LANL is located in Los Alamos County, an incorporated county, in north-central New Mexico, approximately 60 miles north-northeast of Albuquerque and 25 miles northwest of Santa Fe. The regional location of LANL is shown on Figure 2-1. LANL, which occupies an area of 43 square miles, and the associated residential and commercial areas of Los Alamos County, which occupy an area of 109 square miles, are situated on the Pajarito Plateau. The plateau consists of a series of finger-like mesas separated by deep east-west trending canyons. Ephemeral, or intermittent, streams lie at the bottoms of all the canyons. The mesa tops range in elevation from approximately 7,800 feet above mean sea level (amsl) at the flank of the Jemez Mountains, located to the west of Los Alamos, to about 6,200 feet amsl at their eastern extent, where they terminate above the Rio Grande Valley.

LANL, a multidisciplinary laboratory owned by the U.S. Department of Energy (DOE), is operated jointly by DOE and the University of California. The principal mission of LANL includes the research, design, development, and analysis of weapons components for the nation's nuclear arsenal. This effort is supported by research programs such as nuclear physics, hydrodynamics, conventional explosives, chemistry, metallurgy, radiochemistry, and biology. In addition to its defense program efforts, LANL supports energy research and environmental missions with programs including medium-energy physics; space nuclear systems; controlled thermonuclear fusion; laser research; environmental research; geothermal, solar, and fossil energy research; nuclear safeguards; biomedical research; and space physics. In 1992, LANL expanded its mission in support of environmental management to include development of new programs in the areas of health and biotechnology, environmental technologies, and industrial partnerships.

LANL is divided into 49 technical areas (TA), 38 of which are developed (Figure 2-2). The hazardous and mixed waste management areas addressed in this permit modification request include the following container storage areas (CSA) at LANL's TA-50 and TA-54 West:

- Three CSAs at TA-50-1 in Rooms 35, 36, and 38/38A
- Two CSAs associated with the Waste Characterization, Reduction, and Repackaging Facility (WCRRF) at TA-50-69
- Four CSAs at the Radioassay and Nondestructive Testing (RANT) Facility (TA-54-38) at TA-54 West.

As provided in 20 NMAC 4.1, Subpart I, 260.10, the definition of "container" is "any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled."

Other Resource Conservation and Recovery Act (RCRA) units at or planned to be located at LANL include the following:

- Units that are permitted for hazardous waste storage and treatment
- Units that operate under interim status facility standards for hazardous and mixed waste storage and treatment
- Units that are planned for construction for hazardous and mixed waste storage, treatment, and disposal.

These units are located or planned for construction at 14 TAs (see Figure 2-2).

Units that are permitted for hazardous waste storage or treatment include the following:

- CSAs and treatment/storage tanks at TA-54, Area L. Two of the tanks are currently undergoing RCRA closure.
- The batch waste treatment unit and associated storage areas at TA-50-1. The batch waste treatment unit has undergone RCRA closure.
- The controlled air incinerator and associated storage areas at TA-50-37. The incinerator will undergo RCRA closure.
- An industrial incinerator at TA-16.

Units that are permitted for mixed waste storage include:

- CSAs for transuranic (TRU) mixed waste at TA-54, Area G. These CSAs include Storage Pads 1, 2, and 4, which are existing, and Storage Domes A (Building 54-229), B (Building 54-230), C (Building 54-231), and D (Building 54-232), which are under construction.

Units that are operating under interim status facility standards include the following:

- Thermal treatment units for open burning/open detonation of high-explosive waste at TA-14, TA-15, TA-16, TA-36, and TA-39. One thermal treatment unit, the scrap detonation site at TA-40, is undergoing RCRA closure under interim status.
- CSAs and storage tanks for mixed waste located at TA-3, TA-16, TA-21, TA-50, TA-54, and TA-55.
- Surface impoundments for storage of mixed waste at TA-53. These surface impoundments will undergo RCRA closure under interim status.
- Mixed waste treatment units (waste solidification/cementation) at TA-50-1 and TA-55-4.
- An oxygen sparging furnace at TA-55-4 for treatment of mixed waste. This unit will undergo RCRA closure under interim status.

Units that are planned for construction at LANL and for which permit applications/modification requests have been submitted include the following:

- Hazardous and mixed waste treatment and storage units at the Hazardous Waste Treatment Facility, TA-63.

There are one existing and one planned hazardous/mixed waste decontamination areas at LANL. A centralized Decontamination Facility at TA-50 is used for cleanup of equipment, some of which is associated with hazardous and mixed waste operations. One decontamination area in the facility is located in Room 34B in the south wing of Building 1. Room 34B is a high bay that can accommodate equipment of all sizes, including heavy equipment. TA-50-1 is shown on Figures 2 and 3 and Map 2 of the TA-50 and TA-54 West Part A permit application, which is being submitted to the New Mexico Environment Department (NMED) with this permit modification request, but as a separate document. A decontamination area will be established at the Drum Prep Facility (DPF) at TA-54, Area G, during an upgrade of that facility. This area will be used

for cleanup of equipment associated with the container retrieval project at TA-54, Area G, and for general site activities. The decontamination area in the DPF will be large enough to accommodate large earth-moving equipment. The location of the DPF (TA-54-33) is shown on Map 6 in this section.

2.1.1 TA-50 Container Storage Areas

TA-50 is located on a finger mesa bounded by Mortandad Canyon to the north and by Two Mile Canyon to the south. Mesa-top elevations at TA-50 range from approximately 7,250 to 7,280 feet amsl. The locations of the CSAs at TA-50 addressed in this permit modification request are shown on Figures 2 through 4 and Map 2 of the TA-50 and TA-54 West Part A permit application.

TA-50 contains facilities for treatment, storage, and disposal of solid radioactive, hazardous, and mixed waste. The Radioactive Liquid Waste Treatment Facility (TA-50-1) treats radioactive liquid wastes received from other TAs at LANL. The incinerator complex (TA-50-37), constructed in 1975, manages solid and liquid hazardous waste, TRU mixed waste, and low-level mixed waste. The incinerator is located in Room 112 of Building 37 (TA-50-37-112), and the associated liquid and solid waste feed system is housed in TA-50-37-115. Material Disposal Area (MDA) C, an 11.8-acre landfill, comprises approximately half of TA-50. MDA C was used from 1948 until 1974. It contains pits and shafts that received radioactive and mixed waste.

The CSAs at TA-50 addressed in this permit modification request are located in Rooms 35, 36, and 38/38A at TA-50-1 and at the WCRRF (TA-50-69). The CSAs in Rooms 35, 36, and 38/38A are located in the southern portion of the basement in TA-50-1. The Room 35 and Room 38/38A CSAs will be used for short-term storage of TRU mixed, non-RCRA-regulated TRU, low-level mixed, non-RCRA-regulated low-level, and hazardous waste in drums of various sizes. The Room 38/38A CSA will also be used to store wastes in standard waste boxes (SWB). The Room 36 CSA will be used to store lead-containing gloveboxes received in fiberglass-reinforced plywood (FRP) boxes. These gloveboxes will have the lead shielding removed while in Room 36. Drums of waste will also be stored in the Room 36 CSA. At the WCRRF, wastes are size reduced and repackaged for transport and storage. LANL also plans to conduct various waste characterization activities and lead-shielding removal at the WCRRF. Two CSAs are associated with the WCRRF. The WCRRF Outdoor CSA is located approximately 30 feet from the southwest corner of the WCRRF. The WCRRF Indoor CSA is located in the unloading area and the main

process room inside TA-50-69. Both the WCRRF Outdoor and Indoor CSAs will be used to store TRU mixed, non-RCRA-regulated TRU, low-level mixed, non-RCRA-regulated low-level, and hazardous waste in drums, FRP boxes, B25 boxes, SWBs, and other irregular containers of various sizes.

2.1.2 TA-54 West Container Storage Areas

TA-54 is located on Mesita del Buey, an east-west-trending finger mesa bounded by Cañada del Buey to the north and by Pajarito Canyon to the south. Mesa-top elevations at TA-54 range from approximately 6,900 to 6,650 feet amsl. TA-54 West is located at the west end of TA-54. The locations of the CSAs at TA-54 West addressed in this permit modification request are shown on Figure 6 and Map 3 of the TA-50 and TA-54 West Part A permit application.

TA-54 contains four waste management areas and supporting offices. The waste management areas are commonly referred to as Areas H, J, L, and G. Area H is an inactive waste management area. Area J is used for disposal of nonhazardous, nonradioactive, administratively controlled solid waste. Chemical and low-level mixed waste operations are located at Area L. Mixed waste CSAs within Area L are shown on Map 6 in this section. Area G is used for containerized storage of mixed waste and disposal of radioactive solid waste. The mixed waste CSAs within Area G are shown on Map 6 in this section.

The RANT Facility is located at TA-54 West. This facility will be used for verification assay and radiographic examination of unopened containers of radioactive, mixed, and hazardous wastes. The assay process will use passive/active neutron interrogation, and the examination process will involve x-ray radiography. The four CSAs at the RANT Facility are located in the facility's low bay, high bay, on the loading dock, and just north of the facility.

The Low Bay CSA is located in the northern half of the RANT Facility. This CSA will be used to store TRU mixed, non-RCRA-regulated TRU, low-level mixed, non-RCRA-regulated low-level, and hazardous waste in drums of various sizes. No FRP boxes or SWBs will be stored in the Low Bay CSA. The High Bay CSA is located in the southern half of the RANT Facility. This CSA will be used to store TRU mixed, non-RCRA-regulated TRU, low-level mixed, non-RCRA-regulated low-level, and hazardous waste in variously sized drums and FRP boxes as well as SWBs and B25 boxes. Non-RCRA-regulated low-level waste may be stored at this CSA in cardboard boxes.

The Loading Dock CSA is located at the northeast corner of the RANT Facility. This CSA will be used to store wastes similar to those in the Low Bay CSA. The Outdoor CSA will be located just north of the RANT Facility. This CSA will be used to store SWBs, B25 boxes, and variously sized drums of TRU mixed, non-RCRA-regulated TRU, low-level mixed, non-RCRA-regulated low-level, and hazardous waste.

2.1.3 Topographic Maps [20 NMAC 4.1, Subpart IX, 270.14(b)(19)]

Due to the size of LANL and the number of waste management areas addressed in this permit modification request, several maps and figures are provided to meet the requirements of 20 NMAC 4.1, Subpart IX, 270.14(b)(19). All maps clearly show a map scale, the date of preparation, and a north arrow. The maps and figures used to fulfill these regulatory requirements include the following:

- The locations of the CSAs at TA-50 and TA-54 West addressed in this permit modification request are shown on Maps 2 and 3 of the TA-50 and TA-54 West Part A permit application.
- A LANL-wide 100-year floodplain map is provided on page 36 of the report included as Appendix A.
- Surface waters, including intermittent streams, are shown on Map 4 of the TA-50 and TA-54 West Part A permit application.
- Surrounding land uses are shown on Figure 2-1 of this section.
- Wind roses for LANL are shown on Figures 2-3 and 2-4 of this section.
- The legal boundaries of LANL are shown on Map 1 of the TA-50 and TA-54 West Part A permit application.
- Access control features (e.g., fences, gates) are shown on Figures 5-1 and 5-2.
- Well locations are shown on Map 4 of the TA-50 and TA-54 West Part A permit application.
- Buildings and structures are shown on Maps 1, 2, and 3 of the TA-50 and TA-54 West Part A permit application.
- Drainage control features for the WCRRF Outdoor CSA and the Outdoor CSA at the RANT Facility are shown on Figures 4-3 and 4-5.
- Natural surface drainages are shown on Maps 2 and 3 of the TA-50 and TA-54 West Part A permit application.

- Access ways and internal roads are shown on Figures 2-5, 2-6, and 2-7 of this section.

Map 1 of the TA-50 and TA-54 West Part A permit application is a topographic map at a scale of 1 inch = 2,500 feet. Map 2 is at a scale of 1 inch = 200 feet, and Map 3 is at a scale of 1 inch = 250 feet. Contour lines on Maps 2 and 3 are in intervals of 10 feet, which is sufficient to detail natural drainage in the vicinity of the CSAs. As provided in 20 NMAC 4.1, Subpart IX, 270.14(b)(19), LANL requests that the NMED accept the maps at these scales and contour intervals due to the size of the waste management areas, the extent of the LANL facility, and the topographic relief in the area.

Maps 2 and 3 in the TA-50 and TA-54 West Part A permit application show the locations and surrounding topography of the hazardous and mixed waste units at TA-50 and TA-54 West, respectively, that are addressed in this permit modification request. Maps 1, 4, 5, and 6 are also included in the TA-50 and TA-54 West Part A permit application to satisfy the requirements of 20 NMAC 4.1, Subpart IX, 270.13(l). To meet the requirements of 20 NMAC 4.1, Subpart IX, 270.14(b)(19)(xii), topographic maps showing the locations of all the hazardous and mixed waste units and subunits at additional LANL locations are provided in this section as Maps 1–14.

2.1.4 Wells and Surface Waters [20 NMAC 4.1, Subpart IX, 270.14(b)(19)(iii) and (ix)]

The municipal and industrial water supply for LANL and Los Alamos County is supplied by 13 deep wells in three well fields. The wells are located on the Pajarito Plateau and in canyons east of LANL. Water is pumped from the main aquifer, the surface of which ranges from approximately 600 to 1,200 feet below the surface of the plateau. The locations of supply wells, monitoring wells, test wells, springs, and surface-water sampling stations are shown on Map 4 of the TA-50 and TA-54 West Part A permit application. Surface water on LANL property is limited primarily to ephemeral, or intermittent, streams in the canyon bottoms. The volume of water flow in these streams is generally dependent upon storm runoff, snow melt, and numerous National Pollutant Discharge Elimination System (NPDES) outfalls discharging treated sanitary and industrial effluents. Perennial surface flow occurs in the Rito de los Frijoles south of LANL and in Santa Clara Canyon north of LANL. Springs on the flanks of the Jemez Mountains between elevations of 7,900 and 8,900 feet supply base flow throughout the year to the upper reaches of Cañon de Valle and in Guaje, Los Alamos, Pajarito, and Water Canyons (Purtymun, 1975). The flow volume from the springs is insufficient to maintain surface flow within more than

the western third of the canyons before it is depleted by evaporation, transpiration, and infiltration into the underlying alluvium. Surface, well, and spring waters are sampled routinely and analyzed for radionuclides as well as organics (volatiles, semivolatiles, pesticides, herbicides, and polychlorinated biphenyls), heavy metals, fluorides, nitrates, carbonates, bicarbonates, silica, sodium, magnesium, and conductivity. Analytical results are published annually by LANL's Environmental Assessments and Resource Evaluations Group (ESH-20). Copies of this publication are submitted annually to the NMED and the U.S. Environmental Protection Agency (EPA), Region 6, Administrator.

LANL has one geothermal well at TA-57, the Fenton Hill Geothermal Site, approximately 20 air miles west of Los Alamos. An NPDES-permitted industrial outfall for geothermal discharge is located at this site. This industrial outfall is designated NPDES Serial No. 001. The Fenton Hill Geothermal Site is shown on Map 6 of the TA-50 and TA-54 West Part A permit application. Locations of all NPDES-permitted outfalls within the LANL boundary are provided on Map 5 of the TA-50 and TA-54 West Part A permit application.

2.1.5 Wind Rose [20 NMAC 4.1, Subpart IX, 270.14(b)(19)(v)]

Surface winds are light at Los Alamos, averaging 7 miles per hour (mph), or 3 meters per second (m/s). Wind speeds are strongest from March through May and weakest in December and January. The strongest winds are generally southwesterly to northwesterly and occur in the afternoon or evening. Night winds are usually west-northwesterly at the western edge of the Pajarito Plateau because of persistent cold air drainage down the plateau. Daytime winds are generally southeasterly to southwesterly, caused by upslope and up valley winds. Daytime winds are also frequently westerly during the windy season (March through May).

Mean, annually averaged wind directions are plotted in wind roses at four sites (shown on Figures 2-3 and 2-4). Annually averaged daytime wind roses are depicted on Figure 2-3. Nighttime wind roses are shown on Figure 2-4. Day and night are defined by the times of sunrise and sunset. A wind rose is a circle with bars extending from the center, representing the direction from which the wind blows. The length of each bar is proportional to the wind-direction frequency. Each direction is 1 of 16 primary compass points (e.g., N, NNE, etc.) and is centered on a 22.5-degree-wide sector. The wind directions were taken at a height above ground of about 36 feet (11 meters [m]) at four stations: TA-6; TA-49; TA-53; and TA-54/White Rock. The wind

direction at 300 feet (92 m) is also given for TA-6. The wind rose for this height is in the far upper-left corner of Figures 2-3 and 2-4. The numbers in the center of each wind rose represent the percent frequency of calm winds (i.e., winds less than 1 mph).

Los Alamos surface winds often vary dramatically with time of day, location, and height above ground because of the complex terrain. On sunny days, thermally driven (convective) upslope winds develop over the Pajarito Plateau. Upslope winds are generally light, less than 6 mph (3 m/s). Winds usually become more south-southwesterly and southerly at locations toward the Rio Grande Valley, where a larger-scale, thermally driven up-valley wind predominates.

When sky conditions are clear and large-scale winds are light, locally produced winds reverse at night. At sunset, shallow drainage winds from the north to the northwest flow down the plateau, especially near the Jemez Mountains and in other areas with a greater slope. These winds can reach speeds of 6 to 8 mph (3 to 3.5 m/s).

2.1.6 Land Use [20 NMAC 4.1, Subpart IX, 270.14(b)(19)(iv)]

Los Alamos County, an incorporated county, encompasses several residential areas. The residential areas located closest to LANL are Los Alamos, located just north of LANL; White Rock, located east-southeast of LANL; and a trailer park within TA-61, which is located near the north-central boundary of LANL. According to 1992 University of New Mexico Bureau of Business and Economic Research data, the total population of Los Alamos County is approximately 18,200. Most of Los Alamos County, as well as adjoining portions of neighboring Sandoval, Rio Arriba, and Santa Fe Counties, is undeveloped. The only significant developments in Los Alamos County are the LANL facilities and the associated residential and commercial areas. Large tracts of land in the Jemez Mountains, west of LANL in Los Alamos County, are held by the U.S. Forest Service (e.g., Santa Fe National Forest) and the National Park Service (e.g., Bandelier National Monument) (Figure 2-1). This land is largely covered by piñon and ponderosa pine, juniper, fir, and aspen forests. Horticulture in the vicinity of LANL is limited to home gardens. In the river valleys to the east, agriculture is limited to the cultivation of relatively small irrigated plots. Primary crops are corn, chili, tree fruits, and alfalfa.

2.2 LOCATION INFORMATION

2.2.1 Seismic Standard [20 NMAC 4.1, Subpart IX, 270.14(b)(11)(i and ii) and 20 NMAC 4.1, Subpart V, 264.18(a)]

TA-50 is in compliance with the seismic standards of 20 NMAC 4.1, Subpart IX, 270.14(b)(11), and 20 NMAC 4.1, Subpart V, 264.18(a). A geologic field investigation, which consisted of exploratory trenching, was conducted within 3,000 feet of TA-50-1 and TA-50-69 during the fall of 1992 and summer of 1993. Based on trench stratigraphy, no evidence of Holocene faulting was observed (Woodward-Clyde Federal Services, 1995). TA-54 is exempt from the seismic standards because TA-54 contained existing hazardous and mixed waste management units prior to the effective dates of hazardous and mixed waste regulations. Consistent with the criteria provided in 20 NMAC 4.1, Subpart IX, 270.10(e), and 20 NMAC 4.1, Subpart V, 264.18(a), TA-54 contains existing units; thus, seismic standards are not applicable.

TO BE DISCUSSED WITH NMED, 10/27/95

2.2.2 Floodplain Standard [20 NMAC 4.1, Subpart IX, 270.14(b)(11)(iii) and 270.14(b)(19)(ii)]

In accordance with 20 NMAC 4.1, Subpart IX, 270.14(b)(11)(iii), the CSAs addressed in this permit modification request are not located within the 100-year floodplain boundary. As required in "Module VIII: Special Conditions Pursuant to the 1984 Hazardous and Solid Waste Amendments to RCRA for Los Alamos National Laboratory, EPA I.D. NM0890010515" (EPA, 1990; EPA, 1994a), LANL has mapped all 100-year floodplain boundaries within the LANL complex.

A report was published documenting the floodplain mapping procedures (McLin, 1992). This report is included as Appendix A. A LANL-wide 100-year floodplain map is provided on page 36 of that report. Individual floodplain boundary location maps are being finalized that will supplement the floodplain report. The floodplain boundary maps will reside on LANL's computer-based Autometric™ Geographic Information System—Mapping Overlay Statistical System, a graphic information system database.

2.2.3 Soils

A comprehensive soil survey of Los Alamos County was prepared by Nyhan et al. (1978). This soil survey classifies the soils according to the soil series, soil type, and soil phase.

The principal parent materials of about 95 percent of the Los Alamos County soils are Bandelier Tuff, volcanic rocks of the Tschicoma Formation, volcaniclastic sedimentary rocks of the

Puye Formation, basaltic rocks of Chino Mesa, and remnants of the El Cajete pumice. The remaining 5 percent of the soils were formed from colluvium, alluvium, andesitic rocks of the Paliza Canyon Formation, Cerro Rubio quartz latites, and tuffs associated with sediments of Cerro Toledo rhyolite. Textures of these soils range from very fine sandy loams and clay loams to gravelly, sandy loams and stony, silty clay loams.

The soils in TA-50 are Hackroy-Rock outcrop complex and Carjo loam. The Hackroy-Rock outcrop complex consists primarily of rock outcrop and Hackroy soils. These soils are classified in the Unified Soil Classification System as sandy loam (SM), sandy loam-sandy clay (SM-SC), loam (ML), clay loam-loam (CL-ML), and clay loam (CL). The Hackroy soils typically range from a brown SM in the top 8 centimeters (cm) to a reddish brown clay from 8 to 30 cm in depth (Figure 2-8). Permeability rates range from 5 to 15 cm per hour (cm/hr) in the top layers down to 0.15 to 0.50 cm/hr in the lower layers. The shrink-swell potential is low. Available water-holding capacity is 0.11 to 0.21 cm/cm, and the soil pH is 6.6 to 7.8. The Carjo soils typically range from a grayish brown ML in the top 10 cm to a brown CL from 10 to 30 cm in depth (Figure 2-9). Permeability rates range from 1.5 to 5 cm/hr in the top layer down to 0.15 to 5 cm/hr in the lower layers. The shrink-swell potential is low to moderate. Available water-holding capacity is 0.14 to 0.21 cm/cm, and the soil pH is 6.3 to 7.8. Native vegetation in TA-50 is mainly blue grama, piñon pine, one-seed juniper, and scattered ponderosa pine (Nyhan et al., 1978).

The soils in TA-54 are Hackroy sandy loam (see description above). Native vegetation in TA-54 is mainly blue grama, piñon pine, and one-seed juniper (Nyhan et al., 1978).

2.2.4 Geology

2.2.4.1 Regional Geology

The discussions of the regional geology, stratigraphy, structural geology, and ground water were extracted primarily from LANL's "Installation Work Plan for Environmental Restoration" (IWP) (LANL, 1993a). The IWP has been prepared in accordance with the Hazardous and Solid Waste Amendments Module VIII requirements of LANL's Hazardous Waste Facility Permit (New Mexico Environmental Improvement Division, 1989). One of the major components of the IWP is an installation description that provides information on current environmental conditions at LANL. The IWP is updated annually and submitted to the NMED.

LANL is located on the Pajarito Plateau along the eastern flank of the Jemez Mountains, which are part of the Jemez volcanic field. The Jemez volcanic field consists of approximately 432 cubic miles of volcanic rocks that cover an area of over 30 miles east to west and 50 miles north to south. The volcanic rocks were erupted from numerous vents, including a large multistage caldera (Gardner et al., 1986). The Jemez volcanic field is located at the intersection of the Jemez lineament and the Rio Grande rift (Aldrich, 1986) (Figure 2-10).

About 1.5 and 1.13 million years ago, respectively, two major volcanic eruptions in the Jemez Mountains produced widespread and voluminous ash-flow sheets. These ash-flow sheets are the Otowi and Tshirege Members of the Bandelier Tuff (Smith and Bailey, 1966; Spell et al., 1990). The Pajarito Plateau morphology is dominated by a gently eastward-sloping surface dissected by numerous steep-sided canyons. The Otowi and Tshirege Members of the Bandelier Tuff were erupted concomitantly with the collapse of the Toledo and Valles calderas, respectively. Volcanism continued after the formation of the calderas, as evidenced by the extrusion of domes along ring fractures. The El Cajete pumice and Banco Bonito rhyolite flow comprise the latest eruption in the Jemez Mountains. This eruption occurred about 130,000 years ago (Gardner et al., 1986; Self et al., 1988). Solfataric and hot spring activity continue as vestiges of volcanic activity today, both within and outside of the Valles caldera (Goff et al., 1989).

The Pajarito Plateau is located in the western part of the Española basin of the Rio Grande rift, a major tectonic feature of the western United States. The eastern margin of the Española basin lacks distinct major faults, but faults of major vertical offset may exist within Precambrian rocks of the Sangre de Cristo uplift (Vernon and Riecker, 1989; Biehler et al., 1991). A prominent zone of major faults, which cuts Miocene to Quaternary rocks of the Jemez volcanic field, characterizes the western margin of the Española basin (Smith et al., 1970; Gardner and Goff, 1984; Goff et al., 1990). The location and development of the Jemez volcanic field was strongly influenced by these border faults (Gardner and Goff, 1984; Gardner et al., 1986).

Rocks exposed around the margins of and underlying the Española basin were deposited prior to the development of the Rio Grande rift. These rocks consist of Mississippian to Permian marine limestones, sandstones, and shales; Mesozoic marine to terrestrial sandstones and shales; and Eocene sandstones, shales, and freshwater limestones. Precambrian quartzite, granitic gneiss and schist, and greenstone are exposed in the cores of the flanking Sangre de

Cristo, Nacimiento, and Brazos uplifts (Kelley, 1978) (Figure 2-10). Earliest sediments deposited in the Española basin are those of the Tertiary Abiquiu, Picuris, and Los Piños Formations. These formations consist of tuffaceous sandstones and volcaniclastic conglomerates derived largely from volcanic highlands to the north and northeast. They range in age from about 28 to 17 million years old (Baldridge et al., 1980; May, 1984; Ingersoll et al., 1990).

2.2.4.2 Site-Specific Geology

TA-50 and TA-54 are located in the central part of the Pajarito Plateau (Figure 2-11), which forms an apron of volcanic and sedimentary rocks around the eastern flanks of the Jemez Mountains. The plateau is aligned approximately north-south and is about 20 to 25 miles in length and 5 to 10 miles wide. It is bounded on the east by White Rock Canyon (which contains the Rio Grande), on the north and northeast by the Puye escarpment, and on the west by Sierra de los Valles. The Pajarito Plateau slopes gently eastward from an elevation of about 7,500 feet near the mountains toward the Rio Grande, where it terminates at an elevation of about 5,400 feet in steep slopes and cliffs formed by downcutting of the river. The plateau has been dissected into a number of narrow mesas by southeastward-trending streams. The stratigraphy and structural features of the Pajarito Plateau are described in the following sections.

2.2.4.2.1 Stratigraphy

The mesas of the Pajarito Plateau, comprised primarily of Bandelier Tuff, are covered by a veneer of soils and alluvial deposits and are underlain by a sequence of sedimentary and volcanic rocks typical of a terrain produced by concurrent sedimentation and volcanism (Figure 2-12). The oldest unit exposed around the margins of the Pajarito Plateau and penetrated by water-supply wells is the Miocene and early Pliocene age Santa Fe Group. The Santa Fe in this area is a thick series of terrestrial conglomerates, sandstones, and mudstones, with minor limestones, evaporites, volcanic tuffs, and intercalated basalts. Most production from water wells at Los Alamos is from the Santa Fe Group (Griggs and Hem, 1964; Purtymun, 1984). Sedimentary rocks usually dominate the Santa Fe, although basalts constitute up to 45 percent of the section penetrated by water-supply wells at LANL (Purtymun et al., 1984). In the Española basin and underlying the northern part of Los Alamos County, the Santa Fe is subdivided into two formations, the Tesuque and the Chamita. Several members of the Tesuque and Chamita Formations reflect the diversity of the coalesced alluvial fans deposited in the Española basin (Galusha and Blick, 1971; Ingersoll et al., 1990). Early investigators inferred that all Santa Fe

rocks exposed around the flanks of the Pajarito Plateau and intersected by water-supply wells beneath the plateau belonged to the Tesuque Formation, although more recent investigations suggest that some of the upper Santa Fe is Chamita Formation (Turbeville et al., 1989).

Interfingering with the Santa Fe Group are the volcanic rocks of the Tschicoma Formation. This formation consists of a sequence of dacitic domes and lavas that were erupted from vents in the central to northeastern Jemez Mountains between about 7 and 3 million years ago (Gardner et al., 1986). These volcanic rocks outcrop extensively in the mountains immediately west of LANL. They are reported in the subsurface beneath the western and southern part of the LANL boundary (Weir and Purtymun, 1962; Griggs and Hem, 1964; Dransfield and Gardner, 1985).

Overlying the Santa Fe Group and interfingering with the Tschicoma Formation are the rocks of the Puye Formation. The Puye consists of a Pliocene-to-Pleistocene fanglomerate that was shed eastward from Tschicoma volcanic centers in the northeastern Jemez volcanic field between about 4 and 1.7 million years ago. Earlier workers (e.g., Griggs and Hem, 1964) included the Totavi Lentil, now considered a separate formation, as part of the Puye. Most of the Puye conglomerates contain cobbles of dacite and andesite in a volcanic sand matrix. The Puye includes stream-flow deposits, debris-flow deposits, volcanic-ash and block-flow deposits, and ash-fall and pumice-fall deposits (Waresback and Turbeville, 1990). It is best exposed north of LANL; however, lithologically similar rocks have been penetrated in drill holes as far south as Frijoles Mesa (Weir and Purtymun, 1962; Dransfield and Gardner, 1985). The Puye is interstratified with basalts of the Cerros del Rio volcanic field under parts of LANL. In Los Alamos water-supply wells, the top of the main aquifer is usually within the Puye.

Immediately beneath the fanglomerates of the Puye Formation and unconformably overlying the Santa Fe Group is a section of poorly consolidated fluvial gravels. Griggs originally named this unit the Totavi Lentil of the Puye Formation (Griggs and Hem, 1964). The gravels contain clasts that differ lithologically from those in the Puye, including abundant well-rounded cobbles and boulders of quartzite, granite, and pegmatite that record a source area distant from the Jemez Mountains. This unit probably represents axial channel gravels of an ancestral Rio Grande. Waresback and Turbeville (1990) redefined these fluvial gravels as a separate formation, the Totavi Formation. The Totavi includes lacustrine sediments that are complexly interstratified with

the upper Puye Formation. The Totavi was reported in some water-supply wells beneath LANL between the Santa Fe and the Puye, occurring at lower elevations in the eastern wells (Cooper et al., 1965; Purtymun et al., 1983; Purtymun et al., 1984). The presence of the Totavi at these levels suggests that river gravels of the Rio Grande were deposited on erosional surfaces. This setting is analogous to Quaternary terraces of the Rio Grande in the Española basin described by Dethier et al. (1988) before deposition of the Puye fans, which unconformably overlie older formations.

Overlying and interfingering the Totavi and Puye Formations are the basaltic flows, breccias, and scoria of the Cerros del Rio basalts. This formation occurs in the subsurface beneath much of the Pajarito Plateau (Dransfield and Gardner, 1985) and outcrops in the east and southeast parts of Los Alamos County (Griggs and Hem, 1964). These volcanic rocks are associated with the Pliocene-to-Pleistocene Cerros del Rio basalt field, east of the Rio Grande. Rocks from this field have been dated at 4.6 to 2.0 million years old (Gardner et al., 1986), and the youngest lava flows occurred between 1.5 and 1.13 million years ago. Part of this volcanic field is also known as the basaltic rocks of Chino Mesa (Griggs and Hem, 1964). The top of the main aquifer beneath LANL is locally within this section of basaltic rocks.

In the subsurface beneath much of the Pajarito Plateau and in outcrops in many of the canyons, the Otowi Member of the Bandelier Tuff underlies the Tshirege Member (Griggs and Hem, 1964). The Otowi Member is mostly a nonwelded ash-flow tuff (ignimbrite) that was erupted from the Jemez Mountains approximately 1.5 million years ago (Spell et al., 1990). It is highly porous, poorly indurated, and composed of multiple flow units. Cooling joints are typically absent in outcrops because of relatively low emplacement temperatures and the lack of induration. Generally the Guaje Pumice Bed occurs at the base of the Otowi Member. The Guaje consists of sorted pumice fragments that average from 0.8 to 1.6 inches in size (Crowe et al., 1978). An interbedded sequence of rhyolitic tuffs and sediments commonly occurs between the Otowi and Tshirege Members of the Bandelier Tuff. The rhyolitic tuffs were erupted between 1.5 and 1.2 million years ago, predominantly from the Cerro Toledo domes in the northeastern Jemez Mountains (Heiken et al., 1986). Beneath the Pajarito Plateau, the sediments are epiclastic sands and sandy gravels that lithologically resemble Puye Formation fanglomerates. Deposits in this interval at LANL have sometimes been referred to as "Tsankawi pumice" or the "Tsankawi member."

The Tshirege Member of the Bandelier Tuff is the most widespread rock unit on the Pajarito Plateau (Griggs and Hem, 1964). The Tshirege was erupted from the Valles caldera about 1.13 million years ago (Spell et al., 1990). It is composed of multiple flow units of crystal-rich ignimbrite, which display significant variations in welding and alteration, both in a single stratigraphic section and with varying distance from the caldera. To the west, individual units tend to be thicker and more welded. Flow units are locally separated by volcanic surge deposits of well-sorted, fine-grained, cross-bedded crystal and pumice fragments. Vapor-phase alteration occurs in much of this unit. Often the base of the Tshirege is marked by 1.5 to 10 feet of bedded, unconsolidated, pumice-rich ash-fall tuff of Tsankawi pumice (Bailey et al., 1969; Crowe et al., 1978). In ash-flow tuffs, cooling joint spacing varies primarily with the thickness of the unit, emplacement temperature, substrate temperature, and topography. Joint density tends to be greatest in welded tuff and least in nonwelded tuff. Hydraulic conductivities are generally greatest in the fractured, welded parts of ash flow tuffs and least in the nonwelded parts (Crowe et al., 1978).

2.2.4.2.2 Structural Geology

The Pajarito fault system forms the western margin of the Española basin. This fault system exhibits Holocene movement and historic seismicity (Gardner and House, 1987; Gardner et al., 1990). The fault system is made up of over 65 miles of mapped fault traces. It connects with regional structures that extend at least as far as Cochiti to the south and Taos to the northeast (Gardner and House, 1987).

Within Los Alamos County, the Pajarito fault system consists of a number of active or potentially active faults, including the Pajarito, Rendija Canyon, and Guaje Mountain faults (Figure 2-13). The Pajarito fault is a zone of faulting that is greater than 0.25 mile wide. Its major scarp forms the western boundary of LANL. Near the southwestern corner of LANL's boundary, the major scarp of the Pajarito fault is over 410 feet high in rocks about 1 million years old. Movement on this fault is normal-oblique. The eastern side of the fault is relatively downdropped. Where exposed north of Los Alamos Canyon, the Rendija Canyon and Guaje Mountain faults are characterized by zones of gouge and breccia ranging from 100 to 150 feet wide. The Rendija Canyon and Guaje Mountain faults produce visible offsets of stratigraphic horizons; both are dominantly normal-oblique faults whose west sides are downdropped. Some strike-slip movements on the Guaje Mountain fault have been noted (Wachs et al., 1988; Aldrich and

Dethier, 1990; Gardner et al., 1990). The youngest movements on the Guaje Mountain fault have been constrained between roughly 4,000 and 6,000 years (Gardner et al., 1990). Displacement on the Guaje Mountain and Rendija Canyon faults apparently decreases south of Los Alamos Canyon, where narrow zones of faulting are replaced by over 300-foot-wide zones of intense brecciation and fracturing superimposed on the network of cooling joints in the Bandelier Tuff (Vaniman and Wohletz, 1990).

A variety of data have been integrated to produce structure contour and paleogeologic maps of the pre-Bandelier Tuff surface beneath the Pajarito Plateau (Dransfield and Gardner, 1985). These maps indicate that subsurface rock units are cut by a series of down-to-the-west normal faults. However, the overlying Bandelier Tuff is not obviously displaced by these buried faults. Detailed fracture studies have shown that fracture abundances and apertures increase in the Bandelier Tuff over some of the buried fault projections (Vaniman and Wohletz, 1990).

2.2.5 Ground Water

In the Los Alamos area, ground water occurs in three modes: (1) water in shallow alluvium in some of the larger canyons, (2) as perched water (a ground-water body above a less permeable layer that separates it from the underlying main aquifer by an unsaturated zone), and (3) the main aquifer of the Los Alamos area.

Alluvium in canyons that head on the Pajarito Plateau is relatively fine-grained and consists of clays, silts, sands, and gravels derived from the Bandelier Tuff. Saturated hydraulic conductivity of the alluvium ranges from 10^{-2} centimeters per second (cm/s) for sand to 10^{-4} cm/s for silty sand (Abeele et al., 1981). Ephemeral runoff in some canyons infiltrates the alluvium until downward movement is impeded by the less permeable tuff and sediments. The impeded movement results in a buildup of a shallow alluvial ground-water body. The horizontal and vertical extent of the alluvial water is controlled primarily through depletion by evapotranspiration and by limited movement into the underlying rocks (Purtymun et al., 1977). The limited saturated thickness and extent of the alluvial ground water preclude its use as a viable source of municipal and industrial supply to LANL and the surrounding community.

Perched ground-water bodies occur at intermediate depths in the conglomerates and basalts beneath the alluvium in portions of Pueblo, Los Alamos, and Sandia Canyons. Depth to perched

water ranges from about 90 feet in the midreach of Pueblo Canyon to about 450 feet in lower Sandia Canyon. Water from the Pueblo Canyon perched aquifer discharges at Basalt Spring in lower Los Alamos Canyon. Recent tritium measurements of intermediate depth perched ground water from four locations in Pueblo and Los Alamos Canyons indicate that recharge to these depths has occurred during the last several decades (Gallaher, 1995).

The only aquifer of the Pajarito Plateau capable of providing a large-scale municipal and industrial water supply is in rocks of the Santa Fe Group and Puye Formation. The upper surface of this main aquifer rises westward from the Rio Grande through the Santa Fe and into the lower part of the Puye beneath the central and western parts of the plateau (Figure 2-12). The exact source of recharge to the main aquifer is unknown. Three sources of recharge have been suggested by Cushman (1965): infiltration of runoff in canyons, underflow from the Valles caldera through the Tschicoma Formation, and infiltration on mesas. A large quantity of hydrologic, structural, and geochemical data indicate, however, that the caldera may not serve as an appreciable source of recharge to the main aquifer (Conover et al., 1963; Griggs and Hem, 1964; Goff, 1991). Furthermore, natural recharge through undisturbed Bandelier Tuff on the mesa tops is believed to be insignificant (Purtymun and Kennedy, 1971; Kearl et al., 1986). Limited data exist to support an evaluation of canyon runoff and alluvial water as a recharge source. Recent work using tritium and carbon-14 as hydrologic tracers indicates that some downward movement of moisture occurs beneath the canyons (LANL, 1993a; LANL, 1994b) and that some recharge has occurred at three locations (i.e., Los Alamos, Mortandad, and Pueblo Canyons) over the last four decades (Gallaher, 1995). Investigations are continuing to further evaluate the possible pathways for tritium movement toward the main aquifer. Water-level elevations suggest that ground water flows from the Jemez Mountains east and east-southeast toward the Rio Grande, where a part is discharged into the river through seeps and springs (Purtymun et al., 1980) (Figure 2-14). It is inferred that major recharge occurs from the west because the piezometric surface slopes downward to the east. The ground-water flow rate ranges from 20 feet per year (ft/yr) in the Tesuque Formation to 345 ft/yr in the more permeable Puye (Purtymun, 1984).

Figure 2-14 shows contours drawn to depict the piezometric surface of the main aquifer. The hydraulic gradient of the aquifer averages about 60 to 80 feet per mile within the Puye but increases to 80 to 100 feet per mile along the eastern edge of the plateau as the water enters

the Santa Fe. The depth to the water table under LANL ranges from about 600 to 1,200 feet. The wells in the main aquifer near the Rio Grande exhibit artesian conditions.

As expected, wells completed in the high permeability sediments and volcanics of the Santa Fe Group and Puye Formation are very productive. Wells located in the eastern well field, which penetrates about 1,600 feet of the fine-grained sediments of the Santa Fe, yield an average of 500 gallons per minute, with a specific capacity of 8 gallons per minute per foot of drawdown. Wells in the central part of the plateau, which are completed in the Puye and in the coarser sediments of the Santa Fe, are higher yielding and average 1,000 gallons per minute, with a specific capacity of about 35 gallons per minute per foot of drawdown.

Water-balance calculations for the area of LANL indicate that the annual evapotranspiration rate exceeds the annual precipitation rate. Additionally, field investigations have shown that infiltration of precipitation into the Bandelier Tuff is essentially zero. At depths below 10 feet, the volumetric moisture content of the tuff at LANL varies from about 4 to 6 percent on the mesas and from approximately 6 percent to saturation in the canyons with perched aquifers. In canyons where no perched aquifers are present, the volumetric moisture content of the tuff at depths below ten feet ranges from about 4 to 10 percent. If sufficient moisture is present to permit migration of moisture, unsaturated flow would be the predominant mechanism of movement in the Bandelier Tuff. If insufficient moisture is present, vapor phase transport appears to be the predominant mechanism of movement. Additional information on Los Alamos ground-water and vadose zone characteristics is presented in "Hydrogeologic Assessment of Technical Area 54, Areas G and L, Los Alamos National Laboratory" (IT, 1987) and in the IWP (LANL, 1993a).

<u>Ground-Water Monitoring</u> [20 NMAC 4.1, Subpart IX, 270.14(c) and 20 NMAC 4.1, Subpart V, 264.90(a)]

Requirements for ground-water monitoring and protection specified in 20 NMAC 4.1, Subpart IX, 270.14(c), and 20 NMAC 4.1, Subpart V, 264.90(a), apply to owners and operators of the following "regulated units" only: surface impoundments, waste piles, land treatment units, and landfills. This permit modification request addresses CSAs, which are not regulated units subject to 20 NMAC 4.1, Subpart IX, 270.14(c).

2.3 TRAFFIC PATTERNS [20 NMAC 4.1, Subpart IX, 270.14(b)(10)]

2.3.1 General

The rugged topography of alternating mesas and canyons present at LANL limits traffic circulation to only a few major arterial roads. A total of 85 miles of paved roads are present within LANL (Pan Am World Services Inc., 1986). The major roads are shown on Figure 2-5. There are 19 miles of highway, 22 miles of TA access roads, and 44 miles of roads in LANL's TAs.

The main access route to LANL is State Road 502 (formerly State Road 4). The majority of traffic to LANL approaches from the east on State Road 502. Alternate access routes are available from the south on State Roads 4 and 501 (West Jemez Road).

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

Currently over 12,000 people are employed at LANL (including full-time, part-time, and casual LANL personnel and subcontractors). Roughly 4,000 people commute to LANL daily from communities outside Los Alamos County.

2.3.2 Waste Collection Areas

Hazardous and mixed waste is generated at TAs throughout LANL. Small quantities of waste are generally accumulated in containers at less-than-90-day storage areas or satellite accumulation areas and then packed in containers, such as drums or boxes, for transport to RCRA interim status or permitted storage or treatment areas, as necessary. Because hazardous and mixed waste may be generated throughout LANL, waste transport may occur on nearly all roads within LANL.

2.3.3 Routes of Travel

The primary traffic routes that may be used to transport hazardous and mixed waste to TA-50 and to TA-54 West include Pajarito Road, Pecos Drive, and Mesita del Buey Road; lesser used traffic routes may include Diamond Drive and West Jemez Road (State Road 501) (Figures 2-5, 2-6, and 2-7). For waste generated east of the townsite (e.g., TA-21), the traffic route may include

Trinity Drive through Los Alamos. After waste containers are received at TA-50 and TA-54 West, they may be moved minimal distances on road surfaces within these areas.

2.3.4 Traffic Volumes

According to a 1991 traffic study, the peak traffic periods are between 7:15 and 8:15 a.m., 12:20 and 1:20 p.m., and 4:25 and 5:25 p.m. (Los Alamos County, 1991). The 1991 traffic study was limited to the intersection of Diamond Drive and Trinity Drive, just north of the TA-3 area. Consequently, the data presented in the study should reflect the existing traffic conditions in the TA-3 area at LANL. TA-3 will typically have higher vehicular volumes than the rest of LANL; thus, this study provides a conservative estimate of facilitywide traffic volumes. Maps from the cited study depicting vehicular traffic-count movements at the intersection of Diamond and Trinity Drives are included in Appendix B. Based on the 1991 traffic study, the Diamond Drive and Trinity Drive intersection had a volume of 2,269 vehicles from 7:15 to 8:15 in the morning and 2,096 from 4:25 to 5:25 in the afternoon. The count is biased low because the northbound traffic from Diamond Drive turning east onto Trinity Drive was not fully tallied during this study. In addition, the count is biased low because alternate routes were being used while the Los Alamos Canyon bridge was being widened and improved.

Data from a traffic count conducted at the same intersection in September 1992 are also included in Appendix B (Los Alamos County, 1992). The traffic volume from 7:15 to 8:15 in the morning was 3,047 vehicles. From 4:30 to 5:30 in the afternoon, the volume was 3,313 vehicles. The traffic volumes in the 1992 study were higher than those in the 1991 study because northbound traffic from Diamond Drive turning east onto Trinity Drive was tallied in the 1992 study whereas it was not fully tallied in the 1991 study.

2.3.5 Traffic Control Signals

Sitewide traffic flow at LANL is controlled by traffic lights, stop signs, and yield signs. Traffic lights are in place at all major intersections. Traffic signs are used at "T" intersections throughout LANL. Access to the high-security TAs is controlled by security guards and is restricted to vehicles having specific identification. Only personnel having appropriate security clearance and identification or escorted visitors are allowed access to the secured TAs. Vehicles and personnel entering these TAs are subject to periodic search by security personnel.

Traffic control signals within TA-50 and TA-54 include stop signs, posted speed limits, and other traffic and pedestrian control signs. The locations of existing signs at TA-50 and TA-54 are shown on Figures 2-6 and 2-7.

2.3.6 Road Load-Bearing Capacity

Roads at LANL carrying the greatest traffic volumes include Diamond Drive, Pajarito Road, and East and West Jemez Roads. These roads were constructed with a 10-inch-thick base overlain with a 5-inch-thick asphaltic concrete surface. They were designed and built in conformance with American Association of State Highway Transportation Officials (AASHTO) specification HS-20. This specification is intended to accommodate truck loading capacities of 32,000 pounds per axle. Roads within TAs are generally two-lane roads with asphaltic concrete surfaces. Pecos Drive and Mesita del Buey Road were constructed with a 6-inch-thick base overlain with a 6- to 8-inch-thick asphaltic concrete surface. The roads were designed and constructed to meet AASHTO standards.

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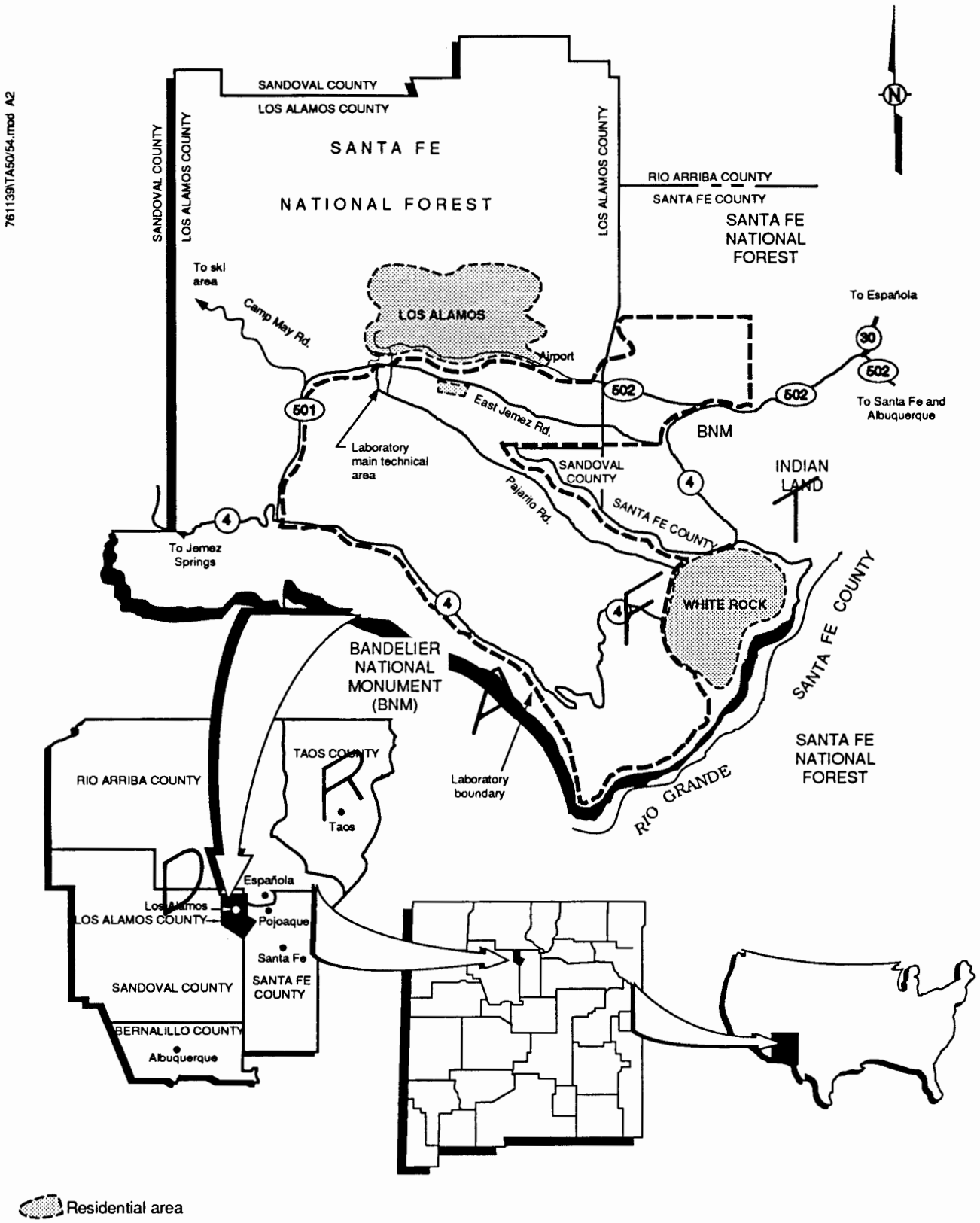

Modified from: "Environmental Surveillance at Los Alamos During 1992," 1994, LA-12764-ENV, Los Alamos National Laboratory, Los Alamos, New Mexico.

Figure 2-1

Regional Location Map of Los Alamos National Laboratory and Surrounding Land Use

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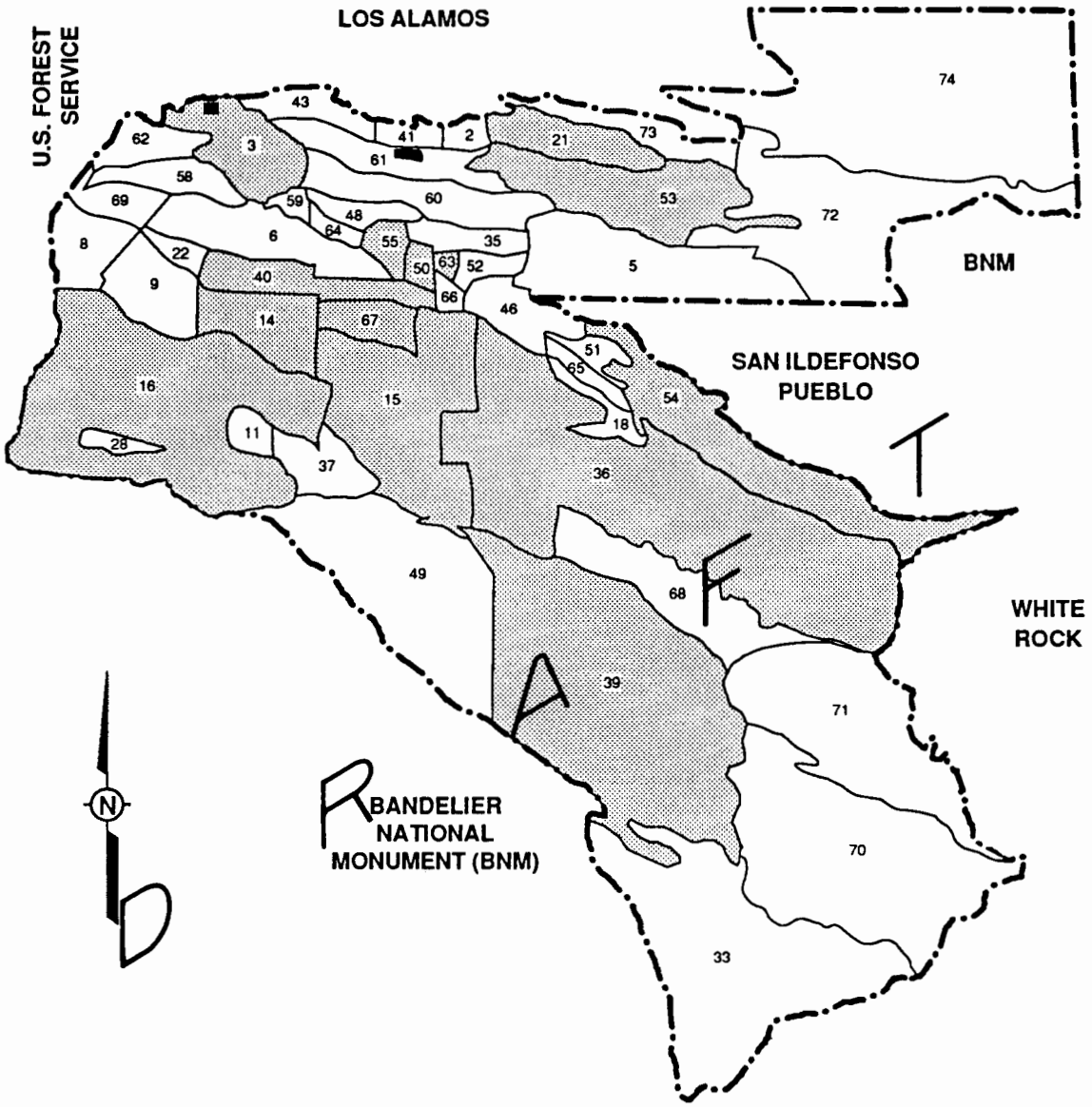

Shading indicates technical areas in which hazardous waste or mixed waste units are located or planned for construction.

Not LANL property.

4800 0 4800
Scale in Feet

Note: Technical Area 57, the Fenton Hill Geothermal Site, is not shown on this figure.

Figure 2-2
Location Map of Los Alamos National Laboratory (LANL) Technical Areas

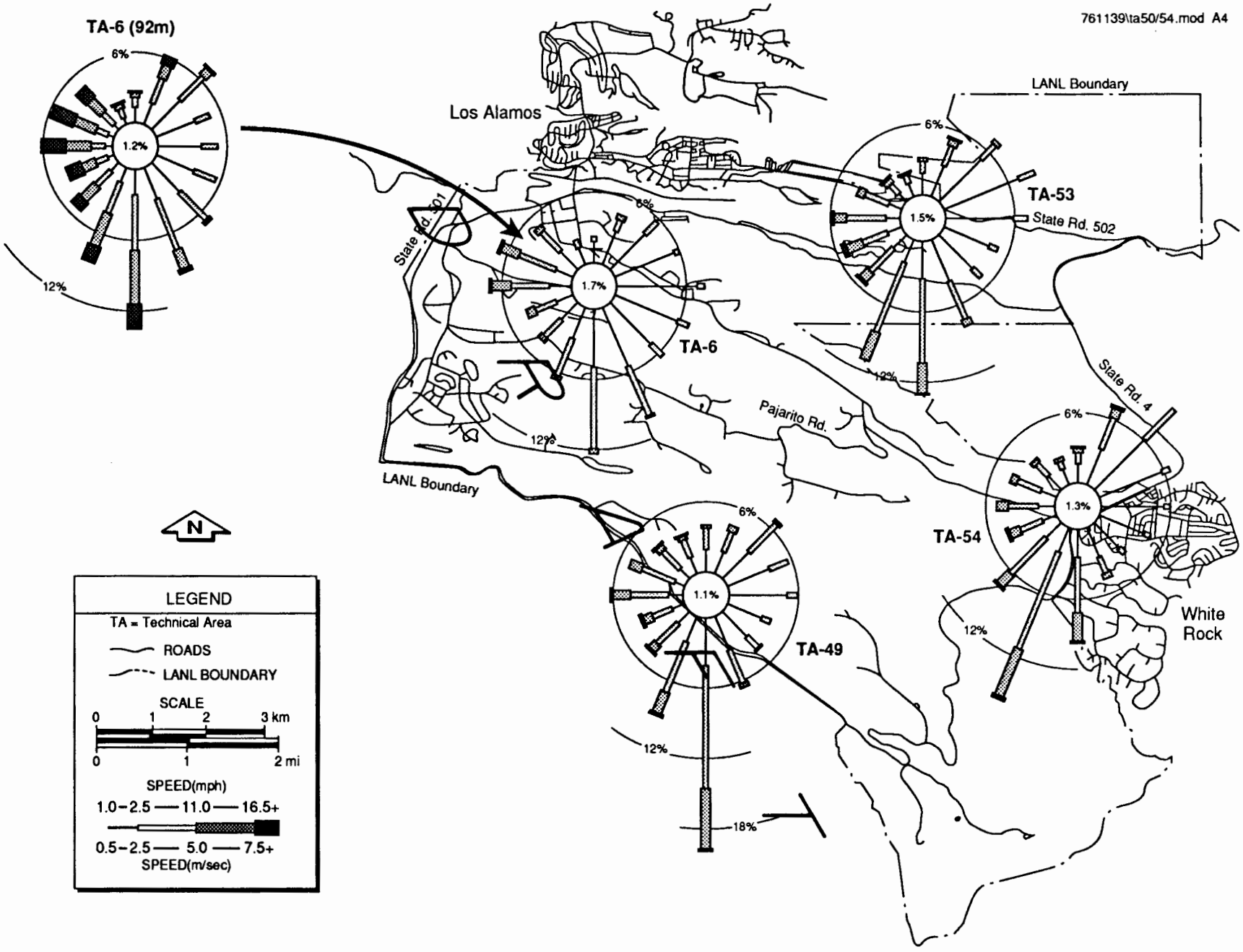

Figure 2-3
Annual Wind Roses for Los Alamos National Laboratory (LANL)—Day

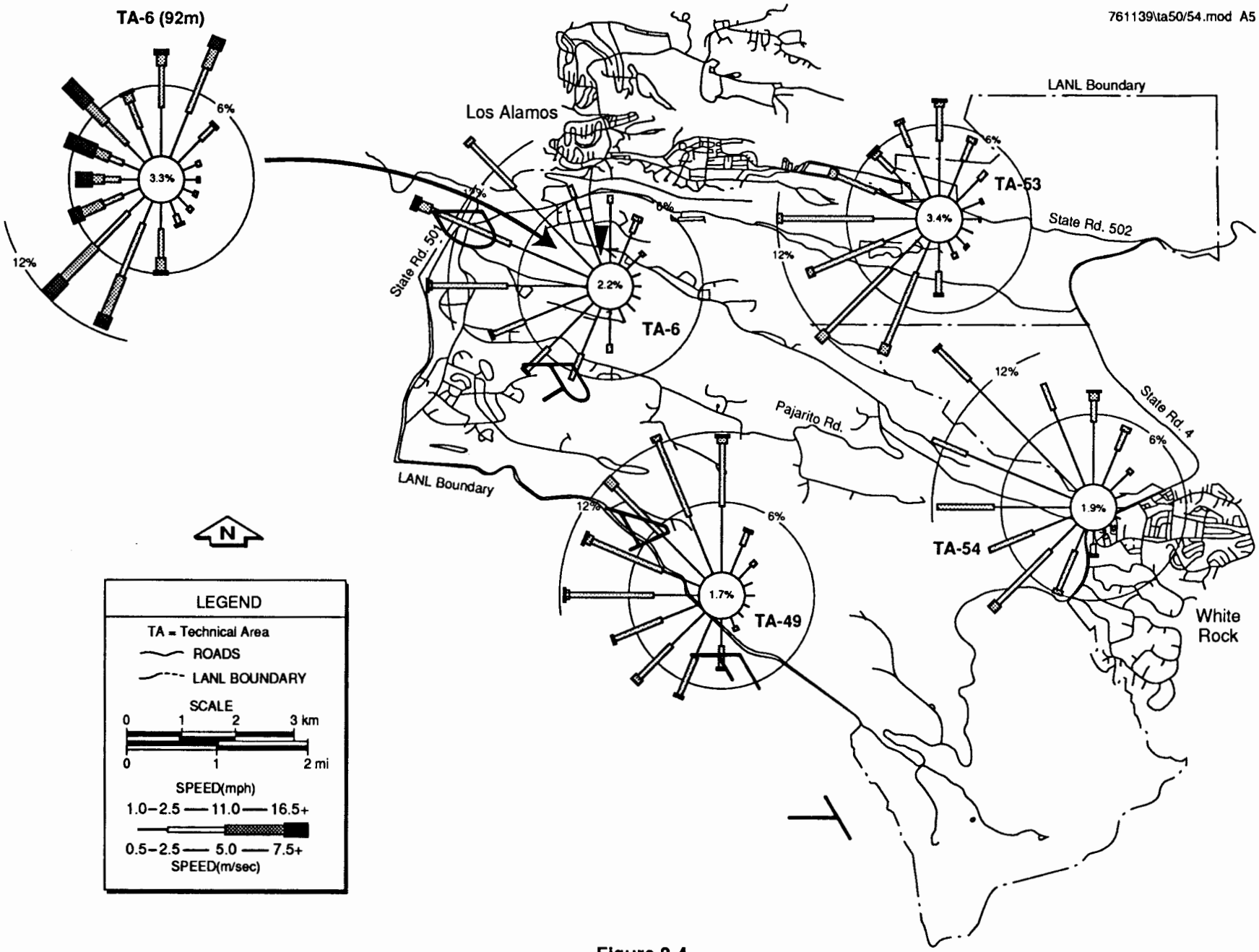

Figure 2-4
Annual Wind Roses for Los Alamos National Laboratory (LANL)—Night

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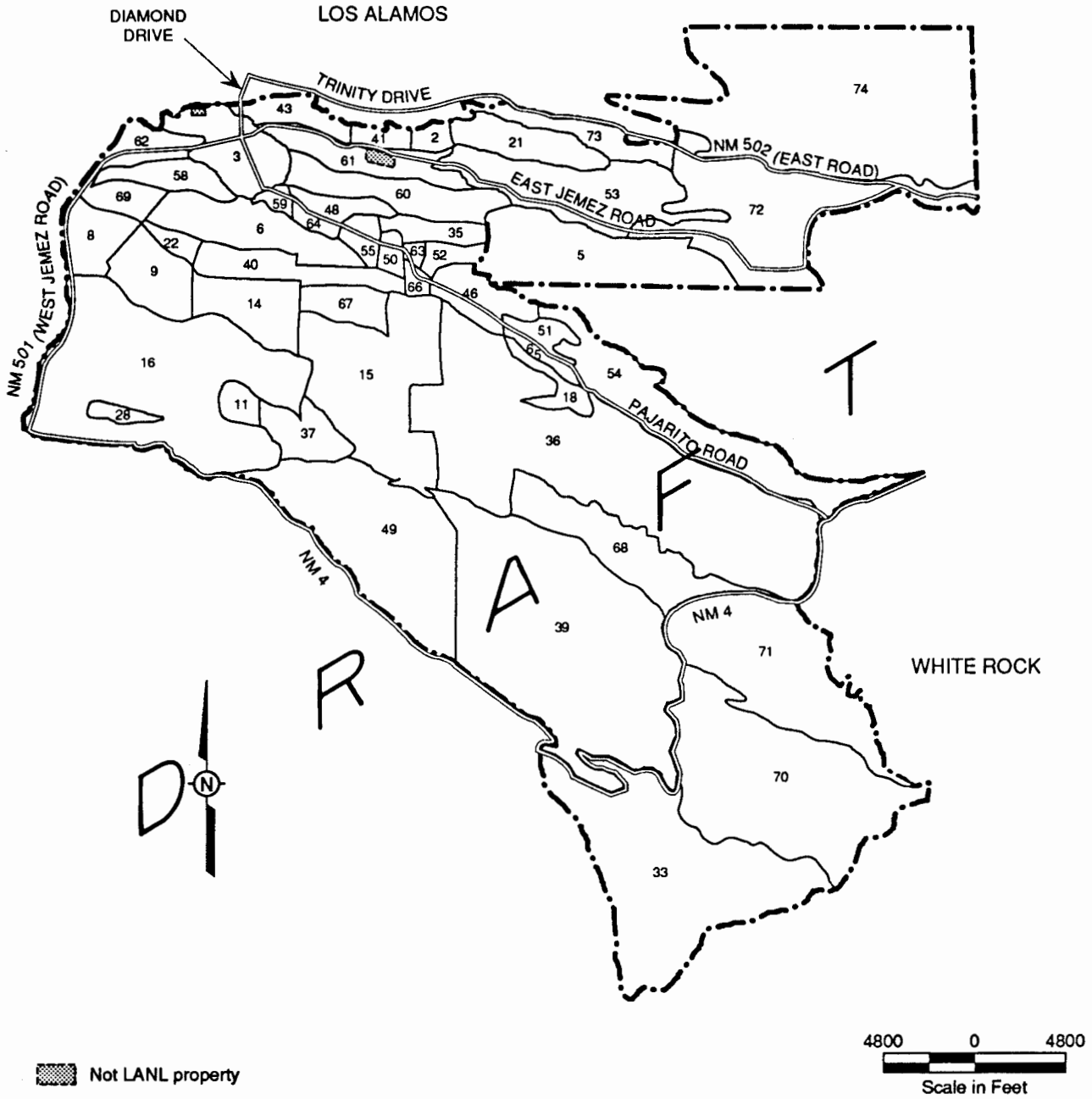


Figure 2-5
Major Roads and Primary Traffic Routes at Los Alamos National Laboratory (LANL)

TA-50

761139\ta50/54,mod A7

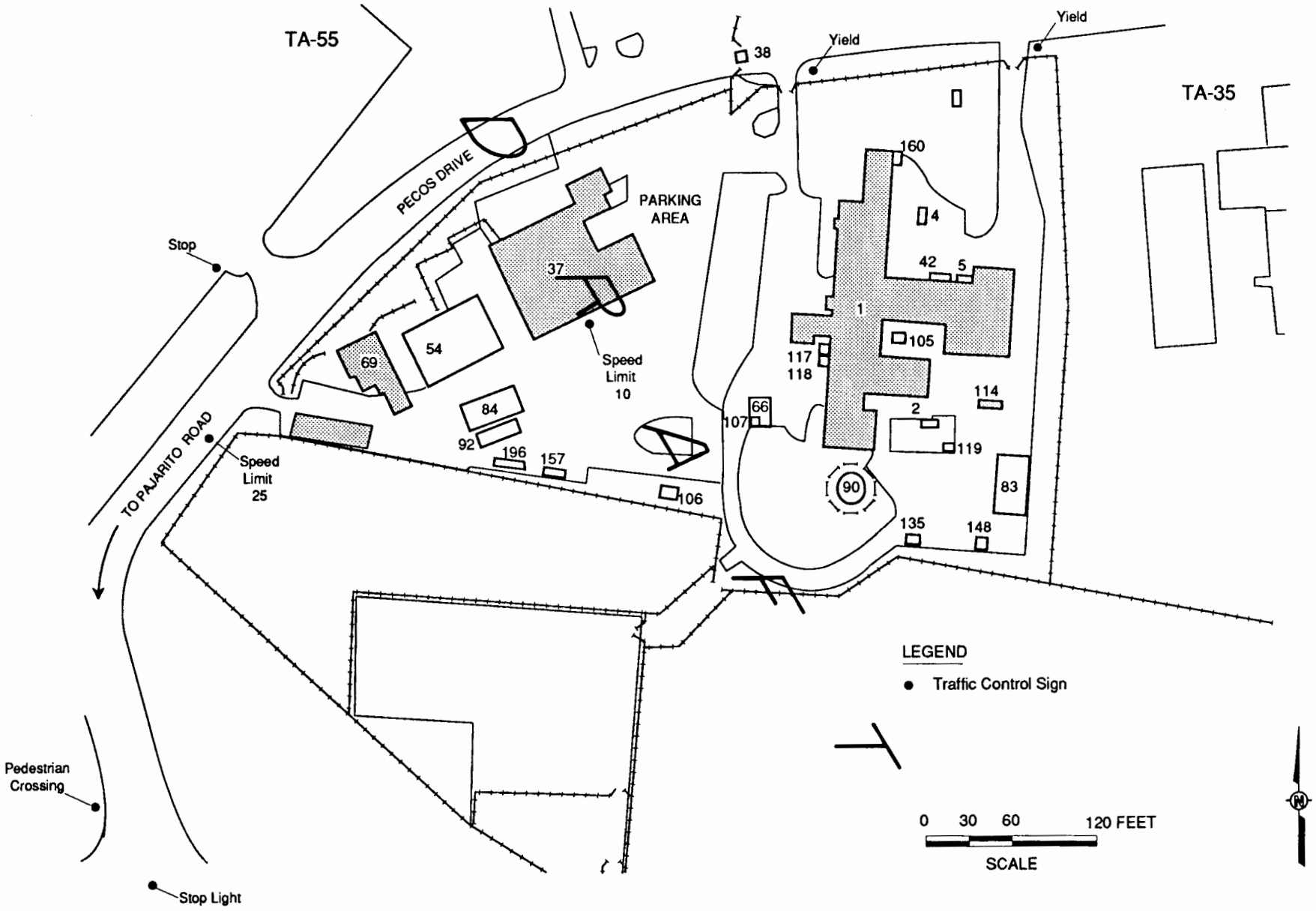


Figure 2-6
Location Map of Access Road and Traffic Control Signs in Technical Area (TA) 50

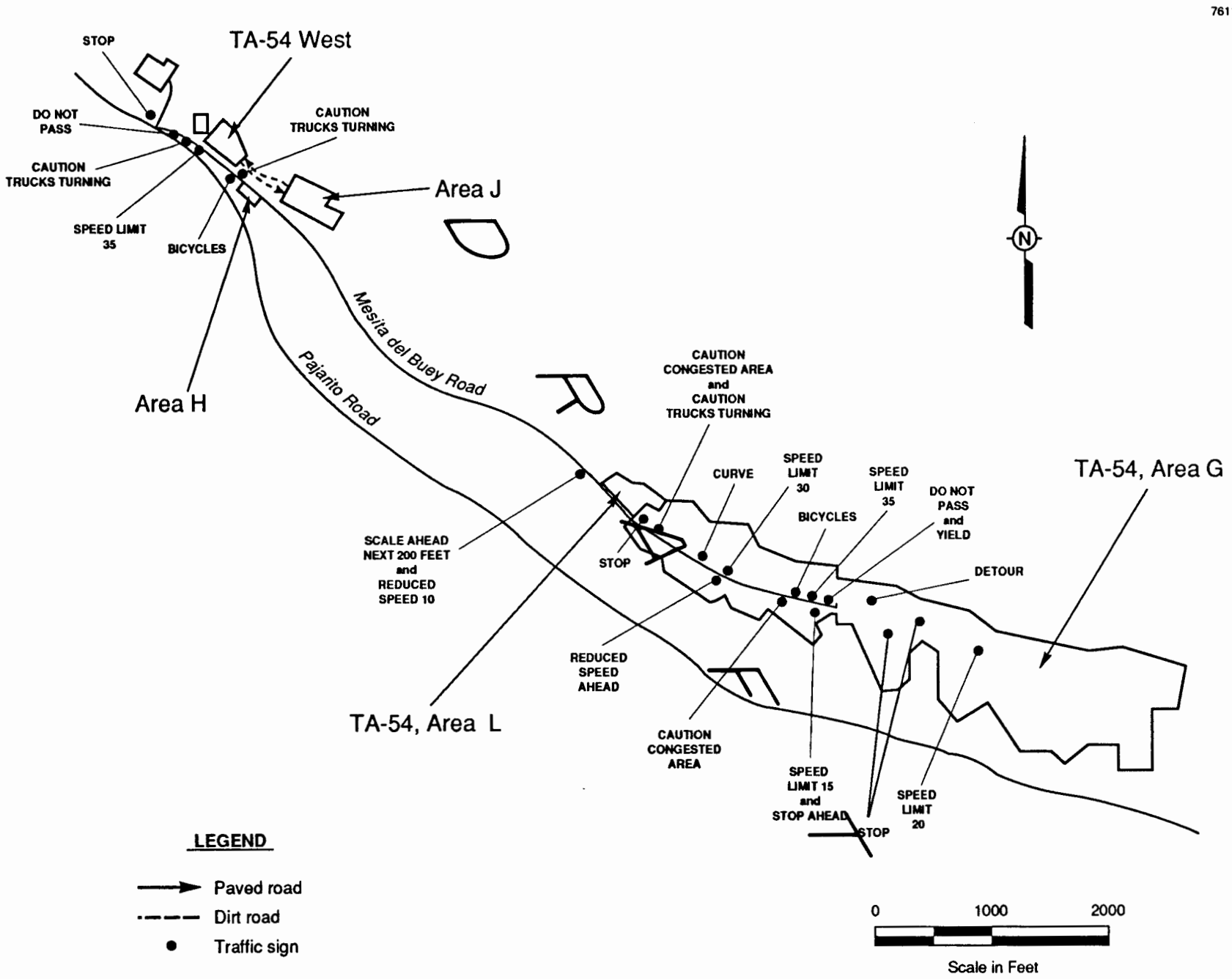
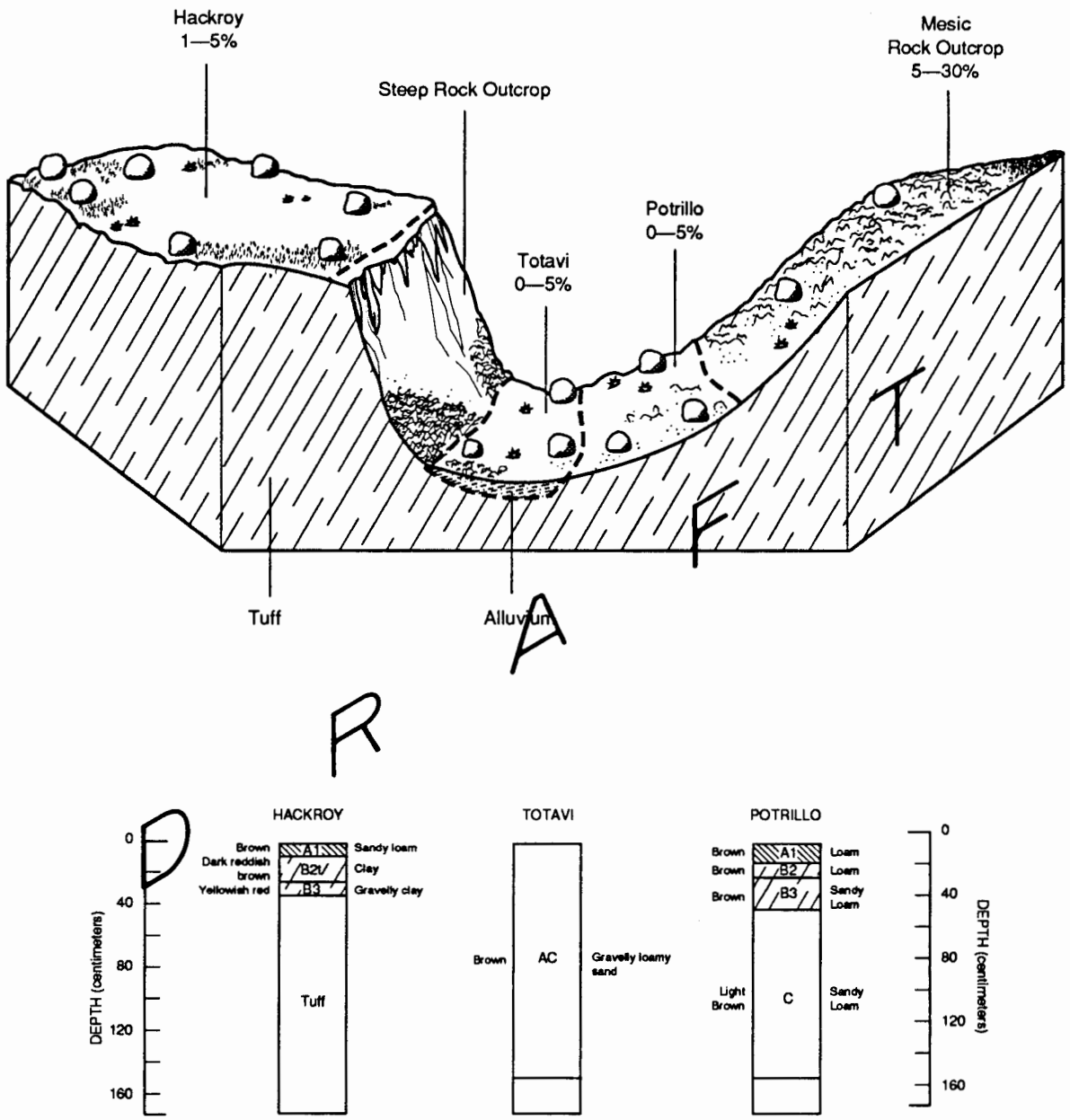


Figure 2-7
Location Map of Access Road and Traffic Control Signs in Technical Area (TA) 54

761139\ta50/54.mod A9



Reference: Nyhan et al., 1978, "Soil Survey of Los Alamos County, New Mexico," LA-6779-MS, Los Alamos National Laboratory, Los Alamos, New Mexico.

