TA-55

Department of Energy
National Nuclear Security Administration
Los Alamos Site Office
Los Alamos, New Mexico 87544

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NMED Hazardous
Waste Bureau

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Sandra Martin, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

Dear Ms. Martin:

Subject: Resource Conservation and Recovery Act (RCRA), Technical Area 55 (TA-55) Part B Permit Application Submittal – Los Alamos National Laboratory (LANL), EPA ID No. NM 890010515

The purpose of this letter is to submit and request approval for the most recent version of the RCRA permit application for TA-55, entitled, "Los Alamos National Laboratory, Technical Area 55 Part B Permit Application, Revision 2.0 (LA-UR-03-6303)." This application supports the renewal of the LANL hazardous waste facility permit. The original RCRA Hazardous Waste Facility Permit was issued to the U.S. Department of Energy (DOE) and the University of California (UC) by the New Mexico Environmental Improvement Division on November 8, 1989.

This submittal contains one permit application, one manila envelope, and one supporting document designed to aid final review of the application. The permit application has a Laboratory-issued unrestricted release (LA-UR) number. This means that it is acceptable to make the information contained within the binder available to those in the public that may wish to review it. The manila envelope within the front pocket of the binder is labeled UCNI (Unclassified Controlled Nuclear Information). Its contents consist of LA-CP-03-0680. This information, while not classified, is sensitive and is not to be distributed for review with the rest of the application. It is now the responsibility of the New Mexico Environment Department (NMED) to maintain control of that information and keep it secured during times when it is not being used. The supporting document is a table that outlines briefly the changes that have taken place since the last revision of the TA-55 application.

This revised permit application incorporates the text and information indicated in DOE/UC's response to NMED's, "Notice of Deficiency, TA-55 Part B RCRA Permit Application, January 2002, Revision 1.0, Los Alamos National Laboratory, EPA ID# NM0890010515, HWB-LANL-99-051." This revision was also modified to include

4461

additional information regarding various waste management programs or procedures that have changed since the response.

If you should have any questions or comments concerning this permit application submittal, please contact Gene Turner, DOE, of my staff at (505) 667-5794 or Jack Ellvinger, UC, at (505) 667-0633.

Sincerely,

Ralph E. Erickson
Manager

FO:8GT-004

Enclosure

cc w/enclosure:
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LA-UR-03-6303
September 2003

Los Alamos National Laboratory

Technical Area 55 Part B Permit Application

Revision 2.0

Prepared by:

Los Alamos National Laboratory
Solid Waste Regulatory Compliance
Los Alamos, New Mexico 87545

Crosswalk for the Los Alamos National Laboratory Technical Area 55 Part B Permit Application and Subsequent Revisions

September 2003

Prepared by:

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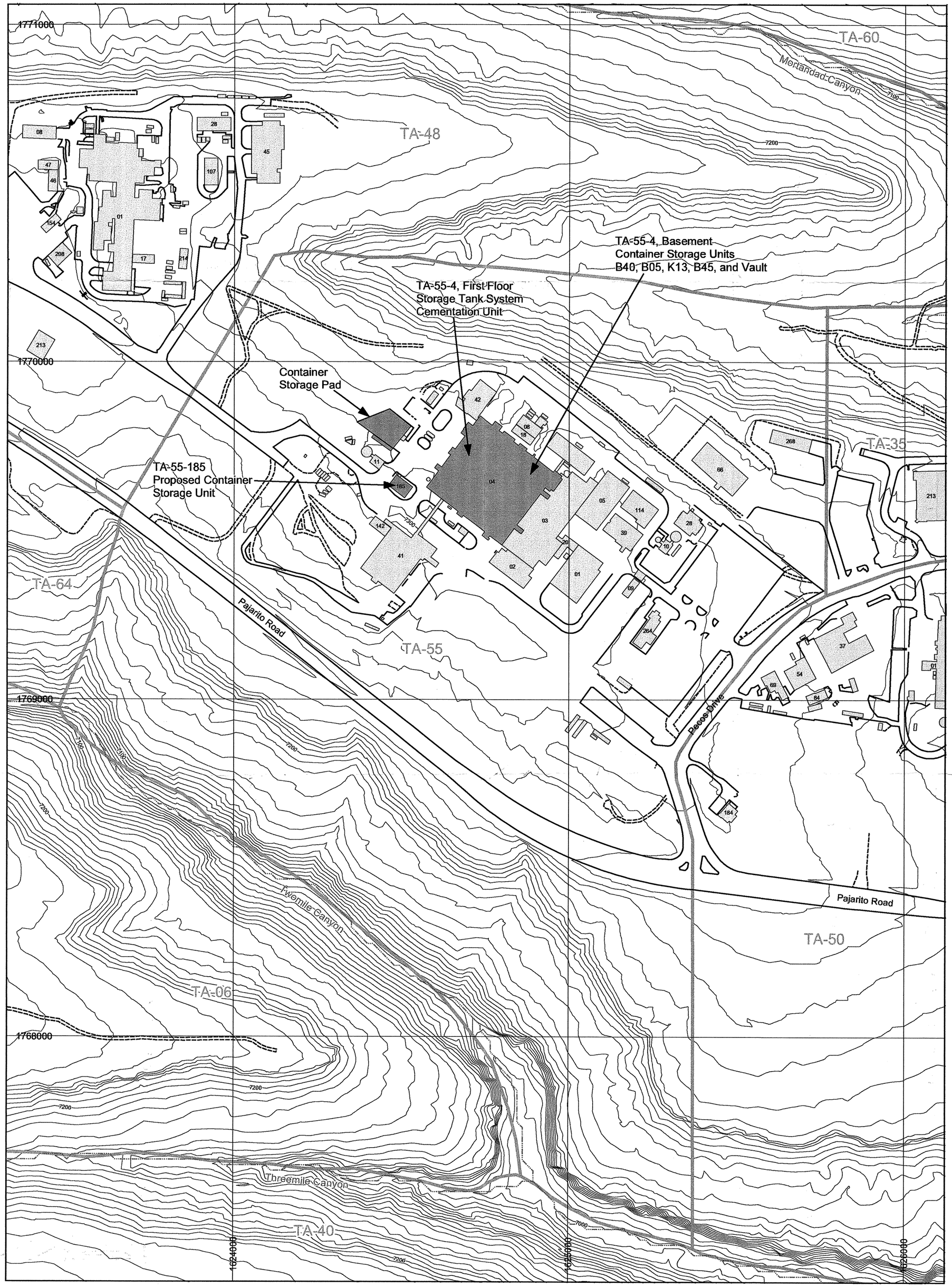

LEGEND

- Boundary, TA
- Contour, 10 Foot
- Contour, 100 Foot
- Road, Paved
- Road, Dirt
- Stream, Intermittent
- Structure
- Treatment and/or Storage Locations for Hazardous and/or Mixed Waste

DATA SOURCES FOR PLOT: 200733

Title; Owner, ID; Intended Scale; Pub Date; Comments

Drainage; Los Alamos National Laboratory, RRES-R; ER2002-0591; 1:24000; Unknown; Provided by ER's SDE server, sde.DBO.drainage_dem_arc.

Hypsography, 10 Foot Contour Interval; Los Alamos National Laboratory, RRES-R; NA; Unknown; 1991; Provided by RRES-R SDE server, sde.DBO.contour1991_010_arc

Hypsography, 100 Foot Contour Interval; Los Alamos National Laboratory, RRES-R; NA; Unknown; 1991; Provided by RRES-R SDE server, sde.DBO.contour1991_100_arc

Hypsography, 20 Foot Contour Interval; Los Alamos National Laboratory, RRES-R; NA; Unknown; 1991; Provided by RRES-R SDE server, sde.DBO.contour1991_020_arc

Roads, Dirt; Los Alamos National Laboratory, FWO Utilities and Infrastructure; NA; Unknown; 12 September 2002; Provided by RRES-R SDE server, sde.DBO.paved_rds_arc

Roads, Paved; Los Alamos National Laboratory, FWO Utilities and Infrastructure; NA; Unknown; Unknown; Provided by RRES-R SDE server, sde.DBO.paved_rds_arc

Structure; Los Alamos National Laboratory, FWO Utilities and Infrastructure; NA; Unknown; 12 August 2002; Provided by RRES-R SDE server, sde.DBO.structures_ply

Technical Area Boundary; Los Alamos National Laboratory, FWO Utilities and Infrastructure; NA; Unknown; 12 August 2002; Provided by RRES-R SDE server, sde.DBO.tabndy_ply

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Figure A-5. Contour Map Showing the Locations of the Hazardous and Mixed Waste Management Units at Technical Area (TA) 55

Cartography by: Doug Walther
Date: July 22, 2003
GISLab M#: 200733
Request#: 13218

GISLab
Los Alamos National Laboratory

N

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

Grid displays New Mexico State Plane coordinates in feet.

1:2,400

0 200 400 600 800
Feet

0 60 120 180 240
Meters

DISCLAIMER OF LIABILITY:
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ATTACHMENT A

FACILITY DESCRIPTION

TABLE OF CONTENTS

LIST OF FIGURES ii
LIST OF ABBREVIATIONS/ACRONYMS iii

FACILITY DESCRIPTION A-1
A.1 TA-55 GENERAL DESCRIPTION A-1
A.2 TRAFFIC PATTERNS A-1
A.2.1 Routes of Travel A-2
A.2.2 Traffic Volumes A-2
A.2.3 Traffic Control Signals A-2
A.2.4 Road Load-Bearing Capacity A-2
A.3 LOCATION INFORMATION A-2
A.3.1 Seismic Standard A-2
A.3.2 Floodplain Standard A-3
A.4 TOPOGRAPHIC MAPS A-3
A.5 GROUNDWATER MONITORING A-4
A.6 OTHER PERMIT ACTIVITIES A-4
A.7 REFERENCES A-4

LIST OF FIGURES

FIGURE NO.	TITLE
A-1	Location Map of Technical Area (TA) 55 at Los Alamos National Laboratory (LANL)
A-2	Location of Waste Management Units at Technical Area (TA) 55
A-3	Major Roads and Primary Traffic Routes at Los Alamos National Laboratory (LANL)
A-4	Location Map of Access Roads and Traffic Control Signs in the Vicinity of Technical Area (TA) 55
A-5	Contour Map Showing the Locations of the Hazardous and Mixed Waste Management Units at Technical Area (TA) 55
A-6	Annual Wind Roses for Technical Area (TA) 6 at Los Alamos National Laboratory (LANL) – Day
A-7	Annual Wind Roses for Technical Area (TA) 6 at Los Alamos National Laboratory (LANL) – Night
A-8	Location Map Showing Security Fences, Entry Gates, and Entry Station at Technical Area (TA) 55
A-9	Drainage Control Features at Technical Area (TA) 55

LIST OF ABBREVIATIONS/ACRONYMS

20.4.1 NMAC	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
AASHTO	American Association of State Highway and Transportation Officials
ft	feet/foot
in.	inch(es)
LANL	Los Alamos National Laboratory
TA	technical area

ATTACHMENT A
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 (20.4.1 NMAC), revised June 14, 2000 [6-14-00]. The following subject areas are addressed:

- A general description of Technical Area (TA) 55 at Los Alamos National Laboratory (LANL) [20.4.1 NMAC §270.14(b)(1)];
- Site-specific traffic patterns, volume, and control [20.4.1 NMAC §270.14(b)(10)];
- Site-specific location information for compliance with the seismic standard and floodplain requirements [20.4.1 NMAC §270.14(b)(11) and 20.4.1 NMAC §264.18(a) and (b)];
- Site-specific topographic map requirements [20.4.1 NMAC §270.14(b)(19)]; and
- Site-specific groundwater monitoring and protection information [20.4.1 NMAC §270.14(c) and 20.4.1 NMAC §264.90(a)].

A LANL-wide facility description addressing additional regulatory requirements is provided in Appendix A of the most recent version of the "Los Alamos National Laboratory General Part B Permit Application," hereinafter referred to as the LANL General Part B.

A.1 TA-55 GENERAL DESCRIPTION [20.4.1 NMAC §270.14(b)(1)]

TA-55 is located in the north central portion of LANL (Figure A-1) on a mesa between a branch of Mortandad Canyon on the north and Two Mile Canyon on the south. Mesa-top elevations at TA-55 range from approximately 7,100 to 7,300 feet (ft) above mean sea level. The locations of the waste management units at TA-55 are shown on Figure A-2.

TA-55 began operating in 1978 and is the location of research and development activities, including a plutonium-processing facility. The waste management units addressed in this permit application include seven container storage units, a storage tank system, and a cementation unit. Detailed descriptions of the waste management units at TA-55 are provided in Attachments G, H and I, respectively.

A.2 TRAFFIC PATTERNS [20.4.1 NMAC §270.14(b)(10)]

General traffic pattern information, traffic volumes, and traffic control signals for the LANL-wide facility are provided in Appendix A of the LANL General Part B.

A.2.1 Routes of Travel

Hazardous and/or mixed waste stored and treated at TA-55 is generated at TA-3 and TA-55. Hazardous and/or mixed waste is occasionally transported from TA-55 to other areas at LANL (e.g., TA-54). The primary traffic routes that may be used to transport hazardous and mixed waste to and from TA-55 include Diamond Drive, Pajarito Road, and Pecos Drive as shown on Figure A-3.

A.2.2 Traffic Volumes

The buildings at TA-55 are located northwest of the intersection of Pajarito Road and Pecos Drive, as shown on Figure A-4. According to a traffic study conducted by Johnson Controls World Services, Inc. (JCI) (JCI, 1999), Pajarito Road has an average daily traffic volume of 12,000 vehicles. This includes vehicles traveling both northwest and southeast. Pecos Drive has an average daily traffic volume of 5,000 vehicles per day. This includes vehicles traveling both north and south. These values are based on a 24-hour period. Vehicle types include cars, light- and medium-duty trucks, and vans.

A.2.3 Traffic Control Signals

Traffic control signals surrounding and within TA-55 include stop signs, posted speed limits, a traffic light, and other traffic and pedestrian control signs. The locations of existing traffic control signals at TA-55 are shown on Figure A-4.

A.2.4 Road Load-Bearing Capacity

Roads within TA-55 are generally two lane roads with asphaltic-concrete surfaces. Load-bearing capacity for these roads is 32,000 pounds per axle. These roads are typically constructed with a 6-inch (in.)-thick base with a 3-in.-thick asphaltic-concrete surface. These roads were designed and constructed to meet the American Association of State Highway and Transportation Officials (AASHTO) specification HS-20 (AASHTO, 1996).

A.3 LOCATION INFORMATION [20.4.1 NMAC §270.14(b)(11)]

A.3.1 Seismic Standard [20.4.1 NMAC §270.14(b)(11)(i - ii) and 20.4.1 NMAC §264.18(a)]

General seismic information for the LANL-wide facility is provided in Appendix A of the LANL General Part B. TA-55 is in compliance with the seismic standards of 20.4.1 NMAC §270.14(b)(11) and 20.4.1

NMAC §264.18(a) [6-14-00]. A geologic field investigation, which consisted of exploratory trenching, was conducted within 3,000 ft of TA-55-4 and TA-55-185 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).

A.3.2 Floodplain Standard [20.4.1 NMAC §270.14(b)(11)(iii - v) and 270.14(b)(19)(ii); 20.4.1 NMAC §264.18(b)]

The hazardous and mixed waste management units at TA-55 are located on a mesa top. In accordance with 20.4.1 NMAC §270.14(b)(11)(iii) [6-14-00], the hazardous and mixed waste management units addressed in this permit application are not located within the 100-year floodplain boundary. Additional floodplain information is provided in Appendix A of the LANL General Part B.

A.4 TOPOGRAPHIC MAPS [20.4.1 NMAC §270.14(b)(19)]

Topographic maps and figures are provided herein or referenced to meet the requirements of 20.4.1 NMAC §270.14(b)(19) [6-14-00]. All maps clearly show the map scale, the date of preparation, and a north arrow. The maps and figures used to fulfill these regulatory requirements include the following:

- LANL-wide 100-year floodplain maps are provided as Appendix C of the "Response to Request for Supplemental Information: Technical Adequacy Review, RCRA Permit Application; General Part A," April 1998, Revision 0.0; and "Los Alamos National Laboratory General Part B," October 1998, Revision 1.0; Los Alamos National Laboratory, EPA ID No. NM 0890010515" (LANL, 2001).
- A map showing surface waters, including intermittent streams, near TA-55 is included as Figure A-5.
- Surrounding land uses are shown on Figure A-1.
- Wind roses for TA-6, the TA directly west of TA-55, are shown on Figures A-6 and A-7.
- A map showing the boundaries of LANL (including TA-55) is provided as Figure A-2 in the LANL General Part B.
- Access control features at TA-55 (e.g., fences, gates) are shown on Figure A-8.
- A map showing supply wells, monitoring wells, test wells, springs, and surface-water sampling stations near TA-55 is included as Figure A-5.
- The locations of buildings, hazardous and/or mixed waste management units, and loading and unloading areas at TA-55 are shown on Figure A-5.

- A map showing National Pollutant Discharge Elimination System discharge structure locations is included in the most recent version of the "Los Alamos National Laboratory General Part A Permit Application," herein after referred to as the LANL General Part A.

- Storm, sanitary, and process sewer systems at LANL are shown on Map A-1 of the LANL General Part B.

- Drainage control features (e.g., run-on/runoff) are shown on Figure A-9.

- Fire stations serving LANL and the County of Los Alamos are shown on Figure E-2 of Appendix E in the LANL General Part B.

- The equipment cleanup area for LANL is located at TA-50-1. The location of TA-50-1 is shown on Figure 50-1 in the LANL General Part A.

Contour lines on the topographic map (Figure A-5) are in intervals sufficient to detail natural drainage at LANL and in the vicinity of the waste management units at TA-55. As provided in 20.4.1 NMAC §270.14(b)(19) [6-14-00], LANL has submitted the maps to the New Mexico Environment Department at these scales and contour intervals due to the size of the waste management units, the extent of the LANL facility, and the topographic relief in the area.

A.5 GROUNDWATER MONITORING [20.4.1 NMAC, Subpart IX, 270.14(c) and 20.4.1 NMAC, Subpart V, 264.90(a)]

Groundwater monitoring information is provided in Appendix A of the LANL General Part B.

A.6 OTHER PERMIT ACTIVITIES

Other types of Resource Conservation and Recovery Act permits include, but are not limited to, the following:

- Permits by Rule
- Emergency Permits
- Hazardous Waste Incinerator Permits
- Permits for Land Treatment Demonstrations Using Field Test or Laboratory Analyses
- Interim Permits for Underground Injection Control Program Wells
- Research, Development, and Demonstration Permits
- Permits for Boilers and Industrial Furnaces Burning Hazardous Waste

Currently, none of these permit types are in effect for operations at TA-55.

A.7 REFERENCES

AASHTO, 1996 and all approved updates, "Standard Specifications for Highway Bridges," 16th Edition, American Association of State Highway and Transportation Officials.

JCI, 1999, Telecon from John Bradley, Johnson Controls World Services, Inc. to Jessica Moseley, IT Corporation, on February 10, 1999, Los Alamos, New Mexico.

LANL, 2001, “Response to Request for Supplemental Information: Technical Adequacy Review, RCRA Permit Application; General Part A,” April 1998, Revision 0.0; “Los Alamos National Laboratory General Part B,” October 1998, Revision 1.0, Los Alamos National Laboratory, EPA ID No. NM0890010515,” Los Alamos National Laboratory, Los Alamos, New Mexico.

Woodward-Clyde Federal Services, 1995, “Evaluation of the Potential for Surface Faulting at TA-63,” prepared for Los Alamos National Laboratory, Los Alamos, New Mexico.

ATTACHMENT B

WASTE ANALYSIS PLAN

ATTACHMENT B
WASTE ANALYSIS PLAN

Waste analysis requirements are specified in New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC) §270.14(b)(2), 20.4.1 NMAC §264.13, and 20.4.1 NMAC §268.7, revised June 14, 2000 [6-14-00]. The waste analysis requirements for the Technical Area 55 container storage units, storage tank system, and cementation unit at Los Alamos National Laboratory are described in the facility-wide Waste Analysis Plan in Appendix B of the most recent version of the "Los Alamos National Laboratory General Part B Permit Application."

ATTACHMENT C

INSPECTION PLAN

TABLE OF CONTENTS

LIST OF ABBREVIATIONS/ACRONYMS ii

INSPECTION PLAN C-1

C.1 TA-55 VAULT C-1

C.1.1 Non-Intrusive Inspection Systems C-1

C.1.2 Intrusive Inspection Procedures C-2

C.2 STORAGE TANK SYSTEM C-3

C.2.1 Daily (During Operation) C-3

C.2.2 Weekly C-3

C.2.3 Annually C-4

C.3 CEMENTATION UNIT C-4

C.3.1 Daily (During Operation) C-4

C.3.2 Weekly C-4

C.4 ADDITIONAL INSPECTION ITEMS C-5

C.5 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPARTS AA AND BB REQUIREMENTS C-5

C.6 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART CC REQUIREMENTS C-5

C.7 REFERENCES C-6

LIST OF ABBREVIATIONS/ACRONYMS

20.4.1 NMAC	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
CAM	continuous air monitor
CFR	Code of Federal Regulations
CSU	container storage unit(s)
FMU-7	Facility and Waste Operations Division
IRF	Inspection Record Form
LANL	Los Alamos National Laboratory
m^3	cubic meters
ppmw	parts per million by weight
rem	Roentgen equivalent man
TA	technical area

ATTACHMENT C
INSPECTION PLAN

In accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC) §270.14(b)(5) and 20.4.1 NMAC §264.15, revised June 14, 2000 [6-14-00], inspection requirements for all hazardous and/or mixed waste management units at Los Alamos National Laboratory (LANL) are addressed in Appendix C of the most recent version of the "Los Alamos National Laboratory General Part B Permit Application," hereinafter referred to as the LANL General Part B. This attachment presents additional inspection requirements applicable to the waste management units at Technical Area (TA) 55. These requirements 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 to the environment or a threat to human health. Inspections will be conducted often enough to identify problems in time to correct them before they harm human health or the environment.

C.1 TA-55 VAULT [20.4.1 NMAC §264.15(b) and 264.174]

The Vault is a container storage unit (CSU) located in the basement at TA-55-4. The CSU consists of a completely enclosed area consisting of 13 rooms located along a central corridor. Because of high levels of radioactivity, the Vault must have specialized inspection procedures to adhere to "as low as reasonably achievable" principles established by the Atomic Energy Act. Performance of a weekly inspection of the storage rooms pursuant to the requirements of 20.4.1 NMAC §264.174 [6-14-00], would result in an annual employee exposure of 2.7 Roentgen equivalent man (rem) of neutron radiation. This exceeds the annual allowable employee exposure rate of 2 rems. Therefore, the following alternative inspection procedures have been implemented. These inspection requirements are applicable only to those rooms in the Vault that store mixed waste regulated pursuant to 20.4.1 NMAC Subpart V, Part 264 [6-14-00].

C.1.1 Non-Intrusive Inspection Systems

Continuous air monitors (CAM) are located in each individual storage room within the Vault to continuously monitor airborne radioactivity levels. If the concentration of an airborne material reaches a preset level, an alarm will sound. All of the containers in the Vault contain radioactive material. If container integrity is compromised and the material inside the container becomes airborne, the CAM will detect the release and sound an alarm. CAM air intakes have been placed near the negative air exhaust vent for each room. Placing CAM air intakes near room-exhaust points provides the most beneficial location within the room to detect a release because air vented from each room must pass

by the CAM intake prior to exhausting from the room. Each room has a single exhaust vent. If a problem with a container is identified, it is removed from the Vault and inspected in an open-front hood.

Information obtained during inspections and all container transfers are noted on the Vault Traffic Log Book maintained at TA-55. The Vault Traffic Log Book will be inspected weekly by Nuclear Materials Technology staff as a quality assurance measure to verify receipt or transfer of mixed waste from the Vault. If mixed waste is not currently being stored in the Vault and the weekly inspection indicates that no mixed waste has been received, the Inspection Record Form (IRF) will be marked “No Use” and completed according to the IRF instructions.

The Vault has extremely strict security and safeguards. Therefore, there is no significant potential for container breaches through inadvertent and uncontrolled access to the Vault.

C.1.2 Intrusive Inspection Procedures

The central hallway of the Vault will be inspected weekly when mixed waste is in storage and will address the following items:

- Vault Traffic Log Book inspected for receipt or transfer of waste
- Communications equipment
- Warning signs
- Security
- Work surfaces/floors in central corridor
- Spill/fire equipment
- Secondary containment
- (Un)loading area
- Visual inspection of storage rooms from hallway
- Nuclear Materials Custodian contacted to verify no alarms or problems

When containers are placed into or removed from a storage room within the Vault, the following items will be inspected in that storage room, as appropriate:

- Vault Traffic Log Book inspected for receipt or transfer of waste
- Communication equipment
- Warning signs
- Security
- Work surfaces/floors
- Spill/fire equipment
- Secondary containment
- (Un)loading area
- Nuclear Materials Custodian contacted to verify no alarms or problems

- Emergency equipment/lighting
- Covers/lids of containers
- Labels
- Accumulation start date
- Compatibility
- Structural integrity of containers
- Aisle spacing/stacking
- Pallets/raised containers

Inspection results are recorded on the IRF maintained at TA-55.

C.2 STORAGE TANK SYSTEM [20.4.1 NMAC §264.15(b), 264.193(i), and 264.195]

The storage tank system components located at TA-55-4, Room 401, are inspected according to the schedule provided below. The inspection frequency is based on the deterioration rate of equipment/systems and the probability of adverse impact to human health or the environment if failure of the equipment/systems or any operator error goes undetected between inspections.

C.2.1 Daily (During Operation)

The storage tank system components (including ancillary equipment) will be inspected at least once each operating day. An operating day includes when mixed waste is added to or emptied from a tank. For daily inspections, the following items will be inspected, as appropriate, and recorded on the IRF:

- Work surfaces/floors
- Secondary containment structure
- Structural integrity of tanks and ancillary equipment
- Labels
- (Un)loading areas
- All portions of tank systems to detect corrosion or releases of waste and to detect any possible malfunctions to overfill/spill control equipment, tank monitoring, and leak detection systems and data from these systems
- Proper operating condition of tank

C.2.2 Weekly

Weekly inspection of the storage tank system components will be conducted and will include the following items, as appropriate, and recorded on the IRF:

- Warning signs
- Work surfaces/floors
- Secondary containment structures
- Covers/lids of tanks

- Labels
- Structural integrity of tanks and ancillary equipment
- (Un)loading areas
- All portions of tank systems to detect corrosion or releases of waste and to detect any possible malfunctions to overfill/spill control equipment, tank monitoring, and leak detection systems and data from these systems
- Proper operating condition of tank

C.2.3 Annually

An annual assessment, as required by 20.4.1 NMAC §264.193 (i) [6-14-00], is not necessary for the TA-55 storage tank system and ancillary equipment because the storage tank system and the ancillary equipment have secondary containment.

C.3 CEMENTATION UNIT [20.4.1 NMAC §§264.15(b) and 264.602]

The cementation unit is located at TA-55-4, Room 401, and is inspected according to the schedule provided below. The inspection frequency is based on the deterioration rate of equipment/systems and the probability of adverse impact to human health or the environment if failure of the equipment/systems or any operator error goes undetected between inspections.

C.3.1 Daily (During Operation)

The cementation unit is inspected each operating day (i.e., when mixed waste is treated in the unit). For the daily inspection of the cementation unit, the following items will be inspected, as appropriate, and recorded on the IRF:

- Work surfaces/floors
- Secondary containment structures
- Labels
- Structural integrity of cementation unit
- (Un)loading area

C.3.2 Weekly

Weekly inspection of the cementation unit will be conducted and will address the following items, as appropriate and recorded on the IRF:

- Warning signs
- Work surfaces/floors
- Secondary containment structure
- Labels
- Structural integrity of cementation unit
- (Un)loading area

C.4 ADDITIONAL INSPECTION ITEMS

The items listed below are inspected monthly and documented by the Facility and Waste Operations Division (FMU-7) on a separate form:

- Evacuation alarms
- Ventilation alarms
- Fire alarms
- Fire pumps
- Fire extinguishers
- Communication equipment
- Eyewashes/safety showers

These inspection items may be changed at the discretion of FMU-7 to ensure consistency with the inspection items and frequencies specified in the most current version of the "TA-55 Final Safety Analysis Report" (LANL, 1996) and the "TA-55 Technical Safety Requirements" (LANL, 2000).

Additionally, security inspections of the fences and TA-55 access controls are conducted daily.

C.5 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPARTS AA AND BB REQUIREMENTS [20.4.1 NMAC, Subpart V, Part 264, Subparts AA and BB]

The TA-55 CSUs are not subject to the requirements of 20.4.1 NMAC, Subpart V, Part 264, Subparts AA and BB because they do not operate applicable process vents or equipment.

C.6 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART CC REQUIREMENTS [20.4.1 NMAC, Subpart V, Part 264, Subpart CC]

The hazardous wastes stored in containers at the TA-55 CSUs may be subject to 20.4.1 NMAC, Subpart V, Part 264, Subpart CC (incorporating the Code of Federal Regulations [CFR], Title 40, Part 264, Subpart CC, "Air Emission Standards for Tanks, Surface Impoundments, and Containers") based on the applicability criteria specified in 40 CFR §264.1080. Subpart CC standards for containers, as currently set forth by the U.S. Environmental Protection Agency, require that containers of hazardous waste be covered so that there are no detectable emissions of volatile organic compounds to the air. Inspection and monitoring requirements are also specified.

As indicated in 40 CFR §264.1080(b)(6), these standards are not currently applicable to containers that are used solely for management of radioactive mixed waste in accordance with all regulations under the authority of the Atomic Energy Act and the Nuclear Waste Policy Act. The standards are also not applicable to containers of hazardous waste with less than 500 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 the effective date of the regulation (December 6, 1996). The following management standards apply for hazardous waste managed at LANL that do not meet any of the exemption listed in 40 CFR §264.1080(b).

LANL requires that Subpart CC requirements be evaluated by the generator as part of the waste characterization process. Generator information is used to determine whether the concentration of volatile organics in a waste stream at the point of generation is less than 500 ppmw or is equal to or greater than 500 ppmw, which is the threshold concentration for Subpart CC requirements. The generator documents this determination for that waste stream. In the event that this information is not available, the waste will be characterized in accordance with Appendix B of the most recent version of the LANL General Part B. Any hazardous waste that is newly-generated through the treatment or re-characterization of mixed waste at TA-55 will be characterized for the volatile organic content in accordance with Appendix B.

Three levels of air emission controls based on container design capacity are established in 40 CFR §264.1086(b). TA-55 hazardous waste storage procedures require Level 1 controls based upon container design capacities. Containers of greater than 0.1 m^3 and less than 0.46 m^3 (approximately 119 gallons) capacity and that meet U.S. Department of Transportation specifications under 49 CFR, Part 178, are kept closed during storage pursuant to 40 CFR §264.1086 (c)(3). Containers undergoing waste characterization activities may be opened for access for the purposes described in 40 CFR §264.1086(c)(3). As required by 40 CFR §264.1086(c)(4), these containers are subject to a visual inspection and monitoring program. On or before acceptance of the waste container, the container is inspected to check for visible cracks, holes, gaps, or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position, in accordance with 40 CFR §264.1086(c)(1)(ii). This inspection is documented in uniform hazardous waste manifests. Pursuant to the Inspection Plan in Appendix C of the most recent version of the LANL General Part B, containers are inspected weekly at TA-55 to ensure that the containers remain closed during storage, thereby exceeding the requirements of 40 CFR §264.1086(c)(4)(ii).

C.7 REFERENCES

LANL, 2000 and all recent revisions, “TA-55 Technical Safety Requirements,” Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 1996 and all recent revisions, “TA-55 Final Safety Analysis Report,” Los Alamos National Laboratory, Los Alamos, New Mexico.

ATTACHMENT D

PERSONNEL TRAINING PLAN

ATTACHMENT D
PERSONNEL TRAINING PLAN

In accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC) §270.14(b)(12) and 20.4.1 NMAC Subpart V, Part 264.16, revised June 14, 2000 [6-14-00], training requirements for workers who manage hazardous and/or mixed waste at Technical Area 55 are addressed in Appendix D of the most recent version of the "Los Alamos National Laboratory General Part B Permit Application."

ATTACHMENT E

CONTINGENCY PLAN

TABLE OF CONTENTS

LIST OF TABLES ii
LIST OF FIGURES iii
LIST OF ABBREVIATIONS/ACRONYMS iv

CONTINGENCY PLAN E-1

LIST OF TABLES

TABLE NO.	TITLE
E-1	Emergency Equipment at Technical Area (TA) 55, Building 4 (TA-55-4), First Floor
E-2	Emergency Equipment at Technical Area (TA) 55, Building 4 (TA-55-4), Basement
E-3	Emergency Equipment at Technical Area (TA) 55 Container Storage Pad
E-4	Emergency Equipment at Technical Area (TA) 55, Building 185 (TA-55-185)

LIST OF FIGURES

FIGURE NO.	TITLE
E-1	Evacuation Routes and Muster Areas at Technical Area (TA) 55

LIST OF ABBREVIATIONS/ACRONYMS

20.4.1 NMAC	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
LANL	Los Alamos National Laboratory
TA	technical area

ATTACHMENT E
CONTINGENCY PLAN

In accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC) Subpart V, Part 264, Subpart D and 20.4.1 NMAC §270.14(b)(7), revised June 14, 2000, contingency measures applicable to the hazardous and mixed waste management units at Technical Area (TA) 55 are provided in Appendix E of the most recent version of the "Los Alamos National Laboratory General Part B," hereinafter referred to as the LANL General Part B.

Figure E-1 shows evacuation routes and muster areas that may be used at TA-55 in the event of an emergency. In addition, lists of emergency equipment currently available for use at TA-55 are included as Tables E-1 through E-4. A list of emergency equipment (including spill control equipment) available from the Hazardous Materials Response Group is presented in Table E-2 of Appendix E in the most recent version of the LANL General Part B. Evacuation routes, muster area locations, and emergency equipment are subject to change. Emergency equipment discussed in this plan may be replaced and/or upgraded with functionally equivalent components and equipment as necessary for routine maintenance and repairs.

Hazardous waste spills are managed by type and severity of the incident. If a hazardous waste spill occurs, the Incident Command evaluates the type and severity of the spill and determines if assistance from LANL's Emergency Management and Response Group is required. If not, the spill is managed internally by TA-55 personnel.

Table E-1 [a]
Emergency Equipment at
Technical Area (TA) 55, Building 4 (TA-55-4), First Floor

FIRE CONTROL EQUIPMENT:

Dry-chemical fire extinguishers are located in Room 401.

Description of General Capabilities:

The fire extinguishers are portable, manually-operated units and can be used by any employee in case of fire. The fire extinguishers in Room 401 are for use only in case of fire outside the gloveboxes.

Fire alarm pull boxes and push button stations are available in Room 401.

Description of General Capabilities:

Fire alarms can be activated by any employee in the event of fire to notify the Central Alarm Station.

An automatic fire suppression sprinkler system is located in Room 401.

Automatic thermal alarms are located in the gloveboxes in Room 401.

Fire hydrants are located outdoors on the north, south, and west sides of TA-55-4.

SPILL CONTROL EQUIPMENT:

Room 401 provides secondary containment for the storage tank system and cementation unit.

COMMUNICATION EQUIPMENT:

Telephones are located in Room 401. The telephones are capable of handling incoming/outgoing calls and paging.

A telephone is located at each of the two west exit doors of TA-55-4.

Two-way radios are available from the Nuclear Materials Technology Facility Incident Command located at TA-55-3, Room 179, for personnel working in Room 401.

Alarms at TA-55-4:

The fire alarm is a zone-wide whooping sound.

If a drop-box pushbutton station is used, a zone-wide, high-pitched constant tone will be activated and then switch to the standard whooping sound.

Refer to footnote at end of table.

Table E-1 [a] (continued)
Emergency Equipment at
Technical Area (TA) 55, Building 4 (TA-55-4), First Floor

COMMUNICATION EQUIPMENT, continued:

The evacuation alarm is a facility-wide mid-range pulsating tone.

The continuous air monitor alarm is a local high-pitched pulsating tone.

The ventilation alarm is a local slow, repeating chime tone.

The public address system may also be used to announce an evacuation.

DECONTAMINATION EQUIPMENT:

Safety showers and eyewash stations are located in Room 401.
Description of General Capabilities:
Safety showers and eyewashes are available for decontamination of personnel who receive a chemical splash to the skin or eyes.

Material Safety Data Sheets (MSDS) are available in Room 401 and at TA-55-4.
Specific MSDSs may be obtained prior to working with any hazardous waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT:

Self-contained breathing apparatus (SCBA) are located in the southside hallway outside of Room 401, in the northside hallway of TA-55-4, and in TA-55-3, Room 179. The SCBAs are available for personnel working in or near Room 401.

Change/decontamination rooms with protective clothing available are located on the first floor of TA-55-4 and in TA-55-3. Protective clothing is also available in a locker located in the hallway near Room 401 for use by personnel working in or near Room 401.

Respirators located in TA-55-3 (Room 107) and in TA-55-4 (Room 515) are available for all personnel working in or near TA-55-4. Respirators are re-issued on a regular basis to TA-55-4 personnel for radiation work. These respirators are stored in the personnel's individual lockers. Combination gas canisters (particulate, organic, and acid) are available in TA-55-4 (Room 515).

OTHER:

If transportation is needed for evacuation, vehicles may be obtained through the Emergency Management and Response Group.

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

Table E-2 [a]
Emergency Equipment at
Technical Area (TA) 55, Building 4 (TA-55-4), Basement

FIRE CONTROL EQUIPMENT:

Halon, dry chemical, and/or carbon dioxide fire extinguishers are available near B40, B05, K13, B45, and the Vault.

Description of General Capabilities:

The fire extinguishers are portable, manually-operated units and can be used by any employee in case of fire.

Fire alarm pull boxes are located at B05, K13, B45, the Vault, and on each side of the fire door.

Description of General Capabilities:

Fire alarms can be activated by any employee in the event of fire to notify the Central Alarm System.

An automatic fire suppression sprinkler system is located throughout the basement at TA-55-4, including the Vault and the office and corridor associated with the Vault.

Fire hydrants are located outdoors on the north, south, and west sides of TA-55-4.

SPILL CONTROL EQUIPMENT:

Self-containment pallets or cabinets are provided for containers of liquid and/or potentially liquid-bearing wastes stored at B40, K13, and the Vault.

COMMUNICATION EQUIPMENT:

Telephones and intercom stations are located throughout the basement of TA-55-4. The telephones are capable of handling both incoming and outgoing calls. The intercom system is connected to the TA-55-3 Operations Center and allows the Operations Center to easily mobilize emergency response support.

Two-way radios are available from the Nuclear Materials Technology Facility Incident Command located at TA-55-3, Room 179, for personnel working in the basement at TA-55-4.

Personal pagers are issued to and carried by assigned personnel working in the basement of TA-55-4. These pagers are accessed by telephone.

Alarms at TA-55-4:

The fire alarm is an area-wide whooping sound.

The evacuation alarm is a facility-wide mid-range pulsating tone.

Refer to footnote at end of table.

Table E-2 [a] (continued)
Emergency Equipment at
Technical Area (TA) 55, Building 4 (TA-55-4), Basement

COMMUNICATION EQUIPMENT, continued:

The continuous air monitor alarm is a local high-pitched pulsating tone.
The ventilation alarm is a local slow, repeating chime tone.

The public address system activated from the TA-55-3 Operations Center may be used to announce an evacuation.

A site-wide paging system activated from the TA-55-3 Operations Center can be heard throughout TA-55-4.

DECONTAMINATION EQUIPMENT:

Eyewashes are located throughout the basement of TA-55-4.
Description of General Capabilities:
The eyewash stations are available for decontamination of personnel who receive a chemical splash to the eyes.

Safety showers are located near B40, K13 and in the office for the Vault.
Description of General Capabilities:
The safety showers are available for decontamination of personnel who receive a chemical splash to the skin.

Material Safety Data Sheets (MSDSs) are available at TA-55-41. Specific MSDSs may be obtained prior to working with any hazardous waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT:

Change/decontamination rooms with protective clothing available are located on the first floor of TA-55-4 and in TA-55-3.

Respirators located in TA-55-4 and in TA-55-3 are available for all personnel working in or near TA-55-4. Particulate and toxic gas canisters are available in TA-55-4.

Self-contained breathing apparatus are located in the TA-55, Basement.

OTHER:

If transportation is needed for evacuation, vehicles may be obtained through the Emergency Management and Response Group.

Forklifts stored in the basement are available for use in the basement and are stored near the north basement doorway.

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

Table E-3 [a]
Emergency Equipment at
Technical Area (TA) 55 Container Storage Pad

FIRE CONTROL EQUIPMENT:

A dry chemical fire extinguisher is located on the Container Storage Pad.
Description of General Capabilities:
The fire extinguishers are portable, manually-operated units and can be used by any employee in case of fire.

Fire hydrants are located along the north, south, and west sides of TA-55-4.

One fire hydrant is located just south of the Container Storage Pad.

Fire alarm pull boxes are located in TA-55-42 at the northwest corner of TA-55-4.

One fire alarm pull box is located outside on the south side of TA-55-4.

COMMUNICATION EQUIPMENT:

A telephone is located on the east side of TA-55-11, and additional phones are located in TA-55-185 and on the south side of TA-55-4.

Two-way radios are available from the Nuclear Materials Technology (NMT) Facility Incident Command located at TA-55-3, Room 179, for personnel working at the Container Storage Pad.

Personal pagers are issued to and carried by assigned personnel working at the Container Storage Pad. These pagers are accessed by telephone.

Alarms at TA-55:
The fire alarm is an area-wide whooping sound.
The evacuation alarm is a facility-wide mid-range pulsating tone.

The public address (PA) system activated from the TA-55-3 Operations Center may be used to announce an evacuation. PA speakers are located on the west side of TA-55-4.

Two intercom systems to the TA-55-3 Operations Center are located on the south and north sides of TA-55-4.

DECONTAMINATION EQUIPMENT:

A safety shower and eyewash station are located outdoors on the Container Storage Pad.

Refer to footnote at end of table.

Table E-3 [a] (continued)
Emergency Equipment at
Technical Area (TA) 55 Container Storage Pad

DECONTAMINATION EQUIPMENT, continued:

Description of General Capabilities:
The safety shower and eyewash are available for personnel who receive a chemical splash to the skin or eyes.

Material Safety Data Sheets (MSDSs) are available at TA-55-2. Specific MSDSs may be obtained prior to working with any hazardous waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT:

Change rooms with protective clothing available are located on the first floor of TA-55-4 and in TA-55-3.

Respirators are located in TA-55-4 and in TA-55-3 for all personnel working in or near TA-55-4.

OTHER:

If transportation is needed for evacuation, vehicles may be obtained through the Emergency Management and Response Group.

Two forklifts are available for NMT-7 use.

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

Table E-4 [a]
Emergency Equipment at
Technical Area (TA) 55, Building 185 (TA-55-185)

FIRE CONTROL EQUIPMENT:

Fire hydrants are located along the north, south, and west sides of TA-55, Building 4 (TA-55-4).

One fire alarm pull box is located inside TA-55-185.

Fire alarm pull boxes are located in TA-55, Building 42, at the northwest corner of TA-55-4.

One fire alarm pull box is located outside on the south side of TA-55-4.

COMMUNICATION EQUIPMENT:

One telephone is located inside TA-55-185.

A telephone is located on the east side of TA-55-11 and additional phones are located in TA-55-185 and on the south side of TA-55-4.

Two-way radios are available from the Nuclear Materials Technology (NMT) Facility Incident Command located at TA-55-3, Room 179, for personnel working at TA-55-185.

Personal pagers are issued to and carried by assigned personnel working at TA-55-185. These pagers are accessed by telephone.

Alarms at TA-55-4:
The fire alarm is an area-wide whooping sound.
The evacuation alarm is a facility-wide mid-range pulsating tone.

The pubic address (PA) system activated from the TA-55-3 Operations Center may be used to announce an evacuation.

PA speakers are located on the west side of TA-55-4 near TA-55-185. Intercom systems to the TA-55-3 Operations Center are located on the south and north sides of TA-55-4.

DECONTAMINATION EQUIPMENT:

TA-55-185 will be equipped with a portable safety shower and eyewash station before wastes are managed there.

Refer to footnote at end of table.