Figure 2-8
Relationship of Slope and Parent Material
to Hackroy, Totavi, and Potrillo Soils

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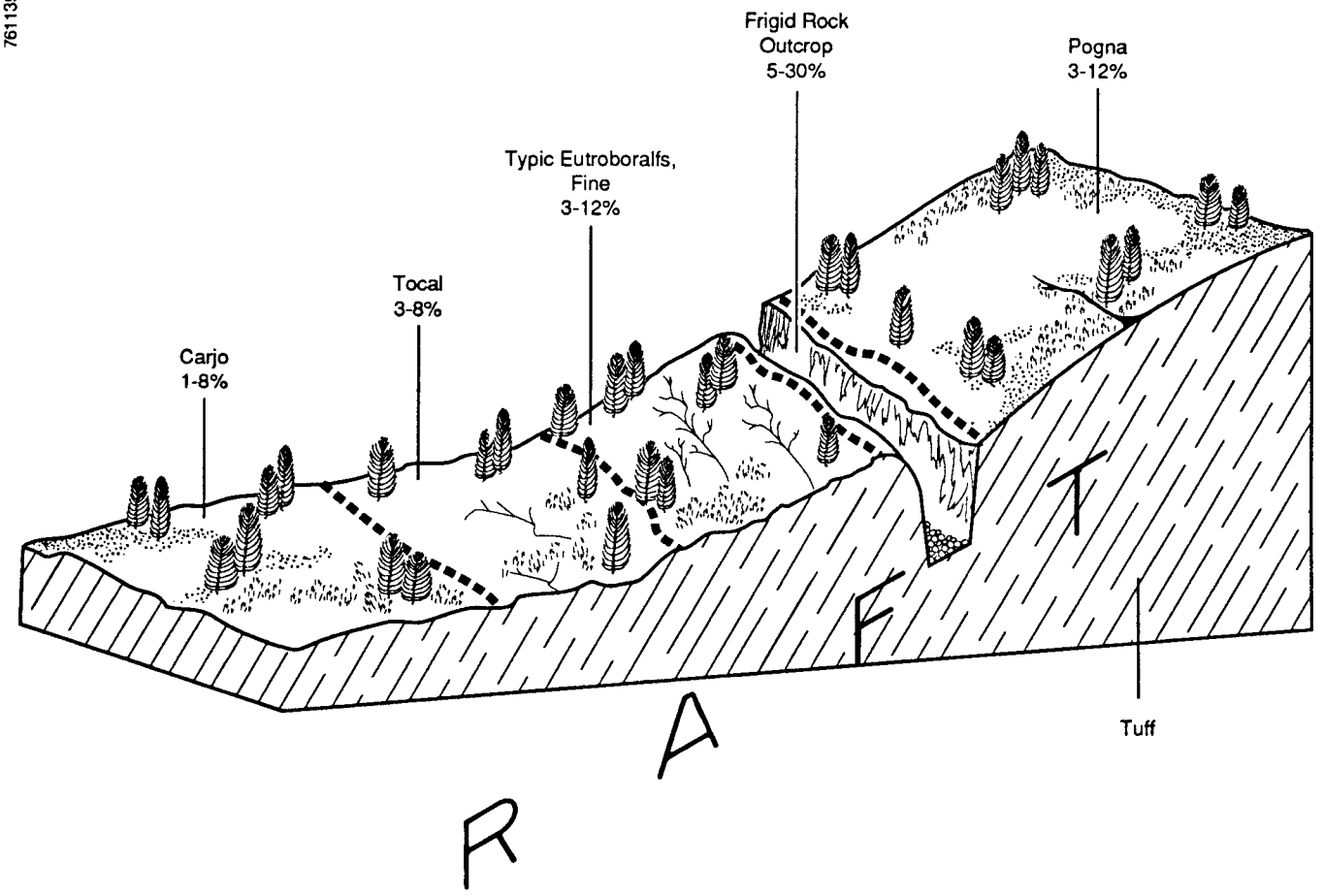
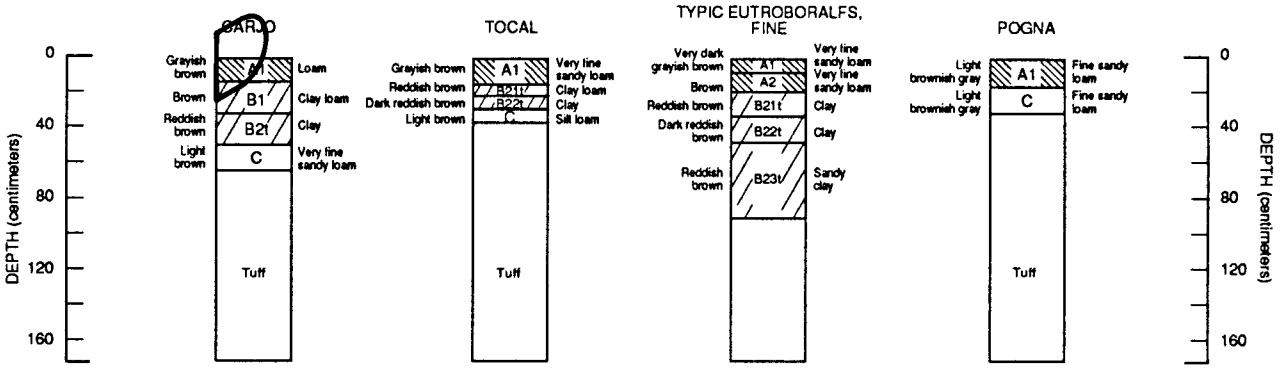




Reference: Nyhan et al., 1978, "Soil Survey of Los Alamos County, New Mexico," LA-6779-MS, Los Alamos National Laboratory, Los Alamos, New Mexico.

Figure 2-9
Relationship of Slope and Parent Material
to Carjo, Tocal, Typic Eutroboralfs, Fine, and Pogna Soils

761139\ta50/54.mod A11

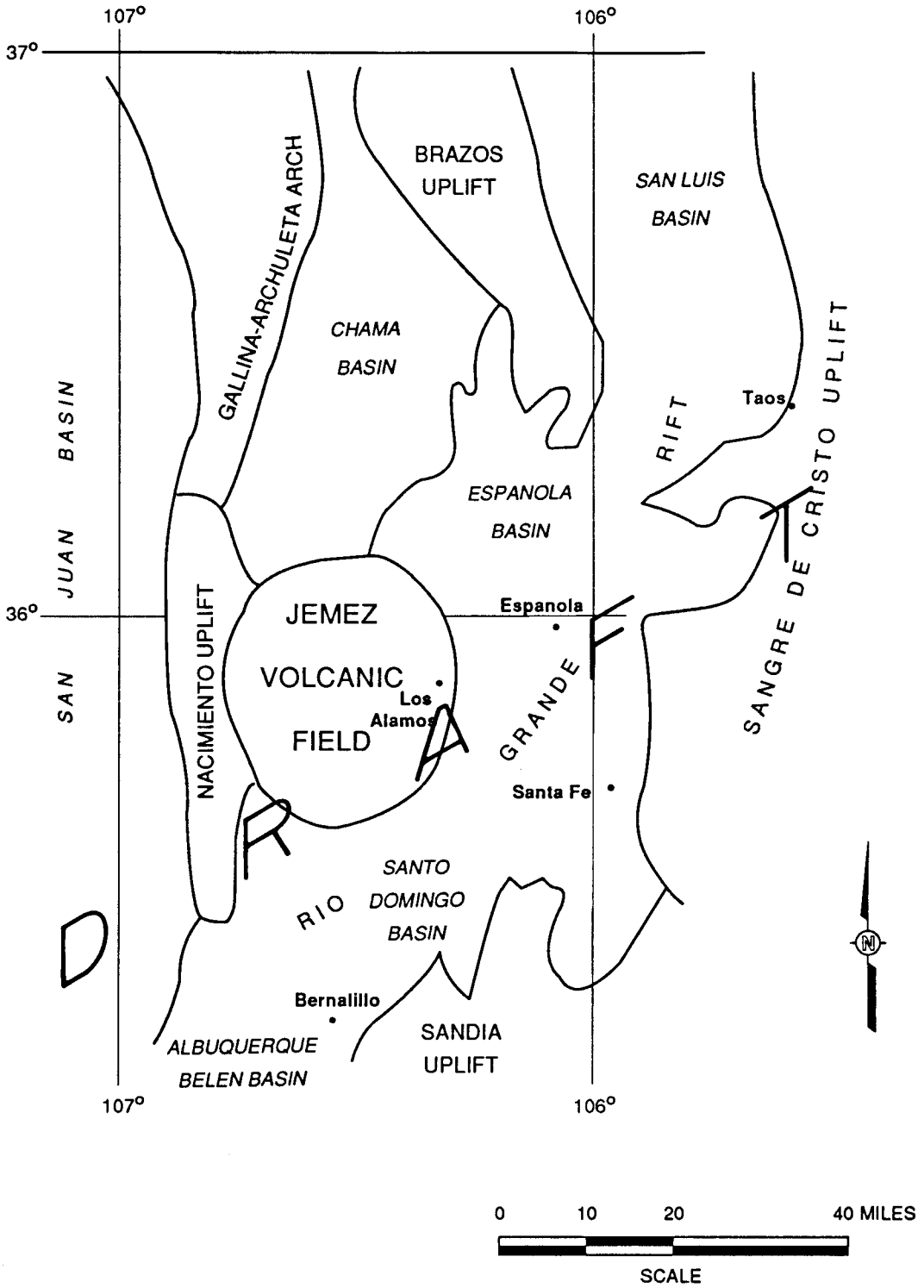
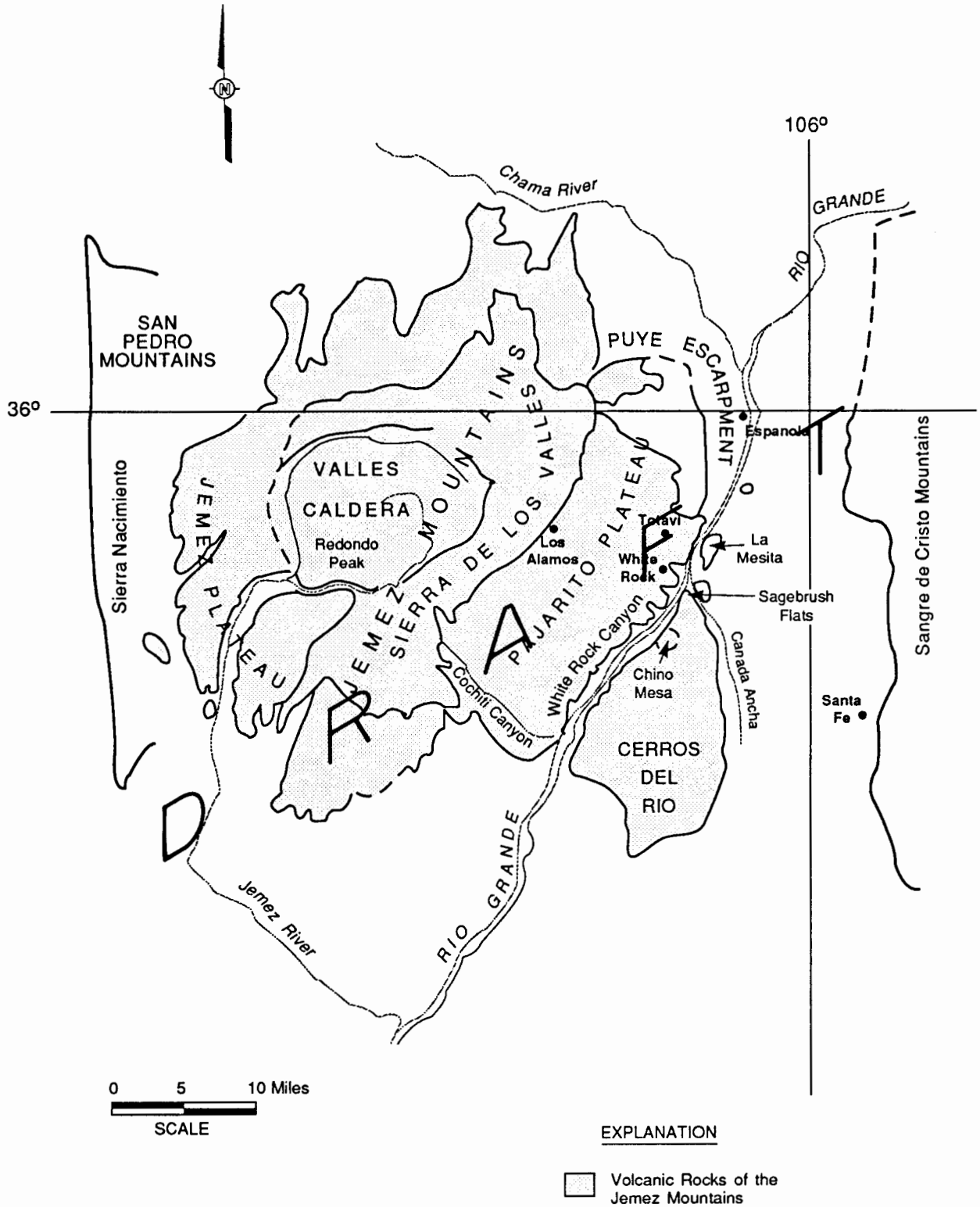


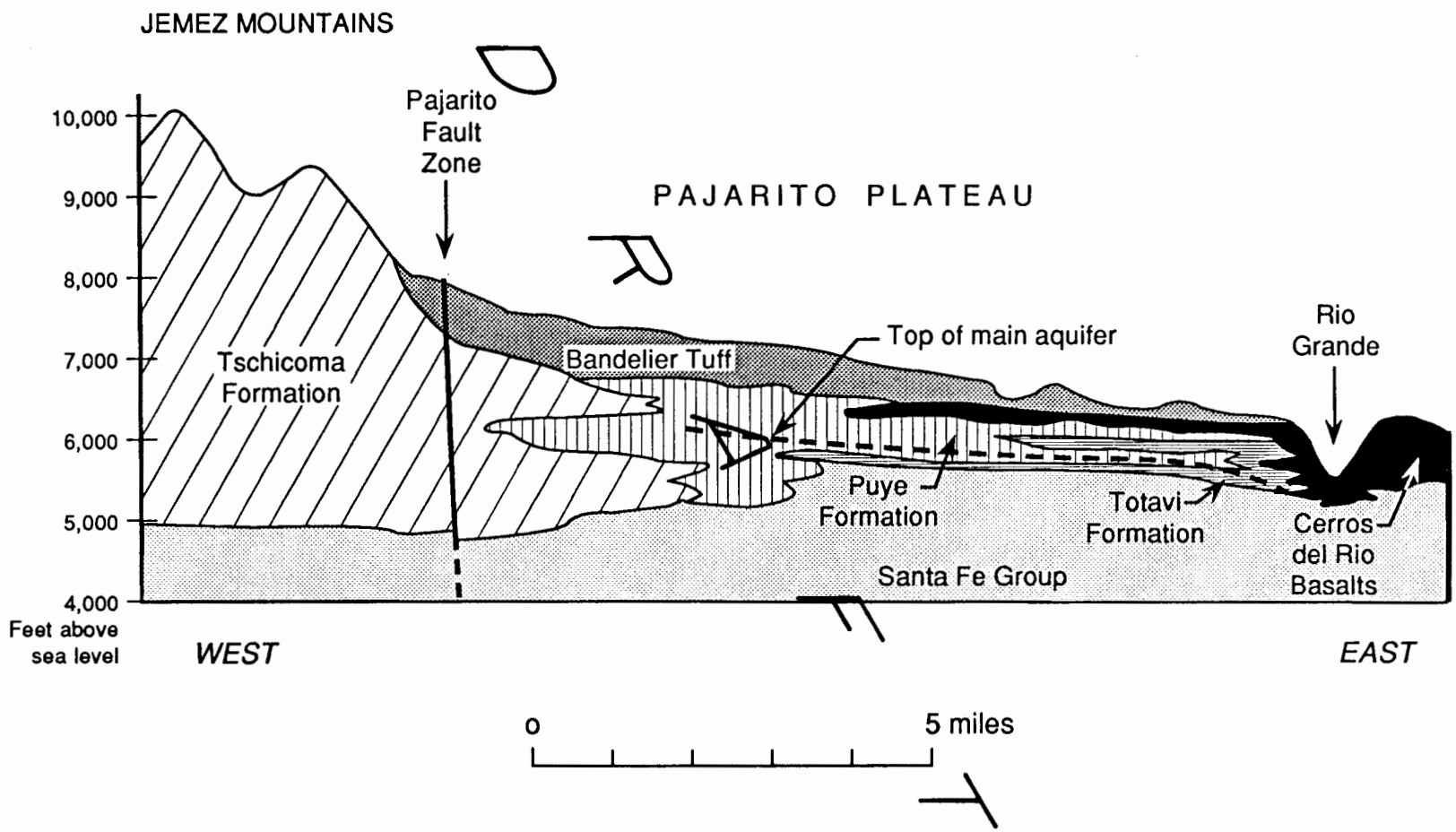
Figure 2-10
Index Map Showing Major Tectonic Elements of North-Central New Mexico

761139\ta50/54.mod A12



Reference: Griggs, R. L. and Hem, J. D., 1964, "Geology and Ground-Water Resources of the Los Alamos Area, New Mexico," U.S. Geological Survey Water Supply Paper 1753, Albuquerque, New Mexico.

Figure 2-11
Physiographic Features of the Jemez Mountains



Reference: Los Alamos National Laboratory, 1993, "Installation Work Plan for Environmental Restoration," Rev. 3, Los Alamos National Laboratory, Los Alamos, New Mexico.

Figure 2-12

East-West Geologic Section Showing Stratigraphy and Structure from the Sierra de Los Valles across the Pajarito Plateau to the Rio Grande

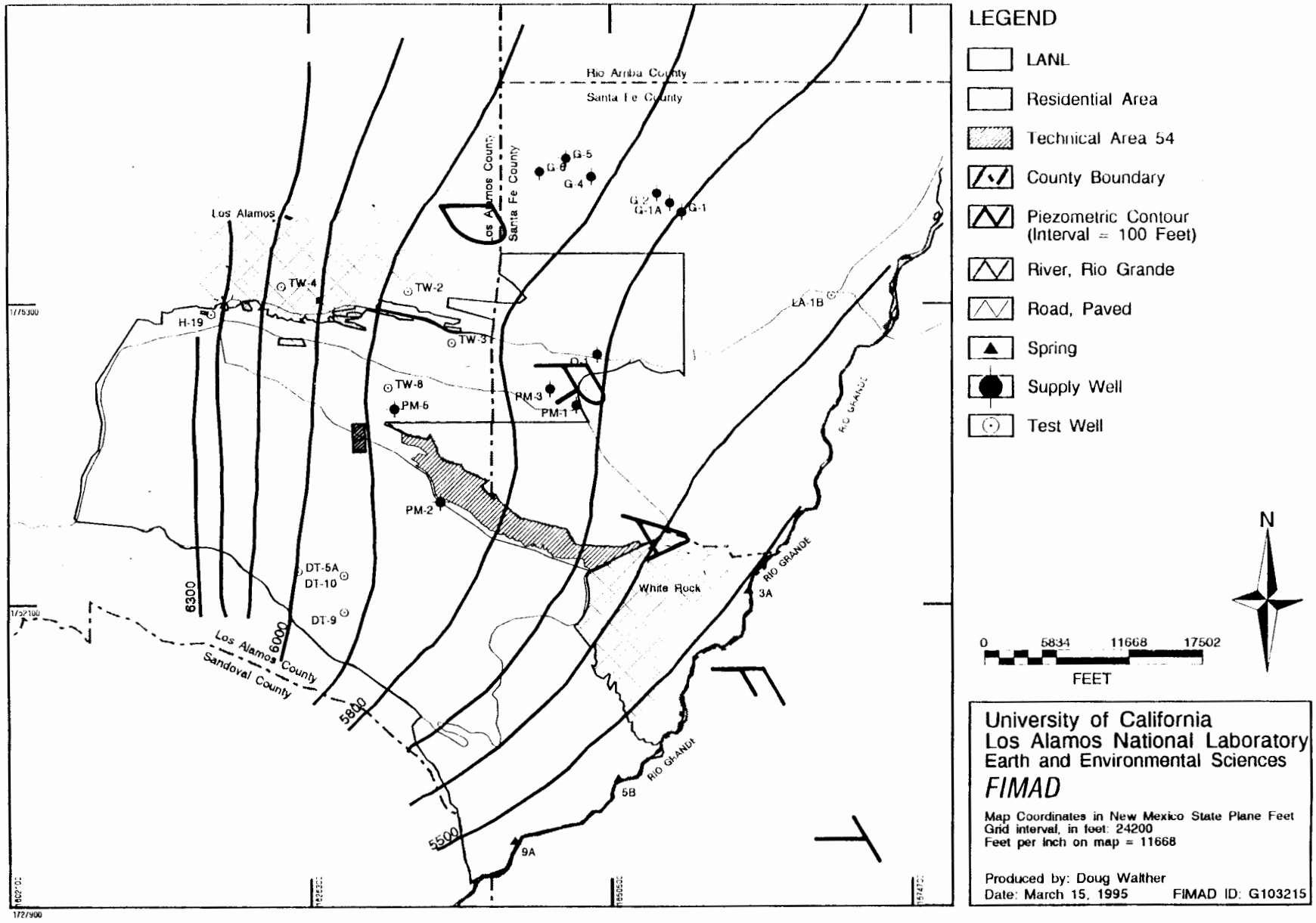


Figure 2-14
Generalized Piezometric Surface of Main Aquifer

3.0 WASTE ANALYSIS PLAN

Three waste analysis plans are included in this section. The Waste Analysis Plan for Transuranic Mixed Waste is presented first. Page numbers for this plan are preceeded by the alphanumeric code 3a (e.g., 3a-1, 3a-2, etc.). The Waste Analysis Plan for Low-Level Solid Mixed Waste is presented second, and page numbers are preceeded by the alphanumeric code 3b (e.g., 3b-1, 3b-2, etc.). The Waste Analysis Plan for Hazardous Waste follows, and page numbers are preceeded by the alphanumeric code 3c (e.g., 3c-1, 3c-2, etc.).

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Document:	**LANL CST Permit Mod**
Revision No.:	**Final Draft**
Date:	**September 29, 1995**

WASTE ANALYSIS PLAN FOR TRANSURANIC MIXED WASTE

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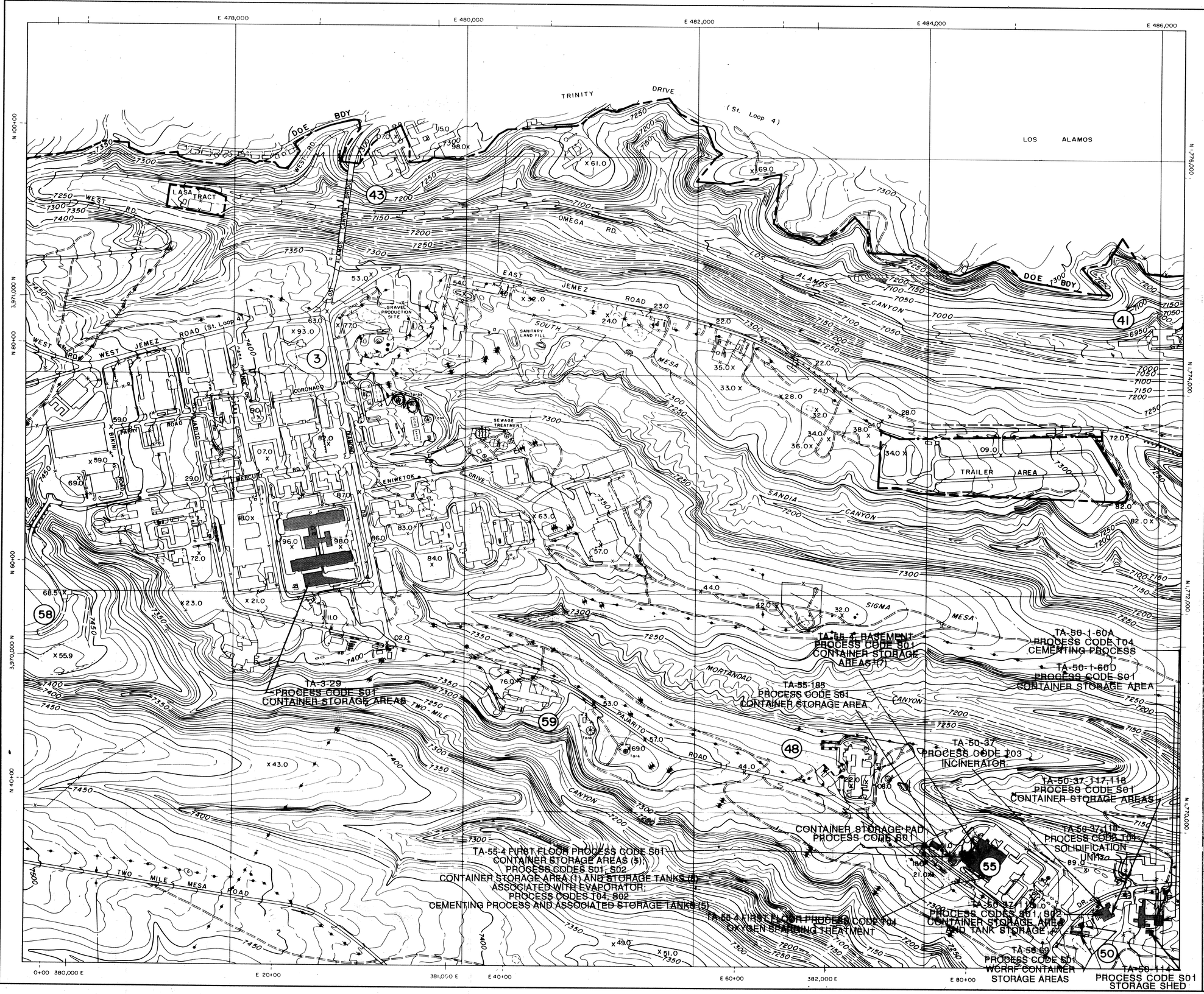
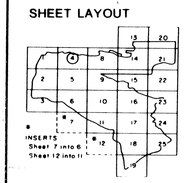


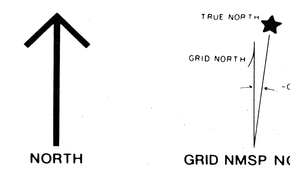
LEGEND

X 93.0	SPOT ELEVATION	N 1,768,000	NMSP GRID
6900	INDEX CONTOUR	3,989,000 N	UTM GRID
	INTERMEDIATE CONTOUR 10ft.	N 240+00	LASL GRID
	SUPPLEMENTARY CONTOUR 5ft.		
	CONTOURS THROUGH HEAVY VEGETATION		
	COUNTY LINES – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES.		
	DOE BOUNDARY – X & Y COORDINATE DATA PROVIDED BY LASL.		
	DOE BOUNDARY – SURVEY DESCRIPTIONS OR RECORD PLATS PROVIDED BY LASL.		
	DOE BOUNDARY – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES BASED ON PROJECTED COUNTY LINES.		

35	TECHNICAL AREA NO.		TOWER
	BUILDING		PIPE LINE
	FENCE		CUT LINE OR POWER LINE CLEARANCE SCAR
	PAVED ROAD		WATER TOWER
	DIRT ROAD	Tank	TANK
	JEEP TRAIL		POND
	CULVERT	RW	RETAINING WALL
	GUARD RAIL		EARTH DIKES OR BLASTING SHIELDS
	TUNNEL	Earth Work	EARTH WORK OR GRADED AREAS
	EARTHEN BUNKERS		GATE
	POWER POLE		

SHEET LAYOUT





MAPPING COMPLETED BY PHOTOGRAMMETRIC METHODS, UTILIZING 1:30,000, 1:12,000 & 1:13,200 PHOTOGRAPHY, OBTAINED IN NOV. 1976 & JUNE 1980 WITH ZEISS RMK A 15/23 CAMERAS OF 153.42 & 152.43mm C.F.L. RESPECTIVELY, MAPPING BASED ON CONTROL SURVEYS TIED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM (CENTRAL ZONE). MAPPING COMPLETED IN ACCORDANCE WITH NATIONAL MAP ACCURACY SPECIFICATIONS.

400 200 0 400 800 1200 1600 FEET
100 50 0 100 200 300 400 500 METER

GRAPHIC SCALE: 1 in.=400 ft. CONTOUR INTERVAL 10 ft.

TECHNICAL AREAS

3 SM–SITE	41 W–SITE	50 WM–SITE
43 HRL–SITE	48 RC–SITE	
58 TWO MILE NORTH–SITE	55 PLUTONIUM FACILITY SITE	
59 OH–SITE		

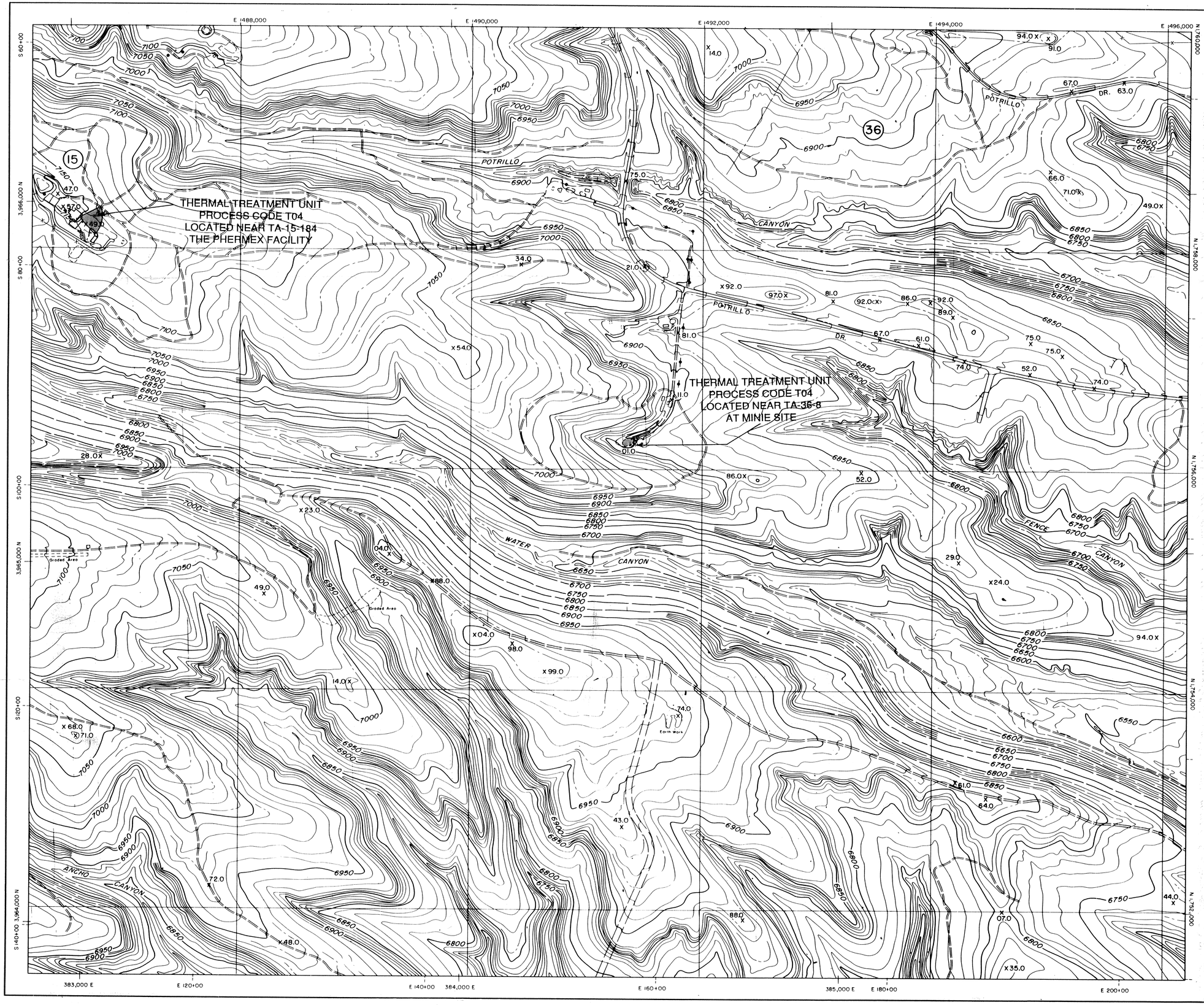
LOS ALAMOS SCIENTIFIC LABORATORY

MAP 1
CONTOUR MAP SHOWING
MIXED WASTE UNITS
AT TA-3, TA-55, TA-50

Revised as of September 1995

LAB JOB NO. 5682
1"=400' SCALE
PLAN / TOPO
SHEET 4 OF 25

8755-F

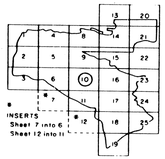


LEGEND

X 93.0	SPOT ELEVATION	N 1,768,000	NMSP GRID
6900	INDEX CONTOUR	3,989,000 N	UTM GRID
	INTERMEDIATE CONTOUR 10ft.	N 240+00	LASL GRID
	SUPPLEMENTARY CONTOUR 5ft.		
	CONTOURS THROUGH HEAVY VEGETATION		
	COUNTY LINES – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES.		
	DOE BOUNDARY – X & Y COORDINATE DATA PROVIDED BY LASL.		
	DOE BOUNDARY – SURVEY DESCRIPTIONS OR RECORD PLATS PROVIDED BY LASL.		
	DOE BOUNDARY – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES BASED ON PROJECTED COUNTY LINES.		

35	TECHNICAL AREA NO.		TOWER
	BUILDING		PIPE LINE
	FENCE		CUT LINE OR POWER LINE CLEARANCE SCAR
	PAVED ROAD		WATER TOWER
	DIRT ROAD	Tank	TANK
	JEEP TRAIL		POND
	CULVERT	RW	RETAINING WALL
	GUARD RAIL		EARTH DIKES OR BLASTING SHIELDS
	TUNNEL	Earth Work	EARTH WORK OR GRADED AREAS
	EARTHEN BUNKERS		GATE
	POWER POLE		

SHEET LAYOUT



NORTH

TRUE NORTH
GRID NORTH
-00°00'57
GRID NMSP NORTH

MAPPING COMPLETED BY PHOTOGRAMMETRIC METHODS, UTILIZING 1:30,000, 1:12,000 & 1:13,200 PHOTOGRAPHY, OBTAINED IN NOV. 1976 & JUNE 1980 WITH ZEISS RMK A 15/23 CAMERAS OF 153.42 & 152.43mm C.F.L. RESPECTIVELY. MAPPING BASED ON CONTROL SURVEYS TIED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM (CENTRAL ZONE). MAPPING COMPLETED IN ACCORDANCE WITH NATIONAL MAP ACCURACY SPECIFICATIONS.

400 200 0 400 800 1200 1600 FEET
100 50 0 100 200 300 400 500 METER

GRAPHIC SCALE: 1 in.=400 ft.

CONTOUR INTERVAL 10 ft.

TECHNICAL AREAS

36 KAPPA SITE

15 R-SITE

LOS ALAMOS SCIENTIFIC LABORATORY

MAP 2

CONTOUR MAP SHOWING
MIXED WASTE UNITS
AT TA-15 AND TA-36

8755-G

Revised as of April 14, 1995

LAB JOB NO. 5682

1"=400' SCALE

PLAN / TOPO

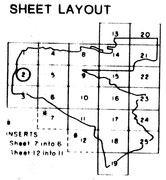
SHEET 10 OF 25

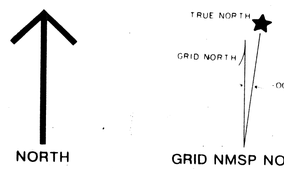
LEGEND

X 93.0	SPOT ELEVATION
6900	INDEX CONTOUR
	INTERMEDIATE CONTOUR 10ft.
	SUPPLEMENTARY CONTOUR 5ft.
	CONTOURS THROUGH HEAVY VEGETATION
	COUNTY LINES – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES.
	DOE BOUNDARY – X & Y COORDINATE DATA PROVIDED BY LASL.
	DOE BOUNDARY – SURVEY DESCRIPTIONS OR RECORD PLATS PROVIDED BY LASL.
	DOE BOUNDARY – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES BASED ON PROJECTED COUNTY LINES.
N 1,768,000	NMSP GRID
3,989,000 N	UTM GRID
N 240+00	LASL GRID

35	TECHNICAL AREA NO.		TOWER
	BUILDING		PIPE LINE
	FENCE		CUT LINE OR POWER LINE CLEARANCE SCAR
	PAVED ROAD		WATER TOWER
	DIRT ROAD	Tank	TANK
	JEEP TRAIL		POND
	CULVERT	RW	RETAINING WALL
	GUARD RAIL		EARTH DIKES OR BLASTING SHIELDS
	TUNNEL	Earth Work	EARTH WORK OR GRADED AREAS
	EARTHEN BUNKERS		GATE
	POWER POLE		

SHEET LAYOUT





MAPPING COMPLETED BY PHOTOGRAMMETRIC METHODS, UTILIZING 1:30,000, 1:12,000 & 1:13,200 PHOTOGRAPHY, OBTAINED IN NOV. 1976 & JUNE 1980 WITH ZEISS RMK A 15/23 CAMERAS OF 153.42 & 152.43mm C.F.L. RESPECTIVELY, MAPPING BASED ON CONTROL SURVEYS TIED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM (CENTRAL ZONE). MAPPING COMPLETED IN ACCORDANCE WITH NATIONAL MAP ACCURACY SPECIFICATIONS.

400 200 0 400 800 1200 1600 FEET
100 50 0 100 200 300 400 500 METER

GRAPHIC SCALE: 1 in.=400 ft. CONTOUR INTERVAL 10 ft.

TECHNICAL AREAS

(8) ANCHOR WEST SITE (9) ANCHOR EAST SITE (16) S–SITE
(22) TD–SITE

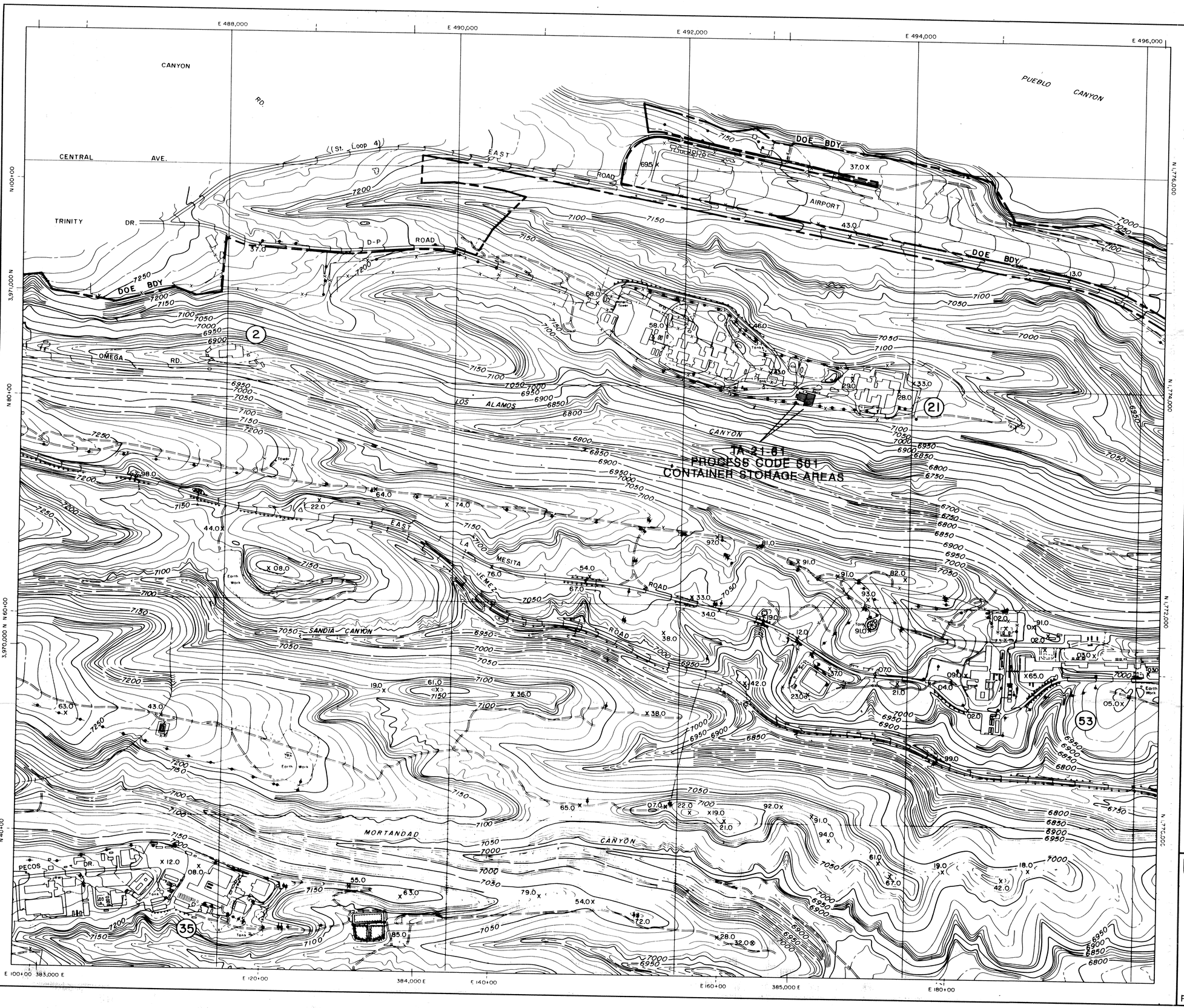
LOS ALAMOS SCIENTIFIC LABORATORY

MAP 3
CONTOUR MAP SHOWING MIXED WASTE UNITS AT TA-16

8755-H

Revised as of January 1991

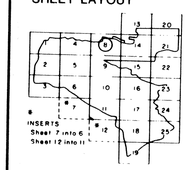
LAB JOB NO. 5682
1"=400' SCALE
PLAN / TOPO
SHEET 2 OF 25



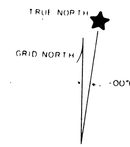
LEGEND

X 93.0	SPOT ELEVATION
6900	INDEX CONTOUR
	INTERMEDIATE CONTOUR 10ft.
	SUPPLEMENTARY CONTOUR 5ft.
	CONTOURS THROUGH HEAVY VEGETATION
	COUNTY LINES – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES.
	DOE BOUNDARY – X & Y COORDINATE DATA PROVIDED BY LASL.
	DOE BOUNDARY – SURVEY DESCRIPTIONS OR RECORD PLATS PROVIDED BY LASL.
	DOE BOUNDARY – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES BASED ON PROJECTED COUNTY LINES.
N 1,768,000	NMSP GRID
3,989,000 N	UTM GRID
N 240+00	LASL GRID
35	TECHNICAL AREA NO.
	BUILDING
	FENCE
	PAVED ROAD
	DIRT ROAD
	JEEP TRAIL
	CULVERT
	GUARD RAIL
	TUNNEL
	EARTHEN BUNKERS
	POWER POLE
	TOWER
	PIPE LINE
	CUT LINE OR POWER LINE CLEARANCE SCAR
	WATER TOWER
Tank	TANK
	POND
RW	RETAINING WALL
	EARTH DIKES OR BLASTING SHIELDS
Earth Work	EARTH WORK OR GRADED AREAS
	GATE

SHEET LAYOUT



NORTH



GRID NMSP NORTH

MAPPING COMPLETED BY PHOTOGRAMMETRIC METHODS, UTILIZING 1:30,000, 1:12,000 & 1:13,200 PHOTOGRAPHY, OBTAINED IN NOV. 1976 & JUNE 1980 WITH ZEISS RMK A 15/23 CAMERAS OF 153.42 & 152.43mm C.F.L. RESPECTIVELY, MAPPING BASED ON CONTROL SURVEYS TIED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM (CENTRAL ZONE). MAPPING COMPLETED IN ACCORDANCE WITH NATIONAL MAP ACCURACY SPECIFICATIONS.

400 200 0 400 800 1200 1600 FEET
100 50 0 100 200 300 400 500 METER

GRAPHIC SCALE: 1 in.=400 ft.

CONTOUR INTERVAL 10 ft.

TECHNICAL AREAS

(2) OMEGA SITE
(21) DP–SITE
(39) TEN SITE
(53) MPF–SITE

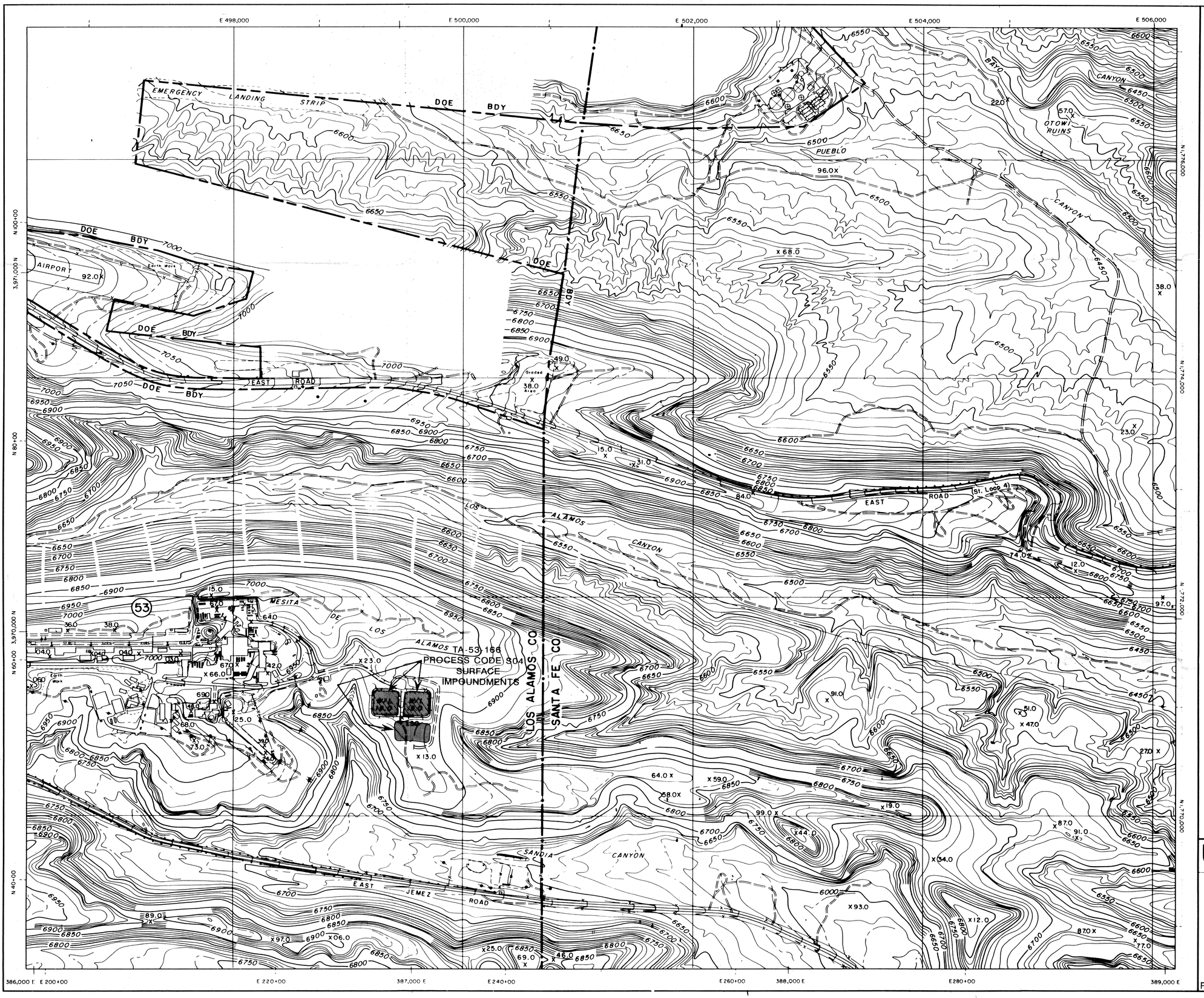
LOS ALAMOS SCIENTIFIC LABORATORY

MAP 4
CONTOUR MAP SHOWING MIXED WASTE UNITS AT TA-21

8755-I

Revised as of January 1991

LAB JOB NO. 5682
1" =400' SCALE
PLAN / TOPO
SHEET 8 OF 25

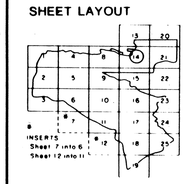


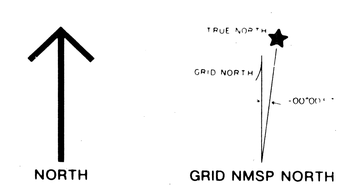
LEGEND

X 93.0	SPOT ELEVATION	N 1,768,000	NMSP GRID
—6900—	INDEX CONTOUR	3,989,000 N	UTM GRID
	INTERMEDIATE CONTOUR 10ft.	N 240+00	LASL GRID
	SUPPLEMENTARY CONTOUR 5ft.		
	CONTOURS THROUGH HEAVY VEGETATION		
	COUNTY LINES – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES.		
	DOE BOUNDARY – X & Y COORDINATE DATA PROVIDED BY LASL.		
	DOE BOUNDARY – SURVEY DESCRIPTIONS OR RECORD PLATS PROVIDED BY LASL.		
	DOE BOUNDARY – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES BASED ON PROJECTED COUNTY LINES.		

35	TECHNICAL AREA NO.		TOWER
	BUILDING		PIPE LINE
	FENCE		CUT LINE OR POWER LINE CLEARANCE SCAR
	PAVED ROAD		WATER TOWER
	DIRT ROAD	Tank	TANK
	JEEP TRAIL		POND
	CULVERT	RW	RETAINING WALL
	GUARD RAIL		EARTH DIKES OR BLASTING SHIELDS
	TUNNEL	Earth Work	EARTH WORK OR GRADED AREAS
	EARTHEN BUNKERS		GATE
	POWER POLE		

SHEET LAYOUT





MAPPING COMPLETED BY PHOTOGRAMMETRIC METHODS, UTILIZING 1:30,000, 1:12,000 & 1:13,200 PHOTOGRAPHY, OBTAINED IN NOV. 1976 & JUNE 1980 WITH ZEISS RMK A 15/23 CAMERAS OF 153.42 & 152.43mm C.F.L. RESPECTIVELY, MAPPING BASED ON CONTROL SURVEYS TIED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM (CENTRAL ZONE). MAPPING COMPLETED IN ACCORDANCE WITH NATIONAL MAP ACCURACY SPECIFICATIONS.

400 200 0 400 800 1200 FEET
100 50 0 100 200 500 1000 METER

GRAPHIC SCALE: 1 in.=400 ft. CONTOUR INTERVAL 10 ft

TECHNICAL AREAS

53 MPF–SITE

LOS ALAMOS SCIENTIFIC LABORATORY

MAP 5

CONTOUR MAP SHOWING
MIXED WASTE UNITS
AT TA-53

8755-J

Revised as of June 1992

LAB JOB NO. 5682

1"=400' SCALE

PLAN / TOPO

SHEET 14 OF 25

LEGEND

- Contours, 100 ft
- Contours, 10 ft
- Fence, Industrial
- Fence, Security
- Power Line >13.2 kV
- Power Line <13.2 kV
- Retaining Wall
- Road, Dirt
- Road, Paved
- Road/Trail
- Sewer Line
- Storm Drain/Culvert
- Telephone Line
- Water Line
- Material Disposal Area
- Pad
- Pit
- Shaft
- Permanent Structure
- Temporary Structure
- Denotes engineering information supplied by a source other than LANL Engineering Division

8755-K

MAP 6:
Contour Map Showing Mixed Waste Units at Technical Area (TA) 54, Areas G and L

N

State Plane Coordinate System, New Mexico Central Zone.
1983 North American Datum

Grid provides NM State Plane coordinates in feet.
Grid interval, in feet: 1000
Feet per inch on map = 250

SCALE 1:3000

0 76 152 228 304

METERS

0 250 500 750 1000

FEET

NOTICE: The information on this map is provisional. Feature locations are dependent on scale and symbology and their accuracy may not have been confirmed. Los Alamos National Laboratory boundary is based on legal description established in 1995. Other boundary, structure, and utility data are from Los Alamos National Laboratory Engineering Division and Los Alamos County Utility and Engineering Departments. Contour data are from Los Alamos National Laboratory Environmental Restoration Project aerial survey, September 1991.

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Earth and Environmental Sciences Division
FIMAD Facility for Information Management, Analysis, and Display
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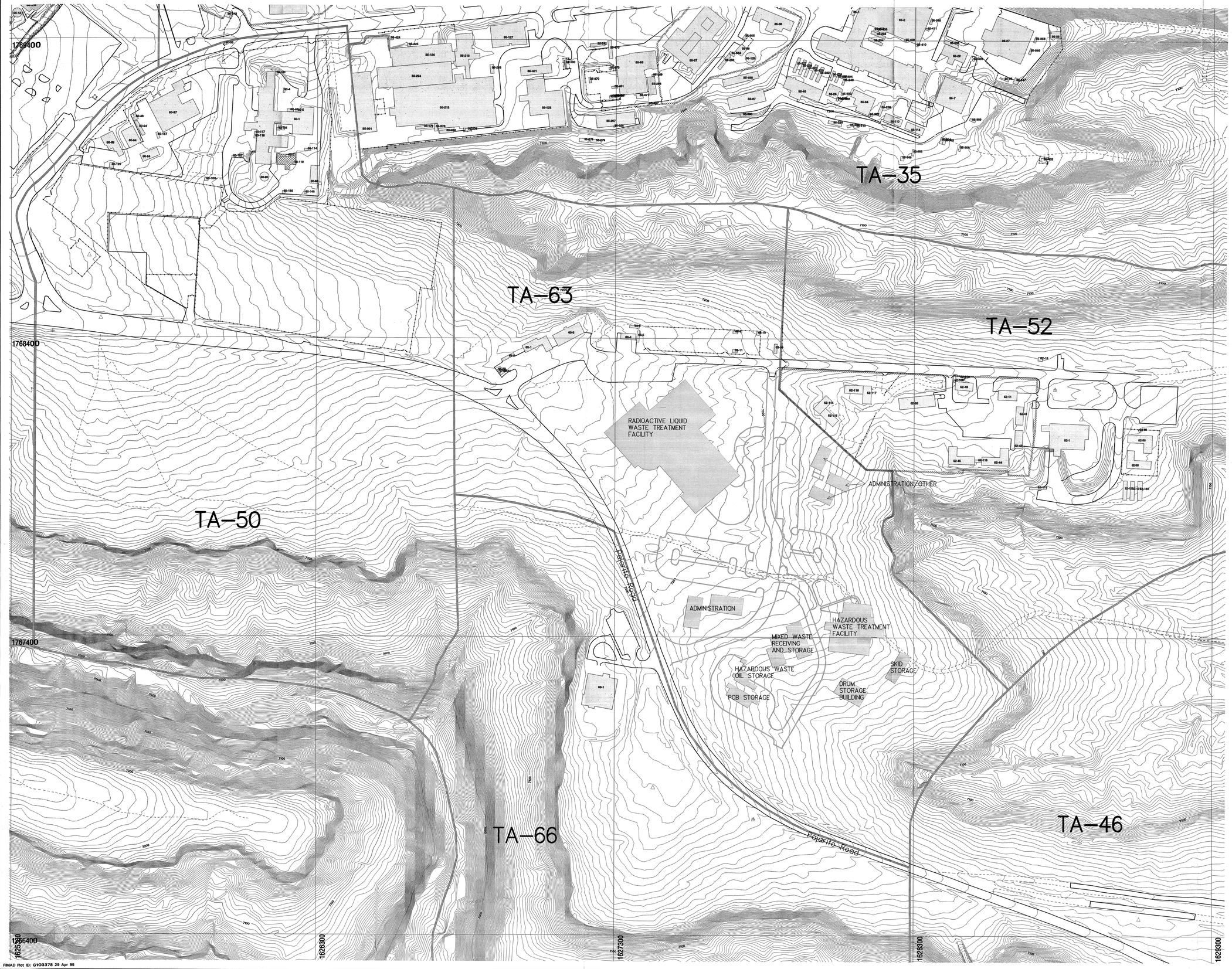
Produced by: Marcia Jones

Date: August 25, 1995 FIMAD Plot ID: G103693

Location Map of Proposed Hazardous Waste Treatment Facility at TA-63



FIMAD Plot ID: G103378 29 Apr 95

Location Map of Proposed Hazardous Waste Treatment Facility

LEGEND

- Boundary, TA
- Contour, 100 foot
- Contour, 10 foot
- Contour, 2 foot
- Fence, Industrial
- Fence, Security
- Gate
- Road, Dirt
- Road, Paved
- Road/Parking, Proposed
- Road/Trail

STRUCTURES

- Permanent
- Proposed
- Temporary
- Underground

- Brass Cap
- Ground Control Point

8755-L

Map 7

N

State Plane Coordinate System, New Mexico Central Zone.
1983 North American Datum

Grid provides NM State Plane coordinates in feet.
Grid interval, in feet: 1000
Feet per inch on map = 125

SCALE 1:1500

0 38 76 114 152

METERS

0 125 250 375 500

FEET

NOTICE: The information on this map is provisional. Feature locations are dependent on scale and symbology and their accuracy may not have been confirmed. Los Alamos National Laboratory boundary is based on legal description established in 1995. Other boundary, structure and utility data are from Los Alamos National Laboratory Engineering Division and Los Alamos County Utility and Engineering Departments. Contour data are from Los Alamos National Laboratory Environmental Restoration Project aerial survey, September, 1991.

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Earth and Environmental Sciences Division
FIMAD Facility for Information Management, Analysis and Display
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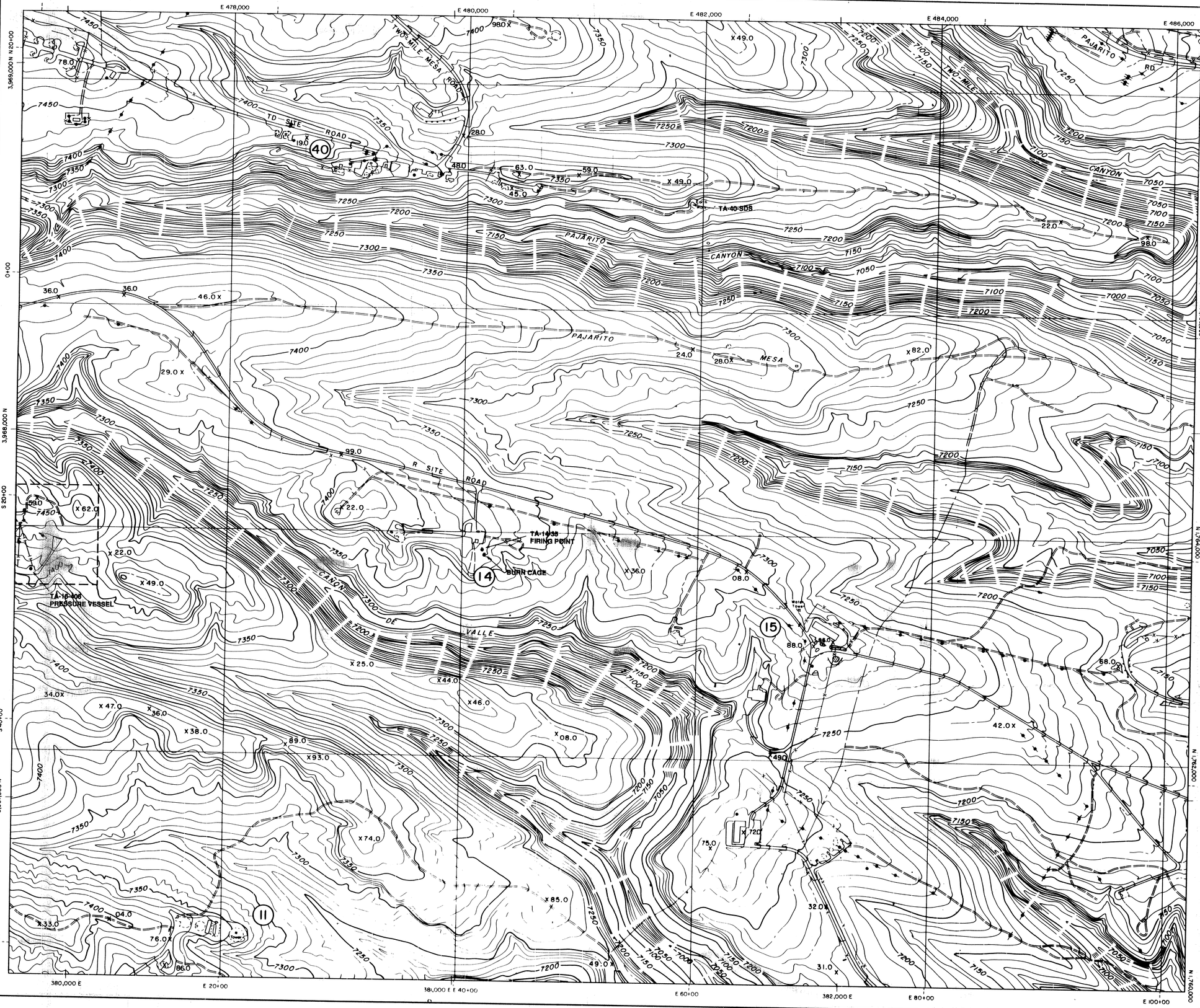
Produced by: Doug Walther

Date: April 29, 1995 FIMAD Plot ID: G103378



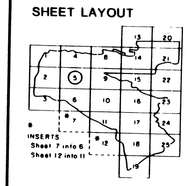
LEGEND

x 93.0	SPOT ELEVATION
6900	INDEX CONTOUR
	INTERMEDIATE CONTOUR 10ft.
	SUPPLEMENTARY CONTOUR 5ft.
	CONTOURS THROUGH HEAVY VEGETATION
	COUNTY LINES – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES.
	DOE BOUNDARY – X & Y COORDINATE DATA PROVIDED BY LASL.
	DOE BOUNDARY – SURVEY DESCRIPTIONS OR RECORD PLATS PROVIDED BY LASL.
	DOE BOUNDARY – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES BASED ON PROJECTED COUNTY LINES.

N 1,768,000 NMSP GRID
3,989,000 N UTM GRID
N 240+00 LASL GRID

35	TECHNICAL AREA NO.		TOWER
	BUILDING		PIPE LINE
	FENCE		CUT LINE OR POWER LINE CLEARANCE SCAR
	PAVED ROAD		WATER TOWER
	DIRT ROAD	Tank	TANK
	JEEP TRAIL		POND
	CULVERT	RW	RETAINING WALL
	GUARD RAIL		EARTH DIKES OR BLASTING SHIELDS
	TUNNEL	Earth Work	EARTH WORK OR GRADED AREAS
	EARTHEN BUNKERS		GATE
	POWER POLE		

SHEET LAYOUT



NORTH

TRUE NORTH
GRID NORTH
00°00'47"

GRID NMSP NORTH

MAPPING COMPLETED BY PHOTOGRAMMETRIC METHODS, UTILIZING 1:30,000, 1:12,000 & 1:13,200 PHOTOGRAPHY, OBTAINED IN NOV. 1976 & JUNE 1980 WITH ZEISS RMK A 15/23 CAMERAS OF 153.42 & 152.43mm C.F.L. RESPECTIVELY. MAPPING BASED ON CONTROL SURVEYS TIED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM (CENTRAL ZONE). MAPPING COMPLETED IN ACCORDANCE WITH NATIONAL MAP ACCURACY SPECIFICATIONS.

400 200 0 400 800 1200 1600 FEET
100 50 0 100 200 300 400 500 METER

GRAPHIC SCALE: 1 in.=400 ft.

CONTOUR INTERVAL 10 ft.

TECHNICAL AREAS

11 K–SITE
40 DF–SITE
14 Q–SITE
15 R–SITE

8755-M

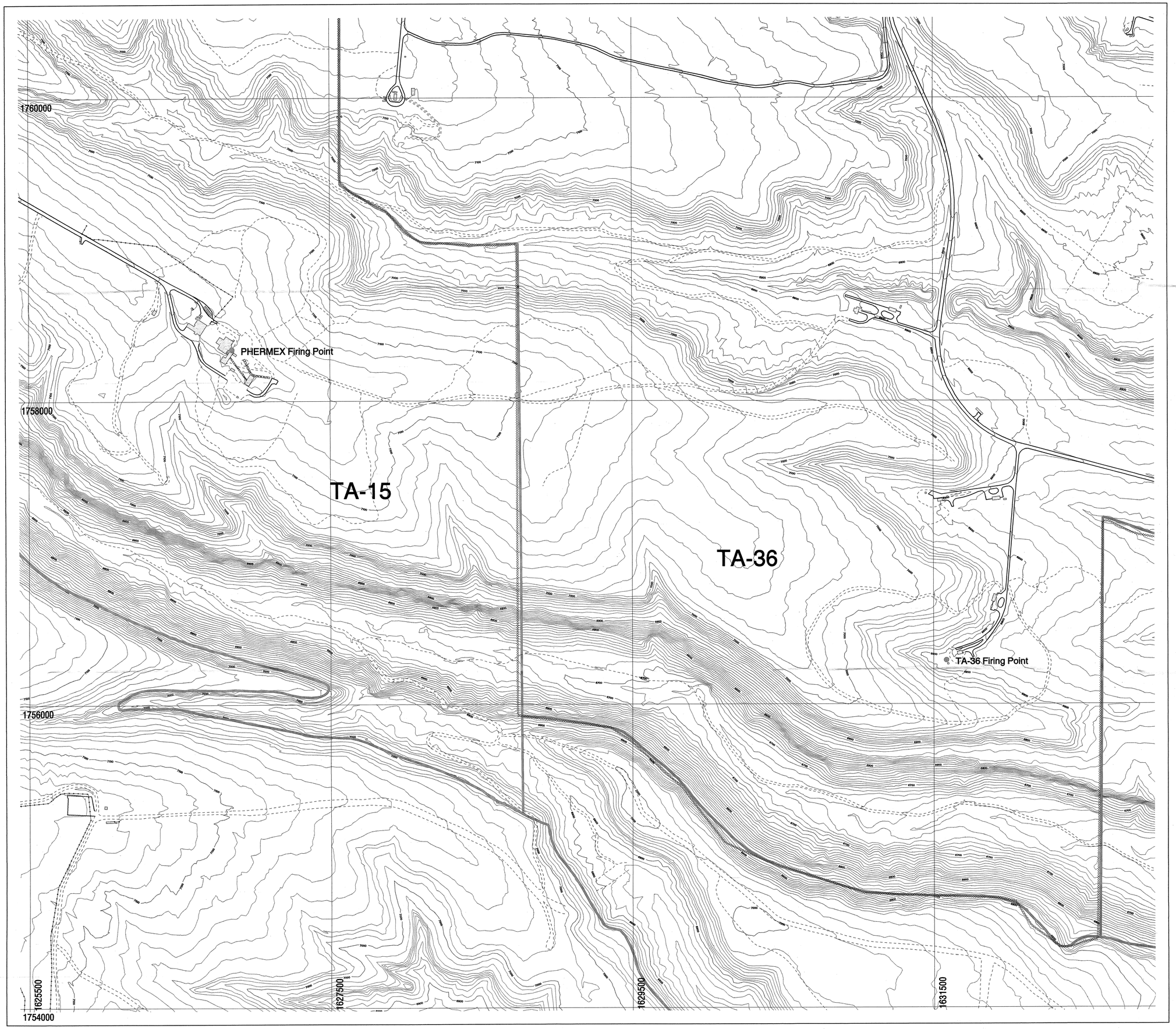
LOS ALAMOS SCIENTIFIC LABORATORY

MAP 8

CONTOUR MAP SHOWING THE LOCATION OF THE TA-14 FIRING POINT AND BURN CAGE AND THE TA-40 SCRAP DETONATION SITE

General Revisions, November 1987

LAB JOB NO. 5682
1" = 400' SCALE
PLAN / TOPO
SHEET 5 OF 25



LEGEND

- Boundary, LANL
- Boundary, TA
- Contours, 10 foot
- Contours, 100 foot
- Fence, Industrial
- Fence, Security
- Roads, Dirt
- Roads, Paved
- Road/Trail
- Structure, Permanent
- Structure, Temporary
- Structure, Underground
- Firing Point

8755-N

MAP 9:
Contour Map Showing the Locations of the Technical Area (TA) 15 and TA-36 Firing Points

N

State Plane Coordinate System, New Mexico Central Zone.
1983 North American Datum

Grid provides NM State Plane coordinates in feet.
Grid interval, in feet: 2000
Feet per inch on map = 300

SCALE 1:3600

0 91 182 273 364

METERS

0 300 600 900 1200

FEET

NOTICE: The information on this map is provisional. Feature locations are dependent on scale and symbology and their accuracy may not have been confirmed. Los Alamos National Laboratory boundary is based on legal description established in 1995. Other boundary, structure and utility data are from Los Alamos National Laboratory Engineering Division and Los Alamos County Utility and Engineering Departments. Contour data are from Los Alamos National Laboratory Environmental Restoration Project aerial survey, September, 1991.

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Earth and Environmental Sciences Division

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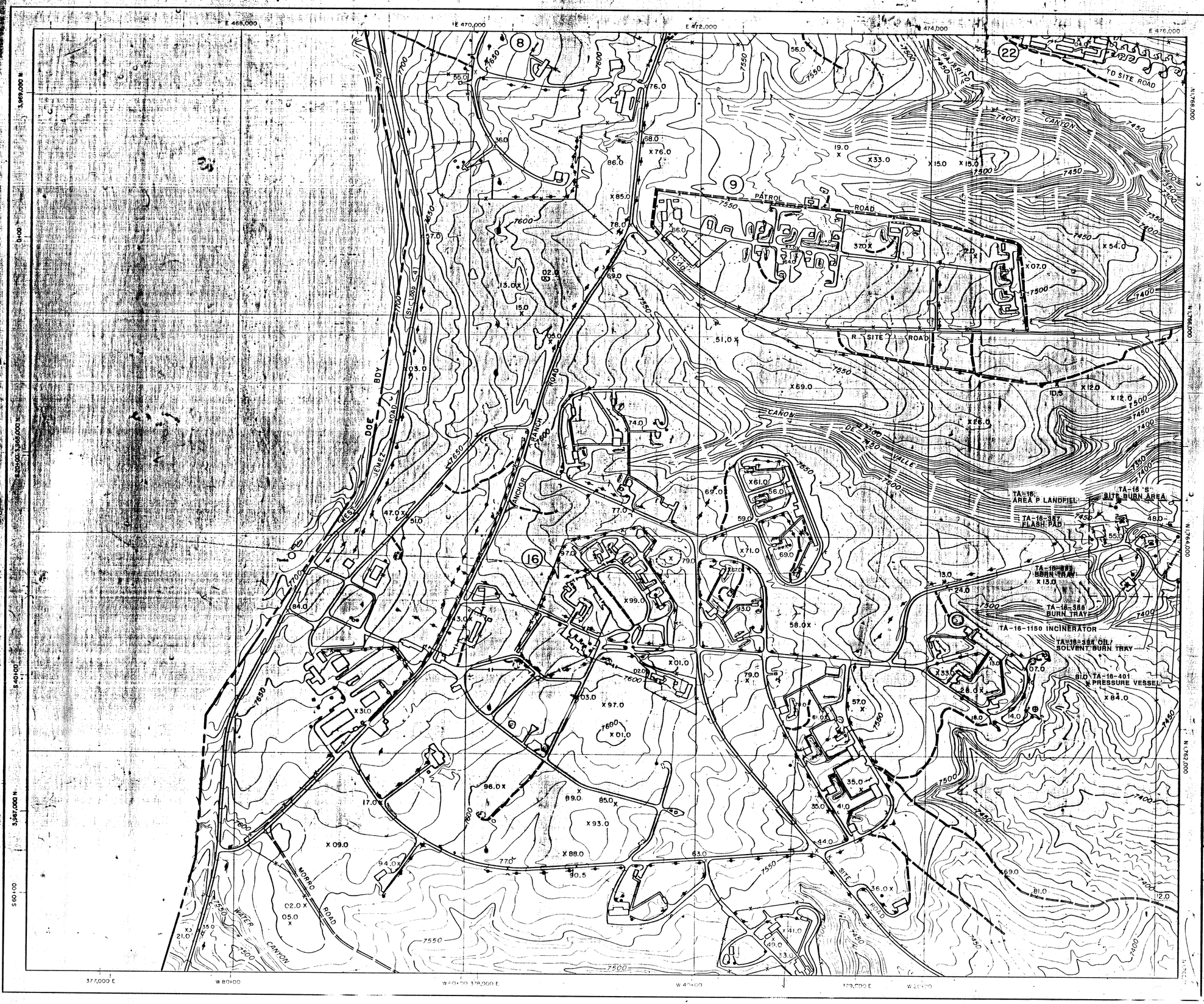
Produced by: Doug Walther
Date: May 12, 1995 FIMAD Plot ID: G103430



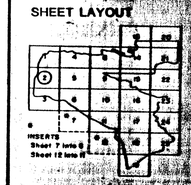
LEGEND

- X 93.0 — SPOT ELEVATION
- 6900 — INDEX CONTOUR
- INTERMEDIATE CONTOUR 10ft.
- SUPPLEMENTARY CONTOUR 5ft.
- CONTOURS THROUGH HEAVY VEGETATION
- COUNTY LINES – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES.
- DOE BOUNDARY – X & Y COORDINATE DATA PROVIDED BY LASL.
- DOE BOUNDARY – SURVEY DESCRIPTIONS OR RECORD PLATS PROVIDED BY LASL.
- DOE BOUNDARY – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES BASED ON PROJECTED COUNTY LINES.

N 1,768,000 — NMSP GRID
3,969,000 N — UTM GRID
N 240+00 — LASL GRID

- (36) TECHNICAL AREA NO.
- BUILDING
- FENCE
- PAVED ROAD
- DIRT ROAD
- JEEP TRAIL
- CULVERT
- GUARD RAIL
- TUNNEL
- EARTHEN BUNKERS
- POWER POLE
- TOWER
- PIPE LINE
- CUT LINE OR POWER LINE CLEARANCE SCAR
- WATER TOWER
- TANK
- POND
- RETAINING WALL
- EARTH DIKES OR BLASTING SHIELDS
- EARTH WORK OR GRADED AREAS
- GATE

SHEET LAYOUT



TRUE NORTH
GRID NORTH
00°00'57"
NORTH
GRID NMSP NORTH

MAPPING COMPLETED BY PHOTOGRAMMETRIC METHODS, UTILIZING 1:30,000, 1:12,000 & 1:13,200 PHOTOGRAPHY, OBTAINED IN NOV. 1976 & JUNE 1980 WITH ZEISS RMK A 15/23 CAMERAS OF 153.42 & 152.43mm C.F.L. RESPECTIVELY. MAPPING BASED ON CONTROL SURVEYS TIED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM (CENTRAL ZONE). MAPPING COMPLETED IN ACCORDANCE WITH NATIONAL MAP ACCURACY SPECIFICATIONS.

400 200 0 400 800 1200 1600 FEET
100 50 0 100 200 300 400 500 METER

GRAPHIC SCALE: 1 in.=400 ft. CONTOUR INTERVAL 10 ft.