Table E-4 [a] (continued)
Emergency Equipment at
Technical Area (TA) 55, Building 185 (TA-55-185)

PERSONAL PROTECTIVE EQUIPMENT:

Change rooms with protective clothing available are located in TA-55-3.

Respirators located in TA-55-4 and in TA-55-3 are available for all personnel working in or near TA-55-185.

OTHER:

If transportation is needed for evacuation, vehicles may be obtained through the Emergency Management and Response Group.

A forklift is available inside of TA-55-185.

Two forklifts are available to NMT-7.

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

ATTACHMENT F.1

CLOSURE PLAN FOR THE TECHNICAL AREA 55 CONTAINER STORAGE UNITS

TABLE OF CONTENTS

LIST OF TABLES ii
LIST OF FIGURES iii
LIST OF ABBREVIATIONS/ACRONYMS iv

CLOSURE PLAN FOR THE TECHNICAL AREA 55 CONTAINER STORAGE UNITS F.1-1

F.1.1 GENERAL CLOSURE INFORMATION F.1-2

F.1.1.1 Closure Performance Standard F.1-2

F.1.1.2 Partial and Final Closure Activities F.1-2

F.1.1.3 General Closure Schedule F.1-3

F.1.1.4 Amendment of the Closure Plan F.1-4

F.1.1.5 Closure Cost Estimate, Financial Assurance, and Liability Requirements F.1-5

F.1.1.6 Closure Certification F.1-5

F.1.1.7 Security F.1-5

F.1.1.8 Closure Reports F.1-5

F.1.1.9 Survey Plat and Post-Closure Requirements F.1-6

F.1.2 DESCRIPTION OF THE TA-55 CSUs F.1-6

F.1.2.1 Estimate of Maximum Waste in Storage F.1-8

F.1.2.2 Description of Stored Waste F.1-9

F.1.3 CLOSURE PROCEDURES F.1-9

F.1.3.1 Removal of Waste F.1-10

F.1.3.2 Preliminary Closure Procedures F.1-10

F.1.3.3 Decontamination Procedures F.1-11

F.1.3.4 Verification of Decontamination F.1-14

F.1.3.5 Decontamination Criteria F.1-15

F.1.4 SAMPLING AND ANALYSIS PLAN F.1-15

F.1.5 REFERENCES F.1-16

LIST OF TABLES

TABLE NO.	TITLE
F.1-1	Closure Schedule
F.1-2	Container Storage Units at Technical Area 55
F.1-3	Maximum Container Storage Unit Capacities at Technical Area 55
F.1-4	Estimated Total Storage Capacity at the Technical Area 55 Container Storage Units

LIST OF FIGURES

FIGURE NO.	TITLE
F.1-1	Location Map - Technical Area (TA) 55 Container Storage Units

LIST OF ABBREVIATIONS/ACRONYMS

20.4.1 NMAC	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
ALARA	as low as reasonably achievable
COPC	constituents of potential concern
CSU	container storage unit(s)
D&D	decontamination and decommissioning
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
LANL	Los Alamos National Laboratory
LASO	Los Alamos Site Office
NMED	New Mexico Environment Department
NNSA	National Nuclear Security Administration
PPE	personal protective equipment
QA	quality assurance
QC	quality control
R&D	research and development
RCRA	Resource Conservation and Recovery Act
SAP	sampling and analysis plan
SWRC	Solid Waste Regulatory Compliance Group
TA	technical area

ATTACHMENT F.1
CLOSURE PLAN FOR THE TECHNICAL AREA 55 CONTAINER STORAGE UNITS

The information provided in this closure plan is submitted to address the applicable closure requirements specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC) §270.14(b)(13), and 20.4.1 NMAC, Subpart V, Part 264, Subparts G and I, revised June 14, 2000 [6-14-00]. This closure plan describes the activities necessary to perform Resource Conservation and Recovery Act (RCRA) closure for the container storage units (CSU) at Los Alamos National Laboratory (LANL) Technical Area (TA) 55. Closure will include removal of any remaining waste, decontamination or removal of contaminated equipment/structures, and verification that all residues have been removed. Closure activities will minimize the need for further maintenance, preclude the release of hazardous waste or hazardous constituents to environmental media, and be protective of human health in accordance with the closure performance standards in 20.4.1 NMAC § 264.111 [6-14-00].

Container storage at TA-55 consists of seven CSUs including B40, B05, K13, B45, and the Vault located at TA-55-4; a container storage pad located northwest of TA-55-4; and TA-55-185 (Figure F.1-1). This closure plan will be used to provide guidance and permit conditions for the partial closure of these TA-55 CSUs. Closure will occur separately and over the active life of the TA-55 facility, which is not anticipated to end before 2050.

This closure plan describes general closure activities and establishes the procedure of submitting a separate detailed CSU-specific sampling and analysis plan (SAP) to the New Mexico Environment Department (NMED) for approval at the time of closure. The CSU-specific SAPs will alleviate the need for future closure plan and permit modifications until the actual closure activities for each CSU are scheduled. Each SAP will provide the required level of detail to assure that closure performance standards are met and will be consistent with the appropriate decontamination and verification requirements existing at the time of closure.

This plan is organized as follows:

- Section F.1.1 - General Closure Information
- Section F.1.2 - Description of the TA-55 CSUs
- Section F.1.3 - Closure Procedures
- Section F.1.4 - Sampling and Analysis Plan

- Section F.1.5 - References

Until closure is complete and has been certified in accordance with 20.4.1 NMAC §264.115 [6-14-00], as discussed in Section F.1.1.6, a copy of the approved closure plan and any approved revisions will be on file with the Risk Reduction and Environmental Stewardship Division Solid Waste Regulatory Compliance Group (SWRC) and at the U.S. Department of Energy (DOE)/National Nuclear Security Administration (NNSA) Los Alamos Site Office (LASO).

F.1.1 GENERAL CLOSURE INFORMATION

F.1.1.1 Closure Performance Standard [20.4.1 NMAC §264.111]

The CSUs addressed in this closure plan 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, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground or surface waters or atmosphere, and
- Comply with the closure and post-closure requirements of 20.4.1 NMAC, Subpart V, Part 264, Subpart G and I [6-14-00].

This will be accomplished by removal of waste from each TA-55 CSU and decontamination, if necessary, of the areas that may have come into contact with wastes. Decontamination activities will ensure the removal of hazardous waste residues from each TA-55 CSU to established cleanup levels.

F.1.1.2 Partial and Final Closure Activities [20.4.1 NMAC §264.112(d)]

This closure plan has been written for partial closure rather than final closure of the entire LANL facility. Partial RCRA closure is the closure of a hazardous waste management unit at a facility that contains other active hazardous waste management units. Partial closure at TA-55 will consist of closing one or more of the CSUs, while leaving the other units at LANL in operation. Partial closure (hereinafter referred to as closure) will be deemed complete when the waste has been removed from the CSU; the CSU all related surfaces and equipment have been decontaminated, if necessary, or otherwise properly disposed; closure has been verified; and the closure certification has been submitted to and approved by the NMED.

Final RCRA closure of the LANL hazardous waste management facility will occur when all of LANL's hazardous/mixed waste management units are closed. Final closure will consist of assembling documentation on the closure status of each waste management unit, including all pervious closures as well as land-based units where closures have been or are being addressed via alternative closure requirements. Final closure will be deemed complete when the closure certification has been submitted to the NMED, and the NMED has approved the final closure.

F.1.1.3 General Closure Schedule [20.4.1 NMAC §§264.112(b)(6), 264.112(e), and 264.113]

Written notification will be provided to the NMED 45 days before the start of closure activities at any TA-55 CSU. However, pursuant to 20.4.1 NMAC §264.112(e) [6-14-00], removing hazardous and/or mixed wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Closure activities will begin according to the requirements of 20.4.1 NMAC §264.112(d)(2) [6-14-00]. Treatment, removal, or disposal of hazardous wastes will begin in accordance with the approved closure plan, as required by 20.4.1 NMAC §264.113(a) [6-14-00], within 90 days after final receipt of waste at the CSU to be closed. This timeframe will be met as long as facilities are available for treatment or disposal of these wastes. In the event that closure activities cannot begin within 90 days, LANL will notify the Secretary of the NMED in accordance with the extension requirements in 20.4.1 NMAC §264.113(a) [6-14-00]. Closure activities and reporting requirements will then be completed within 180 days of the receipt of the final volume of waste at the CSU to be closed. Closure will be conducted in accordance with the schedule presented in Table F.1-1 of this closure plan.

Table F.1-1

Closure Schedule

Activity	Maximum Time Required [a]
Submit CSU-specific SAP	-90 Days
Notify the NMED of intent to close.	-45 Days
Final receipt of waste.	Day 0
Remove waste.	Day 5
Decontaminate surfaces and equipment.	Day 20
Sample excess used decontamination water for disposal.	Day 20
Perform verification sampling.	Day 30
Evaluate analytical data from verification sampling.	Day 50
Perform additional decontamination, if necessary.	Day 55
Perform additional verification sampling, if necessary.	Day 60
Evaluate additional analytical data.	Day 75
Perform final cleanup and disposal (i.e., removal of decontaminated equipment and decontamination waste).	Day 140
Certify closure.	Day 175
Submit closure certification 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 and/or may not require the maximum time listed. Extensions to this schedule may be requested, as needed.

NMED = New Mexico Environment Department

SAP = Sampling and Analysis Plan

Further details regarding the schedule of closure activities on a CSU-specific basis will be included with the CSU-specific SAP as discussed in Section F.1.4 of this closure plan. In the event that closure is prevented from proceeding according to schedule, LANL will notify the Secretary of the NMED in accordance with extension request requirements in 20.4.1 NMAC §264.113(b) [6-14-00]. In addition, the demonstrations in 20.4.1 NMAC §264.113(a)(1) and (b)(1) [6-14-00], will be made in accordance with 20.4.1 NMAC §264.113(c) [6-14-00].

F.1.1.4 Amendment of the Closure Plan [20.4.1 NMAC §264.112(c)]

In accordance with 20.4.1 NMAC §264.112(c) [6-14-00], LANL will submit a written notification or request for a permit modification to authorize a change in the approved closure plan whenever:

- There are changes in operating plans or facility design that affect the closure plan.
- There is a change in the expected year of closure.
- Unexpected events occur during closure that requires modification of the approved closure plan.
- The owner or operator requests the Secretary of the NMED to apply alternative requirements to a regulated unit under 20.4.1 NMAC §§ 264.90(f) and/or 264.110(c).

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

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

F.1.1.5 Closure Cost Estimate, Financial Assurance, and Liability Requirements [20.4.1 NMAC §264.140(c)]

In accordance with 20.4.1 NMAC §264.140(c) [6-14-00], LANL, as a federal facility, is exempt from the requirements of 20.4.1 NMAC, Subpart V, Part 264, Subpart H [6-14-00], to provide a cost estimate, financial assurance mechanisms, and liability insurance for closure actions.

F.1.1.6 Closure Certification [20.4.1 NMAC §264.115]

Within 60 days after completion of closure activities at any TA-55 CSU or final closure of the facility, LANL will submit to the Secretary of the NMED, via certified mail, a certification that the unit or facility has been closed in accordance with the approved closure plan. The certification will be signed by the appropriate DOE/NNSA and LANL officials and by an independent, registered professional engineer, in accordance with 20.4.1 NMAC §264.115 [6-14-00]. Documentation supporting the independent, registered engineer's certification will be furnished to the Secretary of the NMED upon request, as specified in 20.4.1 NMAC §264.115 [6-14-00]. A copy of the certification and supporting documentation will be maintained by both DOE/NNSA LASO and SWRC.

F.1.1.7 Security

Because of the ongoing nature of waste management operations at TA-55, security and administrative controls at the TA-55 waste management units will be maintained by the DOE/NNSA or another authorized federal agency for as long as necessary to prohibit public access. The security fence at TA-55 will be maintained to ensure that public access into TA-55 is prevented.

F.1.1.8 Closure Reports

Upon completion of the RCRA closure activities at any TA-55 CSU, a closure report will be prepared and submitted to the Secretary of the NMED. The report will document the closure and contain, for example, the following:

- A copy of the certification described in Section F.1.1.6 of this closure plan.
- A general summary of closure activities.
- Any significant variance from the approved activities and the reason for the variance.
- A summary of any sampling data associated with the closure
- Storage or disposal location of hazardous/mixed waste resulting from closure activities.
- A certification of accuracy of the report.

F.1.1.9 Survey Plat and Post-Closure Requirements [20.4.1 NMAC §264.116 and 264.117 through 264.120]

LANL intends to remove hazardous/mixed waste and associated constituents from the CSU to be closed and decontaminate all surfaces and equipment to established cleanup levels or, if the cleanup levels approved in the CSU-specific closure SAP cannot be achieved, to dispose of the contaminated surfaces and equipment. If decontamination to established cleanup levels approved in the CSU-specific closure SAP cannot be achieved, LANL may propose an alternate demonstration of decontamination, as circumstances indicate.

If a CSU cannot be closed as described above, LANL will conduct post-closure or equivalent activities in accordance with Appendix G in the most recent version of the "Los Alamos National Laboratory General Part B Permit Application," hereinafter referred to as the LANL General Part B. A survey plat prepared in accordance with 20.4.1 NMAC §264.116 [6-14-00] will be filed with the appropriate authorities at certification of closure, as described in that regulation. A survey plat indicating the location and dimensions of the CSU with respect to permanently surveyed benchmarks will be submitted to the local zoning authority (i.e., Los Alamos County) and to the NMED at the time of submission of the certification of closure. The plat filed with the local zoning authority will contain a prominently displayed note, which states the obligation of LANL and DOE/NNSA to restrict disturbance of the unit in accordance with the applicable regulations in 20.4.1 NMAC, Subpart V, Part 264, Subpart G. Post-closure notices will be filed with appropriate authorities, as described in 20.4.1 NMAC §264.119 [6-14-00]. To meet that requirement, DOE/NNSA will file a "Land Use Restriction Notice" or equivalent document with the County of Los Alamos and other authorized agencies. Within 60 days after completions of the established post-closure care period for the unit, LANL will submit to the Secretary of the NMED, via certified mail, a certification of completion of post-closure care in accordance with the requirements of 20.4.1 NMAC §264.120 [6-14-00].

F.1.2 DESCRIPTION OF THE TA-55 CSUs

TA-55 is located on a mesa between a branch of Mortandad Canyon to the north and Two Mile Canyon to the south. Mesa-top elevations at TA-55 range from approximately 7,100 to 7,300 feet above mean sea level. TA-55 began operating in 1978 and is the location of research and development activities including a plutonium processing facility. Container storage at TA-55 consists of seven CSUs including B40, B05, K13, B45, and the Vault located at TA-55-4; a container storage pad located northwest of TA-55-4; and TA-55-185. Table F.1-2 provides the location and dimensions of each CSU.

Table F.1-2
Container Storage Units at Technical Area 55

Container Storage Unit	Location	Dimensions
B40	TA-55-4, Basement	L-shaped, long dimensions of 61.5 ft x 55 ft
B05	TA-55-4, Basement	26 ft x10 ft
K13	TA-55-4, Basement	16 ft x 13 ft
B45	TA-55-4, Basement	45 ft x 17.5 ft
Vault	TA-55-4, Basement	79.5 ft x 50.5 ft
Storage Pad	Northwest of TA-55-4	Trapezoid that is 102 ft x 86 ft x 156 ft x 105 ft and a 70 ft x 10 ft rectangle on the side.
TA-55-185	West of TA-55-4	60 ft x 40 ft

TA = Technical Area
ft = feet/foot

LANL does not currently intend to reduce the design capacities of the CSUs at TA-55 during the active life of the units. Estimated annual quantities for the CSUs at TA-55 are provided in the most recent version of the "Los Alamos National Laboratory General Part A Permit Application," hereinafter referred to as the LANL General Part A.

F.1.2.1 Estimate of Maximum Waste in Storage

The maximum total inventory of waste that can be in storage at any time in the TA-55 CSUs is provided in Table F.1-3.

Table F.1-3
Maximum Container Storage Unit Capacities at Technical Area 55

CSU	Capacity[a] (gallons)
B40	21,500
B05	3,600
K13	2,500
B45	11,000
Vault	4,000
Storage Pad	135,000
TA-55-185	30,000

a Reflects the calculation of maximum capacities with a minimum aisle space of 2 feet.

TA = Technical Area
CSU = container storage unit

Table F.1-4 provides the date storage began at each CSU and estimates the maximum amount of hazardous and/or mixed waste in storage over the life of the unit.

Table F.1-4
Estimated Total Storage Capacity at the Technical Area 55 Container Storage Units

CSU	Approximate Storage Dates	Estimated Total Storage Capacity[a] (gallons)
B40	1980 - 2050	3,010,000
B05	1980 - 2050	504,000
K13	1980 - 2050	350,000
B45	1980 - 2050	1,540,000
Vault	1980 - 2050	560,000
Storage Pad	1980 - 2050	18,900,000
TA-55-185[b]	2005 - 2050	2,700,000

[a] Calculated based upon turn over of the maximum storage capacity twice a year
[b] Assumed that 2005 is the year storage at the unit will begin

F.1.2.2 Description of Stored Waste

The hazardous waste that may be stored at TA-55 is generated during research and development (R&D) activities, decontamination and decommissioning (D&D) projects, and general facility operations. A waste is considered hazardous if it meets the definition of a solid waste described in 20.4.1 NMAC §261.2 [6-14-00]; is not exempt from regulation as a hazardous waste under 20.4.1 NMAC §261.2 [6-14-00]; and exhibits any of the characteristics of hazardous waste identified in 20.4.1 NMAC, Subpart II, Part 261, Subpart C, or is listed in 20.4.1 NMAC, Subpart II, Part 261, Subpart D [6-14-00]. Mixed wastes currently stored at TA-55 are generated during R&D activities, processing and recovery operations, D&D projects, and general facility operations. Mixed waste is any solid waste that has both a hazardous component (as defined by 20.4.1 NMAC, Subpart II, Part 261) and a radioactive component. Information on the hazardous components of all wastes that can be stored at the TA-55 CSUs is provided in the most recent version of the LANL General Part A. Additional information on waste generating activities at LANL is available in the waste analysis plan in Appendix B of the most recent version of the LANL General Part B.

The estimated annual quantities of waste in storage at the TA-55 CSUs are provided in the most recent version of the LANL General Part A.

F.1.3 CLOSURE PROCEDURES

Closure will be conducted in accordance with the schedule presented in Table F.1-1, as amended by the CSU-specific SAPs submitted at the time of closure. Closure will generally be conducted as follows:

- **Removal of Waste** - Includes the transportation of all waste containers remaining in storage at the time of closure.
- **Preliminary Closure** – Determination of safety precautions and background contaminant

levels for the CSU to be closed. Includes the inspection of the CSU by the engineer observing the closure to ensure adequate containment and conditions for closure.

- **Decontamination** – Includes the removal of potential hazardous and/or mixed waste constituents from equipment used during waste management activities (e.g., pallets, drum dollies) and all structures, surfaces, walls, and secondary containment features (e.g., surfaces, sumps, berms, and/or recessed drains). Removal can include sweeping, vacuuming, moping, and/or wiping as appropriate at the time of closure and will be based upon the contaminant levels determined by the operating record of the unit.
- **Verification** – Sampling to verify that residual hazardous waste constituents have been decontaminated to appropriate levels. Sample media can include swipes, solutions, and/or soil as appropriate to the CSU being closed and will be determined at the time of closure based upon the operating record of the unit.
- **Closure Certification –** Certification by a professional engineer that the procedures and requirements provided in this closure plan and the CSU-specific SAPs were followed.

The following sections provide additional information for the closure procedures described above. The CSU-specific SAPs provided at the time of closure will provide detailed information regarding the preliminary closure procedures, decontamination methods, and verifications procedures as applicable at the time of closure.

F.1.3.1 Removal of Waste

Prior to initiation of closure activities, all wastes will be removed from the CSU scheduled for closure. Containers may be removed from each location with forklifts. Small containers may be handled manually or with dollies. Containers will be placed onto flatbed trucks, or trailers, or other appropriate vehicles for transport. Appropriate shipping papers will accompany the wastes during transport. Containers holding hazardous or mixed wastes will be moved to an approved on-site CSU or permitted off-site treatment, storage, or disposal facility.

F.1.3.2 Preliminary Closure Procedures

F.1.3.2.1 Safety Precautions

Job hazards associated with closure activities will be identified, controls developed, and workers briefed before closure activities are conducted, in accordance with LANL safety procedures. Personnel involved in closure activities will wear appropriate personal protective equipment (PPE), specified by the Health Physics Group and the Industrial Hygiene and Safety Group, and will follow good hygiene practices to protect themselves from exposure to hazardous and/or mixed waste. The level of PPE that will be required will depend upon the physical hazards present and the levels of contamination that are detected, if any. All workers involved in closure activities will be required to have appropriate training (as identified in Attachment D of this permit application and Appendix D in

the most recent version of the LANL General Part B. Contaminated PPE will either be decontaminated or managed in compliance with appropriate waste management regulations.

F.1.3.2.2 Background Determination

Prior to the commencement of decontamination, the operating record of the CSU to be closed will be evaluated to determine the constituents of potential concern (COPCs) during closure. In addition, background samples and/or concentrations derived from LANL studies developed under the LANL corrective action or other programs can be used to determine COPC background/baseline levels applicable at the time of closure. The COPCs, appropriate background levels, and/or necessary sample collection techniques will be determined at the time of closure and included in the CSU-specific SAP at the time of closure, as discussed in Section F.1.4 of this closure plan.

F.1.3.2.3 Structural Assessment

Prior to beginning decontamination activities, the CSU to be closed will be inspected for any cracks or conditions that would potentially lead to the loss of decontamination wash water containment, as applicable. Preventative maintenance inspections are conducted routinely (i.e., weekly) at each CSU. If any defects, deterioration, damage, or hazards affecting containment are discovered during inspection, appropriate remedial actions (including repairs, maintenance, or replacement) will be completed before decontamination activities begin. If a crack or gap is present, a swipe sample or a representative sample of the media will be taken (e.g., asphalt or concrete) to determine the presence of contamination. The sample will be analyzed for the COPCs identified based upon the operating history of the unit, as discussed in Section F.1.3.2.2. If contamination is detected, the surface flaw will be decontaminated prior to repairing the crack/gap. Complete or partial removal (e.g., cold milling) of the material may be performed until contamination is no longer detected. If partial removal is successful in eliminating the contamination, it will be assumed that the remaining material, including the underlying soil, is clean.