TECHNICAL AREAS

- (8) ANCHOR WEST SITE
- (9) ANCHOR EAST SITE
- (16) S-SITE
- (22) TD-SITE

8755-O

LASL LOS ALAMOS SCIENTIFIC LABORATORY

MAP 10
CONTOUR MAP SHOWING
LOCATION OF TA-16
OPEN BURNING UNIT
AND TA-16-1150 INCINERATOR

General Revisions, November 1987

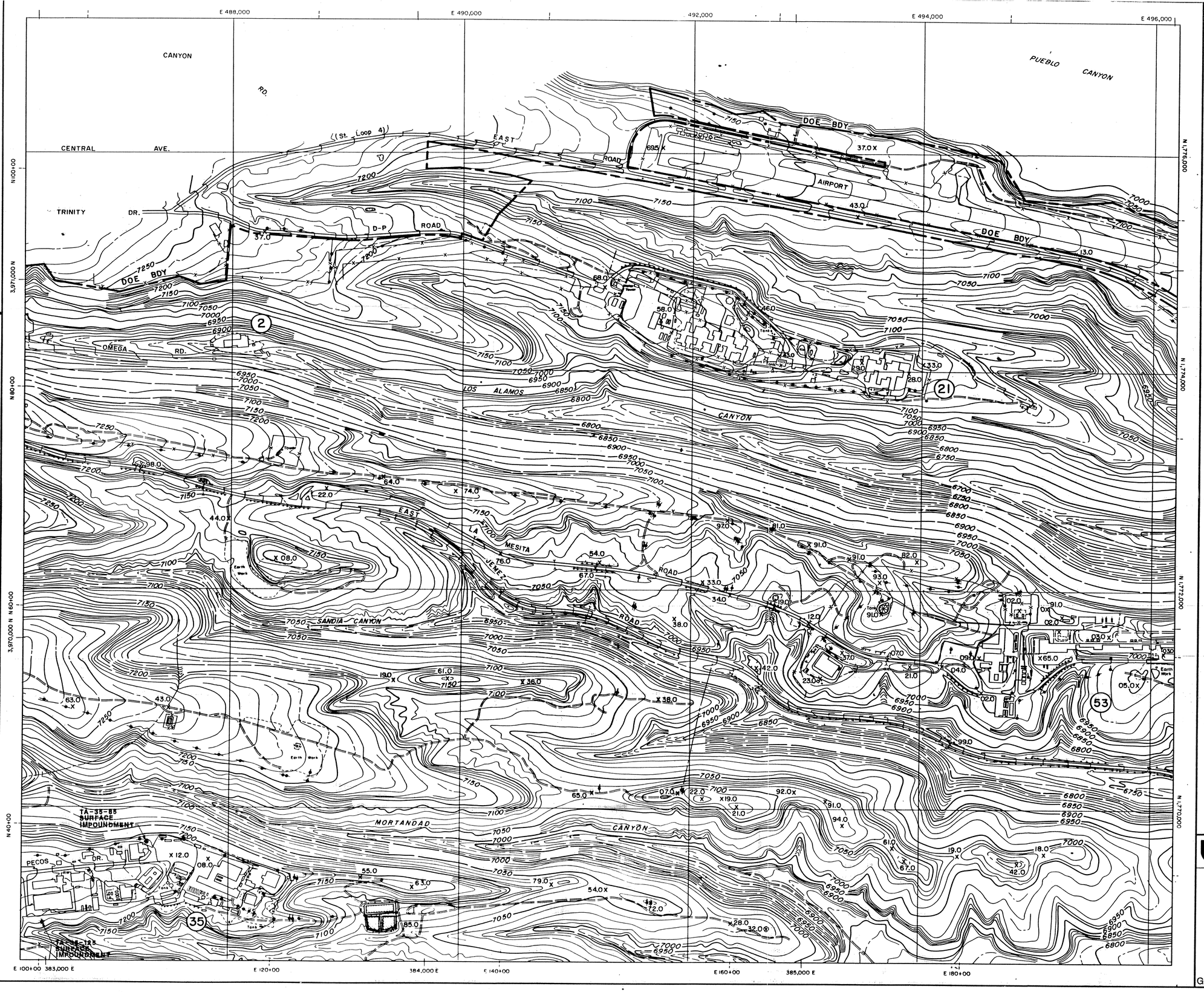
ENG-R 5277

LAB JOB NO. 5682

1"=400' SCALE

PLAN / TOPO

SHEET 2 OF 25

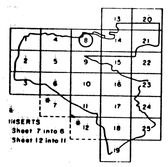


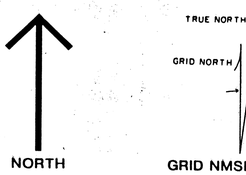
LEGEND

X 93.0	SPOT ELEVATION	N41,768,000	NMSP GRID
6900	INDEX CONTOUR	3,989,000 N	UTM GRID
	INTERMEDIATE CONTOUR 10ft.	N 240+00	LASL GRID
	SUPPLEMENTARY CONTOUR 5ft.		
	CONTOURS THROUGH HEAVY VEGETATION		
	COUNTY LINES – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES.		
	DOE BOUNDARY – X & Y COORDINATE DATA PROVIDED BY LASL.		
	DOE BOUNDARY – SURVEY DESCRIPTIONS OR RECORD PLATS PROVIDED BY LASL.		
	DOE BOUNDARY – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES BASED ON PROJECTED COUNTY LINES.		

(35)	TECHNICAL AREA NO.		TOWER
	BUILDING		PIPE LINE
	FENCE		CUT LINE OR POWER LINE CLEARANCE SCAR
	PAVED ROAD		WATER TOWER
	DIRT ROAD	Tank	TANK
	JEEP TRAIL		POND
	CULVERT	RW	RETAINING WALL
	GUARD RAIL		EARTH DIKES OR BLASTING SHIELDS
	TUNNEL	Earth Work	EARTH WORK OR GRADED AREAS
	EARTHEN BUNKERS		GATE
	POWER POLE		

SHEET LAYOUT





MAPPING COMPLETED BY PHOTOGRAMMETRIC METHODS, UTILIZING 1:30,000, 1:12,000 & 1:13,200 PHOTOGRAPHY, OBTAINED IN NOV. 1976 & JUNE 1980 WITH ZEISS RMK A 15/23 CAMERAS OF 153.42 & 152.43mm C.F.L. RESPECTIVELY. MAPPING BASED ON CONTROL SURVEYS TIED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM (CENTRAL ZONE). MAPPING COMPLETED IN ACCORDANCE WITH NATIONAL MAP ACCURACY SPECIFICATIONS.

400 200 0 400 800 1200 1600 FEET
100 50 0 100 200 300 400 500 METER

GRAPHIC SCALE: 1 in.=400 ft.

CONTOUR INTERVAL 10 ft.

TECHNICAL AREAS

(2) OMEGA SITE
(21) DP–SITE
(35) TEN SITE
(53) MPF–SITE

LOS ALAMOS SCIENTIFIC LABORATORY

MAP 11

CONTOUR MAP SHOWING THE LOCATIONS OF THE TA-35-125 AND TA-35-85 SURFACE IMPOUNDMENTS

8755-P

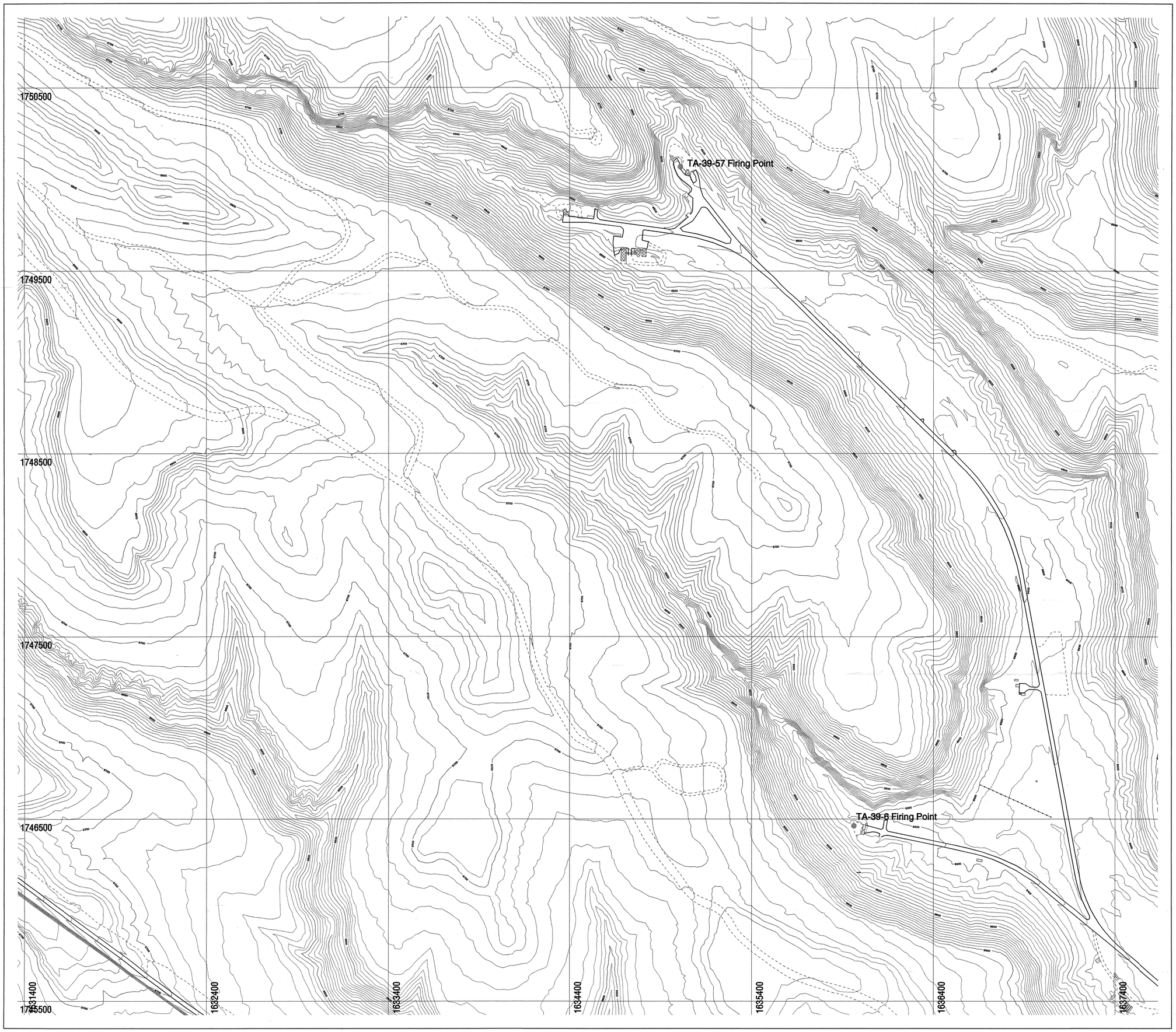
General Revisions, November 1987

LAB JOB NO. 5682

1"=400' SCALE

PLAN / TOPO

SHEET 8 OF 25



LEGEND

- Boundary, LANL
- Boundary, TA
- Contours, 10 foot
- Contours, 100 foot
- Fence, Industrial
- Fence, Security
- Roads, Dirt
- Roads, Paved
- Road/Trail
- Structure, Permanent
- Structure, Temporary
- Structure, Underground
- Firing Point

8755-Q

MAP 12:
Contour Map Showing the Locations of the Technical Area (TA) 39 Firing Points

N

State Plane Coordinate System, New Mexico Central Zone.
1983 North American Datum

Grid provides NM State Plane coordinates in feet.
Grid interval, in feet: 1000
Feet per inch on map = 250

SCALE 1:3000

FEET: 0 — 76 — 152 — 228 — 304

METERS: 0 — 250 — 500 — 750 — 1000

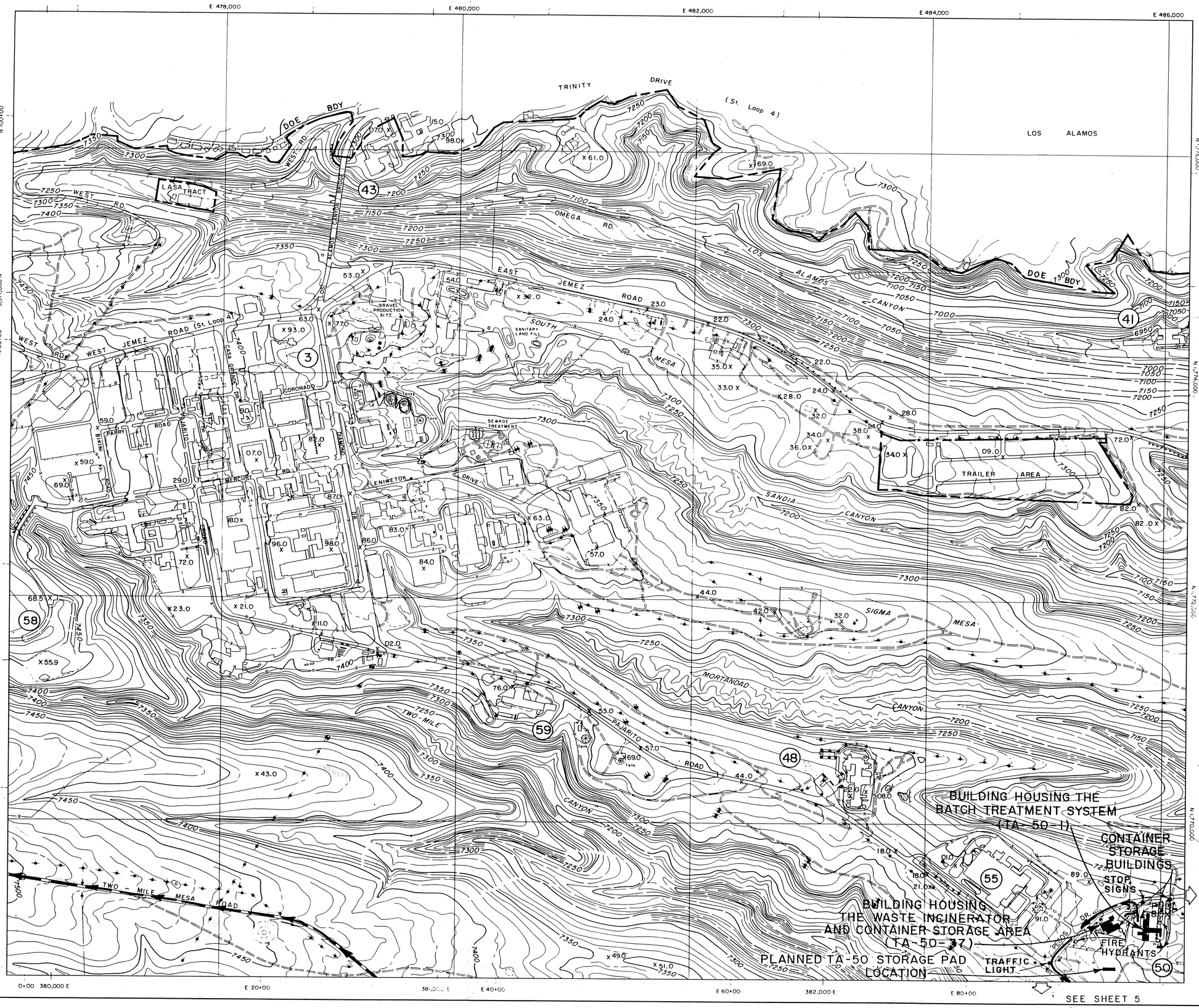
NOTICE: The information on this map is provisional. Feature locations are dependent on scale and symbology and their accuracy may not have been confirmed. Los Alamos National Laboratory boundary is based on legal description established in 1995. Other boundary, structure and utility data are from Los Alamos National Laboratory Engineering Division and Los Alamos County Utility and Engineering Departments. Contour data are from Los Alamos National Laboratory Environmental Restoration Project aerial survey, September, 1991.

University of California
Los Alamos National Laboratory
Earth and Environmental Sciences Division

FIMAD Facility for Information Management, Analysis and Display
FIMAD is the electronic data repository for the Environmental Restoration Project at Los Alamos National Laboratory.

Produced by: Doug Walther

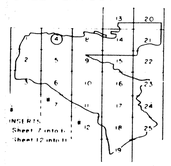
Date: May 12, 1995 FIMAD Plot ID: G103431



LEGEND

x 93.0	SPOT ELEVATION
6900	INDEX CONTOUR
	INTERMEDIATE CONTOUR 10ft.
	SUPPLEMENTARY CONTOUR 5ft.
	CONTOURS THROUGH HEAVY VEGETATION
	COUNTY LINES – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES.
	DOE BOUNDARY – X & Y COORDINATE DATA PROVIDED BY LASL.
	DOE BOUNDARY – SURVEY DESCRIPTIONS OR RECORD PLATS PROVIDED BY LASL.
	DOE BOUNDARY – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES BASED ON PROJECTED COUNTY LINES.
N 1,768,000	NMSP GRID
3,989,000 N	UTM GRID
N 240+00	LASL GRID
35	TECHNICAL AREA NO.
	BUILDING
	FENCE
	PAVED ROAD
	DIRT ROAD
	JEEP TRAIL
	CULVERT
	GUARD RAIL
	TUNNEL
	EARTHEN BUNKERS
	POWER POLE
	TOWER
	PIPE LINE
	CUT LINE OR POWER LINE CLEARANCE SCAR
	WATER TOWER
tank	TANK
	POND
RW	RETAINING WALL
	EARTH DIKES OR BLASTING SHIELDS
Earth Work	EARTH WORK OR GRADED AREAS
	GATE
	EVACUATION ROUTE

SHEET LAYOUT



NORTH

GRID NMSP NORTH

MAPPING COMPLETED BY PHOTOGRAMMETRIC METHODS, UTILIZING 1:30,000, 1:12,000 & 1:13,200 PHOTOGRAPHY, OBTAINED IN NOV. 1976 & JUNE 1980 WITH ZEISS RMK A 15/23 CAMERAS OF 153.42 & 152.43mm C.F.L. RESPECTIVELY. MAPPING BASED ON CONTROL SURVEYS TIED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM (CENTRAL ZONE). MAPPING COMPLETED IN ACCORDANCE WITH NATIONAL MAP ACCURACY SPECIFICATIONS.

400 200 0 400 800 1200 FEET

100 50 0 200 300 400 500 METERS

GRAPHIC SCALE: 1 in.=400 ft.

CONTOUR INTERVAL 10 ft.

TECHNICAL AREAS

- (3) SM–SITE
- (43) HRL–SITE
- (58) TWO MILE NORTH–SITE
- (59) OH–SITE
- (41) W–SITE
- (48) RC–SITE
- (55) PLUTONIUM FACILITY SITE
- (50) WM–SITE

8755-R

LOS ALAMOS SCIENTIFIC LABORATORY

MAP 13

CONTOUR MAP SHOWING THE LOCATIONS OF THE BATCH TREATMENT SYSTEM AND CONTAINER STORAGE AREA AND THE WASTE INCINERATOR

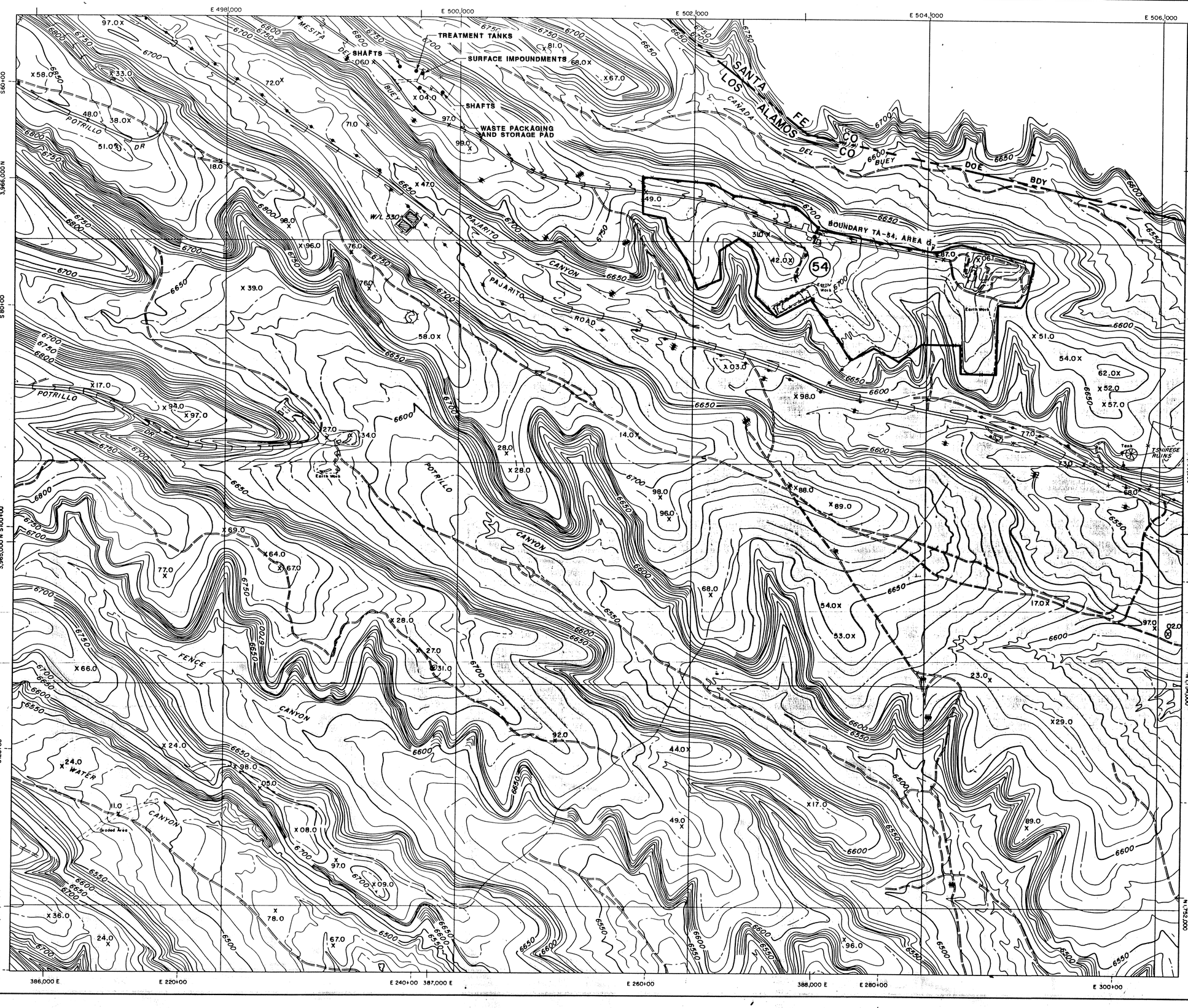
IT Corporation
General Revisions Nov.1987
Checked by SHIRLINER

LAB JOB NO. 5682

1" =400' SCALE

PLAN / TOPO

SHEET 4 OF 25



LEGEND

x 93.0	SPOT ELEVATION
6900	INDEX CONTOUR
	INTERMEDIATE CONTOUR 10ft.
	SUPPLEMENTARY CONTOUR 5ft.
	CONTOURS THROUGH HEAVY VEGETATION
	COUNTY LINES – TRANSFERRED FROM USGS 1:24,000 QUADRANGLES.
	DOE BOUNDARY – X & Y COORDINATE DATA PROVIDED BY LASL.
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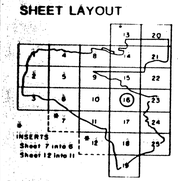
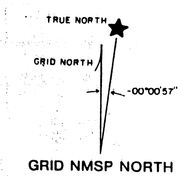
N 1,768,000	NMSP GRID
3,989,000 N	UTM GRID
N 240+00	LASL GRID

35	TECHNICAL AREA NO.		TOWER
	BUILDING		PIPE LINE
	FENCE		CUT LINE OR POWER LINE CLEARANCE SCAR
	PAVED ROAD		WATER TOWER
	DIRT ROAD	Tank	TANK
	JEEP TRAIL		POND
	CULVERT	Rw	RETAINING WALL
	GUARD RAIL		EARTH DIKES OR BLASTING SHIELDS
	TUNNEL	Earth Work	EARTH WORK OR GRADED AREAS
	EARTHEN BUNKERS		GATE
	POWER POLE		

SHEET LAYOUT





MAPPING COMPLETED BY PHOTOGRAMMETRIC METHODS, UTILIZING 1:30,000, 1:12,000 & 1:13,200 PHOTOGRAPHY, OBTAINED IN NOV. 1976 & JUNE 1980 WITH ZEISS RMK A 15/23 CAMERAS OF 153.42 & 152.43mm C.F.L. RESPECTIVELY, MAPPING BASED ON CONTROL SURVEYS TIED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM (CENTRAL ZONE). MAPPING COMPLETED IN ACCORDANCE WITH NATIONAL MAP ACCURACY SPECIFICATIONS.

400 200 0 400 800 1200 1600 FEET

100 50 0 100 200 300 400 500 METER

GRAPHIC SCALE: 1 in.=400 ft.

CONTOUR INTERVAL 10 ft.

TECHNICAL AREAS

54 MD–SITE

8755-S

LOS ALAMOS SCIENTIFIC LABORATORY

MAP 14

CONTOUR MAP SHOWING THE LOCATION OF THE TA-54, AREA L TREATMENT TANKS, SURFACE IMPOUNDMENTS, WASTE PACKAGING AND STORAGE PAD, SHAFTS, AND TA-54, AREA G

General Revisions, November 1987

LAB JOB NO. 5682

1" = 400' SCALE

PLAN / TOPO

SHEET 16 OF 25

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), 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. 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, or is listed in 20 NMAC 4.1, Subpart II, Part 261, Subpart D.

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.

LIST OF DEFINITIONS
(Continued)

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).

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 storage requirements	3a.2 and 3a.3
264.13(a)(2)	Waste analysis data	3a.3.2
264.13(a)(3)	Repeat analysis	3a.3.1, 3a.5, and 3a.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	3a.2.1 and 3a.2.2 and Table 3a-3
264.13(b)(2)	Test methods	3a.3, 3a.3.3, 3a.3.3.1, 3a.3.3.2, 3a.3.3.3, 3a.4, and Tables 3a-3 and 3a-4
264.13(b)(3)	Representative sample collection method	3a.3.3, 3a.3.3.3, 3a.3.3.4, and 3a.3.3.5
264.13(b)(4)	Frequency for review or repeat of initial analysis	3a.3.1, 3a.5.1, and 3a.5.2
264.13(b)(5)	Waste analysis information agreed upon for off-site facilities	3a.3.1, 3a.3.2, and Figure 3a-1
264.13(b)(6)	Additional waste analysis requirements	3a.6
264.13(b)(7)	Surface impoundments exempted under 20 NMAC 4.1, Subpart VIII, 268.4(a)	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

See 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)(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	3a.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	3a.6.3
268.7(b)(2)	Testing of treatment residues pursuant to 20 NMAC 4.1, Subpart VIII, 268.32	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	3a.6.3
268.7(b)(4)	Notice requirements	3a.6.3 and Figure 3a-2
268.7(b)(5)	Certification of compliance with 20 NMAC 4.1, Subpart VIII, Part 268	3a.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)	Record-keeping 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)	NA
268.7(d)(2)	Updated notification requirements for debris	NA

See 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(d)(3)	Documentation and certification requirements for debris excluded under 20 NMAC 4.1, Subpart II, 261.3(e)(1)	NA
270.14(b)(2)	Chemical and physical analyses	3a.2.1, 3a.3, 3a.3.1, 3a.3.2, 3a.3.3, 3a.3.3.1, 3a.3.3.2, 3a.3.3.3, Figure 3a-1, and Tables 3a-3 and 3a-4

[a] Resource Conservation and Recovery Act
[b] New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), 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 (1993). 20 NMAC 4.1, Subparts V, VIII, and IX, contain equivalent regulations to 40 CFR Parts 264, 268, and 270, respectively.

DRAFT

Differences in requirements for the characterization of legacy, existing, and future TRU mixed waste are described in the applicable sections of this WAP.

3a.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.

3a.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 3a.1.1.1 through 3a.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. 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, 1994a). Sampling and analytical procedures, discussed in Sections 3a.3 and 3a.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 3a-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 3a.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 3a.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 3a.1.1.3.

Tables 3a-1 and 3a-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 3a-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 3a.1.1.1, 3a.1.1.2, and 3a.1.1.3, respectively. The basis for RCRA waste classification for each IDC, TRUCON code, and RSWD code is provided in Table 3a-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 3a-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 3a.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 3a-2 are the result of the most recent iteration of this process and may be updated upon further evaluation.

DRAFT

3a.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, 1991b). The EPA Hazardous Waste Numbers that potentially apply to these IDC wastes are listed in Table 3a-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.

DRAFT

3a.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, 1994c). The EPA Hazardous Waste Numbers that potentially apply to these TRUCON-coded wastes are listed in Table 3a-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.

3a.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, 1994b). 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 3a-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 above) 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.

3a.1.2 Description of TRU Mixed Waste Management Units

The TRU mixed waste storage units at LANL that are addressed in this permit modification request include:

- Rooms 35, 36, and 38/38A Container Storage Areas (CSA) at TA-50-1
- 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).

These units are described fully in Sections 2.0 and 4.0 of this permit modification request.

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.

Information on these units 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, 1993b), submitted to the New Mexico Environment Department in September 1993.

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, 1994a).

3a.2 WASTE ANALYSIS PARAMETERS [20 NMAC 4.1, Subpart V, 264.13(a)(1)]

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.

3a.2.1 Proposed Analytical Parameters and Characterization Methods [20 NMAC 4.1, Subpart V, 264.13(b)(1), and Subpart IX, 270.14(b)(2)]

Proposed analytical parameters and characterization methods for TRU mixed waste at LANL are summarized in Table 3a-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)

3a.2.2 Criteria and Rationale for Parameter Selection [20 NMAC 4.1, Subpart V, 264.13(b)(1)] 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, 1994b) 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 3a-3.

3a.3 CHARACTERIZATION OF TRU MIXED WASTE [20 NMAC 4.1, Subpart V, 264.13(a)(1), 264.13(b)(2), and Subpart IX, 270.14(b)(2)]

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 3a.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 3a.3.2).

The TRU mixed waste types described include solid process residues, soils, and debris wastes. As discussed in Section 3a.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 3a-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. 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 3a-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 3a-3 summarizes characterization methods by matrix parameter code. Sampling and analytical methods for specific hazardous constituents are presented in Table 3a-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 3a.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 3a.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 3a.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.

3a.3.1 Waste Profiling System [20 NMAC 4.1, Subpart V, 264.13(a)(3), 264.13(b)(4) and (5), and Subpart IX, 270.14(b)(2)]

In an effort to maintain detailed and accurate waste characterization information, LANL's Hazardous and Solid Waste Group (ESH-19) and CST Division utilize 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 3a-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 ESH-19 and 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, ESH-19 can accurately classify the waste and assign it the appropriate EPA Hazardous Waste Number(s). The accuracy of information

provided on the WPF as well as the resulting waste classification are reviewed by ESH-19 and CST. 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).

3a.3.2 Acceptable Knowledge [20 NMAC 4.1, Subpart V, 264.13(a)(2), 264.13(b)(5), and Subpart IX, 270.14(b)(2)]

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, 1992a). 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, 1994b). *Process knowledge* is described in 20 NMAC 4.1, Subpart V, 264.13(a)(2), as data developed under

20 NMAC 4.1, Subpart II, 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, 1994b).

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), 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, 1994b). 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.

3a.3.3 Sampling and Analysis for TRU Mixed Waste [20 NMAC 4.1, Subpart V, 264.13(b)(2) and (3), and Subpart IX, 270.14(b)(2)]

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. 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. Determinations of whether a TRU mixed waste exhibits these characteristics or is listed will be made by applying acceptable knowledge, as described in Section 3a.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 3a.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 3a.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 3a.3.3.5) for headspace gas sampling during drum-venting operations.

3a.3.3.1 Real-Time Radiography [20 NMAC 4.1, Subpart V, 264.13(b)(2), and Subpart IX, 270.14(b)(2)]

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.

3a.3.3.2 Visual Examination [20 NMAC 4.1, Subpart V, 264.13(b)(2), and Subpart IX, 270.14(b)(2)]

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.

3a.3.3.3 Headspace Gas Sampling and Analysis [20 NMAC 4.1, Subpart V, 264.13(b)(2) and (3), and Subpart IX, 270.14(b)(2)]

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 3a.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, 1994b), 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, 1992b) 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, 1994c).

3a.3.3.4 Solid Waste Sampling and Analysis [20 NMAC 4.1, Subpart V, 264.13(b)(3)]
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, 1992b); 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 3a.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 3a-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, 1994b). 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.

3a.3.3.5 Statistical Approach for Headspace Gas and Solid Waste Sampling [20 NMAC 4.1, Subpart V, 264.13(b)(3)]

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.

3a.3.4 Sample Handling, Preservation, and Storage

Table 3a-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.

3a.4 ANALYTICAL LABORATORY SELECTION AND ANALYTICAL METHODS [20 NMAC 4.1, Subpart V, 264.13(b)(2)]

Analytical laboratories at LANL and/or approved subcontractor laboratories will perform all of the detailed qualitative and quantitative chemical analyses specified in Table 3a-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 3a-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.

3a.5 VERIFICATION ANALYSIS FOR TRU MIXED WASTE [20 NMAC 4.1, Subpart V, 264.13(a)(3)]

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.

3a.5.1 Verification of Existing TRU Mixed Waste [20 NMAC 4.1, Subpart V, 264.13(b)(4)]

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 3a.3.3.1), visual examination of the contents of select waste containers (see Section 3a.3.3.2), and headspace gas sampling while venting (see Section 3a.3.3.3).

3a.5.2 Verification of Future TRU Mixed Waste [20 NMAC 4.1, Subpart V, 264.13(a)(3) and 264.13(b)(4)]

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 3a.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.

3a.6 SPECIAL PROCEDURAL REQUIREMENTS [20 NMAC 4.1, Subpart V, 264(b)(6)]
Additional waste management requirements specific to ignitable, reactive, and incompatible wastes, as well as compliance with LDR, are described below.

3a.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. At a minimum, ignitable and reactive wastes will be separated during storage.

3a.6.2 Procedures for Incompatible Wastes
Pursuant to 20 NMAC 4.1 Subpart V, 264.17, 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.

3a.6.3 Procedures to Ensure Compliance with LDR Requirements [20 NMAC 4.1, Subpart VIII, 268.7(a), and 268.7(b)(1), (3), (4), and (5)]

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. 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, 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. 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 3a-2).

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Table 3a-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 3a-1 (Continued)

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
5000-Debris Wastes (Continued)	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 3a-1 (Continued)

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
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), 1994b, "TRU Waste Characterization Quality Assurance Program Plan," *CAO-94-1010*, Rev. B, Draft, Carlsbad Area Office, Carlsbad, New Mexico.

Table 3a-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 3a-2 (Continued)

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)
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 3a-2 (Continued)

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)
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 3a-2 (Continued)

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)
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 3a-2 (Continued)

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)
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 3a-2 (Continued)

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)
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	Hydrofluoric acid	NA
						D004	Arsenic	5.0
						D006	Cadmium	1.0
						D007	Chromium	5.0
						D008	Lead	5.0
						D009	Mercury	0.2
						D019	Carbon tetrachloride	0.5
						D021	Chlorobenzene	100.0
						D022	Chloroform	6.0
						D028	Dichloroethane	0.5
						D040	Trichloroethylene	0.5
						F002	1,1,1-Trichloroethane	NA
						None	Acetone	None
						None	Beryllium	None
						None	Bromobenzene	None
						None	Ethanol	None
						None	Methanol	None
						None	Methylene Chloride	None
						None	n-Butyl Alcohol	None
						None	Toluene	None
						None	Xylene	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

[a] This table is based on preliminary information from Los Alamos National Laboratory, 1994d, "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 1994c, 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.

[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 3a-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 3a-4)	– Sample and analyze statistically selected number of drums in waste stream. (see Table 3a-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 3a-4)	– Sample and analyze statistically selected number of drums in waste stream. (see Table 3a-4)	– Determine toxicity characteristic – Determine concentration of organics
4000—Soils	– Contaminated soil			
5000—Debris Waste	– Mixed metal scrap and incidental combustibles – Combustible waste – Graphic 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

Refer to footnotes at end of table.

Table 3a-3 (Continued)

Parameters, Characterization Methods, and Rationale for Transuranic Mixed Waste

Matrix Parameter[a] Code/Description	Waste Description	Analytical Parameters[b]	Characterization Methods	Rationale
		– RCRA-regulated metals (see Table 3a-4)	– Acceptable knowledge	– Determine compliance with land disposal restriction (LDR) treatment standards, if applicable
		– 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 3a-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), 1994b, "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), 1994b, "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 3a-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

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Refer to footnotes at end of table.

Table 3a-4 (Continued)

Summary of Waste Characterization Techniques for Transuranic Mixed Waste

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, 6010, 6010A, 6020, 7060, 7060A, 7061A)[d]		
Barium	(3051, 1311, 6010, 6010A, 6020, 7080, 7080A, 7081)[d]	Inductively coupled plasma	
Cadmium	(3051, 1311, 6010, 6010A, 6020, 7130, 7131, 7131A)[d]		
Chromium	(3051, 1311, 6010, 6010A, 6020, 7190, 7191)[d]		
Lead	(3051, 1311, 6010, 6010A, 6020, 7420, 7421)[d]	Atomic absorption spectroscopy	
Mercury	(1311, 7470, 7470A, 7471, 7471A)[d]		
Nickel	(3051, 1311, 6010, 6010A, 6020, 7520)[d]		
Selenium	(3051, 1311, 6010, 6010A, 6020, 7740, 7741, 7741A, 7742)[d]	Cold vapor atomic absorption spectroscopy	
Silver	(3051, 1311, 6010, 6010A, 6020, 7760A, 7761)[d]		
Thallium	(3051, 1311, 6010, 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), 1992b, "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; U.S. Environmental Protection Agency, 1995, *Federal Register*, Volume 60, No. 9.
[e] Equivalent methods, subject to EPA approval, may be substituted.

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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

_____
_____
_____
_____
_____
_____
_____

Figure 3a-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 _____	_____

Figure 3a-1 (Continued)
Waste Profile Form

Section 2- Radiological Characteristics

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

	Range minimum		Range maximum	Unit (C/g or C/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 (C/g or C/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

Figure 3a-1 (Continued)
Waste Profile Form

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:

DRAFT

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

Figure 3a-1 (Continued)
Waste Profile Form

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.

Figure 3a-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)

T

Check all that apply.

F

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.

A

Check only one, if applicable.

R

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.

D

NOTIFICATION FOR OTHER "F" WASTES

Check only one, if applicable.

- ☐ F006
- ☐ F007
- ☐ F008
- ☐ F009
- ☐ F027

Figure 3a-2 (Continued)
Land Disposal Restrictions Notification Form

Los Alamos
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 3a-2 (Continued)
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

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)

DRAFT

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.

DRAFT

NOTIFICATION OF ADDITIONAL TREATMENT STANDARDS

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

Document:	**LANL CST Permit Mod**
Revision No.:	**Final Draft**
Date:	**September 29, 1995**

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).

LIST OF DEFINITIONS
(Continued)

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), 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. 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, or is listed in 20 NMAC 4.1, Subpart II, Part 261, Subpart D.

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.

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.

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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 storage requirements	3b.2 and 3b.3
264.13(a)(2)	Waste analysis data	3b.3.2
264.13(a)(3)	Repeat analysis	3b.3.1, 3b.3.3, 3b.5, and 3b.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	3b.2.1 and 3b.2.2
264.13(b)(2)	Test methods	3b.3, 3b.3.3, 3b.4, and Tables 3b-2 and 3b-3
264.13(b)(3)	Representative sample collection method	3b.3.3
264.13(b)(4)	Frequency for review or repeat of initial analysis	3b.3.1, 3b.3.3, 3b.5.1, and 3b.5.2
264.13(b)(5)	Waste analysis information agreed upon for off-site facilities	3b.3.1, 3b.3.2, and Figure 3b-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)	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 for off-site shipments	NA
264.13(c)(2)	Sampling method for the waste to be identified for off-site shipments	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)(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	3b.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	NA
268.7(b)(2)	Testing of treatment residues pursuant to 20 NMAC 4.1, Subpart VIII, 268.32	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	3b.6.3
268.7(b)(4)	Notice requirements	3b.6.3 and Figure 3b-2
268.7(b)(5)	Certification of compliance with 20 NMAC 4.1, Subpart VIII, Part 268	3b.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)	Record-keeping 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)	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)	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
270.14(b)(2)	Chemical and physical analyses	3b.2.1, 3b.3, 3b.3.1, 3b.3.2, 3b.3.3, Figure 3b-1, and Tables 3b-2 and 3b-3

[a] Resource Conservation and Recovery Act
[b] New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), 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 (1993). 20 NMAC 4.1, Subpart V, VIII, and IX, contain equivalent regulations to 40 CFR Parts 264, 268, and 270, respectively.

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3b.0 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); in 20 NMAC 4.1, Subpart V, 264.13, "General Waste Analysis;" and in 20 NMAC 4.1, Subpart VIII, 268.7, "Waste Analysis and Recordkeeping." 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], 1994b).

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 on page 3b-ii 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 3b.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 3b.2 presents waste parameters, including the criteria and rationale for selection. Section 3b.3 provides low-level mixed waste characterization procedures. Section 3b.4 presents laboratory selection and analytical methods. Section 3b.5 provides waste verification requirements. Section 3b.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 3b.3 of this WAP.

3b.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.

3b.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 3b-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 3b-1. Descriptions of the low-level solid mixed wastes and their waste-generating processes are provided below. These descriptions are extracted primarily from LANL's "Report for the Characterization Review of Low-Level Mixed Waste, Final Draft," (LANL, 1995).

3b.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 Chemical Treatment Sludges from Radioactive Liquid Waste Treatment Facilities

Radioactive liquid waste from various sources throughout LANL is collected and treated at the TA-50 and TA-21 radioactive liquid waste treatment facilities. 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. However, liquids at the cement surface within some drums have been observed.

Soils with Heavy Metals and Organic Compounds

Soils with heavy metals and organic compounds are almost exclusively environmental restoration (ER) waste from the remediation of spill sites. Some of this waste stream has resulted from decommissioning of reactors. For specific information on ER mixed waste and waste characterization, refer to the Waste Analysis Plan for Hazardous, Low-Level Mixed, and Transuranic Mixed Waste Generated by the Environmental Restoration Project (hereafter referred to as the ER WAP).

Residues from Plating Shops with Heavy Metals or Solvents

Residues from plating shops with heavy metals or solvents consist of solidified residues from plating operations. Chromic acid residues from plating baths and cleaning operations comprise the bulk of this waste stream.

Unused Solid Reagent Chemicals

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 inventory. Most of these items are in the original manufacturer's containers, some of which may contain residual liquid. Many of these containers are unopened but are suspected to have radioactive surface contamination.

Greases

The greases waste stream consists of bulk greases from the motor pool and from hydraulic applications. Some waste grease from heavy machinery maintenance was generated in controlled areas and may be contaminated with unknown radioactive isotopes.

3b.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.

Discarded Hazardous and Contaminated Scrap Metals

Discarded hazardous and contaminated scrap metals are generated by the demolition and decommissioning of research laboratories or equipment. The waste stream includes piping and hydraulic fittings from test reactors and test explosives assemblies. The waste may be considered hazardous due to the nature of the scrap metal or by virtue of contamination during use.

Reactive Metal Debris

Reactive metal debris waste is generated through the cleanup of high-explosive (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.

Contaminated Bulk Lead Shielding

Contaminated bulk lead shielding consists of lead used for radiation shielding in reactor, accelerator, laser, and x-ray applications. In many cases, the lead was activated by the radiation. The lead may be in the form of sheets, pigs, bricks, or shot.

Lead-Contaminated Soils

Lead-contaminated soil waste is generated during decommissioning and decontamination activities and during ER projects at various locations throughout LANL. This waste consists of soils contaminated with varying concentrations of lead resulting from contact with small lead

shapes, typically in the form of shot or pellets. (For specific information on ER mixed waste and waste characterization, refer to the ER WAP.)

Discarded Bricks and Glass

Discarded bricks and glass are generated through dismantling of LANL buildings, including plating shops and machine sheds. The waste may be contaminated with residues of cadmium, nickel, cyanide, and uranium.

Lead in Heterogeneous Matrices

Lead in heterogeneous matrices is generated during decommissioning and ER activities. The waste consists of lead in the form of solder, pipes, discarded equipment, lead-lined boxes, and lead dross and cannot be decontaminated in the same manner as the bulk lead shielding. (For specific information on ER mixed waste and waste characterization, refer to the ER WAP.)

Absorbed Oils

Absorbed oil waste is comprised of bulk drums containing rags or Kimwipes™ and vermiculite or corn-cob fractions used to absorb many different types of oil from spills and routine maintenance operations. The oil generally originates from vacuum pumps and may contain 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 per standard operating procedures.

Rags and Combustible Debris Contaminated with Heavy Metals and Organics

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, such as WD-40™ and various other aerosol lubricants, 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.

Mercury-Contaminated Instruments and Equipment

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 electronic 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.

Rags with Solvents

Maintenance operations associated with hydraulic systems and vacuum pump components generate rags with solvents. Rags are used in the final cleanup of oil spills and for cleaning parts.

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.

Debris from Scintillation Vial-Crushing Operations

Debris from scintillation and crushing operations consists of contaminated cardboard boxes, Kimwipes™, and crushed vials with absorbed and residual scintillation solvents.

Laboratory Debris with Solvents

Laboratory debris waste 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

Discarded equipment with heavy metals and solvents primarily includes equipment and broken glassware that may have contained residual solvents.

Solid Wastes from Biochemical Laboratories

Solid wastes from biochemical laboratories consist of reagents and materials used for biological assays, including ion exchange resins with interstitial acidic liquids. Many of these reagents and materials are contaminated specifically with low-level radioactive markers (such as tritium and carbon-14), including nucleotides in acid solutions and filtration and ion-exchange media. A large portion of these materials are molecular-sieve media that react violently with water.

Batteries

Battery wastes include discarded lead-acid, mercury, and rechargeable batteries from decommissioned equipment or routine maintenance operations. The batteries may contain residual liquids. In addition, they may contain activated lead or are suspected of bulk radioactive contamination because of usage near an activation or reactor source. Many of the batteries were used as backup power supplies at locations where they were potentially subject to long-term radiological contamination.

Firing Site Debris

Firing site debris is generated from the detonation of 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.

Dried Paints with Heavy Metal Pigments

Paint chips from removal and decommissioning operations comprise this waste stream. This waste stream also includes paints in their original cans, which were dried up at the time of disposal.

Materials from Plating Shops

Corrosive and reactive reagents and spent samples from wastewater analyses and chemical assays, which may contain residual liquids, comprise this waste stream. The waste reagents consist of both used and unused reagents from plating shops.

3b.1.2 Description of Low-Level Solid Mixed Waste Management Units

The low-level solid mixed waste storage units at LANL that are addressed in this permit modification request include:

- Rooms 35, 36, and 38/38A Container Storage Areas (CSA) at TA-50-1
- 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).

These units are described fully in Sections 2.0 and 4.0 of this permit modification request.

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, 1994a).

3b.2 WASTE ANALYSIS PARAMETERS [20 NMAC 4.1, Subpart V, 264.13(a)(1)]

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 3b.3.

3b.2.1 Proposed Analytical Parameters and Characterization Methods [20 NMAC 4.1, Subpart V, 264.13(b)(1), and Subpart IX, 270.14(b)(2)]

Proposed analytical parameters, characterization methods, and test methods for low-level solid mixed waste at LANL are summarized in Tables 3b-2 and 3b-3. The parameters listed in Table 3b-2 were selected based on acceptable knowledge, as described in Section 3b.3.2, for the various homogeneous and heterogeneous waste forms described in Section 3b.1.1. Table 3b-3 indicates the proposed test methods for generating the data, pursuant to 20 NMAC 4.1, Subpart V, 264.13(b)(2).

3b.2.2 Criteria and Rationale for Parameter Selection [20 NMAC 4.1, Subpart V, 264.13(b)(1)]

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 3b-2 and 3b-3.

3b.3 CHARACTERIZATION OF LOW-LEVEL SOLID MIXED WASTE [20 NMAC 4.1, Subpart V, 264.13(a)(1), 264.13(b)(2), and Subpart IX, 270.14(b)(2)]

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 3b.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 3b.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, 1994c). 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 3b.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. 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.

3b.3.1 Waste Profiling System [20 NMAC 4.1, Subpart V, 264.13(a)(3), 264.13(b)(4) and (5), and Subpart IX, 270.14(b)(2)]

In an effort to maintain detailed and accurate waste characterization information, LANL's Hazardous and Solid Waste Group (ESH-19) and the Chemical Science and Technology (CST) Division utilize 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 3b-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 ESH-19 and 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, ESH-19 can accurately classify the waste and assign it the appropriate EPA Hazardous Waste Number(s). The accuracy of information provided on the WPF as well as the resulting waste classification are reviewed by ESH-19 and CST. 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).

3b.3.2 Acceptable Knowledge [20 NMAC 4.1, Subpart V, 264.13(a)(2), 264.13(b)(5), and Subpart IX, 270.14(b)(2)]

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, 1992a). 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, 1994b). *Process knowledge* is described in 20 NMAC 4.1, Subpart V, 264.13(a)(2), as data developed under 20 NMAC 4.1, Subpart II, 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, 1994b).

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.

3b.3.3 Sampling and Analysis for Low-Level Solid Mixed Waste [20 NMAC 4.1, Subpart V, 264.13(a)(3), 264.13(b)(2), (3), and (4), and Subpart IX, 270.14(b)(2)]

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, 1992b). 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 3b-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, 1994b). 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, 1994c), 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.

3b.3.4 Sample Handling, Preservation, and Storage

Table 3b-4 presents requirements specified in SW-846 (EPA, 1992b) 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.

3b.4 ANALYTICAL LABORATORY SELECTION AND ANALYTICAL METHODS [20 NMAC 4.1, Subpart V, 264.13(b)(2)]

Analytical laboratories at LANL and/or approved subcontractor laboratories will perform all of the detailed qualitative and quantitative chemical analyses specified in Table 3b-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 3b-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.

3b.5 VERIFICATION ANALYSIS FOR LOW-LEVEL SOLID MIXED WASTE [20 NMAC 4.1, Subpart V, 264.13(a)(3)]

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.

3b.5.1 Verification of Existing Low-Level Solid Mixed Waste [20 NMAC 4.1, Subpart V, 264.13(b)(4)]

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.

3b.5.2 Verification of Future Low-Level Solid Mixed Waste [20 NMAC 4.1, Subpart V, 264.13(a)(3) and 264.13(b)(4)]

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.

3b.6 SPECIAL PROCEDURAL REQUIREMENTS

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

3b.6.1 Procedures for Ignitable and Reactive Wastes

Pursuant to 20 NMAC 4.1, Subpart V, 264.17, 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.

3b.6.2 Procedures for Incompatible Wastes

Pursuant to 20 NMAC 4.1, Subpart V, 264.17, 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.

3b.6.3 Procedures to Ensure Compliance with LDR Requirements [20 NMAC 4.1, Subpart VIII, 268.7(a) and 268.7(b)(3), (4), and (5)]

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. 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, 1994b). 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, 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, will be land disposed in a permitted facility without further treatment. An LDR notification form (Figure 3b-2), including all analytical records to support the notification, will be prepared and will accompany the shipment of waste to the receiving facility.

DRAFT

Table 3b-1

Descriptions of Low-Level Solid Mixed Waste at Los Alamos National Laboratory

Information to be added at a later date.

DRAFT

Table 3b-2

Parameters, Characterization Methods, and Rationale for Low-Level Solid Mixed Waste

Information to be added at a later date.

DRAFT

Table 3b-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
[illegible]als 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), 1992b, "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.; U.S. Environmental Protection Agency, 1995, *Federal Register*, Volume 60, No. 9.
[e] Equivalent methods, subject to EPA approval, may be substituted.

Table 3b-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 3b-4 (Continued)

Recommended Sample Containers, Preservation Techniques, and Holding Times[a]

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), 1992b, "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		Reference Number
	For rapid processing, complete **all sections** in black or blue ink and mail this form to Waste Services Group at MS J579	

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

_____
_____
_____
_____
_____
_____
_____

Figure 3b-1
Waste Profile Form

Section 1- Chemical and Physical Characteristics (continued)

Ignitability (degrees F.) Check only one.	Corrosivity (pH) Check only one.	Reactivity Check as many as apply.	Boiling Point (degrees F.) Check only one.
☐ < 73	☐ ≤ 2.0	☐ Unstable	☐ ≤ 95
☐ 73-99	☐ 2.1-4.0	☐ Water reactive	☐ > 95
☐ 100-139	☐ 4.1-6.0	☐ Pyrophoric	☐ Not applicable
☐ 140-200	☐ 6.1-9.0	☐ Cyanide bearing	
☐ > 200	☐ 9.1-12.4	☐ Sulfide bearing	
☐ Ignitable solid	☐ ≥ 12.5	☐ Shock sensitive	
☐ DOT oxidizer	☐ Liquid corrosive to steel	☐ Explosive - class _____	
☐ Not ignitable	☐ Not aqueous	☐ Non-reactive	

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	_____	_____

Figure 3b-1 (Continued)
Waste Profile Form

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	_____	_____
☐ 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		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	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____

Contamination Type: *Check as many as apply.*

☐ Volume Contamination
☐ Surface Contamination

Figure 3b-1 (Continued)
Waste Profile Form

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:

DRAFT

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 _____

Figure 3b-1 (Continued)
Waste Profile Form

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.

Figure 3b-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)

T

Check all that apply.

F

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

A

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

R

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.

D

NOTIFICATION FOR OTHER "F" WASTES

Check only one, if applicable.

- ☐ F006
- ☐ F007
- ☐ F008
- ☐ F009
- ☐ F027

Los Alamos
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

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Figure 3b-2 (Continued)
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

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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)

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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.

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NOTIFICATION OF ADDITIONAL TREATMENT STANDARDS

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

Document:	**LANL CST Permit Mod**
Revision No.:	**Final Draft**
Date:	**September 29, 1995**

WASTE ANALYSIS PLAN FOR HAZARDOUS WASTE

LIST OF DEFINITIONS

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

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

Homogeneous waste - Waste that is of uniform composition.

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), 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.

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. 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, or is listed in 20 NMAC 4.1, Subpart II, Part 261, Subpart D.

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.

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 storage requirements	3c.2 and 3c.3
264.13(a)(2)	Waste analysis data	3c.3.1 and 3c.3.2
264.13(a)(3)	Repeat analysis	3c.3.1, 3c.3.2, and 3c.5
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	3c.2.1, 3c.2.2, and Table 3c-2
264.13(b)(2)	Test methods	3c.3, 3c.3.3, 3c.4, and Tables 3c-2 and 3c-3
264.13(b)(3)	Representative sample collection method	3c.3.3 and 3c.3.4
264.13(b)(4)	Frequency for review or repeat of initial analysis	3c.3.1, 3c.3.3, and 3c.5
264.13(b)(5)	Waste analysis information agreed upon for off-site facilities	3c.3.1, 3c.3.2, and Figure 3c-1
264.13(b)(6)	Additional waste analysis requirements	3c.6, 3c.6.1, 3c.6.2, and 3c.6.3
264.13(b)(7)	Surface impoundments exempted under 20 NMAC 4.1, Subpart VIII, 268.4(a)	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 for off-site shipments	NA
264.13(c)(2)	Sampling method for the waste to be identified for off-site shipments	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)(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	3c.6.3
268.7(b)	Testing requirements for treatment facilities	3c.6.3
268.7(b)(1)	Testing of treatment residues or extracts of treatment residues having concentration-based treatment standards specified in 20 NMAC 4.1, Subpart VIII, 268.41	3c.6.3
268.7(b)(2)	Testing of treatment residues pursuant to 20 NMAC 4.1, Subpart VIII, 268.32	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	NA
268.7(b)(4)	Notice requirements	3c.6.3 and Figure 3c-2
268.7(b)(5)	Certification of compliance with 20 NMAC 4.1, Subpart VIII, Part 268	3c.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)	Record-keeping requirements for land disposal facilities	NA
268.7(c)(2)	Testing requirements for land disposal facilities	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(d)(1)	Notification requirements for excluded debris (i.e., pursuant to 20 NMAC 4.1, Subpart II, 261.3)	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)	NA
270.14(b)(2)	Chemical and physical analyses	3c.2.1, 3c.2.2, 3c.3, 3c.3.1, 3c.3.2, 3c.3.3, Figure 3c-1, and Tables 3c-2 and 3c-3

[a] Resource Conservation and Recovery Act
[b] New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), 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 (1993). 20 NMAC 4.1, Subpart V, VIII, and IX, contain equivalent regulations to 40 CFR Parts 264, 268, and 270, respectively.

3c.0 WASTE ANALYSIS PLAN FOR HAZARDOUS WASTE

This waste analysis plan (WAP) presents information on the chemical and physical nature of hazardous waste generated and general hazardous 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); in 20 NMAC 4.1, Subpart V, 264.13, "General Waste Analysis;" and in 20 NMAC 4.1, Subpart VIII, 268.7, "Waste Analysis and Recordkeeping." 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], 1994b).

Hazardous waste is defined and regulated by the Resource Conservation and Recovery Act (RCRA). This WAP addresses only *RCRA hazardous waste* (as provided in the List of Definitions on page 3c-ii of this WAP) identified as wastewaters and nonwastewaters pursuant to land disposal restriction (LDR) regulations specified in 20 NMAC 4.1, Subpart VIII.

This hazardous waste WAP is organized as follows. Section 3c.1 includes a facility description, information on hazardous waste-generating processes and activities, identification of hazardous wastes managed, and a description of hazardous waste management units. Section 3c.2 presents analytical parameters, analytical methods, and criteria and rationale for parameter selection for hazardous wastes. Section 3c.3 presents hazardous waste characterization procedures. Section 3c.4 specifies analytical laboratory selection and analytical methods criteria. Section 3c.5 specifies verification analysis requirements. Section 3c.6 addresses special procedural requirements (e.g., for ignitable, reactive, and incompatible wastes and for compliance with LDR requirements).

3c.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.

3c.1.1 Facility Waste-Generating Processes, Activities, and Identification of Hazardous Wastes Managed

Hazardous waste is generated at LANL primarily from research and development (R&D) activities, processing and recovery operations, decontamination and decommissioning projects, and environmental remediation/restoration activities.

LANL's R&D activities generate a variety of hazardous wastes, most in relatively small quantities. The composition of each R&D waste stream is unique to the activity, typically consisting of laboratory reagents, solvents, test samples, analytical wastes, and laboratory containers and equipment (e.g., glass, ceramic, plastic, and metal) contaminated with these wastes. Numerous hazardous wastes, consisting of small quantities of acids, bases, organics, inorganics, reactive metals, and other miscellaneous chemicals, are also generated. The waste generated by R&D activities changes continuously as a function of the rapidly changing research efforts at LANL.

Processing and recovery operations waste streams generally consist of large quantities of material containing a limited range of hazardous waste types. Unless modifications to a process occur, a given process waste stream is typically uniform in composition and concentration of its hazardous constituents. These wastes are produced from activities at numerous sites at LANL, including maintenance shops, analytical laboratories, R&D fabrication facilities, and waste treatment operations. Examples of processing activities that produce hazardous waste are plating, polishing, etching, isotope separation, basic analytical wet chemistry, biological research,

degreasing, machining and fabrication, waste treatment (incineration and chemical treatment), and facility and grounds maintenance (pesticide spraying and painting).

Table 3c-1 provides the following information on hazardous waste streams generated at LANL: brief descriptions of the waste and the waste-generating processes, their locations, the basis for characterizing the waste (i.e., acceptable knowledge and/or sampling and analysis), potential EPA Hazardous Waste Number(s), potential hazardous constituents in and/or characteristics of the waste, and regulatory limits of specific constituents. Descriptions of the hazardous wastes and their waste-generating processes are provided below. These descriptions were developed from LANL's Hazardous and Solid Waste Group (ESH-19) Waste Profile Form (WPF) database. This database is a repository of process and waste information that has been reviewed for quality and accuracy, providing the most extensive repository of available knowledge for waste streams at LANL.

Spent Solvents and Contaminated Solvent Mixtures

This waste stream is comprised of homogeneous liquid wastes consisting of spent solvents and spent solvent mixtures that may be contaminated with organic or inorganic compounds, heavy metals, oils, and other contaminants. A wide variety of R&D and processing operations conducted throughout LANL (e.g., cleaning, degreasing, and electropolishing operations; laser, chemical, and biological research) generate this waste stream.

Contaminated Solid Wastes

Contaminated solid wastes are typically heterogeneous mixtures of rags, soils, spill cleanup materials, Kimwipes™, gloves, glassware, filters, plastic and paper products, empty containers, personal protective equipment, and disposable equipment contaminated with organic or inorganic compounds, heavy metals, oils, and other contaminants. This waste stream is generated throughout LANL by activities that include machining operations, chemistry- and biology-related research, decontamination and cleaning processes, finishing operations, superconductor research, photographic film processing, and general maintenance operations.

Paint and Paint-Related Wastes

Paint and paint-related waste consists of excess paint, aerosol paints, scrubber filtrates and sludges of paints and thinners from spray booths, and other paint-related wastes. Possible contaminants include heavy metals used as paint pigments and solvents contained in thinners and lacquers. This waste stream is generated by painting and finishing operations, sandblasting operations, and general facility maintenance. The waste matrices may be homogeneous or heterogeneous depending on the specific waste-generating process.

Photographic Processing and Photocopier Wastes

This waste stream is generated from photographic film-processing operations and photocopier operations. Photographic processing wastes include spent or excess film developers, fixer solutions, and photo bleach solutions that may be contaminated with heavy metals. Photocopier wastes include kerosene-based toners and dispersants.

Barium-Contaminated High Explosives (HE) Treatment Residues

The treatment of HE waste through open burning or open detonation produces a treatment residue of sand contaminated with barium. The treatment operations destroy the reactive components in the HE waste; however, barium remains in the waste at levels above the RCRA-established toxicity characteristic (TC) level.

Corrosive Liquid Wastes

Corrosive liquid wastes consist of acidic or alkaline solutions contaminated with organics, inorganics, metals, oils, and other contaminants. This homogeneous waste stream is generated by analytical chemistry research; electroetching, electropolishing, and electroplating operations; high speed circuit-etching operations; waste simulant research; biological research; and scrubber operations.

Solid Metals and Metallic Compounds

This waste stream consists of homogeneous wastes including metal chips and turnings from machining and cutting operations, metal powders, metal salts, metal sheets, reactive metals used in synthesis reactions, and solders from electronic manufacturing and repair operations. These

wastes may also be generated by anodizing procedures, grinding operations, and superconductor research.

Contaminated Noncorrosive, Aqueous and Nonaqueous Solutions and Sludges

This waste stream consists of noncorrosive, aqueous and nonaqueous solutions and sludges that are contaminated with hazardous constituents. These wastes are typically homogeneous and generated by operations such as vacuum pump maintenance, analytical spectrometry, equipment cleaning and maintenance, vehicle maintenance, electrolytic silver recovery, synthesis reactions, polishing and finishing operations, and chemical and biological research.

Mercury Wastes

Mercury wastes include free elemental mercury, mercuric compounds, articles and instruments containing mercury, and gels containing mercuric compounds. These wastes are generated by lamp replacement, chemistry and biological research, mercury spill cleanup, and equipment cleaning and maintenance.

Used Batteries and Battery Fluids

Used batteries and battery fluids are typically generated by routine equipment maintenance. These wastes may be contaminated with heavy metals such as cadmium, lead, mercury, and silver.

Unused/Outdated Commercial Chemical Products

This waste stream consists of solid or liquid chemical reagents that are unused, outdated, or off-specification and are being discarded. This waste stream also includes spill residues and empty containers containing original product residues.

Incinerator Wastes

Incinerator wastes include bottom ash, scrubber liquid blowdown, spent high-efficiency particulate air filters, and spent scrubber liquid blowdown filters. Incinerator wastes will be generated by hazardous waste incineration treatment operations at LANL.

3c.1.2 Description of Hazardous Waste Management Units

The hazardous waste storage units at LANL that are addressed in this permit modification request include:

- Rooms 35, 36, and 38/38A Container Storage Areas (CSA) at TA-50-1
- 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).

These units are described fully in Sections 2.0 and 4.0 of this permit modification request.

Hazardous waste storage units permitted for operation or operating under interim status facility standards at LANL include:

- Container storage at TA-54, Area L, and at TA-50
- Container storage at TA-63 in the hazardous waste storage building and lockers
- Tank storage of specified wastes at TA-54, Area L
- Tank storage at TA-63 in treated waste storage tanks.

Information on these units is available in LANL's "Hazardous Waste Facility Permit," issued by the New Mexico Health and Environment Department Environmental Improvement Division in 1989, and 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, 1993b), submitted to the New Mexico Environment Department in September 1993.

3c.2 WASTE ANALYSIS PARAMETERS [20 NMAC 4.1, Subpart V, 264.13(a)(1)]

A detailed chemical and physical characterization is performed prior to managing hazardous waste, in accordance with RCRA. Waste analysis parameters are 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 is performed using the procedures described in Section 3c.3.

3c.2.1 Analytical Parameters and Characterization Methods [20 NMAC 4.1, Subpart V, 264.13(b)(1), and Subpart IX, 270.14(b)(2)]

Analytical parameters, characterization methods, and test methods for hazardous waste at LANL are summarized in Tables 3c-2 and 3c-3 of this WAP. The analytical parameters listed in Table 3c-2 were selected based on acceptable knowledge, as described in Section 3c.3.2. Table 3c-3 provides the test methods used for waste characterization, as required by 20 NMAC 4.1, Subpart V, 264.13(b)(2). For each waste stream, documentation supporting acceptable knowledge is reviewed to identify the analytical parameters for potential hazardous constituents in the waste and any compatibility concerns associated with the waste.

3c.2.2 Criteria and Rationale for Parameter Selection [20 NMAC 4.1, Subpart V, 264.13(b)(1)]

Waste analysis parameters were selected to characterize hazardous waste in accordance 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 3c-2 and 3c-3 of this WAP.

3c.3 CHARACTERIZATION OF HAZARDOUS WASTE [20 NMAC 4.1, Subpart V, 264.13(a)(1), 264.13(b)(2), and Subpart IX, 270.14(b)(2)]

A detailed chemical and physical characterization is performed before storage of any hazardous waste, in accordance with 20 NMAC 4.1, Subpart V, 264.13. Characterization of hazardous waste is accomplished primarily by either applying acceptable knowledge or obtaining chemical or physical analytical data from representative samples of the waste. A secondary distinction between heterogeneous and homogeneous waste is made to determine the availability and appropriateness of sampling procedures.

Preliminary hazardous waste characterizations are developed using process knowledge, which is provided by waste generators using LANL's waste profiling system described in Section 3c.3.1. If a homogeneous hazardous waste is found to have insufficient process information available to adequately characterize the waste, sampling and analysis are performed.

Characterization procedures are constrained by the physical nature of the waste stream (i.e., homogeneous or heterogeneous). Homogeneous hazardous waste may be evaluated for the presence of hazardous constituents (e.g., volatile organic compounds [VOC], semivolatile organic compounds [SVOC], and metals) using acceptable knowledge, sampling and analysis, or both. Homogeneous waste streams may be sampled and analyzed for the TC contaminants listed in 20 NMAC 4.1, Subpart II, 261.24. 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 hazardous waste will be characterized primarily on the basis of acceptable knowledge.

3c.3.1 Waste Profiling System [20 NMAC 4.1, Subpart V, 264.13(a)(2) and (3), 264.13(b)(4) and (5), and Subpart IX, 270.14(b)(2)]

In an effort to maintain detailed and accurate waste characterization information, LANL's ESH-19 and the Chemical Science and Technology (CST) Division utilize a generator waste-profiling program. This waste-profiling effort requires each waste generator to provide a detailed written description of the waste on a standardized WPF, Form 1346 (Figure 3c-1). The waste description can be based on generator process knowledge, information drawn from the applicable 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 hazardous wastes. The WPF contains a box for the generator to mark to initiate a request for the sampling and analysis of unknown or incompletely characterized waste streams. Specific information for the waste requested on the WPF includes:

- Point of generation
- Method of characterization
- Waste categories
- Waste description
- Waste origination
- 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 ESH-19 and 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 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, ESH-19 can accurately classify the waste and assign it the appropriate EPA Hazardous Waste Number(s). The accuracy of information provided on the WPF as well as the resulting waste classification are reviewed by ESH-19 and CST. 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 in 20 NMAC 4.1, Subpart V, 264.13(b)(4).

3c.3.2 Acceptable Knowledge [20 NMAC 4.1, Subpart V, 264.13(a)(2) and (3), 264.13(b)(4) and (5), and Subpart IX, 270.14(b)(2)]

Many wastes at LANL are generated by defined and controlled processes. The chemical and physical nature of the waste is defined by the process; therefore, knowledge of the process provides the information necessary to accurately characterize the waste. The physical nature of

some hazardous waste forms (e.g., debris, equipment, and instruments) precludes the collection of representative samples. This difficulty arises from several factors, some of which include waste streams containing disparate items; large objects not able to fill standard sample containers; disparate elements needing to be segregated into similar forms; and laboratories not having the capability to sample large objects (EPA, 1992a). In addition, the health and safety risks to personnel from exposure to hazardous material may constrain or restrict extensive sampling and analytical activities of certain hazardous waste forms.

According to EPA guidance, *acceptable knowledge* is broadly defined to include process knowledge, waste analysis data, and/or facility records of analysis (EPA, 1994b). *Process knowledge* is defined in 20 NMAC 4.1, Subpart V, 264.13(a)(2), as data developed under 20 NMAC 4.1, Subpart II, 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* obtained 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.
- Wastes for which health and safety risks to personnel do not justify sampling and analysis due to quantified and documented chemical exposure concerns.
- Wastes containing heterogeneous materials, where the physical nature of the waste does not lend itself to taking a representative sample (e.g., contaminated solid waste and construction debris with surface contamination) (EPA, 1994b).

At LANL, waste generators 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. 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 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 how the wastes are generated and 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 analytical 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.

3c.3.3 Sampling and Analysis for Hazardous Waste [20 NMAC 4.1, Subpart V, 264.13(b)(2), (3), and (4), and Subpart IX, 270.14(b)(2)]

Sampling and analysis will be performed when a homogeneous hazardous waste lacks sufficient process information to adequately characterize the waste. Personnel involved in sampling and analyzing hazardous waste comply with LANL-specific protocol consistent with EPA's "Test Methods for Evaluating Solid Waste" (SW-846) (EPA, 1992b). Sampling is conducted according to LANL sampling procedures to ensure that a representative sample is collected. Specific information relative to analytical methods and to sampling methods is outlined in Tables 3c-3 and 3c-4 of this WAP, respectively.

For purposes of collecting a representative sample of homogeneous waste, the sample must be collected and handled to preserve its original physical form and composition and to prevent contamination or changes in concentration of the parameters to be analyzed (EPA, 1994b). The two approaches used to collect a representative sample are authoritative sampling and random sampling. Collection of homogeneous hazardous wastes will be performed with the following sampling equipment:

- 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.

Verification analysis and/or visual examination may be utilized to confirm the acceptable knowledge used to characterize a hazardous waste. Verification analysis is discussed in Section 3c.5.

Visual examination may be used to verify acceptable knowledge amenable to visual confirmation. If a visual examination indicates a discrepancy between the waste and its WPF, additional

characterization will be performed to recharacterize the 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.

3c.3.4 Sample Handling, Preservation, and Storage [20 NMAC 4.1, Subpart V, 264.13(b)(3)]

Table 3c-4 presents requirements specified in SW-846 (EPA, 1992b) regarding sample containers, preservation techniques, and holding times associated with sample collection. Adherence to these requirements ensures that sampling and analytical operations meet established quality objectives.

3c.4 ANALYTICAL LABORATORY SELECTION AND ANALYTICAL METHODS [20 NMAC 4.1, Subpart V, 264.13(b)(2)]

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

- The capability of handling hazardous waste
- A documented, comprehensive quality assurance/quality control program
- Technical analytical expertise
- A document control/records management program
- The capability to perform data reduction, validation, and reporting.

The selection and development of analytical testing methods for LANL hazardous waste streams are based on the following considerations:

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

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

3c.5 VERIFICATION ANALYSIS FOR HAZARDOUS WASTE [20 NMAC 4.1, Subpart V, 264.13(a)(3) and (b)(4)]

Analyses are performed to verify the accuracy of the initial waste characterization based on acceptable knowledge, to verify that applicable treatment standards have been met, there has been a change in a waste-generating process, a generator requests analysis, or analytical results indicate a change in the composition of a waste stream. Verification analyses are conducted at an on-site laboratory or at an approved subcontractor's laboratory facilities. All verification analyses are conducted in conformance with appropriate EPA-approved methods.

Acceptable knowledge documentation applicable to heterogeneous waste streams are qualitatively verified through visual examination of the contents of selected waste containers and by reviewing supporting documentation. Homogeneous waste streams initially characterized using acceptable knowledge undergo verification sampling and analysis at a frequency of at least one in 100 waste streams per year. Waste streams are randomly selected for verification analysis. Factory-sealed containers and original containers of unused chemicals are not 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 information is used to support waste characterization information based on acceptable knowledge for the waste stream.

Analytical results showing regulated constituents present at concentrations outside of the ranges documented on the WPF are cause for rejection of the WPF and will require investigation to identify the root cause. Recharacterization of the waste stream includes sampling and analysis sufficient to establish the range of regulated constituents potentially present in the waste stream.

In addition, any time a process change affecting a waste stream occurs, verification analysis must be repeated to determine the regulatory status of the waste stream.

3c.6 SPECIAL PROCEDURAL REQUIREMENTS [20 NMAC 4.1, Subpart V, 264.13(b)(6)]

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

3c.6.1 Procedures for Ignitable and Reactive Wastes [20 NMAC 4.1, Subpart V, 264.13(b)(6) and 264.17]

Pursuant to 20 NMAC 4.1, Subpart V, 264.17, ignitable and reactive wastes are and will be segregated during storage. In addition, potential liquid-bearing containers will be stored on self-containment pallets. Thus, in the event that a spill or release of ignitable or reactive waste occurs, mixing is precluded.

3c.6.2 Procedures for Incompatible Wastes [20 NMAC 4.1, Subpart V, 264.13(b)(6) and 264.17]

Pursuant to 20 NMAC 4.1, Subpart V, 264.17, incompatible wastes are and will be segregated during storage. In addition, potential liquid-bearing containers will be stored on self-containment pallets. Thus, if a release of waste in storage occurs, incompatible wastes would not be capable of commingling.

3c.6.3 Procedures to Ensure Compliance with LDR Requirements [20 NMAC 4.1, Subpart V, 264.13(b)(6) and Subpart VIII, 268.7(a) and 268.7(b), (b)(1), (4), and (5)]

In accordance with LDR requirements, waste that will be land disposed must be characterized to confirm that it meets applicable LDR treatment standards in 20 NMAC 4.1, Subpart VIII, Part 268, Subpart D. Treatment standards are expressed in two ways:

- 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)
- As specified treatment technologies.

Waste that must meet concentration-based treatment standards prior to disposal is evaluated to determine if applicable constituent concentration levels have been attained. This is accomplished by testing the waste or by using acceptable knowledge (EPA, 1994b). Sampling and analysis is conducted only to certify that a waste meets LDR treatment standards. If a waste does not meet applicable LDR treatment standards based on acceptable knowledge, sampling and analysis is not necessary to certify LDR compliance. All analytical results obtained in support of LDR requirements are retained within the facility operating record.

Wastes that do not meet applicable LDR treatment standards are sent to permitted treatment facilities. LDR notifications, with information required under 20 NMAC 4.1, Subpart VIII, 268.7, are 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.

Wastes determined through analysis to meet treatment standards as specified in 20 NMAC 4.1, Subpart VIII, Part 268, Subpart D, are land disposed in a permitted facility without further treatment. An LDR notification form, equivalent to the one shown on Figure 3c-2, along with all analytical records to support the notification, are prepared and sent with the shipment of waste to the receiving facility.