F.1.3.3 Decontamination Procedures

To the extent possible, all contaminated surfaces and equipment (if present) will be decontaminated. Surfaces, items, materials, and equipment that cannot be decontaminated will be containerized and managed in compliance with appropriate waste management regulations.

An appropriate surfactant/solvent to be used in wash water solutions will be determined based upon the COPCs identified in the CSU-specific SAP. Alconox®, a surfactant, will be used to decontaminate

the CSUs. Specialized solvents will be used for more focused decontamination/removal purposes, as appropriate.

F.1.3.3.1 Equipment Located in the CSUs

The TA-55 CSUs have a variety of equipment that will be removed, decontaminated, and/or disposed of prior to decontamination of the surfaces associated with the unit. This includes all portable equipment such as grating/supports, pallets, drum dollies, and carts that are used to manage waste at the CSU. This equipment will be removed, decontaminated and/or disposed based upon the level of contamination and future use.

F.1.3.3.2 Indoor Storage Locations

Decontamination will be conducted using mops, cloths, and/or other absorbent materials to remove any potential hazardous constituents. These materials will be submerged in a wash water solution (e.g., Alconox, water) and used to wipe down the surfaces associated with the CSU being closed. After decontamination of the surfaces, the containment system (e.g., recessed areas, sumps, berms) will be wiped down. Used wash water will be collected, removed, and transferred to an appropriate container for storage pending the results of analysis and disposal.

Verification of decontamination will be conducted as indicated in Section F.1.3.4. If the analysis from the verification sampling indicates that hazardous constituents are present, decontamination wash cycles and analyses will continue until the structure and surfaces have been decontaminated or the decision is made to manage it appropriately as contaminated waste. Upon determination that it is contaminated waste, the material/structure/surface may be removed, transported to, and stored at other CSUs to facilitate the closure process.

F.1.3.3.3 Vault

It is anticipated that the Vault will remain an active mixed waste management unit until the LANL facility closure and that the area will be decontaminated in the manner described above. If “as low as reasonably achievable” (ALARA) considerations preclude decontaminating the area in the aforementioned manner, alternative measures will be initiated, as necessary, to ensure that the area is closed in a manner consistent with ALARA requirements and the intent of the closure regulations contained herein.

F.1.3.3.4 Container Storage Pad

Closure activities at the outdoor asphaltic-concrete container storage pad will include decontamination, and/or removal. To decontaminate the surface of the container storage pad, procedures similar to those described in Section F.1.3.3.2 of this closure plan can be used. If the decision is made to decontaminate, portable berms or other devices designed to collect and provide containment for used wash water will be used to control runoff from the CSU.

Used wash water samples from the container storage pad may exhibit contamination due to leaching of the asphalt during washdown. If this is the case, record reviews (e.g. manufacturer's specifications, Material Safety Data Sheets) and additional analyses may be performed to determine if leaching from the asphalt contributed to the contaminant concentration in the used wash water. If this additional evaluation confirms the asphalt as the source of contamination, baseline concentrations for clean wash water will be adjusted accordingly.

If decontamination verification, as discussed in Section F.1.3.4 cannot be demonstrated after two wash cycles, the asphaltic-concrete pad will be removed from the site and managed as appropriate for the waste type.

F.1.3.3.5 Soil Sampling

At the TA-55 container storage pad CSU soil removal can also be used to meet the closure performance standards if the operating records for the unit indicate that a release of hazardous waste to the surrounding soil has occurred. If records indicate that no release of hazardous waste to soils has occurred, soil sampling will not be conducted.

If collection of soil samples is determined to be necessary to demonstrate decontamination, appropriate background sample and/or concentrations derived from LANL studies (Section F.1.3.2.2) will be used to determine background/baseline levels for decontamination verification. Sampling locations to determine the extent of contamination will be based upon a biased random sampling approach, including historical evidence or releases, physical evidence of distressed vegetation or visual staining, and any other information that indicates a potential contamination pathway. The number of samples, locations, depths, and sampling will be determined before closure and will be included in the TA-55 CSU-specific closure SAP, as discussed in Section F.1.4. Results from sampling will be compared to the background samples and/or baseline concentration levels included in the closure SAP. If analysis shows that the soil at the outdoor container storage pad is contaminated, soil sampling results that are above the background/baseline levels will be used to identify the extent of

soil contamination. Contaminated soils will either be treated in place or removed in layers and sampling conducted following removal of each layer. This procedure will be used to minimize the amount of soil removed.

F.1.3.3.6 Equipment Used During Closure

Reusable protective clothing, tools, and equipment used during decontamination activities at the CSU will be cleaned with a wash water solution. If reusable sampling equipment is used, sampling equipment rinsate blanks will be collected and analyzed in accordance with the quality assurance (QA)/quality control (QC) procedures to be described in the closure SAP. Reusable decontamination equipment, including protective clothing and tools used during closure activities will be scraped as necessary to remove any residue and cleaned with a wash water solution. Residue, disposable equipment and reusable equipment that cannot be decontaminated will be containerized and managed as waste in accordance with LANL waste management procedures, depending on the regulated constituents present.

F.1.3.4 Verification of Decontamination

Verification of decontamination will be conducted using sampling and analysis to demonstrate that hazardous and/or mixed waste residues are not present on the surfaces of the CSU. Sample media can include wash water solutions, swipes, and/or solid media samples (e.g., soil, concrete) as determined in the CSU-specific SAP at the time of closure and the operating record of the unit. The sampling methodology will be based on factors such as COPCs and the CSU materials of construction. All sampling conducted during closure will be done in accordance with the QA/QC procedures defined by “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods” (U.S. Environmental Protection Agency [EPA], 1986). The CSU-specific SAP will establish the minimum number of verification samples to be collected for the CSU being closed. The sample number will be based on the total surface area associated with the unit. Verification sampling will use a biased random approach for the determination of sample locations for the equipment, structures, and/or surfaces of the CSU and will include known or likely areas of contamination (e.g., low areas, sumps, and known spill locations) as determined by the operating record of the unit at the time of closure.

Decontamination will be verified if the analytical data from the collected samples meets at least one of the decontamination criteria listed in Section F.1.3.5 of this closure plan. If the data cannot meet at least one of the criteria, additional sampling can be performed to establish the boundaries of the contamination. Decontamination, as discussed in Section F.1.3.3, will be repeated within those boundaries, using portable berms or other appropriate materials to limit the potential for runoff from the

affected area. An additional round of verification sampling will be performed for all of the areas previously determined to be contaminated. After each decontamination/verification sequence, a decision will be made to repeat or remove the contaminated materials and dispose of them properly.

F.1.3.5 Decontamination Criteria

Successful decontamination will consist of sampling as specified in the TA-55 CSU-specific SAP and meet one of the following four criteria:

- No detectable hazardous waste or hazardous waste constituents from container storage activities are identified in the verification sample.
- Detectable hazardous waste or hazardous waste constituents from container storage activities in the verification solution sample are removed to statistically significant levels based on baseline concentrations in the clean verification sample.
- Detectable hazardous waste or hazardous waste constituents from container storage activities in the verification solution sample are at or below levels agreed upon with the NMED.
- Detectable hazardous waste or hazardous waste constituent concentrations from container storage activities do not significantly decrease after several wash downs. In such an event, hazardous constituents that pose an acceptable risk will be allowed to remain, as mutually agreed upon with the NMED.

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

F.1.4 SAMPLING AND ANALYSIS PLAN

Sampling and analysis will be performed using standard approved methods (e.g., *SW-846*, American Society for Technology and Materials), as appropriate, for making closure decontamination verification determinations. LANL will submit a TA-55 CSU-specific closure SAP to the NMED at the time of each CSU closure notification for review and approval. Each SAP will provide a detailed description of the CSU to be closed and propose a closure methodology that assures the closure performance standards in Section F.1.1.1 are met.

The TA-55 CSU-specific SAPs will include the following information:

- A detailed discussion of site characteristics.
- The CSU operational history, to include descriptions of known spills, releases, and/or evidence of potential problems (e.g., visual stains, dead vegetation, solid waste management units).

- Chemical properties of the waste stored at the CSU.
- Determination of applicable COPCs.
- A hazard control plan, including a review of chemical hazards present at the site, control and monitoring methods and procedures, and required PPE.
- Determination of wash water solution composition, if necessary.
- Detailed procedures describing decontamination methods for equipment , structures, and media.
- Discussion of background levels determined through sampling or use of published data and their relevance to the specific CSU.
- Methods for sampling and analysis of contaminated media.
- Removal procedures for contaminated media, if necessary.
- Sampling methods for decontamination media and hazardous waste determination. The discussion should include the rationale for using wash water samples, swipe samples, soil samples, and/or other sampling methodology.
- Sampling methods for decontamination verification procedures. The discussion should include the statistical or judgmental basis for determining the number of verification samples needed and the constituents to be analyzed.
- Sampling equipment decontamination and disposition procedures.
- Sample handling and documentation procedures.
- Analytical methods (including detection limits) and the rationale for their determination.
- Disposition of removed waste, decontamination media, or contaminated soils. This discussion should include an identification of proposed on- or off-site hazardous waste management facilities that may be used for final disposition and the types of wastes anticipated to be shipped.
- Decontamination criteria.
- Statistical basis for verification of decontamination, if applicable. The discussion should include information on determination of statistical increases in analytical parameters and numerical values for significant increases.
- Risk assessment procedures to be used, if necessary.
- Field and laboratory QA/QC procedures.
- Schedule of closure activities, including decontamination, sampling, analysis, potential removal of soils, and closure certification submittal.
- Identification of contact person or office.

F.1.5 REFERENCES

EPA, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *EPA-SW-846*, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

ATTACHMENT F.2

CLOSURE PLAN FOR THE TECHNICAL AREA 55 STORAGE TANK SYSTEM

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TABLE OF CONTENTS

LIST OF TABLES ... ii
LIST OF FIGURES ... iii
LIST OF ABBREVIATIONS/ACRONYMS ... iv

CLOSURE PLAN FOR THE TECHNICAL AREA 55 STORAGE TANK SYSTEM ... F.2-1
F.2.1 GENERAL CLOSURE INFORMATION ... F.2-2
F.2.1.1 Closure Performance Standard ... F.2-2
F.2.1.2 Partial and Final Closure Activities ... F.2-2
F.2.1.3 General Closure Schedule ... F.2-3
F.2.1.4 Amendment of the Closure Plan ... F.2-4
F.2.1.5 Closure Cost Estimate, Financial Assurance, and Liability Requirements ... F.2-4
F.2.1.6 Closure Certification [20.4.1 NMAC §264.115] ... F.2-5
F.2.1.7 Security ... F.2-5
F.2.1.8 Closure Report ... F.2-5
F.2.1.9 Survey Plat and Post-Closure Requirements ... F.2-5
F.2.2 DESCRIPTION OF THE STORAGE TANK SYSTEM ... F.2-6
F.2.2.1 Estimate of Maximum Waste in Storage ... F.2-6
F.2.2.2 Description of Waste ... F.2-7
F.2.3 CLOSURE PROCEDURES ... F.2-7
F.2.3.1 Removal of Waste ... F.2-8
F.2.3.2 Preliminary Closure Procedures ... F.2-8
F.2.3.3 Decontamination Procedures ... F.2-9
F.2.3.4 Verification of Decontamination ... F.2-11
F.2.3.5 Decontamination Criteria ... F.2-12
F.2.4 SAMPLING AND ANALYTICAL PLAN [20.4.1 NMAC §264.112(b)(4)] ... F.2-12
F.2.5 REFERENCES ... F.2-14

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LIST OF TABLES

TABLE NO.	TITLE
F.2-1	Closure Schedule
F.2-2	Storage Tank System at Technical Area 55
F.2-3	Storage Tank System Component Capacities
F.2-4	Estimated Total Lifetime Storage Capacity at the Storage Tank System

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LIST OF FIGURES

FIGURE NO.	TITLE
F.2-1	Storage Tank System at Technical Area 55

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LIST OF ABBREVIATIONS/ACRONYMS

20.4.1 NMAC	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
COPC	constituents of potential concern
CSU	container storage unit
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
LANL	Los Alamos National Laboratory
LASO	Los Alamos Site Office
NMED	New Mexico Environment Department
NNSA	National Nuclear Security Administration
PPE	personal protective equipment
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
SAP	sampling and analysis plan
SWRC	Solid Waste Regulatory Compliance
TA	technical area

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ATTACHMENT F.2
CLOSURE PLAN FOR THE TECHNICAL AREA 55 STORAGE TANK SYSTEM

The information provided in this closure plan is submitted to address the applicable closure requirements specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC) §270.14(b)(13), and 20.4.1 NMAC, Subpart V, Part 264, Subparts G and J, revised June 14, 2000 [6-14-00]. This closure plan describes the activities necessary to perform Resource Conservation and Recovery Act (RCRA) closure for the storage tank system located at Los Alamos National Laboratory (LANL) Technical Area (TA) 55. Closure activities will include removal of any remaining waste, decontamination or removal of contaminated equipment/structures, and verification that all residues have been removed. Closure will minimize the need for further maintenance, preclude the release of hazardous waste or hazardous constituents to environmental media, and be protective of human health in accordance with the closure performance standards specified in 20.4.1 NMAC §264.111 [6-14-00].

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There is one storage tank system at TA-55. This tank system is composed of 3 tank components and consists of a total of 16 tanks located at TA-55-4, Room 401 (Figure F.2-1). This closure plan will be used to provide guidance and permit conditions for the partial closure of the storage tank system at TA-55. Closure will occur separately from the other waste management units at TA-55 and over the active life of the TA-55 facility, which is not anticipated to end before 2050.

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This closure plan describes general closure and establishes the procedure of submitting a separate detailed sampling and analysis plan (SAP) to the New Mexico Environment Department (NMED) for approval at the time of closure. The SAP will alleviate the need for future closure plan and permit modifications until the actual closure activities for the storage tank system are scheduled. The SAP will provide the required level of detail to assure that closure performance standards are met, consistent with the appropriate decontamination and verification requirements existing at the time of closure.

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This plan is organized as follows:

- Section F.2.1 - General Closure Information.
- Section F.2.2 - Description of the Storage Tank System.
- Section F.2.3 - Closure Procedures.
- Section F.2.4 - Sampling and Analysis Plan.
- Section F.2.5 – References.

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Until closure is complete and has been certified in accordance with 20.4.1 NMAC §264.115 [6-14-00], as discussed in Section F.2.1.6, a copy of the approved closure plan and any approved revisions will be on file with the Risk Reduction and Environmental Stewardship Division Solid Waste Regulatory Compliance Group (SWRC) and at the U.S. Department of Energy (DOE)/National Nuclear Security Administration (NNSA) Los Alamos Site Office (LASO).

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F.2.1 GENERAL CLOSURE INFORMATION

F.2.1.1 Closure Performance Standard [20.4.1 NMAC §264.111]

The storage tank system addressed in this closure plan 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 closure and post closure requirements of 20.4.1 NMAC, Subpart V, Part 264, Subparts G and J [6-14-00].

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

F.2.1.2 Partial and Final Closure Activities [20.4.1 NMAC §264.112(d)]

This closure plan has been written for partial closure rather than final closure of the entire LANL facility. Partial RCRA closure is the closure of a hazardous waste management unit at a facility that contains other active hazardous waste management units. Partial closure at TA-55 can consist of closing the storage tank system, while leaving the other units in operation. Partial closure (hereinafter referred to as closure) will be deemed complete when the waste has been removed from the storage tank system; all related secondary containment surfaces and equipment have been decontaminated, if necessary, or otherwise properly disposed; closure has been verified; and the closure certification has been submitted to and approved by the NMED.

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Final RCRA closure of the LANL hazardous waste management facility will occur when all of LANL's hazardous/mixed waste management units are closed. Final closure will consist of assembling documentation on the closure status of each waste management unit, including all pervious closures

as well as land-based units where closures have been or are being addressed via alternative closure requirements. Final closure will be deemed complete when the closure certification has been submitted to the NMED, and the NMED has approved the final closure.

F.2.1.3 General Closure Schedule [20.4.1 NMAC §§264.112(b)(6), 264.112(e), and 264.113]

Written notification will be provided to the NMED 45 days before the start of closure activities for the TA-55 storage tank system. However, pursuant to 20.4.1 NMAC §264.112(e) [6-14-00], removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Closure activities will begin according to the requirements of 20.4.1 NMAC §264.112(d)(2) [6-14-00]. Treatment, removal, or disposal of hazardous wastes will begin in accordance with the approved closure plan, as required by 20.4.1 NMAC §264.113(a) [6-14-00], within 90 days after final receipt of waste at the storage tank system. In the event that closure activities cannot begin within 90 days, LANL will notify the Secretary of the NMED in accordance with the extension requirements in 20.4.1 NMAC §264.113(a) [6-14-00]. Closure activities and reporting requirements will then be completed within 180 days of the receipt of the final volume of waste at the storage tank system. Closure will be conducted in accordance with the schedule presented in Table F.2-1 of this closure plan.

Table F.2-1
Closure Schedule

Activity	Maximum Time Required [a]
Submit SAP.	-90 Days
Notify the NMED of intent to close.	-45 Days
Final receipt of waste.	Day 0
Remove waste.	Day 5
Decontaminate surfaces and equipment.	Day 20
Sample excess used decontamination water for disposal.	Day 20
Perform verification sampling.	Day 30
Evaluate analytical data from verification sampling.	Day 50
Perform additional decontamination, if necessary.	Day 55
Perform additional verification sampling, if necessary.	Day 60
Evaluate additional analytical data.	Day 75
Perform final clean up and disposal (i.e., removal of decontaminated equipment and decontamination waste).	Day 140
Certify closure.	Day 175
Submit closure certification 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 and/or may not require the maximum time listed.

NMED = New Mexico Environment Department
SAP = sampling and analysis plan

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Deleted: This closure plan has been written for partial closure rather than final closure of the entire LANL facility. Partial closure will consist of closing one or more of the storage tank system components while leaving the other tank system components and/or regulated hazardous and mixed waste management units at LANL in service. The storage tank system at TA-55-4 is composed of 3 distinct components that share a common piping system and secondary containment. Closure of these components is defined as follows: ¶
¶
<#>Partial closure of the storage tank system will consist of the removal of mixed waste from the component to be closed, the removal of a given tank component (e.g., the 5 cementation pencil tanks) and the ancillary equipment (i.e., piping valves) connected directly to it, and decommissioning or decontamination of any surfaces, and/or equipment that have been contaminated by hazardous constituents. What remains in place will consist of the portions of the piping system which all of the tank components share and the secondary containment. The secondary containment will be decontaminated in the vicinity of the tank component(s) being removed.¶
¶
<#>Final closure of the storage tank system will include removal of all of the tank components and ancillary equipment, including the shared portions of the piping system. The facility headers for ventilation, the wet vacuum system, and the radioactive liquid waste collection system will be left in place for other uses.¶

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Further details regarding the schedule of closure activities will be included with the SAP as discussed in Section F.2.4 of this closure plan. In the event that closure is prevented from proceeding according to schedule, LANL will notify the Secretary of the NMED in accordance with extension request requirements in 20.4.1 NMAC §264.113(b) [6-14-00]. In addition, the demonstrations in 20.4.1 NMAC §264.113(a)(1) and (b)(1) [6-14-00], will be made in accordance with 20.4.1 NMAC §264.113(c) [6-14-00].

F.2.1.4 Amendment of the Closure Plan [20.4.1 NMAC §264.112(c)]

In accordance with 20.4.1 NMAC §264.112(c) [6-14-00], LANL will submit a written notification of or request for a permit modification to authorize a change in the approved closure plan whenever:

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

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¶

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

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

F.2.1.5 Closure Cost Estimate, Financial Assurance, and Liability Requirements [20.4.1 NMAC §264.140(c)]

In accordance with 20.4.1 NMAC §264.140(c) [6-14-00], LANL, as a federal facility, is exempt from the requirements of 20.4.1 NMAC, Subpart V, Part 264, Subpart H [6-14-00], to provide a cost estimate, financial assurance mechanisms, and liability insurance for closure actions.

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F.2.1.6 Closure Certification [20.4.1 NMAC §264.115]

Within 60 days after completion of closure activities for the storage tank system or final closure of the facility, LANL will submit to the Secretary of the NMED, via certified mail, a certification that the unit or facility has been closed in accordance with the approved closure plan. The certification will be signed by the appropriate DOE/NNSA and LANL officials and by an independent, registered professional engineer, in accordance with 20.4.1 NMAC §264.115 [6-14-00]. Documentation supporting the independent, registered engineer's certification will be furnished to the Secretary of the NMED upon request, as specified in 20.4.1 NMAC §264.115 [6-14-00]. A copy of the certification and supporting documentation will be maintained by both the DOE/NNSA LASO and SWRC.

F.2.1.7 Security

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Because of the ongoing nature of waste management operations at TA-55, site security and administrative controls at the TA-55 waste management units will be maintained by the DOE/NNSA or another authorized federal agency for as long as necessary to prohibit public access. The security fence at TA-55 will be maintained to ensure that public access into TA-55 is prevented.

F.2.1.8 Closure Report

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Upon completion of RCRA closure activities at the storage tank system , a closure report will be prepared and submitted to the Secretary of the NMED. The report will document the closure and contain, for example, the following:

- A copy of the certification described in Section F.2.1.6 of this closure plan.
- A general summary of closure activities.
- Any significant variance from the approved activities and the reason for the variance.
- A summary of any sampling data associated with the closure.
- The location of the file of supporting documentation (e.g., memos, logbooks, laboratory data).
- Storage or disposal location of regulated hazardous/mixed waste resulting from closure activities.
- A certification of accuracy of the report.

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- Sample identification.¶
- Sampling location.¶
- Datum reported.¶
- Detection limit for each datum.¶
- A measure of analytical precision (e.g., uncertainty, range, variance).¶
- Identification of analytical procedure.¶
- Identification of analytical laboratory.¶
¶
<#>A quality assurance (QA)/quality control (QC) statement on analytical data validation and decontamination verification.¶

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- Field logbooks.¶
- Laboratory sample analysis reports.¶
- QA/QC documentation.¶
- Chain-of-custody forms.¶
¶

F.2.1.9 Survey Plat and Post-Closure Requirements [20.4.1 NMAC §264.116 and 264.117 through 264.120]

LANL intends to remove hazardous/mixed waste and associated constituents from the storage tank system and decontaminate all surfaces and equipment to established cleanup levels or, if the cleanup levels cannot be achieved, to dispose of the contaminated surfaces and equipment. LANL will amend this closure plan, as necessary, to address changes to closure procedures or post-closure care

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pursuant to 20.4.1 NMAC §§264.117 through 264.120 [6-14-00]. A survey plat, post-closure certification, and post-closure notices will not be required for the permitted unit because all wastes will be removed, the storage tank system components will be disposed, and any surfaces and equipment will be decontaminated at closure, or closure equivalency will be demonstrated. Therefore, these requirements are not applicable.