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Table 3c-1

Descriptions of Hazardous Waste at Los Alamos National Laboratory

Waste Description[a]	Waste Generating Process Description[a]	Technical Area (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)
Spent solvents and contaminated solvent mixtures	Laser research; organic and inorganic chemistry research (e.g., solvent extractions, liquid chromatography solvents, polymer synthesis, distillations); biology research (e.g., histological tissue staining, electrophoresis, deoxyribonucleic acid (DNA) precipitations, in situ hybridization), electropolishing operations, cleaning and degreasing operations	TA-2, TA-3, TA-9, TA-16, TA-21, TA-22, TA-34, TA-35, TA-40, TA-43, TA-46, TA-48, TA-51, TA-53, TA-55, TA-59	Acceptable knowledge[d] Sampling and analysis[e]	D001	Ignitability	N/A[f]
				D002	Corrosivity	N/A
				D003	Reactivity	N/A
				D004	Arsenic	5.0
				D005	Barium	100.0
				D007	Chromium	5.0
				D008	Lead	5.0
				D009	Mercury	0.2
				D010	Selenium	1.0
				D011	Silver	5.0
				D018	Benzene	0.5
				D019	Carbon tetrachloride	0.5
				D021	Chlorobenzene	100.0
				D022	Chloroform	6.0
				D028	1,2-Dichloroethane	0.5
				D029	1,1-Dichloroethylene	0.7
				D030	2,4-Dinitrotoluene	0.13
				D032	Hexachlorobenzene	0.13
				D035	Methyl ethyl ketone	200.0
				D036	Nitrobenzene	2.0
				D038	Pyridine	5.0
				D040	Trichloroethylene	0.5
				D043	Vinyl chloride	0.2
				F001	Tetrachloroethylene Trichloroethylene Methylene chloride 1,1,1- Trichloroethane Carbon tetrachloride Chlorofluorocarbons	N/A
				F002	Tetrachloroethylene Trichloroethylene 1,1,1-Trichloroethane 1,1,2-Trichloro-1,2,2-trifluoroethane	N/A

Refer to footnotes at end of table.

Table 3c-1 (Continued)

Descriptions of Hazardous Waste at Los Alamos National Laboratory

Waste Description[a]	Waste Generating Process Description[a]	Technical Area (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)
Spent solvents and contaminated solvent mixtures (Continued)				F003	Xylene, Acetone, Ethyl acetate, Ethyl ether, Methyl isobutyl ketone, n-Butyl alcohol, Methanol	N/A
				F005	Toluene, Methyl ethyl ketone, Carbon disulfide, Isobutanol, Pyridine, Benzene	N/A
Contaminated solid wastes	Machining operations; chemistry research; decontamination and cleaning operations; metal finishing operations; superconductor research; laser research; molecular biology research; photographic film processing	TA-3, TA-8, TA-15, TA-16, TA-21, TA-24, TA-35, TA-43, TA-46, TA-48, TA-50, TA-53, TA-55, TA-57, TA-59, TA-60, TA-64	Acceptable knowledge	D001	Ignitability	N/A
				D003	Reactivity	N/A
				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
				D030	2,4-Dinitrotoluene	0.13
				D032	Hexachlorobenzene	0.13
				D033	Hexachlorobutadiene	0.5
				D034	Hexachloroethane	3.0
				D036	Nitrobenzene	2.0
				D037	Pentachlorophenol	100.0
				D039	Tetrachloroethylene	0.7
				D040	Trichloroethylene	0.5
				D042	2,4,6-Trichlorophenol	2.0
				F001	1,1,1-Trichloroethane Carbon Tetrachloride	N/A
				F002	1,1,1-Trichloroethane	N/A
				F003	Acetone, Methanol	N/A
				F005	Toluene, Benzene	N/A

Refer to footnotes at end of table.

Table 3c-1 (Continued)

Descriptions of Hazardous Waste at Los Alamos National Laboratory

Waste Description[a]	Waste Generating Process Description[a]	Technical Area (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)
Paint and paint-related wastes	Paint application and removal operations; sandblasting operations; paint booth scrubber filtrate	TA-3, TA-8, TA-21, TA-53, TA-55, TA-60	Acceptable knowledge Sampling and analysis Material safety data sheets	D001 D005 D006 D007 D008 D009 D011 F003 F005	Ignitability Barium Cadmium Chromium Lead Mercury Silver Xylene Toluene	N/A 100.0 1.0 5.0 5.0 0.2 5.0 N/A N/A
Photographic processing and photocopier wastes	Photographic film processing; photocopying operations	TA-3, TA-8, TA-15, TA-35, TA-36, TA-40, TA-43, TA-53, TA-55	Acceptable knowledge Sampling and analysis Material safety data sheets	D001 D002 D007 D008 D011	Ignitability Corrosivity Chromium Lead Silver	N/A N/A 5.0 5.0 5.0
Barium-contaminated high explosives (HE) treatment residues	Cleaning/ decontamination operations; surplus explosive and operational supplies; HE burning operations; HE sample analysis processes; area sump slurry; personal protective equipment (PPE) and decontamination water; fired actuators; research involving plant materials grown in soil with trinitrotoluene (TNT)	TA-9, TA-15, TA-16, TA-22, TA-39, TA-40, TA-43, TA-59	Acceptable knowledge Material safety data sheets	D002 D003 D005 D007 D008 D009 D036 F001	Corrosivity Reactivity Barium Chromium Lead Mercury Nitrobenzene Tetrachloroethylene Trichloroethylene Methylene chloride 1,1,1-Trichloroethane Carbon tetrachloride Chlorofluorocarbons	N/A N/A 100.0 5.0 5.0 0.2 2.0 N/A

Refer to footnotes at end of table.

Table 3c-1 (Continued)

Descriptions of Hazardous Waste at Los Alamos National Laboratory

Waste Description[a]	Waste Generating Process Description[a]	Technical Area (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)
Barium-contaminated HE treatment residues (continued)				F002	Tetrachloroethylene Methylene Chloride Trichloroethylene 1,1,1-Trichloroethane Chlorobenzene 1,1,2-Trichloro-1,2,2-trifluoroethane Ortho-dichlorobenzene Trichlorofluoromethane 1,1,2-Trichloroethane	N/A
				F003	Xylene, Acetone, Ethyl acetate, Ethyl benzene, Ethyl ether, Methyl isobutyl ketone, n-Butyl alcohol, Cyclohexanone, Methanol	N/A
				F005	Toluene, Methyl ethyl ketone, Carbon disulfide, Isobutanol, Pyridine, Benzene, 2-Ethoxyethanol, 2-Nitropropane	N/A
Corrosive liquid wastes	Analytical research and operations; electroetching; electropolishing and electroplating operations; high speed circuit etching operations; molecular biology research; waste simulants research; scrubber operations	TA-00, TA-01, TA-02, TA-03, TA-16, TA-21, TA-22, TA-34, TA-35, TA-43, TA-46, TA-48, TA-50, TA-53, TA-54, TA-55	Acceptable knowledge Sampling and analysis	D001 D002 D003 D004 D005 D006 D007 D008 D009 D010 D011 D038	Ignitability Corrosivity Reactivity Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver Pyridine	N/A N/A N/A 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0 5.0

Refer to footnotes at end of table.

Table 3c-1 (Continued)

Descriptions of Hazardous Waste at Los Alamos National Laboratory

Waste Description[a]	Waste Generating Process Description[a]	Technical Area (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)
Corrosive liquid wastes (Continued)				F002	Tetrachloroethylene Methylene chloride Trichloroethylene 1,1,1-Trichloroethane Chlorobenzene 1,1,2-Trichloro-1,2,2-trifluoroethane Ortho-dichlorobenzene Trichlorofluoromethane 1,1,2-Trichloroethane	N/A
				F003 F004 F005	Methanol Nitrobenzene Toluene, Methyl ethyl ketone, Carbon disulfide, Isobutanol, Pyridine, Benzene, 2-Ethoxyethanol, 2-Nitropropane	N/A N/A N/A
Solid metals and metallic compounds	Anodizing procedures; machining and cutting operations; superconductivity experimentation; synthesis reactions; grinding operations; electronics repair operations	TA-2, TA-3, TA-9, TA-15, TA-21, TA-33, TA-35, TA-41, TA-43, TA-46, TA-48, TA-51, TA-52, TA-53, TA-54, TA-55, TA-59, TA-60	Acceptable knowledge Sampling and analysis	D001 D003 D004 D005 D006 D007 D008 D009 D010 D011	Ignitability Reactivity Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	N/A N/A 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0

Refer to footnotes at end of table.

Table 3c-1 (Continued)

Descriptions of Hazardous Waste at Los Alamos National Laboratory

Waste Description[a]	Waste Generating Process Description[a]	Technical Area (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)
Contaminated noncorrosive, aqueous and nonaqueous solutions and sludges	Vacuum pump maintenance; spectrometric operations; equipment cleaning and maintenance; cutting operations; sawing operations; electrolytic silver recovery; synthesis reactions; analytical operations; metal removal from biological materials; DNA experimentation; metal polishing operations; vehicle maintenance	TA-3, TA-16, TA-21, TA-34, TA-35, TA-43, TA-46, TA-48, TA-50, TA-53, TA-55, TA-57, TA-59	Acceptable knowledge Sampling and analysis	D001	Ignitability	N/A
				D003	Reactivity	N/A
				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
				D038	Pyridine	5.0
				D040	Trichloroethylene	0.5
				F002	Tetrachloroethylene Methylene chloride Trichloroethylene 1,1,1-Trichloroethane Chlorobenzene 1,1,2-Trichloro-1,2,2-trifluoroethane Ortho-dichlorobenzene Trichlorofluoromethane 1,1,2-Trichloroethane	N/A
				F003	Xylene, Acetone, Ethyl acetate, Ethyl benzene, Ethyl ether, Methyl isobutyl ketone, n-Butyl Alcohol, Cyclohexanone, Methanol	N/A
				F005	Toluene, Methyl ethyl ketone, Carbon disulfide, Isobutanol, Pyridine, Benzene, 2-Ethoxyethanol, 2-Nitropropane	N/A

Refer to footnotes at end of table.

Table 3c-1 (Continued)

Descriptions of Hazardous Waste at Los Alamos National Laboratory

Waste Description[a]	Waste Generating Process Description[a]	Technical Area (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)
Mercury wastes	Lamp removal procedures; mercury spill clean-up; equipment cleaning and maintenance; laboratory operations	TA-0, TA-3, TA-9, TA-21, TA-35, TA-39, TA-43, TA-46, TA-48, TA-50, TA-53, TA-55, TA-59, TA-60	Acceptable knowledge Sampling and analysis Material safety data sheets	D002 D003 D009 U151	Corrosivity Reactivity Mercury Mercury	N/A N/A 0.2 N/A
Used batteries and battery fluids	Equipment maintenance	TA-3, TA-18, TA-21, TA-35, TA-46, TA-48, TA-52, TA-53, TA-55, TA-59, TA-61	Acceptable knowledge Material safety data sheets	D002 D006 D007 D008 D009 D011	Corrosivity Cadmium Chromium Lead Mercury Silver	N/A 1.0 5.0 5.0 0.2 5.0
Unused/ outdated commercial chemical products	Laboratory research, design and development activities, and spills	TA-0, TA-1, TA-2, TA-3, TA-4, TA-8, TA-9, TA-15, TA-16, TA-18, TA-21, TA-22, TA-33, TA-34, TA-35, TA-36, TA-39, TA-40, TA-41, TA-42, TA-43, TA-46, TA-48, TA-50, TA-51, TA-52, TA-53, TA-54, TA-55, TA-57, TA-59, TA-60, TA-61, TA-64	Acceptable knowledge Sampling and analysis Material safety data sheets	D001 D002 D003 D004 to D043 All P- and U-listed codes	Ignitability Corrosivity Reactivity Toxicity characteristic leaching procedure (TCLP) wastes Discarded commercial chemical products and off-specification species	N/A N/A N/A -[c] N/A

Refer to footnotes at end of table.

Table 3c-1 (Continued)

Descriptions of Hazardous Waste at Los Alamos National Laboratory

Waste Description[a]	Waste Generating Process Description[a]	Technical Area (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)
Incinerator wastes	Hazardous waste incineration treatment operations	TA-16, TA-50	Acceptable knowledge Sampling and analysis	D004 D005 D006 D007 D008 D009 D010 D011 All P-, U-, and F-listed codes	Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver Treated discarded commercial chemical products and off-specification species, and spent solvents from non-specific sources	5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0 N/A

[a] Denotes information from the Los Alamos National Laboratory (LANL) Hazardous and Solid Waste Group (ESH-19) Waste Profile Form database. 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 (D004-D043) at a concentration equal to or greater than the respective value given in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart II, Part 261, Subpart D.
[d] Indicates that acceptable knowledge may be used as the basis for the hazardous waste designation. (See Section 3c.3.2 of this waste analysis plan for the criteria for acceptable knowledge.)
[e] Indicates that sampling and analysis may be used to characterize the waste stream.
[f] N/A means not applicable.

Table 3c-2

Parameters, Characterization Methods, and Rationale for Hazardous Waste

Waste Description[a]	Analytical Parameters[b]	Characterization Methods	Rationale
– Spent solvents and contaminated solvent mixtures	– Flash point – pH – Total amenable cyanide/sulfide – Resource Conservation and Recovery Act (RCRA)-regulated metals (see Table 3c-3) – Volatile organic compounds (VOC) (see Table 3c-3) – Semivolatile organic compounds (SVOC) (see Table 3c-3)	– Acceptable knowledge[c] – Sampling and analysis	– Determine characteristic for ignitability, corrosivity, and reactivity – Determine concentration of toxicity characteristic (TC) contaminants – Determine concentration of F-listed solvents
– Contaminated solid wastes	– Capability to cause and sustain a fire – Total amenable cyanide/sulfide – RCRA-regulated metals – VOCs – SVOCs	– Acceptable knowledge	– Determine characteristic for ignitability and reactivity – Determine concentration of TC contaminants – Determine concentration of F-listed solvents
– Paint and paint-related wastes	– Flash point – RCRA-regulated metals – VOCs	– Acceptable knowledge – Sampling and analysis – Material Safety Data Sheets (MSDS)	– Determine characteristic for ignitability – Determine concentration of TC contaminants – Determine concentration of F-listed solvents
– Photographic processing and photocopier wastes	– Flash point – pH – RCRA-regulated metals	– Acceptable knowledge – Sampling and analysis – MSDS	– Determine characteristic for ignitability and corrosivity – Determine concentration of TC contaminants
– Barium-contaminated HE treatment residues	– pH – Total amenable cyanide/sulfide – RCRA-regulated metals – VOCs – SVOCs	– Acceptable knowledge – MSDS	– Determine characteristic for corrosivity and reactivity – Determine concentration of TC contaminants – Determine concentration of F-listed solvents
– Corrosive liquid wastes	– Flash point – pH – Total amenable cyanide/sulfide – RCRA-regulated metals – VOCs – SVOCs	– Acceptable knowledge – Sampling and analysis	– Determine characteristic for ignitability, corrosivity, and reactivity – Determine concentration of TC contaminants – Determine concentration of F-listed solvents

Refer to footnotes at end of table.

Table 3c-2 (Continued)

Parameters, Characterization Methods, and Rationale for Hazardous Waste

Waste Description[a]	Analytical Parameters[b]	Characterization Methods	Rationale
– Solid metals and metallic compounds	– Capability to cause and sustain a fire – Total amenable cyanide/sulfide – RCRA-regulated metals	– Acceptable knowledge – Sampling and analysis	– Determine characteristic for ignitability and reactivity – Determine concentration of TC contaminants
– Contaminated noncorrosive, aqueous and nonaqueous solutions and sludges	– Flash point – Total amenable cyanide/sulfide – RCRA-regulated metals – VOCs – SVOCs	– Acceptable knowledge – Sampling and analysis	– Determine characteristic for ignitability and reactivity – Determine concentration of TC contaminants – Determine concentration of F-listed solvents
– Mercury wastes	– pH – Total amenable cyanide/sulfide – RCRA-regulated metal	– Acceptable knowledge – Sampling and analysis – MSDS	– Determine characteristic for corrosivity and reactivity – Determine concentration of TC contaminants
– Used batteries and battery fluids	– pH – RCRA-regulated metals	– Acceptable knowledge – MSDS	– Determine characteristic for corrosivity – Determine concentration of TC contaminants
– Unused/outdated commercial chemical products	– Flash point – Capability to cause and sustain a fire – pH – Total amenable cyanide/sulfide – RCRA-regulated metals – VOCs – SVOCs	– Acceptable knowledge – Sampling and analysis – MSDS	– Determine characteristic for ignitability, corrosivity, and reactivity – Determine concentration of TC contaminants – Determine presence of P-listed and/or U-listed unused commercial chemical products
– Incinerator wastes	– RCRA-regulated metals – VOCs – SVOCs	– Acceptable knowledge – Sampling and analysis	– Determine concentration of TC contaminants – Determine concentration of treated discarded commercial chemical products and off-specification species, and spent solvents

[a] Information contained in this column is from the Los Alamos National Laboratory (LANL) Hazardous and Solid Waste Group (ESH-19) Waste Profile Form database.

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

According to U.S. Environmental Protection Agency (EPA), 1994b, "Waste Analysis at Facilities that Generate, Treat, Store and Dispose of Hazardous Waste - A Guidance Manual," acceptable knowledge is broadly defined as process knowledge, waste analysis data (e.g., sampling and analysis), and/or facility records of analysis obtained before the effective date of Resource Conservation and Recovery Act regulations.

Table 3c-3

Summary of Waste Characterization Techniques for Hazardous Waste

Parameter[a]	Method Numbers	Test Methods	Rationale
Volatile organic compounds (VOC) in waste: Acetone Benzene Carbon tetrachloride Chlorobenzene Chloroform 1,2-Dichloroethane 1,1-Dichloroethylene F-listed solvents Methyl ethyl ketone Methylene chloride 1,1,1-Trichloroethane Trichloroethylene Tetrachloroethylene Xylene	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 VOC and/or toxicity characteristic leaching procedure (TCLP) VOC analysis by gas chromatography/ mass spectrometry (GC/MS) Acceptable knowledge for heterogeneous wastes	Determine total VOC and/or TCLP VOC concentrations
Semivolatile organic compounds (SVOC) in waste: 1,4-Dichlorobenzene 1-Dinitrotoluene Hexachlorobenzene Hexachlorobutadiene Hexachloroethane Nitrobenzene Pentachlorophenol Pyridine 2,4,6-Trichlorophenol	SW-846 (1311, 8250, 8250A, 8270B)[d], or equivalent methods[e]	Total SVOC and/or TCLP SVOC analysis by GC/MS Acceptable knowledge for heterogeneous wastes	Determine total SVOC and/or TCLP SVOC concentrations
Metals 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 Acceptable knowledge for heterogeneous wastes	Determine total and/or TCLP metals concentrations
Reactive Cyanide Reactive Sulfide	SW-846, Test Method to Determine Hydrogen Cyanide Released from Wastes[e,f] SW-846, Test Method to Determine Hydrogen Sulfide Released from Wastes[e,f] SW-846 (9010A, 9012, 9013)[d] or equivalent methods[e]	Colorimetric or titrametric measurement of hydrogen cyanide and hydrogen sulfide released from waste following reflux distillation under acidic conditions	Determine concentrations of reactive cyanides and sulfides

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Refer to footnotes at end of table.

Table 3c-3 (Continued)

Summary of Waste Characterization Techniques for Hazardous Waste

[a] Information contained in this column is from the Los Alamos National Laboratory (LANL) Hazardous and Solid Waste Group (ESH-19) Waste Profile Form 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.

[c] U.S. Environmental Protection Agency (EPA), 1991, "Soil Sampling and Analysis for Volatile Organic Compounds," *EPA/540/4-9/001*, Office of Research and Development.

[d] U.S. Environmental Protection Agency (EPA), 1992, "Test Methods for Evaluating Solid Waste," Physical/Chemical Methods, *SW-846*, Third Edition, Final Update 1 and Proposed Update II, 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.

[f] SW-846 Sections 7.3.3.2 and 7.3.4.2 contain specialized methods to determine if a cyanide- or sulfide-containing waste exhibits the reactivity characteristic.

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Table 3c-4

Recommended Sample Containers, Preservation Techniques, and Holding Times[a]

Analyte Class and Sample Type	Container	Preservative	Holding Time
Volatile Organics			
Concentrated Waste Samples	4-ounce (oz) (120-milliliter [mL]) wide-mouth glass with Teflon™-lined lid	Cool to 4 degrees Celsius (°C).	14 days
Liquid Samples			
No residual chlorine present	2 x 40-mL vials with Teflon™-lined septum caps	Cool to 4°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™-lined lid, or wide-mouth glass container sealed with a septum.	Cool to 4°C.	14 days
Semivolatile Organics/Organochlorine Pesticides and Herbicides			
Concentrated Waste Samples	4-oz (120-mL) wide-mouth glass with Teflon™-lined lid	None.	Samples must be extracted within 14 days and analyzed within 40 days following extraction.
Soil/Sediments and Sludges	4-oz (120-mL) wide-mouth glass with Teflon™-lined lid	Cool to 4°C.	Samples must be extracted within 14 days and analyzed within 40 days following extraction.

Refer to footnotes at end of table.

Table 3c-4, Continued

Recommended Sample Containers, Preservation Techniques, and Holding Times[a]

Analyte Class and Sample Type	Container	Preservative	Holding Time
Liquid Samples			
No Residual Chlorine Present	1-gallon (gal.), 2 x 0.5-gal., or 4 x 1 liter (L) amber glass container with Teflon™-lined lid	Cool to 4°C.	Samples must be extracted within 7 days and extracts analyzed within 40 days following extraction.
Residual Chlorine Present	1-gal., 2 x 0.5-gal., or 4 x 1-L amber glass container with Teflon™-lined lid	Add 3 mL 10% sodium thiosulfate solution per gallon.[d] Cool to 4°C.	Samples must be extracted within 7 days and extracts analyzed within 40 days following extraction.
Metals (except hexavalent chromium and mercury)			
Liquid Samples			
Total	1-L polyethylene	Add nitric acid to pH of less than 2.	180 days
Chromium VI	500-mL polyethylene	Cool to 4°C.	24 hours
Mercury (Total)	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), 1992b, "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.
[d] Pre-preservation may be performed in the laboratory prior to field use.

Los Alamos
National Laboratory

WASTE PROFILE FORM

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

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

_____
_____
_____
_____
_____
_____
_____

Figure 3c-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
[illegible]-dichlorobenzene	☐ None	☐ < 7.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
[illegible]-Dichloroethane	☐ None	☐ < 0.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
[illegible],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 _____	_____

Figure 3c-1 (Continued)
Waste Profile Form

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	_____	_____
☐ 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		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

Figure 3c-1 (Continued)
Waste Profile Form

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:

DRAFT

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

Figure 3c-1 (Continued)
Waste Profile Form

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.

Figure 3c-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

Los Alamos
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

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Figure 3c-2 (Continued)
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

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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)

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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

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[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)

Document:	**LANL CST Permit Mod**
Revision No.:	**Final Draft**
Date:	**September 29, 1995**

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RCRA Permit Modification Request
Volume II

T

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

F

A

Technical Area 54 West

Building 38; Radioassay and Nondestructive Testing Facility High Bay,
Low Bay, Loading Dock, and Outdoor Container Storage Areas

R

D

Prepared by:
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Los Alamos, New Mexico 87545

September 29, 1995

4.0 DESIGN, OPERATIONS, AND PROCESS INFORMATION

This section presents a brief description of each container storage area (CSA) addressed in this permit modification request as well as an overview of the general operations and process information that are applicable to each of the CSAs. The information provided in this section is submitted to address the applicable container storage requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart IX, 270.15, and 20 NMAC 4.1, Subpart V, Part 264, Subpart I.

In response to the New Mexico Environment Department (NMED)'s December 17, 1993, Notice of Deficiency requiring sampling and chemical/physical analysis of transuranic (TRU) mixed waste, Los Alamos National Laboratory (LANL) submitted a waste analysis plan (WAP) that prescribes a variety of activities intended to supply sufficient waste characterization information for Resource Conservation and Recovery Act (RCRA)-compliant storage. LANL has obtained several pieces of equipment necessary to perform the waste characterization activities included in the WAP.

The Radioassay and Nondestructive Testing (RANT) Facility at Technical Area (TA) 54 West, Building 38 (TA-54-38), is designed for the verification of various types of waste through the use of noninvasive radioassay scanning or monitoring of containers. Originally, the facility was to be operated to certify TRU wastes for shipment to the Waste Isolation Pilot Plant (WIPP). The real-time radiography (RTR) and passive/active neutron (PAN) systems at the facility will be utilized to provide safe on-going waste assay for waste generators throughout LANL as well as to certify the wastes associated with the TRU Waste Inspectable Storage Project. A more detailed description of these processes is provided in Appendix C of this permit modification request.

Characterization Gloveboxes used to visually characterize and segregate heterogeneous waste streams, and Drum Coring Gloveboxes used to obtain core samples from drums containing solidified waste will be stationed and operated within the Waste Characterization, Reduction, and Repackaging Facility (WCRRF) Indoor CSA at TA-50-69 and the TA-50-1, Room 35 CSA. The characterization and sampling activities to be performed in these gloveboxes are not regulated under 20 NMAC 4.1, Subpart V, Part 264. However, siting the gloveboxes within permitted CSAs allows for efficient processing of drums selected for characterization and will assure that before,

during, and after the characterization process, candidate drums will be managed in a manner that is protective of human health and the environment. A detailed description of these gloveboxes and their use is provided in Appendix D of this permit modification request.

TA-50-1, Room 36, and the WCRRF have been selected as sites for removal of external lead shielding from decommissioned, radioactively contaminated gloveboxes. The lead-segregation and recycling activities to be conducted in these areas are not regulated under 20 NMAC 4.1, Subpart V, Part 264. However, it is anticipated that the lead-removal process will take several days for each glovebox. Siting the process within permitted CSAs will assure that before and during the removal process, the gloveboxes will be managed in a manner that is protective of human health and the environment. Detailed information on the lead-removal process is provided in Appendix E of this permit modification request.

4.1 CONTAINER STORAGE AREAS [20 NMAC 4.1, Subpart IX, 270.15; 20 NMAC 4.1, Subpart V, Part 264, Subpart I]

This section provides descriptions of the CSAs at TA-50 and TA-54 West. The CSAs addressed in this permit modification request include the TA-50-1, Rooms 35, 36, and 38/38A CSAs; the WCRRF Indoor and Outdoor CSAs at TA-50-69; and the RANT Facility Low Bay, High Bay, Loading Dock, and Outdoor CSAs at TA-54-38. Each description includes the location, the physical parameters, the materials of construction, the basic design features, and the maximum storage capacity of each CSA. In addition, for areas that will store wastes that may contain free liquids, information is provided on the design and capacity of the secondary containment system for that particular CSA. Engineering drawings (Figures 4-1 through 4-5) are provided for each CSA included in this permit modification request.

4.1.1 TA-50-1 Room 35 Container Storage Area

The TA-50-1 Room 35 CSA will be located in the basement of the southern portion of Building 1, the Radioactive Liquid Waste Treatment Facility (RLWTF). The RLWTF was built in 1963. TA-50-1 also houses analytical chemistry laboratories and LANL's Decontamination Facility. The Decontamination Facility at TA-50 is located in Areas G and H of Building 1, and include Rooms 34B, 35, 36, 38/38A, 41, 42, 46, and 49.

The Room 35 CSA consists of Room 35, which measures approximately 20 feet wide and 40 feet long (Figure 4-1). The long dimension is oriented north-south. The walls are painted concrete

block. There are no floor drains in Room 35, and there is no noticeable slope to the floor. The floor is concrete overlain with waxed linoleum tile. In the past, Room 35 has been used for routine decontamination of miscellaneous equipment. Therefore, permanent equipment and fixtures not associated with the CSA are located there and include laboratory hoods, cabinets, and a wire security cage.

The storage capacity for the Room 35 CSA is 250 gallons, or approximately four 55-gallon drums and one 30-gallon drum. Wastes to be stored in the Room 35 CSA include TRU waste, TRU mixed waste, low-level waste, low-level mixed waste, and hazardous waste. Candidate drums for storage may include wastes that consist of solid physical forms and wastes that are either suspected or known to contain free liquids. Further information on the wastes that may be stored in the Room 35 CSA is provided in Tables 3a-1, 3b-1, and 3c-1.

Waste containers to be stored in the Room 35 CSA will include drums of various sizes. No cylinders containing waste gases will be stored in this CSA. Detailed information regarding different container types used at LANL is provided in Section 4.2.1. To facilitate container movement, storage, and inspection, all drums holding wastes that do not contain free liquids will be stored either on wooden pallets or dollies. Containers holding suspect or known liquids will be stored on self-containment pallets. Pallets also provide protection from potential contact with liquids that could be introduced through fire suppression activities. Together, these waste management practices and design considerations satisfy the requirements of 20 NMAC 4.1, Subpart IX, 270.15(b)(2), and 20 NMAC 4.1, Subpart V, 264.175(c).

Pursuant to the requirements of 20 NMAC 4.1, Subpart IX, 270.15(b)(1), information contained in LANL's waste databases will be used initially to verify the absence of free liquids in containers. In addition, some containers received at the Room 35 CSA will have been characterized with real-time radiography (RTR) to verify the presence or absence of free liquids within the container.

Containers holding suspect or known free liquids will be stored on self-containment pallets. The self-containment pallets will be constructed of impervious, corrosion-resistant materials compatible with the wastes and will have the capacity to contain at least 10 percent of the total volume of the potential liquid-bearing containers or the volume of the largest potential liquid-bearing container, whichever is greater. Containers will be placed on grates within these pallets to

prevent contact with potentially accumulated liquids. Because the Room 35 CSA is indoors, run-on into the self-containment systems is not likely to occur. Positive surface drainage will direct potential run-on away from TA-50-1. Map 2 of the TA-50 and TA-54 West Part A permit application, submitted with this permit modification request but as a separate document, shows the contours and surface drainage around TA-50-1. In addition, self-containment pallets are elevated by design. Any accumulated liquids in the self-containment pallet will be removed as soon as possible to prevent overflow. Together, the design and operation of the self-containment pallets will meet the requirements of 20 NMAC 4.1, Subpart V, 264.175(b), and 20 NMAC 4.1, Subpart IX, 270.15(a)(1)-(a)(4).

To meet the requirements of 20 NMAC 4.1, Subpart IX, 270.15(a)(5), any liquids accumulated within the self-containment pallets will be removed as soon as possible to prevent overflow and will be analyzed. Depending upon the volume of the accumulated liquid, a high-efficiency particulate air (HEPA) vacuum, a portable pump, universal sorbents, and/or other methods suitable for retrieval will be used to remove the liquid for subsequent sampling and analysis.

The collected liquids and/or sorbents will be transferred to compatible containers and sampled for the constituents known to be present in the waste or for the parameters listed in Table 7-3, as appropriate. These containers will be stored temporarily at TA-50 in Building 114 pending analytical results, which will determine how the wastes will be managed.

If a sample represents a spill, the sample will be analyzed for the hazardous waste constituents known to be components of the source. In the unlikely event that a spill source cannot be identified, the sample will be analyzed for all the hazardous waste constituents listed in Table 7-3. If the liquids in the self-containment pallets are not a result of a spill (e.g., water generated during fire suppression activities), samples will be analyzed for the potential constituents listed in Table 7-3, as applicable.

All applicable requirements for the storage of ignitable, reactive, incompatible, and certain F-listed wastes will be met at the Room 35 CSA as follows. When ignitable or reactive wastes are stored in the Room 35 CSA, they will be located at least 50 feet from the facility's property line as shown on Map 2 of the TA-50 and TA-54 West Part A permit application. Incompatible wastes, if stored, will be segregated during storage using self-containment pallets. Pursuant to the requirements

of 20 NMAC 4.1, Subpart V, 264.177(a) and (b), no incompatible wastes will be mixed, and no waste will be placed in a container that previously held an incompatible waste. No wastes carrying the U.S. Environmental Protection Agency (EPA) Hazardous Waste Numbers F020, F021, F022, F023, F026, or F027 will be stored in the Room 35 CSA. Therefore, the requirements of 20 NMAC 4.1, Subpart V, 264.175(d) are not applicable.

4.1.2 TA-50-1 Room 36 Container Storage Area

The TA-50-1 Room 36 CSA will be located in the basement of the southern portion of Building 1, just east of Room 35. The Room 36 CSA consists of Room 36, which measures approximately 20 feet wide and 32 feet long (Figure 4-1). The long dimension is oriented east-west. The walls are painted concrete block. The floor is concrete and painted with an epoxy paint. The Room 36 floor slopes gently toward two recessed cadaver tanks and a central floor drain, which are both connected to the RLWTF. Room 36 is elevated slightly above Rooms 35 and 38/38A, and there is a slight ramp up to the threshold of the door separating Room 36 from Rooms 38 and 38A. The Room 36 CSA was originally designed as a cadaver room to decontaminate casualties of nuclear criticality accidents. Therefore, permanent equipment and fixtures not associated with the CSA are located there and include the two recessed cadaver tanks and an autopsy table. In 1990, a permanent glovebox was installed for the decontamination of precious metals.

The storage capacity for the Room 36 CSA is 15 cubic yards. The only waste type to be stored in this CSA will be lead, either containerized in drums or fiberglass-reinforced plywood (FRP) boxes, or in the form of lead-lined gloveboxes of various sizes. Containers holding non-RCRA-regulated low-level waste will also be stored in the Room 36 CSA. Prior to lead removal, the gloveboxes may be stored in FRP boxes. Candidate gloveboxes for storage may be TRU mixed waste, low-level mixed waste, or hazardous waste. Further information on the waste that may be stored in the Room 36 CSA is provided in Tables 3a-1, 3b-1, and 3c-1.

Only waste that does not contain free liquids will be stored in the Room 36 CSA. Therefore, the requirements of 20 NMAC 4.1, Subpart IX, 270.15(b), and 20 NMAC 4.1, Subpart V, 264.175(b), are not applicable.

Pursuant to the requirements of 20 NMAC 4.1, Subpart IX, 270.15(b)(1), the following information is provided to demonstrate that the wastes stored in the Room 36 CSA consist of solid physical

forms only. The FRP boxes that hold the gloveboxes will not contain any free liquids. In the event any free liquids were discovered during past inspections, they would have been removed from the FRP boxes at TA-54, Area G, or elsewhere, prior to any transport and continued storage. Glovebox-containing FRP boxes that have poor structural integrity are overpacked at TA-54, Area G, in metal containers to facilitate safe transport and storage. FRP boxes will be disassembled in the Room 36 CSA after transport.

Both the FRP boxes and the enclosed portion of all gloveboxes are elevated by design. Pallets will be used to store waste drums. Therefore, in accordance with 20 NMAC 4.1, Subpart V, 264.175(c), and 20 NMAC 4.1, Subpart IX, 270.15(b)(2), the containers will be kept from contact with standing liquids that could be introduced via fire suppression activities.

To meet the requirements of 20 NMAC 4.1, Subpart IX, 270.15(a)(5), any liquids accumulated within the Room 36 CSA (e.g., water generated during fire suppression activities) will be removed as soon as possible to prevent overflow and analyzed. Depending upon the volume of the accumulated liquid, a HEPA vacuum, a portable pump, universal sorbents, and/or other methods suitable for retrieval will be used to remove the liquid for subsequent sampling and analysis. The collected liquids and/or sorbents will be transferred to compatible containers and will be sampled for the parameters listed in Table 7-3, as appropriate. These containers will be stored temporarily at TA-50 in Building 114 pending analytical results, which will determine how the wastes will be managed.

No ignitable, reactive, or incompatible wastes will be stored in this CSA. Therefore, the requirements of 20 NMAC 4.1, Subpart IX, 270.15(c) and (d); 20 NMAC 4.1, Subpart V, 264.176; and 20 NMAC 4.1, Subpart V, 264.177, are not applicable. Only solid wastes will be stored in the Room 36 CSA. Therefore, the requirements of 20 NMAC 4.1, Subpart IX, 270.15(e), and 20 NMAC 4.1, Subpart V, 264.175(b) are not applicable. No wastes carrying EPA Hazardous Waste Numbers F020, F021, F022, F023, F026, or F027 will be stored in the Room 36 CSA. Therefore, the requirements of 20 NMAC 4.1, Subpart V, 264.175(d), are not applicable.

4.1.3 TA-50-1 Room 38/38A Container Storage Area

The TA-50-1 Room 38/38A CSA will be located in the basement of the southern portion of Building 1, just south of Room 36. The Room 38/38A CSA opens into Room 36. The

Room 38/38A CSA consists of Rooms 38 and 38A, which together measure approximately 10 feet wide and 24 feet long (Figure 4-1). The long dimension is oriented east-west. Room 38/38A is slightly lower in comparison to Room 36. There is a slight upward ramp to the threshold of the door separating Room 38/38A from Room 36. The walls of Room 38/38A are cast-in-place concrete and painted. The floor is concrete and painted with an epoxy paint. A blind sump measuring 33 inches by 39 inches is located roughly in the center of Room 38. The sump has been locked out and epoxy painted. There is no noticeable slope in Room 38/38A. Room 38/38A was originally designed as a hot cell to decontaminate highly contaminated equipment using manipulator arms. Equipment and other items were placed on a cart and isolated in Room 38A, where the decontamination took place. Therefore, permanent structures and equipment not associated with the Room 38/38A CSA but located in Room 38/38A include iron rails used to transport the equipment cart, manipulator arms, an overhead crane, and permanent shelving.

The storage capacity for the Room 38/38A CSA is 750 gallons, or approximately fourteen 55-gallon drums. Wastes to be stored in the Room 38/38A CSA include TRU waste, TRU mixed waste, low-level waste, low-level mixed waste, and hazardous waste. Candidate containers for storage may include wastes that consist of solid physical forms and wastes that are either suspected or known to contain free liquids. Further information on the wastes that may be stored in the Room 38/38A CSA is provided in Tables 3a-1, 3b-1, and 3c-1.

Waste containers to be stored in the Room 38/38A CSA will include drums of various sizes and standard waste boxes (SWB). In addition, 1-foot by 1-foot by 2-foot cardboard boxes holding non-RCRA-regulated low-level waste are stored in this area. No cylinders containing waste gases will be stored in the Room 38/38A CSA. Detailed information regarding the different container types used at LANL is provided in Section 4.2.1. To facilitate container movement, storage, and inspection, all drums that do not contain free liquids will be stored either on wooden pallets or dollies. SWBs are elevated by design. Pallets and elevated SWBs will provide protection from potential contact with liquids that could be introduced through fire suppression activities. Together, these waste management practices and design considerations will satisfy the requirements of 20 NMAC 4.1, Subpart IX, 270.15(b)(2), and 20 NMAC 4.1, Subpart V, 264.175(c).

Pursuant to the requirements of 20 NMAC 4.1, Subpart IX, 270.15(b)(1), information contained in LANL's waste databases will be used initially to verify the absence of free liquids. In addition, some containers received at the Room 38/38A CSA will have been characterized at the RANT Facility using RTR to verify the absence of free liquids within the container.

Containers holding suspect or known free liquids will be stored on self-containment pallets. The self-containment pallets will be constructed of impervious, corrosion-resistant materials compatible with the wastes and will have the capacity to contain at least 10 percent of the volume of the potential liquid-bearing containers or the volume of the largest potential liquid-bearing container, whichever is greater. Containers will be placed on grates within these pallets to prevent contact with potentially accumulated liquids. Because the Room 38/38A CSA is indoors, run-on into the self-containment systems is not likely to occur. In addition, self-containment pallets are elevated by design. Positive surface drainage will direct potential run-on away from TA-50-1. Map 2 of the TA-50 and TA-54 West Part A permit application shows the contours and surface drainage around TA-50-1. Any precipitation potentially conveyed into the CSA by the equipment cart rails will be contained within the blind sump and removed upon discovery when routine inspections are conducted. Any accumulated liquids in the self-containment pallets will be removed as soon as possible to prevent overflow. Together, the design and operation of the self-containment pallets will meet the requirements of 20 NMAC 4.1, Subpart V, 264.175(b), and 20 NMAC 4.1, Subpart IX, 270.15(a)(1)-(a)(4).

To meet the requirements of 20 NMAC 4.1, Subpart IX, 270.15(a)(5), any liquids accumulated in the self-containment pallets will be removed as soon as possible to prevent overflow and will be analyzed. Depending upon the volume of the accumulated liquid, a HEPA vacuum, a portable pump, universal sorbents, and/or other methods suitable for retrieval will be used to remove the liquid for subsequent sampling and analysis. The collected liquids and/or sorbents will be transferred to compatible containers and will be sampled for the constituents known to be present in the waste or for the parameters listed in Table 7-3, as appropriate. These containers will be stored temporarily at TA-50 in Building 114 pending analytical results, which will determine how the wastes will be managed.

If a sample represents a spill, the sample will be analyzed for the hazardous waste constituents known to be components of the source. In the unlikely event that a spill source cannot be

identified, the sample will be analyzed for all the hazardous waste constituents listed in Table 7-3. If the liquids in the self-containment pallets are not a result of a spill (e.g., water generated during fire suppression activities), samples will be analyzed for the potential constituents listed in Table 7-3, as applicable.

All applicable requirements for the storage of ignitable, reactive, incompatible, and certain F-listed wastes will be met at the Room 38/38A CSA as follows. When ignitable or reactive wastes are stored in the Room 38/38A CSA, they will be located at least 50 feet from the facility's property line as shown on Map 2 of the TA-50 and TA-54 West Part A permit application. Incompatible wastes, if stored, will be segregated during storage using self-containment pallets. Pursuant to the requirements of 20 NMAC 4.1, Subpart V, 264.177(a) and (b), no incompatible wastes will be mixed, and no waste will be placed in a container that previously held an incompatible waste. No wastes carrying EPA Hazardous Waste Numbers F020, F021, F022, F023, F026, or F027 will be stored in the Room 38/38A CSA. Therefore, the requirements of 20 NMAC 4.1, Subpart V, 264.175(d), are not applicable.

4.1.4 TA-50-69 WCRRF Indoor Container Storage Area

The TA-50-69 WCRRF Indoor CSA is located inside TA-50-69, which is in the southwest quadrant of TA-50. When constructed in 1979, the primary mission of the WCRRF (formerly the Size Reduction Facility) was to cut apart large metallic items such as gloveboxes and other process equipment that were TRU contaminated and repackage them into standard-sized containers amenable to disposal at the WIPP. The facility was first used to size reduce TRU mixed waste in 1982. The original function of the WCRRF has been expanded to include other activities related to hazardous and mixed waste management, such as waste characterization and experimental process demonstration support.

TA-50-69 is a single story building constructed in two phases. The original structure, 45 feet by 52 feet, was built in 1979 to house the main process room (Room 102) and personnel change rooms. An unloading area (Room 103) and a vehicle airlock entrance (Room 104) were added to the building in 1986. The dimensions of the 1986 addition are 20 feet by 36 feet. The longest dimension of the building is now 88 feet, and the building is oriented northwest/southeast. Also added in 1986 was a mezzanine over the western third of the main process room. The exterior walls of TA-50-69 are load bearing and constructed of structural steel framing with a plastic

veneer finish on polystyrene insulation and gypsum wallboard. Interior walls are similarly constructed. The epoxy-painted floor of the building is reinforced concrete slab on compacted fill.

The WCRRF Indoor CSA consists of Rooms 102 and 103 (Figure 4-2). Historically, these rooms have been used to store contaminated gloveboxes and other mixed wastes associated with operations in the facility. There is no physical barrier between Rooms 102 and 103. Room 102, the main process room, measures approximately 45 feet wide and 52 feet long. The long dimension is oriented northwest/southeast. Inside of the main process room is a large glovebox enclosure where size reduction of radioactively contaminated metallic items takes place. The glovebox enclosure measures 15 feet wide, 30 feet long, and 10 feet high. It is constructed of type 304 stainless steel with a high-polish finish. It was originally assembled in four separate modules: an airlock module, a disassembly module, a cutting module, and a packaging/bagout module. The modules are bolted together and seal welded. Although assembled as four modules, the structure is a single continuous volume, entirely self contained, and meets all the requirements for containment of free liquids. The glovebox enclosure was leak tested prior to use. A floor drain is located near the glovebox enclosure and is connected directly to the RLWTF. As a precaution, the floor drain grate is replaced by a metal plate and rubber gasket whenever waste containers that are known or suspected to contain free liquids are managed at the WCRRF Indoor CSA.

A steel mezzanine added to the western third of the main process room is used for storage of materials and equipment. The mezzanine is not part of the WCRRF Indoor CSA. Other equipment not associated with the WCRRF Indoor CSA but located inside Room 102 include various small shop machinery and welding equipment, the power supply for the glovebox enclosure cutting torch, and personnel radiation monitors.

Room 103, the unloading area, measures approximately 18 feet wide and 19 feet long. It is located adjacent to and just southeast of Room 102. A 12-foot by 20-foot roll-up vehicle access door is located at the southernmost end of Room 103, separating the unloading area (Room 103) from the vehicle airlock entrance (Room 104). This configuration allows for unobstructed transport of oversized FRP boxes from outside the facility, through the vehicle airlock entrance, into the unloading area, and into the glovebox cutting enclosure. A floor drain is located in the

eastern part of Room 103. The drain is plumbed directly to the RLWTF. As a precaution, the floor drain grate is replaced by a metal plate and rubber gasket whenever waste containers that are known or suspected to contain free liquids are managed at the WCRRF Indoor CSA. Equipment located inside Room 103 but not associated with the container storage area include a chemical decontamination fume hood, a flexible welding fume hood, a continuous feed welding system, and a Heliarc welding system. Room 104 is not part of the WCRRF Indoor CSA.

The storage capacity for the WCRRF Indoor CSA is 1,500 gallons, or approximately 27 55-gallon drums. Wastes to be stored in WCRRF Indoor CSA include TRU waste, TRU mixed waste, low-level waste, low-level mixed waste, and hazardous waste. Wastes that consist of solid physical forms and wastes that are either suspected or known to contain free liquids are stored at this CSA. Further information on the wastes that may be stored in the WCRRF Indoor CSA is provided in Tables 3a-1, 3b-1, and 3c-1.

Waste containers stored in the WCRRF Indoor CSA include drums of various sizes, FRP boxes, SWBs, steel B25 boxes, and other irregular containers. No cylinders containing waste gases are stored at this CSA. Detailed information regarding different container types used at LANL is provided in Section 4.2.1. To facilitate container movement, storage, and inspection, all drums and irregular containers that do not contain free liquids are stored either on wooden pallets or dollies. Drums holding suspect or known liquids are stored on self-containment pallets. SWBs, FRP boxes, and B25 boxes are elevated by design. Pallets and elevated package design provide protection from potential contact with liquids that could be introduced through fire suppression activities. Together, these waste management practices and design considerations satisfy the requirements of 20 NMAC 4.1, Subpart IX, 270.15(b)(2), and 20 NMAC 4.1, Subpart V, 264.175(c).

In accordance with 20 NMAC 4.1, Subpart IX, 270.15(b)(1), information contained in LANL's waste databases is used initially to verify the absence of free liquids in containers. In addition, some containers received at the WCRRF Indoor CSA will have been characterized at the RANT Facility using RTR to verify the absence of free liquids within the container.

Pursuant to the requirements of 20 NMAC 4.1, Subpart IX, 270.15(b)(1), the following information is provided to demonstrate that the FRP boxes stored in the WCRRF Indoor CSA consist of solid

physical forms only. The FRP boxes that hold the gloveboxes do not contain any free liquids. In the event any free liquids were discovered during past inspections, they would have been removed from the FRP boxes at TA-54, Area G, or elsewhere, prior to any transport and continued storage. All glovebox-containing FRP boxes that have poor structural integrity are overpacked in metal containers to facilitate safe transport and storage.

Containers holding suspect or known free liquids are stored either on self-containment pallets or inside the glovebox enclosure. The self-containment pallets are constructed of impervious, corrosion-resistant materials compatible with the wastes and have the capacity to contain at least 10 percent of the volume of the potential liquid-bearing containers or the volume of the largest potential liquid-bearing container, whichever is greater. Containers are placed on grates within these pallets to prevent contact with potentially accumulated liquids in the containment system. Any accumulated liquids in the self-containment pallet is removed as soon as possible to prevent overflow. Run-on into the self-containment systems will be prevented because they are elevated by design and storage will occur inside Rooms 102 and 103. In addition, positive surface drainage will direct run-on away from TA-50-69. Map 2 of the TA-50 and TA-54 West Part A permit application shows the contours and surface drainage around TA-50-69.

The glovebox enclosure is airtight and provides a containment system that meets the requirements of 20 NMAC 4.1, Subpart V, 264.175(b). The glovebox enclosure is designed with sufficient secondary containment capacity to contain at least 10 percent of the volume of the potential liquid-bearing containers or the volume of the largest potential liquid-bearing container, whichever is greater. Containers inside the glovebox enclosure are elevated to prevent contact with potentially accumulated liquid. Any accumulated liquid in the glovebox enclosure is removed as soon as possible to prevent overflow. Together, the design and operation of the self-containment pallets and glovebox enclosure meet the requirements of 20 NMAC 4.1, Subpart V, 264.175(b), and 20 NMAC 4.1, Subpart IX, 270.15(a)(1)-(a)(4).

To meet the requirements of 20 NMAC 4.1, Subpart IX, 270.15(a)(5), any liquids accumulated within the self-containment pallets or within the glovebox enclosure will be removed as soon as possible to prevent overflow. Depending upon the volume of the accumulated liquid, a HEPA vacuum, a portable pump, universal sorbents, and/or other methods suitable for retrieval are used to remove the liquid for subsequent sampling and analysis. The collected liquids and/or sorbents

are transferred to compatible containers and sampled for the constituents known to be present in the waste or for the parameters listed in Table 7-3, as appropriate. These containers are stored temporarily at TA-50 in the WCRRF Indoor or Outdoor CSA (see Section 4.1.5) pending analytical results, which determine how the wastes are managed.

If a sample represents a spill, the sample is analyzed for the hazardous waste constituents known to be components of the source. In the unlikely event that a spill source cannot be identified, the sample is analyzed for all the hazardous waste constituents listed in Table 7-3. If the liquids in the self-containment pallets are not a result of a spill (e.g., water generated during fire suppression activities), samples are analyzed for the potential constituents listed in Table 7-3, as applicable.

All applicable requirements for the storage of ignitable, reactive, incompatible, and certain F-listed wastes are and will be met at the WCRRF Indoor CSA. When ignitable or reactive wastes are stored in the WCRRF Indoor CSA, they are located at least 50 feet from the facility's property line as shown on Map 2 of the TA-50 and TA-54 West Part A permit application. Incompatible wastes, when stored, are segregated during storage by using self-containment pallets. Pursuant to the requirements of 20 NMAC 4.1, Subpart V, 264.177(a) and (b), no incompatible wastes are mixed, and no waste is or will be placed in a container that previously held an incompatible waste. No wastes carrying EPA Hazardous Waste Numbers F020, F021, F022, F023, F026, or F027 are or will be stored in the WCRRF Indoor CSA. Therefore, the requirements of 20 NMAC 4.1, Subpart V, 264.175(d), are not applicable.

4.1.5 TA-50-69 WCRRF Outdoor Container Storage Area

The TA-50-69 WCRRF Outdoor CSA is located in the southwest corner of TA-50, just north of Material Disposal Area (MDA) C and approximately 30 feet from the southwest corner of TA-50-69. The WCRRF Outdoor CSA (Figure 4-3) measures 24 feet wide and 90 feet long and is constructed of asphaltic concrete, not lined or coated, to a thickness of approximately 4 inches. The long dimension of this CSA is oriented east/southeast. The pad slopes gently (approximately 1 to 5 percent) from west to east and up to 2.5 percent toward the center line. It was constructed prior to 1980 and first used to store mixed waste in 1982. Transportainers are utilized within the WCRRF Outdoor CSA to provide weather protection for containers of various sizes. Detailed information regarding standard transportainers is provided in Appendix F. Four monuments have

been surveyed demarking the four corners of the WCRRF Outdoor CSA, and a rope barrier is used to visually delineate its boundary.

The storage capacity for the WCRRF Outdoor CSA is 30,000 gallons, or roughly 545 55-gallon drums. Wastes stored in the WCRRF Outdoor CSA include TRU waste, TRU mixed waste, low-level waste, low-level mixed waste, and hazardous waste. Wastes that consist of solid physical forms and wastes that are either suspected or known to contain free liquids are stored here. Further information on the wastes stored in the WCRRF Outdoor CSA is provided in Tables 3a-1, 3b-1, and 3c-1.

Waste containers stored in the WCRRF Outdoor CSA include drums of various sizes, FRP boxes, SWBs, B25 boxes, and other irregular containers. No cylinders containing waste gases are stored in this CSA. Detailed information regarding the different container types used at LANL is provided in Section 4.2.1. To facilitate container movement, storage, and inspection, all drums and irregular containers holding wastes that do not contain free liquids are stored either on wooden pallets or dollies. Drums holding suspect or known liquids are stored on self-containment pallets. SWBs, FRP boxes, and B25 boxes are elevated by design. Pallets and elevated design of SWBs, FRP boxes, and B25 boxes provide protection from potential contact with accumulated liquid resulting from any storm event. Together, these waste management practices and design considerations satisfy the requirements of 20 NMAC 4.1, Subpart IX, 270.15(b)(2), and 20 NMAC 4.1, Subpart V, 264.175(c).

In accordance with 20 NMAC 4.1, Subpart IX, 270.15(b)(1), information contained in LANL's waste databases is used initially to verify the absence of free liquids in containers. In addition, some containers received at the WCRRF Outdoor CSA will have been characterized with RTR to verify the presence or absence of free liquids within the container.

Pursuant to the requirements of 20 NMAC 4.1, Subpart IX, 270.15(b)(1), the following information is provided to demonstrate that the FRP boxes stored in the WCRRF Outdoor CSA consist of solid physical forms only. The FRP boxes that hold the gloveboxes do not contain any free liquids. In the event any free liquids were discovered during past inspections, they would have been removed from the FRP boxes at TA-54, Area G, or elsewhere, prior to any transport or

continued storage. All glovebox-containing FRP boxes that have poor structural integrity are overpacked in metal containers to facilitate safe transport and storage.

Containers holding suspect or known free liquids will be stored on self-containment pallets. The self-containment pallets are constructed of impervious, corrosion-resistant materials compatible with the wastes and have the capacity to contain at least 10 percent of the volume of the potential liquid-bearing containers or the volume of the largest potential liquid-bearing container, whichever is greater. Containers are placed on grates within these pallets to prevent contact with potentially accumulated liquids.

Run-on into the self-containment systems is prevented because they are elevated by design. The WCRRF Outdoor CSA is sloped sufficiently to prevent the accumulation of precipitation. Map 2 of the TA-50 and TA-54 West Part A permit application shows the contours and surface drainage around TA-50-69. In addition, drainage swales located in the vicinity divert stormwater away from the CSA. One drainage swale is located just south of the WCRRF Outdoor CSA, between the CSA and MDA C. A second drainage swale is located on the west side of the WCRRF Outdoor CSA, between Pecos Drive and the TA-50 fenceline. Any accumulated liquids in the self-containment pallet are removed as soon as possible to prevent overflow. Together, the design and operation of the self-containment pallet system meet the requirements of 20 NMAC 4.1, Subpart V, 264.175(b), and 20 NMAC 4.1, Subpart IX, 270.15(a)(1)-(a)(4).

To meet the requirements of 20 NMAC 4.1, Subpart IX, 270.15(a)(5), any liquids accumulated within the self-containment pallets are removed and analyzed. Depending upon the volume of the accumulated liquid, a HEPA vacuum, a portable pump, universal sorbents, and/or other methods suitable for retrieval are used to remove the liquid for subsequent sampling and analysis. The collected liquids and/or sorbents are transferred to compatible containers and sampled for the constituents known to be present in the waste or for the parameters listed in Table 7-3, as appropriate. These containers are stored temporarily at either the WCRRF Indoor or Outdoor CSA pending the analytical results, which determine how the wastes are managed.

If a sample represents a spill, the sample is analyzed for the hazardous waste constituents known to be components of the source. In the unlikely event that a spill source cannot be identified, the sample is analyzed for all the hazardous waste constituents listed in Table 7-3.

All applicable requirements for the storage of ignitable, reactive, incompatible, and certain F-listed wastes are and will be met at the WCRRF Outdoor CSA. When ignitable or reactive wastes are stored in the WCRRF Outdoor CSA, they are located at least 50 feet from the facility's property line as shown on Map 2 of the TA-50 and TA-54 West Part A permit application. Incompatible wastes, when stored, are segregated during storage by using self-containment pallets. Pursuant to the requirements of 20 NMAC 4.1, Subpart V, 264.177(a) and (b), no incompatible wastes are mixed, and no wastes are placed in a container that previously held an incompatible waste. No wastes carrying EPA Hazardous Waste Numbers F020, F021, F022, F023, F026, or F027 are stored in the WCRRF Outdoor CSA. Therefore, the requirements of 20 NMAC 4.1, Subpart V, 264.175(d), are not applicable.

4.1.6 TA-54-38 RANT Facility Low Bay Container Storage Area

The TA-54-38 RANT Facility Low Bay CSA will be located inside TA-54-38 at TA-54 West, which is at the extreme west end of TA-54. The primary mission of the RANT Facility was to receive, certify, and ship TRU wastes to the WIPP. The square structure, built in 1987, is constructed with 36-foot-high pre-cast concrete panel walls topped by pre-stressed double-T concrete roof sections. A concrete panel wall divides the building interior into northern and southern compartments; the low bay occupies the northern compartment, and the high bay occupies the southern compartment (Figure 4-4).

The floor of the low bay and the high bay is 6-inch reinforced concrete slab on compacted fill. The low bay walls and concrete floor have been coated with industrial grade enamel paint. The dimensions of the low bay are approximately 40 feet by 34 feet. The long dimension is oriented north-south. Offices and restroom facilities are located on a mezzanine at the west end of the low bay. An 8-foot by 12-foot roll-up door at the east end of the low bay opens to a 16-foot by 40-foot outdoor loading dock. Another 8-foot by 12-foot roll-up door, located in the southeast corner of the low bay, opens up into the high bay. Permanent equipment and fixtures not associated with the Low Bay CSA but located in the low bay include a PAN assay system, an industrial x-ray unit, an airport x-ray system, and a security cage.

The RANT Facility Low Bay CSA will be located along the north side of the center wall, next to the security cage. Its dimensions are 11 feet by 11 feet. The Low Bay CSA boundary will be delineated with a yellow painted line on the floor.

The storage capacity for the Low Bay CSA is 880 gallons, or sixteen 55-gallon drums. Wastes to be stored in the Low Bay CSA will include TRU waste, TRU mixed waste, low-level waste, low-level mixed waste, and hazardous waste. Candidate containers for storage may include DELETED wastes that consist of solid physical forms and wastes that are either suspected or known to contain free liquids. Further information on the wastes that may be stored in the Low Bay CSA is provided in Tables 3a-1, 3b-1, and 3c-1.

Waste containers stored in the Low Bay CSA will include drums of various sizes. No cylinders containing waste gases will be stored in this CSA. Detailed information regarding the different container types used at LANL is provided in Section 4.2.1. All drums holding wastes that do not contain free liquids will be stored on wooden pallets or dollies. Drums holding suspect or known liquids are stored on self-containment pallets. Pallets provide protection from potential contact with liquids that could be introduced through fire suppression activities. Together, these waste management practices and design considerations satisfy the requirements of 20 NMAC 4.1, Subpart IX, 270.15(b)(2), and 20 NMAC 4.1, Subpart V, 264.175(c).

In accordance with 20 NMAC 4.1, Subpart IX, 270.15(b)(1), information contained in LANL's waste databases will be used to verify the absence of free liquids in containers. Once container contents have been verified using RTR, the containers will be managed accordingly.

Any containers holding suspect or known free liquids will be stored on self-containment pallets. The self-containment pallets will be constructed of impervious, corrosion-resistant materials compatible with the wastes and will have the capacity to contain at least 10 percent of the total volume of the potential liquid-bearing containers, or the volume of the largest potential liquid-bearing container, whichever is greater. Containers will be placed on grates within these pallets to prevent contact with potentially accumulated liquids. The Low Bay CSA has no noticeable slope. Because the Low Bay CSA is indoors, run-on into the self-containment systems is not likely to occur. In addition, self-containment pallets are elevated by design. Positive drainage will direct run-on away from TA-54-38. Map 2 of the TA-50 and TA-54 West Part A permit application shows the contours and surface drainage around TA-54-38. Together, the design and operation of the self-containment pallets meet the requirements of 20 NMAC 4.1, Subpart V, 264.175(b), and 20 NMAC 4.1, Subpart IX, 270.15(a)(1)-(a)(4).

To meet the requirements of 20 NMAC 4.1, Subpart IX, 270.15(a)(5), any liquids accumulated within the self-containment pallets will be removed as soon as possible to prevent overflow. Depending upon the volume of the accumulated liquid, a HEPA vacuum, a portable pump, universal sorbents, and/or other methods suitable for retrieval will be used to remove the liquid for subsequent sampling and analysis.

The collected liquids and/or sorbents will be transferred to compatible containers and will be sampled for the constituents known to be present in the waste or for the parameters listed in Table 7-3, as appropriate. These containers will be stored temporarily in either the Low Bay CSA or the High Bay CSA pending analytical results, which will determine how the wastes will be managed.

If a sample represents a spill, the sample will be analyzed for the hazardous waste constituents known to be components of the source. In the unlikely event that a spill source cannot be identified, the sample will be analyzed for all the hazardous waste constituents listed in Table 7-3. If the liquids in the self-containment pallets are not a result of a spill (e.g., water generated during fire suppression activities), samples will be analyzed for the potential constituents listed in Table 7-3, as applicable.

All applicable requirements for the storage of ignitable, reactive, incompatible, and certain F-listed wastes will be met at the RANT Facility Low Bay CSA. When ignitable or reactive wastes are stored in the Low Bay CSA, they will be located at least 50 feet from the facility's property line as shown on Map 3 of the TA-50 and TA-54 West Part A permit application. Incompatible wastes, when stored, will be segregated during storage by using self-containment pallets. Pursuant to the requirements of 20 NMAC 4.1, Subpart V, 264.177(a) and (b), no incompatible wastes will be mixed, and no waste will be placed in a container that previously held an incompatible waste. No wastes carrying EPA Hazardous Waste Numbers F020, F021, F022, F023, F026, or F027 will be stored in the Low Bay CSA. Therefore, the requirements of 20 NMAC 4.1, Subpart V, 264.175(d), are not applicable.

4.1.7 TA-54-38 RANT Facility High Bay Container Storage Area

The TA-54-38 RANT Facility High Bay CSA will be located in the southern compartment of TA-54-38 (Figure 4-4). The dimensions of the high bay are 40 feet by 80 feet. The long

dimension is oriented east-west. Originally built for loading TRU waste into TRUPACT-I containers, the high bay is equipped with 14-foot by 18-foot roll-up doors on the east and west ends to allow convenient, indoor loading of tractor-trailers used to transport shipments of waste to the WIPP. Permanent structures and equipment not associated with the High Bay CSA but located in the high bay compartment include a light machine shop in the northeast corner. The high bay floor is unpainted and slopes gently in all directions toward a central trench and sump. The trench is a 5-inch by 6-inch trough that is 50 feet in length. The entire length is covered with a metal grate. The sump is designed to hold precipitation and snow melt from tractor-trailers while they are located inside the building. The sump is locked out and a pipe plug has been installed. Any liquids that accumulate within the sump are pumped out and managed appropriately.

The High Bay CSA will be located along the south side of the center wall and is bounded by the 8-foot by 12-foot roll up door to the east and a personnel access door to the west. Its dimensions are 11 feet wide and 34 feet long.

The storage capacity for the High Bay CSA is 2,200 gallons, or 40 55-gallon drums. Wastes to be stored in the High Bay CSA will include TRU waste, TRU mixed waste, low-level waste, low-level mixed waste, and hazardous waste. Candidate containers for storage may include wastes that consist of solid physical forms and wastes that are either suspected or known to contain free liquids. Further information on the wastes that may be stored in the High Bay CSA is provided in Tables 3a-1, 3b-1, and 3c-1.

Waste containers to be stored in the High Bay CSA include drums of various sizes, FRP boxes, steel SWBs, and B25 boxes. No cylinders containing waste gases will be stored in this CSA. Detailed information regarding the different container types used at LANL is provided in Section 4.2.1. All drums holding wastes that do not contain free liquids will be stored on wooden pallets or dollies. Drums holding suspect or known liquids will be stored on self-containment pallets. SWBs, FRP boxes, and B25 boxes are elevated by design. Pallets and elevated design of SWBs, FRP boxes, and B25 boxes will provide protection from potential contact with liquids that could be introduced through fire suppression activities. Together, these waste management practices and design considerations satisfy the requirements of 20 NMAC 4.1, Subpart IX, 270.15(b)(2), and 20 NMAC 4.1, Subpart V, 264.175(c).

In accordance with 20 NMAC 4.1, Subpart IX, 270.15(b)(1), information contained in LANL's waste databases will be used to verify the absence of free liquids. Once containers have been characterized using RTR, they will be stored accordingly.

Pursuant to the requirements of 20 NMAC 4.1, Subpart IX, 270.15(b)(1), the following information is provided to demonstrate that the FRP boxes stored in the High Bay CSA consist of solid physical forms only. The FRP boxes that hold the gloveboxes will not contain any free liquids. In the event any free liquids were discovered during past inspections, they would have been removed from the FRP boxes at TA-54, Area G, or elsewhere, prior to any transport or continued storage. All glovebox-containing FRP boxes that have poor structural integrity will be overpacked in metal containers to facilitate safe transport and storage.

Any containers holding suspect or known free liquids will be stored on self-containment pallets. The self-containment pallets will be constructed of impervious, corrosion-resistant materials compatible with the wastes and will have the capacity to contain at least 10 percent of the total volume of the potential liquid-bearing containers or the volume of the largest potential liquid-bearing container, whichever is greater. Containers will be placed on grates within these pallets to prevent contact with potentially accumulated liquids. Because the High Bay CSA is indoors, run-on into the self-containment systems is not likely to occur. In addition, self-containment pallets are elevated by design. Positive surface drainage will direct potential run-on away from TA-54-38. Map 3 of the TA-50 and TA-54 West Part A permit application shows the contours and surface drainage around TA-54-38. Together, the design and operation of the self-containment pallets will meet the requirements of 20 NMAC 4.1, Subpart V, 264.175(b), and 20 NMAC 4.1, Subpart IX, 270.15(a)(1)-(a)(4).

To meet the requirements of 20 NMAC 4.1, Subpart IX, 270.15(a)(5), any liquids accumulated within the self-containment pallets will be removed as soon as possible to prevent overflow. Depending upon the volume of the accumulated liquid, a HEPA vacuum, a portable pump, universal sorbents, and/or other methods suitable for retrieval will be used to remove the liquid for subsequent sampling and analysis. The collected liquids and/or sorbents will be transferred to a compatible container and will be sampled for the constituents known to be present in the waste or for the parameters listed in Table 7-3, as appropriate. These containers will be stored

temporarily at either the Low Bay CSA or the High Bay CSA pending analytical results, which will determine how the wastes will be managed.

If a sample represents a spill, the sample will be analyzed for the hazardous waste constituents known to be components of the source. In the unlikely event that a spill source cannot be identified, the sample will be analyzed for all the hazardous waste constituents listed in Table 7-3. If the liquids in the self-containment pallets are not a result of a spill (e.g., water generated during fire suppression activities), samples will be analyzed for the potential constituents listed in Table 7-3, as applicable.

All applicable requirements for the storage of ignitable, reactive, incompatible, and certain F-listed wastes will be met at the RANT Facility High Bay CSA. When ignitable or reactive wastes are stored in the RANT High Bay CSA, they will be located at least 50 feet from the facility's property line as shown on Map 3 of the TA-50 and TA-54W Part A permit application. Incompatible wastes, when stored, are segregated during storage by using self-containment pallets. Pursuant to the requirements of 20 NMAC 4.1, Subpart V, 264.177(a) and (b), no incompatible wastes will be mixed, and no waste will be placed in a container that previously held an incompatible waste. No wastes carrying EPA Hazardous Waste Numbers F020, F021, F022, F023, F026, or F027 will be stored in the High Bay CSA. Therefore, the requirements of 20 NMAC 4.1, Subpart V, 264.175(d), are not applicable.

4.1.8 TA-54-38 RANT Facility Loading Dock Container Storage Area

The TA-54-38 RANT Facility Loading Dock CSA will be located outside TA-54-38, just east of the low bay (Figure 4-4). The dimensions of the TA-54-38 loading dock are 16 feet wide by 38 feet, 10 inches long, with the long dimension oriented north-south. A metal awning covers the loading dock. The platform and ramp are constructed of cast-in-place concrete. The platform, constructed of 6-inch cast-in-place concrete, sits roughly 4 inches above grade. The platform is equipped with a hydraulic dock leveler that spans the distance between the platform edge and the trailer bed, making a landing over which forklifts and other drum-handling equipment can be driven to load and unload waste containers. A 22-foot-wide truck ramp with an 8 percent slope runs perpendicular to the platform. The truck ramp is not considered part of the Loading Dock CSA. At the bottom of the truck ramp is a 38 inch by 38 inch iron grate covering a drainage culvert. The culvert drains stormwater runoff from the building roof and from the eastern and

southern portion of the facility yard. Precipitation is conveyed through the culvert to a stormwater discharge. As a precautionary measure, a sliding gate valve will be closed to seal the culvert whenever potential liquid-bearing waste is loaded or unloaded at the loading dock.

The Loading Dock CSA is divided into two areas of the platform: a 16-foot by 10-foot area on the north end of the loading dock, and a 16-foot by 12-foot area on the south end. The boundary of each side of the Loading Dock CSA will be delineated with yellow painted lines on the cement.

The storage capacity for the Loading Dock CSA is 660 gallons, or twelve 55-gallon drums. Wastes to be stored in the Loading Dock CSA will include TRU waste, TRU mixed waste, low-level waste, low-level mixed waste, and hazardous waste. Candidate containers for storage may include wastes that consist of solid physical forms and wastes that are either suspected or known to contain free liquids. Further information on the wastes that may be stored in the Loading Dock CSA is provided in Tables 3a-1, 3b-1, and 3c-1. DELETED

Waste containers to be stored at the Loading Dock CSA will include drums of various sizes. No cylinders containing waste gases will be stored at the Loading Dock CSA. Detailed information regarding the different container types used at LANL is provided in Section 4.2.1. All drums will be stored on self-containment pallets. Pallets will provide protection from potential contact with liquids that could be introduced through safety shower operation or severe storm events. Together, these waste management practices and design considerations satisfy the requirements of 20 NMAC 4.1, Subpart IX, 270.15(b)(2), and 20 NMAC 4.1, Subpart V, 264.175(c).

All drums, including those known not to contain free liquids, will be stored on self-containment pallets at the Loading Dock CSA. Therefore, the requirements of 20 NMAC 4.1, Subpart IX, 270.15(b)(1), are not applicable. The self-containment pallets will be constructed of impervious, corrosion-resistant materials compatible with the wastes and will have the capacity to contain at least 10 percent of the total volume of the potential liquid-bearing containers or the volume of the largest potential liquid-bearing container, whichever is greater. Containers will be placed on grates within these pallets to prevent contact with potentially accumulated liquids. Run-on into the self-containment systems will be prevented because they are elevated by design. The loading dock is abovegrade and positive surface drainage will direct potential run-on away from TA-54-38. Map 3 of the TA-50 and TA-54 West Part A permit application shows the contours and surface

drainage around TA-54-38. Together, the design and operation of the self-containment pallets will meet the requirements of 20 NMAC 4.1, Subpart V, 264.175(b), and 20 NMAC 4.1, Subpart IX, 270.15(a)(1)-(a)(4).

To meet the requirements of 20 NMAC 4.1, Subpart IX, 270.15(a)(5), any liquids accumulated within the self-containment pallets will be removed and analyzed. Depending upon the volume of the accumulated liquid, a HEPA vacuum, a portable pump, universal sorbents, and/or other methods suitable for retrieval will be used to remove the liquid for subsequent sampling and analysis. The collected liquids and/or sorbents will be transferred to compatible containers and will be sampled for the constituents known to be present in the waste or for the parameters listed in Table 7-3, as appropriate. These containers will be stored temporarily at the Low Bay CSA or the High Bay CSA pending analytical results, which will determine how the wastes will be managed.

If a sample represents a spill, the sample will be analyzed for the hazardous waste constituents known to be components of the source. In the unlikely event that a spill source cannot be identified, the sample will be analyzed for all the hazardous waste constituents listed in Table 7-3.

All applicable requirements for the storage of ignitable, reactive, incompatible, and certain F-listed wastes will be met at the RANT Facility Loading Dock CSA. When ignitable or reactive wastes are stored at the Loading Dock CSA, they will be located at least 50 feet from the facility's property line as shown on Map 3 of the TA-50 and TA-54 West Part A permit application. Incompatible wastes, if stored, will be segregated during storage by using self-containment pallets. Pursuant to the requirements of 20 NMAC 4.1, Subpart V, 264.177(a) and (b), no incompatible wastes will be mixed, and no waste will be placed in a container that previously held an incompatible waste. No wastes carrying EPA Hazardous Waste Numbers F020, F021, F022, F023, F026, or F027 will be stored at the Loading Dock CSA. Therefore, the requirements of 20 NMAC 4.1, Subpart V, 264.175(d), are not applicable.

4.1.9 TA-54-38 RANT Facility Outdoor Container Storage Area

The TA-54-38 RANT Facility Outdoor CSA will be located approximately 18 feet north of Building 38 (Figure 4-5). The Outdoor CSA will measure 40 feet wide and 40 feet long. It will be constructed of asphaltic concrete to a thickness of approximately 4 inches and will slope

approximately 1 to 2 percent to the northeast. Four monuments have been surveyed to mark the proposed location. A yellow stripe will be painted on the asphaltic concrete to clearly delineate the Outdoor CSA boundary.

The storage capacity for the RANT Facility Outdoor CSA is 7,920 gallons, or 144 55-gallon drums. Wastes to be stored in the Outdoor CSA will include TRU waste, TRU mixed waste, low-level waste, low-level mixed waste, and hazardous waste. Wastes that consist of solid physical forms and wastes that are either suspected or known to contain free liquids will be stored at this CSA. Further information on the wastes that may be stored in the Outdoor CSA is provided in Tables 3a-1, 3b-1, and 3c-1. DELETED

Waste containers stored in the RANT Facility Outdoor CSA will include drums of various sizes, SWBs, and steel B25 boxes. No cylinders containing waste gases will be stored at this CSA. Detailed information regarding the different container types used at LANL is provided in Section 4.1.2. All drums will be stored on self-containment pallets. Steel B25 boxes and SWBs are elevated by design to facilitate container movement, storage, and inspection. Pallets and elevated storage will also provide protection from potential contact with accumulated liquid resulting from any storm event. Together, these waste management practices and design considerations will satisfy the requirements of 20 NMAC 4.1, Subpart IX, 270.15(b)(2), and 20 NMAC 4.1, Subpart V, 264.175(c).

All drums, including those known not to contain free liquids, will be stored on self-containment pallets. Therefore, the requirements of 20 NMAC 4.1, Subpart IX, 270.15(b)(1), will not be applicable.

Containers holding suspect or known free liquids will be stored on self-containment pallets. The self-containment pallets will be constructed of impervious, corrosion-resistant materials compatible with the wastes and will have the capacity to contain at least 10 percent of the total volume of the potential liquid-bearing containers or the volume of the largest potential liquid-bearing container, whichever is greater. Containers will be placed on grates within these pallets to prevent contact with potentially accumulated liquids. Run-on into the self-containment systems will be prevented because they are elevated by design. In addition, the Outdoor CSA will be sloped sufficiently to prevent the accumulation of precipitation. Together, the design and

operation of the self-containment system will meet the requirements of 20 NMAC 4.1, Subpart V, 264.175(b), and 20 NMAC 4.1, Subpart IX, 270.15(a)(1)-(a)(4).

To meet the requirements of 20 NMAC 4.1, Subpart IX, 270.15(a)(5), any liquids accumulated within the self-containment pallets will be removed as soon as possible to prevent overflow. Depending upon the volume of the accumulated liquid, a HEPA vacuum, a portable pump, universal sorbents, and/or other methods suitable for retrieval will be used to remove the liquid for subsequent sampling and analysis. The collected liquids and/or sorbents will be transferred to compatible containers and will be sampled for the constituents known to be present in the waste or for the parameters listed in Table 7-3, as appropriate. These containers will be stored temporarily at either the Low Bay CSA or the High Bay CSA pending analytical results, which will determine how the wastes will be managed.

If a sample represents a spill, the sample will be analyzed for the hazardous waste constituents known to be components of the source. In the unlikely event that a spill source cannot be identified, the sample will be analyzed for all the hazardous waste constituents listed in Table 7-3.

All applicable requirements for the storage of ignitable, reactive, incompatible, and certain F-listed wastes will be met at the RANT Facility Outdoor CSA. When ignitable or reactive wastes are stored at the Outdoor CSA, they will be located at least 50 feet from the facility's property line as shown on Map 3 of the TA-50 and TA-54 West Part A permit application. Incompatible wastes, if stored, will be segregated during storage by using self-containment pallets. Pursuant to the requirements of 20 NMAC 4.1, Subpart V, 264.177(a) and (b), no incompatible wastes will be mixed, and no waste will be placed in a container that previously held an incompatible waste. No wastes carrying EPA Hazardous Waste Numbers F020, F021, F022, F023, F026, or F027 will be stored at the RANT Facility Outdoor CSA. Therefore, the requirements of 20 NMAC 4.1, Subpart V, 264.175(d), are not applicable.