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F.2.2 DESCRIPTION OF THE STORAGE TANK SYSTEM

TA-55 is located on a mesa between a branch of Mortandad Canyon to the north and Two Mile Canyon to the south. Mesa-top elevations at TA-55 range from approximately 7,100 to 7,300 feet above mean sea level. TA-55 began operating in 1978 and is the location of research and development activities including a plutonium processing facility. The storage tank system is composed of 3 tank components and consists of a total of 16 tanks located at TA-55-4, Room 401. Table F.2-2 identifies each tank component, its location, and the number of tanks.

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Table F.2-2
Storage Tank System at Technical Area 55[a]

Tank Component	Location	Number of Tanks
Evaporator Glovebox Tank	TA-55-4, Room 401	1
Cementation Unit Pencil Tanks	TA-55-4, Room 401	5
Pencil Tanks	TA-55-4, Room 401	10

a. The storage tank system consists of 3 components that store the same waste type and share a common piping network.

TA = technical area

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LANL does not currently intend to reduce the design capacities of the storage tank system at TA-55 during the active life of the unit. Estimated annual quantities for the storage tank system at TA-55 are provided in the most recent version of the "Los Alamos National Laboratory General Part A Permit Application," hereinafter referred to as the LANL General Part A.

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F.2.2.1 Estimate of Maximum Waste in Storage

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The storage tank system has a maximum storage capacity of 1,020 liters or approximately 266 gallons. Table F.2-3 identifies each tank component, the number of tanks, and capacity of each tank.

Table F.2-3
Storage Tank System Component Capacities

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Tank Component	Number of Tanks	Tank capacity (gallons)	Maximum Capacity (gallons)
Evaporator Glovebox Tank	1	71	71
Cementation Unit Pencil Tanks	5	13	65

Pencil Tanks	10	13	130

Table F.1-4 provides the date storage began at the storage tank system and estimates the maximum amount of hazardous and/or mixed waste in storage over the life of the unit.

Table F.2-4
Estimated Total Lifetime Storage Capacity at the Storage Tank System

Storage Tank System Component	Approximate Operation Dates	Estimated Lifetime Storage Capacity (gallons) [a]
Evaporator Glovebox Tank	1987-2050	107,352
Cementation Unit Pencil Tanks	1987-2050	98,280
Pencil Tanks [b]	2005-2050	140,400

a Calculated based upon turn over of the maximum storage capacity twice every month.
b Assumed that 2005 would be the date that storage would begin in this unit.

F.2.2.2 Description of Waste

The storage tank system is used to store evaporator bottoms solutions, a mixed transuranic waste, generated primarily from research and development activities and processing and recovery operations at TA-55 and at the Chemistry and Metallurgy Research Building at TA-3. These waste solutions generally consist of concentrated nitric acid saturated with salts and metals. Evaporator bottoms solution waste is classified as mixed waste. Mixed waste has both a hazardous component (as defined by 20.4.1 NMAC, Subpart II, Part 261) and a radioactive component. Information on the hazardous components of the wastes that can be stored in the TA-55 storage tank system is provided in the most recent version of the LANL General Part A. Additional information on waste generating activities at LANL is available in the waste analysis plan in Appendix B of the most recent version of the LANL General Part B.

The estimated annual quantities of waste in storage at the storage tank system are provided in the most recent version of the LANL General Part A.

F.2.3 CLOSURE PROCEDURES [20.4.1 NMAC §264.112(b)(4) and (5), and 264.114]

Closure will be conducted in accordance with the schedule presented in Table F.2-1, as amended by the SAP submitted at the time of closure. Closure will generally be conducted as follows:

- **Removal of Waste** - Pumping of any remaining solutions in storage at the time of closure.
- **Preliminary Closure** - Safety precautions and background contaminant levels for the storage tank system will be assessed. Inspection of the secondary containment surfaces by the engineer observing the closure to ensure adequate containment and conditions for closure.

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¶
The estimated annual quantities of waste in storage is provided in the "Los Alamos Nation Laboratory General Part A Permit Application," Revision 1.0 (LANL, 1998a) or most recent version.¶
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- **Decontamination** – Removal of potential hazardous waste constituents from equipment used during waste management activities; and all surfaces, walls, and secondary containment features (e.g., surfaces, sumps, berms, and/or recessed drains). Removal can include dismantling, sweeping, vacuuming, moping, and/or wiping as appropriate at the time of closure and based upon the contaminant levels determined by the operating record of the unit.
- **Verification** – Sampling to verify that residual hazardous waste constituents have been decontaminated to appropriate levels. Sample media can include swipes, solutions, and/or solid samples as appropriate and will be determined at the time of closure based upon the operating record of the unit.
- **Closure Certification** – Certification by a professional engineer that the procedures and requirements provided in this closure plan and the SAP were followed.

The following sections provide additional information for the closure procedures described above. The SAP provided at the time of closure will provide detailed information regarding the preliminary closure procedures, decontamination methods, and verifications procedures as applicable at the time of closure.

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F.2.3.1 Removal of Waste

Prior to the initiation of closure activities, any waste remaining in the storage tank system (or portion thereof) will be discharged for storage in an appropriate container or treatment in the cementation unit according to current waste-specific standard operating procedures.

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F.2.3.2 Preliminary Closure Procedures

F.2.3.2.1 Safety Precautions

Job hazards associated with closure activities will be identified, controls developed, and workers briefed before closure activities are conducted, in accordance with LANL safety procedures. Personnel involved in closure activities will wear appropriate personal protective equipment (PPE), specified by the Health Physics Group and the Industrial Hygiene and Safety Group, and will follow good hygiene practices to protect themselves from exposure to mixed waste. The level of PPE that will be required will depend upon the physical hazards present and the levels of contamination that are detected, if any. All workers involved in closure activities will be required to have appropriate training (as identified in Attachment D of this permit application and Appendix D in the most recent version of the LANL General Part B. Contaminated PPE will either be decontaminated or managed in compliance with appropriate waste management regulations.

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Deleted: All workers involved in closure activities will be required to have appropriate training (as specified in Attachment D of this application and Appendix D of the "Los Alamos National Laboratory General Part B Permit Application," Revision 1.0 (LANL, 1998b or most recent version). Minimum PPE requirements will consist of coveralls, steel-toed shoes, and safety glasses or face shields. If an overhead danger is present, hard hats will be worn. All workers involved in closure activities will be required to have appropriate training and medical monitoring. Contaminated PPE will either be decontaminated or managed in compliance with appropriate waste management regulations.¶

F.2.3.2.2 Background Determination

Prior to the commencement of decontamination, the operating record will be evaluated to determine the constituents of potential concern (COPCs) during closure. In addition, background samples and/or

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concentrations derived from LANL studies developed under the LANL corrective action or other programs can be used to determine COPC background/baseline levels applicable at the time of closure. The COPCs, appropriate background levels, and/or necessary sample collection techniques will be determined at the time of closure and included in the SAP at the time of closure, as discussed in Section F.1.4 of this closure plan.

F.2.3.2.3 Structural Assessment

Prior to beginning decontamination activities, the secondary containment associated with the storage tank system will be inspected for any cracks or conditions that would potentially lead to the loss of decontamination wash water containment. Preventative maintenance inspections are conducted routinely (i.e., weekly) at each storage tank location. If any defects, deterioration, damage, or hazards affecting containment are discovered during inspection, appropriate remedial actions (including repairs, maintenance, or replacement) will be completed before decontamination activities begin. If a crack or gap is present, a swipe sample or a representative sample of the media will be taken (e.g., concrete) to determine the presence of contamination. The sample will be analyzed for the COPCs identified based upon the operating history of the unit, as discussed in Section F.2.3.2.2. If contamination is detected, the surface flaw will be decontaminated prior to repairing the crack/gap. Complete or partial removal (e.g., cold milling) of the material may be performed until contamination is no longer detected. If partial removal is successful in eliminating the contamination, it will be assumed that the remaining material, including the underlying soil, is clean.

F.2.3.3 Decontamination Procedures

To the extent possible, all contaminated surfaces and equipment (if present) will be decontaminated. Surfaces, items, materials, and equipment that cannot be decontaminated will be containerized and managed in compliance with appropriate waste management regulations.

An appropriate surfactant/solvent to be used in wash water solutions will be determined based upon the COPCs identified in the SAP. Alconox®, a surfactant, will be used to decontaminate the cementation unit. Specialized solvents will be used for more focused decontamination/removal purposes, as appropriate.

F.2.3.3.1 Storage Tank System Components

Storage tank system components will be decommissioned at closure. Due to the design of the storage tank components, decontamination is not possible. The decommissioned storage tank system components will be containerized and managed in compliance with appropriate regulations.

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F.2.3.3.2 Ancillary Equipment

The storage tank system ancillary equipment (e.g., piping, pumps) will either be decontaminated, decommissioned, or dismantled, depending on the extent of contamination and anticipated disposition or use after closure. Closure of the will include removal of all of the tank components and ancillary equipment, including the shared portions of the piping system. The facility headers for ventilation, the wet vacuum system, and the radioactive liquid waste collection system will be left in place for other uses. If any of the ancillary equipment is to be decommissioned or dismantled, the resulting components will be containerized and managed in compliance with appropriate regulations. If the ancillary equipment is to be decontaminated, the following procedures will be used.

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The interior surfaces of the ancillary equipment will be flushed with a decontamination solution to be specified in the SAP at the time of closure. The exterior surfaces will be decontaminated using mops, cloths, and/or other absorbent materials to remove any potential hazardous constituents. These materials will be rinsed in the decontamination solution (e.g., Alconox and water) and used to wipe down the exterior surfaces of the component being closed. Used wash water will be collected, removed, and transferred to an appropriate container for storage pending the results of analysis and disposal.

Verification of decontamination will be conducted as indicated in Section F.2.3.4. If the analysis from the verification indicates that mixed waste constituents are present, decontamination wash cycles and analyses will continue until the ancillary equipment has been decontaminated or the decision is made to manage it appropriately as contaminated waste. Upon determination that it is contaminated waste, the material/structure/surface may be removed, transported to, and stored at an appropriate container storage unit (CSU) to facilitate the closure process.

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F.2.3.3.3 Areas Adjacent to the Storage Tank System

Random swipe samples from the areas adjacent to the storage tank system (e.g., walls, floors, sumps, and drains) will be collected and analyzed for the COPCs expected to be present, based on the operating record. If decontamination measures are deemed necessary based on the analytical results, the following procedures will be used.

Decontamination will be conducted using mops, cloths, and/or other absorbent materials to remove any potential mixed waste constituents. These materials will be submerged in a wash water solution (e.g., Alconox, water) and used to wipe down the surfaces associated with the storage tank system.

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After decontamination of the surfaces, the containment system (e.g., recessed areas, sumps, berms) will be wiped down. Used wash water will be collected, removed, and transferred to an appropriate container for storage pending the results of analysis and disposal.

Verification of decontamination will be conducted as indicated in Section F.2.3.4. If the analysis from the verification indicates that mixed waste constituents are present, decontamination wash cycles and analyses will continue until the structure and surfaces have been decontaminated or the decision is made to manage it appropriately as contaminated waste. Upon determination that it is contaminated waste, the material/structure/surface may be removed, transported to, and stored at an appropriate CSU to facilitate the closure process.

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¶
When decontamination is complete, verification will be conducted as indicated in Section F.2.3.4. If the analysis from the verification solution indicates that hazardous constituents are present, wash cycles and analyses will continue until the structure, surface, or equipment (if present) has been decontaminated or the decision is made to manage it appropriately as contaminated waste. Upon determination that it is contaminated waste, the structure, surface, or equipment may be removed, transported to, and stored at other hazardous waste management locations to facilitate the closure process.¶

F.2.3.3.4 Equipment Used During Closure

Reusable protective clothing, tools, and equipment used during decontamination activities at the storage tank system will be cleaned with a wash water solution. If reusable sampling equipment is used, sampling equipment rinsate blanks will be collected and analyzed in accordance with the quality assurance (QA)/quality control (QC) procedures described in the closure SAP. Reusable decontamination equipment, including protective clothing and tools used during closure activities will be scraped as necessary to remove any residue and cleaned with a wash water solution (the closure SAP will include a discussion of wash water solutions). Residue, disposable equipment and reusable equipment that cannot be decontaminated will be containerized and managed as waste in accordance with LANL waste management procedures, depending on the regulated constituents present.

F.2.3.4 Verification of Decontamination

Verification of decontamination will be conducted using sampling and analysis to demonstrate that mixed waste residues are not present on the equipment and/or surfaces associated with the storage tank system (as applicable). Sample media can include wash water solutions, swipes, and/or solid media samples (e.g., soil, concrete) as determined in the SAP at the time of closure and the operating record of the unit. The sampling methodology will be based on factors such as COPCs and the materials of construction. All sampling conducted during closure will be done in accordance with the QA/QC procedures defined by "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (U.S. Environmental Protection Agency [EPA], 1986). The SAP will establish the minimum number of verification samples to be collected based on the total surface area associated with the unit. Verification sampling will use a biased random approach for the determination of sample locations for the equipment, structures, and/or surfaces and will include known or likely areas of contamination (e.g., low areas, sumps, and known spill locations) as determined by the operating record of the unit at

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the time of closure.

Decontamination will be verified if the analytical data from the collected samples meets at least one of the decontamination criteria listed in Section F.2.3.5 of this closure plan. If the data cannot meet at least one of the criteria, additional sampling can be performed to establish the boundaries of the contamination. Decontamination, as discussed in Section F.2.3.3, will be repeated within those boundaries, using portable berms or other appropriate materials to limit the potential for runoff from the affected area. An additional round of verification sampling will be performed for all of the areas previously determined to be contaminated. After each decontamination/verification sequence, a decision will be made to repeat or remove the contaminated materials and dispose of them properly.

F.2.3.5 Decontamination Criteria

Successful decontamination will consist of sampling as specified in the component-specific SAP and meet one of the following criteria:

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- No detectable hazardous waste or hazardous waste constituents from storage tank system activities are identified in the verification sample.

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- Detectable hazardous waste or hazardous waste constituents from storage tank system activities in the verification sample are removed to statistically significant levels based on concentrations in the background/baseline samples.

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- Detectable hazardous waste or hazardous waste constituents from storage tank system activities in the verification sample are at or below levels agreed upon with the NMED.

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- Detectable hazardous waste or hazardous waste constituent concentrations from storage tank system activities do not significantly decrease after several wash downs. In such an event, hazardous constituents that pose an acceptable risk will be allowed to remain, as mutually agreed upon with the NMED.

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

F.2.4 SAMPLING AND ANALYTICAL PLAN [20.4.1 NMAC §264.112(b)(4)]

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Sampling and analysis will be performed using standard approved methods (e.g., *SW-846*, American Society for Technology and Materials), as appropriate, for making closure decontamination verification determinations. LANL will submit a SAP to the NMED at the time of closure notification for review and

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approval. The SAP will provide a detailed description of the storage tank system and propose a closure methodology that assures the closure performance standards in Section F.2.1.1 are met.

The SAP will include the following information:

- A detailed discussion of site characteristics.
- Operational history, including descriptions of known spills, releases, and/or evidence of potential problems (e.g., visual stains, dead vegetation, solid waste management units).
- Chemical properties of the waste stored.
- List of COPCs.
- A hazard control plan, including a review of chemical hazards present at the site, control and monitoring methods and procedures, and required PPE.
- Determination of wash water solution composition, if necessary.
- Detailed procedures describing decontamination methods for equipment, structures, and media.
- Discussion of background levels determined through sampling or use of published data and their relevance to the specific storage tank system.
- Methods for sampling and analysis of contaminated media.
- Removal procedures for contaminated media, if necessary.
- Sampling methods for decontamination media and hazardous waste determination. The discussion should include the rationale for using wash water samples, swipe samples, soil samples, and/or other sampling methodology.
- Sampling methods for decontamination verification procedures. The discussion should include the statistical or judgmental basis for determining the number of verification samples needed and the constituents to be analyzed.
- Sampling equipment decontamination and disposition procedures.
- Sample handling and documentation procedures.
- Analytical methods (including detection limits) and the rationale for their determination.
- Disposition of removed waste, decontamination media, or contaminated soils. This discussion should include an identification of proposed on- or off-site hazardous waste management facilities that may be used for final disposition and the types of wastes anticipated to be shipped.
- Decontamination criteria.
- Statistical basis for verification of decontamination, if applicable. The discussion should include information on determination of statistical increases in analytical parameters and numerical values for significant increases.
- Risk assessment procedures to be used, if necessary.
- Field and laboratory QA/QC procedures.

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- Schedule of closure activities, including decontamination, sampling, analysis, potential removal of soils, and closure certification submittal.
- Identification of contact person or office.

F.2.5 REFERENCES

EPA, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *EPA-SW-846*, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

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LANL 1998b and all approved revisions, "Los Alamos National Laboratory General Part B Permit Application," Revision 1.0, Los Alamos National Laboratory, Los Alamos, New Mexico.¶

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F.2.1 GENERAL CLOSURE INFORMATION F.2-2

F.2.1.1 Closure Performance Standard F.2-2

F.2.1.2 Partial and Final Closure Activities F.2-2

F.2.1.3 General Closure Schedule F.2-3

F.2.1.4 Amendment of the Closure Plan F.2-4

F.2.1.5 Closure Cost Estimate, Financial Assurance, and Liability Requirements F.2-4

Page i: [2] Deleted Stephanie Arellano 8/26/2003 3:48:00 PM

F.2.1.6 Closure Certification F.2-4

F.2.1.7 Security F.2-

F.2.1.8 Closure Report F.2-5

F.2.1.9 Survey Plat and Post-Closure Requirements F.2-5

F.2.2 DESCRIPTION OF THE STORAGE TANK SYSTEM F.2-6

F.2.2.1 Estimate of Maximum Waste in

Page i: [3] Deleted Stephanie Arellano 8/26/2003 3:48:00 PM

Storage F.2-6

F.2.2.2 Description of Waste F.2-7

F.2.3 CLOSURE PROCEDURES F.2-7

Page i: [4] Deleted Stephanie Arellano 8/26/2003 3:48:00 PM

F.2.3.1 Removal of Waste F.2-8

F.2.3.2 Preliminary Closure Procedures F.2-8

F.2.3.3 Decontamination Procedures F.2-9

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F.2.3.3.4 Equipment Used During Closure

Page i: [6] Deleted Stephanie Arellano 8/26/2003 3:48:00 PM

F.2.3.4 Verification of Decontamination F.2-11

F.2.3.5 Decontamination Criteria F.2-12

F.2.4 SAMPLING AND ANALYTICAL PLAN F.2-12

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F.2.5 REFERENCES F.2-14

Page i: [8] Deleted Stephanie Arellano 8/26/2003 3:48:00 PM

F.2.1 GENERAL CLOSURE INFORMATION F.2-2

F.2.1.1 Closure Performance Standard F.2-2

F.2.1.2 Partial and Final Closure Activities F.2-2
F.2.1.3 Closure Schedule F.2-3
F.2.1.4 Amendment of the Closure Plan F.2-4
F.2.1.5 Closure Cost Estimate, Financial Assurance, and Liability Requirements F.2-4
F.2.1.6 Closure Certification F.2-4
F.2.1.7 Security F.2-
F.2.1.8 Closure Report F.2-5
F.2.1.9 Survey Plat and Post-Closure Requirements F.2-6
F.2.2 DESCRIPTION OF THE STORAGE TANK SYSTEM F.2-6
F.2.2.1 Estimate of Maximum Waste in Inventory F.2-6
F.2.2.2 Description of Waste F.2-7
F.2.3 CLOSURE PROCEDURES F.2-7
F.2.3.1 Removal of Waste F.2-7
F.2.3.2 Preliminary Closure Procedures F.2-7
F.2.3.3 Decontamination Procedures F.2-9
F.2.3.4 Verification of Decontamination F.2-11
F.2.4 SAMPLING AND ANALYTICAL PROCEDURES F.2-11
F.2.5 REFERENCES F.2-12

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Prepare closure report.	Day 150

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Evaporator Glovebox Tank	1985 -2050	55,380
Cementation Unit Pencil Tanks	1985-2050	50,700
Pencil Tanks [b]	2005-2050	70,200

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If a crack or gap is present, a swipe sample or a representative sample of the media will be taken (e.g., asphalt or concrete) to determine the presence of contamination. The sample will be analyzed for the hazardous contaminants of potential concern (COPC) determined through review of the chemical properties of the waste stored during the operating history of the storage tank system and through an evaluation of the history of any spills that may have occurred at the storage tank system. If contamination is detected, the surface flaw will be decontaminated prior to repairing the crack/gap. Complete or partial removal (e.g., cold milling) of the material may be performed until contamination is no longer detected. If partial removal is successful in eliminating the contamination, it will be assumed that the remaining material, including the underlying soil, is clean.

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To the extent possible, all contaminated surfaces and equipment (if present) will be decontaminated. Surfaces and equipment that cannot be decontaminated will be containerized and managed in compliance with applicable regulations. All sampling conducted during closure and decontamination will be done in accordance with QA/QC procedures defined by "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846,* [U.S. Environmental Protection Agency EPA], 1986) as discussed in Section F.2-4. Closure will be conducted in accordance with the schedule presented in Table F.2-1 as amended by the SAP submitted at the time of closure. Monitoring for contamination will occur throughout closure activities, as appropriate.

The first step in decontamination will be to evaluate the operating record of the storage tank system to be closed to determine the COPCs. That appropriate surfactant/solvent to be used in the wash water solution will be determined based upon the COPCs. Laboratory surfactants (e.g., Alconox®) will be used for the majority of decontamination COPC analytes at the storage tank system. Specialized solvents will be used for more focused decontamination/removal purposes, as applicable.