4.2 WASTE MANAGEMENT PRACTICES [20 NMAC 4.1, Subpart V, Part 264, Subpart I]

The following sections provide an overview of the general operations and process information that are applicable to all of the CSAs addressed in this permit modification request. This overview includes a discussion of container types and labeling practices; storage configuration; handling and inspection procedures; precautions taken when handling or storing incompatible, ignitable,

or reactive wastes; the contents of the operating record for the facility; and information regarding additional reporting requirements. This information is submitted to fulfill the requirements of 20 NMAC 4.1, Subpart V, Part 264, Subpart I.

4.2.1 Container Types and Labeling

Containers used to store low-level mixed, TRU mixed, non-RCRA-regulated low-level, non-RCRA-regulated TRU, and hazardous waste at the CSAs addressed in this permit modification request include 30-, 55-, 83-, 85-, and 110-gallon steel drums; standard FRP boxes; steel SWBs; metal overpack boxes; steel B25 boxes; various small containers; and some oversized, irregularly-shaped FRP boxes. The specific types of waste containers in use at each of the CSAs are identified in Sections 4.1.1 through 4.1.9. Some of these containers are vented. The vented containers have carbon composite filters that allow gases (e.g., hydrogen), if any, to be released but that prevent the release of airborne particulates.

The most common drum used for storage is the 55-gallon drum. The standard drum in use is constructed of 16-gauge steel and has an inner diameter of 22.5 inches and a usable inside height of 33.25 inches. Standard-size FRP boxes used for storage measure 4 by 4 by 8 feet. The outer surface of the crates is coated with a 0.06- to 0.12-inch-thick (60- to 120-mil) layer of epoxy-impregnated fiberglass. At times, nonstandard-size FRP boxes are designed and constructed to contain odd-shaped or oversized waste. There are two different types of SWBs used for storage. One type is constructed of 14-gauge steel and has rounded ends. It measures 52 by 69 by 36 inches, has continuous welds on all four sides and the bottom, and has a closed cell neoprene lid gasket. After waste is placed into the container, the lid is bolted on. The second type of SWB is also constructed of 14-gauge steel but is rectangular in shape. Its dimensions are 56 by 72 by 37 inches. It has continuous welds on all four sides and the bottom and a lid that is clamped in place and then welded. The metal overpack boxes vary in size and have continuous welds both inside and outside on all four sides and on the bottom. The lid gasket is made of closed-cell neoprene and can be strapped closed or clipped down. The metal overpack boxes are elevated by design with risers for ease in handling. B25 boxes are constructed of 16-gauge welded carbon steel, are a standard size of 4 by 4 by 6 feet, and are elevated by design. All B25 boxes have a rubber gasket with either a bolt-on, clip-pinned, or hinged lid.

Overpacks may be used when a container's integrity is suspect or if cracks or leaks are observed. Eighty-five-gallon drums are commonly used to overpack 55-gallon drums and 110-gallon drums are used to overpack 85-gallon drums. The 85-gallon overpacks are constructed of 16-gauge steel, at a minimum. Universal sorbent is generally added to the interior of the overpack. The lid is secured to the overpack with a 12-gauge bolt ring complete with a 5/8-inch closure bolt. Rounded-end SWBs will be used to overpack drums of various sizes that contain TRU mixed waste. Finally, metal boxes are used as overpacks for FRP boxes.

All waste containers are labeled with an identification number in the form of a barcode that corresponds to a number in the Chemical Science and Technology Division's (CST's) waste management database. This database is composed of information supplied by the generator prior to storage and by CST personnel after the waste has been received. This information includes the waste generator, the available waste characterization information, the packaging, the waste certification, the receiving site, and the storage location. In addition to an identification number, all containers are labeled with a hazardous waste label, and the appropriate EPA Hazardous Waste Numbers. Containers holding RCRA mixed waste are also labeled with a radioactive material tag. All containers will be clearly marked to identify contents and the date each period of accumulation begins. Crates and boxes are labeled on a minimum of two sides. When waste containers are moved during storage, their waste package identification numbers (barcode), origin and destination, and package changes (e.g., overpack volume, overpack dimensions) will be documented. CST's database will then be updated to reflect any new information.

4.2.2 Storage Configuration

The waste storage configuration varies for each CSA. Storage configurations are dependent upon facility throughput, size constraints, and by the chemical and radiological characteristics of the waste in storage at any one time.

4.2.2.1 TA-50-1, Rooms 35, 36, and 38/38A Container Storage Areas

The storage capacity requested for the Room 35 CSA reflects the volume necessary to support the characterization activities that will occur in the Characterization Glovebox and the Drum Coring Glovebox (see Appendix C for a detailed description of waste characterization equipment). Whenever waste is stored in the Room 35 CSA, it will be positioned in an area that is removed from the location of any worker activity or traffic that is unrelated to the management of the waste

itself. Security posts and a chain will be used to alert workers to the presence of waste containers in Room 35. Adequate space will be maintained around each pallet to allow for inspection of all containers. The volume and placement of waste managed in the Room 35 CSA will not require aisle spacing. However, whenever incompatible wastes are stored, separate self-containment pallets will be used to keep the wastes segregated to ensure commingling would not occur in the event a container is breached. No stacking of containers will occur in the Room 35 CSA. Up to three containers of non-liquid-bearing waste may be stored in containers that are connected to the Characterization Glovebox. Up to three containers of either non-liquid-bearing or potential liquid-bearing waste may be stored in containers that are connected to the Drum Coring Glovebox.

Container storage capacity for the Room 36 CSA is requested in support of a process to remove external lead shielding from decommissioned gloveboxes. The lead removal process will take place roughly in the center of the room, but away from worker traffic. The storage capacity proposed for the Room 36 CSA reflects the volume of the largest glovebox that may be processed. Only one glovebox will be processed in the Room 36 CSA at any one time. During glovebox processing, no other container types will be stored in the Room 36 CSA. Minimum 26-inch aisle spacing will be maintained, as necessary.

Only EPA Hazardous Waste Number D008 will be stored in the Room 36 CSA. Therefore, no provisions are necessary for the storage of incompatible wastes. Whenever containerized D008 waste is stored in the Room 36 CSA, it will be positioned in an area that is removed from the location of any worker activity or traffic that is unrelated to the management of the waste itself. Security posts and a chain will be used to alert workers to the presence of waste containers in the Room 36 CSA. Adequate space will be maintained around each pallet to allow for inspection of all containers. No stacking of containers will occur in the Room 36 CSA. The volume of waste managed in the Room 36 CSA will not require aisle spacing.

The physical dimensions of Rooms 38 and 38A limit container storage in the Room 38/38A CSA to approximately 12 drums. A five-foot center aisle and a minimum of 26 inches will be maintained at all times between rows of wooden pallets or self-containment pallets in this area. Whenever incompatible wastes are stored, separate self-containment pallets will be used to keep the wastes segregated to ensure commingling would not occur in the event a container is

breached. No stacking of containers will occur in the Room 38/38A CSA. The Room 38/38A CSA will remain locked at all times except when waste is added or removed.

4.2.2.2 TA-50-69 WCRRF Indoor and Outdoor Container Storage Areas

The storage capacity requested for the WCRRF Indoor CSA reflects the volume necessary to support the size reduction, waste characterization, and process demonstration activities that occur within the facility. Whenever waste is stored in the WCRRF Indoor CSA, it will be positioned in an area that is removed from the location of any worker activity or traffic that is unrelated to the management of the waste itself. Palletized drums will be banded together when stored to eliminate the potential for any waste container to be knocked over while moving equipment is operated. Adequate space will be maintained around each storage pallet to allow for inspection of all containers. The volume and placement of waste managed in the WCRRF Indoor CSA will not require aisle spacing. However, whenever incompatible wastes are stored, separate self-containment pallets are used to keep the wastes segregated to ensure that commingling would not occur in the event a container is breached. No stacking of containers occurs in the WCRRF Indoor CSA.

Storage of non-liquid-bearing waste also occurs in containers connected to the packaging/bagout module of the glovebox enclosure. The maximum storage in this area at any given time is the equivalent of one 55-gallon drum, one 30-gallon drum, and one SWB. Potential liquid-bearing waste may be stored inside the glovebox enclosure. Waste containers stored inside the glovebox will not require aisle spacing. Incompatible wastes will not be stored inside the glovebox enclosure.

When the Characterization Glovebox is positioned in the WCRRF Indoor CSA, up to three containers of non-liquid-bearing waste may be stored in containers that are connected to it. When the Drum Coring Glovebox is positioned in the WCRRF Indoor CSA, up to three containers of either non-liquid-bearing or potential liquid-bearing waste may be stored in containers that are connected to it.

The storage capacity requested for the WCRRF Outdoor CSA reflects the volume required to support the waste management activities, such as size reduction and waste characterization, that occur at the facility. The physical dimensions of the WCRRF Outdoor CSA and its alignment

relative to TA-50-69 dictate a storage configuration that allows for waste to be loaded and unloaded along the north side. Thus, container storage rows are oriented north and south. The width of the WCRRF Outdoor CSA precludes the use of a center aisle. A minimum of 26 inches will be maintained between rows of container types or containment pallets. Whenever incompatible wastes are stored, separate self-containment pallets are used to keep the wastes segregated to ensure that commingling will not occur in the event a container is breached. Drums containing only non-liquid-bearing waste will be stacked up to a maximum of two high. SWBs and B25 boxes will be stacked up to a maximum of two high. Other containers may be stacked up to two high.

Storage configurations inside the transportainers occurs in one of two ways. Non-liquid-bearing waste is stored in rows along both walls of the transportainer, with a main aisle running down the center. Containers stored on dollies are rotated during routine inspections so that the entire drum can be inspected. The physical dimensions of the pallets prevent the use of a center aisle configuration. Pallets are placed against one wall of the transportainer and a main aisle runs along the opposite wall. A minimum of 26 inches is maintained between pallets. Adequate space is maintained between the pallets and the transportainer wall to allow for visual inspection. Incompatible wastes will not be stored in the same transportainer.

4.2.2.3 TA-54-38 RANT Facility Container Storage Areas

To allow for ease in inspection, the storage configuration in each of the TA-54-38 RANT Facility CSAs is such that a minimum of 26 inches of space is maintained around each pallet (in the case of drum storage) or container (in the case of SWBs and FRP boxes). SWBs, FRP boxes, and palletized drums will be positioned in arrays with 26-inch aisle spaces between containers. No containers will be stacked. Whenever incompatible wastes are stored, separate self-containment pallets will be used to keep the wastes segregated to ensure that commingling will not occur in the event a container is breached. No container storage will occur outside the CSA boundaries.

4.2.3 Handling and Inspection [20 NMAC 4.1, Subpart V, 264.171, 264.173, and 264.174]

As required by 20 NMAC 4.1, Subpart V, 264.171, any container that is not in good condition (e.g., severe rusting, apparent structural defects) is overpacked or the wastes are repackaged in containers that are in good condition prior to storage. All containers are kept closed during storage in accordance with 20 NMAC 4.1, Subpart V, 264.173(a), except when waste is added

to or removed from the container or when a container's contents need to be repackaged. Containers are handled and stored at all times in a manner that will not rupture a container nor cause it to leak, as required by 20 NMAC 4.1, Subpart V, 264.173(b).

Inspections will be performed at each CSA according to the schedule in Section 6.2. The purpose of the inspections is to identify leaking containers, deterioration of containers, and loss of integrity of the containment system, as required by 20 NMAC 4.1, Subpart V, 264.174. The inspections include checking the structural integrity of the steel drums and boxes (e.g., for bulging) and the crates (e.g., for warping). Refer to Section 6.0 of this permit modification request for more detailed information regarding inspection requirements and how they are met.

4.2.4 Ignitable, Reactive, and Incompatible Wastes [20 NMAC 4.1, Subpart V, 264.17(a), 264.176, and 264.177]

In accordance with the requirements of 20 NMAC 4.1, Subpart V, 264.176, containers holding ignitable or reactive waste are and will be stored at least 50 feet from the facility's property line (refer to Maps 2 and 3 of the TA-50 and TA-54 West Part A permit application). All ignitable and reactive wastes are also protected from sources of ignition or reaction, in accordance with 20 NMAC 4.1, Subpart V, 264.17(a). No smoking is allowed. "No Smoking" signs are conspicuously placed wherever there is a potential hazard from ignitable or reactive waste, as required by 20 NMAC 4.1, Subpart V, 264.17(a). In addition, most mechanical equipment operated within each CSA is grounded to minimize the potential for sparking and accidental ignition.

Incompatible wastes are and will be kept separated during storage at all the CSAs. LANL has a system in place that assigns codes to TRU waste streams based on the chemical and physical properties of the waste. Containers of TRU mixed wastes are segregated according to their assigned waste code and generator location. Containers of hazardous waste and low-level mixed waste will be segregated by EPA Hazardous Waste Number. No incompatible wastes will be mixed, and no wastes will be placed in containers that previously held incompatible wastes, as required by 20 NMAC 4.1, Subpart V, 264.177(a) and (b), and 20 NMAC 4.1, Subpart IX, 270.15(d). Pursuant to the requirements in 20 NMAC 4.1, Subpart V, 264.172, only containers made of or lined with materials that will not react with and are otherwise compatible with the waste to be stored will be used for storage at these CSAs.

4.2.5 Operating Record [20 NMAC 4.1, Subpart V, 264.73 and 264.74]

A written operating record will be maintained at the facility until closure. The operating record will contain the following information, as it becomes available:

- A description (including waste sources) and the quantity of each hazardous (including mixed) waste and the method(s) and date(s) of storage in the Room 35, 36, and 38/38A CSAs; at the WCRRF Indoor and Outdoor CSAs; and at the RANT Facility High Bay, Low Bay, Loading Dock, and Outdoor CSAs as required by Appendix I of 20 NMAC 4.1, Subpart V

- The location of each hazardous waste within each storage area, the quantity at each location, and the final disposition of each waste

- Records of knowledge of process information and available waste analysis results on the RCRA components of the wastes to be stored

- Summary reports and details of all incidents that require implementation of the contingency plan, as specified in 20 NMAC 4.1, Subpart V, 264.56(j)

- Records and results of inspections, to be kept for at least three years, as required by 20 NMAC 4.1, Subpart V, 264.15(d) and 264.174

- Monitoring, testing, or analytical data, where required by 20 NMAC 4.1, Subpart V, Part 264, and corrective action, where required by 20 NMAC 4.1, Subpart V, 264.101

- Records of the quantities (and date of placement) for each shipment of hazardous waste in land disposal units under an extension to the effective date of any land disposal restriction granted pursuant to 20 NMAC 4.1, Subpart VIII, 268.5; a petition pursuant to 20 NMAC 4.1, Subpart VIII, 268.6; or a certification under 20 NMAC 4.1, Subpart VIII, 268.8; and the applicable notice required by a generator under 20 NMAC 4.1, Subpart VIII, 268.7(a)

- The information contained in the notice (except the manifest number) and the certification and demonstration, if applicable, required by the generator or the owner or operator under 20 NMAC 4.1, Subpart VIII, 268.7, or 20 NMAC 4.1, Subpart VIII, 268.8.

Information will be provided for inclusion in LANL's annual facilitywide report, required by 20 NMAC 4.1, Subpart V, 264.73(b)(9), on the waste minimization program. This information will include documentation that the proposed method of storage is the practicable method currently available to minimize the present and future threat to human health and the environment. All records, including plans, required under 20 NMAC 4.1, Subpart V, Part 264, Subpart E, will be furnished upon request and will be made available at all reasonable times for inspection by duly designated representatives of the NMED and/or the EPA. To satisfy the requirements of

20 NMAC 4.1, Subpart V, 264.74(c), a copy of records of waste disposal locations and quantities, as required by 20 NMAC 4.1, Subpart V, 264.73(b)(2), will be submitted to NMED and the local land authority upon closure of the facility. Any shipments to off-site facilities will comply with the appropriate requirements of 20 NMAC 4.1, Subpart III, Part 262; 20 NMAC 4.1, Subpart V, Part 264; and 20 NMAC 4.1, Subpart VIII, Part 268.

4.2.6 Biennial Report [20 NMAC 4.1, Subpart V, 264.75]

The U.S. Department of Energy (DOE) Los Alamos Area Office (LAAO) and LANL will prepare and submit a biennial report to the NMED by March 1 of each even-numbered year. The biennial report will be submitted to NMED on EPA Form 8700-13B. The report will cover facility activities during the previous calendar year and will include:

- The EPA identification number, name, and address of the facility
- The calendar year covered by the report
- A description and the quantity of each hazardous waste (including mixed) the facility received during the year
- The method of treatment, storage, or disposal for each hazardous waste
- For generators who treat, store, or dispose of hazardous waste on-site; a description of the efforts undertaken during the year to reduce the volume and toxicity of waste generated
- For generators who treat, store, or dispose of hazardous waste on-site; a description of the changes in volume and toxicity of waste actually achieved during the year in comparison to previous years to the extent such information is available for the years prior to 1984
- The certification signed by DOE/LAAO or an authorized representative.

4.2.7 Additional Reports [20 NMAC 4.1, Subpart V, 264.77]

In accordance with the requirements of 20 NMAC 4.1, Subpart V, 264.77, DOE/LAAO will also report the following to NMED:

- Releases, fires, and explosions as specified in 20 NMAC 4.1, Subpart V, 264.56(j)
- Facility closures specified in 20 NMAC 4.1, Subpart V, 264.115
- As otherwise required by 20 NMAC 4.1, Subpart V, Part 264, Subpart F.

5.0 PROCEDURES TO PREVENT HAZARDS

The information provided in this section is submitted in accordance with the applicable requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart IX, 270.14(b)(4), 270.14(b)(8), 270.14(b)(9), 270.14(b)(19)(viii), and 270.15, and 20 NMAC 4.1, Subpart V, Subparts B, C, and I. In accordance with 20 NMAC 4.1, Subpart V, 264.31, the container storage areas (CSA) addressed in this permit modification request are designed and operated to minimize the possibility of fire, explosion, or unplanned releases of hazardous constituents to any environmental medium. The following subject areas are addressed in this section: security; preparedness and prevention requirements; preventive procedures, structures, and equipment; and precautions for ignitable, reactive, or incompatible wastes.

5.1 SECURITY [20 NMAC 4.1, Subpart IX, 270.14 (b)(4) and 270.14(b)(19)(viii); 20 NMAC 4.1, Subpart V, 264.14]

Security at Technical Area (TA) 50, Building 1 (TA-50-1); TA-50, Building 69 (TA-50-69), the Waste Characterization, Reduction, and Repackaging Facility (WCRRF); and TA-54 West, Building 38 (TA-54-38), the Radioassay and Nondestructive Testing (RANT) Facility is predominantly maintained with artificial barriers. These barriers prevent the unknowing entry and minimize the possibility for unauthorized entry of persons or livestock into the areas and thus satisfy the requirements of 20 NMAC 4.1, Subpart V, 264.14(a) and 264.14(b)(2).

Eight-foot-high chain-link security fences with barbed wire at the top surround the entire perimeters of TA-50 and TA-54 West. Bilingual (i.e., English and Spanish) warning signs are posted on the fences at approximately 50- to 75-foot intervals. Pursuant to the requirements of 20 NMAC 4.1, Subpart V, 264.14(c), warning signs are also posted at the entrances to each area managing hazardous and mixed waste and can be seen from any approach to these areas. The legends on the signs indicate "Danger—Hazardous Waste Storage Area" and "Unauthorized Persons Keep Out." The signs are legible from a distance of 25 feet.

There are three entry gates to TA-50. A fire access and shipping gate is located west of TA-50-69 and is routinely closed and locked. When the gate is opened for shipments of material or waste, personnel are present in the yard west of TA-50-69 to limit egress by unauthorized persons. Two entry gates are located north of TA-50-1. These gates are closed and locked during nonoperational hours. An additional entry gate is also located at TA-50-38 on Pecos Drive,

northwest of TA-50-1. This gate may be used to secure entrance to TA-50 and TA-35 from Pecos Drive. It is also closed and locked during nonoperational hours.

There are two entry gates at TA-54-38, one west of the building and one east of the building along Mesita del Buey Road. An additional entry gate is located on Mesita del Buey Road between these two gates. The gates are locked during nonoperational hours.

TA-50-1, TA-50-69, and TA-54-38 are always locked; access is gained via code locks or badge readers. Roll-up doors to the buildings can only be opened from inside the building and may also be locked; keys to these doors are distributed to designated personnel only. The building sites are patrolled by Protection Technology Los Alamos (PTLA) security personnel during nonoperational hours to ensure that the gates are locked and that unauthorized entry has not occurred. The security fences are also inspected weekly by on-site personnel and repairs are made as necessary. In accordance with 20 NMAC 4.1, Subpart IX, 270.14(b)(19)(viii), the locations of the security fences and entry gates at TA-50 and TA-54 West are shown on Figures 5-1 and 5-2, respectively. In addition to a security fence and entry gates at TA-54 West, cliffs on the north side of TA-54 West also assist to discourage unauthorized entry.

5.2 PREPAREDNESS AND PREVENTION REQUIREMENTS [20 NMAC 4.1, Subpart V, Subpart C]

The following sections present how operations at TA-50 and TA-54 West comply with the preparedness and prevention requirements of 20 NMAC 4.1, Subpart V, Part 264, Subpart C. Communication and alarm equipment available at Los Alamos National Laboratory (LANL) is presented in Section 7.0 of this permit modification request. A summary list of the emergency equipment available for use at the CSAs addressed in this permit modification request is included as Attachment 7-1.

5.2.1 Required Equipment [20 NMAC 4.1, Subpart V, 264.32]

5.2.1.1 TA-50-1, Rooms 35, 36, and 38/38A Container Storage Areas

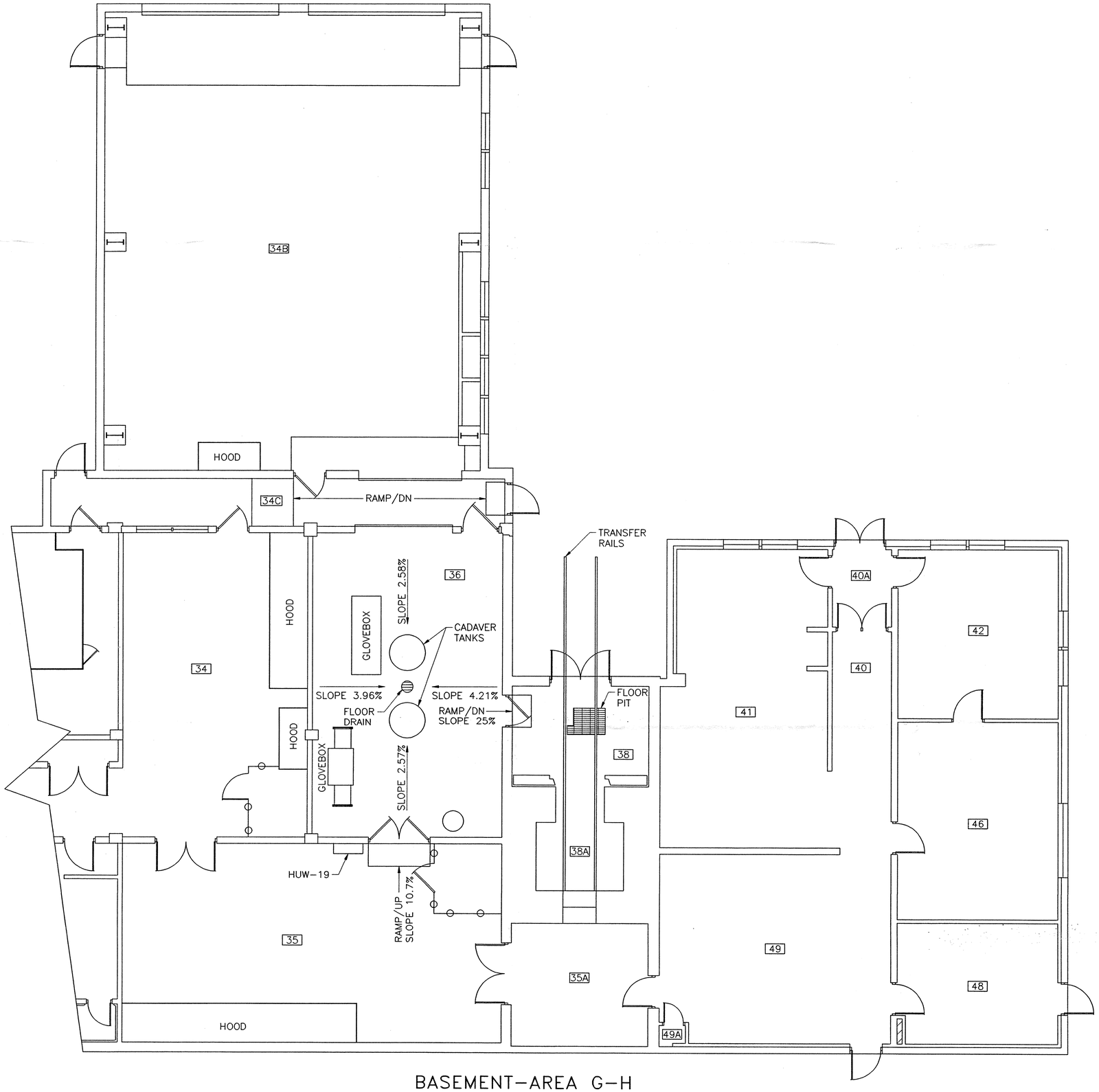
TA-50-1 is the Radioactive Liquid Waste Treatment Facility. It is equipped with an audible alarm system to alert personnel to evacuate the area. The alarm system may be activated by using fire alarm pull stations. There is a pull station located in Room 49 that can be used by personnel working in Rooms 35, 36 and 38/38A. Room 49 is approximately 15 feet from Room 35, 35 feet from Room 36, and 45 feet from Room 38/38A. The building also has a paging system for

announcing fires or evacuations. Telephones with paging capabilities are located in Rooms 34 and 35A. Paging telephones are used to page on-site personnel and may be used in the event of an emergency to communicate the location and nature of hazardous conditions to personnel in the area. The alarm system is interrupted when the paging telephone system is activated to allow personnel to hear the announcement. Personnel working in Rooms 35, 36, and 38/38A can also use these phones to summon assistance from local emergency response teams in case of emergency.

There is a Halon fire extinguisher available in Room 35 and a BC-rated dry-chemical fire extinguisher in Room 36. Personnel working in Room 38/38A have access to the Room 36 fire extinguisher, which is located near the door between the two rooms. Depending on the size of a fire and the fuel source, fire extinguishers may be used by on-site personnel. However, LANL policy encourages immediate evacuation of the area and notification of appropriate emergency personnel. There is a heat-activated sprinkler system in Rooms 35 and 36. All manual pull stations and the heat-activated sprinkler system are connected to the Los Alamos County Fire Department (LACFD) through LANL's central alarm system (Section 7.0) at all times.

A fire hydrant installed according to National Fire Protection Association (NFPA) standards is located outside TA-50-1, approximately 15 feet from the southeast corner of Room 34B, which is adjacent to Room 36. Water is supplied to the fire hydrant by a municipal water system through 8-inch pipes at an adequate volume and pressure (i.e., 200 gallons per minute and 90 pounds per square inch static pressure) to supply a water hose in the event of a fire.

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 this spill center. Trained personnel may use this equipment to mitigate small containable spills when they are certain their actions will not put themselves or others at risk. Personnel decontamination equipment available includes safety showers in Rooms 35, 36, and 38/38A and emergency eyewashes in Rooms 35 and 36. Personnel working in Room 38/38A have access to the eyewash in Room 36. The buddy system will always be employed when containers are actively managed in Room 38/38A to assure that the eyewash can be reached in an emergency. Material Safety Data Sheets (MSDS) provide useful exposure information and are available in Rooms 34B and 49.

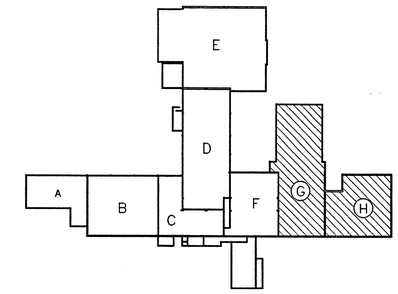


BASEMENT–AREA G–H

SCALE: 3/16" = 1'–0"

6 4 2 0 6 12 24
GRAPHIC SCALE

N



KEY PLAN

SCALE: NONE

ABBREVIATIONS

HUW HEATER UNIT (WATER)

FIGURE 4–1

FLOOR PLAN FOR TECHNICAL AREA 50, BUILDING 1, ROOMS 35, 36, AND 38/38A CONTAINER STORAGE AREAS

8755-T

NO	DATE	CLASS REV	DESCRIPTION	DWN	VER	CHKD	SUB	APP

JOHNSON CONTROLS

AS–BUILT RECORD FLOOR PLAN
RAD LIQUID TREATMENT

ARCH: FIGURE 4–1 FLOOR PLAN FOR TECHNICAL AREA 50, BUILDING 1, ROOMS 35, 36 & 38/38A

DRAWN	M. HOHNER
VERIFIED	MH/YB
CHECKED	C. SANDOVAL
DATE	08–29–95

BLDG 1 TA–50

SUBMITTED: JERRY FORTE
APPROVED FOR RELEASE: FRED THOMPSON

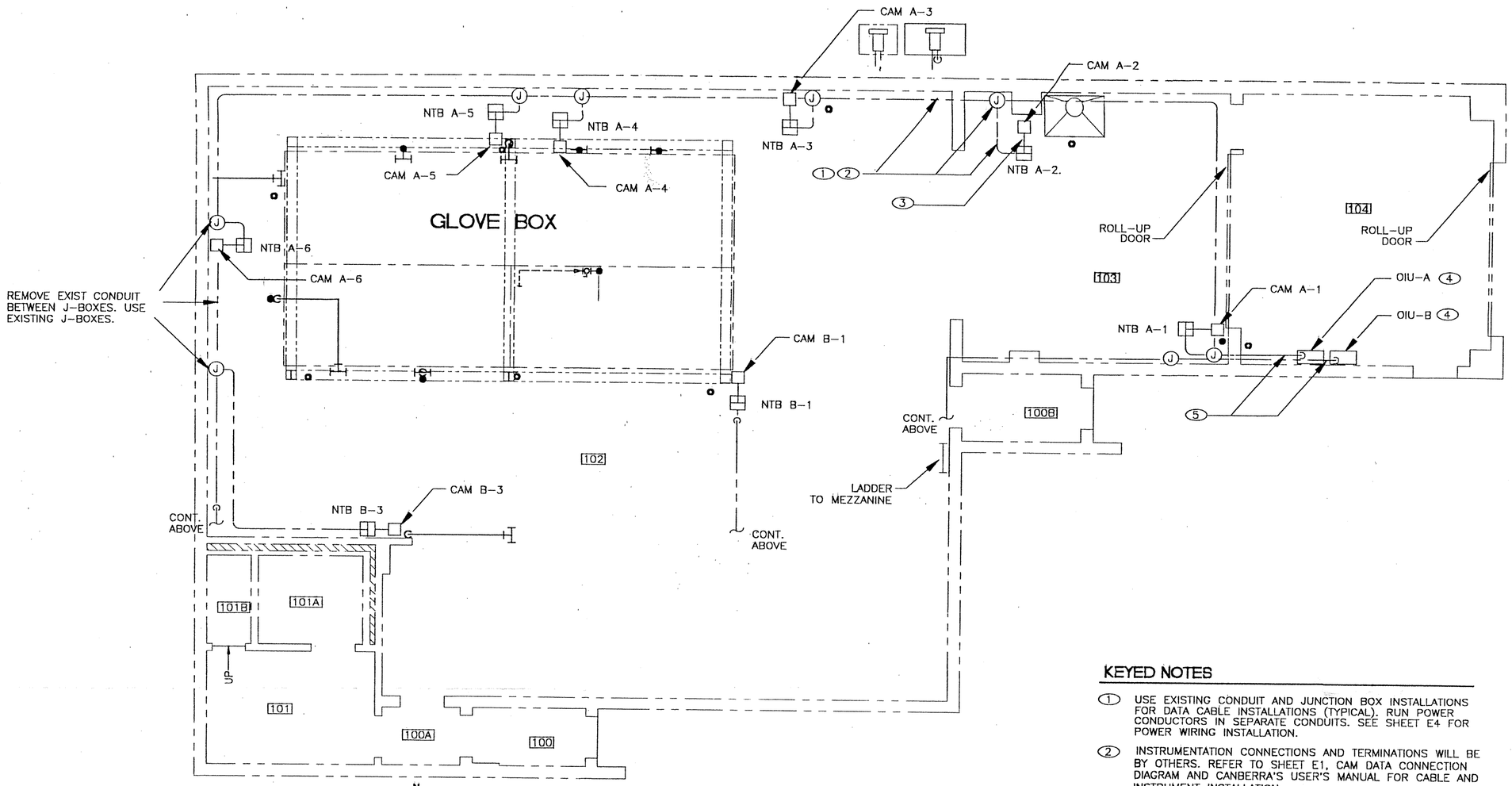
Los Alamos — Los Alamos National Laboratory, Los Alamos, New Mexico 87545

SHEET 1 OF 1

CLASSIFICATION U REVIEWER T. GUSDORF DATE 9-27-95

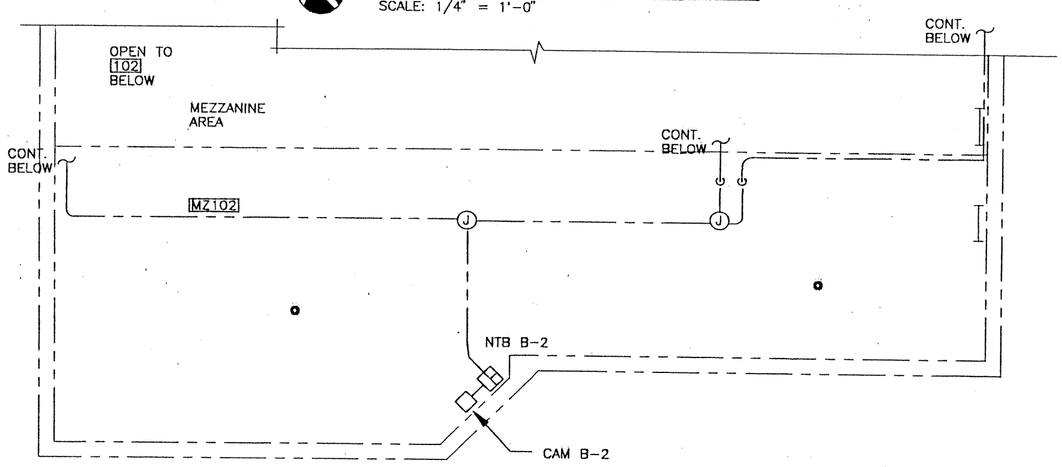
PROJECT ID 7556 | DRAWING NO AB523 | REV

FIELD VERIFIED 08–23–95



CAM DATA- FLOOR PLAN

SCALE: 1/4" = 1'-0"



CAM DATA - MEZZANINE PLAN

SCALE: 1/4" = 1'-0"

LEGEND

CAM	CONTINUOUS AIR MONITOR
NTB	NETWORK TEE BOX
FAS	EXISTING FIXED HEAD AIR SAMPLER
FAS	NEW FIXED HEAD AIR SAMPLER

KEYED NOTES

1. USE EXISTING CONDUIT AND JUNCTION BOX INSTALLATIONS FOR DATA CABLE INSTALLATIONS (TYPICAL). RUN POWER CONDUCTORS IN SEPARATE CONDUITS. SEE SHEET E4 FOR POWER WIRING INSTALLATION.
2. INSTRUMENTATION CONNECTIONS AND TERMINATIONS WILL BE BY OTHERS. REFER TO SHEET E1, CAM DATA CONNECTION DIAGRAM AND CANBERRA'S USER'S MANUAL FOR CABLE AND INSTRUMENT INSTALLATION.
3. NETWORK ACCESS CABLE / NTB TO CAM, ITEM NO. 6 SEE SHEET E5, MATERIALS LIST (TYP. 9).
4. OPERATOR INTERFACE UNIT (OIU), ITEM NO. 1 SEE SHEET E5, MATERIALS LIST.
   INSTALL IN EXISTING WOOD SHELVES, SEE SHEET E4.
5. 3/4" CONDUIT WITH ONE PAIR SHIELDED CABLE, ITEM NO.9. SEE SHEET E5, MATERIALS LIST.

Figure 4-2

Floor Plan for Technical Area 50, Building 69, the Waste Characterization, Reduction, and Repackaging Facility (WCRRF) Indoor Container Storage Area

Revised September 1995

8755-U

FACILITIES ENGINEERING DIVISION

AIR MONITOR UPGRADE
SIZE REDUCTION FACILITY
ELEC CAM DATA FLOOR PLAN
BLDG. 69 TA-50

DRAWN	E. RACINEZ
DESIGN	E. RACINEZ
CHECKED	D. POWELL
RELEASED	E. RACINEZ
DATE	8-24-94

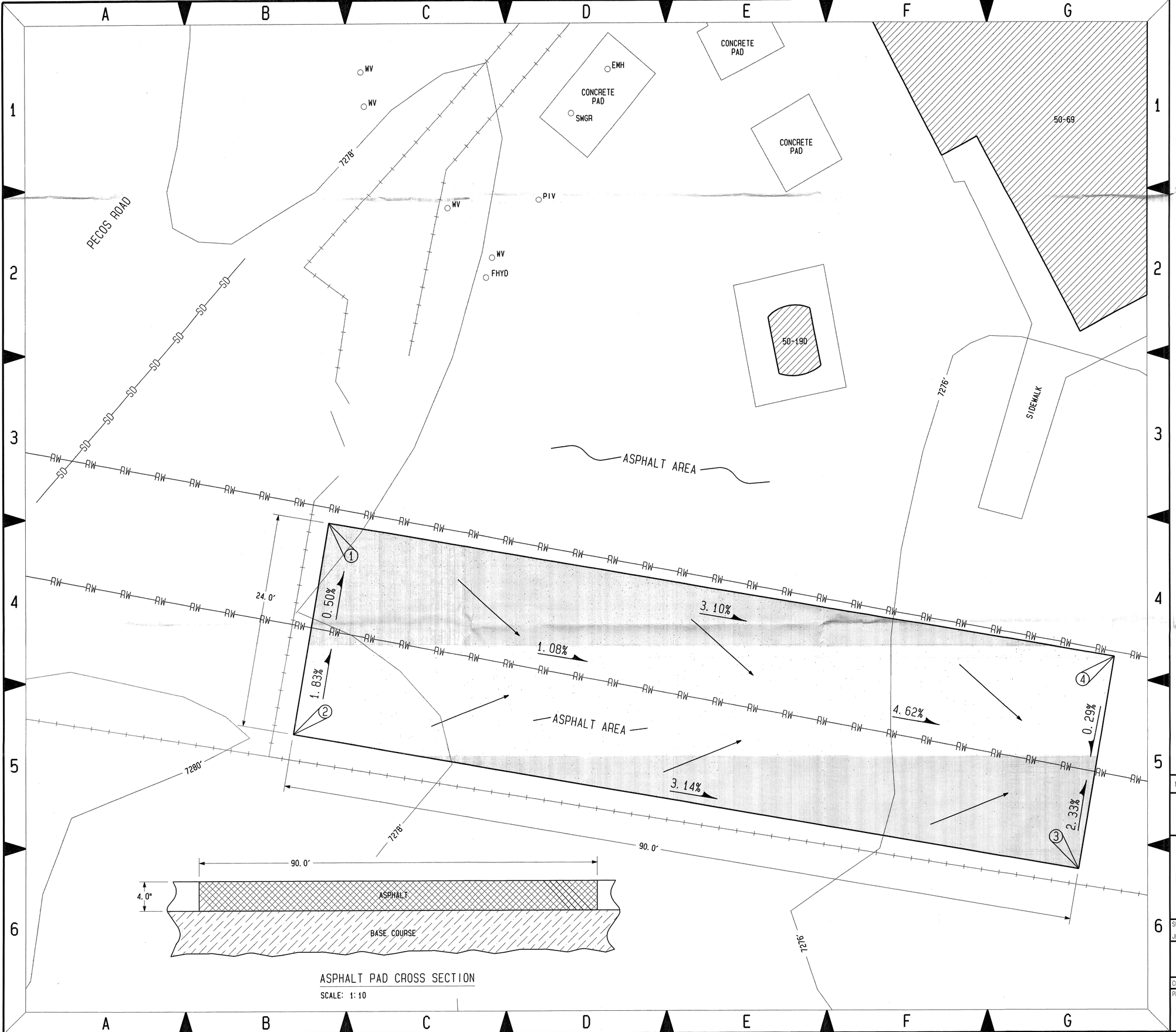
SUBMITTED E. RACINEZ
RECOMMENDED E. RACINEZ
APPROVED S. BODENSTEIN FOR

Los Alamos — Los Alamos National Laboratory, Los Alamos, New Mexico 87545

SHEET E3 OF 10/12

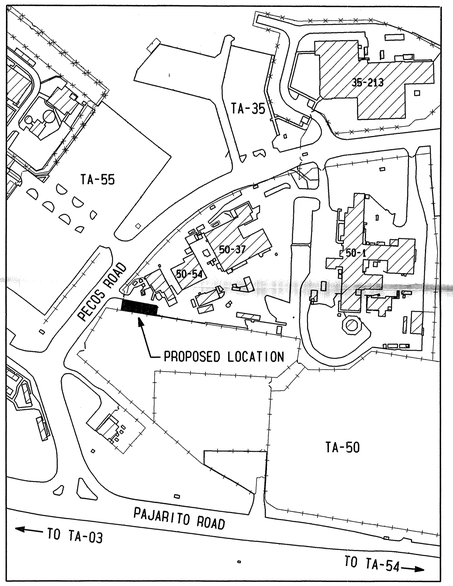
CLASSIFICATION U REVIEWER E. RACINEZ DATE 8-30-94

PROJECT ID	DRAWING NO.	REV.
15641	C49555	0



ASPHALT PAD CROSS SECTION

SCALE: 1:10



LOCATION PLAN

SCALE: NONE

LEGEND

- PROPOSED PAD LOCATION
- EXISTING STRUCTURE WITH NUMBER
- INDUSTRIAL FENCE
- GATES
- DOE/TECHNICAL AREA BOUNDARY
- SD — STORM DRAIN
- RW — RADIOACTIVE LIQUID WASTE LINE
- ① - X=485272.04, Y=1768939.19, Z=7276.27
- ② - X=485268.00, Y=1768915.53, Z=7276.55
- ③ - X=485356.71, Y=1768900.38, Z=7273.76
- ④ - X=485360.74, Y=1768924.02, Z=7273.45

N

SCALE: 1:60

5 0 5 10

FEET

2 FOOT CONTOUR INTERVAL

State Plane Coordinate System, New Mexico Central Zone.
1927 North American Datum

Figure 4-3
Site Plan for Technical Area 50, Building 69,
the Waste Characterization, Reduction, and Repacking
Facility (WCRRF) Outdoor Container Storage Area

NO	DATE	CLASS REV	REVISIONS	DWN	VER	CHKD	SUB	APP

JOHNSON CONTROLS

OUTDOOR CSA

PROPOSED SITING

TA-50 **8755-V**

DRAWN	D. BACA
VERIFIED	D. BACA, A. VILLA
CHECKED	
DATE	09-01-95

SUBMITTED: JERRY FORTE

APPROVED FOR RELEASE: STAN BODENSTEIN, STEPHANIE STODDARD

Los Alamos — Los Alamos National Laboratory, Los Alamos, New Mexico 87545

SHEET 1 OF 1

CLASSIFICATION U REVIEWER H. SALAZAR DATE 9-28-95

PROJECT ID	DRAWING NO	REV
016356	ABBM020	

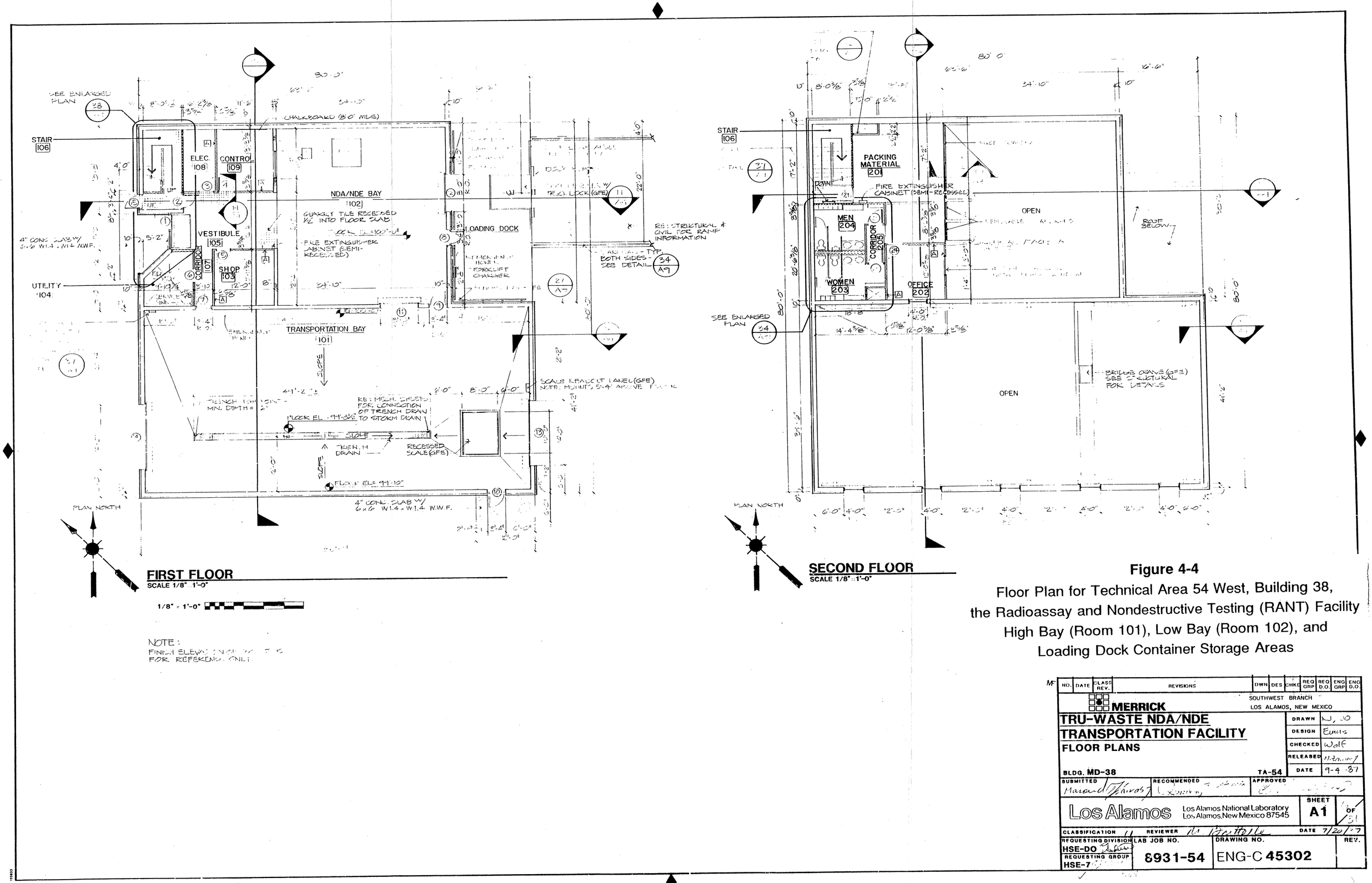


Figure 4-4

Floor Plan for Technical Area 54 West, Building 38, the Radioassay and Nondestructive Testing (RANT) Facility High Bay (Room 101), Low Bay (Room 102), and Loading Dock Container Storage Areas

NO.	DATE	CLASS REV.	REVISIONS	DWN	DES	CHKD	REQ GRP	REQ D.O.	ENG GRP	ENG D.O.

MERRICK — SOUTHWEST BRANCH, LOS ALAMOS, NEW MEXICO

TRU-WASTE NDA/NDE TRANSPORTATION FACILITY
FLOOR PLANS

BLDG. MD-38 TA-54

DRAWN	N. JO
DESIGN	Evans
CHECKED	Wolf
RELEASED	
DATE	9-4-87

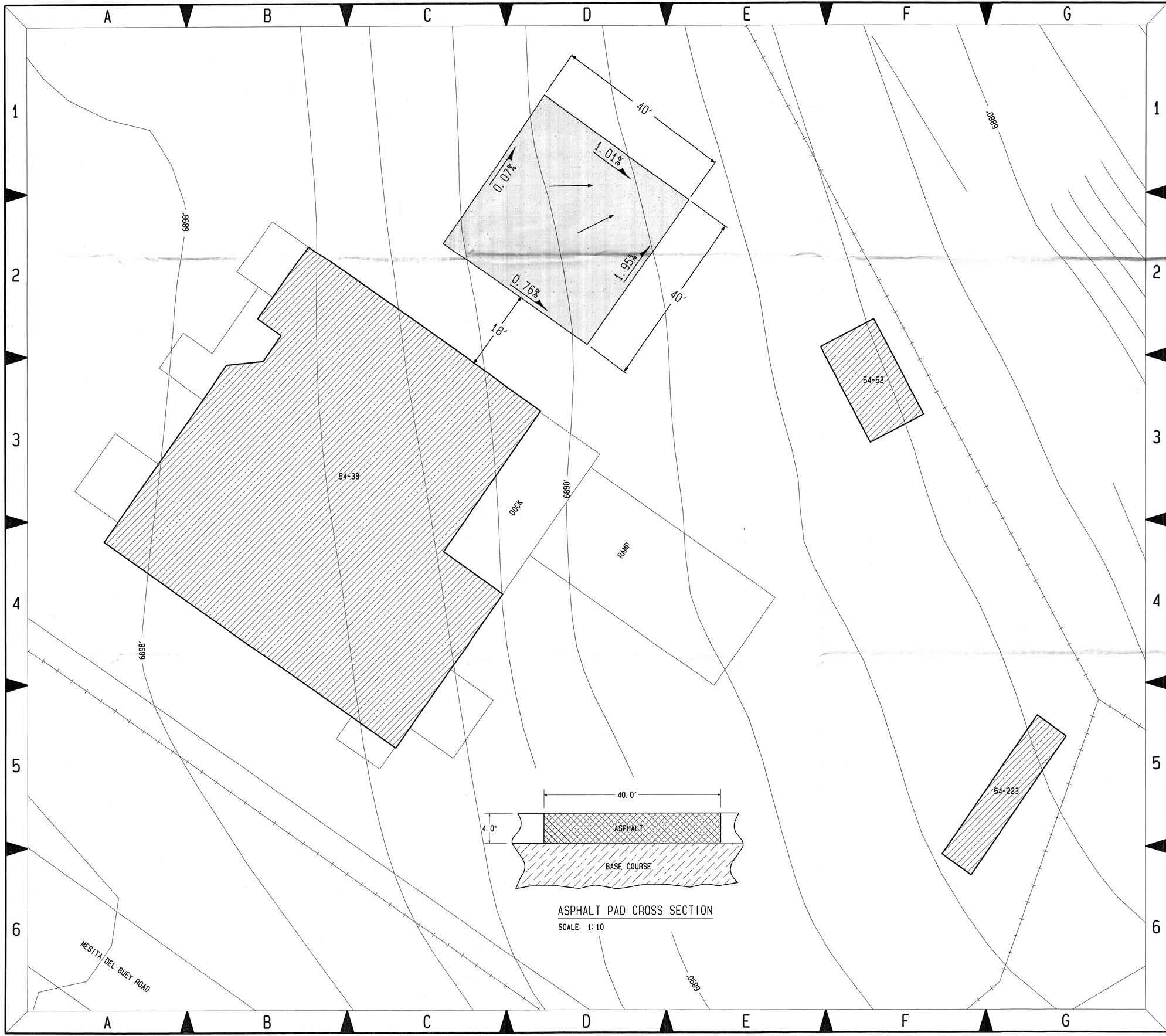
SUBMITTED: Maraud Thomas — RECOMMENDED: [illegible] — APPROVED: [illegible]

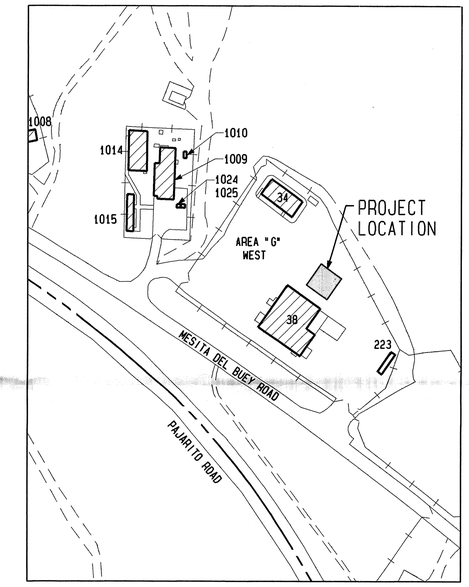
Los Alamos — Los Alamos National Laboratory, Los Alamos, New Mexico 87545 — SHEET A1 OF 31

CLASSIFICATION U — REVIEWER [illegible] — DATE 7/20/87

REQUESTING DIVISION: HSE-DO — REQUESTING GROUP: HSE-7 — LAB JOB NO. 8931-54 — DRAWING NO. ENG-C 45302 — REV.

8755-W





LOCATION PLAN
SCALE: NONE

LEGEND

- PROPOSED PAD LOCATION
- 54-89 - EXISTING STRUCTURE WITH NUMBER
- INDUSTRIAL FENCE
- GATES
- DOE/TECHNICAL AREA BOUNDARY
- —SD— STORM DRAIN
- —W— WATER LINES
- —S— SEWER LINES

N

SCALE: 1:120

10 0 10 20
FEET
2 FOOT CONTOUR INTERVAL

State Plane Coordinate System, New Mexico Central Zone.
1927 North American Datum

Figure 4-5
Site Plan for Technical Area 54 West, Building 38,
the Radioassay and Nondestructive Testing (RANT) Facility
Outdoor Container Storage Area

8755-X

NO	DATE	CLASS REV	REVISIONS	DWN	VER	CHKD	SUB	APP

JOHNSON CONTROLS

RANT FACILITY

STORAGE PAD SITING

TA-54-38

DRAWN	D. BACA
VERIFIED	D. BACA, A. VILLA
CHECKED	
DATE	09-01-95

SUBMITTED
JERRY FORTE

APPROVED FOR RELEASE
STAN BODENSTEIN
STEPHANIE STODDARD

Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

SHEET 1 OF 1

CLASSIFICATION U REVIEWER H. SALAZAR DATE 9-28-95

PROJECT ID 016356

DRAWING NO. ABBM038

REV

5.2.1.2 TA-50-69 Waste Characterization, Reduction, and Repackaging Facility Container Storage Areas

TA-50, Building 69 (TA-50-69), the WCRRF, is equipped with an audible alarm system to alert personnel to fire or the need to evacuate the area. The alarm can be heard from the WCRRF Outdoor CSA. The alarm system may be activated by using fire alarm pull stations. There is one pull station in the change room and one along the south wall of the main process room. The manual pull stations and an automatic wet-pipe sprinkler system in the building are connected to the LACFD through LANL's central alarm system (Section 7.0) at all times. Three telephones with paging capabilities are located in TA-50-69. Paging telephones are used to contact on-site personnel and may be used in the event of an emergency to communicate the location and nature of hazardous conditions to personnel in the area. Personnel working within the building can also use these phones to summon assistance in case of emergency.

Fire control equipment is available at TA-50-69 for use at the WCRRF CSAs. There are two CO_2 fire extinguishers available in the WCRRF, and another available at the WCRRF Outdoor CSA. Depending on the size of the fire and the fuel source, fire extinguishers may be used by on-site personnel. However, LANL policy encourages immediate evacuation of the area and notification of appropriate emergency personnel. There is an automatic wet-pipe sprinkler system in the main building and in the large glovebox enclosure. The sprinkler system is heat activated at 212 degrees Fahrenheit (°F). A fire hydrant installed according to NFPA standards is located approximately 50 feet west of TA-50-69. Water is supplied to the fire hydrant by a municipal water system through 8-inch pipes at an adequate volume and pressure (i.e., 200 gallons per minute and 90 pounds per square inch pressure) to supply a water hose in the event of fire.

Chemical spill centers are located in the WCRRF and within 20 feet of the WCRRF Outdoor CSA. These contain spill control equipment, personal protective equipment, and sorbents. Personnel working anywhere within the area have access to these spill centers. Trained personnel may use this equipment to mitigate small containable spills when they are certain their actions will not put themselves or others at risk.

Personnel decontamination equipment available in the WCRRF includes a safety shower and eyewash located west of the large glovebox enclosure in the main process room and a personnel shower located adjacent to the change room. The buddy system will always be employed when waste containers are actively managed in the WCRRF Outdoor CSA to assure that the eyewash

can be reached in an emergency. MSDSs located in the northwest corner of the WCRRF unloading area also provide useful exposure information.

5.2.1.3 TA-54-38 Radioassay and Nondestructive Testing Facility Container Storage Areas

TA-54 West, Building 38 (TA-54-38), the RANT Facility, is equipped with an audible alarm system to alert personnel to fire or the need to evacuate the area. Fire alarm pull stations located in the low bay, in the high bay, and in the building's main entrance area may be activated in the event of a fire. Strobe lights mounted at the fire alarms and on Building 34 just north of TA-54-38 flash upon activation of the pull stations to visually alert personnel. Additionally, a roll-up door located between the high bay and low bay automatically closes if the fire alarm is activated or electrical power is lost. The alarm system may also be activated by using one of the evacuation alarm buttons located by the east personnel entrance door in the low bay and in the building's main entry area. Upon activation of the evacuation alarm system, horns sound to alert personnel of emergency conditions. All of the building's manual pull stations, the evacuation alarm system, and the sprinkler systems at the RANT Facility are connected to the LACFD through LANL's central alarm system (Section 7.0) at all times.

TA-54-38 is also equipped with telephones to provide adequate communication and to summon external emergency assistance if necessary. Paging telephones are located in the high bay, in the low bay, and outside the main entry area of the building. Paging telephones are used to contact on-site personnel and may be used in the event of an emergency to communicate the location and nature of hazardous conditions to personnel in the area. The alarm system is interrupted when the paging telephone system is activated to allow personnel to hear the announcement. Additionally, an emergency telephone is located outside the main entry area. Personnel working within the building can also use these phones to summon assistance from local emergency response teams in case of emergency.

Fire control equipment is available for use at all the CSAs at TA-54-38. Portable Halon fire extinguishers are located in the high bay, in the low bay, and at the Outdoor CSA. The fire extinguisher located by the east personnel entrance door in the low bay may also be used at the Loading Dock CSA. Depending on the size of the fire and the fuel source, fire extinguishers may be used by on-site personnel. However, LANL policy encourages immediate evacuation of the area and notification of appropriate emergency personnel. The building is equipped with a smoke-

activated dry-pipe sprinkler system in the low bay and with heat-activated dry-pipe fire suppression systems in the high bay and at the loading dock. A fire hydrant installed according to NFPA standards is located approximately 220 feet west of TA-54-38 near the west entrance to TA-54 West. Water is supplied to the fire hydrant by a municipal water system through 8-inch pipes at an adequate volume and pressure (i.e., 200 gallons per minute and 90 pounds per square inch pressure) to supply a water hose in the event of fire.

A portable chemical spill center is maintained at the RANT Facility. It contains sorbents and personal protective equipment. Personnel working anywhere within the building have access to this spill center. Trained personnel may use this equipment to mitigate small containable spills when they are certain their actions will not put themselves or others at risk. Personnel decontamination equipment available includes a safety shower and eyewash located in the high bay and a safety shower and eyewash on the loading dock. MSDSs located in the main entry area of the building and at the muster area (approximately 120 feet northwest) also provide useful exposure information.

5.2.2 Testing and Maintenance of Equipment [20 NMAC 4.1, Subpart V, 264.33]

All the communications and alarm systems and the fire protection, spill control, and decontamination equipment described above are tested and/or maintained according to the inspection schedule detailed in Section 6.2. The frequency of inspection is adequate to assure proper operation in the event of an emergency. Repair and replacement of emergency equipment are performed as required.

5.2.3 Access to Communications or Alarm System [20 NMAC 4.1, Subpart V, 264.34]

Whenever waste is being handled at any of the CSAs at TA-50 and TA-54 West, all personnel involved have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another individual. In the event of an emergency, this communication equipment allows personnel to contact the operating group management, the Emergency Management and Response Office, and/or the Central Alarm Station operator (refer to Section 7.2.2). In addition to the communications and alarm systems described in Section 5.2.1, on-site personnel may carry pagers, two-way radios, and/or cellular telephones so that they can contact or be contacted by on-site and LANL emergency support personnel at all times.

5.2.4 Aisle Space Requirements [20 NMAC 4.1, Subpart V, 264.35]

Where applicable, aisle space between waste containers at the TA-50 and TA-54 West CSAs will be a minimum of 26 inches to provide access for inspection purposes and to allow the unobstructed movement of personnel and fire protection, spill control, and decontamination equipment in the event of an emergency. The specific waste storage method and configurations for the areas are described below.

5.2.4.1 TA-50-1, Rooms 35, 36, and 38/38A Container Storage Areas

Drums of solid waste will be stored on wooden pallets in Rooms 35 and 38/38A. Steel standard waste boxes (SWB) and non-RCRA-regulated boxes of low-level waste will also be stored in Room 38/38A. Any waste potentially containing liquid will be stored on self-containment pallets. Lead-lined gloveboxes in fiberglass-reinforced plywood (FRP) boxes and lead in drums, FRP boxes, or other containers will be stored in Room 36. The volume and placement of waste managed in the CSAs in Rooms 35 and 36 will not require aisle spaces. Room 38 has a 5-foot center aisle and a minimum 26 inches of space will be maintained between wooden or self-containment pallets. Additional information on storage configurations at the TA-50-1, Rooms 35, 36, and 38/38A CSAs is presented in Section 4.2.2.1 of this permit modification request.

5.2.4.2 TA-50-69 WCRRF Container Storage Areas

Space in the WCRRF Indoor CSA is limited and it is not anticipated that the volume and placement of wastes will require aisle spaces. The storage configuration at the WCRRF Outdoor CSA pad will be in rows aligned north and south; the storage configuration in the transportainers is dependent on the waste types in storage. A minimum of 26 inches will be maintained between containers or pallets in these areas. Additional information on storage configurations at the TA-50-69 WCRRF CSAs is presented in Section 4.2.2.2 of this permit modification request.

5.2.4.3 TA-54-38 RANT Facility Container Storage Areas

Space at the RANT Facility CSAs is limited and it is not anticipated that main aisles will be required. A minimum of 26 inches of space will be maintained between containers or pallets in these areas. Additional information on storage configurations at the TA-54-38 RANT Facility CSAs is presented in Section 4.2.2.3 of this permit modification request.

5.2.5 Support Agreements with Outside Agencies [20 NMAC 4.1, Subpart V, 264.37(a)]

The U.S. Department of Energy maintains support agreements, contracts, and a memorandum of understanding with various outside response agencies for emergency response assistance at LANL. In addition, LANL maintains contracts with additional response groups for security and scene access (i.e., PTLA) and maintenance support (i.e., Johnson Controls World Services Inc.) during emergency response. The "Contract Between the U.S. Department of Energy and the Incorporated County of Los Alamos" provides for the training of emergency response personnel so that they are familiar with the layout of the facility, the properties of hazardous or mixed waste handled at the facility, the associated hazards, and the possible evacuation routes. The "Planning Agreement Between the U.S. Department of Energy Los Alamos Area Office and the Los Alamos Medical Center" allows for the training of medical personnel regarding the care and treatment of patients contaminated with radioactive materials. Support agreements are discussed briefly in the contingency plan (Section 7.0) and copies are presented as Appendices G, H, and I in this permit modification request. Responsibilities of internal and external emergency response groups and agencies are discussed fully in Section 7.1.

5.3 PREVENTIVE PROCEDURES, STRUCTURES, AND EQUIPMENT [20 NMAC 4.1, Subpart IX, 270.14(b)(8)]

A description of the preventive procedures, structures, and equipment at the TA-50 and TA-54 West waste management areas is presented below. This information is provided in accordance with the requirements of 20 NMAC 4.1, Subpart IX, 270.14(b)(8). Adherence to the procedures and proper use of the structures and equipment will help to prevent hazards and exposure to personnel and releases to the environment.

5.3.1 TA-50-1, Rooms 35, 36, and 38/38A Container Storage Areas

Flatbed trucks or trailers are used to transport containers to TA-50-1 for storage and processing. Cranes and or a liquid propane forklift equipped with tines will be used to move FRP crates (containing gloveboxes) into Room 36. A 5-ton bridge crane in Room 36 will be used to move waste containers within the room. Dollies or electric forklifts will be used to move drums or other containers into and out of Rooms 35, 36, and 38/38A. Individual drums of waste are manipulated with a drum-grapple attachment on the forklift. Small containers may be handled manually or with a dolly. A 2-ton hoist is also available to move containers in Room 38/38A. The use of proper handling equipment, appropriate to a container's size and weight, helps to prevent hazards while moving containers within the CSAs. All damaged containers (e.g., severely corroded drums) are

repaired or overpacked or the wastes are repackaged in new containers before being stored at any of the CSAs.

Runoff of hazardous or mixed waste from the CSAs to other areas of the facility or to the environment will be prevented. Secondary containment (e.g., self-containment pallets) is provided at each CSA where potential liquid-bearing containers are or may be stored. All secondary containment systems in each storage area will be sufficient to contain at least 10 percent of the volume of potential liquid-bearing containers or the volume of the largest container, whichever is greater, pursuant to the requirements of 20 NMAC 4.1, Subpart V, 264.175(b)(3). Liquids resulting from leaks or spills that may accumulate in the self-containment pallets will be collected into a container using a portable pump and/or sorbents, depending on the volume of accumulated liquid. Accumulated liquids will be removed as soon as possible.

Run-on to the self-containment systems will be prevented because all the CSAs at TA-50-1 are located inside the building. In addition, positive surface drainage will direct potential run-on away from the building. Pursuant to the requirements of 20 NMAC 4.1, Subpart IX, 270.14(b)(19)(xi), Map 2 of the TA-50 and TA-54 West Part A permit application shows the contours and surface drainage around TA-50-1.

For several reasons, it is not anticipated that there will be any impact to ground water or other water supplies as a result of waste-handling operations at TA-50-1. The CSAs are located inside the building, any material spilled during waste management activities will be remediated pursuant to the appropriate contingency plan as part of normal operations, and potential liquid-bearing wastes will be stored on self-containment pallets. In addition, all water supply lines are under pressure and are equipped with backflow prevention devices to prevent contamination of these lines during emergencies. The depth to ground water at TA-50 is approximately 1,000 feet (Purtymun and Johansen, 1974). Geologic units underlying TA-54 (located 4 miles east of TA-50) include layers of unsaturated volcanic tuff and ash, the moisture content of which ranges from 0.2 to 2.0 percent by weight (IT, 1987). This moisture content is insufficient for direct moisture migration through the Bandelier Tuff. No impact to ground water is expected due to the release of the wastes managed at these units.

To prevent undue exposure of personnel to hazardous and mixed waste, appropriate personal protective equipment is worn by all on-site personnel at TA-50-1. While working with waste containers in Room 35, coveralls, gloves, and steel-toed shoes will be worn. Respirators may also be worn in Room 35 while activities are being conducted at the waste characterization glovebox. While working with waste containers in Room 36, coveralls, respirators, steel-toed shoes, gloves, and booties will be worn. Labcoats and steel-toed shoes are required while working in Room 38/38A. Hard hats will be worn while heavy equipment is being operated.

Releases to the atmosphere are not anticipated at the CSAs at TA-50-1 because containers are kept closed during storage. The only exception to this practice is when, upon inspection, it is determined that containers currently in storage need to be overpacked or repackaged in new containers. Daily inspections are conducted to ensure the integrity of all stored containers. Continuous air monitors (CAMs) are located in Rooms 35 and 36 and, in the event of an unexpected release, all personnel located in the area would be notified to evacuate immediately.

Electrical power is supplied to TA-50-1 by a 13.2 kilovolt (kV) aerial transmission line extending along Pecos Drive. Supplied power is used to operate CAMs and other electrical equipment in the building. In the event of a power failure, operations in the building would cease and personnel would exit the facility. Operations in CSAs would be discontinued temporarily if electrical power was not restored quickly or if container handling equipment failed. However, neither a power nor an equipment failure would affect containment at any of these CSAs.

5.3.2 TA-50-69 WCRRF Container Storage Areas

Flatbed trucks or trailers are used to transport containers to TA-50-69 for storage and processing. The containers are then handled primarily with one of two types of forklifts. A liquid propane forklift is used to move containers at the WCRRF Outdoor CSA and from outside the building into the WCRRF airlock. An electric forklift is used to move containers within the WCRRF. FRP boxes and palletized drums are handled with a forklift equipped with tines. Individual drums of waste are manipulated with a drum-grapple attachment on the forklift. Small containers may be handled manually or with a dolly. The use of proper handling equipment, appropriate to a container's size and weight, helps to prevent hazards while moving containers within the CSAs. All damaged containers (e.g., severely corroded drums) are repaired or overpacked or the wastes are repackaged in new containers before being stored at any of the CSAs.

Inside TA-50-69, two cranes are available to move heavy objects. A 5-ton gantry crane extends from the vehicle airlock to the outside of the glovebox enclosure. Inside the glovebox enclosure is a 1.5-ton hoist that is operated remotely from outside the enclosure. Load limits are restricted to the rated capacity of these cranes for safe operation.

Runoff of hazardous or mixed waste from the CSAs to other areas of the facility or to the environment will be prevented. Secondary containment (e.g., self-containment pallets) is provided at each CSA where potential liquid-bearing containers are or may be stored (see Section 4.1). The self- containment pallets in each storage area will be sufficient to contain at least 10 percent of the volume of potential liquid-bearing containers or the volume of the largest container, whichever is greater, pursuant to the requirements of 20 NMAC 4.1, Subpart V, 264.175(b)(3). Surface runoff (e.g., precipitation) at the WCRRF Outdoor CSA will be managed according to the Clean Water Act's National Pollutant Discharge Elimination System (NPDES) criteria. At both the WCRRF Outdoor and Indoor CSAs, liquids resulting from leaks or spills that may accumulate in the self-containment pallets will be collected into a container using a portable pump and/or sorbents, depending on the volume of accumulated liquid. Accumulated liquids will be removed as soon as possible.

Run-on to the self-containment systems will be prevented. Potential liquid-bearing containers will be stored on self-containment pallets, which are elevated by design. The self-containment pallets in the WCRRF Outdoor CSA will be covered to prevent contact with precipitation. The Outdoor CSA is sloped sufficiently to prevent the accumulation of precipitation. In addition, swales on the west and south sides of the Outdoor CSA help direct potential run-on away from the CSA. The foundation of the WCRRF is abovegrade and positive surface drainage will direct potential run-on away from this facility. Pursuant to the requirements of 20 NMAC 4.1, Subpart IX, 270.14(b)(19)(xi), Map 2 of the TA-50 and TA-54 West Part A permit application, submitted with this permit modification request, show the contours and surface drainage around TA-50-69.

For several reasons, it is not anticipated that there will be any impact to ground water or other water supplies as a result of waste-handling operations at TA-50-69. The depth to ground water at TA-50 is approximately 1,000 feet (Purtymun and Johansen, 1974). Geologic units underlying TA-54 (located 4 miles east of TA-50) include layers of unsaturated volcanic tuff and ash, the moisture content of which ranges from 0.2 to 2.0 percent by weight (IT, 1987). Because the

moisture content is insufficient for moisture migration through the Bandelier Tuff, no impact to ground water is expected. In addition, all water supply lines are under pressure and are equipped with backflow prevention devices. Therefore, no impact to water supplies is expected.

To prevent undue exposure of personnel to hazardous and mixed waste, appropriate personal protective equipment is worn by all on-site personnel at TA-50-69. Workers wear protective work uniforms, steel-toed shoes, gloves, and dosimeter badges when containers are being loaded or unloaded at the CSAs. Hard hats are worn while heavy equipment is being operated. Operators 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 surgical gloves, laboratory coats, booties, and dosimeter badges while working through the glovebox enclosure gloves. Workers inside the glovebox enclosure airlock wear anti-C coveralls, surgical gloves, booties, dosimeter badges, and respirators. Workers inside the glovebox cutting enclosure wear at least two layers of anti-C coveralls, surgical gloves, booties, dosimeter badges, and air-purifying respirators with supplied breathing air. All visitors wear an anti-C lab coat, a dosimeter badge, safety glasses, and booties.

Releases to the atmosphere are not anticipated at the WCRRF Indoor and Outdoor CSAs because containers are kept closed during storage. The only exception to this practice is when, upon inspection, it is determined that containers currently in storage need to be overpacked or repackaged in new containers (see Section 4.2.3). Daily inspections are conducted to ensure the integrity of all stored containers. CAMs are located throughout TA-50-69 and, in the event of an unexpected release, all personnel located in the WCRRF would be notified to evacuate immediately.

Electrical power is supplied to TA-50-69 by a 13.2 kV aerial transmission line extending along Pecos Drive. Supplied power is used to operate CAMs and other electrical equipment in the WCRRF. Additionally, an uninterruptable power source has been installed to operate the CAMs in the event of a power outage. In the event of a power failure, operations in the building would cease and personnel would exit the facility. Operations in both the WCRRF Indoor and Outdoor CSAs would be discontinued temporarily if electrical power was not restored quickly or if container handling equipment failed. However, neither a power nor an equipment failure would affect containment at either of these CSAs.

5.3.3 TA-54-38 RANT Facility Container Storage Areas

Flatbed trucks or trailers will be used to transport containers to the RANT Facility at TA-54 West for storage and testing. The containers will then be handled primarily with diesel or electric forklifts and placed directly into the appropriate CSA. A 5-ton bridge crane operated by riggers will be used to move FRPs in the high bay. Forklifts with drum grapplers may be used to move drums in all the CSAs at the RANT Facility. Drums containing solid wastes will be placed on multi-wheeled dollies, which will facilitate movement into and out of the real-time radiography and passive-active neutron analysis systems. Small containers (e.g., cardboard boxes) may be handled manually or with a dolly. The use of proper handling equipment, appropriate to a container's size and weight, helps to prevent hazards while moving containers within the CSAs. Damaged containers will not be accepted at the RANT Facility. If damaged containers are received, they will be returned to the sender. A 22-foot-wide sloped truck ramp is located east of and adjacent to the loading dock. A dock leveler electric hydraulic ramp with a "Trucklock" allows access from the transport truck to the loading dock platform. These design features facilitate safe handling of containers during loading and unloading operations at the TA-54-38 loading dock.

Runoff of mixed waste from the CSAs to other areas of the facility or to the environment will be prevented. Secondary containment (e.g., self-containment pallets) will be provided at each CSA where potential liquid-bearing containers may be stored (see Section 4.1). The self-containment systems in each storage area will be sufficient to contain at least 10 percent of the volume of potential liquid-bearing containers or the volume of the largest container, whichever is greater, pursuant to the requirements of 20 NMAC 4.1, Subpart V, 264.175(b)(3). Runoff control of liquids resulting from fire-suppression activities will be accomplished by using a vacuum truck, a portable pump, a high-efficiency particulate air vacuum, and/or sorbents, depending on the volume of accumulated fire-suppression liquid. Accumulated liquids will be removed as soon as possible. Surface run-off (e.g., precipitation) at the Outdoor CSA will be managed according to the Clean Water Act's NPDES criteria. The drain in the truck loading area will be blocked to prevent potential spills from entering the NPDES outfall.

Run-on to the self-containment systems will be prevented. The foundation of TA-54-38 is abovegrade. All drums in the Outdoor CSA and the Loading Dock CSA will be stored on self-containment pallets. All waste containers will be covered to prevent contact with precipitation.

The loading dock is abovegrade and is covered. Positive surface drainage will direct potential run-on away from the CSAs at the RANT Facility. Pursuant to the requirements of 20 NMAC 4.1, Subpart IX, 270.14(b)(19)(xi), Map 3 of the TA-50 and TA-54 West Part A permit application show the contours and surface drainage around TA-54-38.

For several reasons, it is not anticipated that there will be any impact to ground water or other water supplies as a result of waste-handling operations at the RANT Facility. The depth to ground water at TA-54 West is approximately 950 feet (IT, 1987). Geologic units underlying TA-54 include layers of unsaturated volcanic tuff and ash, the moisture content of which ranges from 0.2 to 2.0 percent by weight (IT, 1987). Because the moisture content is insufficient for moisture migration through the Bandelier Tuff, no impact to ground water is expected. In addition, all water supply lines are under pressure and are equipped with backflow prevention devices. Therefore, no impact to water supplies is expected.

To prevent undue exposure of personnel to hazardous and mixed waste, personal protective equipment will be worn by all on-site personnel working within the CSAs at TA-54-38. Workers involved in waste handling at TA-54-38 will be required to wear gloves and steel-toed shoes. Protective coveralls may also be worn during waste-handling operations. Hard hats will be worn while crane equipment is being operated.

Releases to the atmosphere are not anticipated at any of the CSAs at the RANT Facility because the containers will be kept closed during storage and testing. Daily inspections are conducted to ensure the integrity of all stored containers. CAMs are located in the low bay and the high bay within TA-54-38 and, in the event of an unexpected release, all personnel located in the facility would be notified immediately to evacuate. If an unexpected release should occur, a building ventilation switch located at the main entrance area is turned off manually while exiting the facility. This design feature will also help prevent releases to the atmosphere.

Electrical power is supplied to TA-54-38 by a transformer located north of the building. Supplied power is used to operate CAMs within TA-54-38. In the event of a power failure, the roll-up door between the high bay and low bay would automatically close and operations in the building would cease. Operations in any of the CSAs would be discontinued temporarily if electrical power was

not restored quickly or if container handling equipment failed. However, neither a power nor an equipment failure would affect containment at any of the CSAs at the RANT Facility.

5.4 PREVENTION OF ACCIDENTAL IGNITION OR REACTION OF IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE [20 NMAC 4.1, Subpart IX, 270.14(b)(9), 270.15(c) and (d); 20 NMAC 4.1, Subpart V, 264.17, 264.176, and 264.177]

This section provides a description of the precautions used to prevent accidental ignition or reaction of ignitable, reactive, or incompatible wastes at the TA-50 and TA-54 West CSAs.

Ignitable and/or reactive wastes (e.g., discarded materials contaminated with ignitable spent solvents, reactive metal debris) may be stored in containers at any of the CSAs. Containers holding ignitable or reactive wastes are or will be located at least 50 feet from the facility's property line at all times (refer to Maps 2 and 3 of the TA-50 and TA-54 West Part A permit application) and will be protected from sources of ignition or reaction. Policies and features are in place at TA-50 and TA-54-38 that minimize the possibility of accidental ignition. Most mechanical equipment operated within the areas is grounded to minimize the potential for sparking by dissipating static charges. In addition, smoking is not allowed within any of these areas. "No Smoking" signs are conspicuously placed wherever there is a potential hazard from ignitable or reactive waste, as required by 20 NMAC 4.1, Subpart V, 264.17(a). Together, these measures meet the requirements of 20 NMAC 4.1, Subpart V, 264.17(a) and (b) and 264.176.

Incompatible wastes, if any, are kept segregated during storage as described in Section 4.2.4. In addition, no incompatible wastes will be mixed, and no waste will be placed in a container that previously held an incompatible waste, as required by 20 NMAC 4.1, Subpart V, 264.177(a) and (b), and 20 NMAC 4.1, Subpart IX, 270.15(d). Incompatible liquid-bearing solid wastes (e.g., dewatered sludges) will be stored on self-containment pallets to meet the requirements of 20 NMAC 4.1, Subpart V, 264.177(c). Only containers made of or lined with materials that will not react with and are otherwise compatible with the waste to be stored will be used for storage at the CSAs addressed in this permit modification request.

5.5 ORGANIC AIR EMISSION STANDARDS

The waste management units described in this permit modification request may potentially manage hazardous wastes subject to the Code of Federal Regulations, Title 40 (40 CFR), Part 264, Subpart CC, standards for volatile organic emissions after December 6, 1995.

Subpart CC standards for containers, as currently set forth by the U.S. Environmental Protection Agency (59 *Federal Register* 62896), require that containers be covered so that there are no detectable emissions. This requirement is determined to be met through various processes for the types of containers to be managed in these CSAs.

These standards are not applicable to containers of waste with less than 100 parts per million by weight (ppmw) volatile organics, containers of less than 0.1 cubic meters (m^3) (approximately 26 gallons) capacity, or that have received waste prior to December 6, 1995. Containers of less than 0.46 m^3 (approximately 119 gallons) capacity and that meet U.S. Department of Transportation (DOT) specifications under 49 CFR Part 178 will be closed during storage pursuant to 40 CFR 264.1086(b)(1)(ii). Containers of greater than 0.46 m^3 capacity or that are greater than 0.1 m^3 capacity, do not meet DOT specifications, and contain wastes of greater than 100 ppmw volatile organics will be subject to a visual inspection and monitoring program as required by 40 CFR 264.1088(b). Containers undergoing the waste characterization activities described in this permit modification request may be open for access for the purposes described in 40 CFR 264.1088(c).

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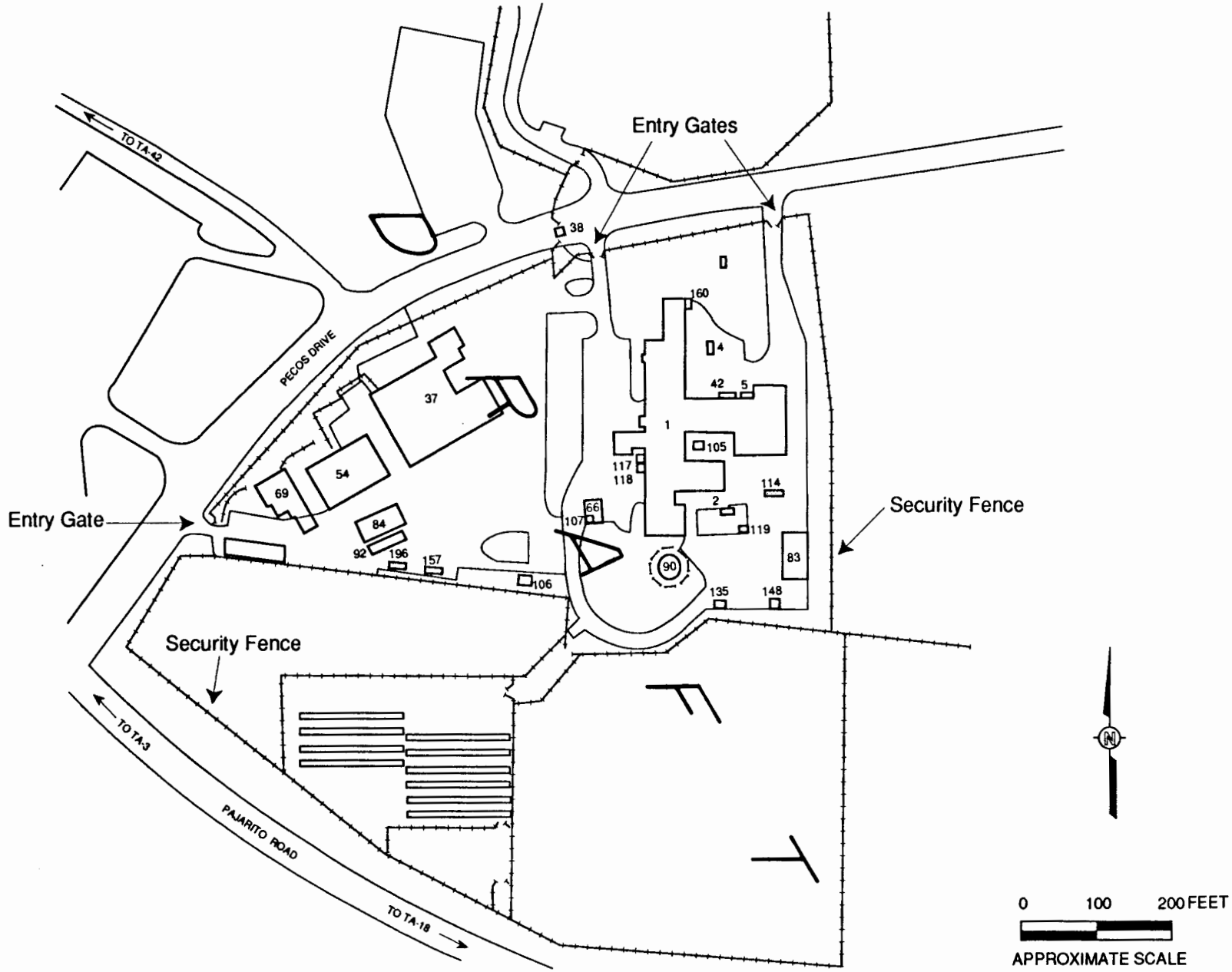

Figure 5-1
Location Map Showing Security Fences and Entry Gates at Technical Area (TA) 50

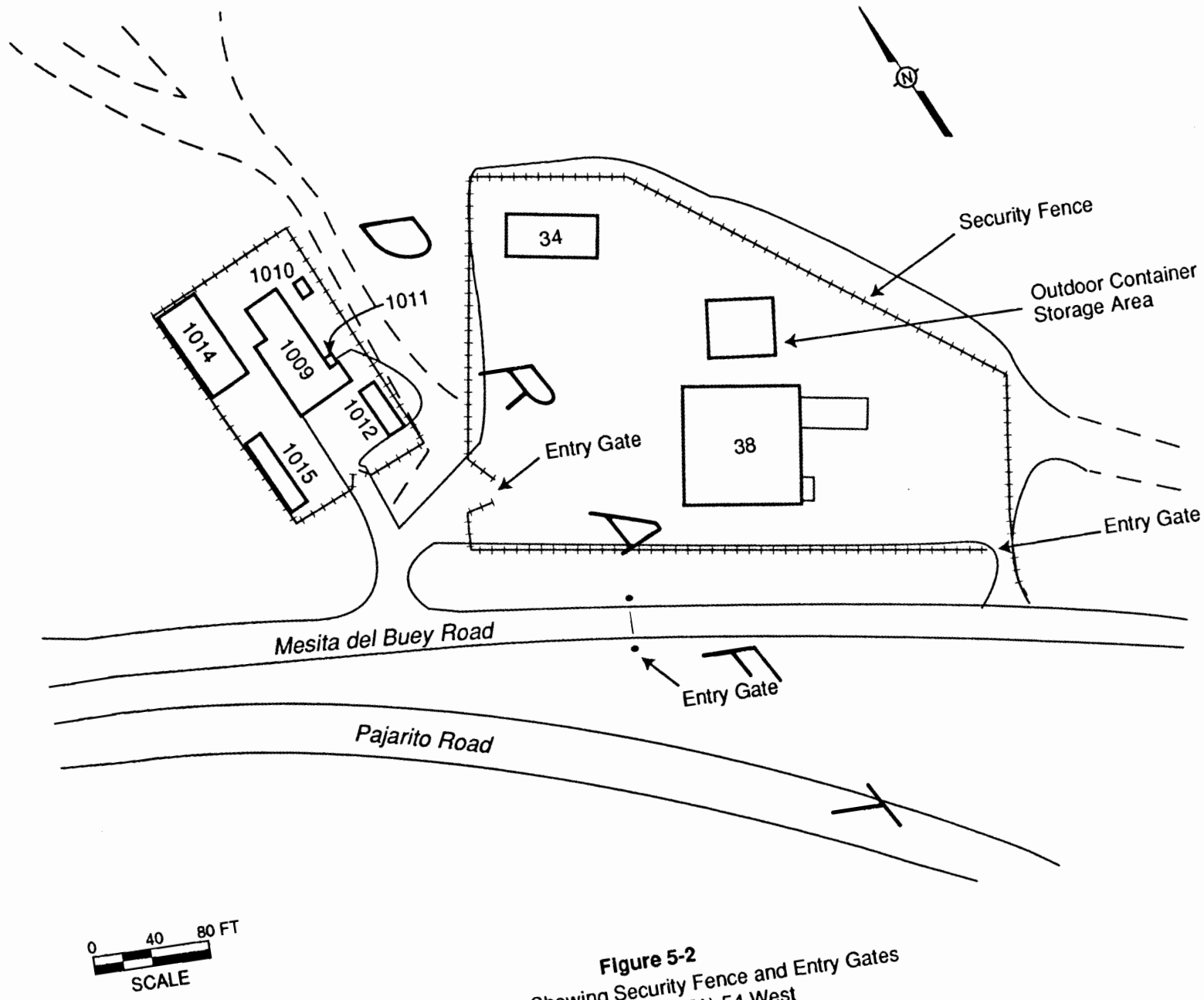

Figure 5-2
Location Map Showing Security Fence and Entry Gates at Technical Area (TA) 54 West

6.0 INSPECTION PLAN

In accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.15, "General Inspection Requirements," this section presents inspection requirements for hazardous and mixed waste container storage units at Los Alamos National Laboratory (LANL). Inspection schedules for the container storage areas (CSA) addressed in this Resource Conservation and Recovery Act permit modification request have been developed to identify equipment malfunctions and deterioration, operator errors, and discharges that might cause or lead to a release of hazardous or mixed waste and pose a threat to human health and the environment. As specified in 20 NMAC 4.1, Subpart IX, 270.14(b)(5), a copy of the general inspection schedule is being included with this submittal. Inspections will be conducted often enough to identify problems in time to correct them before they harm human health or the environment.

6.1 GENERAL INSPECTION SCHEDULES AND REQUIREMENTS [20 NMAC 4.1, Subpart IX, 270.14(b)(5); 20 NMAC 4.1, Subpart V, 264.15(a),(b), and (c)]

In accordance with the requirements of 20 NMAC 4.1, Subpart IX, 270.14(b)(5), and 20 NMAC 4.1, Subpart V, 264.15(a), (b), and (c), a written inspection schedule has been developed at LANL. This schedule will be followed for the inspection of monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, and responding to environmental or human health hazards. Copies of inspection records will be maintained at the facility by LANL's Hazardous and Solid Waste Group (ESH-19) and the site operator.

Inspection schedules outlining the items to be addressed on LANL's Hazardous and Mixed Waste Facility Inspection Record Form (IRF), as well as inspection frequencies, are provided in Section 6.2 and summarized in Table 6-1 for the unit type addressed in this permit modification request. The IRF and instructions for its completion are provided as Attachment 6-1. The activities discussed below are addressed according to the specified regulatory requirements as well as according to existing LANL inspection requirements for hazardous and mixed waste units.

6.1.1 Inspection Records [20 NMAC 4.1, Subpart V, 264.15(d)]

Inspection training is provided through LANL's Environment, Safety, and Health Training Group, with guidance from ESH-19. After training, personnel assigned from the operating group that

manages the unit or subunit will conduct inspections and record the information on IRFs. For a minimum of three years from the date of inspection, the groups responsible for these inspections will retain original records in inspection logbooks. They will send copies of the inspection records to ESH-19 at the end of each work week. ESH-19 will maintain their copies of the inspection records for a minimum of three years from the time the copy is received. The inspection records will be available for review in the event that the New Mexico Environment Department, the U.S. Environmental Protection Agency, or the U.S. Department of Energy inspects the facility for compliance with inspection requirements.

If necessary, ESH-19 may modify the IRF used at LANL or develop a form equivalent to it. Because the IRF is a comprehensive form that applies to all categories of both hazardous and mixed waste units or subunits, not all sections of the form apply to all units or subunits. The IRF encompasses 20 NMAC 4.1, Subpart V, requirements for permitted hazardous waste units; 20 NMAC 4.1, Subpart VI, interim status requirements; and additional requirements directed by LANL policy. All 20 NMAC 4.1, Subpart V, inspection requirements will be addressed at the CSAs addressed in this permit modification request during inspections. Instructions included with the IRF provide specific guidance for each inspection parameter listed.

The IRF will be completed according to the schedule provided in Section 6.2. In the event that the primary inspector is not available to complete the IRF, an alternate will be responsible for its completion. Where daily inspections are required, an inspection will be conducted and recorded in Parts I and II of the IRF for each working day that waste is processed or stored. For each working day that waste is not processed or stored, a check mark will be placed in the "No Use" block in Part I.

Weekly inspections must be conducted for all CSAs. Inspections commence on the first working day of the week and are recorded in Parts I and II of the IRF. For each work week that waste is not processed or stored, a check mark will be entered in the "No Use" block in Part I of the IRF.

For every item requiring inspection (refer to Section 6.2), a response indicating the condition of each item must be entered in the column under the appropriate day of the week. The response is either "OK" or "AR" (action required). If the response is "AR", the required action must be

noted in Part II of the IRF. If more than one "AR" is listed, "ARs" should be numbered. If inspection results indicate that corrective measures are warranted, any and all actions taken (along with time, date, and other pertinent information) will be recorded in Part II of the IRF and on all subsequent IRFs until corrective measures are completed. Only after corrective measures have been completed and recorded on an IRF can an "OK" be entered in the "Condition" column on the IRF.

6.1.2 Inspection Frequency

Inspection frequencies relevant to the CSAs addressed in this permit modification request are specified in Section 6.2 of this plan. Inspection frequencies may be increased at the discretion of the operator or ESH-19, if unexpected malfunctions occur, or if an accelerated deterioration rate of containers or secondary containment systems is detected.

6.1.3 Actions Resulting From Inspections [20 NMAC 4.1, Subpart V, 264.15(c) and 264.171]

6.1.3.1 Preventive Action

If any defects, deterioration, damage, or potential hazards are discovered during inspection, appropriate corrective measures (e.g., transfer of waste from the defective container to an appropriate container in good condition) will be completed promptly to minimize further damage and prevent the need for emergency response. Any preventive action taken in response to an inspection will be noted on the IRF.

6.1.3.2 Remedial and Emergency Action

If a hazardous condition is imminent or has already occurred, remedial action will be taken immediately. The condition will be assessed by the group leader (or designee) responsible for the unit or subunit. If this assessment indicates that human health and the environment may be adversely affected, the contingency plan (Section 7.0 of this submittal) will be implemented immediately. The contingency plan discusses the appropriate responses to emergency situations. Evacuation determinations will be made as outlined in Table 7-4. In the event the contingency plan is needed, any sampling, decontamination, and verification will be conducted as specified in that plan.

6.2 INSPECTION SCHEDULE AND REQUIREMENTS FOR CONTAINER STORAGE AREAS [20 NMAC 4.1, Subpart V, 264.15(b) and 264.174]

Each CSA will be inspected according to the schedule provided below and summarized in Table 6-1. Inspection frequencies are adequate based on the deterioration rates of equipment/systems and the probability of harm to human health or the environment if failure of the equipment/systems or any operator error goes undetected between inspections.

6.2.1 Daily

Areas subject to spills, such as loading and unloading areas, will be inspected each working day when in use (i.e., when waste is stored at the area). Daily inspection requirements must also be met when containers that have the potential for spills and leaks are moved within a CSA and when new containers of hazardous or mixed waste are placed in the storage area. For the daily inspection, the items in the following blocks on the IRF will be addressed:

Block Number	Item(s)
1–5	General information
7	(Un)loading area
13	Structural integrity of containers
14	Covers/lids of containers
16	Labels
22	Secondary containment structures
23	Appropriate aisle space and stacking
24	Appropriate container segregation
39	Radiation safety
40–48	General information

6.2.2 Weekly

Weekly inspection requirements for CSAs, to be initiated on the first working day of each week, include the items in the following blocks on the IRF:

Block Number	Item(s)
1–5	General information
7	(Un)loading area
8	Communication equipment

Block Number	Item(s)
11	Porta Berm (if applicable)
12	Eyewashes/safety showers
13	Structural integrity of containers
14	Covers/lids of containers
15	Warning signs
16	Labels
17	Accumulation start date
18	Run on/off control
20	Security
21	Site lighting
22	Secondary containment structures
23	Appropriate aisle space and stacking
24	Appropriate container segregation
25	Hose bibs, water supply (if applicable)
26	Storage sheds
27	Road/work surfaces
28	Wind sock (if applicable)
29	Shaft cover and rail (if applicable)
30	Pallets (if applicable)
32	Refrigerator
33	Spill control, fire, and emergency equipment
39	Radiation safety
40–48	General information

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Table 6-1
Inspection Schedule for Hazardous or Mixed Waste Container Storage Units[a]

CONTAINER STORAGE AREAS	REQUIRED ENTRIES ON INSPECTION RECORD FORM
DAILY for areas subject to spills and when new containers of waste are placed in the storage area	Blocks 1-5, 7, 13, 14, 16, 22, 23, 24, 39, 40–48
WEEKLY	Blocks 1-5, 7, 8, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 32, 33, 39, 40–48

[a] All inspection requirements apply when hazardous or mixed waste is present at the unit.

ATTACHMENT 6-1

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

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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*) 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							

Attachment 6-1
Hazardous and Mixed Waste Facility Inspection Record Form

September 1995

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							

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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.

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(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)

Attachment 6-1 (Continued)

Hazardous and Mixed Waste Facility Inspection Record Form

September 1995

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 9 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 readable 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.

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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.)

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7.0 CONTINGENCY PLAN

This section 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, "Contingency Plan and Emergency Procedures," and Part B permit application requirements in 20 NMAC 4.1, Subpart IX, 270.14(b)(7), 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, 1993c), 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)].

7.1 HAZARDOUS AND MIXED WASTE EMERGENCY RESPONSE RESOURCES [20 NMAC 4.1, Subpart V, 264.52(c) and 264.53]

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 assumes full responsibility for management of the emergency response operations at the scene. Additional resources include personnel from the Environment, Safety, and Health (ESH) and the Chemical Science and Technology (CST) Divisions at LANL.

Contracted services and other agencies are also available for assistance during emergencies. These 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). The Los Alamos County Police Department (LACPD) provides assistance under a memorandum of understanding (MOU). The Los Alamos Medical Center (LAMC) provides assistance under an MOU.

The IC coordinates all groups and agencies responding to the emergency and personnel operating at the scene. The emergency notification procedure is illustrated on Figure 7-1. The responsibilities and/or assistance available from the response groups/agencies are listed in Table 7-1 and discussed briefly in Sections 7.1.2 through 7.1.7. Each of the emergency response groups/agencies and the 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.

7.1.1 Emergency Management and Response Office [20 NMAC 4.1, Subpart V, 264.52(d) and 264.55]

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). 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.

EM&R Office personnel designated as Emergency Managers are listed in Table 7-2. 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 ESH, CST, and site groups, the duty Emergency Manager will initially assess the possible hazards to human health or the environment and will use whatever response group(s) and/or emergency equipment necessary in order to control and contain the waste. 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 Incident Control Group [ICG]). At the scene of the emergency, the IC will assemble an ICG consisting of the senior person from each responding organization, functional specialists, and the

duty Emergency Manager. Additional technical or management representation may be integrated into the emergency response, as needed. The ICG will receive direction from the IC. The members of the ICG 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. From the BEP(s) and other site-specific information, the ICG will then supply the various response groups with 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).

7.1.2 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 is part of the ICG 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 also provides site field monitoring to determine the nature and extent of contamination, provides information on correct handling of chemicals, makes recommendations on protective clothing and equipment, and provides 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).

7.1.3 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. The Environmental Safety and Health Advisor will provide technical support and ensure LANL compliance with federal, state, and local regulations.

7.1.3.1 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.

7.1.3.2 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.

7.1.3.3 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.

7.1.3.4 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.

7.1.3.5 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.

7.1.4 Other LANL Response Resources

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. 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 personnel are responsible for treatment and storage units at TA-16. These personnel are also trained in emergency procedures and may provide information and/or assistance during emergencies involving units at TA-16.

7.1.5 Contracted Response Groups

Contracted response groups report to the Crisis Manager in the ICG 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.

7.1.5.1 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.

7.1.5.2 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.

7.1.5.3 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 Technician 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 copy of the contract between the DOE and the Incorporated County of Los Alamos is provided as Appendix G.

7.1.6 LANL Support Groups

7.1.6.1 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.

7.1.6.2 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 facility is shown on Figure 7-2. Medical staff 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 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.

7.1.6.3 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.

7.1.6.4 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.

7.1.7 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.

7.1.7.1 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. A copy of the MOU between the DOE and the Incorporated County of Los Alamos for mutual aid assistance is included as Appendix H.

7.1.7.2 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. A copy of the MOU between the DOE Los Alamos Area Office (DOE/LAAO) and LAMC is included as Appendix I.

7.2 EMERGENCY EQUIPMENT AND COMMUNICATIONS [20 NMAC 4.1, Subpart V, 264.52(e)]

7.2.1 Emergency Equipment

20 NMAC 4.1, Subpart V, Part 264, Subpart D, requires a listing of all emergency response equipment available that can be used in the event of an emergency. Attachment 7-1 lists all emergency equipment available at the container storage areas addressed in this permit modification request and in the HAZMAT vehicles and trailers. Attachment 7-1 includes supplemental emergency equipment maintained by JCI, the LACFD, and ESH-2 as well. The locations of emergency facilities are shown on Figure 7-2.

7.2.2 Emergency Communications [20 NMAC 4.1, Subpart V, 264.56(a)]

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. When responding to hazardous or mixed waste emergencies, the EM&R Office provides communications between response units and emergency organizations.

7.2.2.1 Emergency Central Alarm Station

The 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.

7.2.2.2 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.

7.2.2.3 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, 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
- 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.

7.3 CONTINGENCY PLAN IMPLEMENTATION [20 NMAC 4.1, Subpart V, 264.56]

Section 7.3.1 defines the guidelines used to initiate this contingency plan and the resulting actions taken.

7.3.1 Guidelines For Implementation [20 NMAC 4.1, Subpart V, 264.51(b) and 264.56]

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.

  - If an imminent danger of an explosion involving hazardous or mixed waste exists.

- Fires:
  - If a fire involving hazardous or mixed waste occurs.

  - If any building, grass, forest, or nonhazardous waste fire exists that threatens to volatilize or ignite hazardous or mixed waste.

7.3.2 Emergency Notification [20 NMAC 4.1, Subpart V, 264.56(a) and (b)]

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 will 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 an ICG 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 7-1 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.

7.3.3 Emergency Manager Actions [20 NMAC 4.1, Subpart V, 264.56 (b-h)]

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 ICG, 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 7.3.1 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 7.3.1 to assess the hazards to human health and the environment. If any of the criteria under Section 7.3.1 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.

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 are generated by several LANL groups responding to the emergency, as detailed in Section 7.12.

7.4 SPILLS [20 NMAC 4.1, Subpart V, 264.56(e)]

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 7.3.1, 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, 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 CST 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.

7.4.1 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. Attachment 7-1 lists emergency equipment available for spill control at each container storage area addressed in this permit modification request. CST waste management groups will determine the ultimate disposition of any contaminated sorbent or waste material according to RCRA regulatory requirements.

7.4.2 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 7-3 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 7-3. 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, or if a hazardous constituent listed in 20 NMAC 4.1, Subpart II, Part 261, Appendix VIII (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, 1992b).

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.

7.5 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 explosions, 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.

7.6 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. 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.

7.7 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.

7.7.1 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. Otherwise, the operating group will call the EM&R Office for assistance. Any correction methods for nonsudden releases that have resulted in an impact to the environment will be coordinated with the NMED.

7.7.2 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 container storage areas addressed in this application and to ensure that the containers 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 are leaking or that secondary containment has deteriorated, the

operating group will ensure that maintenance or replacement of containment is performed, as appropriate.

7.7.3 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.

7.8 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, light-headedness, 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.

7.9 EVACUATION [20 NMAC 4.1, Subpart V, 264.52(f)]

A facility will be evacuated upon the voice command to evacuate the area or upon the sounding of the evacuation or fire alarm.

7.9.1 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.

7.9.2 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 7-4 lists the criteria for evacuation, persons responsible for initiating evacuations, and reentry conditions. Figure 7-3 shows evacuation routes and muster areas at TA-50-1, and Figure 7-4 shows the evacuation routes and the muster area for TA-50-69. Figure 7-5 shows evacuation roads, trails, and zones; emergency exit gates; assembly/muster stations; and pick-up points at TA-54. Evacuation routes at TA-54 West, Building 38, are shown on Figure 7-6.

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 Platoon 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.

7.10 SALVAGE AND CLEANUP [20 NMAC 4.1, Subpart V, 264.56(g) and (h)]

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. CST waste management groups 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.

7.11 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.

7.12 EMERGENCY RESPONSE RECORDS AND REPORTS [20 NMAC 4.1, Subpart V, 264.56(j)]

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.

7.13 CONTINGENCY PLAN AMENDMENT [20 NMAC 4.1, Subpart V, 264.54]

This contingency plan will be reviewed periodically by the EM&R Office, CST 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 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.

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Table 7-1

Response Groups and Agencies Available to the Emergency Management and Response Office for Guidance and/or Emergency Assistance

LANL[a]-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.

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Table 7-1 (Continued)

Response Groups and Agencies Available to the Emergency Management and Response Office for Guidance and/or Emergency Assistance

LANL[a]-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	Monitors for leaks, pressure buildup, gas generation, or equipment ruptures in the event of an emergency at Technical Area (TA) 55.
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.
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.

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Table 7-1 (Continued)

Response Groups and Agencies Available to the Emergency Management and Response Office for Guidance and/or Emergency Assistance

Non-LANL[a]-Controlled Response Group	Telephone	Responsibilities
Los Alamos County Fire Department	667-7080	Dispatches firefighting personnel, equipment, and Emergency Medical Technicians.
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.

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Table 7-2

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 7-3

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	(L, S) HCN Test Method, Section 7.3
	Test method to determine hydrogen sulfide released from waste	(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 and graphite furnace atomic absorption (AA) spectroscopy, gaseous hydride AA, or direct aspiration AA	(L, S) SW1311
Arsenic		(L, S) SW7060A, SW7061A
Barium		(L, S) SW7081, SW7080A
Cadmium		(L, S) SW7131A, SW7130
Chromium		(L, S) SW7191, SW7190
Lead		(L, S) SW7421, SW7420
Selenium		(L, S) SW7740, SW7741A
Silver		(L, S) SW7761, SW7760A
Mercury	TCLP extraction or dissolution steps and manual cold-vapor technique	(L) SW7470A, (S) SW7471A
Volatile organics	Gas chromatography(GC)/mass spectrometry (MS)	(L, S) SW8240B
	GC/MS capillary column technique	(L, S) SW8260A
Semivolatile organics	GC/MS packed column technique	(L, S) SW8250A
	GC/MS capillary column technique	(L, S) SW8270B

Refer to footnotes at end of table.

Table 7-3 (Continued)

Waste Analysis Parameters and Test Methods[a]

Parameter	Test Method	Reference[b]
Organochlorine pesticides	TCLP extraction and GC	(L, S) SW8080A
Chlorinated herbicides		(L, S) SW8150B
Chemical composition	95 percent organic composition by GC/flame ionization detector	(L) SW8100
Trace organic analysis	Any of the following:	
	Volatile organic compounds-GC/MS	(L, S) SW8240B
	- Capillary column technique	(L, S) SW8260A
	Semivolatile organic compounds-GC/MS	
	- Packed column technique	(L, S) SW8250A
	- Capillary column technique	(L, S) SW8270B
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	TCLP extraction and colorimetric method for hexavalent chromium	(L, S) SW7196A
Sulfide	Colorimetric titration	(L, S) SW9030A

Refer to footnotes at end of table.

Table 7-3 (Continued)

Waste Analysis Parameters and Test Methods[a]

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

[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, 1992b, "Test Methods for Evaluating ~~Solid~~ Waste," Physical/Chemical Methods, *SW-846*.
(L) refers to liquid waste.
(S) refers to solid waste.
See 55 *Federal Register* 11863.

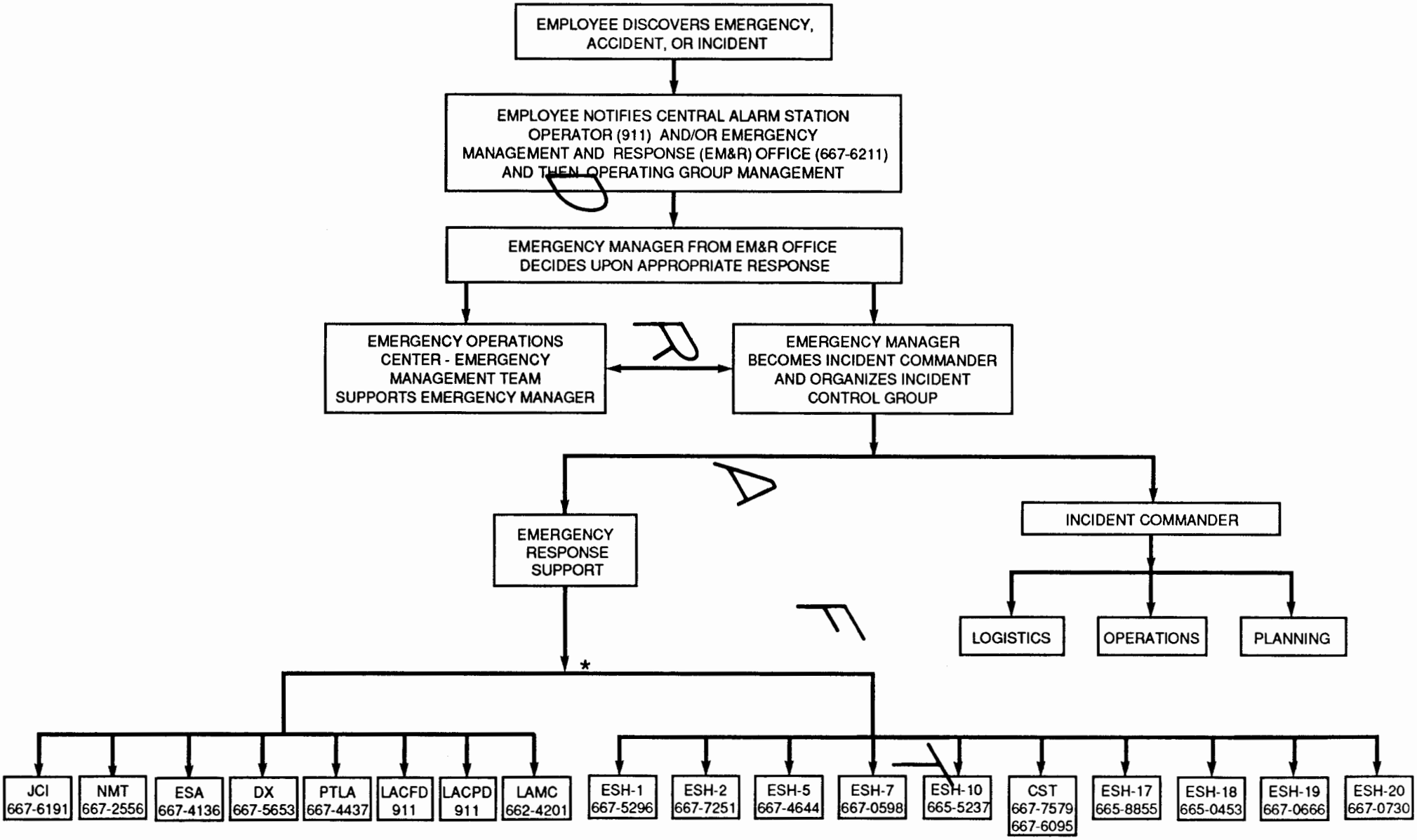
[c] See also Atomic Absorption Methods listed under TCLP.

Table 7-4

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.



*Refer to Table 7-1 for information on these response groups.

Figure 7-1
Hazardous and Mixed Waste Emergency Notification Structure

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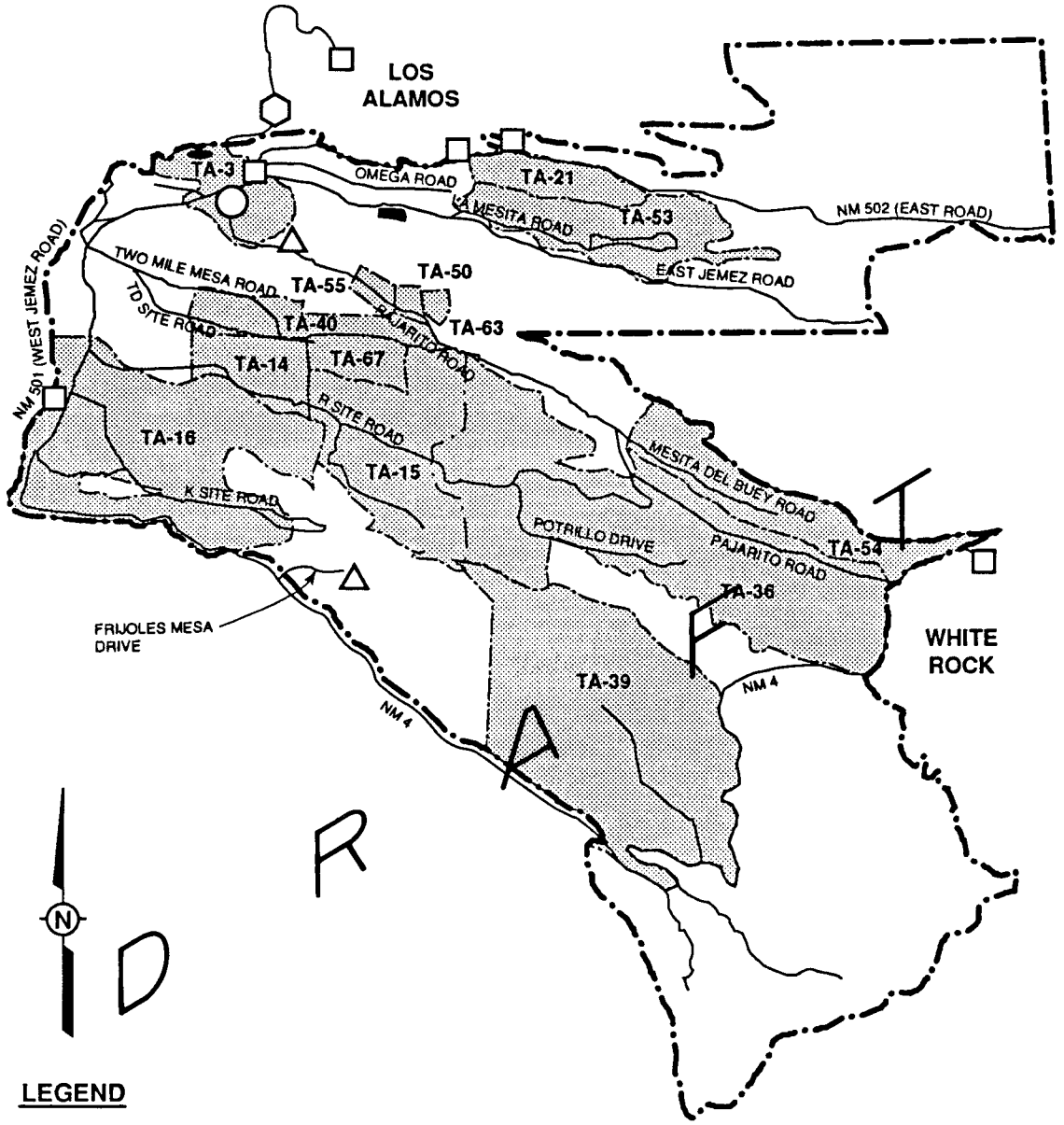

LEGEND

- 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 7-2
Emergency Facilities

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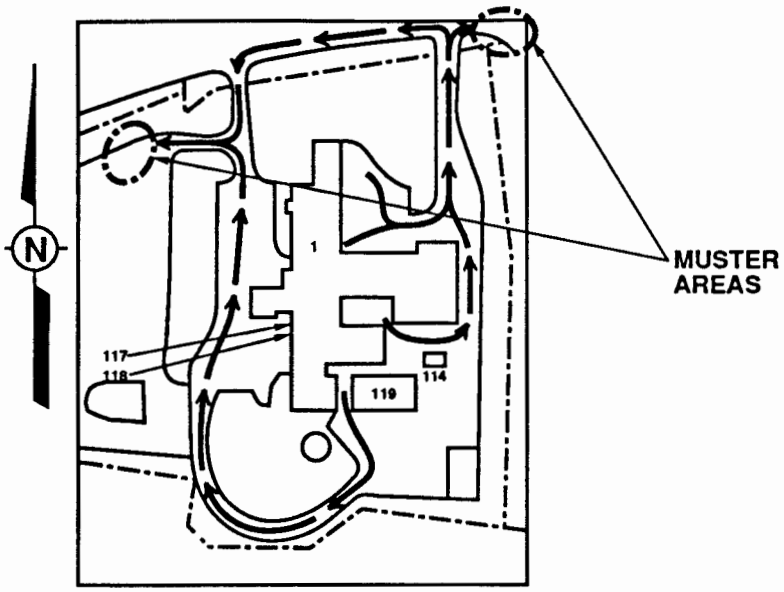

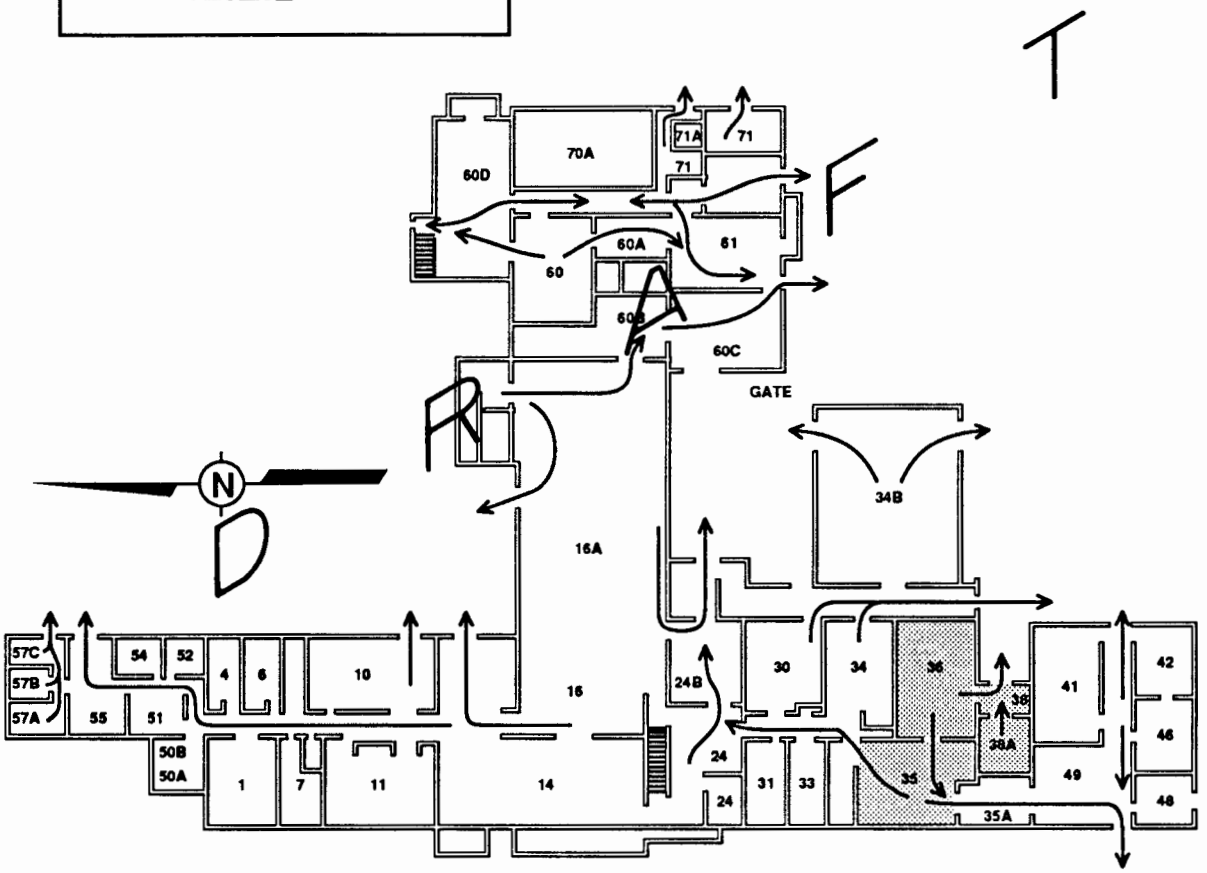

TA-50-1 BASEMENT

LEGEND

↑ EVACUATION ROUTE

CONTAINER STORAGE AREA

NOT TO SCALE

Figure 7-3
Evacuation Routes and Muster Areas at Technical Area (TA) 50, Building 1 (TA-50-1), Basement

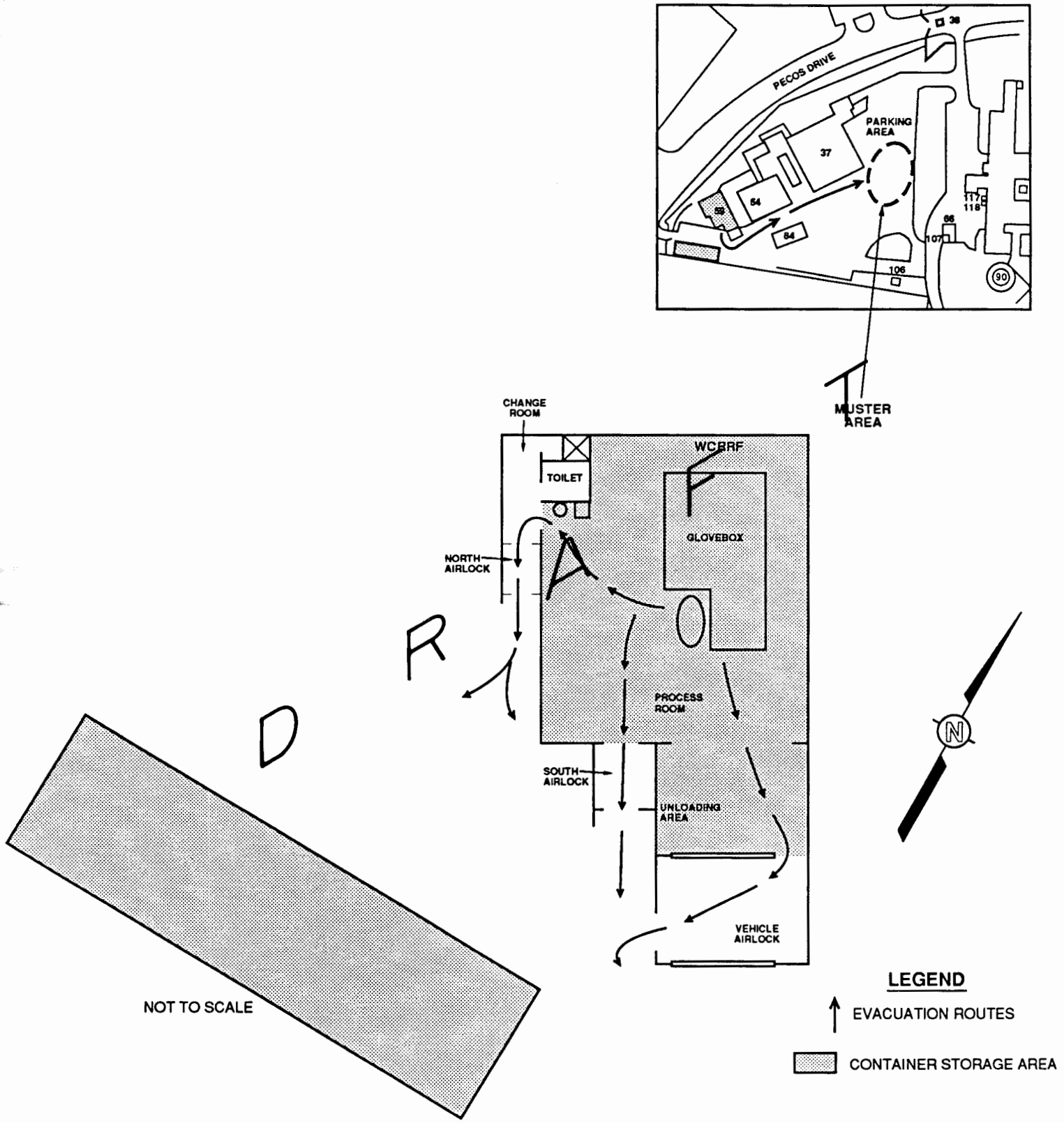

Figure 7-4
Evacuation Routes and Muster Area at the Waste Characterization, Reduction, and Repackaging Facility (WCRRF) at Technical Area (TA) 50

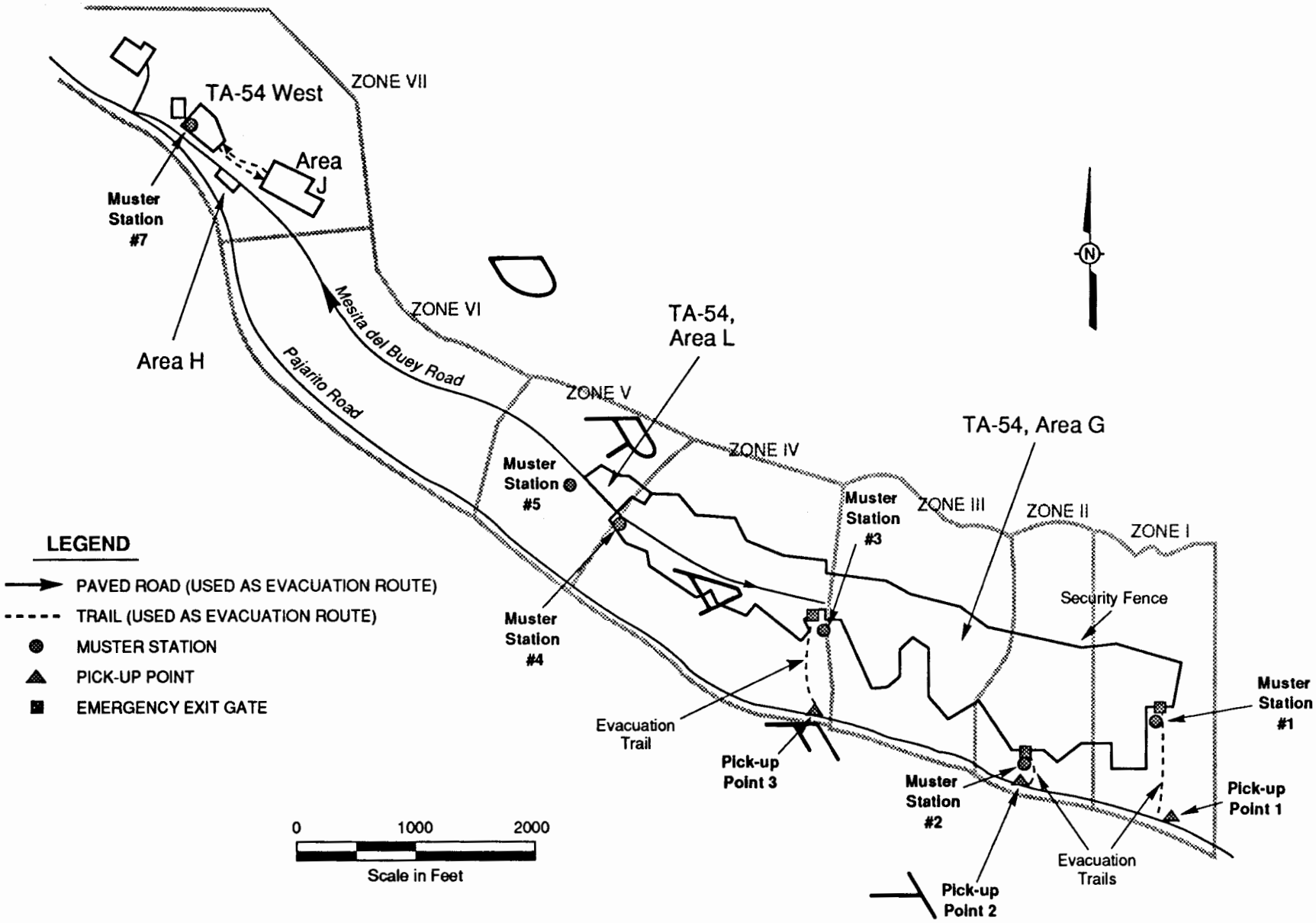

Figure 7-5

Evacuation Roads, Trails, and Zones; Emergency Exit Gates; Muster Stations; and Pick-up Points at Technical Area (TA) 54

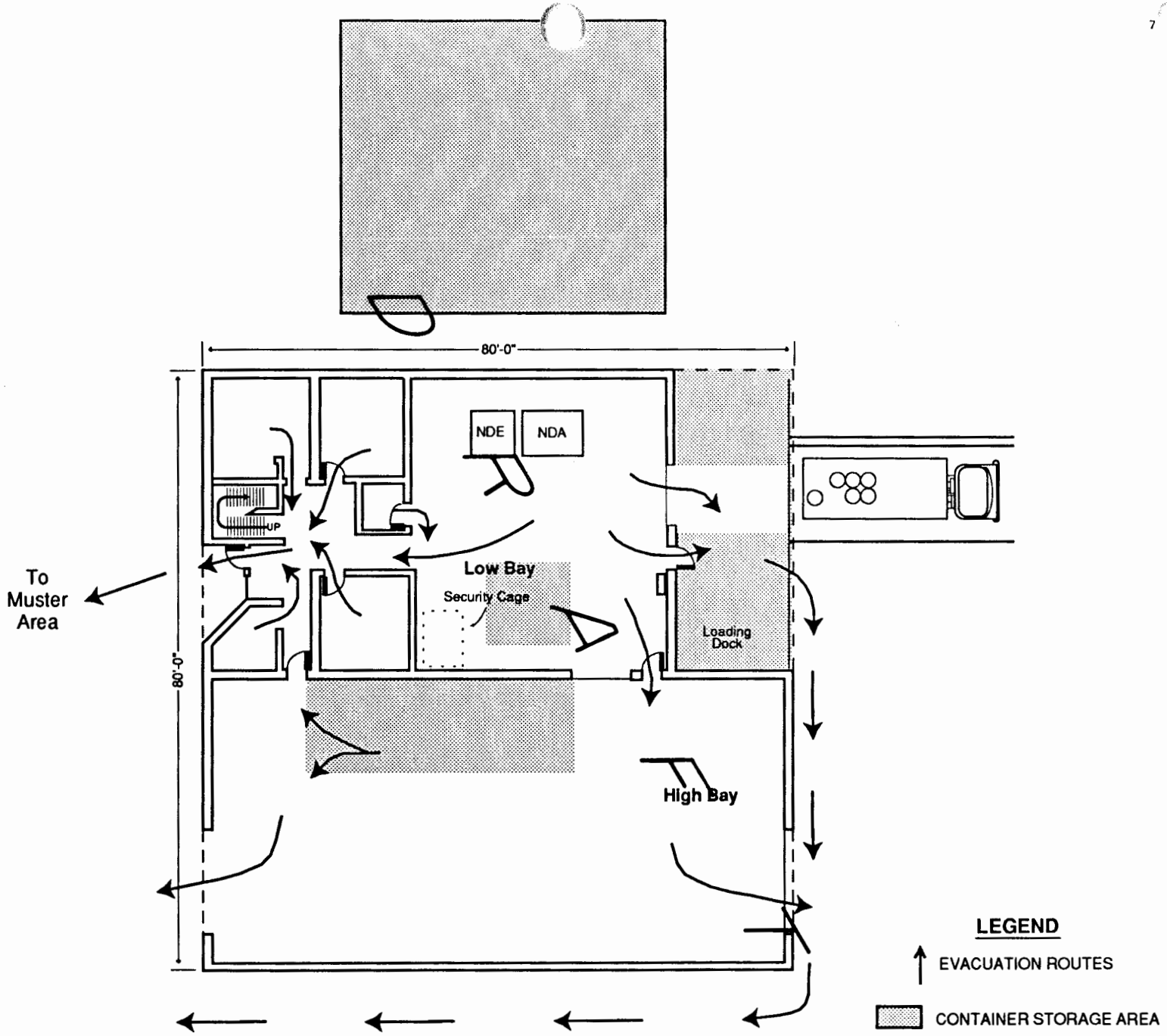

Figure 7-6

Evacuation Routes at the Radioassay and Nondestructive Testing (RANT) Facility at Technical Area (TA) 54 West

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ATTACHMENT 7-1

Emergency Equipment

Attachment 7-1

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) 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.

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Attachment 7-1

Emergency Equipment

TA-50

Emergency equipment at TA-50-1, 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.

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Attachment 7-1

Emergency Equipment
(Continued)

Emergency equipment at TA-50-1, 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.

Attachment 7-1

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.

Attachment 7-1

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.

Attachment 7-1

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.

Attachment 7-1

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.

Attachment 7-1

Emergency Equipment
(Continued)

Supplemental emergency equipment and personnel available from the Los Alamos County Fire Department:

	Number
Engine companies - 1,250 gallons per minute	
Engines 1, 3, 4, 5, 6, 10, and 40	7
Engine 50 (Reserve) - 1,000 gallons per minute	1
Mini-pumpers	
MT-1, -3, -4, and -5	4
Modular ambulances	4
3 First line - M1, M3, M4	
1 Reserve Unit - M10	
Rescue vehicles	2
1 First Line	
1 Newly Purchased	
Crash-Fire-Rescue (CFR) units	1
CFR 6	
SCBA units	44
SCBA air tanks	130
105-foot tower ladder with pump - 1,500 gallons per minute	1
Personnel with 120 hours Emergency Medical Technician training	90
Personnel with Advanced Life Support training	14
Water tankers	5
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	

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Attachment 7-1

Emergency Equipment (Continued)

Supplementary emergency equipment and personnel available from Johnson Controls World Services Inc.:

	Number
TRANSPORTATION:	
Pickups, 1/2 through 3/4 ton	183
Trucks, 1 through 3 ton	25
Vans, panels, and carryalls	24
SPECIAL EQUIPMENT:	
Road grader, Cat, self-propelled blade, with radio	1
Grader, John Deere, self-propelled, with radio	2
Loaders, bucket, Melroe, Bobcat, 1/3 cubic yards	3
Loader, bucket, Cat, 2-3/4 cubic yards, with radio	1
Loader, Fiat-Allis, 3 cubic yards	1
Loader, bucket, Cat, 2-1/2 cubic yards	1
Loader, bucket, Cat, 3-1/4 cubic yards	1
Loader, bucket, Yale, 3 cubic yards, with radio	1
Loader, bucket, backhoe, Case, 1-1/2 cubic yards	1
Loaders, bucket, backhoe, Case, 7/8 cubic yards	1
Loader, backhoe, Ford, 1 cubic yard	1
Loader, bucket, backhoe, JCB, 7/8 cubic yards	3
Snowplows, Bombardier, with blade	2
Bulldozer, D-8, Crawler	1
Bulldozers, TD-25, International	2
Scraper, Terex, self-propelled	1
Scraper, Fiat-Allis, self-propelled	1
Bulldozer, 280, rubber-tired, with radio	1
Semitrailers	7
Chain saws	12
Flusher, street, 3,000-gallon truck, tanker, 500-gallon, FMC	1
Mobile transceivers (2-way, KOB-753)	144
Generators	6
Handsets (2-way)	113
Pageboys (1-way)	398
Welders, mounted on trailers and trucks	32

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Attachment 7-1

Emergency Equipment (Continued)

Supplementary emergency equipment and personnel available from Johnson Controls World Services Inc., (continued):

	Number
PERSONNEL:	
Heavy equipment operators	18
Clerks	10
Dispatchers	1
Mechanics	21
Power saw operators	8
Radio and telephone operators	1
Truck drivers	23
OTHER EQUIPMENT:	
Portable toilets	3
Light bank set 2/3 kilowatt generator	1
Hand held two way radios	11
6" x 8" landscape timbers	65
15 ton dump truck	8
8 ton dump truck	5
Fuel truck 3,000 gallons (diesel)	1
Service truck (petroleum, oil, lubricant)	1
Combination fuel truck (392 gallons diesel) (392 gallons gasoline)	1
SNOW REMOVAL EQUIPMENT:	
Truck mounted snow plows	9
Motor graders w/wing plow attachment	2
Truck mounted sand/salt spreaders	3
Sand/salt spreader/plow	1
Front end loaders	8
Rubber tired bulldozer	1
Farm tractors w/blade attachments	6
Skid steer loaders	4
Rubber tracked bombardiers	2
Hand operated snow blowers	2
Road configured snow blower	1
Wheel Horses w/blade attachments	6

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Attachment 7-1

Emergency Equipment
(Continued)

Supplementary emergency equipment and personnel available from Johnson Controls World Services Inc., (continued):

	Quantity
SNOW REMOVAL PERSONNEL:	
Labors	57
Teamsters	25
Operators	25
Mechanics	21
Supervisors	6
SPILL RESPONSE EQUIPMENT:	
Spill trailer	1
Material storage shed	1
Submersible pump	1
Acid/caustic pump	1
Wet/vacuums	2
Vacuum	1
SPILL RESPONSE MATERIAL:	
Sorbent sheets	2,400
Zorball (sacks)	6
55 gallon barrel w/bung	8
55 gallon barrel w/o bung	1
3" x 96" spill booms	108
Sand bags	200
Gallon ND-165 degreaser	55
White mop heads w/handles	24
PERSONNEL:	
Teamsters	3
Operators	3
Laborers	15
Supervisors	6

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Attachment 7-1

Emergency Equipment (Continued)

Supplementary emergency equipment and personnel available from Johnson Controls World Services Inc., (continued):

	Quantity
UTILITIES EQUIPMENT:	
Line truck (digger derrick)	2
Basket truck	3
Backhoe	2
Boom truck	1
Dump truck	1
Sewage trucks	2
Potable water truck	1
Trailer mounted generator 110 volt	1
Truck mounted welders	2
Thawing machine	1
UTILITIES PERSONNEL:	
Operators	14
Pipefitters	24
Laborers	10

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Attachment 7-1

Emergency Equipment
(Continued)

Emergency equipment and personnel at the Central Medical Facility, Occupational Medicine Group (ESH-2):

At TA-3 (SM-409) Central Clinic:

PERSONNEL:	Number
Physicians (3 casual)	7
Physician's Assistants (1 casual)	5
Nurses (2 casual)	9
X-ray Technicians	1
Clinical Laboratory Technicians (4 part-time)	5
Clinical Testing Technicians	4

SPECIAL EQUIPMENT-PORTABLE:	
Multichannel emergency receiver-base station	1
Two-way radio on the State Med Net, the LANL Emergency Management channel, and the LANL Health-Safety Net	1
Cardiac monitors and defibrillators (1 backup)	2
Crash cart emergency equipment with E-tank oxygen (O_2)	1
Portable physicians' bag with medications	1
Portable suction unit	1
Portable stretchers (1 ambulance, 3 gurney, 1 folding)	5
Wheelchairs	6
O_2 tanks	4
Manual resuscitators	2
Intravenous (IV) stands	2
IV solutions	q.s.*
Otoscope/ophthalmoscopes	5
Portable sphygmomanometers	8
Stethoscopes	10
Anticontamination apparel	q.s.
Eye irritation solution	q.s.
Industrial first-aid kits	q.s.
Extrication and cervical collars, crutches, canes	4
Suture sets	4
Protective apparel	4
Morgan lends and irrigation sets	2
Decontamination equipment (portable)	2

*q.s. - inventory varies as needed.

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Attachment 7-1

Emergency Equipment
(Continued)

Emergency equipment and personnel at the Central Medical Facility, ESH-2 (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 (2)
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.

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8.0 PERSONNEL TRAINING

This section describes the personnel training program for Los Alamos National Laboratory (LANL). Training requirements for facility personnel are specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.16, "Personnel Training," and are submitted with the Resource Conservation and Recovery Act (RCRA) Part B permit application as specified in 20 NMAC 4.1, Subpart IX, 270.14(b)(12). 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. 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.

8.1 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 all waste management activities except for high-explosive waste treatment, which is 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 and to waste generators. 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

(ES&H) Training Group (ESH-13) is responsible for developing and delivering LANL-wide ES&H training. Environmental courses are designed with substantial input from ESH-19, the CST waste management groups, and others, as appropriate.

8.2 TRAINING CONTENT, FREQUENCY, AND TECHNIQUES [20 NMAC 4.1, Subpart IX, 270.14(b)(12); 20 NMAC 4.1, Subpart V, 264.16(a)(b) and (d)]

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 (performance-based courses that focus primarily on procedures performed by individual workers). Each of these types of training is described briefly in Sections 8.2.1 through 8.2.3. All LANL, JCI, and PTLA employees 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 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 will maintain, at a minimum, hard copies of training records for currently employed workers until the facility closes.

A table, provided as Attachment 8-1, 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. Attachment 8-2 summarizes the components of facility-specific and on-the-job training (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. Categories of workers include hazardous/mixed waste workers, managers of hazardous/mixed waste workers, emergency responders, and uncontrolled area potential release site workers.

Hazardous/mixed waste workers and managers of hazardous/mixed waste workers receive OJT specific to the hazardous/mixed waste facility to which they are assigned. In addition to the training topics specified in Attachment 8-2, OJT topics include 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.

The outline of LANL's training programs, provided as Attachment 8-1, is on file in the ES&H Training Center and is 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. The ES&H Training Center maintains 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, as required by 20 NMAC 4.1, Subpart V, 264.16(d)(3).

8.2.1 LANL-Wide Training

The personnel training courses emphasize compliance with requirements for the safe handling of hazardous and mixed waste. Program instructors are trained in hazardous and mixed waste management procedures and RCRA provisions. The training program is designed to provide training that is appropriate for the worker's responsibilities. Personnel who handle hazardous/mixed waste and/or clean up spills or releases of hazardous/mixed waste and the supervisors of these workers receive instruction on the appropriate topics listed in Attachment 8-1. In addition, personnel who conduct inspections of hazardous and/or mixed waste units and who are responsible for requisitioning the transport, treatment, or storage of hazardous and/or mixed waste receive training, as necessary, as listed in Attachment 8-1. Training may be provided by LANL instructors through ESH-13 or by external vendors knowledgeable about a particular subject.

8.2.2 Facility-Specific Training

All waste-handling personnel will participate in facility-specific training at their work locations. Attachment 8-2 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 (as they apply to their facility) and implementation 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.

8.2.3 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.

8.2.4 Training Coordinator [20 NMAC 4.1, Subpart V, 264.16(a)(2)]

The ESH-13 Group Leader directs the personnel 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 ensure that personnel under their supervision receive necessary training.

8.3 EMERGENCY TRAINING [20 NMAC 4.1, Subpart V, 264.16(a)(3) and (c)]

If called upon by the EM&R Office, the outside professionals (JCI and PTLA) assist LANL's 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 Crisis Manager or the Incident Commander in the Incident Control Group.

To ensure maximum protection of life and property and to mitigate the consequences of an emergency situation, all ESH, CST, ESA, DX, NMT, and JCI personnel involved in waste handling

and emergency response must be knowledgeable about appropriate building and operating area emergency procedures. These workers participate in LANL's emergency training program.

Group leaders and immediate supervisors are responsible for ensuring that education and training in facility-specific emergency procedures and in LANL's emergency management program are provided to all personnel under their supervision. Training in facility-specific emergency procedures is given by the operating group. The EM&R Office provides training related to implementing LANL's EMP. 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 RCRA requirements that apply to job-related activities as well as to 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 review of procedures affecting the work area. ESH-13, with guidance from ESH-19, provides an annual refresher of applicable RCRA requirements. The sponsoring organization's office file currently maintains facility-specific 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. In addition, all waste management and handling personnel in CST, ESA, DX, and JCI 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.

8.4 IMPLEMENTATION OF TRAINING PROGRAMS

General Employee Training (GET), an introductory training program, 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. All workers who will handle or be associated with mixed waste also receive courses in hazard communications, waste generator training, and radiation worker protection. Personnel who will handle or be associated with hazardous waste are required to take the hazard communications and waste generator training courses. Workers will not work in unsupervised positions or at a new position until they have been trained.

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 programs.

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. 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.

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ATTACHMENT 8-1

Los Alamos National Laboratory-Wide Training Program

Attachment 8-1

Los Alamos National Laboratory-Wide Training Program

COURSES	Hazardous/Mixed Waste Worker	Manager of Hazardous/Mixed Waste Workers	Supervisor of Hazardous/Mixed Waste Workers	Emergency Responder	Uncontrolled Area Potential Release Site Worker
General Employee Training (includes familiarization with standard operating safety guidelines)	X[a]	X	X	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	X
Hazard Communications (includes explosion/fire hazards, chemical burns, chemical compatibility, eye/skin hazards and protection, respiratory hazards and protection, as applicable)	X	X	X	X	X
Radiation Worker I or II (requires recertification every two years)	*[b]	*	*	X	X
Resource Conservation and Recovery Act (RCRA) Personnel Training (includes RCRA provisions - overview of Code of Federal Regulations Title 40, Parts 260-265, 268, and New Mexico Administrative Code, Chapter 4, Part 1; overview of Department of Transportation shipping regulations; inspections - internal and external protocol regarding facilities; operating equipment, communication systems, security systems; contingency plan; familiarization with emergency equipment use, inspection, and repair)	X	X	X	X	X

Refer to footnotes at end of attachment.

Attachment 8-1 (Continued)

Los Alamos National Laboratory-Wide Training Program

COURSES	Hazardous/Mixed Waste Worker	Manager of Hazardous/Mixed Waste Workers	Supervisor of Hazardous/Mixed Waste Workers	Emergency Responder	Uncontrolled Area Potential Release Site Worker
RCRA Annual Refresher (includes regulatory and legislative updates, occurrence reports and lessons learned, audit findings, modification/review of the contingency plan; provides required retraining)	X	X	X	X	X
First Aid: Standard (provides required triennial recertification)	X	X	X	X	X
Cardiopulmonary Resuscitation: Adult (provides annual required recertification)	X	X	X	X	X
Waste Documentation Forms (includes use of Waste Profile Form, use of waste disposal forms, use of manifest system, as applicable)	*		*		*
Respirators - Air Purifying (provides required annual retraining for operation and inspection of device, changing filters, donning and doffing)	*	*	*	X	*
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	*
Hazardous Materials Packaging & Transportation (HMPT) Introduction (includes introduction to regulations, identification of hazardous materials, placarding/labeling, manifesting/recordkeeping)	*		*		

Refer to footnotes at end of attachment.

Attachment 8-1 (Continued)

Los Alamos National Laboratory-Wide Training Program

COURSES	Hazardous/Mixed Waste Worker	Manager of Hazardous/Mixed Waste Workers	Supervisor of Hazardous/Mixed Waste Workers	Emergency Responder	Uncontrolled Area Potential Release Site Worker
HMPT Movement by Highway (includes placarding/labeling, segregation of hazardous materials)	*		*		
HMPT Preparing Shipments (includes packaging operations)	*		*		
HMPT Completing the Hazardous Materials Transfer Form for Radioactive Materials	*		*		
Spill Coordinator Training (includes accidental release and spill response procedures per the Spill Prevention, Control, and Countermeasures Plan)	*			X	

[a] X indicates a required course.
[b] * indicates that a course may be required for specific job tasks and/or work areas.

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ATTACHMENT 8-2

Facility-Specific and On-the-Job Training for Hazardous and Mixed Waste Handling Operations

Attachment 8-2

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.

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9.0 CLOSURE PLAN

This section describes the activities necessary to close the hazardous and mixed waste container storage areas (CSA) addressed in this permit modification request. The activities detailed in this section are included to address the closure requirements specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart IX, 270.14(b)(13), and 20 NMAC 4.1, Subpart V, Part 264, Subpart G. This section is organized as follows:

- General closure information applicable to the CSAs addressed in this permit modification request (Section 9.1)
- Closure procedures specific to the CSAs at Technical Area (TA) 50, Building 1, Rooms 35, 36 and 38/38A (Section 9.2)
- Closure procedures specific to the CSAs at TA-50, Building 69, the Waste Characterization, Reduction, and Repackaging Facility (WCRRF) (Section 9.3)
- Closure procedures specific to the TA-54 West, Building 38, the Radioassay and Nondestructive Testing (RANT) Facility (Section 9.4)
- Specific sampling and analytical procedures to be used during closure activities at the CSAs addressed in this permit modification request (Section 9.5).

Closure activities to be conducted at other units throughout Los Alamos National Laboratory (LANL) are described in LANL's Resource Conservation and Recovery Act (RCRA) Hazardous Waste Facility (HWF) Permit, in existing RCRA Part B permit applications, and in interim status closure plans for units that have not yet been or may not be included in permit applications.

Closure will include removal of waste from the CSA to be closed (see Sections 9.2.3, 9.3.3, and 9.4.3) and decontamination of structures and equipment that have been contaminated by waste materials (see Sections 9.2.4, 9.3.4, and 9.4.4). Closure activities will minimize the need for further maintenance, preclude the release of hazardous waste or constituents to environmental media, and be protective of human health.

Radiological exposures during closure activities will be maintained as low as reasonably achievable, as required by the Atomic Energy Act, to protect worker and public health and safety. Until closure is complete and has been certified in accordance with 20 NMAC 4.1, Subpart V, 264.115, a copy of the approved closure plan and all approved revisions will be on file at LANL

and will be available to the New Mexico Environment Department (NMED) or the U.S. Environmental Protection Agency (EPA) upon request.

9.1 GENERAL CLOSURE INFORMATION

This section is prepared in accordance with the requirements of 20 NMAC 4.1, Subpart IX, 270.14(b)(13), and 20 NMAC 4.1, Subpart V, Part 264, Subparts G and I, as applicable.

A copy of the closure plan and any approved revisions will be maintained at LANL. The primary contact person is:

Larry D. Kirkman, Acting Area Manager
Los Alamos Area Office (LAAO)
U.S. Department of Energy
528 35th Street
Los Alamos, New Mexico 87544
Tel. (505) 667-5288

9.1.1 Closure Performance Standard [20 NMAC 4.1, Subpart V, 264.111]

Container storage areas described in this permit modification request will be closed to meet the following performance standards:

- Minimize the need for further maintenance
- Control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground or surface waters or atmosphere
- Comply with the container management requirements of 20 NMAC 4.1, Subpart V, 264.178, as applicable.

This will be accomplished by removal of waste from the CSAs and decontamination, if necessary, of the areas that may have come into contact with wastes. Decontamination activities will ensure the removal of waste residues from the CSAs addressed in this permit application to established cleanup levels (see Sections 9.2.6, 9.3.6, and 9.4.6).

Closure of any CSA will be deemed complete when decontamination has been verified (see Sections 9.2.6, 9.3.6, and 9.4.6); all equipment and structures associated with operation of the

area have been decontaminated, if necessary; and closure certification has been submitted to and approved by the NMED.

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

This closure plan has been written for implementation of partial closure (i.e., closure of a waste management unit or subunit at a facility that contains other active waste management units) rather than final closure of the LANL facility. Partial closure will 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 procedures described in the following sections will apply to the CSA(s) to be closed. Partial closure (hereafter referred to as closure) will be complete when decontamination has been verified (see Sections 9.2.6, 9.3.6, and 9.4.6); the waste management area and related equipment and structures have been decontaminated, if necessary; the closure certification has been submitted; and the NMED has approved the closure. Final closure will occur when LANL's remaining RCRA-regulated waste management units or subunits are closed either by waste removal and decontamination or by closure in place.

9.1.3 Closure Schedule [20 NMAC 4.1, Subpart V, 264.112(b)(6) and 264.113]

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 20 NMAC 4.1, Subpart V, 264.113(a), 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). 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 9-1. 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). In addition, the demonstrations in 20 NMAC 4.1, Subpart V, 264.113(a)(1) and (b)(1), will be made in accordance with 20 NMAC 4.1, Subpart V, 264.113(c).

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

If it is necessary to amend the closure plan for any CSA addressed in this plan, LANL will submit, in accordance with 20 NMAC 4.1, Subpart IX, 264.112(c), a written notification of or a request for a permit modification describing any change in operation or facility design that could affect the closure plan. The written notification or request will include a copy of the amended closure plan for approval by the NMED. The U.S. Department of Energy (DOE) will submit a written notification of or a request for a permit modification to authorize a change in the approved plan if:

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

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

9.1.5 Financial and Liability Requirements [20 NMAC 4.1, Subpart V, 264.140(c)]

In accordance with 20 NMAC 4.1, Subpart V, 264.140(c), LANL, as a federal facility, is exempt from the requirements to provide financial assurance mechanisms and liability insurance for closure actions.

9.1.6 Closure Certification [20 NMAC 4.1, Subpart V, 264.115]

Within 60 days after completion of closure activities for each of the CSAs, 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 applicable closure plan, when approved. The certification will be attested to by an independent, registered professional engineer and will be signed by the appropriate DOE and LANL officials, in accordance with 20 NMAC 4.1, Subpart V, 264.115. Documentation supporting the independent registered engineer's certification will be

furnished to the Secretary of the NMED with the original certification. A copy of the certification and supporting documentation shall be maintained by both DOE/LAAO and LANL's Hazardous and Solid Waste Group (ESH-19).

9.1.7 Security

Because of the nature of operations at TA-50 and TA-54 West, these sites will be under the permanent care of DOE or another authorized federal agency. Fences and site security will be maintained in perpetuity to prohibit public access and to meet DOE requirements for radiation protection.

9.1.8 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 quality assurance (QA)/quality control (QC) plan prepared in accordance with the most current version of "Test Methods for Evaluating Solid Waste," Physical/Chemical Methods (SW-846) (EPA, 1992b) 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.

9.1.9 Closure Report

Upon completion of the closure activities for each CSA addressed in this permit application, 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 9.1.6
- 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.

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

LANL intends to remove hazardous waste and constituents from the CSAs to be permitted and to decontaminate all structures and equipment to established cleanup levels. If decontamination to established cleanup levels is not achievable, LANL will amend this closure plan to address appropriate closure procedures and/or post-closure care requirements pursuant to 20 NMAC 4.1, Subpart V, 264.117 through 264.120.

A survey plat, post-closure certification, and post-closure notices will not be required for the CSAs to be permitted because all waste will be removed and the areas will be decontaminated at closure. Therefore, these requirements are not applicable.