ATTACHMENT F.3

CLOSURE PLAN FOR THE TECHNICAL AREA 55 CEMENTATION UNIT

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TABLE OF CONTENTS

LIST OF TABLES ii
LIST OF FIGURES iii
LIST OF ABBREVIATIONS/ACRONYMS iv

CLOSURE PLAN FOR THE TECHNICAL AREA 55 CEMENTATION UNIT F.3-1
F.3.1 GENERAL CLOSURE INFORMATION F.3-2
F.3.1.1 Closure Performance Standard F.3-2
F.3.1.2 Partial and Final Closure Activities F.3-2
F.3.1.3 General Closure Schedule F.3-3
F.3.1.4 Amendment of the Closure Plan F.3-4
F.3.1.5 Closure Cost Estimate, Financial Assurance, and Liability Requirements F.3-4
F.3.1.6 Closure Certification F.3-4
F.3.1.7 Security F.3-5
F.3.1.8 Closure Report F.3-5
F.3.1.9 Survey Plat and Post-Closure Requirements F.3-6
F.3.2 DESCRIPTION OF THE CEMENTATION UNIT F.3-6
F.3.2.1 Estimate of Maximum Waste Treated F.3-6
F.3.2.2 Description of Stored Waste F.3-6
F.3.3 CLOSURE PROCEDURES F.3-7
F.3.3.1 Removal of Waste F.3-8
F.3.3.2 Preliminary Closure Procedures F.3-8
F.3.3.3 Decontamination Procedures F.3-9
F.3.3.4 Verification of Decontamination F.3-11
F.3.3.5 Decontamination Criteria F.3-12
F.3.4 SAMPLING AND ANALYTICAL PROCEDURES F.3-13
F.3.5 REFERENCES F.3-14

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F.3.1.1 . Closure Performance Standard . ¶
F.3.1.2 . Partial and Final Closure Activities . ¶
F.3.1.3 . General Closure Schedule . ¶
F.3.1.4 . Amendment of the Closure Plan . ¶
F.3.1.5 . Closure Cost Estimate, Financial Assurance, and Liability Requirements . ¶
F.3.1.6 . Closure Certification . ¶
F.3.1.7 . Security . ¶
F.3.1.8 . Closure Report . ¶
F.3.1.9 . Survey Plat and Post-Closure Requirements . 6¶
F.3.2 . DESCRIPTION OF THE CEMENTATION UNIT . ¶
F.3.2.1 . Estimate of Maximum Waste in Storage . ¶
F.3.2.2 . Description of Stored Waste . ¶
F.3.3 . CLOSURE PROCEDURES . ¶
F.3.3.1 . Removal of Waste . ¶
F.3.3.2 . Preliminary Closure Procedures . 8¶
F.3.3.3 . Decontamination Procedures . ¶
F.3.3.3.4 . Equipment Used During Closure . ¶
F.3.3.4 . Verification of Decontamination . ¶
F.3.3.5 . Decontamination Criteria . ¶
F.3.4 . SAMPLING AND ANALYTICAL PROCEDURES [20.4.1 NMAC §264.112(b)(4)] . 13¶
F.3.5 . REFERENCES . . ¶

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F.3.1.1 . Closure Performance Standard . F.3-2¶
F.3.1.2 . Partial and Final Closure Activities . F.3-2¶
F.3.1.3 . Closure Schedule . F.3-32¶
F.3.1.4 . Amendment of the Closure Plan . F.3-43¶
F.3.1.5 . Closure Cost Estimate, Financial Assurance, and Liability Requirements . F.3-4¶
F.3.1.6 . Closure Certification . F.3-4¶
F.3.1.7 . Security . F.3-54¶
F.3.1.8 . Closure Report . F.3-5¶
F.3.1.9 . Survey Plat and Post-Closure Requirements . F.3-6¶
F.3.2 . DESCRIPTION OF THE CEMENTATION UNIT . F.3-6¶
F.3.2.1 . Estimate of Maximum Waste in Storage . F.3-6¶
F.3.2.2 . Description of Stored Waste . F.3-6¶
F.3.3 . CLOSURE PROCEDURES . F.3-7¶
F.3.3.1 . Removal of Waste . F. ... [1]

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LIST OF TABLES

TABLE NO.	TITLE
F.3-1	Closure Schedule

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LIST OF FIGURES

FIGURE NO.	TITLE
F.3-1	Technical Area (TA) 55 Cementation Unit Location

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LIST OF ABBREVIATIONS/ACRONYMS

20.4.1 NMAC	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
COPC	constituents of potential concern
CSU	container storage unit
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
LANL	Los Alamos National Laboratory
LASO	Los Alamos Site Office
NMED	New Mexico Environment Department
NMT	Nuclear Materials Technology
NNSA	National Nuclear Security Administration
PPE	personal protective equipment
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
SAP	sampling and analysis plan
SWRC	Solid Waste Regulatory Compliance
TA	technical area

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ATTACHMENT F.3
CLOSURE PLAN FOR THE TECHNICAL AREA 55 CEMENTATION UNIT

The information provided in this closure plan is submitted to address the applicable closure requirements specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC) §270.14(b)(13), and 20.4.1 NMAC, Subpart V, Part 264, Subparts G and X, revised June 14, 2000. This closure plan describes the activities necessary to perform Resource Conservation and Recovery Act (RCRA) closure for the cementation unit at Los Alamos National Laboratory (LANL) Technical Area (TA) 55. Closure activities will include removal of any remaining waste, decontamination or removal of contaminated equipment/structures, and verification that all residues have been removed. Closure will minimize the need for further maintenance, preclude the release of hazardous constituents to environmental medial, and be protective of human health in accordance with the closure performance standards specified in 20.4.1 NMAC §264.111 [6-14-00].

The cementation unit is located at TA-55-4, Room 401. It consists of a pH column, vacuum trap, two motor-driven mixers, four impellers, and piping inside of a glove box. Figure F.3-1 shows the location of the cementation unit. This closure plan will be used to provide guidance and permit conditions for the partial closure of the cementation unit. Closure will occur separately from the other waste management units at TA-55 and over the active life of the TA-55 facility, which is not anticipated to end before 2050.

This closure plan describes general closure and establishes the procedure of submitting a separate detailed sampling and analysis plan (SAP) to the New Mexico Environment Department (NMED) for approval at the time of closure. The SAP will alleviate the need for future closure plan and permit modification until the actual closure activities for the cementation unit are scheduled. The SAP will provide the required level of detail to assure that closure performance standards are met, consistent with the appropriate decontamination and verification requirements existing at the time of closure.

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This plan is organized as follows:

- Section F.3.1 - General Closure Information.
- Section F.3.2 - Description of the Cementation Unit.
- Section F.3.3 - Closure Procedures.
- Section F.3.4 - Sampling and Analysis Plan.
- Section F.3.5 – References.

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Until closure is complete and has been certified in accordance with 20.4.1 NMAC §264.115 [6-14-00], as discussed in Section F.3.1.6, a copy of the approved closure plan and any approved revisions will be on file at with Risk Reduction and Environmental Stewardship Division Solid Waste Regulatory Compliance Group (SWRC) and at the U.S. Department of Energy (DOE)/National Nuclear Security Administration (NNSA) Los Alamos Site Office (LASO).

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F.3.1 GENERAL CLOSURE INFORMATION

F.3.1.1 Closure Performance Standard [20.4.1 NMAC §264.111]

The cementation unit addressed in this closure plan 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 closure and post closure requirements of 20.4.1 NMAC, Subpart V, Part 264, Subparts G and X [6-14-00].

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

F.3.1.2 Partial and Final Closure Activities [20.4.1 NMAC §§264.112 (b)(2) and 264.112(d)]

This closure plan has been written for partial closure rather than final closure of the entire LANL facility. Partial RCRA closure is the closure of a hazardous waste management unit at a facility that contains other active hazardous waste management units. Partial closure at TA-55 can consist of closing the cementation unit, while leaving the other units in operation. Partial closure (hereinafter referred to as closure) will be deemed complete when the waste has been removed from the cementation unit; all related secondary containment surfaces and equipment have been decontaminated, if necessary, or otherwise properly disposed; closure has been verified; and the closure certification has been submitted to and approved by the NMED.

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Final RCRA closure of the LANL hazardous waste management facility will occur when all of LANL's hazardous/mixed waste management units are closed. Final closure will consist of assembling documentation on the closure status of each waste management unit, including all pervious closures

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as well as land-based units where closures have been or are being addressed via alternative closure requirements. Final closure will be deemed complete when the closure certification has been submitted to the NMED, and the NMED has approved the final closure.

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F.3.1.3 General Closure Schedule [20.4.1 NMAC §§264.112(b)(6), 264.112(e), and 264.113]

Written notification will be provided to the NMED 45 days before the start of closure activities for the TA-55 cementation unit. However, pursuant to 20.4.1 NMAC §264.112(e) [6-14-00], removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Closure activities will begin according to the requirements of 20.4.1 NMAC §264.112(d)(2) [6-14-00]. Treatment, removal, or disposal of hazardous wastes will begin in accordance with the approved closure plan, as required by 20.4.1 NMAC §264.113(a) [6-14-00], within 90 days after final receipt of waste at the cementation unit. In the event that closure activities cannot begin within 90 days, LANL will notify the Secretary of the NMED in accordance with the extension requirements in 20.4.1 NMAC §264.113(a) [6-14-00]. Closure activities and reporting requirements will then be completed within 180 days of the receipt of the final volume of waste at the cementation unit. Closure will be conducted in accordance with the schedule presented in Table F.3-1 of this closure plan.

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Table F.3-1
Closure Schedule

Activity	Maximum Time Required [a]
Submit SAP.	-90 Days
Notify the NMED of intent to close.	-45 Days
Final receipt of waste.	Day 0
Remove waste.	Day 5
Decontaminate surfaces and equipment.	Day 20
Sample excess used decontamination water for disposal.	Day 20
Perform verification sampling.	Day 30
Evaluate analytical data from verification sampling.	Day 50
Perform additional decontamination, if necessary.	Day 55
Perform additional verification sampling, if necessary.	Day 60
Evaluate additional analytical data.	Day 75
Perform final clean up and disposal (i.e., removal of decontaminated equipment and decontamination waste).	Day 140
Certify closure.	Day 175
Submit closure certification 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 and/or may not require the maximum time listed.

NMED = New Mexico Environment Department
SAP = sampling and analysis plan

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Further details regarding the schedule of closure activities will be included with the SAP as discussed in Section F.3.4 of this closure plan. In the event that closure is prevented from proceeding according

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to schedule, LANL will notify the Secretary of the NMED in accordance with extension request requirements in 20.4.1 NMAC §264.113(b) [6-14-00]. In addition, the demonstrations in 20.4.1 NMAC §264.113(a)(1) and (b)(1) [6-14-00], will be made in accordance with 20.4.1 NMAC §264.113(c) [6-14-00].

F.3.1.4 Amendment of the Closure Plan [20.4.1 NMAC §264.112(c)]

In accordance with 20.4.1 NMAC §264.112(c) [6-14-00], LANL will submit a written notification of or request for a permit modification to authorize a change in the approved closure plan whenever:

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

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

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

F.3.1.5 Closure Cost Estimate, Financial Assurance, and Liability Requirements [20.4.1 NMAC §264.140(c)]

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In accordance with 20.4.1 NMAC §264.140(c) [6-14-00], LANL, as a federal facility, is exempt from the requirements of 20.4.1 NMAC, Subpart V, Part 264, Subpart H [6-14-00], to provide a cost estimate, financial assurance mechanisms, and liability insurance for closure actions.

F.3.1.6 Closure Certification [20.4.1 NMAC §264.115]

Within 60 days after completion of closure activities for the cementation unit or final closure of the facility, LANL will submit to the Secretary of the NMED, via certified mail, a certification that the unit or facility has been closed in accordance with the approved closure plan. The certification will be signed by the appropriate DOE/NNSA and LANL officials and by an independent, registered professional

engineer, in accordance with 20.4.1 NMAC §264.115 [6-14-00]. Documentation supporting the independent, registered engineer's certification will be furnished to the Secretary of the NMED upon request, as specified in 20.4.1 NMAC §264.115 [6-14-00]. A copy of the certification and supporting documentation will be maintained by both the DOE/NNSA LASO and SWRC.

F.3.1.7 Security

Because of the ongoing nature of waste management operations at TA-55, site security and administrative controls at the TA-55 waste management units will be maintained by the DOE/NNSA or another authorized federal agency for as long as necessary to prohibit public access. The security fence at TA-55 will be maintained to ensure that public access into TA-55 is prevented.

F.3.1.8 Closure Report

Upon completion of RCRA closure activities at the cementation unit, a closure report will be prepared and provided to the Secretary of the NMED. The report will document the closure and contain, for example, the following:

- A copy of the certification described in Section F.3.1.6 of this closure plan.
- A general summary of closure activities.
- Any variance from the approved activities and the reason for the variance.
- A summary of any sampling data associated with the closure.
- The location of the file of supporting documentation (e.g., memos, logbooks, laboratory data).
- Storage or disposal location of regulated hazardous/mixed waste resulting from closure activities.
- A certification of accuracy of the report.

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- Sample identification¶
- Sampling location¶
- Datum reported¶
- Detection limit for each datum¶
- A measure of analytical precision (e.g., uncertainty, range, variance)¶
- Identification of analytical procedure¶
- Identification of analytical laboratory¶

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A quality assurance (QA)/quality control (QC) statement on analytical data validation and decontamination verification.¶
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- Laboratory sample analysis reports¶
- QA/QC documentation¶
- Chain-of-custody forms¶

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F.3.1.9 Survey Plat and Post-Closure Requirements [20.4.1 NMAC §§264.116 and 264.117 through 264.120]

LANL intends to remove the mixed waste and associated constituents from the cementation unit and decontaminate all surfaces and equipment to established cleanup levels or, if the cleanup levels cannot be achieved, to dispose of the contaminated surfaces and equipment. If decontamination to established cleanup levels is not achievable, LANL may propose an alternate demonstration of decontamination, as circumstances indicate. A survey plat, post-closure certification, and post-closure notices will not be required because all wastes will be removed and any surfaces and equipment will be decontaminated or disposed of at closure. Therefore, these requirements are not applicable for clean-closed units.

F.3.2 DESCRIPTION OF THE CEMENTATION UNIT

TA-55 is located on a mesa between a branch of Mortandad Canyon to the north and Two Mile Canyon to the south. Mesa-top elevations at TA-55 range from approximately 7,100 to 7,300 feet above mean sea level. TA-55 began operating in 1978 and is the location of research and development activities including a plutonium processing facility. The cementation unit is located at TA-55 in glovebox GB-454 along the west wall of TA-55-4, Room 401. The unit is used to stabilize mixed waste solutions into a cement matrix. It consists of a pH column, vacuum trap, two motor-driven mixers, four impellers, piping and glovebox.

LANL does not currently intend to reduce the design capacity of the cementation unit at TA-55 during the active life of the unit. Estimated annual quantities for the cementation unit at TA-55 are provided in the most recent version of the "Los Alamos National Laboratory General Part A Permit Application," hereinafter referred to as the LANL General Part A.

F.3.2.1 Estimate of Maximum Waste Treated

The maximum total volume of mixed waste that may be in inventory in the cementation unit at any time is estimated at 150 gallons. Treatment at TA-55 using the cementation unit commenced in 1987 and is projected to continue until the facility is decommissioned in 2050. The estimated lifetime treatment capacity for the unit is approximately 226,800 gallons.

F.3.2.2 Description of Stored Waste

The cementation unit is used to treat liquid and solid mixed waste generated primarily from research and development activities and processing and recovery operations at TA-55 and at the Chemistry and Metallurgy Research Building at TA-3. The liquid wastes consist of evaporator bottoms solutions and laboratory solutions that exhibit the hazardous characteristics of corrosivity and toxicity (for metals) as

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defined in 20.4.1 NMAC §261.22 and 261.24 [6-14-00], respectively. The solid process wastes consist of process residue from the evaporator, process leached solids, and filter cake. These waste streams exhibit the hazardous characteristics of toxicity (for metals) and corrosivity and are classified as mixed waste. Mixed waste has both a hazardous component (as defined by 20.4.1 NMAC, Subpart II, Part 261) and a radioactive component. Information on the hazardous components of the wastes that can be treated by cementation unit is provided in the most recent version of the LANL General Part A. Additional information on waste generating activities at LANL is available in the waste analysis plan in Appendix B of the most recent version of the LANL General Part B.

The estimated annual quantities of waste treated in the cementation unit are provided in the most recent version of the LANL General Part A.

F.3.3 CLOSURE PROCEDURES [20.4.1 NMAC §264.112(b)(4) and (5), and 264.114]

Closure will be conducted in accordance with the schedule presented in Table F.2-1, as amended by the SAP submitted at the time of closure. Closure will generally be conducted as follows:

- **Removal of Waste** – Treatment of any remaining solutions in the unit at the time of closure.
- **Preliminary Closure** - Safety precautions and background contaminant levels for the cementation unit will be assessed. Inspection of the secondary containment surfaces by the engineer observing the closure to ensure adequate containment and conditions for closure.
- **Decontamination** – Removal of potential hazardous waste constituents from equipment used during waste management activities; and all surfaces, walls, and secondary containment features (e.g., surfaces, sumps, berms, and/or recessed drains). Removal can include dismantling, sweeping, vacuuming, moping, and/or wiping as appropriate at the time of closure and based upon the contaminant levels determined by the operating record of the unit.
- **Verification** – Sampling to verify that residual hazardous waste constituents have been decontaminated to appropriate levels. Sample media can include swipes, solutions, and/or solid samples as appropriate and will be determined at the time of closure based upon the operating record of the unit.
- **Closure Certification** – Certification by a professional engineer that the procedures and requirements provided in this closure plan and the SAP were followed.

The following sections provide additional information for the closure procedures described above. The SAP provided at the time of closure will provide detailed information regarding the preliminary closure procedures, decontamination methods, and verifications procedures as applicable at the time of closure.

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The estimated annual quantities of waste in storage is provided in the "Los Alamos National Laboratory General Part A Permit Application," Revision 1.0 (LANL, 1998a) or most recent version.¶

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F.3.3.1 Removal of Waste

Prior to the initiation of closure activities, any waste remaining in the cementation unit will be removed or treated according to current waste-specific standard operating procedures. Once the waste has been removed or treated, the drum(s) of solidified waste will be removed and transported to an approved on-site facility or a permitted off-site treatment, storage, and disposal facility.

F.3.3.2 Preliminary Closure Procedures

F.3.3.2.1 Safety Precautions

Job hazards associated with closure activities will be identified, controls developed, and workers briefed before closure activities are conducted, in accordance with LANL safety procedures. Personnel involved in closure activities will wear appropriate personal protective equipment (PPE), specified by the Health Physics Group and the Industrial Hygiene and Safety Group, and will follow good hygiene practices to protect themselves from exposure to mixed waste. The level of PPE that will be required will depend upon the physical hazards present and the levels of contamination that are detected, if any. All workers involved in closure activities will be required to have appropriate training (as identified in Attachment D of this permit application and Appendix D in the most recent version of the LANL General Part B. Contaminated PPE will either be decontaminated or managed in compliance with appropriate waste management regulations.

Deleted: Job hazards associated with closure activities will be identified, controls developed, and workers briefed before closure activities are conducted, in accordance with LANL safety procedures. Personnel involved in closure activities will wear appropriate personal protective equipment (PPE), specified by the Health Physics Group and the Industrial Hygiene and Safety Group, and will follow good hygiene practices to protect themselves from exposure to hazardous and/or mixed waste. The level of PPE that will be required will depend upon the physical hazards present and the levels of contamination that are detected, if any. All workers involved in closure activities will be required to have appropriate training as specified in (Attachment D of this application and Appendix D of the "Los Alamos National Laboratory General Part B Permit Application," Revision 1.0 [LANL, 1998b] or most recent version). Minimum PPE requirements will consist of coveralls, steel-toed shoes, and safety glasses or face shields. If an overhead danger is present, hard hats will be worn. All workers involved in closure activities will be required to have appropriate training and medical monitoring. Contaminated PPE will either be decontaminated or managed in compliance with appropriate waste management regulations.¶

F.3.3.2.2 Background Determination

Prior to the commencement of decontamination, the operating record will be evaluated to determine the constituents of potential concern (COPCs) during closure. In addition, background samples and/or concentrations derived from LANL studies developed under the LANL corrective action or other programs can be used to determine COPC background/baseline levels applicable at the time of closure. The COPCs, appropriate background levels, and/or necessary sample collection techniques will be determined at the time of closure and included in the SAP at the time of closure, as discussed in Section F.3.4 of this closure plan.

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Deleted: Before any decontamination activity begins, background levels for potential hazardous waste constituents will be determined. These levels will be determined by wash water, swipe, soil, or other applicable methods of sampling available at the time of closure. Appropriate background concentrations derived from LANL studies developed under the LANL corrective action or other programs will be used to determine hazardous constituent background/baseline levels. Details of appropriate background levels and/or necessary samples and collection techniques will be included in the SAP at the time of closure, as discussed in Section F.3.45 of this closure plan.¶

F.3.3.2.3 Structural Assessment

Prior to beginning decontamination activities, the glovebox and secondary containment associated with the cementation unit will be inspected for any cracks or conditions that would potentially lead to the loss of decontamination-liquid containment. Preventative maintenance inspections are conducted routinely (i.e., weekly). If any defects, deterioration, damage, or hazards affecting containment are discovered during inspection, appropriate remedial actions (including repairs, maintenance, or replacement) will be completed before decontamination activities begin. If a crack or gap is present, a

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swipe sample or a representative sample of the media will be taken (e.g., concrete) to determine the presence of contamination. The sample will be analyzed for the COPCs identified based upon the operating history of the unit, as discussed in Section F.3.3.2.2. If contamination is detected, the surface flaw will be decontaminated prior to repairing the crack/gap. Complete or partial removal (e.g., cold milling) of the material may be performed until contamination is no longer detected. If partial removal is successful in eliminating the contamination, it will be assumed that the remaining material, including the underlying soil, is clean.

F.3.3.3 Decontamination Procedures

To the extent possible, all contaminated surfaces and equipment (if present) will be decontaminated. Surfaces, items, materials, and equipment that cannot be decontaminated will be containerized and managed in compliance with appropriate waste management regulations.

An appropriate surfactant/solvent to be used in wash water solutions will be determined based upon the COPCs identified in the SAP. Alconox®, a surfactant, will be used to decontaminate the cementation unit. Specialized solvents will be used for more focused decontamination/removal purposes, as appropriate.

F.3.3.3.1 Cementation Unit and Glovebox

The cementation unit equipment (e.g., pH column, vacuum trap, motor-driven mixers, impellers) and glovebox will either be decontaminated, decommissioned, or dismantled, depending on the extent of contamination and anticipated disposition or use after closure. If the cementation unit equipment and/or the glovebox is to be decommissioned or dismantled, the resulting components will be containerized and managed appropriately at an approved on-site facility, depending on the regulated constituents present. If the cementation unit equipment and/or the glovebox is to be decontaminated, Nuclear Materials Technology (NMT) personnel will use the following procedures.

Prior to decontamination of any of the cementation unit equipment, any visible material located inside the glovebox will be removed to the extent possible and managed in compliance with appropriate regulations. The cementation unit equipment (while located inside the glovebox) and interior surfaces of the glovebox will be rinsed or flushed with wash water or wiped down with cloths and/or other absorbent materials. Used wash water will be collected, removed, and transferred to an appropriate container for storage pending the results of analysis and disposal.

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Deleted: If a crack or gap is present, a swipe sample or a representative sample of the media will be taken (e.g., asphalt or concrete) to determine the presence of contamination. The sample will be analyzed for the hazardous contaminants of potential concern (COPC) determined through review of the chemical properties of the waste stored during the operating history of the cementation unit and ancillary equipment and/or the associated glovebox and through an evaluation of the history of any spills that may have occurred at the unit or glovebox. If contamination is detected, the surface flaw will be decontaminated prior to repairing the crack/gap. Complete or partial removal (e.g., cold milling) of the material may be performed until contamination is no longer detected. If partial removal is successful in eliminating the contamination, it will be assumed that the remaining material, including the underlying soil, is clean.¶

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The first step in decontamination will be to evaluate the operating record of the cementation unit to be closed to determine the COPCs. That appropriate surfactant/solvent t ... [3]

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Verification of decontamination will be conducted as indicated in Section F.3.3.4. If the analysis from the verification indicates that mixed waste constituents are present, decontamination wash cycles and analyses will continue until the ancillary equipment has been decontaminated or the decision is made to manage it appropriately as contaminated waste. Upon determination that it is contaminated waste, the material/structure/surface may be removed, transported to, and stored at an appropriate container storage unit (CSU) to facilitate the closure process.

F.3.3.3.2 Ancillary Equipment

The cementation unit ancillary equipment located inside Room 401 (outside the glovebox) will either be decontaminated, decommissioned, or dismantled, depending on the extent of contamination and anticipated disposition or use after closure. If any of the cementation unit ancillary equipment is to be decommissioned or dismantled, the resulting components will be containerized and managed appropriately at an approved on-site facility, depending on the regulated constituents present. If decontamination measures are deemed appropriate, NMT personnel will use the following procedures for surface decontamination of the cementation unit ancillary equipment.

Random swipe samples from the areas adjacent to the cementation unit ancillary equipment (e.g., walls, floors, sumps, and drains) will be collected and analyzed for the COPCs expected to be present, based on the operating record. If decontamination measures are deemed necessary based on the analytical results, the following procedures will be used.

Decontamination will be conducted using mops, cloths, and/or other absorbent materials to remove any potential mixed waste constituents. These materials will be submerged in a wash water solution (e.g., Alconox, water) and used to wipe down the surfaces associated with the cementation unit. After decontamination of the surfaces, the containment system (e.g., recessed areas, sumps, berms) will be wiped down. Used wash water will be collected, removed, and transferred to an appropriate container for storage pending the results of analysis and disposal.

Verification of decontamination will be conducted as indicated in Section F.3.3.4. If the analysis from the verification indicates that mixed waste constituents are present, decontamination wash cycles and analyses will continue until the structure and surfaces have been decontaminated or the decision is made to manage it appropriately as contaminated waste. Upon determination that it is contaminated waste, the material/structure/surface may be removed, transported to, and stored at an appropriate CSU to facilitate the closure process.

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When decontamination is complete, verification will be conducted as indicated in Section F.3.3.4. If the analysis from the verification solution indicates that hazardous constituents are present, wash cycles and analyses will continue until the structure, surface, or equipment (if present) has been decontaminated or the decision is made to manage it appropriately as contaminated waste. Upon determination that it is contaminated waste, the structure, surface, or equipment may be removed, transported to, and stored at other hazardous waste management locations to facilitate the closure process.

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Decontamination will be conducted using mops, cloths, and/or other absorbent materials to remove any potential hazardous constituents. These materials will be rinsed in a wash water solution (e.g., Alconox, water) and used to wipe down the surfaces of the ancillary equipment. The wash water solution will also be used to rinse or flush equipment, as appropriate. Used wash water will be collected, removed, and transferred to an appropriate container. It will be analyzed for the COPCs expected to be present, based on the operating record. The wash cycles will continue until the equipment has been clean to established levels or the decision is made to manage it as contaminated waste. Equipment to be managed as contaminated waste will be containerized and managed in compliance with appropriate regulations. ¶

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F.3.3.3.3 Areas Adjacent to the Cementation Unit Glovebox

Random swipe samples from the areas adjacent to the cementation unit glovebox (e.g., walls, floors, sumps, and drains) will be collected and analyzed for the COPCs expected to be present, based on the operating record. If decontamination measures are deemed necessary based on the analytical results, the following procedures will be used.

Decontamination will be conducted using mops, cloths, and/or other absorbent materials to remove any potential mixed waste constituents. These materials will be submerged in a wash water solution (e.g., Alconox, water) and used to wipe down the surfaces associated with the areas adjacent to the cementation unit glovebox. After decontamination of the surfaces, the containment system (e.g., recessed areas, sumps, berms) will be wiped down. Used wash water will be collected, removed, and transferred to an appropriate container for storage pending the results of analysis and disposal.

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Verification of decontamination will be conducted as indicated in Section F.3.3.4. If the analysis from the verification indicates that mixed waste constituents are present, decontamination wash cycles and analyses will continue until the structure and surfaces have been decontaminated or the decision is made to manage it appropriately as contaminated waste. Upon determination that it is contaminated waste, the material/structure/surface may be removed, transported to, and stored at an appropriate CSU to facilitate the closure process.

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Deleted: Decontamination will be conducted using mops, cloths, and/or other absorbent materials to remove any potential hazardous constituents. These materials will be rinsed in a wash water solution (e.g., Alconox, water) and used to wipe down the surfaces adjacent to the cementation unit glovebox being closed. After decontamination of the surfaces, the containment system (e.g., recessed areas, sumps, berms) associated with the area will be wiped down. Used wash water will be collected, removed, and transferred to an appropriate container for analysis. ¶
¶
When decontamination is complete, verification will be conducted as indicated in Section F.3.3.4. If the analysis from the verification solution indicates that hazardous constituents are present, wash cycles and analyses will continue until the structure, surface, or equipment (if present) has been decontaminated or the decision is made to manage it appropriately as contaminated waste. Upon determination that it is contaminated waste, the structure, surface, or equipment may be removed, transported to, and stored at other hazardous waste management locations to facilitate the closure process.¶

F.3.3.3.4 Equipment Used During Closure

Reusable protective clothing, tools, and equipment used during decontamination activities will be cleaned with a wash water solution. If reusable sampling equipment is used, sampling equipment rinsate blanks will be collected and analyzed in accordance with the quality assurance (QA)/quality control (QC) procedures to be described in the closure SAP. Reusable decontamination equipment, including protective clothing and tools used during closure activities will be scraped as necessary to remove any residue and cleaned with a wash water solution. Residue, disposable equipment and reusable equipment that cannot be decontaminated will be containerized and managed as waste in accordance with LANL waste management procedures, depending on the regulated constituents present.

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F.3.3.4 Verification of Decontamination

Verification of decontamination will be conducted using sampling and analysis to demonstrate that hazardous waste residues are not present on the equipment and/or surfaces associated with the cementation unit (as applicable). Sample media can include wash water solutions, swipes, and/or

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solid media samples (e.g., soil, concrete) as determined in the SAP at the time of closure and the operating record of the unit. The sampling methodology will be based on factors such as COPCs and the materials of construction. All sampling conducted during closure will be done in accordance with QA/QC procedures defined by "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (U.S. Environmental Protection Agency [EPA], 1986). The SAP will establish the minimum number of verification samples to be collected based on the total surface area associated with the unit. Verification sampling will use a biased random approach for the determination of sample locations for the equipment, structures, and/or surfaces and will include known or likely areas of contamination (e.g., low areas, sumps, and known spill locations) as determined by the operating record of the unit at the time of closure.

Decontamination will be verified if the analytical data from the collected samples meets at least one of the decontamination criteria listed in Section F.3.3.5 of this closure plan. If the data cannot meet at least one of the criteria, additional sampling can be performed to establish the boundaries of the contamination. Decontamination, as discussed in Section F.3.3.3, will be repeated within those boundaries, using portable berms or other appropriate materials to limit the potential for runoff from the affected area. An additional round of verification sampling will be performed for all of the areas previously determined to be contaminated. After each decontamination/verification sequence, a decision will be made to repeat or remove the contaminated materials and dispose of them properly.

F.3.3.5 Decontamination Criteria

Successful decontamination will consist of sampling as specified in the component-specific SAP and meet one of the following criteria:

- No detectable hazardous waste or hazardous waste constituents from cementation unit activities are identified in the verification sample.
- Detectable hazardous waste or hazardous waste constituents from cementation unit in the verification sample are removed to statistically significant levels based on concentrations in the background/baseline samples.
- Detectable hazardous waste or hazardous waste constituents from cementation unit in the verification sample are at or below levels agreed upon with the NMED.
- Detectable hazardous waste or hazardous waste constituent concentrations from cementation unit activities do not significantly decrease after several wash downs. In such an event, hazardous constituents that pose an acceptable risk will be allowed to remain, as mutually agreed upon with the NMED.

An alternative demonstration of decontamination may be proposed and justified at the time of closure as circumstances dictate. The NMED will evaluate the proposed alternative in accordance with the

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standards and guidance then in effect and, if approved, LANL will incorporate the alternative into the SAP at the time of closure.

F.3.4 SAMPLING AND ANALYTICAL PROCEDURES [20.4.1 NMAC §264.112(b)(4)]

Sampling and analysis will be performed using standard approved methods (e.g., *SW-846*, American Society for Technology and Materials), as appropriate, for making closure decontamination verification determinations. LANL will submit a SAP to the NMED at the time of closure notification for review and approval. The SAP will provide a detailed description of the cementation unit and propose a closure methodology that assures the closure performance standards in Section F.3.1.1 are met.

The SAP will include at a minimum the following information:

- A detailed discussion of site characteristics.
- The cementation unit, ancillary equipment and/or associated glovebox operational history, to include descriptions of known spills, releases, and/or evidence of potential problems (e.g., visual stains, dead vegetation, solid waste management units).
- Chemical properties of the waste stored and processed at the unit and/or glovebox.
- Determination of applicable COPCs.
- A hazard control plan, including a review of chemical hazards present at the site, control and monitoring methods and procedures, and required PPE.
- Determination of wash water solution composition, if necessary.
- Detailed procedures describing decontamination methods for equipment, structures, and media.
- Discussion of background levels determined through sampling or use of published data and their relevance to the unit and/or glovebox.
- Methods for sampling and analysis of contaminated media.
- Removal procedures for contaminated media, if necessary.
- Sampling methods for decontamination media and hazardous waste determination. The discussion should include the rationale for using wash water samples, swipe samples, soil samples, and/or other sampling methodology.
- Sampling methods for decontamination verification procedures. The discussion should include the statistical or judgmental basis for determining the number of verification samples needed and the constituents to be analyzed.
- Sampling equipment decontamination and disposition procedures.
- Sample handling and documentation procedures.
- Analytical methods (including detection limits) and the rationale for their determination.
- Disposition of removed waste, decontamination media, or contaminated soils. This discussion should include an identification of proposed on- or off-site hazardous waste management

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¶
<#>No detectable hazardous waste or hazardous waste constituents from container storage activities are identified in the verification solution sample.¶
¶
<#>Detectable hazardous waste or hazardous waste constituents from container storage activities in the verification solution sample are removed to statistically significant levels based on baseline concentrations in the clean verification solution.¶
¶
<#>Detectable hazardous waste or hazardous waste constituents from container storage activities in the verification solution sample are at or below levels agreed upon with the NMED.¶
¶
<#>Detectable hazardous waste or hazardous waste constituent concentrations from container storage activities do not significantly decrease after several wash downs. In such an event, hazardous constituents that pose an acceptable risk will be allowed to remain, as mutually agreed upon with the NMED.¶
¶
An alternative demonstration of decontamination may be proposed and justified at the time of unit closure as circumstances indicate. The NMED will evaluate the proposed alternative in accordance with the standards and guidance then in effect and, if approved, incorporate the alternative into this closure plan.¶

Deleted: Sampling and analysis will be performed using standard approved methods (e.g., *SW-846*, American Society of Testing and Materials), as appropriate, for making closure decontamination verification determinations. To alleviate the need for future closure plan and permit modifications until actual closure activities are scheduled, LANL will submit the SAP to the NMED at the time of closure notification for review and approval. The SAP will provide a detailed description of the cementation unit and propose a closure methodology to assure that the closure performance standards in Section F.3.1.1 are met.¶

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facilities that may be used for final disposition and the types of wastes anticipated to be shipped.

- Decontamination criteria.
- Statistical basis for verification of decontamination, if applicable. The discussion should include information on determination of statistical increases in analytical parameters and numerical values for significant increases.
- Risk assessment procedures to be used, if necessary.
- Field and laboratory QA/QC procedures.
- Schedule of closure activities, including decontamination, sampling, analysis, potential removal of soils, and closure certification submittal.
- Identification of contact person or office.

F.3.5 REFERENCES

EPA, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *EPA-SW-846*, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

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LANL, 1998a and all approved revisions, "Los Alamos National Laboratory General Part A Permit Application," Revision 1.0, Los Alamos National Laboratory, Los Alamos, New Mexico.¶
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LANL, 1998b and all approved revisions, "Los Alamos National Laboratory General Part B Permit Application," Revision 1.0, Los Alamos National Laboratory, Los Alamos, New Mexico.¶

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F.3.1 GENERAL CLOSURE INFORMATION F.3-2

F.3.1.1 Closure Performance Standard F.3-2

F.3.1.2 Partial and Final Closure Activities F.3-2

F.3.1.3 Closure Schedule F.3-32

F.3.1.4 Amendment of the Closure Plan F.3-43

F.3.1.5 Closure Cost Estimate, Financial Assurance, and Liability Requirements F.3-4

F.3.1.6 Closure Certification F.3-4

F.3.1.7 Security F.3-54

F.3.1.8 Closure Report F.3-5

F.3.1.9 Survey Plat and Post-Closure Requirements F.3-6

F.3.2 DESCRIPTION OF THE CEMENTATION UNIT F.3-6

F.3.2.1 Estimate of Maximum Waste in Storage F.3-6

F.3.2.2 Description of Stored Waste F.3-6

F.3.3 CLOSURE PROCEDURES F.3-7

F.3.3.1 Removal of Waste F.3-7

F.3.3.2 Preliminary Closure Procedures F.3-7

F.3.3.3 Decontamination Procedures F.3-8

F.3.3.4 Verification of Decontamination F.3-11

F.3.4 SAMPLING AND ANALYTICAL PROCEDURES F.3-11

F.3.5 REFERENCES F.3-

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To the extent possible, all contaminated surfaces and equipment (if present) will be decontaminated. Surfaces and equipment that cannot be decontaminated will be containerized and managed in compliance with applicable regulations. All sampling conducted during closure and decontamination will be done in accordance with QA/QC procedures defined by “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods” (*SW-846)* (U.S. Environmental Protection Agency [EPA], 1986) as discussed in Section F.3.4. Closure will be conducted in accordance with the schedule presented in Table F.3-1 as amended by the SAP submitted at the time of closure. Monitoring for contamination will occur throughout closure activities, as appropriate.

The first step in decontamination will be to evaluate the operating record of the cementation unit to be closed to determine the COPCs. That appropriate surfactant/solvent to be used in the wash water solution will be determined based upon the COPCs. Laboratory surfactants (e.g., Alconox®) will be used for the majority of COPC analytes at the cementation unit. Specialized solvents will be used for more focused decontamination/removal purposes, as applicable.

ATTACHMENT G

CONTAINER STORAGE

TABLE OF CONTENTS

LIST OF TABLES ii
LIST OF FIGURES iii
LIST OF SUPPLEMENTS iv
LIST OF ABBREVIATIONS/ACRONYMS v

CONTAINER STORAGE G-1

G.1 CONTAINER STORAGE AT TA-55 ..... G-1

G.1.1 B40 ..... G-1

G.1.2 B05 ..... G-1

G.1.3 K13 ..... G-2

G.1.4 B45 ..... G-2

G.1.5 Vault G-2

G.1.6 Container Storage Pad G-2

G.1.7 TA-55-185 ..... G-3

G.2 CONTAINMENT SYSTEMS G-3

G.3 SPECIAL REQUIREMENTS FOR IGNITABLE, REACTIVE, AND INCOMPATIBLE WASTES G-4

G.4 AIR EMISSION STANDARDS FOR CONTAINERS G-5

LIST OF TABLES

TABLE NO.	TITLE
G-1	Use and Management of Containers Regulatory References and Corresponding Permit Application Location
G-2	Container Storage Unit Maximum Storage and Containment Capacities
G-3	Capacity Calculations for Containment Systems

LIST OF FIGURES

FIGURE NO	TITLE
G-1	Technical Area 55, Building 4, Container Storage Units
G-2	Technical Area 55 Container Storage Pad
G-3	Technical Area 55, Building 185, Container Storage Unit

LIST OF SUPPLEMENTS

SUPPLEMENT NO.	TITLE
G.1	Manufacturer's Information on Waste Containers and Containment Units

LIST OF ABBREVIATIONS/ACRONYMS

20.4.1 NMAC	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
CSU	container storage unit(s)
DOT	U.S. Department of Transportation
ft	feet/foot
gal	gallon
in.	inches
LANL	Los Alamos National Laboratory
m^3	cubic meters
ppmw	parts per million by weight
SWB	standard waste box
TA	technical area

ATTACHMENT G
CONTAINER STORAGE

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 (20.4.1 NMAC) §270.15 and 20.4.1 NMAC, Subpart V, Part 264, Subpart I, revised June 14, 2000 [6-14-00]. This section provides detailed descriptions of the seven container storage units (CSU) located at Technical Area (TA) 55. Detailed engineering drawings are provided as Figures G-1 through G-3 and are provided for informational purposes only. Table G-1 summarizes applicable regulatory references for container storage and the corresponding location where the requirement is addressed in this document.

G.1 CONTAINER STORAGE AT TA-55

TA-55 is located in the north central portion of Los Alamos National Laboratory on a mesa between a branch of Mortandad Canyon on the north and Two Mile Canyon on the south. TA-55 is a plutonium processing facility, which began operating in 1978. Hazardous and mixed waste container storage at TA-55 is conducted at seven CSUs. These CSUs are identified as B40, B05, K13, B45, the Vault, the Container Storage Pad, and TA-55-185. The following sections provide general dimensions, containment features, and materials of construction for each CSU to satisfy the requirements of 20.4.1 NMAC §270.15(a)(1) and (2) [6-14-00].

G.1.1 B40

The B40 CSU is used to store containers of hazardous and mixed waste that may contain liquids. (B40 was described as Area 1 in previous permitting applications.) B40 is located in the southwest section of the TA-55-4 basement, as shown on Figure G-1. The CSU is L-shaped and has long dimensions of 61.5 by 55 feet (ft). The maximum storage capacity of this unit is 21,500 gallons (gal), the equivalent of 391 55-gal drums. The types of waste containers holding hazardous or mixed waste that are stored in B40 include 5-, 10-, 12-, 15-, 30-, 55-, and 85-gal drums; large waste boxes; special order waste boxes; and standard waste boxes (SWB).

G.1.2 B05

The B05 CSU is used to store containers of hazardous and mixed waste that do not contain liquids. (B05 was described as Area 3 in previous permitting applications.) B05 is located in the southwest section of the TA-55-4 basement, as shown in Figure G-1. The CSU is rectangular shaped and is 26 ft long by 10 ft wide. The maximum storage capacity of this unit is 3,600 gal, the equivalent of 66

55-gal drums. The types of waste containers holding hazardous or mixed waste that will be stored in B05 include 30-, 55-, and 85-gal drums, large waste boxes; and SWBs.

G.1.3 K13

The K13 CSU is used to store containers of hazardous and mixed waste that may contain liquids. (K13 was described as Area 4 in previous permitting applications.) K13 is located in the northwest section of the TA-55-4 basement, as shown on Figure G-1. The CSU is rectangular shaped and is 16 ft long by 13 ft wide. The maximum storage capacity of this unit is 2,500 gal, the equivalent of 46 55-gal drums. The types of waste containers holding hazardous or mixed waste that will be stored in K13 include 0.25-, 0.5-, 0.75-, 1-, 2-, 4-, and 6-liter/quart containers; 5-, 10-, 12-, and 15-gal containers; 30-, 55-, and 85-gal drums; and large waste boxes.

G.1.4 B45

The B45 CSU is used to store containers of hazardous and mixed waste that do not contain liquids. (B45 was described as Area 5 in previous permitting applications.) B45 is located in the northeast section of the TA-55-4 basement, as shown on Figure G-1. The CSU is rectangular shaped and is 45 ft long by 17.5 ft wide. The maximum storage capacity of this unit is 11,000 gal, the equivalent of 200 55-gal drums. The types of waste containers holding hazardous or mixed waste that will be stored in B45 include 5-, 10-, 12-, and 15-gal containers; 55- and 85-gal drums; large waste boxes; and SWBs.

G.1.5 Vault

The Vault CSU is used to store containers of mixed waste that may contain liquids. (The Vault was described as Area 6 in previous permitting applications.) The Vault is located along the eastern wall of the basement at TA-55-4, as shown on Figure G-1, and is approximately 79.5 ft long by 50.5 ft wide. The maximum storage capacity of this unit is 4,000 gal, the equivalent of approximately 73 55-gal drums. The types of waste containers holding mixed waste that will be stored in the Vault include 0.25-, 0.5-, 0.75-, 1-, 2-, 4-, and 6-liter/quart containers; and 5-, 10-, 12-, 15-, 30- and 55-gal drums.