9.2 CLOSURE PROCEDURES FOR THE TA-50-1, ROOMS 35, 36, AND 38/38A CONTAINER STORAGE AREAS [20 NMAC 4.1, Subpart V, 264.112]

The TA-50-1, Rooms 35, 36, and 38/38A CSAs are located in the basement of the southern portion of the Radioactive Liquid Waste Treatment Facility. The Rooms 35 and 38/38A CSAs will be used to store drums and boxes of various sizes on wooden pallets or self-containment pallets as well as standard waste boxes (SWB) prior to waste characterization activities. The Room 36 CSA will be used for storage of decommissioned radioactively contaminated gloveboxes prior to the removal of external lead shielding and to store lead wastes in drums, fiberglass-reinforced plywood (FRP) boxes, or other containers. Figure 9-1 shows the location of TA-50 at LANL, and the locations of the Rooms 35, 36, and 38/38A CSAs are shown on Figure 9-2. For more information on these areas, see Section 4.1.1 through 4.1.3 of this permit modification request.

9.2.1 Estimate of Maximum Waste in Storage

The maximum inventory of waste in storage at any time at the TA-50-1, Rooms 35, 36, and 38/38A CSAs addressed in this section 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

9.2.2 Description of Waste

TRU mixed waste to be stored in the TA-50-1, 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 to be stored is generated during research activities, processing and recovery operations, decontamination and decommissioning operations, and environmental remediation/restoration activities at various TAs throughout LANL. These wastes are classified as mixed wastes because RCRA characteristic and/or listed wastes are or may be present in the waste, along with a radioactive component. Hazardous wastes generated throughout LANL may also be stored at these CSAs. The wastes are generated primarily from research and development activities, processing and recovery operations, decontamination and decommissioning projects, and environmental remediation/restoration activities.

9.2.3 Removal of Waste

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.

9.2.4 Closure Procedures and Decontamination

To the extent possible, all contaminated structures and equipment at the CSAs addressed in this section 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 QA/QC procedures (see Section 9.1.8).

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, 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 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.

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 9-2. 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 the self-containment pallets, the 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 9-2. 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 9-2. 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 components 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 9.2.6.

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 drilled through the floor material, and soil samples taken and analyzed to determine horizontal and vertical extent of contamination.

9.2.5 Decontamination Equipment

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 9.1.8). 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 components present. Used wash water will be collected and analyzed for the parameters listed in Table 9-2. 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 components present.

9.2.6 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 9-2 to provide baseline data for decontamination verification. Analytical procedures will conform to methods found in SW-846. Used washdown solutions will also be analyzed for the parameters listed in Table 9-2. 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 can 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 NMED.

- Detectable hazardous waste or constituent concentrations from container storage activities do not significantly decrease after several washdowns.

9.3 CLOSURE PROCEDURES FOR THE TA-50-69 WASTE CHARACTERIZATION, REDUCTION, AND REPACKAGING FACILITY CONTAINER STORAGE AREAS [20 NMAC 4.1, Subpart V, 264.112]

The Waste Characterization, Reduction, and Repackaging Facility (WCRRF) is located in Building 69 at the west end of TA-50. Wastes are stored on wooden pallets, on self-containment pallets, and/or in transportainers on an outside asphalt pad prior to being moved into the building for various activities. Waste containers include drums of various sizes, FRP boxes, SWBs, and other miscellaneous containers. Rooms 102 and 103 inside the WCRRF are used for container storage in addition to other waste management activities and are known collectively as the WCRRF Indoor CSA. Figure 9-1 shows the location of TA-50 at LANL, and the locations of the WCRRF Indoor and Outdoor CSAs are shown on Figure 9-3. For more information on these areas, see Section 4.1.4 and 4.1.5 of this permit modification request.

9.3.1 Estimate of Maximum Waste in Storage

The maximum inventory of waste that may be in storage at any time at the WCRRF is estimated at 31,500 gallons. Storage capacity at the WCRRF Outdoor CSA is 30,000 gallons and the capacity of the WCRRF Indoor CSA is 1,500 gallons.

9.3.2 Description of Waste

TRU mixed waste stored at the WCRRF Outdoor and Indoor 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 LANL. These wastes are classified as mixed wastes because RCRA characteristic and/or listed wastes are or may be present in the waste, along with a radioactive component. Hazardous wastes generated throughout LANL may also be stored at these CSAs. The wastes

are generated primarily from research and development activities, processing and recovery operations, decontamination and decommissioning projects, and environmental restoration/remediation activities.

9.3.3 Removal of Waste

All wastes will be removed from the WCRRF CSAs prior to the initiation of closure activities. Containers will be removed 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.

9.3.4 Closure Procedures and Decontamination

To the extent possible, all contaminated structures and equipment at the WCRRF CSAs 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 QA/QC procedures (see Section 9.1.8).

Before proceeding with any closure activities, the WCRRF CSAs will be surveyed for radiological contamination. PPE and monitoring requirements will be determined by ESH-1 and ESH-5 following a field inspection. Radiation and chemical monitoring will occur throughout closure activities. If any contamination is found, the contaminated material, equipment, 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 follow good hygiene practices to protect employees from exposure to hazardous and 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.

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 9-2. 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 CSAs, any portable equipment to be removed from the area will be wiped down with wash water solution. This may include equipment such as the self-containment pallets, the 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 9-2. 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, floor, and remaining equipment of the WCRRF Indoor CSA will then be washed 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 9-2. 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 components 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 9.3.5.

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 9-2 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 9-2 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 9.3.6. 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.

In the event that a transportainer must be removed from the WCRRF Outdoor CSA prior to closure of the CSA, the above decontamination procedure will be followed and decontamination verification will be documented before the removal. Details of the decontamination process and sampling results will be included in the facility record. Because the transportainers main function is weather protection rather than secondary containment and they are not considered to be dedicated hazardous waste management structures, this decontamination and removal will be performed in accordance with 20 NMAC 4.1, Subpart V, 264.112(e). DELETED

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 9-2 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 9-2. 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 components 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 9-2. 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 9-2. 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 9-2. 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.

9.3.5 Decontamination Equipment

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 policies (see Section 9.1.8). 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 components present. Used wash water will be collected and analyzed for the parameters listed in Table 9-2. 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 components present.

9.3.6 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 squeezed from mops and/or sponges prior to use will be collected before initial washdowns of the CSAs. The samples will be analyzed for parameters listed in Table 9-2 to provide baseline data for decontamination verification. Analytical procedures will conform to methods found in SW-846. Used wash water solutions will also be analyzed for the parameters listed in Table 9-2. Wash water 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 will be taken for each additional washdown event.

Existing background soil data for TA-50-69 will 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 hazardous waste or constituents present in the soil samples indicate 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 NMED.
- Detectable hazardous waste or constituent concentrations from container storage activities do not significantly decrease after several washdowns.

9.4 CLOSURE PROCEDURES FOR THE TA-54-38 RADIOASSAY AND NONDESTRUCTIVE TESTING FACILITY CONTAINER STORAGE AREAS [20 NMAC 4.1, Subpart V, 264.112]

The TA-54-38 RANT Facility is located at the extreme west end of TA-54. The High Bay CSA will be used to store waste drums and FRPs; the High Bay CSA will also be used for storage of SWBs, B25 boxes, and cardboard boxes in metal containers. The Low Bay and Loading Dock CSAs will be used to store waste drums and cardboard boxes in metal containers. The Outdoor CSA will be used for storage of drums and SWBs. Figure 9-1 shows the location of TA-54 at LANL, and the locations of the RANT Facility CSAs are shown on Figure 9-4. For more information on these CSAs, see Sections 4.1.6 through 4.1.9 of this permit modification request.

9.4.1 Estimate of Maximum Waste in Storage

The maximum inventory of waste that may be in storage at any time at the TA-54-38 RANT Facility CSAs is estimated at 11,660 gallons. A breakdown of the maximum inventories for each of these areas is as follows:

- High Bay CSA - 2,200 gallons
- Low Bay CSA - 880 gallons
- Loading Dock CSA - 660 gallons
- Outside CSA - 7,920 gallons

9.4.2 Description of Waste

TRU mixed waste that may be stored at the 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 that may be stored at the RANT Facility CSAs is generated during research activities, processing and recovery operations, decontamination and decommissioning operations, and environmental remediation/restoration activities at various TAs throughout LANL. These wastes are classified as mixed wastes because RCRA characteristic and/or listed wastes are or may be present in the waste, along with a radioactive component. Hazardous wastes generated throughout LANL may also be stored at these CSAs. The wastes are generated primarily from research and development activities, processing and recovery operations, decontamination and decommissioning projects, and environmental remediation/restoration activities.

9.4.3 Removal of Waste

All wastes will be removed from the RANT Facility CSA scheduled to be closed prior to the initiation of closure activities. Containers will be removed from each CSA 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.

9.4.4 Closure Procedures and Decontamination

To the extent possible, all contaminated structures and equipment at the RANT Facility CSAs 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 QA/QC procedures (see Section 9.1.8).

Before proceeding with any closure activities, the CSAs at the RANT Facility will be surveyed for radiological contamination. PPE and monitoring requirements will be determined by ESH-1 and ESH-5 following a field inspection. Radiation and chemical monitoring will occur throughout closure activities. If any contamination is found, the contaminated materials, equipment, 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 follow good hygiene practices to protect employees from exposure to hazardous and 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.

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 9-2. The analytical results from these samples will be used to provide a baseline for decontamination verification. The walls, floors, and equipment of the High Bay, Low Bay, and Loading Dock CSAs will then be washed 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 in DOT-approved containers, sampled, and analyzed for the parameters in Table 9-2. 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 components 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 a contaminated waste. Decontamination verification is discussed further in Section 9.4.6.

Under normal circumstances, the following soil sampling information will be inapplicable for the High Bay and Low Bay CSAs as 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. A grid will be sited over the area to be sampled, boreholes drilled through the floor material, and soil samples taken and analyzed to determine horizontal and vertical extent of contamination.

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 9-2 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 9-2. 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 components 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 9-2. 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.

9.4.5 Decontamination Equipment

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 9.1.8). 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 components present. Used wash water will be collected and analyzed for the parameters listed in Table 9-2. 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 components present.

9.4.6 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 squeezed from mops and/or sponges prior to use will be collected before initial washdowns of the CSAs. The samples will be analyzed for parameters listed in Table 9-2 to provide baseline data for decontamination verification. Analytical procedures will conform to methods found in SW-846. Used wash water solutions will also be analyzed for the parameters listed in Table 9-2. Wash water 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 hazardous waste or constituents present in the soil samples indicate 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 NMED.
- Detectable hazardous waste or constituent concentrations from container storage activities do not significantly decrease after several washdowns.

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

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).

9.5.1 Soil and Sediment Sampling

Soil samples will be collected at the WCRRF Outdoor CSA at TA-50-69. Sediment samples from CSA sumps and drains (where located) and additional soil samples may also need to be obtained if evidence is found that hazardous constituents have migrated from the other CSAs discussed in this permit modification request. The soil samples will be collected to determine if contaminants have migrated from the respective CSAs and, if so, to determine the horizontal and vertical extent of such migration.

9.5.1.1 Sampling Procedures

The sampling procedures outlined below will be used to obtain samples to determine the amount of RCRA constituents in soil or sediment 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 9-3). 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 9-3), 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.

9.5.1.2 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.

9.5.2 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.

9.5.2.1 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 9-4), 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.

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9.5.2.2 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.

9.5.3 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 taken, 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 9-3 and 9-4.

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 general rule can be given as to the extent of information that must be entered in the logbook. It is recommended, however, to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

9.5.4 Analytical Procedures

All sample analyses will be conducted using methods prescribed in SW-846, including those for QA/QC. Target detection limits, analytical methods, and instrumentation for metals and organics analyses are presented in Tables 9-5 and 9-6.

9.5.5 Field and Laboratory QA/QC

Field QC activities will include collection of the following QC samples: duplicate samples, trip blanks, field blanks, and equipment rinsate blanks. Field QC samples are summarized in Table 9-7.

Duplicate samples are two or more samples collected simultaneously into separate containers from the same source under identical conditions. Acceptance limits for field duplicate analyses are 0 to 20 relative percent difference per analyte. Frequency of duplicate samples will be no less than 1 per day and 1 in 20 samples. Blank samples will include trip blanks, field blanks, and equipment rinsate blanks. A trip blank is a sample container filled with organic-free deionized water. The filled container is taken to the sampling site, remains unopened, and then is shipped to the analytical laboratory along with the samples. A trip blank is submitted whenever samples are collected for volatile organic compounds analysis. A field blank is a sample collected to assess the ambient conditions at the sampling site. It consists of a sample of organic-free deionized water poured into a sample container under normal sampling conditions. An equipment rinsate blank is collected to assess the cleanliness of sampling equipment. The equipment is cleaned according to the procedures described in Sections 9.5.1.2 and 9.5.2.2, then organic-free deionized water is poured over the decontaminated equipment's sampling surface and collected in a sample container. Frequency of blank samples will be no less than 1 per day and 1 in 20 samples. Blank samples and duplicate samples of liquid, soil, and sediment will be analyzed for the same parameters as the closure samples. Samples will be provided with unique identification numbers that do not indicate to the laboratory that the samples are for QA/QC purposes.

Instrument calibration and maintenance are field activities subject to QC procedures. Field equipment requiring calibration will be limited to radioactivity detection devices and organic vapor monitoring equipment. Radiation detection and organic vapor monitoring equipment are the responsibility of field personnel and will be calibrated and maintained using the manufacturer's instructions and appropriate standard operating procedures.

The analytical laboratory shall operate under a quality assurance program plan (QAPP) that meets the requirements in SW-846. QC procedures in the analytical laboratory are guided by the laboratory's QAPP. In the laboratory, QC samples are required to establish the accuracy and

precision of the analytical data in order to determine the quality of the data. Laboratory QC procedures are summarized in Table 9-8.

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Table 9-1

Schedule for Closure Activities at the Technical Area (TA) 50 and TA-54 West 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.

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Table 9-2

Analytical Parameters and Test Methods[a] for the Technical Area (TA) 50 and TA-54 West 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	(L, S) HCN Test Method, Section 7.3
	Test method to determine hydrogen sulfide released from waste	(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 and graphite furnace atomic absorption (AA) spectroscopy, gaseous hydride AA, or direct aspiration AA	(L, S) SW1311
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	TCLP extraction or dissolution steps and 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 packed column technique GC/MS capillary column technique	(L, S) SW8250A (L, S) SW8270B
Organochlorine pesticides	TCLP extraction and GC	(L, S) SW8080A

Refer to footnotes at end of table.

Table 9-2 (Continued)

Analytical Parameters and Test Methods[a] for the Technical Area (TA) 50 and TA-54 West Container Storage Areas

Parameter	Test Method	Reference[b]
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
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.
See 55 *Federal Register* 11863.
[c] See also atomic absorption methods listed under TCLP.

Table 9-3

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.
[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 9-4

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.
[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

Table 9-5

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

Analyte	Target Detection[a] Limit (µg/L)[b]	EPA SW-846[c] Analytical Method	Instrumentation[d]
Arsenic	10	6010A, 7060A, 7061A	ICP, GFAA
Barium	200	6010A, 7080A, 7081	ICP, FLAA, GFAA
Beryllium	5	6010A, 7090, 7091	ICP, FLAA, GFAA
Cadmium	2	6010A, 7130, 7131A	ICP, FLAA, GFAA
Chromium	10	6010A, 7190, 7191	ICP, FLAA, GFAA
Lead	5	6010A, 7420, 7421	ICP, FLAA, GFAA
Mercury	0.2	7470A, 7471A	CVAA
Nickel	40	6010A, 7520	ICP, FLAA
Selenium	5	6010A, 7740, 7741A	ICP, GFAA
Silver	10	6010A, 7760A, 7761	ICP, FLAA, GFAA
Thallium	10	6010A, 7840, 7841	ICP, FLAA, GFAA

[a] Detection limits listed are for clean water. Actual detection limits may be higher depending on sample composition and matrix type.
[b] µg/L = micrograms per liter
[c] U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste," Physical/Chemical Methods, *SW-846*.
[d] ICP = Inductively coupled plasma emission spectroscopy
GFAA = Graphite furnace atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
CVAA = Cold-vapor atomic absorption spectroscopy

Table 9-6

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

Analyte (Group)	Target Detection Limits[a]	EPA SW-846[b] Analytical Method	Instrumentation[c]
Target compound list volatiles + ten tentatively identified compounds (TIC)	10 mg/L[d] water 10-120 mg/kg[•] sediment	8240B or 8260A	GC/MS
Target compound list semivolatiles + 20 TICs	10 mg/L water 330-50,000 mg/kg sediment	8270B or 8250A	GC/MS

[a] Detection limits expressed as practical quantitation limits.
[b] U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste," Physical/Chemical Methods, *SW-846*.
[c] GC/MS = Gas chromatography/mass spectrometry
[d] mg/L = milligrams per liter
[•] mg/kg = milligrams per kilogram

Table 9-7

Summary of Field Quality Control Samples

Quality Control Sample Type	Sample Matrix	Applicable Analysis	Frequency	Purpose	Acceptance Criteria	Corrective[a] Action
Trip blank	Water	Volatiles	One set per shipping cooler containing samples	Monitor sample contamination in field and laboratory	[b]	Advisory--no action required
Field blank	Water	Volatiles, semivolatiles, pesticides, metals, radionuclides	One sample daily per analysis (can prepare and hold pending sample results)	Monitor field sample contamination/air contamination	[b,c]	Advisory--no action required
Field duplicate	Soil/water	Volatiles, semivolatiles, pesticides, metals, radionuclides	One for every 20 samples	Monitor sample variability	Analytical method criteria, if applicable	Advisory--no action required
Equipment rinsate blank	Water	Volatiles, semivolatiles, pesticides, metals, radionuclides	One sample per day (can prepare and hold pending sample results)	Monitor decontamination effectiveness and sample cross contamination	[b,c]	Advisory--no action required

[a] U.S. Environmental Protection Agency Functional Guidelines for Data Validation may apply.
[b] For volatile and semivolatile analysis, if blank shows detectable levels of any common laboratory contaminant (e.g., methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.
[c] For pesticides analysis, if blank shows detectable level of any contaminant, sample must exhibit that contaminant at a level 5 times the quantitation limit to be considered detectable.

Table 9-8

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

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

Refer to footnote at end of table.

Table 9-8, Continued

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

Parameter	EPA SW-846[b] Analytical Method	Quality Control Check	Frequency	Acceptance Criteria	Corrective Action
Target compound semivolatile organics	8270B or 8250A	Instrument performance: mass calibration/ion abundance pattern	Every 12 hours	Per method	Repeat until acceptance criteria satisfied
		Initial calibration: instrument sensitivity and linearity of response	Five concentration levels. After each performance, check prior to sample analysis	RRFs within method limits	Repeat calibration
		Continuing calibration	Every 12 hours	Average RRFs <25% difference	Repeat calibration
		Internal standards	All calibration standards, samples and blanks	EICP D -50 to +100% Retention time shifts <0.50 minutes	Correct malfunction; reanalyze sample per method criteria
		Method blank	Each group of samples of similar matrix and concentration level (soils)	<5 times quantitation limit for phthalate esters; all other compounds < or = to quantitation limit	Determine source of contamination; document corrective action; reextract and reanalyze samples
		Surrogate compounds	Each sample, blank	Matrix-specific per method limits	Reextract and reanalyze per method criteria
Organo-chlorine pesticides	8080A	Gas chromatograph column resolution	Prior to each initial calibration, or each column and instrument	Per method criteria	Change column, detector, clean system, etc.; repeat procedure

Refer to footnote at end of table.

Table 9-8, Continued

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

Parameter	EPA SW-846[b] Analytical Method	Quality Control Check	Frequency	Acceptance Criteria	Corrective Action
Organo-chlorine pesticides (cont'd)	8080A	Initial calibration	Three concentration levels calibration sequence prior to sample analysis after resolution check	Calibration factors and retention times must meet method criteria	Repeat calibration
		Continuing calibration	Every 12 hours	Calibration factors and retention times must meet method criteria	Repeat calibration
		Method blank	One per field batch, every 20 samples, every 14 days, or whenever similar extraction method used; whichever more frequent	All analytes less than quantitation limits, retention times within windows	Reextract and reanalyze all associated samples
		Instrument blank	First analysis every 12 hours following calibration	Less than 0.5 times quantitation limits, retention times within windows; surrogates acceptable	Correct malfunction; repeat calibration sequence, reanalyze blank, reinject all associated samples
		Sulfur cleanup blank	Each sample set requiring sulfur cleanup	All analytes less than quantitation limits; surrogate retention times within windows	Reextract and reanalyze all associated samples

Refer to footnote at end of table

Table 9-8, Continued

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

Parameter	EPA SW-846[b] Analytical Method	Quality Control Check	Frequency	Acceptance Criteria	Corrective Action
Metals	6010A	Surrogate compounds Instrument calibration Initial/continuing calibration	Each sample and blank Daily, or each setup After instrument calibration, 10% or every 2 hours	60 - 150% recovery 5% of true value 10% of true value	Advisory only--no action Repeat calibration Correct problem, recalibrate and reanalyze previous ten samples
		Initial/continuing calibration blank	Every calibration, 10% or 2 hours	< contract-required detection limits	Correct problem; recalibrate and reanalyze all samples since last blank
		Preparation blank	Each batch of digested samples	< contract-required detection limits	Redigest and reanalyze all associated samples per method criteria
		Interference check sample (ICS)	Each run or twice per 8-hour shift	20% of true value	Correct problem; recalibrate, reanalyze all samples since last ICS
		Duplicate sample analysis	Once per field batch per matrix	0 - 20% relative percent difference when < five times detection limit; detection limit otherwise	Flag data
		Laboratory control sample (LCS)	Once per field batch or each digest group	80 - 120% percent recovery (except silver, antimony)	Correct problem; redigest and reanalyze all samples since last LCS

Refer to footnote at end of table.

Table 9-8, Continued

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

Parameter	EPA SW-846[b] Analytical Method	Quality Control Check	Frequency	Acceptance Criteria	Corrective Action
Metals (cont'd)	6010A	Serial dilution analysis	Once per field batch per matrix	10% original determination	Flag data
		Instrument detection limit	Quarterly	As determined	Not applicable
		Inter-element corrections	Annually	As determined	Not applicable
		Linear range analysis	Quarterly	5% of true value	Reanalyze

[a] Source: U.S. Environmental Protection Agency Contract Laboratory Program Statement of Work for Inorganic and Organic Analysis (EPA, 1990). Not all listed procedures may be applicable to SW-846 protocols.
[b] U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste," Physical/Chemical Methods, *SW-846*.

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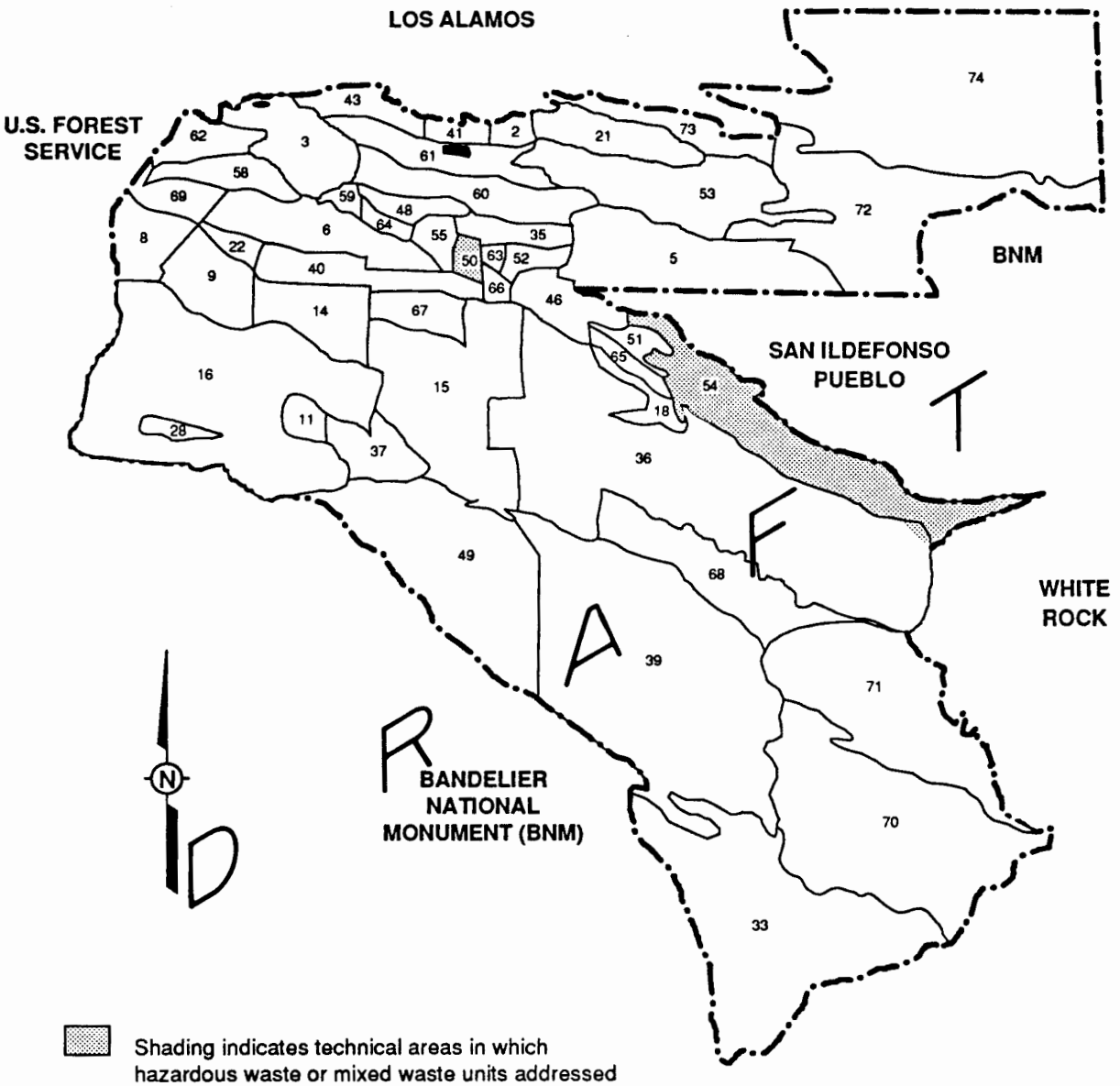


Shading indicates technical areas in which hazardous waste or mixed waste units addressed in this closure plan are located.

Not Los Alamos National Laboratory property.

4800 0 4800
Scale in Feet

Note: Technical Area 57, the Fenton Hill Geothermal Site, is not shown on this figure.

Modified from Los Alamos National Laboratory, 1994, "Environmental Surveillance at Los Alamos During 1992," LA-12764-ENV, Los Alamos National Laboratory, Los Alamos, New Mexico.

Figure 9-1

Technical Areas Where Hazardous and Mixed Waste Units Addressed in the Closure Plan Are Located

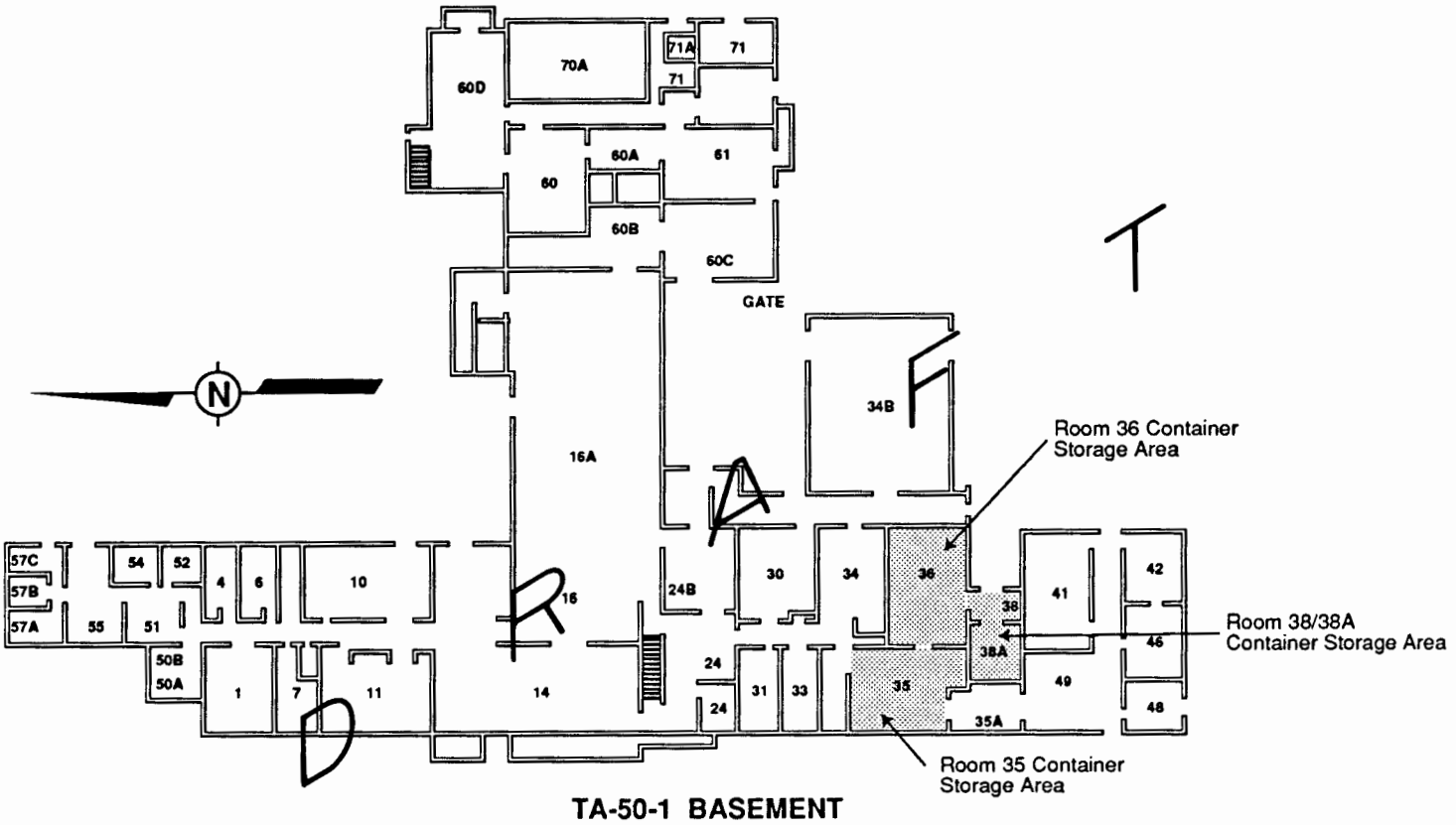
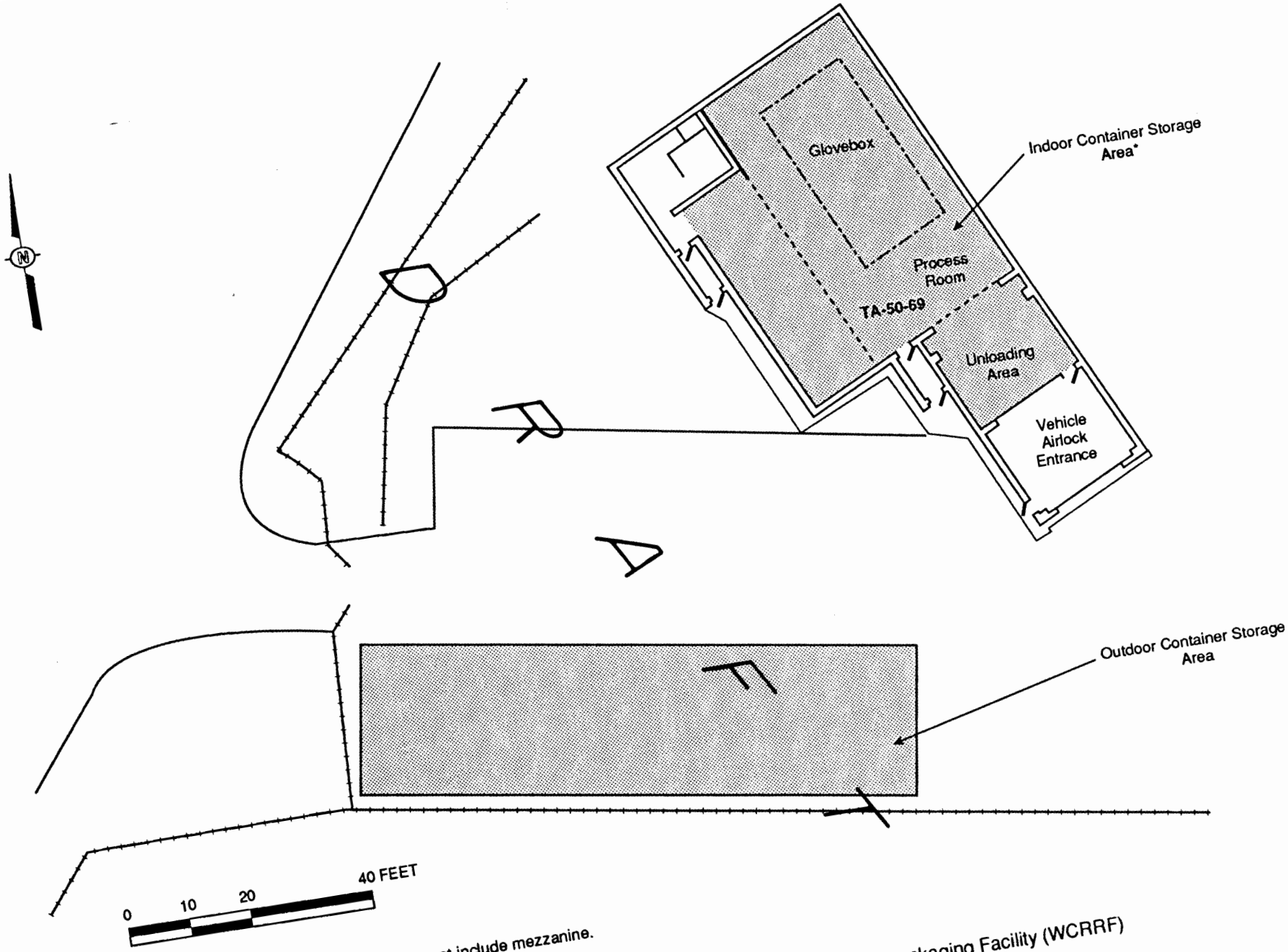


Figure 9-2
Technical Area (TA) 50, Building 1, Rooms 35, 36, and 38/38A Container Storage Areas



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

Figure 9-3

Technical Area (TA) 50, Building 69, Waste Characterization, Reduction, and Repackaging Facility (WCRRF)
Indoor and Outdoor Container Storage Areas

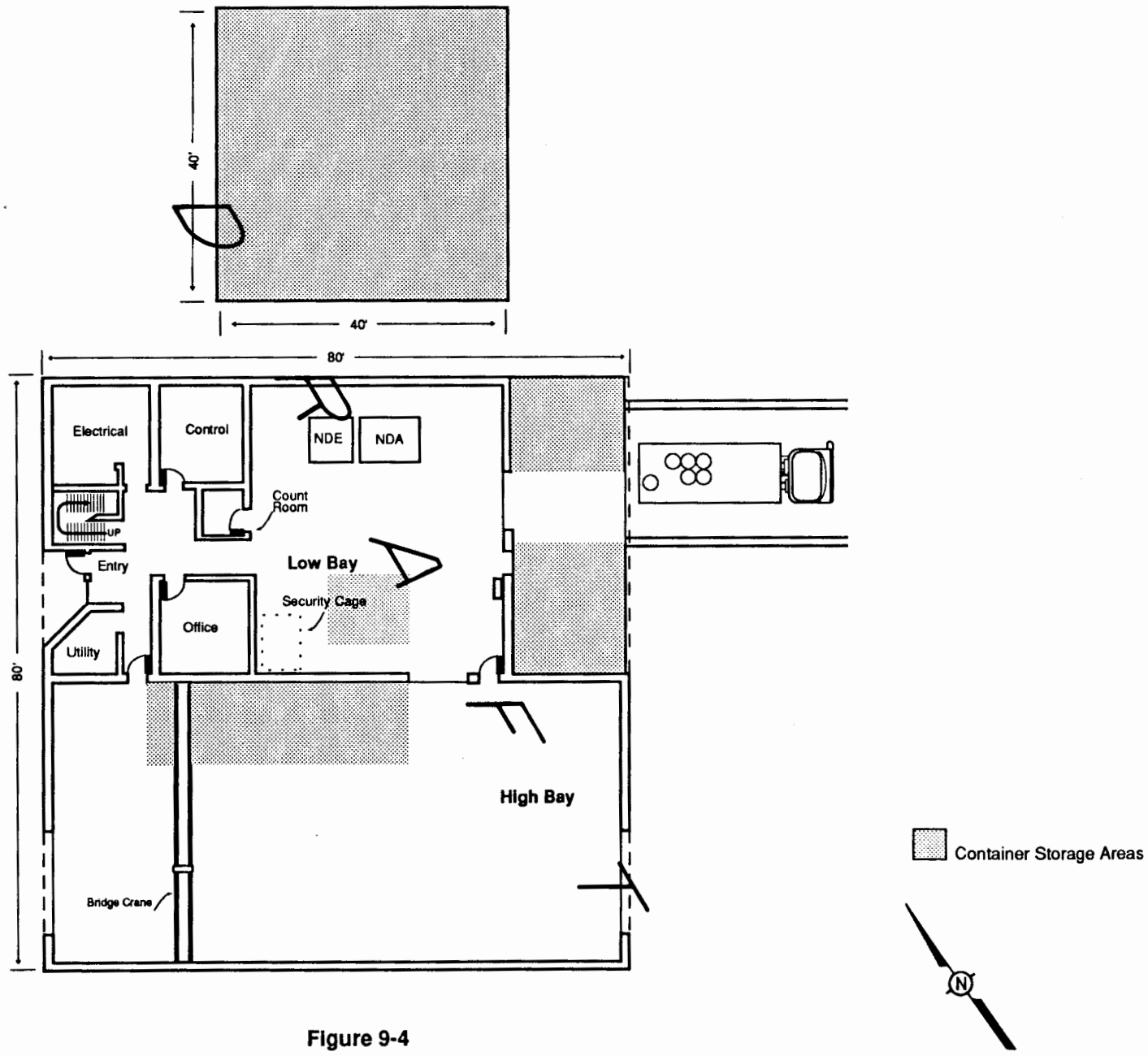


Figure 9-4

Technical Area (TA) 54 West, Building 38, Radioassay and Nondestructive Testing (RANT) Facility
Low Bay, High Bay, Loading Dock, and Outdoor Container Storage Areas

10.0 CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

This section describes the solid waste management units (SWMU) that have been identified in Technical Area (TA) 50 and TA-54 West at Los Alamos National Laboratory (LANL). Tables 10-1 and 10-2 list the SWMUs in TA-50 and TA-54 West, respectively. Attachments 10-1 and 10-2 contain SWMU characterization sheets in response to regulatory requirements in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart IX, 270.14(d). The characterization sheets were taken from Revision 1.0 of LANL's "Solid Waste Management Units Report," hereafter referred to as the 1990 SWMU Report (LANL, 1990).

LANL uses the definition of a SWMU presented in "Module VIII: Special Conditions Pursuant to the 1984 Hazardous and Solid Waste Amendments to RCRA for Los Alamos National Laboratory, EPA I.D. NM0890010515" (U.S. Environmental Protection Agency [EPA], 1990; EPA, 1994a), referred to as Module VIII. This definition states that SWMUs are "any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at or around a facility at which solid wastes have been routinely and systematically released."

10.1 SWMU DESCRIPTIONS

Several types of SWMUs are present in TA-50 and TA-54 West. These SWMUs include those identified for corrective actions in Module VIII, as modified following a Class III permit modification effective May 19, 1994; SWMUs that are active Resource Conservation and Recovery Act (RCRA) units; and SWMUs identified in the 1990 SWMU Report. The SWMUs in TA-50 and TA-54 West are described in the following sections. These descriptions were compiled from the "RFI Work Plan for Operable Unit 1147" (LANL, 1992a); the "RFI Work Plan for Operable Unit 1148" (LANL, 1992b); and from the 1990 SWMU Report. Brief unit and waste descriptions are also provided in Tables 10-1 and 10-2. Figures 10-1 and 10-2 are included solely to show the locations of the SWMUs in TA-50 and TA-54 West, respectively.

10.1.1 TA-50 SWMUs

Radioactive Liquid Waste Treatment Facility

The Radioactive Liquid Waste Treatment Facility (RLWTF), located in Building 1 at TA-50 (TA-50-1), is used to treat radioactive liquid wastes received from other TAs. The

37,000-square-foot facility houses several treatment components that primarily remove transuranics (TRU) from liquid wastes through processes of neutralization, flocculation/clarification, pH control, ion exchange, and filtration. The RLWTF is identified as SWMU No. 50-001(a) in Module VIII.

Waste lines and manholes comprise a system through which liquid waste is transferred to the RLWTF from many of the active TAs at LANL. This transfer system, identified as SWMU No. 50-001(b), is continuously monitored by a drip-tray and conductivity-probe leak monitoring system.

Tanks and Waste Lines

SWMUs at TA-50 include various tanks and waste lines. SWMU No. 50-002(a), identified in Module VIII, is a tank farm (TA-50-2) that includes six flow-through process tanks, the largest of which has a 75,000-gallon capacity. The tank farm is comprised of six underground tanks that manage wastes associated with the RLWTF. Two of the tanks receive incoming waste, two store treated liquid wastes, one tank collects sludge, and one tank stores wastes generated during decontamination and decommissioning activities.

Two additional tanks (TA-50-67 and TA-50-68) are encased in an underground vault (TA-50-66) located approximately 30 feet west of the southwest corner of TA-50-1. Radioactive caustic liquid waste and radioactive acidic liquid waste received from the Plutonium Facility at TA-55 are managed in tanks TA-50-67 and TA-50-68, respectively. These tanks are listed as SWMU Nos. 50-002(b) and 50-002(c) in Module VIII.

An aboveground storage tank, TA-50-5, is located adjacent to the north wall of Room 60D in TA-50-1. This 4,000-gallon tank was used to store nitric acid, which was intended to recharge an ion-exchange column. The tank, SWMU No. 50-002(d), stored nitric acid product only; it has not been used to store waste.

In addition to the active tanks and associated waste transfer lines, several other decommissioned tanks and lines are identified in Module VIII as SWMUs at TA-50. SWMU No. 50-004(a), comprised of a 520-foot section of 6-inch-diameter vitrified clay pipe, transported industrial waste to TA-50. This waste line was removed in 1975 because of radioactive contamination. A

concrete vault and three stainless-steel-lined concrete storage tanks (formerly TA-50-3) comprise SWMU No. 50-004(b). The tanks, ranging in volume from 1,000 to 4,500 gallons, managed waste from the Omega Reactor. The tanks and the vault were removed in 1989. SWMU No. 50-004(c) is comprised of 16 waste lines and associated manholes at various locations within TA-50 that were removed between 1981 and 1989. These waste lines were used to transport radioactive industrial wastes.

The Batch Waste Treatment Unit (BWTU) was located in the basement of TA-50-1. The BWTU (SWMU No. 50-005) consisted of a 500-gallon pressure vessel, filtering system, condenser, vacuum transfer lines, transfer pump, and associated transfer lines. The unit was RCRA-permitted for hazardous waste treatment; it has undergone RCRA closure.

Container Storage Areas

SWMU No. 50-003(a) is a mixed waste container storage area (CSA) located in TA-50-1-59. This active RCRA mixed waste CSA is used primarily to store containers of cemented sludge that at one time were suspected of containing hazardous constituents. This sludge results from waste treatment operations in Room 60A. A CSA located in TA-50-114 is identified as SWMU No. 50-003(d). This active RCRA CSA is permitted for hazardous waste storage and operates under interim status for mixed waste container storage.

A hazardous waste CSA located in TA-50-37-117 is associated with the incinerator complex, which is identified as SWMU No. 50-007. This CSA is permitted for hazardous waste storage. Mixed waste containers are also stored in Room 117. In addition, mixed waste CSAs in Rooms 115 and 118 of TA-50-37 are included as part of SWMU No. 50-007. The three active mixed waste CSAs operate under interim status.

A mixed waste CSA inside TA-50-69, the Waste Characterization, Reduction, and Repackaging Facility (WCRRF), is identified as SWMU No. 50-008. A mixed waste CSA located outside TA-50-69 has not yet been assigned a SWMU number. These two CSAs, addressed in this permit modification request as the WCRRF Indoor and Outdoor CSAs, operate under interim status.

Several additional CSAs have not yet been assigned SWMU numbers. Three CSAs will be located in Rooms 35, 36, and 38/38A of TA-50-1. These CSAs will be used for storage of

concrete vault and three stainless-steel-lined concrete storage tanks (formerly TA-50-3) comprise SWMU No. 50-004(b). The tanks, ranging in volume from 1,000 to 4,500 gallons, managed waste from the Omega Reactor. The tanks and the vault were removed in 1989. SWMU No. 50-004(c) is comprised of 16 waste lines and associated manholes at various locations within TA-50 that were removed between 1981 and 1989. These waste lines were used to transport radioactive industrial wastes.

The Batch Waste Treatment Unit (BWTU) was located in the basement of TA-50-1. The BWTU (SWMU No. 50-005) consisted of a 500-gallon pressure vessel, filtering system, condenser, vacuum transfer lines, transfer pump, and associated transfer lines. The unit was RCRA-permitted for hazardous waste treatment; it has undergone RCRA closure.

Container Storage Areas

SWMU No. 50-003(a) is a mixed waste container storage area (CSA) located in TA-50-1-59. This active RCRA mixed waste CSA is used primarily to store containers of cemented sludge that result from waste treatment operations in Room 60A. A CSA located in TA-50-114 is identified as SWMU No. 50-003(d). This active RCRA CSA is permitted for hazardous waste storage and operates under interim status for mixed waste container storage.

A hazardous waste CSA located in TA-50-37-117 is associated with the incinerator complex, which is identified as SWMU No. 50-007. This CSA is permitted for hazardous waste storage. Mixed waste containers are also stored in Room 117. In addition, mixed waste CSAs in Rooms 115 and 118 of TA-50-37 are included as part of SWMU No. 50-007. The three active mixed waste CSAs operate under interim status.

A mixed waste CSA inside TA-50-69, the Waste Characterization, Reduction, and Repackaging Facility (WCRRF), is identified as SWMU No. 50-008. A mixed waste CSA located outside TA-50-69 has not yet been assigned a SWMU number. These two CSAs, addressed in this permit modification request as the WCRRF Indoor and Outdoor CSAs, operate under interim status.

Several additional CSAs have not yet been assigned SWMU numbers. Three CSAs will be located in Rooms 35, 36, and 38/38A of TA-50-1. These CSAs will be used for storage of

hazardous and mixed waste during non-RCRA-regulated activities (e.g., waste characterization, segregation of lead from gloveboxes). A CSA located within the bermed area of the BWTU at TA-50-1 is RCRA-permitted for hazardous waste storage. Additional CSAs are located in TA-50-137, -138, -139, and -140. Each of these CSAs is RCRA-permitted for hazardous waste storage.

Operational Releases/Outfalls

Operational releases and outfalls comprise three SWMUs identified in Module VIII and located in TA-50. A portion of Upper Ten Site Canyon received two accidental releases of radioactive wastes and chemicals as a result of a sump overflow in TA-50-2. This site is identified as SWMU No. 50-006(a). Airborne releases via stack emissions from the RLWTF and other treatment facilities at TA-50 have contaminated some soil in the area. These airborne releases are identified as SWMU No. 50-006(c). The area where discharge of treated liquid effluent from the RLWTF to Mortandad Canyon is identified as SWMU No. 50-006(d) because previous analyses of the effluent indicated the presence of chemicals, radionuclides, and heavy metals.

Disposal Area

Material Disposal Area (MDA) C is an 11.8-acre disposal site that comprises approximately half of TA-50. MDA C, identified as SWMU No. 50-009 in Module VIII, consists of six pits used for the disposal of radioactive and hazardous waste (Pits 1-6), one pit for disposal of chemical wastes, 107 disposal shafts, and one unnumbered shaft that was used for a single strontium-90 disposal. Pits 1-4 measure approximately 610 feet (ft) long, 40 ft wide, and 25 ft deep. Pit 5 is approximately 705 ft long, 110 ft wide, and 18 ft deep. Pit 6 is approximately 505 ft long, 100 ft wide, and 25 ft deep. The chemical pit measures approximately 180 ft long, 25 ft wide, and 12 ft deep. The disposal shafts vary in depth and diameter. Table 10-1 provides a list of the various types of waste that were disposed of at MDA C. Most waste disposal at MDA C ceased by 1969 and the unit was officially decommissioned in 1974.

Decontamination Area

A vehicle decontamination area at TA-50-1 is used to clean vehicles and large objects that are radioactively contaminated. This area, originally a pad, has been in use since 1963; in 1983, it was enclosed. Liquids wastes generated during decontamination are transferred to TA-50-2 via

the floor drain and waste line. The vehicle decontamination area is identified as SWMU No. 50-010.

Septic System

SWMU No. 50-011(a), identified in Module VIII, consists of a decommissioned septic system that was located near the south end of TA-50-1. This septic system was comprised of a septic tank (TA-50-10), a manhole (TA-50-9), a sanitary distribution box (TA-50-11), and a seepage pit. The septic system managed sanitary waste only. All components of the septic system were removed in 1983. A new septic system was installed in 1983. It is identified as SWMU No. 50-011(b).

Incinerator Complex

An incinerator complex (SWMU No. 50-007) is housed in TA-50-37. The incinerator complex is comprised of the incinerator, various waste-feed components, and two waste-feed tanks. The incinerator is located in Room 112, and the waste-feed system and tanks are located in Room 115. The unit is used to treat solid and liquid wastes containing chlorinated and fluorinated hydrocarbons, carcinogenic materials, and TRU wastes. The incinerator unit is a RCRA-permitted hazardous waste treatment unit; currently, this unit operates under interim status for treatment of mixed waste.

Cementation Unit

A cementation unit [SWMU No. 50-001(a)] is located in Room 60A of TA-50-1. The unit is used to solidify TRU-contaminated sludge generated during the treatment of low-level, acidic, and caustic liquid wastes received from the Plutonium Facility at TA-55. The cementation unit operates under interim status for mixed waste treatment.

10.1.2 TA-54 West SWMUs

Septic Systems

A septic system identified in Module VIII as SWMU No. 54-007(c) is comprised of a 2,000-gallon septic tank and a seepage trench. The septic system served an office building (TA-54-34) and the Radioassay and Nondestructive Testing (RANT) Facility (TA-54-38). The septic system generally received sanitary wastes. The seepage trench, constructed of 4-inch-diameter drain tile, received sanitary waste from the office building and the RANT Facility and sanitary waste and animal waste from the former Animal Holding Facility through another septic system. The septic

tank and seepage trench comprising SWMU No. 54-007(c) were removed from service in October 1992 after the facilities they served were connected to the LANL-wide septic system. SWMU No. 54-007(c) is scheduled for characterization in 1996.

A septic system that provided service to the former Radiation Exposure Facility was comprised of a 972-gallon tank connected to a drain tile trench. This septic system, which received sanitary and animal waste, is identified as SWMU No. 50-007(d). The facilities served by this system have since been connected to the LANL-wide septic system.

A septic system that provided service to the former Animal Holding Facility is identified as SWMU No. 54-007(e). This system was comprised of a 1,500-gallon septic tank connected to a tile seepage trench; the same seepage trench was connected to SWMU No. 54-007(c). Only sanitary and animal waste were received by this septic system, which was constructed in the mid-1960s. The facilities served by this system have since been connected to the LANL-wide septic system.

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Decontamination Area

A truck decontamination pit identified in Module VIII as SWMU No. 54-013(a) was planned for construction at TA-54 West. Plans to build the decontamination pit were subsequently canceled; therefore, no such area exists.

Container Storage Areas

A CSA within the RANT Facility (TA-54-38) is identified in Module VIII as SWMU No. 54-015(h). A total of four CSAs to be located at the RANT Facility are addressed in this permit modification request. The High Bay and the Low Bay CSAs will be located inside the building. The Loading Dock CSA will be located on the loading dock on the east side of the building. The Outdoor CSA will be located on the north side of the building. Because containers will remain closed during storage, assay, and examination at the RANT Facility, it is not anticipated that any RCRA wastes will be released to the environment.

Sump

A sump [SWMU No. 54-016(a)] located in the high bay of the RANT Facility receives snowmelt and rainwater that drip off trucks entering the building. The sump has a pipe at the east end that connects to a canyon outfall; however, the pipe has been plugged and no accumulated liquids

exit the sump. If liquids do accumulate in the sump, a pump will be used to remove the liquids for testing and appropriate management.

10.2 ADDITIONAL SWMU INFORMATION

The SWMU characterization sheets (Attachments 10-1 and 10-2) identify SWMUs at LANL by unique number designations shown in the upper left corner. These numbers are used throughout this section. The individual units grouped within a SWMU are designated by a letter following the SWMU number.

The SWMU characterization sheets include the name, type, and period of operation for each unit. The unit description includes information on the unit, such as location, size, dates of operation for the individual units within a SWMU, materials of construction, waste descriptions, and release information (if any).

10.3 RELEASES

10.3.1 Description of Releases at TA-50

Some of the SWMUs listed in Table 10-1 have released, or are suspected to have released, hazardous waste or hazardous constituents. In 1990, LANL initiated drilling activities to test the integrity of the waste tanks comprising SWMU No. 50-002. Cuttings from the boreholes revealed that some of the soil appeared wet and, based on field screening, were found to be radioactively contaminated.

SWMU No. 50-004(a), a waste line in the vicinity of TA-50-37, was known to have leaked occasionally. Radioactively-contaminated soil discovered during waste line decommissioning activities was cleaned up to levels as low as reasonably achievable. Potential chemical contaminants were not analyzed for at the time of decommissioning.

Accidental releases from the RLWTF have contaminated sections of Upper Ten Site Canyon [SWMU No. 50-006(a)] with radioactive and chemical wastes. Airborne contaminants released through stack emissions from the RLWTF and other treatment facilities at TA-50 have contaminated soil at various locations within TA-50 [SWMU No. 50-006(c)]. Liquid effluent from the treatment plant, released prior to the issuance of a National Pollutant Discharge Elimination System permit, has contaminated sections of Mortandad Canyon with a variety of chemical,

radiological, and heavy metal wastes [SWMU No. 50-006(d)]. Contamination in Mortandad Canyon will be addressed by the LANL Environmental Restoration (ER) Project.

Several sampling efforts at MDA C (SWMU No. 50-009) have confirmed the presence of low-level radioactive contamination of soil in and near the perimeter of the area. Soil at the north and east perimeter of the site contain tritium, uranium, and various isotopes of plutonium at levels above naturally occurring background levels. Soil along the west ends of disposal Pits 2, 4, 5, and 6 also contain above background levels of tritium and various plutonium isotopes.

10.3.2 Description of Releases at TA-54 West

There have been no documented releases of RCRA hazardous waste or hazardous constituents from the SWMUs in TA-54 West. SWMU No. 54-007(c) is scheduled for characterization in 1996.

10.3.3 Characterization of Releases

Potential releases from SWMUs, if any, are described on the SWMU characterization sheets (Attachments 10-1 and 10-2); in the "RFI Work Plan for Operable Unit 1147" (LANL, 1992a); and in the "RFI Work Plan for Operable Unit 1148," (LANL, 1992b). Release descriptions in Attachments 10-1 and 10-2 include the material released and the nature of the release. However, because of the nature of the releases, the exact volume released is not always known. The timing of the releases can only be estimated by the period of operation and sampling events.

10.3.4 Corrective Actions

Pursuant to 20 NMAC 4.1, Subpart V, 264.101(a), corrective actions are required for releases of hazardous waste or hazardous constituents. There have been some documented releases of RCRA-hazardous waste or hazardous constituents from the TA-50 SWMUs listed in Table 10-1. There have been no documented releases of RCRA-hazardous waste or hazardous constituents from the TA-54 West SWMUs listed in Table 10-2. However, because the TA-50 and TA-54 West SWMUs are located in areas where waste has been historically and is currently managed, they will be investigated and remediated, as necessary and with EPA and New Mexico Environment Department approval, during LANL ER Project corrective action activities. Corrective action will follow the RCRA Facility Investigation/Corrective Measures Study process.

Table 10-1

Technical Area (TA) 50 Solid Waste Management Unit (SWMU) Descriptions[a]

SWMU No.	Unit Type	Unit Description	Waste Description
50-001(a)	Radioactive Liquid Waste Treatment Facility (RLWTF) and associated cementation unit	A 37,000-square-foot facility located at TA-50-1 that houses various components used to treat radioactive liquid waste	Radioactive liquid waste and potentially hazardous constituents
50-001(b)	Waste lines and manholes	Liquid waste transfer system	Radioactive liquid waste and potentially hazardous constituents
50-002(a)	Tank farm	Six flow-through process tanks and associated waste transfer lines	Radioactive liquid waste and sludge and potentially hazardous constituents
50-002(b)	Underground storage tank	One of two tanks (TA-50-67) contained in an underground vault located approximately 30 feet west of the southwest corner of TA-50-1	Radioactive liquid waste and potentially hazardous waste
50-002(c)	Underground storage tank	One of two tanks (TA-50-68) contained in an underground vault located approximately 30 feet west of the southwest corner of TA-50-1	Radioactive liquid waste and potentially hazardous waste
50-002(d)	Aboveground storage tank	4,000-gallon nitric acid storage tank	Unit stored product only; no waste stored
50-003(a)	Container storage	Mixed waste container storage area located in TA-50-1-59 used primarily to store drums of solidified, transuranic-contaminated sludge	Potentially mixed waste
50-003(d)	Container storage	Container storage area located in TA-50-114	Hazardous and mixed waste
50-004(a)	Decommissioned waste line	520-foot section of 6-inch-diameter, vitrified clay pipe removed from the vicinity of TA-50-37	Radioactive liquid waste and potentially hazardous constituents
50-004(b)	Decommissioned tank farm	An underground concrete vault and three stainless-steel-lined concrete storage tanks removed in 1989	Radioactive liquid waste and potentially hazardous constituents

See footnotes at end of table.

Table 10-1 (Continued)

Technical Area (TA) 50 Solid Waste Management Unit (SWMU) Descriptions[a]

SWMU No.	Unit Type	Unit Description	Waste Description
50-004(c)	Decommissioned waste lines and manholes	16 waste lines and associated manholes in TA-50 removed between 1981 and 1989	Radioactive liquid waste and potentially hazardous constituents
50-005	Batch Waste Treatment Unit	500-gallon pressure vessel and associated waste-processing components located in TA-50-1	Hazardous waste
50-006(a)	Operational releases/outfall	Section of Upper Ten Site Canyon contaminated as a result of a sump overflow	Radioactive liquid waste and hazardous chemicals
50-006(c)	Operational releases/outfall	Contaminated soil caused by airborne releases from the RLWTF and other treatment facilities at TA-50	Soil contaminated with radioactive and chemical waste
50-006(d)	Operational releases/outfall	Outfall of treated liquid effluent from the RLWTF to Mortandad Canyon	Soil contaminated with a variety of chemicals, radionuclides, and heavy metals
50-007	Incinerator complex	An incinerator, various waste feed components, two waste feed tanks, and three container storage areas housed in TA-50-37	Hazardous and mixed waste
50-008	Container storage	Container storage area located inside TA-50-69	Mixed waste
50-009	Disposal area (Material Disposal Area C)	11.8-acre disposal area (consisting of pits and shafts) located on the north side of Pajarito Road at TA-50	Radioactive, mixed, hazardous, and solid waste in the forms of building debris; contaminated trash; sludge from waste treatment plants and depleted uranium chips; plutonium-contaminated sodium loops; a variety of chemicals, pyrophoric metals, hydrides, and powders; sealed vessels containing sodium-potassium alloys or compressed gases; equipment not suitable for salvage; natural uranium-contaminated objects; gas cylinders containing carboys of di- or triethylbenzene; parts of the Clementine Reactor; and other waste forms

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See footnotes at end of table.

Table 10-1 (Continued)

Technical Area (TA) 50 Solid Waste Management Unit (SWMU) Descriptions[a]

SWMU No.	Unit Type	Unit Description	Waste Description
50-010	Decontamination area	Vehicle decontamination area in TA-50-1	Radioactive waste and potentially hazardous waste
50-011(a)	Septic system	Decommissioned septic system that consisted of a septic tank, a manhole, a sanitary distribution system, and a seepage pit	Sanitary waste
50-011(b)	Septic system	New septic system installed in 1983	Sanitary waste
TBD[b]	Container storage	Container storage area located outside TA-50-69	Mixed waste
TBD[b]	Container storage	Container storage areas located in TA-50-1, Rooms 35, 36, and 38/38A	Radioactive and mixed waste
TBD[b]	Container storage	Bermed area of the Batch Waste Treatment Unit used for container storage	Hazardous waste
TBD[b]	Container storage	Container storage area located in TA-50-137	Hazardous waste
TBD[b]	Container storage	Container storage area located in TA-50-138	Hazardous waste
TBD[b]	Container storage	Container storage area located in TA-50-139	Hazardous waste
TBD[b]	Container storage	Container storage area located in TA-50-140	Hazardous waste

[a] Information compiled from "Solid Waste Management Units Report" (LANL, 1990); "Module VIII: Special Conditions Pursuant to the 1984 Hazardous and Solid Waste Amendments to RCRA for Los Alamos National Laboratory, EPA I.D. NM0890010515," effective date May 19, 1994 (EPA, 1994a); and "RFI Work Plan for Operable Unit 1147" (LANL, 1992a).

[b] TBD = SWMU Number to be determined

Table 10-2

Technical Area (TA) 54 West Solid Waste Management Unit (SWMU) Descriptions[a]

SWMU No.	Unit Type	Unit Description	Waste Description
54-007(c)	Septic system	2,000-gallon septic tank and associated seepage trench	Sanitary waste, animal waste, and potentially hazardous constituents
54-007(d)	Septic system	972-gallon septic tank and associated drain trench	Sanitary waste, animal waste, and potentially hazardous constituents
54-007(e)	Septic system	1,500-gallon septic tank and associated seepage trench	Sanitary waste, animal waste, and potentially hazardous constituents
54-013(a)	Decontamination pit	Vehicle decontamination pit planned for construction in TA-54 West	Decontamination pit was never built; therefore, no waste was managed at this unit
54-015(h)	Container storage	Container storage areas within TA-54-38	Non-Resource Conservation and Recovery Act (RCRA)-regulated transuranic (TRU), TRU mixed, non-RCRA-regulated low-level, and low-level mixed waste
54-016(a)	Sump	Sump located in high bay of TA-54-38	Potentially radioactive and hazardous waste

[a] Information compiled from "Solid Waste Management Units Report" (LANL, 1990), "RFI Work Plan for Operable Unit 1148" (LANL, 1992b), and "Module VIII: Special Conditions Pursuant to the 1984 Hazardous and Solid Waste Amendments to RCRA for Los Alamos National Laboratory, EPA I.D. NM0890010515," effective date May 19, 1994 (EPA, 1994a).

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ATTACHMENT 10-1

Solid Waste Management Unit (SWMU) Characterization Sheets for SWMUs at Technical Area (TA) 50

(From: Los Alamos National Laboratory, 1990, "Solid Waste Management Units Report," Revision 1, LAUR 90-3400, Los Alamos National Laboratory, Los Alamos, New Mexico)

SUMMARY

LOCATION : TA-50
TYPE OF UNIT(s) : TREATMENT PLANT
UNIT USE : TREATMENT
OPERATIONAL STATUS : ACTIVE
PERIOD OF USE : 1963 - PRESENT
HAZARDOUS RELEASE : KNOWN
RADIOACTIVE RELEASE : KNOWN

MATERIALS MANAGED : RADIOACTIVE WASTE
HAZARDOUS WASTE
SUSPECTED MIXED WASTE

UNIT INFORMATION

The radioactive liquid waste treatment facility [50-001(a)] at TA-50 covers 37,000 square feet (60,000 square feet total floor space) and is designed primarily to remove transuranics. Its design capacity is 250 gpm. The facility provides neutralization, flocculation/clarification, pH control, ion exchange and filtration. The facility includes a wiped film evaporator (not yet operational), located in Room 71, Building 1; two clariflocculators, located in Room 116; a pH adjustment tank, located in Room 16; a horizontal evaporator storage tank, located in Room 70A; a decant storage tank (used as an auxiliary sludge storage tank), located in Room 61; a rotary drum vacuum filter, located in Room 116B; two gravity filtration devices, located in Room 116; a 100,000 gallon steel emergency holding tank, TA-50-90, added in 1982; and two waste mixers where chemicals are mixed with waste for treatment, located in Room 116. A drum-tumbler operation in Room 60A is used for cementation of TRU sludge prior to shipment to the Waste Isolation Pilot Plant. The facility has an outfall to Mortandad Canyon regulated under an NPDES permit (see "Operational Releases"). Liquid waste is transferred to the radioactive waste treatment facility from many of the active technical areas. Drainlines [50-001(b)] that transport liquid waste to the treatment facility are identified below.

FROM	STATUS	WASTES MANAGED
TA-55 to TA-50-66	Active	Acidic and caustic waste
Collector manhole TA-50-72 to grit chamber in TA-50-1	Active	LL radioactive industrial waste
TA-50-69 and TA-50-37	Active	LL radioactive industrial waste
TA-2, -3, -35, -43, -48 and -52, via manhole TA-50-72	Active	LL radioactive industrial waste
Manhole TA-50-7	Active	LL radioactive industrial waste
TA-55, via monitor pit TA-50-57 and manhole TA-50-72	Active	LL radioactive industrial waste

The majority of waste flows to TA-50 through double-encased polyethylene and stainless steel piping. There was a low-level radioactive industrial waste line from TA-50-3 until 1989, when the structure was removed.

LL : low-level

WASTE INFORMATION

The waste treated at this facility is radioactive waste. It is suspected that some waste streams entering the plant contain hazardous constituents.

RELEASE INFORMATION

Releases from the treatment facility are described in 50-006.

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
50-001(a)	TA50-3-CA-A-RW	50.006-50.011 50.019 50.022-50.024		TA-50-1, -90
50-001(b)	TA50-1-UST-A-HW/RW		Tsk 5 : 11-17	TA-50-1, -2, -7, -35, -37, -43, -48, -52, -57, -66, -69, -72

SUMMARY

LOCATION : TA-50
TYPE OF UNIT(s) : UNDERGROUND TANK
UNIT USE : TREATMENT/STORAGE
OPERATIONAL STATUS : ACTIVE/INACTIVE
PERIOD OF USE : 1963 - PRESENT
HAZARDOUS RELEASE : UNKNOWN
RADIOACTIVE RELEASE : UNKNOWN

MATERIALS MANAGED : RADIOACTIVE WASTE
SUSEPCTED MIXED WASTE

UNIT INFORMATION

The Radioactive Waste Treatment Facility includes three sets of underground storage tanks. The first set of tanks is a tank farm known collectively as TA-50-2 [50-002(a)] and includes six flow-through process tanks, the largest having a volume of 75,000 gallons. Two of the tanks handle the incoming waste, one is for sludge, and the other two are for treated liquid waste storage. The sixth tank receives liquid from decontamination and decommissioning activities. The wastes are transported from TA-50-1 to TA-50-2 via a system of waste transfer lines. Six buried cast-iron lines transport liquid wastes and sludges from treatment and holding tanks in TA-50-1 to their associated tanks in TA-50-2. Four buried steel lines transport wastes from Room 61 in TA-50-1 to holding tanks in TA-50-2. Three additional cast-iron lines transport waste from drains in TA-50-1 to a tank in TA-50-2. In addition, two tanks TA-50-67 and TA-50-68 [50-002(b) and 50-002(c)] in an underground vault, TA-50-66, handle the caustic and acid liquid wastes respectively from two underground lines from the Plutonium Facility at TA-55. From TA-50-66 these wastes are transported via two double encased stainless steel lines to Room 60 in the TA-50-1 treatment plant. These liquids contain significant amounts of transuranics and are monitored carefully for criticality control before treatment. An outdoor, aboveground storage tank, TA-50-5 [50-002(d)], is located adjacent to the north wall of TA-50-1. The tank is used to store nitric acid and is associated with a concrete containment structure. TA-50-12 was used to hold limestone chips to neutralize nitric acid vapors. The limestone chips were removed when the containment wall was built around TA-50-5 in 1988. TA-50-5 does not handle waste but stores nitric acid for ion exchange column regeneration.

WASTE INFORMATION

The waste treated or stored as a part of the radioactive waste treatment facility is identified as radioactive. It is suspected that some waste streams contain hazardous constituents.

RELEASE INFORMATION

In July, 1990, the Laboratory initiated drilling activities to test the integrity of the waste tanks. Cuttings from some of the boreholes around the grit chamber were wet and, upon surveying, found to be radioactively contaminated. Results of further investigation suggest that the pipeline connecting to the grit chamber was the source of a leak. Samples of the wet soil were collected and submitted to the HSE-9 analytical laboratory for analysis. Analytical results are pending.

NOTES

Three stainless steel tanks that were formerly 50-002(b) have been decommissioned and are described as 50-004(b).

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
50-002(a)	TA50-1-UST-A-HW/RW TA50-3-CA-A-RW	50.029- 50.032	Tsk 5 : 3-5	TA-50-2
50-002(b)	TA50-3-CA-A-RW		Tsk 5 : 7 8	TA-50-67
50-002(c)	TA50-3-CA-A-RW	? 50.014	Tsk 5 : 7 8	TA-50-68
50-002(d)	TA50-3-CA-A-RW	? 50.014	Tsk 5 : 18 23	TA-50-5, -12

? Indicates uncertainty with RFA Unit correlation.

LEGEND

- Contours, 10 ft
- Contours, 2 ft
- Fence, Industrial
- Fence, Security
- Retaining Wall
- Road/Parking, Dirt
- Road/Parking, Paved
- Waste Lines
- Building or Structure
  - 50-1 = Liquid Waste Treatment Plant
  - 50-37 = Incinerator
  - 50-69 = Waste Characterization, Reduction, and Repackaging Facility
- Disposal Pit (location approximate)
- Disposal Shaft (location approximate)
- Strontium-90 Disposal Shaft

8755-Y

FIGURE 10-1
Solid Waste Management Units at Technical Area (TA) 50

N

State Plane Coordinate System, New Mexico Central Zone.
1983 North American Datum

Grid provides NM State Plane coordinates in feet.
Grid interval, in feet: 500

0 15 30 45 60
METERS
0 50 100 150 200
FEET

NOTICE: The information on this map is provisional. Feature locations are dependent on scale and symbology and their accuracy may not have been confirmed. Los Alamos National Laboratory boundary is based on legal description established in 1995. Other boundary, structure, and utility data are from Los Alamos National Laboratory Engineering Division and Los Alamos County Utility and Engineering Departments. Contour data are from Los Alamos National Laboratory Environmental Restoration Project aerial survey, September 1991.

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Earth and Environmental Sciences Division
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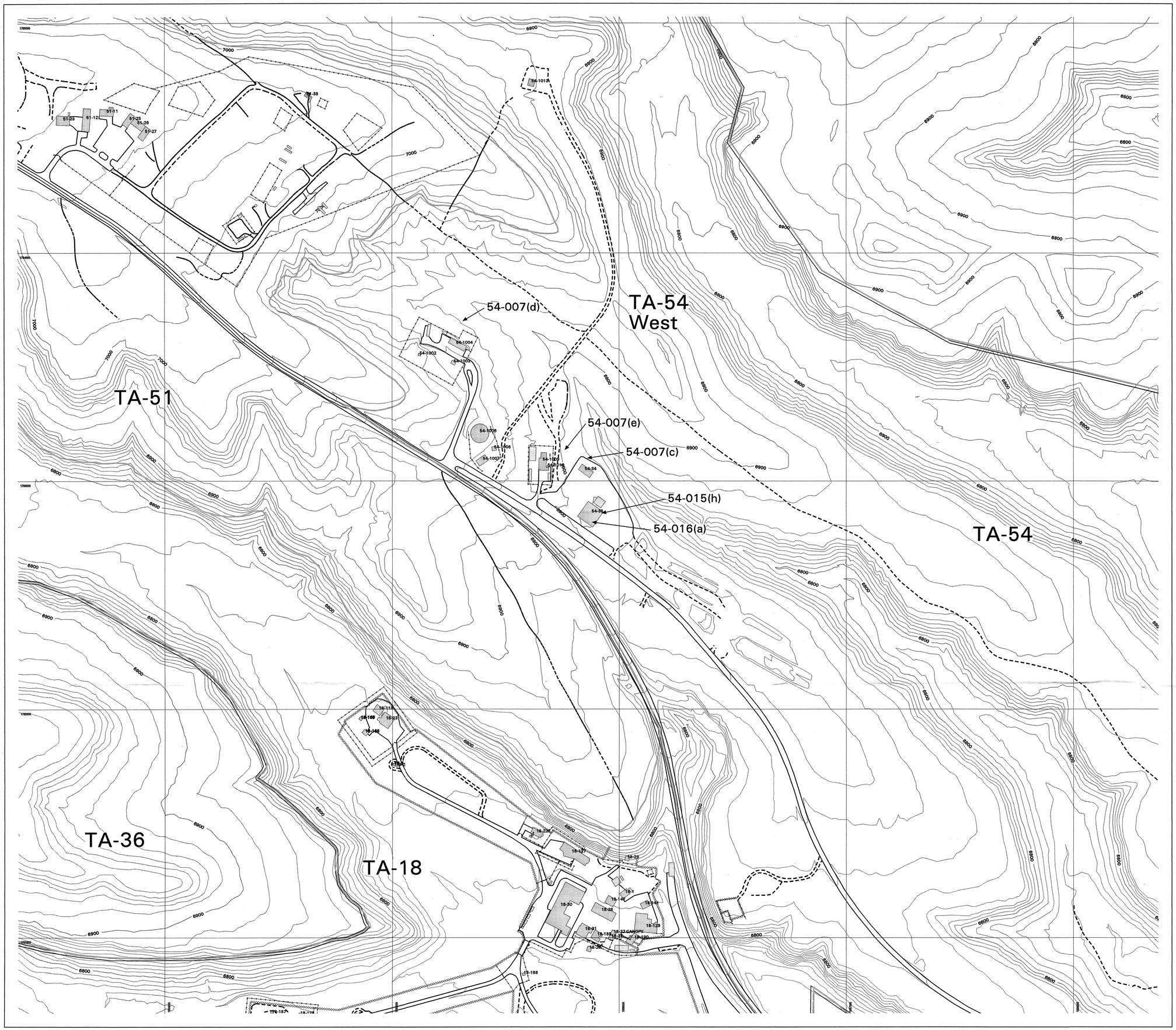
Produced by: Marcia Jones

Date: September 05, 1995 FIMAD Plot ID: 103686



LEGEND

- Boundary, OU
- Boundary, TA
- Contours, 100 ft
- Contours, 10 ft
- Fence, Industrial
- Fence, Security
- Road, Dirt
- Road, Paved
- Road/Trail
- Permanent Structure
- Temporary Structure

NOTE: SWMU No. 54-013(a) is a decontamination pit that was never constructed; therefore, it is not shown on this figure.

FIGURE 10-2
Solid Waste Management Units at Technical Area (TA) 54 West

N

State Plane Coordinate System, New Mexico Central Zone.
1983 North American Datum

Grid provides NM State Plane coordinates in feet.
Grid interval, in feet: 1000
Feet per inch on map = 200

SCALE 1:2400

0 61 122 183 244
METERS

0 200 400 600 800
FEET

NOTICE: The Information on this map is provisional. Feature locations are dependent on scale and symbology and their accuracy may not have been confirmed. Los Alamos National Laboratory boundary is based on legal description established in 1995. Other boundary, structure, and utility data are from Los Alamos National Laboratory Engineering Division and Los Alamos County Utility and Engineering Departments. Contour data are from Los Alamos National Laboratory Environmental Restoration Project aerial survey, September 1991.

8755-Z

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Earth and Environmental Sciences Division
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FIMAD is the electronic data repository for the Environmental Restoration Project at Los Alamos National Laboratory.

Produced by: Marcia Jones
Date: September 05, 1995 FIMAD Plot ID: G103687

SUMMARY

LOCATION : TA-50
TYPE OF UNIT(s) : CONTAINER STORAGE AREA
UNIT USE : STORAGE
OPERATIONAL STATUS : ACTIVE
PERIOD OF USE : 1963 - PRESENT
HAZARDOUS RELEASE : NONE
RADIOACTIVE RELEASE : NONE

MATERIALS MANAGED : SUSPECTED MIXED WASTE
HAZARDOUS WASTE
RADIOACTIVE WASTE

UNIT INFORMATION

There are five drum storage areas in conjunction with the Radioactive Waste Treatment Facility. The primary storage area is located in Building 1, Room 60D [50-003(a)]. The source of the waste is the cementing unit in Room 60A. A second container storage area is located in Room 130 of building TA-50-1 [50-003(b)]. The area is a satellite storage area for the analytical laboratory. The waste stored is samples from the laboratory. There is a temporary storage (less than 90 days) area at TA-50-2 [50-003(c)] that has been active since 1985. It consists of polyethylene 200 or 300 gallon tanks and numerous 55 gallon drums. The drums are stored on asphalt. The source of the waste is the isotope processing unit and the waste goes either into the radioactive waste tank or the neutralization tank. The polyethylene "tuff" tanks are enclosed within a steel cage. Recently a modular shed [50-003(d)] has been constructed behind TA-50-1 in which acidic wastes picked up from the ICON facility (TA-46) are stored. There is also an inflatable berm in this area which is also used for storage. A November 1988 field survey found four barrels under a tarp near TA-50-125 [50-003(e)].

WASTE INFORMATION

The waste in Room 60D is transuranic. The waste in Room 130 and TA-50-2 is low level, transuranic, and/or hazardous. The waste in the shed and berm is acidic waste. The contents of the four barrels is unknown.

RELEASE INFORMATION

There are no known releases from these container storage areas.

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
50-003(a)	**	50.025	Tsk 5 : 28	IN TA-50-1
50-003(b)	**		Tsk 5 : 29	IN TA-50-1
50-003(c)	**	50.033	Tsk 5 : 30	AT TA-50-2
50-003(d)	**		Tsk 5 : 31	BEHIND TA-50-1
50-003(e)	TA50-11-CA-A-HW/RW			NEAR TA-50-125

** No corresponding E. R. Program unit.

SUMMARY

LOCATION : TA-50
TYPE OF UNIT(s) : WASTE LINE
UNIT USE : TRANSPORT
OPERATIONAL STATUS : DECOMMISSIONED
PERIOD OF USE : 1963 - 1989
HAZARDOUS RELEASE : UNKNOWN
RADIOACTIVE RELEASE : KNOWN

MATERIALS MANAGED : SUSPECTED MIXED WASTE
RADIOACTIVE WASTE
HAZARDOUS WASTE

UNIT INFORMATION

In 1975, 520 feet of radioactive contaminated waste line [50-004(a)] was removed at TA-50 in the region where the incinerator is now located, TA-50-37. Contaminated soil and the vitrified clay pipe were taken to Area G and buried. In 1989, the underground concrete vault and three tanks that made up the TA-50-3 Tank Farm [50-004(b)] were removed. These were stainless steel underground storage tanks, ranging in volume from 1,000 to 4,500 gallons. The tanks were used to store waste from the Omega West reactor and could be used in an emergency for the storage of other wastes. The tank vault also received waste from undefined experiments in TA-50-1, via inactive waste line no. 50. Several other drainlines and associated manholes [50-004(c)] have been removed in TA-50.

STRUCTURE NO.	SIZE/MATERIAL	YEAR REMOVED	DESCRIPTION
Waste line no. 44	28', 6" dia, vitrified clay	1984	Connected waste line no. 45 to waste line no. 46 at manhole no. 6
Waste line no. 45	588', 5" dia, PVC	1984	Connected waste line no. 43 at Pecos Dr. to waste line no. 44 near manhole no. 6
Waste line no. 45a, manhole no. 55, manhole no. 56	67', 6" dia, PVC	1984	Drained from manhole no. 73 to manhole no. 56 via manhole no. 55. Manhole nos. 55 and no. 56 were also removed.
Waste line no. 46	41', 6" dia, cast iron	1984	Influent line connecting manhole no. 6 to TA-50-1
Waste line no. 47	14', 4" dia, cast iron	1984	Connected the soil lab in TA-50-1 to manhole no. 6.
Waste line no. 48	95', 6" dia, cast iron	1984	From tank TA-50-3 to manhole no. 6 via manhole no. 7.
Waste line no. 48a	44', 3" dia, cast iron	1984	Connected manhole no. 78 to manhole no. 6.
Waste line no. 49	305', 3" dia, cast iron	1981	Connected TA-35 with TA-50-3.
Waste line no. 54	65', 3" dia, cast iron	1981	Connected waste line no. 49 to overflow tank at TA-50-2.
Waste line no. 55	6" dia, 244' of cast iron, 165' of vitrified clay pipe	1981	Connected TA-50-1 and TA-50-2 to outfall in Ten Site Canyon
Waste line no. 56	29', 4" dia, cast iron	1983	Connected TA-50-1 to waste line no. 58
Waste line no. 65	3150', 3" dia, cast iron	1989	Connected TA-52 to a waste line junction at TA-50-3 Tank Farm.
Waste line no. 67	6" dia, 26' of cast iron, 250' of vitrified clay pipe	1981	Connected an emergency drain in TA-50-2 to an outfall in Ten Site Canyon
Waste line manhole no. 6		1984	Main collector manhole for influent waste lines 42, 44, 45, 46, 47, and 65.

WASTE INFORMATION

The waste consisted of constituents in an acidic matrix. It is suspected that some waste streams contained hazardous constituents.

RELEASE INFORMATION

The lines in the vicinity of TA-50-37 [50-004(a)] were known to have leaked occasionally. Generally, soil contamination by radionuclides, if discovered during waste line decommissioning activities [50-004(c)], was cleaned up to as low as reasonably achievable by removing affected soil and pipe. Chemical constituents which may have been present were usually not sampled for at the time of decommissioning. During excavation of the TA-50-3 vault and tanks [50-004(b)], soil surrounding and beneath the vault were screened for both radioactive and chemical contamination. Levels of contamination were found to be below cleanup levels; the trench was backfilled with soil.

(continued)

NOTES

SWMU No. 50-004(b) was formerly SWMU No. 50-002(b).

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
50-004(a)	TA50-12-CA-I-HW/RW		Tsk 5 : 53	NEAR TA-50-37
50-004(b)	TA50-2-UST-I-HW/RW		Tsk 5 : 10 54	TA-50-3
50-004(c)	**		Tsk 5 : 49 51 52 55-57 59-65	TA-50-1, -2, -3; MANHOLES 6, 7, 55, 56, 73, 78

** No corresponding E. R. Program unit.

DRAFT

SUMMARY

LOCATION : TA-50
TYPE OF UNIT(s) : TREATMENT PLANT
UNIT USE : TREATMENT
OPERATIONAL STATUS : ACTIVE
PERIOD OF USE : 1983 - PRESENT
HAZARDOUS RELEASE : NONE
RADIOACTIVE RELEASE : NONE

MATERIALS MANAGED : HAZARDOUS WASTE

UNIT INFORMATION

A liquid waste batch treatment system is located in Building 1, Room 24, at TA-50. Wastes that have been treated include cyanide, chromate plating solutions and solutions of acids and bases, and heavy metals. The unit is underlain by concrete and includes a Kynar-lined tank and associated Kynar-lined and stainless steel pipeline. The tank is used to treat electroplating waste containing copper and lead. It was put into use in May 1988. The plant also has a Kynar-lined blowdown tank in Room 24. This tank had not been used at the time of the VSI. Mercury reclamation is done on an intermittent basis in Room 34. Mercury is washed in acid and/or solvents and double distilled. The capacity has been estimated at 35 pounds per day. The process is not operated regularly because of the current lack of personnel. The area is estimated to be 60 square feet.

WASTE INFORMATION

The wastes handled at the Room 24 unit are cyanide, chromate plating solutions, acids, bases, and heavy metals including lead. Mercury is handled by the unit in Room 34.

RELEASE INFORMATION

There is no evidence of release from this facility.

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
50-005	TA50-7-CA-I/A-HW	50.026 50.027	Tsk 5 : 24 25	TA-50-1

SUMMARY

LOCATION	: TA-50	MATERIALS MANAGED	: SUSPECTED MIXED WASTE
TYPE OF UNIT(s)	: OPERATIONAL RELEASE		RADIOACTIVE WASTE
UNIT USE	: DISPOSAL		HAZARDOUS WASTE
OPERATIONAL STATUS	: ACTIVE		SOLID WASTE
PERIOD OF USE	: 1963 - PRESENT		
HAZARDOUS RELEASE	: SUSPECTED		
RADIOACTIVE RELEASE	: KNOWN		

UNIT INFORMATION

There have been several releases of radioactive wastes and unknown chemicals at TA-50 over the years. Upper Ten Site Canyon is reported to have contamination [50-006(a)] from overflow of a sump. Stained, potentially contaminated soil [50-006(b)] is present directly beneath an active radiator that is part of the west wall of building TA-50-37. Routine airborne releases of plutonium from the radioactive liquid waste treatment plant have deposited on the surrounding soils [50-006(c)]. Treated liquid effluent from the treatment plant has discharged to Mortandad Canyon since 1963 [50-006(d)]; the discharge is now regulated under an NPDES permit. More recently, the liquid effluent from the TA-21 Treatment Plant has been piped to TA-50 for discharge to Mortandad Canyon as well. The area surrounding an aboveground tank for diesel fuel [50-006(e)] was contaminated by releases from the tank. It was located south of TA-50-37. Underground lines extended from the tank to TA-50-37. The tank and the lines were removed in May, 1990.

WASTE INFORMATION

The spill into upper Ten Site Canyon [50-006(a)] consisted of liquid from the TA-50 Waste Treatment Facility (see 50-001); it was primarily radioactive waste, but may have contained hazardous constituents. The stained soil beneath the radiator at TA-50-37 [50-006(b)] contains hydraulic oil. Airborne releases [50-006(c)] included plutonium; other constituents, if present, are unknown. Outfall of effluent from the treatment plant at TA-50 [50-006(d)] is currently monitored under the routine environmental surveillance program. Analysis of effluent in the early 1980s indicated the presence of radionuclides and metals. The area around the diesel tanks [50-006(e)] received diesel fuel.

RELEASE INFORMATION

Releases through the outfall have caused an inventory of chemicals, heavy metals, and radionuclides to be present in Mortandad Canyon. Sampling near the outfall will continue in response to the 1988 DOE Environmental Survey Report, which cited the stream channel as Environmental Problem 9. In addition, elevated plutonium is present in surface soil at TA-50 from airborne stack emissions. The hydraulic oil beneath the fan at TA-50-37 is unlikely to have caused hazardous releases. Contaminated soil from around the diesel tank was removed and landfarmed.

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
50-006(a)	TA50-5-CA-I-HW/RW		Tsk 5 : 21	SOUTHEAST OF TA-50-1
50-006(b)	**		Tsk 5 : 20 22	WEST WALL OF TA-50-37
50-006(c)	TA50-6-CA-A-RW		Tsk 5 : 19	AROUND TA-50-1
50-006(d)	TA50-4-O/CA-A-HW/RW		Tsk 5 : 1 6	FROM TA-50-1
50-006(e)	TA50-3-CA-A-RW		Tsk 5 : 48	SOUTH OF TA-50-37

** No corresponding E. R. Program unit.

SUMMARY

LOCATION : TA-50
TYPE OF UNIT(s) : INCINERATOR
UNIT USE : TREATMENT/STORAGE
OPERATIONAL STATUS : ACTIVE
PERIOD OF USE : 1975 - PRESENT
HAZARDOUS RELEASE : NONE
RADIOACTIVE RELEASE : KNOWN

MATERIALS MANAGED : MIXED WASTE
HAZARDOUS WASTE

UNIT INFORMATION

The incinerator complex (TA-50-37) was designed and constructed to develop incineration methods for wastes containing transuranics. The design matrix feed rate of this facility is 50 kg/hr. Upgrades are under way to convert the unit from a research and development facility to a production facility. These changes should be on line by the end of 1991. The incinerator is located in Room 112 and the feed system is located in Room 115 of Building 37. The liquid feed system prep room is bermed and contains no floor drains. The inventory permitted in this room is 600 gallons and release containment is designed to hold 110 percent of the maximum inventory. Containers are opened and handled under a barrel hood with an exhaust blower capacity of about 1000 cfm. An off-gas treatment unit is associated with the incinerator complex. The exhaust air system from the room includes two HEPA filters. Room 115 of TA-50-37 is permitted to store radioactive waste for the indoor feed system for the incinerator. At one time, Room 115 was used to empty glass vials containing scintillation liquid. The liquid is stored at TA-54, Area L awaiting startup of the incinerator. The solids were disposed of at TA-54, MDA-G as empty containers. The waste comes from throughout the facility.

WASTE INFORMATION

The wastes incinerated include organic liquids; chlorinated, fluorinated hydrocarbons; carcinogenic materials; and transuranic waste from the plutonium processing facility. Liquid effluent generated by the off-gas aqueous scrub system is filtered for solids removal prior to transfer via a double contained instrumented pipeline to the TA-50 Building 1 Industrial Waste Treatment Facility. Ash will be immobilized in concrete prior to shipment to the Waste Isolation Pilot Plant.

RELEASE INFORMATION

The unit has many release controls associated with it.

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
50-007	TA50-9-IN-A-HW/RW	50.035 50.036	Tsk 5 : 26	TA-50-37

SUMMARY

LOCATION : TA-50
TYPE OF UNIT(s) : VOLUME REDUCTION
UNIT USE : OTHER: VOLUME REDUCTION
OPERATIONAL STATUS : ACTIVE
PERIOD OF USE : 1983 - PRESENT
HAZARDOUS RELEASE : NONE
RADIOACTIVE RELEASE : NONE

MATERIALS MANAGED : MIXED WASTE

UNIT INFORMATION

The Size Reduction Facility in Building TA-50-69 is a prototype facility designed to reduce the volume of and repackage various types of metallic waste contaminated with transuranics. Operations were initiated in August of 1983. Through FY85, a total volume of 3,106 cubic feet of transuranic waste had been reduced by a factor of 3.7 to 1. This facility is moderately contaminated with transuranics and associated radionuclides.

WASTE INFORMATION

The waste consists of transuranic and metallic waste, including lead.

RELEASE INFORMATION

There is no evidence of release at this facility. There are no outfalls associated with this unit; all liquid wastes are processed at the radioactive waste treatment facility. Stack emissions also are monitored.

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
50-008	TA50-8-0A-A-RW		Tsk 5 : 27	IN TA-50-69

SUMMARY

LOCATION : TA-50
TYPE OF UNIT(s) : MATERIAL DISPOSAL AREA
UNIT USE : DISPOSAL
OPERATIONAL STATUS : INACTIVE
PERIOD OF USE : 1948 - 1969
HAZARDOUS RELEASE : UNKNOWN
RADIOACTIVE RELEASE : KNOWN

MATERIALS MANAGED : MIXED WASTE
HAZARDOUS WASTE
SOLID WASTE

UNIT INFORMATION

MDA-C is located on the north side of Pajarito Rd adjacent to TA-50. There is approximately 3,650,000 cubic feet of waste at MDA-C within an area of 11.8 acres. MDA-C is composed of six radioactive pits, one chemical pit and 107 shafts. Pits 1 through 4 were approximately 185.9 m x 12.2 m in area. Pit 5 was approximately 214.9 m long x 33.5 m wide x 5.5 m deep. Pit 6 was approximately 153.9 m long x 30.5 m wide x 7.0 m deep. The chemical pit was approximately 54.9 m long x 7.6 m wide and may have been 3.7 m deep. The shafts vary in diameter and depth, and many are lined with corrugated metal pipe. Pit 1 was used from 1948-1951; Pit 2 was used from 1950-1951; Pit 3 was used from 1951-1953; Pit 4 was used from 1951-1955; Pit 5 was used from 1948-1951; and Pit 6 was used from 1956-1959. The chemical pit was active from 1960-1964. Pit disposal ended in 1964 and shaft disposal ended in 1969. Studies in the late 1970s indicated animal intrusion into the waste and other problems. The surface was improved in 1984 by adding soil cover at a depth greater or equal to six inches with an average cover of approximately two feet, recontouring, and seeding with native grasses. The new surface cover was applied to the eastern half and the extreme western end of the site and consisted of an additional 0.15 meter of topsoil over 0.5 meter of crushed tuff. The new cover was not applied to the extreme southwest corner of Area C because this area does not include any of the waste trenches.

WASTE INFORMATION

The types of radioactive waste buried in Area C include building debris from the demolition of TA-1 and TA-10, routine contaminated trash, sludge from waste treatment plants and depleted uranium chips. Plutonium-contaminated sodium loops from TA-35 were buried in shafts. Noncombustible waste was put in the west end of pit 5 in 1957. The chemical pit contained, according to reports, a variety of chemicals, pyrophoric metals, hydrides and powders, sealed vessels containing sodium potassium alloys or compressed gases, and equipment not suitable for salvage. No high explosives have ever been disposed of in the pit. Natural uranium contaminated objects were placed in the pit, according to reports. Before closing Area C, the safety office placed approximately 200 gas cylinders which were full or partially full and covered them with approximately ten feet of compact fill. The record indicates that warnings were made that some full nickel carbonyl cylinders may have been put into the chemical pit. Carboys of di- or triethylbenzene from the whole body counter at TA-43 were deposited on the ground where the solar panels were located (the solar panels have since been removed). Parts of the Clementine Reactor (see SWMU No. 2-003) are buried in MDA-C.

RELEASE INFORMATION

During the 1986 DOE Environmental Survey (Environmental Problem 22), above background levels of radioactivity were found adjacent to the site. The source of elevated radioactivity has not been determined.

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
50-009	MDA-C	50.034	Tsk 5 : 32-42	MDA-C

SUMMARY

LOCATION : TA-50
TYPE OF UNIT(s) : DECONTAMINATION FACILITY
UNIT USE : TREATMENT
OPERATIONAL STATUS : ACTIVE
PERIOD OF USE : 1963 - PRESENT
HAZARDOUS RELEASE : NONE
RADIOACTIVE RELEASE : NONE

MATERIALS MANAGED : RADIOACTIVE WASTE

UNIT INFORMATION

A radioactive decontamination facility for the laboratory is located in the lower level at the south end of TA-50-1. The facility is used to clean radioactive contamination from vehicles and other objects. Liquid wastes produced during decontamination go to the tank farm at TA-50, via floor drain and drainline, and solid wastes go to TA-54 for storage (TRU) or burial (LL). The decontamination takes place at the facility in hoods, gloveboxes, and open areas.

WASTE INFORMATION

The wastes generated are generally radioactive.

RELEASE INFORMATION

There is no evidence of routine or systematic releases at this facility.

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
50-010	TA50-10-CA-A-RW		Tsk 5 : 9	IN TA-50-1

SUMMARY

LOCATION : TA-50
TYPE OF UNIT(s) : SEPTIC SYSTEM
UNIT USE : TREATMENT/DISPOSAL
OPERATIONAL STATUS : INACTIVE/ACTIVE
PERIOD OF USE : 1963 - PRESENT
HAZARDOUS RELEASE : UNKNOWN
RADIOACTIVE RELEASE : UNKNOWN

MATERIALS MANAGED : SANITARY WASTE

UNIT INFORMATION

A decommissioned septic system [50-011(a)] included a septic tank, TA-50-10, a manhole, TA-50-9, and a sanitary distribution box, TA-50-11. In addition, Zia Company engineering drawing Z-4856 indicates that a seepage pit was installed on the east side of the sanitary distribution box in 1978. All components of the septic system were removed in 1983. An active sanitary waste system of drainlines [50-011(b)] was installed in 1983 to discharge sanitary sewage from TA-50 to the treatment lagoons at TA-35. The lines are 6-inch ductile iron pipe and were installed to replace the earlier septic tank system. The drainlines are operational and subject to monitoring.

WASTE INFORMATION

The septic systems managed sanitary waste only.

RELEASE INFORMATION

The septic system was removed in 1983; it is unknown if there were hazardous releases. No known releases have occurred from the active sanitary waste system.

NOTES

Former SWMU Nos. 50-011(b) and (c) were contiguous parts of the septic system and have been included within 50-011(a).

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
50-011(a)	**		Tsk 5 : 50	TA-50-10, -9, -11
50-011(b)	**		Tsk 5 : 2	
50-011(misc)			Tsk 5 : 58	

** No corresponding E. R. Program unit.

DRAFT

ATTACHMENT 10-2

Solid Waste Management Unit (SWMU) Characterization Sheets for SWMUs at Technical Area (TA) 54 West

(From: Los Alamos National Laboratory, 1990, "Solid Waste Management Units Report," Revision 1, LAUR 90-3400, Los Alamos National Laboratory, Los Alamos, New Mexico)

SUMMARY

LOCATION : TA-54
TYPE OF UNIT(s) : SEPTIC SYSTEM
UNIT USE : TREATMENT/DISPOSAL
OPERATIONAL STATUS : ACTIVE
PERIOD OF USE : ? - PRESENT
HAZARDOUS RELEASE : UNKNOWN
RADIOACTIVE RELEASE : UNKNOWN

MATERIALS MANAGED : SANITARY WASTE
SUSPECTED HAZARDOUS WASTE
SUSPECTED MIXED WASTE

UNIT INFORMATION

Five septic systems are present in TA-54.

SWMU NO.	STRUCTURE	CAPACITY	OVERFLOW	EID NO.
54-007(a)	TA-54-16	1000 gal.	900 sq ft leach field	LA-60
54-007(b)	TA-54-28	750 gal.	seepage pit	LA-61
54-007(c)	TA-54-West	2000 gal.	1820 sq ft septic system and evapotranspiration bed	?
54-007(d)	TA-54-4	972 gal.	leach field	LA-51
54-007(e)	TA-54-9	1500 gal.	leach field	LA-52

TA-54-16 serves one person and TA-54-28 serves 13 people, both systems appear to be operating adequately. TA-54-16 and TA-54-28 are both in Area G. TA-54-16 serves the compactor building, TA-54-2, and the waste management control facility, TA-54-11. TA-54-28 serves office building TA-54-22. The new septic system and evapotranspiration bed are located in TA-54-West. Their EID license number and certification for an Individual Liquid Waste System is 026795. This septic system serves office building TA-54-34 and TRU drum assay building TA-54-38.

WASTE INFORMATION

These systems generally receive sanitary waste; however, because they are located in hazardous, mixed and transuranic waste handling areas, they may contain hazardous constituents. TA-54-4 and TA-54-9 have received animal waste and sanitary waste.

RELEASE INFORMATION

It is unknown whether there have been hazardous releases beyond the boundaries of the overflow areas for these systems.

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
54-007(a)	TA54-2-ST-A-HW/RW		Tsk 46 : 2	TA-54-16
54-007(b)	TA54-2-ST-A-HW/RW			TA-54-28
54-007(c)	**		Tsk 46 : 5	SERVES TA-54-34, -38
54-007(d)	TA54-2-ST-A-HW			TA-54-4
54-007(e)	TA54-2-ST-A-HW			TA-54-9
54-007(misc)			Tsk 46 : 7	

** No corresponding E. R. Program unit.

SUMMARY

LOCATION : TA-54
TYPE OF UNIT(s) : PIT/OPERATIONAL RELEASE
UNIT USE : TREATMENT/DISPOSAL
OPERATIONAL STATUS : ACTIVE
PERIOD OF USE : ? - PRESENT
HAZARDOUS RELEASE : SUSPECTED
RADIOACTIVE RELEASE : NONE

MATERIALS MANAGED : RADIOACTIVE WASTE
SOLID WASTE
SUSPECTED MIXED WASTE

UNIT INFORMATION

Trucks carrying equipment and TRU waste drums are washed in a decontamination pit [54-013(a)] in TA-54-West to remove small amounts of radionuclides. The liquid from the washing operation is discharged to the ground. The exact location of the decontamination pit is not known. A second truck monitoring/washing facility [54-013(b)] is located at the east edge of MDA-G.

WASTE INFORMATION

The wastes consist of washwater with low levels of radioactivity. The washwater may also contain oil and grease.

RELEASE INFORMATION

The extent of releases of hazardous constituents is unknown.

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
54-013(a)	**		Tsk 46 : 35	IN TA-54 WEST
54-013(b)	**		Tsk 46 : 19	AREA G

** No corresponding E. R. Program unit.

SUMMARY

LOCATION : TA-54
TYPE OF UNIT(s) : STORAGE
UNIT USE : STORAGE
OPERATIONAL STATUS : ACTIVE
PERIOD OF USE : ? - PRESENT
HAZARDOUS RELEASE : SUSPECTED
RADIOACTIVE RELEASE : UNKNOWN

MATERIALS MANAGED : MIXED WASTE
RADIOACTIVE WASTE

UNIT INFORMATION

Several areas used for the surface storage of TRU waste are present in TA-54 West and in Areas L and G. There is a TRU drum storage area [54-015(a)] at TA-54-8 where drums are stored on plywood inside a 15' x 40' x 12' high metal shed prior to being sprayed with a corrosion inhibitor. There is also a site [54-015(b)] 100 ft southwest of TA-54-11 in Area G where TRU waste is stored in 20-year retrievable containers and low-level radioactive waste is stored in dumpsters. TRU waste storage pads 1-4 [54-015(c) through (f)] are located at the northwest corner of Area G. Pads 1 [54-015(c)], 2 [15-015(d)], and 4 [15-015(f)] each contain six levels of retrievable contact-handled TRU waste in 55-gallon drums. Pad 2 is completely filled and covered over with tuff; pads 1 and 4 are partially filled and partially covered; pad 3 [15-015(e)] is covered by a temporary dome structure (TA-54-48), will be permitted for mixed waste storage, and will also be used for contact-handled TRU waste storage. Storage began on pads 1-4 in 1974. Pads 1-4 overlie disposal pits 2, 4, and 5, which are addressed in 54-017. On the east side of Area L, uranium-contaminated lead casks [54-015(g)] are being stored on the surface near disposal shaft 4, and are covered by plywood. TRU waste is prepared for shipment off-site at TA-54-38 in TA-54 West [54-015(h)]. A radioactively-contaminated forklift battery is stored just north of the lead stringer shafts in Area L [54-015(i)]. A temporary dome structure (TA-54-49) [54-015(j)] is located on pit 32 in Area G for storage of mixed waste sludge. Above disposal pit 29 in MDA-G [addressed in 54-018(e)] and above grade, one layer of retrievable TRU waste has been stored and backfilled [54-015(k)]. The waste consists of 158 20-ft long by 2.5-ft dia cement-filled sections of corrugated pipe in 5 layers.

WASTE INFORMATION

Waste at TA-54-8 [54-015(a)] consists of TRU waste, oil, and grease. Stored waste near TA-54-11 [54-015(b)] contains TRU and low-level radioactive waste. Pads 1-4 [54-015(c) through (f)] store retrievable, contact-handled TRU waste. Lead contaminated by uranium is stored at 54-015(g). TA-54-38 [54-015(h)] waste consists of possible mixed waste constituents containing >100 nCi/g activity. The waste at 54-015(i) consists of a radioactively contaminated battery. Waste at 54-015(j) consists of mixed waste sludge.

RELEASE INFORMATION

Stains on the soil were noted at 54-015(a) during the VSI. No visible releases have been observed at the other sites.

NOTES

SWMU No. 54-015(a) was formerly SWMU No. 54-003(b).

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
54-015(a)	TA54-1-2-A-HW/RW MDA-G	54.001	Tsk 46 : 27	TA-54-8, AREA G
54-015(b)	TA54-1-2-A-HW/RW MDA-G		Tsk 46 : 38	SOUTHWEST OF TA-54-11, AREA G
54-015(c)	TA54-1-2-A-HW/RW MDA-G	54.058	Tsk 46 : 20	TRU PAD 1
54-015(d)	TA54-1-2-A-HW/RW MDA-G		Tsk 46 : 21	TRU PAD 2
54-015(e)	TA54-1-2-A-HW/RW MDA-G		Tsk 46 : 22	TRU PAD 3, TA-54-48
54-015(f)	TA54-1-2-A-HW/RW MDA-G		Tsk 46 : 23	TRU PAD 4

(continued)

SWMU CROSS-REFERENCE LIST
(continued)

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
54-015(g)	TA54-1-2-A-HW/RW MDA-G		Tsk 46 : 40	NEAR SHAFT 4, AREA L
54-015(h)	TA54-1-2-A-HW/RW MDA-G		Tsk 46 : 34	TA-54-38, TA-54 WEST
54-015(i)	TA54-1-2-A-HW/RW MDA-L		Tsk 46 : 108	SW CORNER OF AREA L
54-015(j)	**		Tsk 46 : 24	ABOVE PIT 32, AREA G, TA-54-49
54-015(k)	TA54-1-L-A-HW/RW MDA-G		Tsk 46 : 67	ABOVE PIT 29, AREA G

** No corresponding E. R. Program unit.

DRAFT

SUMMARY

LOCATION : TA-54
TYPE OF UNIT(s) : SUMP
UNIT USE : STORAGE
OPERATIONAL STATUS : ACTIVE
PERIOD OF USE : 1989 - PRESENT
HAZARDOUS RELEASE : NONE
RADIOACTIVE RELEASE : NONE

MATERIALS MANAGED : SUSPECTED RADIOACTIVE WASTE
SUSPECTED MIXED WASTE

UNIT INFORMATION

A sump [54-016(a)] is located in the new TRU building, TA-54-38, in TA-54 West. The purpose of the sump is to receive any liquids that drain onto the floor at TA-54-38. The sump drain discharges to a canyon outfall on the north side of the building. There is also a sump [54-016(b)] that collects waste from the removal of the corrosion inhibitor (grease) that is sprayed on TRU waste drums. This sump is associated with TA-54-33 in Area G.

WASTE INFORMATION

The liquids at TA-54-38 are anticipated to be snow melt from trucks driving into the receiving area. However, if spills occur, the sump will also receive the spilled liquids. The sump at TA-54-33 collects waste from the removal of grease.

RELEASE INFORMATION

No release information is available.

NOTES

This SWMU was formerly SWMU No. 54-XXX.

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
54-016(a)	**		Tsk 46 : 1 6	TA-54-38, IN TA-54 WEST
54-016(b)	**		Tsk 46 : 31	NEAR TA-54-33, AREA G

** No corresponding E. R. Program unit.

11.0 OTHER FEDERAL LAWS

The following federal laws are required under the New Mexico Administrative Code, Chapter 4, Part 1, Subpart IX, 270.3 and 270.14(b)(20), to be given consideration when applying for a Resource Conservation and Recovery Act permit. When any of these laws is applicable, its procedures must be followed:

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

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

3. *The Endangered Species Act of 1973 (16 USC 1531).* This act provides for the conservation of endangered and threatened species of fish, wildlife, and plants. It requires ensurance that any action will not jeopardize the continued existence of any endangered or threatened species or adversely affect its critical habitat.

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

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

Because Los Alamos National Laboratory (LANL) has ongoing programs in support of the National Historic Preservation Act, the Endangered Species Act, and the Fish and Wildlife Act, consideration was given to these federal laws. Provisions in the Wild and Scenic Rivers Act and the Coastal Zone Management Act are not applicable to LANL's activities.

12.0 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.

DRAFT

Dennis J. Erickson
Division Director for Environment, Safety, and Health Division
Los Alamos National Laboratory
Operator

Date Signed

Larry D. Kirkman
Acting Area Manager, Los Alamos Area Office
U.S. Department of Energy
Albuquerque Operations
Owner/Operator

Date Signed

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APPENDIX A

Determination of 100-Year Floodplain Elevations at Los Alamos National Laboratory

APPENDIX B

1991 and 1992 Traffic Studies at Intersection of Diamond Drive and Trinity Drive

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APPENDIX C

Radioassay and Nondestructive Testing (RANT) Facility Systems

Radioassay And Nondestructive Testing (RANT) Facility

History

The RANT Facility has its origins in the late 1980s when the Waste Isolation Pilot Plant (WIPP) was expected to open in 1988. A facility (TA-54-38) was constructed in 1987 to receive, certify, and ship transuranic (TRU) wastes to the WIPP. At that time, two pieces of nondestructive testing (NDT) equipment were installed: a passive/active neutron (PAN) assay system and a real-time radiography (RTR) system for 55-gallon drums. The facility was used during 1989 and 1990 to perform a provisional certification of the TRU waste in storage at Technical Area (TA) 54, Area G.

Faced with uncertainty regarding ultimate approval to operate the facility and growing characterization requirements together with the need to utilize this equipment across the U.S. Department of Energy (DOE) complex, the Los Alamos National Laboratory's (LANL's) Waste Management Group requested funding for mobile instruments that would not need to be housed in a building and could be brought directly to the waste. The intent was to not only continue the provisional certification but to use these instruments throughout LANL to provide some service to waste generators not completely equipped to assay their wastes.

Capabilities

Table 1 lists the systems currently available at the RANT Facility.

The mobile segmented/tomographic gamma scanner (S/TGS) is the only instrument of its kind currently available. It was developed at LANL for safeguards/accountability applications but has been adapted to waste assay.

The mobile RTR unit is a state-of-the-art 450 kilovolt system. In addition to an image intensifier imaging system, it will soon have digital radiography capabilities.

The PAN systems were designed at LANL in the late 1980s to combine proven passive counting techniques with active techniques to provide greater sensitivity. Similar systems are commonly in use throughout the DOE complex.

Process

In routine operation, the RANT Facility and its instruments are used to nondestructively assay and examine hazardous, low-level, low-level mixed, and TRU mixed waste. Drums or other containers are moved from container storage areas to the examination and assay equipment for the duration of the procedure (5 to 15 minutes typically for the PAN and RTR systems, perhaps as long as 1.5 hours for a S/TGS measurement). After the procedure, the containers are returned to storage. No drums or other containers are opened in the procedure (this is a nonintrusive nondestructive, procedure).

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Table I -RANT Systems Currently Available

System	Maximum Throughput	Function/Capability	Principles of Operation	Applicability	Status
Mobile RTR	10	Real time and digital radiography of waste containers up to the size of Standard Waste Boxes (SWBs). Detection of free liquids, verification of waste contents, detection of potentially pressurized containers.	X-rays produced by an industrial x-ray generator pass through a waste drum. The transmitted x-rays are imaged using an image intensifier or linear diode array. A true image of the drum contents is recorded either on video tape or as an image file viewable using commercially available image processing software.	LLW, MLW, TRU, Hazardous	Operational
Mobile S/TGS	2.5	Gamma assay of waste packages up to the size of an 83 gallon drum. Quantifies the amount of any gamma emitting isotope, correcting for attenuation within the waste package using a tomographic reconstruction of the waste matrix.	Many radioactive isotopes emit gamma radiation which uniquely identifies them and can be used to measure how much is present in a waste drum. The S/TGS uses a High Purity Germanium (HPGe) gamma spectrometer to measure the gamma radiation from a waste drum. The HPGe is also used to measure the transmission of gamma radiation from a ^{75}Se source through the waste drum to produce a crude tomographic image of its contents. Taken together these two images provide isotopic identification, quantification and produce a three dimensional image of the waste matrix and source locations in the waste.	LLW, MLW, TRU, Hazardous	In operation

Mobile PAN	10	Neutron assay of waste packages up to the size of 55 gallon drums. Quantifies the amount of fissile material (^{239}Pu, ^{235}U, etc.) or other neutron emitting materials (e.g.- ^{238}Pu)	The plutonium contaminated wastes common at LANL contain isotopes which spontaneously fission (at a low but usably detectable rate) like ^{238}Pu and ^{240}Pu. In the passive mode of operation of this instrument, the neutrons emitted as a result of this process are detected, counted and related to the total quantity of Pu in a waste drum. There are other isotopes in the waste which will fission (again at a low but usably detectable rate) if irradiated with neutrons from a pulsed neutron source. In this active mode, the neutrons resulting from these induced fissions are also detected, counted and related to the total quantity of Pu in a waste drum.	LLW, MLW, TRU, Hazardous	Operational.Being calibrated.
Fixed RTR	10	Real time radiography of waste containers up to the size of 83 gallon drums. Detection of free liquids, verification of waste contents, detection of potentially pressurized containers.	X-rays produced by an industrial x-ray generator pass through a waste drum. The transmitted x-rays are imaged using an image intensifier. A true image of the drum contents is recorded on video tape.	LLW, MLW, TRU, Hazardous	Operational (pending facility readiness review).
Fixed PAN	10	Neutron assay of waste packages up to the size of 55 gallon drums. Quantifies the amount of fissile material (^{239}Pu, ^{235}U, etc.) or other neutron emitting	The plutonium contaminated wastes common at LANL contain isotopes which spontaneously fission (at a low but usably detectable rate) like ^{238}Pu and ^{240}Pu. In the passive mode of		Operational (pending facility readiness review). Being calibrated.

		materials (e.g.- ^{238}Pu).	operation of this instrument, the neutrons emitted as a result of this process are detected, counted and related to the total quantity of Pu in a waste drum. There are other isotopes in the waste which will fission (again at a low but usably detectable rate) if irradiated with neutrons from a pulsed neutron source. In this active mode, the neutrons resulting from these induced fissions are also detected, counted and related to the total quantity of Pu in a waste drum.		
Portable High Purity Germanium Gamma Detectors	NA	Gamma assay of waste packages. Semi-quantitative to quantitative analysis of the amount of any gamma emitting isotope.	Many radioactive isotopes emit gamma radiation which uniquely identifies them and cam be used to measure how much is present in a waste drum. These High Purity Germanium (HPGe) gamma spectrometers are used to measure the gamma radiation from a waste package. While often used in a semi-quantitative confirmatory/screening mode, with proper calibration these systems can also be used to quantify as well as identify the radioactive contents of waste packages.	LLW, MLW, TRU, Hazardous	Operational

APPENDIX D

Glovebox Information

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Glovebox Information

The following sections describe waste characterization and size reduction activities conducted in the waste characterization glovebox (WCG), the Drum Coring Glovebox (DCG), and the Waste Characterization, Repackaging, and Reduction Facility (WCRRF) Room 102 Glovebox Enclosure (GBE). The activities described in this section are not regulated under the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, Part 264. The information is presented to provide additional detail to that included in Section 4.0 of this permit modification request.

<u>The Waste Characterization Glovebox and Drum Coring Glovebox</u>

Los Alamos National Laboratory (LANL) proposes to open drums of retrievably stored transuranic[1] (TRU) waste for the purpose of verifying and/or identifying their contents. The reason for characterizing the waste is to provide for New Mexico Environment Department (NMED)-compliant storage of the waste, and to certify the waste for shipment to the Waste Isolation Pilot Plant (WIPP). In addition to this project, these gloveboxes will be used for waste characterization of other LANL-generated waste streams.

To characterize the waste, LANL intends to use two new gloveboxes, the WCG and the DCG. The WCG will be used to survey and sort heterogeneous waste (e.g., lab trash) and the DCG will be used to drill core samples from solid or solidified waste forms. Both gloveboxes are intended for use inside Technical Area (TA) 50, Building 69, WCRRF, or TA-50, Building 1, the Radioactive Liquid Waste Treatment Facility (RLWTF), but are sized so that they could easily be transported to other LANL facilities or other U.S. Department of Energy (DOE) sites. Other uses for the gloveboxes are possible, and could be implemented in the future, but those potential uses are outside the scope of this document.

Waste Characterization Glovebox

The WCG is a 7-gauge stainless-steel glovebox, 4 work-stations long (approximately 16 feet [ft]), one work-station wide, and one work-station high (see Figure 1). Among its standard components

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[1] DOE 5280.2, 9/26/88, Attachment 2, p. 4. "...waste that is contaminated with alpha-emitting transuranium [atomic number greater than 92] radionuclides with half-lives greater than 20 years and concentrations greater than 100 nCi/g..."

are 8 sets of gloveports, numerous windows; removable end panels; utility feed throughs; a pass-in port on one end; high-efficiency particulate air (HEPA) filter housings for air control; and bag-on ports for 55-gallon drums, 30-gallon drums, and sample containers on the bottom. Unique features of the glovebox are the side-mounted 55-gallon bag-on port for admitting the waste to the glovebox, and a depression in the floor beneath the side bag-on port to act as a sump to hold any liquids drained from the waste drums. Mounted outside the glovebox is a drum lift to bring a drum of waste from the floor into position in the side bag-on port.

Using the gloveports, workers will remove the contents of a drum, catalog the contents, remove items prohibited by the WIPP Waste Acceptance Criteria (WAC) (e.g., free liquids, corrosives, sealed containers larger than 1 gallon), and repackage the contents into a drum on the lower port. The original drum can be removed and handled as waste or be reused to accept other waste.

A process chart for the WCG follows:

1. Review the records and other available data for the drums.

2. Select candidate drums from the inventory. This will be done on a statistical basis, selecting a number of drums at random from each of the identified waste streams. Waste categories include but are not limited to, glass, metal and incidental combustibles, leaded-rubber and metal waste, graphite waste, and combustible solids.

3. Radiograph the drums.

4. Select or reject drums for inspection based on condition and contents.

5. Transport the drums either to the WCRRF or to the Decontamination Facilities at TA-50-1 for staging.

6. Prepare the WCG.

   - Bag on[2] the appropriate waste receiving containers (55-gallon drum, standard waste box, or other qualified[3] packaging) to the glovebox lower drum ports.[4]

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[2] All emerging technology called bagless posting could eliminate the need for bag sleeves, thus saving time, reducing personnel exposures, and minimizing waste. Typical bag-on procedures are included only to help demonstrate the flow of material.

[3] The named containers are qualified for shipment in TRUPACT-II containers. Should handling other than shipment to WIPP be required, different packaging may be required.

- Tape a sleeve inside a clean container and attach the other end to a bag-on port. Also, if required, attach a long 5-inch-diameter bag to a port. This bag can be used to bag-off samples.

- Remove previously used sleeves from the ports by pushing them up into the glovebox.

7. Bag on the waste drum.

   - Mount the drum to the drum-handling fixture.

   - Open the exterior metal protector of the bag-on port.

   - Attach one end of an 8-foot sleeve to the side glovebox port and the other end of the sleeve to the drum. Tape and clamp the sleeve in place as required for containment.

   - Remove any previously used sleeve from the port by pushing it up into the glovebox.

   - Raise the drum so that it is horizontal and protrudes slightly into the glovebox.

   - Work the extra sleeve material down the side of the drum.

8. Working through gloves, remove the drum clamp ring and lid.

9. If present, contain liquids drained from the waste in the sump and remove immediately for appropriate handling.

10. Remove the waste from the drum and catalog it.[5]

11. Remove any materials from the waste that would otherwise make it uncertifiable for shipment or storage. Remediate conditions prohibited by the WIPP WAC in the segregated materials and return the materials to the waste stream, or remove them to a separate container.

12. Repackage the waste into a container bagged on in (7).

13. Record the contents of the new package and update the waste inventory.

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[4] Special or additional containers may be required to handle sample material to be sent for analysis, or to handle non-remediable waste, or to package waste into one or more additional certifiable waste streams.

[5] Characterization may include counting and weighing separate bags, opening separate bags and characterizing them individually, and videotaping. Other elements of characterization may include estimating the percentage of material of each type (such as glass, paper, gloves, leaded gloves, metal, graphite molds, and so on) or using infrared (IR) reflectometry or other techniques to analyze waste materials.

14. Remove the original waste drum from the glovebox.

    - Install the lid and clamp ring on the drum.
    - Lower the drum to the floor, using the drum-lift fixture.
    - Detach the drum from the drum-lift fixture and rotate the drum to twist-and-tape close the bag.
    - Cut the bag and monitor the cut for radiation.
    - Remove the drum for decontamination or other appropriate handling.
    - Replace the protector plate over the glovebox side port.

15. If the receiving waste containers are not full, leave them attached to the glovebox to receive waste from additional drums.

16. When a receiving container is full, complete the documentation and bag-off procedure.

Drum Coring Glovebox

The DCG is a 7-gauge stainless-steel glovebox, 3 work-stations long, one work-station wide, and one work-station high (see Figure 2), with a higher ceiling in one end to accommodate the drilling apparatus. Among its standard components are 13 sets of gloveports, numerous windows, removable end panels, utility feed throughs, a pass-in port on one end, HEPA filter housings for air control, bag-on ports for two 55-gallon drums and sample containers, and a secondary containment pan. A unique feature of the DCG is a plastic bulkhead that separates the drilling area from the sample preparation area. Mounted outside the glovebox is a drum-handling fixture for moving a drum of waste into and out of drilling position.

Workers will drill a core sample of material from the drum and package the sample for shipment to an analytical laboratory. They will also remediate minor conditions prohibited by the WIPP WAC, such as the presence of free liquids. After drilling, workers will replace the residual core material into the drum, seal the drum, and return it to storage.

A detailed process chart for the DCG follows.

1. Review the records and other available data for the drums.

2. Select candidate drums from the inventory. This will be done on a statistical basis, selecting a number of drums at random from each of the identified waste streams.

Some of the categories of waste are solidified waste water sludge, solidified inorganic process sludge, and pyrochemical salt waste.

3. Radiograph the drums.

4. Select or reject drums for inspection based on condition and contents.

5. Transport the drums to the WCRRF for staging.

6. Prepare the DCG.

   - Bag on a 55-gallon drum to the glovebox lower drum port by taping a sleeve inside a clean container and attaching the other end to the center bag-on port. This container receives the damp decontamination waste from cleanup operations inside the glovebox and other sampling-derived wastes.

   - Bag on sample sleeves as required.

   - Remove previously used sleeves from the ports by pushing them up into the glovebox.

7. Bag on the waste drum.

   - Mount the drum to the drum-handling fixture.

   - Open the exterior metal protector of the bag-on port.

   - Attach one end of an 8-foot sleeve to the side glovebox port and the other end of the sleeve to the drum. Tape and clamp the sleeve in place as required for containment.

   - Remove any previously used sleeve from the port by pushing it up into the glovebox.

   - Move the drum under the drilling area and raise it into the glovebox.

   - Work the extra sleeve material down the side of the drum.

8. Remove the drum lid and package shielding to expose the material to be drilled.

9. Move the drum into drilling position.

10. Drill a core from the drum and collect the required samples.

11. Return the residual core to the original waste drum.

12. Prepare the samples for shipping and remove them from the DCG.

13. Clean up the drilling and sampling areas.

14. Place the collected waste into the waste-receiving drum.

15. Remove the original waste drum from the glovebox.

    - Install the lid and clamp ring on the drum.
    - Move the drum out from under the glovebox.
    - Rotate the drum to twist-and-tape-close the bag.
    - Cut the bag and monitor the cut for radiation.
    - Return the waste drum to storage.
    - Replace the protector plate over the drilling port.

16. If the receiving waste container is not full, leave it attached to the glovebox to receive waste from additional drums.

17. When the receiving container is full, complete the documentation and bag it off.

Throughput of the DCG is anticipated to be 1 drum per day. It is likely, but not mandated, that a cemented waste drum and a partially full process waste-receiving drum will remain attached to the DCG indefinitely. The intent of the WCG and DCG is to characterize and repackage waste, not to hold it in storage, so every effort will be made to detach original waste drums and receiving waste containers in a timely manner, while remaining within waste minimization and as low as reasonably achievable (ALARA) guidelines

WCRRF Glovebox Enclosure

A description of the WCRRF GBE is provided in Section 4.0 of this permit modification request. All of the activities performed in the WCG or the DCG can also be performed, as specified above, in the WCRRF GBE. In addition, the WCRRF GBE is used to size reduce large waste objects into flat pieces that can be packed into standard waste box (SWB) for disposal.

Packaged waste items destined for size reduction are brought into the WCRRF through the large telescoping doors of the WCRRF building. The items for reduction usually are packaged in a fiberglass-reinforced plywood (FRP) box.

To uncrate waste items, the FRP box is placed in the unloading area, and the building is locked and posted with a red flashing light. Workers in Level B personal protective equipment drill a hole

through opposite ends of the FRP box to withdraw an air sample for analysis before uncrating the waste item. If no activity is detected, an inspection port is cut into the package for visual inspection and radiation monitoring of the contents. If the contents appear normal and are not contaminated, the package is cut open and the waste item is lifted out with chains and slings and either a forklift boom or gantry crane. The packaging is monitored and is managed as solid waste, low-level waste, or TRU waste, as appropriate.

From the unloading area, the waste is rigged to the GBE airlock module. To move the waste item from the airlock module to the disassembly and cutting modules, the inner doors of the enclosure airlock are opened, and the hoist hook with rigging carries the waste item into the cutting enclosure and places it on the positioning table. The inner doors of the enclosure airlock are closed and the waste item is disconnected from the rigging.

As much combustible material as possible is removed from the gloveboxes before cutting begins to decrease the likelihood of fires in the enclosure. Working through glove ports, operating personnel, pull off plastic, tape, and other combustible materials. These materials are removed from the disassembly area to the bag-out module and are stored in either the SWB or in one of the drums bagged on there. These wastes remain bagged on to the WCRRF GBE either until full or at the end of a size reduction campaign.

All systems of the PAK-44 (150-400A) plasma-arc cutting system, except the cutting head and connecting hoses, are outside the enclosure. The PAK-44 system uses a plasma gas (cutting gas) mixture of 20 percent hydrogen and 80 percent argon and either compressed air or water as the secondary gas for cutting up materials.

The electromechanical manipulator holds the torch that cuts the waste items into flat sections. Generally, cuts are made starting at the top of an item. The sections are placed on the south end of the cutting table as they are removed. The electromechanical manipulator is used either singly or in tandem with a hoist to transport cut sections to the bag-out module, where the cut waste is placed in an SWB. Once all the items are packaged in the SWB, the dross and debris are cleaned from the cutting and disassembly modules of the enclosure and placed in either the SWB or in one of the drums connected to the bag-out module. If water was used as a secondary gas (wet cutting), the WCRRF GBE is wet vacuumed, and any wet material and water are containerized, solidified, and analyzed in accordance with all applicable regulation.

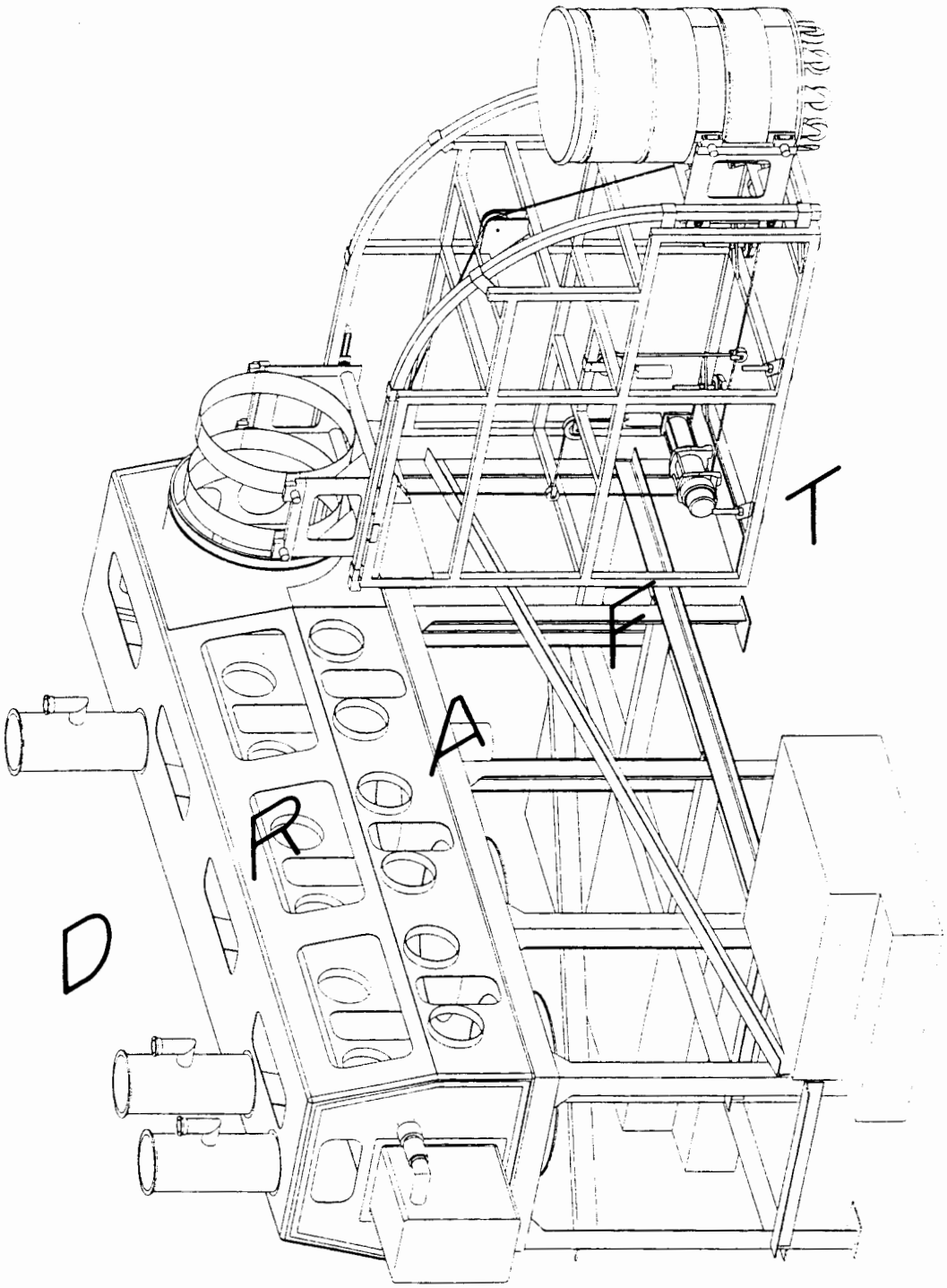

Figure 1

Conceptual Drawing of the Waste Characterization Glovebox

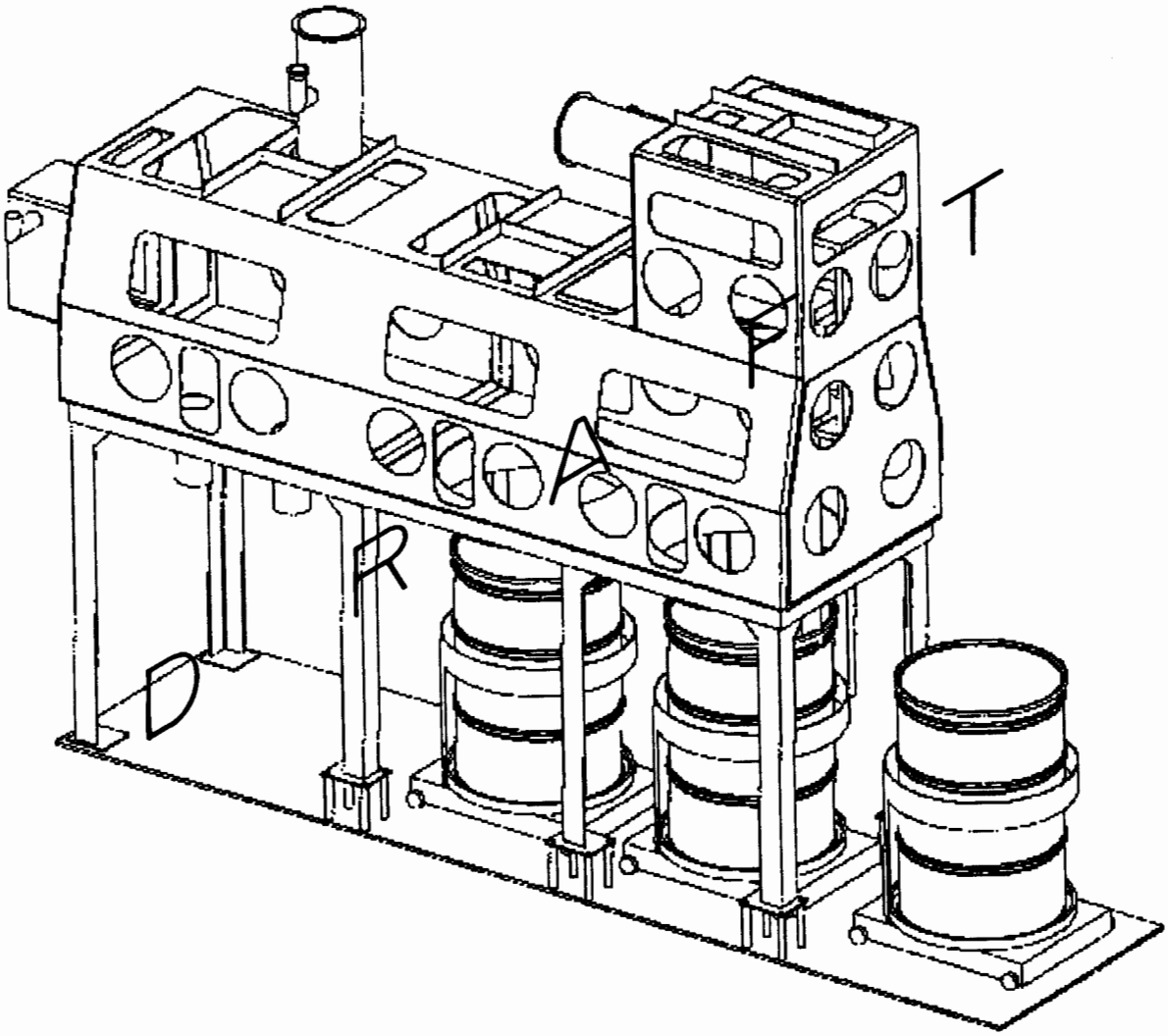

Figure 2

Concept Drawing of the Drum Coring Glovebox

APPENDIX E

Glovebox Lead-Removal Process Information

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Glovebox Lead-Removal Process Information

The following segregation and recycling activities to be conducted in the Room 36 Container Storage Area (CSA) at Technical Area (TA) 50, Building 1, and in the Waste Characterization, Reduction, and Repackaging Facility (WCRRF) Indoor CSA at TA-50-69 are not regulated under the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, Part 264. It is anticipated that the lead-removal process will take several days for each glovebox. Siting the process within a permitted CSA will assure that before and during the removal process, the gloveboxes will be managed in a manner that is protective of human health and the environment. In addition, 20 NMAC 4.1, Subpart V, Part 264, requirements for clean closure will ensure that no hazardous constituents remain after the Room 36 and WCRRF Indoor CSAs are closed.

The gloveboxes will be transported from either TA-54 or the WCRRF Outdoor CSA in fiberglass-reinforced plywood (FRP) boxes. Detailed information regarding this type of container is provided in Section 4.2.1. Forklifts and overhead cranes are used to move the glovebox-containing FRP boxes into the CSAs. Once inside the CSA, the glovebox-containing FRP boxes are dismantled, surveyed, and disposed of in accordance with procedures outlined in Appendix D of this permit modification request.

Before the lead-segregation process begins, a temporary containment structure is constructed. Typically, a wooden two-by-four frame with 6-mil high-density polyethylene (HDPE) plastic sheeting is built around the glovebox. One-inch firring strips are used to nail the plastic to the structure frame. The plastic is taped to the floor. The plastic also covers the floor area inside the temporary containment structure. The structure is constructed to eliminate the potential of any contamination, friable lead, or weld fines generated from the grinding process to escape into the room as the lead shielding is removed from the gloveboxes. In-house HEPA filtration units are hooked up to the temporary containment structure so that the cutting operation will be conducted under negative pressure, further reducing the likelihood that any contaminants will be released from the enclosure into the CSA or adjoining facilities.

Grinding tools are used to cut the welds and the lead sheeting is removed. The outer glovebox layer typically remains connected to the glovebox. After the lead is removed, it is checked for possible radioactive contamination. Lead that is determined to be contaminated is returned to

storage pending decontamination for reuse or disposal. Uncontaminated lead is containerized for reuse.

Welding fines are containerized and managed as mixed waste. The plastic containment structure is decontaminated as necessary and disposed of as low-level waste.

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APPENDIX F

Transportainer Information

Transportainer Information

Maritime freight containers (transportainers) are routinely used at Los Alamos National Laboratory (LANL) to provide security and weather protection for temporary storage. LANL procures this type of equipment from a variety of vendors specializing in the reconditioning of used transportainers. Stringent Federal transportation criteria govern the design and acceptance of transportainers for the specific intended use. Transportainers that no longer meet these specifications are commonly sold to suppliers that recondition them for resale. The following guidelines reflect specifications typical of reconditioned maritime freight containers designed to transport containerized, non-perishable cargo.

The exterior dimensions of the transportainers are typically 8 feet (ft) wide, 8.5 ft tall, and either 20 or 40 ft long. The sidewalls and roof of the transportainers are constructed of 14-gauge corrugated steel. The sidewalls are welded to 5-in.-channel beam supports. All joints and seams are continuously welded. The transportainers are equipped with four corner castings and lifting eyes to allow the transportainers to be stacked or hooked together. The corner posts and lifting eyes are 0.25-in. steel welded to corner castings. The floor has 0.125-in. steel-channel cross members. The joists are spaced 12 to 14 inches on center. Either a 1.125-in. or 1.25-in. hardwood decking is screwed into the joists. The decking is applied such that there are no visible gaps between planks. The transportainer door panels are of double-seam construction with double-sealing (two-flap) gaskets. For added security, the hinge pins are constructed of stainless steel and the locking handles are made of hardened steel. The door hardware bolts are welded so that they cannot be unbolted. Each transportainer is equipped with one-way side vents to equalize ambient pressure differentials inside the transportainer.

The 8-foot by 40-foot transportainers are typically designed to ship 30 tons of cargo. Transportainer cargo load specifications stipulate a 5 to 1 safety margin. See the attached transportainer vendor specifications and figures.

MALOY
MOBILE STORAGE

415 RANKIN RD. NE, ALBUQUERQUE, NM 87107
PH# (505) 344-8123 • FAX# (505) 344-3351

FREIGHT CONTAINER SPECIFICATIONS

Freight Container Designation	Length (External)					S			P			K_1 Max.		K_2 Max.	
	ft	in	tol.	mm	tol.	ft	in	mm	ft	in	mm	in	mm	in	mm
1A	40	0	$^{+0}_{-\frac{3}{4}}$	12190	$^{+3}_{-5}$	39	4	11984	7	5	2258	¾	19	⅜	10
1B	29	11¼	$^{+0}_{-\frac{3}{4}}$	9125	$^{+3}_{-10}$	29	3¼	8918	7	5	2258	⅝	16	⅜	10
1C	19	10½	$^{+0}_{-\frac{3}{4}}$	6055	$^{+3}_{-5}$	19	2½	5852	7	5	2258	½	13	⅜	10
1D	9	9¾	$^{+0}_{-\frac{3}{4}}$	2990	$^{+1}_{-4}$	9	1¾	2766	7	5	2258	¾	10	⅜	10

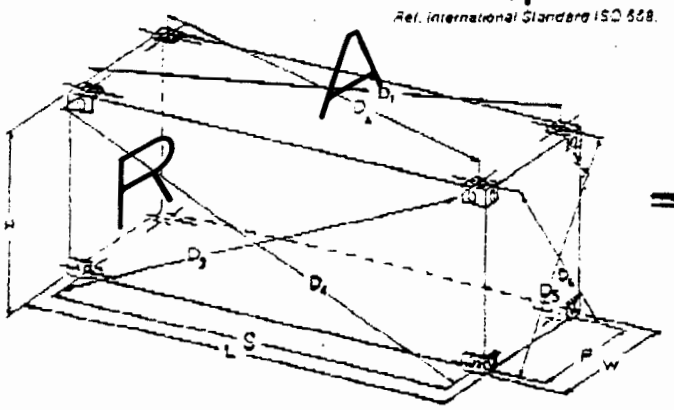
K_1 = Difference between D_1 and D_2 or between D_3 and D_4 i.e.,
$K_1 = D_1 - D_2$ or $K_1 = D_2 - D_1$ or $K_1 = D_3 - D_4$ or $K_1 = D_4 - D_3$

K_2 = Difference between D_5 and D_6, i.e., $K_2 = D_5 - D_6$ or $D_6 - D_5$

WIDTH (external) Containers 1A, 1B, 1C, 1D — 8 ft $^{+0}_{-\frac{3}{16}}$ or 2435 $^{+0}_{-3}$ mm

HEIGHT (external) Containers 1A, 1B, 1C, 1D — 8 ft $^{+0}_{-\frac{3}{16}}$ or 2435 $^{+0}_{-3}$ mm

Ref. International Standard ISO 668.



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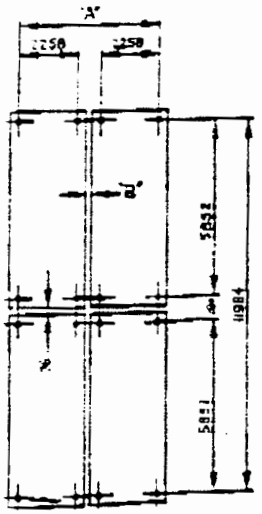
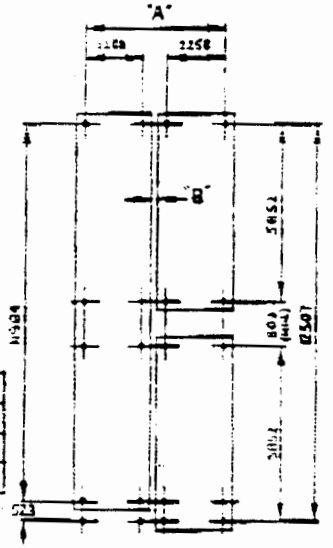
Typical corner casting location of two 20' containers in a 40' container space.



SPACING	
"A"	"B"
4774	80
4719	25

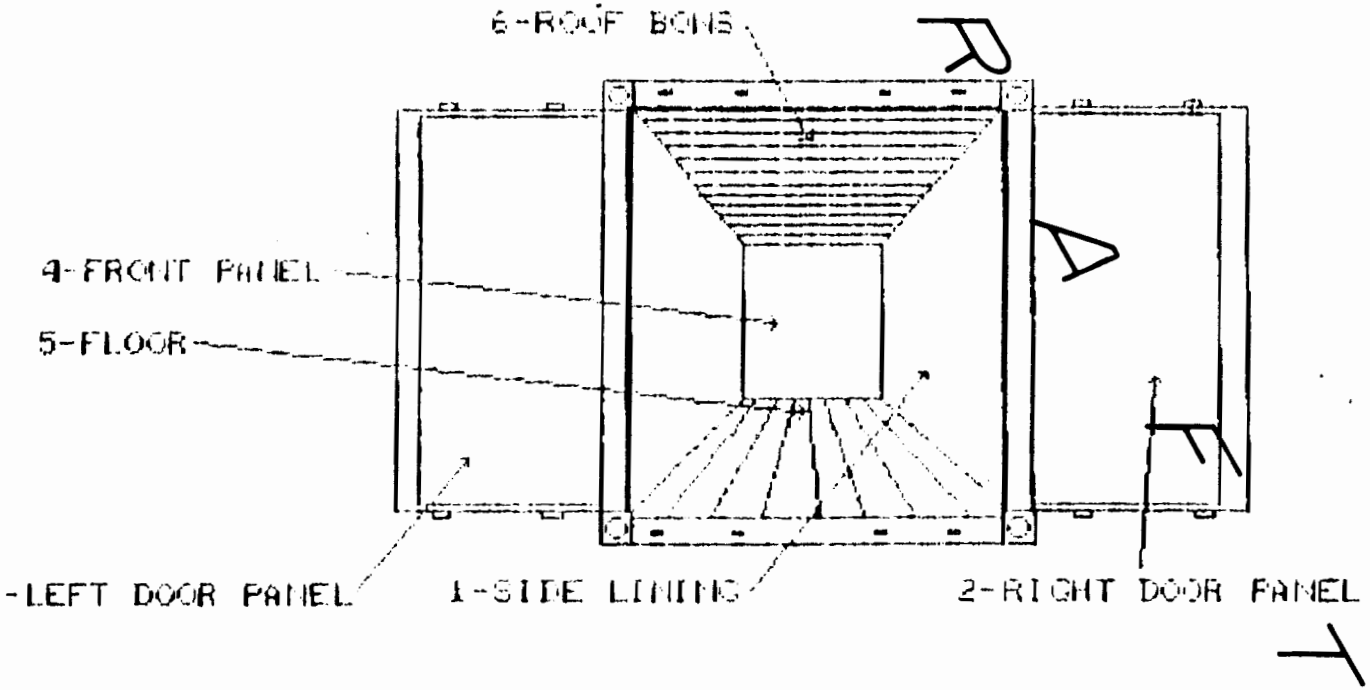
NOTE: Nominal measurements referring to the center of the corner castings

Typical corner casting location of two 20' containers lashed at the midpoint



SPACING	
"A"	"B"
4774	80
4719	25

NOTE: Nominal measurements referring to the center of the corner castings



20ft.

OUTSIDE DIMENSIONS

8ft.6in. HIGH
8ft. WIDE
20ft. LONG

INSIDE DIMENSIONS

7ft.4in. HIGH
7ft.6in. WIDE
19ft.5in LONG

SQ.FT. = 160
CU.FT. = 1097
APROX. WT. = 5200 lbs.

40ft.

OUTSIDE DIMENSIONS

8ft.6in. HIGH
8ft. WIDE
40ft. LONG

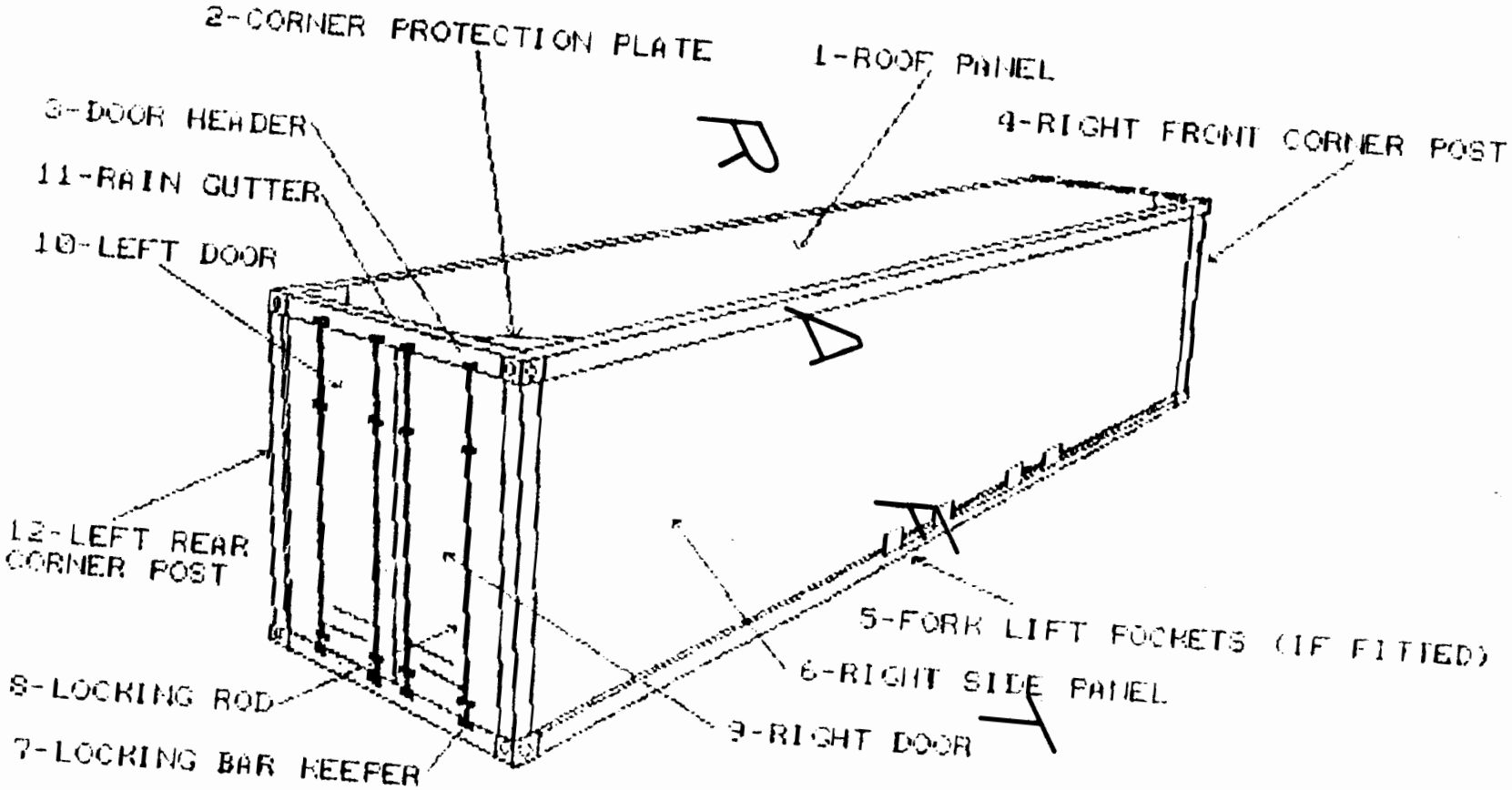
INSIDE DIMENSIONS

7ft.9in. HIGH
7ft.8in. WIDE
39ft.6in. LONG

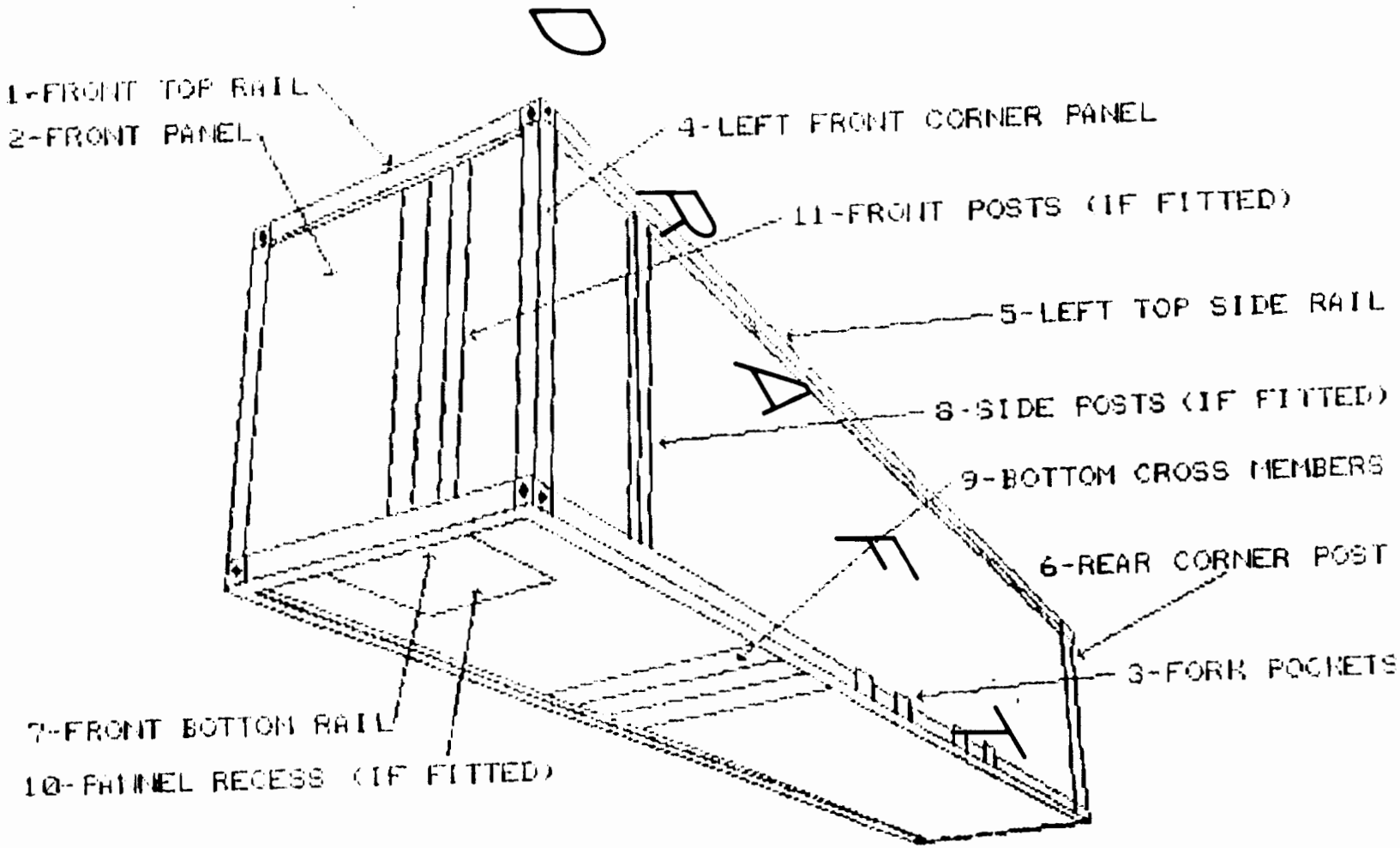
SQ.FT. = 320
CU.FT. = 2266
APROX. WT. = (STEEL) 9000 lbs.
(ALUM.) 7000 lbs.

ALL CONTAINERS MADE OF 14 GAUGE STEEL
WITH HARDWOOD FLOORS ON 3in. STEEL I-BEAMS 1 1/8" wood
(16in. CENTERS)

MALOY MOBILE STORAGE



MALOY MOBILE STORAGE



APPENDIX G

Contract Between the U.S. Department of Energy and the Incorporated County of Los Alamos

APPENDIX H

Memorandum of Understanding Between the U.S. Department of Energy and the Incorporated County of Los Alamos for Mutual Aid Assistance

DRAFT

APPENDIX I

Memorandum of Understanding Between the U.S. Department of Energy Los Alamos Area Office and the Los Alamos Medical Center