G.1.6 Container Storage Pad

The Container Storage Pad is used to store containers of hazardous and mixed waste that may contain liquids. The pad is located outside and northwest of TA-55-4, as shown on Figure G-2. It was installed in the mid-1980s and is constructed of asphaltic-concrete with a variable thickness of 4 to 6 inches (in.). The Container Storage Pad CSU is shaped like a trapezoid and measures 102 ft, 86 ft,

156 ft, and 105 ft. It also includes a rectangular strip measuring 70 ft by 10 ft on the southeast side. The pad is sloped, is elevated 2 to 4 in. above ground level, and has a culvert beneath the pad running from the northwest side to the southeast corner to minimize run-on of precipitation. The storage capacity of this area is 135,000 gal, the equivalent of approximately 2,455 55-gal drums. The types of waste containers holding hazardous or mixed waste that will be stored on the container storage pad include 0.25-, 0.5-, 0.75-, 1-, 2-, 4-, and 6-liter/quart containers; 30-, 55-, and 85-gal drums; SWBs; large waste boxes; and 5-, 10-, 12-, and 15-gal containers.

G.1.7 TA-55-185

TA-55-185 will be used to store containers of hazardous and mixed waste that do not contain liquids. TA-55-185 is located west of TA-55-4, as shown on Figure G-3. The building was constructed in 1991 and consists of a steel frame with fiberglass insulation, metal walls, and a concrete floor. The TA-55-185 CSU will be approximately 60 ft long by 40 ft wide, and will have a maximum storage capacity of 30,000 gal, the equivalent of 546 55-gal drums. The types of waste containers holding hazardous or mixed waste that will be stored at TA-55-185 include 30-, 55-, and 85-gal drums; large waste boxes; and SWBs.

G.2 CONTAINMENT SYSTEMS [20.4.1 NMAC §§270.15(a)(1-5) and 270.15(b)(1-2)]

The B40, K13, Vault, and Container Storage Pad CSUs will be used to store liquid and/or potentially liquid-bearing wastes; therefore, the requirements of 20.4.1 NMAC §264.175(b) [6-14-00] are applicable for these CSUs. Table G-2 provides the secondary capacity associated with each of these CSUs.

Secondary containment at B40, K13, and the Vault CSUs is primarily provided by self-containment pallets, covered self-containment pallet, single-drum pallets, or storage cabinets. Secondary containment at the Container Storage Pad CSU is provided by covered self-containment pallets. Each containment system is described below.

- Self-Containment Pallet: Molded high-density polyethylene base with a fiberglass grating that elevates the containers over a reservoir that is capable of containing leaks and spills from the containers.

- Covered Self-Containment Pallet: Molded, chemical-resistant, high density polyethylene with a removable polyethylene grating and a hinged two-part cover, which is impervious to precipitation. Supplement G-1 provides detailed information on the covered self-containment pallets.

- Single-Drum Containment Pallet: An 85-gal container made of heavy-duty polyethylene designed to hold one 55-gal drum.

- Cabinet: An epoxy-enamel-coated steel frame with a base that has a raised, leakproof sill. Each shelf is lined with a high-density polyethylene tray that is capable of containing leaks and spills from containers.

The B40, K13, and Vault CSUs are located in the basement of TA-55-4. This basement has a recessed floor that provides another level of containment for the liquid wastes stored there. The floor consists of a 10-in.-thick reinforced concrete slab that is free of cracks and gaps, is compatible with the wastes stored in the area, will effectively prevent the migration of waste to the environment, and is capable of collecting releases and accumulated liquids until the material is removed. Each of these containment systems will hold, at a minimum, 10 percent of the volume of the potential liquid-bearing containers or the volume of the largest potential liquid-bearing container stored, whichever is greater, pursuant to the requirements of 20.4.1 NMAC §264.175(b)(3) [6-14-00]. Containers holding hazardous or mixed waste in each CSU will be protected from potential contact with accumulated liquids by either being elevated or stored in an area that is designed and operated to remove accumulated liquids.

The B05, B45, and TA-55-185 CSUs will be used to store containers with only non-liquid bearing waste (i.e., solid form). These CSUs all reside in a building; therefore, run-on and run-off from storm events are not applicable. In the event of a water leak from facility systems, the TA-55-4 basement has sumps to contain the liquid. Drummed waste containers are placed on pallets or stored in self-containment structures. SWBs will be placed on pallets. Large waste boxes are elevated by design. All waste items in TA-55-185 will either be placed on pallets or are elevated by design.

G.3 SPECIAL REQUIREMENTS FOR IGNITIBLE, REACTIVE, AND INCOMPATIBLE WASTES [20.4.1 NMAC §270.14(b)(9), §270.15(c) and (d) and 20.4.1 NMAC §§264.17, 264.176, and 264.177]

Ignitable or reactive waste is stored at the K13 and B40 CSUs and on the Container Storage Pad. Pursuant to 20.4.1 NMAC §264.17 [6-14-00], LANL will follow specific waste management procedures for ignitable and reactive waste as discussed in Section 2.1.9 of this permit application.

Ignitable, reactive, and incompatible wastes will not be stored at B05, B45, and the Vault or at TA-55-185; therefore, the requirements of 20.4.1 NMAC §264.17, and 20.4.1 NMAC §270.15(c) and (d) [6-14-00] do not apply at these CSUs.

G.4 AIR EMISSION STANDARDS FOR CONTAINERS

This section addresses potential applicability of 20.4.1 NMAC, Subpart V, Part 264, Subpart CC [6-14-00], "Air Emission Standards for Tanks, Surface Impoundments, and Containers" to containers at TA-55, based on applicability criteria specified in 20.4.1 NMAC §264.1080 [6-14-00]. Subpart CC standards for containers require that containers of hazardous waste be covered or controlled so that there are no detectable emissions. These standards are not applicable to containers of radioactive mixed waste. The standards are also not applicable to containers of hazardous waste with less than 500 parts per million by weight (ppmw) volatile organics, containers that have received waste prior to the effective date of regulation (December 6, 1996), or containers of less than 0.1 cubic meters (m^3) (approximately 26 gal) capacity. LANL requires that Subpart CC requirements be met by the generator as part of the waste characterization process. The generator determines the concentration of volatile organics in a waste stream at the point of generation. The generator documents this determination for that waste stream, as described in Appendix B of the most recent version of the "Los Alamos National Laboratory General Part B Permit Application."

Containers of less than 0.46 m^3 (approximately 119 gal) capacity and that meet U.S. Department of Transportation (DOT) specifications under the Code of Federal Regulations, Title 49, Part 178, will be kept closed during storage pursuant to 20.4.1 NMAC §264.1086(b)(1)(ii) [6-14-00]. Containers undergoing waste characterization activities may be open for access for the purposes described in 20.4.1 NMAC §264.1086(c) [6-14-00]. Containers of greater than 0.46 m^3 capacity that contain waste with greater than 500 ppmw volatile organics or those that are greater than 0.1 m^3 capacity, do not meet DOT specifications, and contain wastes of greater than 500 ppmw volatile organics will be subject to a visual inspection and monitoring program as required by 20.4.1 NMAC §264.1088(b) [6-14-00].

Table G-1
Use and Management of Containers
Regulatory References and Corresponding Permit Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Permit Application
§270.15	Specific information requirements for containers:	G.0
§270.15(a)	A description of the containment system to demonstrate compliance with §264.175 including at a minimum:	G.2
§270.15(a)(1)	Basic design parameters, dimensions, and materials of construction	G.1
§270.15(a)(2)	How the design promotes drainage or how containers are kept from contact with standing liquids in the containment system	G.2
§270.15(a)(3)	Capacity of the containment system relative to the number and volume of containers to be stored	G.2
§270.15(a)(4)	Provisions for preventing or managing run-on	G.2
§270.15(a)(5)	How accumulated liquids can be analyzed and removed to prevent overflow	G.2
§270.15(b)	For storage areas that store containers holding wastes that do not contain free liquids, a demonstration of compliance with §264.175(c) including:	G.2
§270.15(b)(1)	Test procedures and results or other documentation or information to show that the wastes do not contain free liquids	G.2
§270.15(b)(2)	A description of how the storage area is designed or operated to drain and remove liquids or how containers are kept from contact with standing liquids	G.2
§270.15(c)	Sketches, drawings, or data demonstrating compliance with §264.176 (location of buffer zone and containers holding ignitable or reactive wastes) and §264.177(c) (location of incompatible wastes), where applicable	G.3
§270.15(d)	Where incompatible wastes are stored or otherwise managed in containers, a description of the procedures used to ensure compliance with §264.177(a) and (b) and §264.17(b) and (c)	G.3
§270.15(e)	Information on air emission control equipment as required in §270.27	G.4
§270.27(a)	Specific information requirements for air emission controls	G.4
§270.27(a)(2)	Identification of each container area subject to the requirements of §264, Subpart CC and certification by the owner or operator that the requirements are met	G.4
§270.27(a)(3)	Documentation that each enclosure used to control air emissions from containers are in accordance with the requirements of §264.1086(b)(2)(I) includes information prepared by the owner or operator or manufacturer or vendor describing the enclosure design and certification that the enclosure meets the specifications listed in §265.1087(b)(2)(ii)	NA[a]
§270.27(a)(5)	Documentation for each closed-vent system and control device installed in accordance with the requirements of §264.1087 that includes design and performance information as specified in §270.24 (c) and (d)	NA
§270.27(a)(6)	An emission monitoring plan for both Method 21 and control device monitoring methods. The plan must include:	NA
§270.27(a)(7)	Implementation schedule	NA

a NA = not applicable

Table G-2
Container Storage Unit Maximum Storage and Containment Capacities

Container Storage Unit	Maximum Capacity (gallons)	Containment Systems	Containment Capacity (gallons)
B40	21,500	Self-Containment Pallets	112 [a]
		Single-drum Containment Pallets	55
		TA-55-4, Basement	46,258
		Covered Self-Containment Pallets	112[a]
K13	3,400	Self-Containment Pallets	112 [a]
		Single-drum Containment Pallets	55
		TA-55-4, Basement	46,258
		Cabinets	20
		Covered Self-Containment Pallets	112[a]
Vault	4,000	Self-Containment Pallets	112 [a]
		TA-55-4, Basement	46,258
B05	3,600	NA	NA
B45	11,000	NA	NA
TA-55-185	30,000	NA	NA
Container Storage Pad	135,000	Covered Self-Containment Pallets	112[a]

[a] No more than 110 gallons (i.e., two 55-gallon drums) of free liquid will be stored on an individual containment pallet.

NA = Not Applicable because this CSU is used to store solid waste only.

Table G-3
Capacity Calculations for Containment Systems

Containment System	Length (feet)	Width (feet)	Depth (inches)	Capacity (cubic feet)	Capacity (gallons)
Self-Containment Pallet and Covered Self-Containment Pallet	4.3	2.1	20	15	112[a]
TA-55-4, Basement	280	265	1	6,183	46,258
Cabinet	1.5	3.6	6	2.7	20

[a] No more than 110 gallons (i.e., two 55-gallon drums) of free liquid will be stored on an individual containment pallet.

Figure G-1 has been provided confidentially under separate cover.

Supplement G.1

Manufacturer's Information on Waste Containers and Containment Units

ATTACHMENT H

STORAGE TANK SYSTEM

LIST OF TABLES

TABLE NO.	TITLE
H-1	Storage Tank System Components at Technical Area 55
H-2	Tank System Regulatory References and Corresponding Permit Application Location
H-3	Secondary Containment Capacities for the Storage Tank System

LIST OF FIGURES

FIGURE NO.	TITLE
H-1	Storage Tank System General Arrangement Diagram
H-2	Storage Tank System Process Flow Diagram
H-3	Evaporator Glovebox Tank Component Support Structure
H-4	Storage Tank System Mechanical Legend
H-5	Evaporator Glovebox Tank Component Piping and Instrumentation Diagram
H-6	Cementation Unit Pencil Tanks Component Support Structure
H-7	Cementation Unit Pencil Tanks Component Piping and Instrumentation Diagram
H-8	Pencil Tanks Isometric and Flow Diagram
H-9	Pencil Tanks Component Piping and Instrumentation Diagram
H-10	Pencil Tanks Component Support Structure
H-11	Pencil Tanks Component Support Structure (continued)
H-12	Technical Area 55, Building 4 First Floor Foundation Plan
H-13	Technical Area 55, Building 4 First Floor Plan Showing Penetration Locations

TABLE OF CONTENTS

LIST OF TABLES ii
LIST OF FIGURES iii
LIST OF SUPPLEMENTS iv
LIST OF ABBREVIATIONS/ACRONYMS v

STORAGE TANK SYSTEM H-1
H.1 DESIGN, CONSTRUCTION, MATERIALS, AND OPERATION H-1
H.1.1 Evaporator Glovebox Tank Component H-2
H.1.2 Cementation Unit Pencil Tanks Component H-4
H.1.2.1 Piping and Ancillary Equipment H-5
H.1.2.2 Foundation and Support H-5
H.1.3 Pencil Tanks Component H-6
H.1.3.1 Piping and Ancillary Equipment H-6
H.1.3.2 Foundation and Tank Support H-7
H.2 INSTALLATION, TESTING, AND CERTIFICATION H-8
H.2.1 Evaporator Glovebox Tank Component H-8
H.2.2 Cementation Unit Pencil Tanks Component H-8
H.2.3 Pencil Tanks Component H-9
H.3 SECONDARY CONTAINMENT H-10
H.4 SPECIAL REQUIREMENTS FOR IGNITABLE, REACTIVE, AND INCOMPATIBLE WASTES H-11
H.5 AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS H-11
H.6 ORGANIC AIR EMISSION STANDARDS H-12
H.7 REFERENCES H-12

LIST OF SUPPLEMENTS

SUPPLEMENT NO.	TITLE
H.1	Written Engineering Assessment/Certification for the Evaporator Glovebox Tank Component
H.2A	Written Engineering Assessment/Certification for the Cementation Unit Pencil Tanks Component
H.2B	Tightness Testing Certification for the Cementation Unit Pencil Tanks Component
H.2C	Installation Inspection Certification for the Cementation Unit Pencil Tanks Component
H.3	Written Engineering Assessment/Certification for the Pencil Tanks Component

LIST OF ABBREVIATIONS/ACRONYMS

20.4.1 NMAC	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
ACI	American Concrete Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
BPVC	Boiler and Pressure Vessel Code
CAM	continuous air monitor
ft	feet/foot
gal	gallon(s)
in.	inch(es)
L	liter(s)
LANL	Los Alamos National Laboratory
TA	technical area

ATTACHMENT H
STORAGE TANK SYSTEM

The information provided in this section is submitted to address the applicable tank system requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC) §270.16, and 20.4.1 NMAC, Subpart V, Part 264, Subpart J, revised June 14, 2000 [6-14-00]. This section provides a description of the storage tank system that is used to store mixed waste solutions at Los Alamos National Laboratory (LANL) Technical Area (TA) 55. It includes detailed descriptions of the storage tank system components and associated ancillary equipment.

There is one storage tank system at TA-55 that is comprised of 3 tank components that share a common piping and pumping system. The storage tank system consists of both new and existing components as summarized in Table H-1.

The evaporator glovebox tank was constructed in 1986 and is an existing tank; therefore, this component of the tank system is addressed in this permit application in accordance with the requirements of 20.4.1 NMAC §264.191 [6-14-00]. The cementation unit pencil tanks were constructed in 1985 and were considered existing tanks until new components were installed in 1996. These new components were determined to be a major, non-routine modification; therefore, the cementation unit pencil tanks are subject to the new tank system regulations and are addressed in this permit application as new tanks in accordance with the requirements of 20.4.1 NMAC §264.192 [6-14-00]. The pencil tanks will be constructed and, thus, are subject to new tank system regulations in accordance with the requirements of 20.4.1 NMAC §264.192 [6-14-00].

The written engineering assessments and certifications for the tanks, as required by 20.4.1 NMAC §§264.191 and 264.192(a) [6-14-00], are provided in Supplements H.1, H.2A, H.2B, H.2C, and H.3, respectively. Detailed drawings and information are provided as Figures H-1 through H-13 and are provided for informational purposes only. Table H-2 summarizes applicable regulatory references for tank systems and the corresponding location where the requirement is addressed in this permit renewal application.

H.1 DESIGN, CONSTRUCTION, MATERIALS, AND OPERATION [20.4.1 NMAC §270.16(b), (c), (d) and (l); 20.4.1 NMAC §§264.191(b)(1) and (3), and 264.192(a)(1)]

The TA-55 storage tank system is located at TA-55, Building 4, in Room 401 (Figure H-1) and has a maximum capacity of 1,270 Liters (L) (336 gallons [gal]). The storage tank system consists of 3 components, with 16 tanks, that are used to store evaporator bottoms solutions prior to stabilization in the cementation unit.

The evaporator bottoms solutions are initially stored in the evaporator glovebox tank component, where they are sampled for radionuclides, oxides, and metals. They remain in the evaporator glovebox tank component until the radionuclide content is known. If the sampling results show radionuclide concentrations below the discard limit, the solutions are transferred to the cementation unit pencil tanks component or the pencil tanks component for storage pending the remaining analytical results. Upon completion of the remaining analyses, the solutions are transferred directly to the cementation unit for treatment. If the sampling results show concentrations above the discard limit, the solutions are recirculated. Figures H-1 and H-2 provide a general arrangement diagram and a process flow diagram for the TA-55 storage tank system.

The storage tank system is connected to three main piping systems, which include the solution feed, ventilation, and vacuum piping systems. Each tank component has a separate header that connects to each of the piping systems. The wet-vacuum piping system is used for all transfers; and the vent-piping system is used to break vacuum. The wet-vacuum and vent-piping systems use vacuum traps to capture carryover liquid and prevent contamination of the lines downstream. One vacuum pump serves the storage tank system for liquid transfers and for vacuum sparging. The following sections provide descriptions of each of the tank system components and associated ancillary equipment. The information meets the requirements of 20.4.1 NMAC §270.16(b), (c), (d) and (l); 20.4.1 NMAC §§264.191(b)(1) and (3); and 264.192(a)(1) [6-14-00].

H.1.1 Evaporator Glovebox Tank Component

The evaporator glovebox tank component is located in the northwest corner of TA-55-4, Room 401, as shown in Figure H-1. It is approximately 8 feet (ft) high, 4-ft wide, and 13-ft long and consists of two welded-steel trays, eight glass columns, and associated ancillary equipment. The overall capacity of the evaporator glovebox tank component is approximately 270 L (71 gal). The evaporator glovebox tank component is fabricated from 0.1875-inch (in.), 316 stainless steel with a 2B finish conforming to the American Society for Testing and Materials (ASTM) “A240-Standard Specification for Heat-

Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels," hereinafter referred to as ASTM A240 (ASTM, 1998). The lower half of the tank is fabricated with additional layers of materials welded to the outside of the 0.1875-in.-thick stainless-steel enclosure. These materials consist of 0.25-in.-thick lead shielding, conforming to ASTM "B29-Standard Specification for Refined Lead" (ASTM, 1997a), and an outer layer of 0.0625-in. 316 stainless steel cladding. The tank component is of welded construction with all welds blended, ground, and polished to blend with adjacent material. All joints are vacuum tight.

The support frame and legs of the evaporator glovebox tank component are constructed of carbon steel and conform to ASTM "A36-Standard Specification for Structural Steel for Welding" (ASTM, 1987). The support frame is bolted to the base of the tank component for stabilization. In addition, the legs of the tank component are bolted to the support frame and secured to the 10-in.-thick concrete floor of Room 401 with anchor bolts. The 10-in.-thick concrete floor was constructed to conform to the reinforced concrete building code requirements of the American Concrete Institute (ACI) "318-71-Building Code Requirements for Structural Concrete and Commentary," hereinafter referred to as ACI 318-71 (ACI, 1995). The reinforcing steel was detailed and fabricated in accordance with ACI "315-Details and Detailing of Concrete Reinforcement," hereinafter referred to as ACI 315 (ACI, 1992). The design construction and tolerance of the framework around the concrete is in accordance with ACI "347-Guide to Formwork for Concrete," hereinafter referred to as ACI 347 (ACI, 1994). Figure H-3 shows the dimensions of the evaporator glovebox tank component and its support structure.

The window portions of the evaporator glovebox tank component are constructed of 0.25-in. leaded glass, laminated on both sides with 0.125-in. clear glass, and installed with a neoprene gasket. Additionally, each window is backed with 0.25-in. safety glass installed with a neoprene gasket/seal that provides airtight containment. The dual glass configuration is secured to the tank component with a welded frame consisting of a 0.25-in.-thick lead shielding and a 0.0625-in. 316 stainless steel cladding similar to the additional layers of materials welded to the outside of the lower half of the tank component. The welded window frames are bolted to the tank component. Replacement windows and gaskets, if and when needed, will be made of the same or similar materials.

The glove portions of the evaporator glovebox tank component are constructed of neoprene and Hypalon®. Each glove is tested for material continuity by the manufacturer before acceptance and installation in the evaporator glovebox tank component. Each glove is selected for its resistance to nitric acid. Replacement gloves, when needed, will be made of the same or similar materials.

The evaporator bottoms solutions are vacuum-transferred from the steel trays to the glass columns. Each glass column is individually filled and visually monitored during transfer from the steel trays to a glass column. To prevent overfill, the evaporator bottoms are automatically directed to a vacuum trap when the maximum capacity of a column is reached. The maximum capacity of the vacuum trap is approximately 5.5 L. The glass columns and the vacuum trap are constructed of PYREX® glass, manufactured by Corning, with stainless steel end plates. Replacement parts for the columns and vacuum trap will be of the same or similar materials. The glass columns are equipped with an air-sparging system designed to homogeneously mix the evaporator bottoms prior to sampling or transfer.

The piping associated with the evaporator glovebox tank component includes the transfer line from the evaporator, the wet-vacuum line, the lean-residue transfer line, and the ventilation lines entering and exiting the evaporator glovebox tank component. Figures H-4 and H-5 provide a legend and a piping and instrumentation diagram for the evaporator glovebox tank component. All piping and associated valves are constructed of single-walled, 316 stainless steel. The transfer line from the evaporator is 1.0-in. pipe, the wet-vacuum line and the lean-residue transfer line are 0.75-in. pipe, and the ventilation lines are 2.0-in. pipe. Pipe diameters may change in the event that a portion of the piping requires replacement. The evaporator glovebox tank component's ancillary equipment is supported by a steel channel Uni-strut® support frame. The Uni-strut® support frame is secured to the concrete ceiling with anchor bolts and provides the component's ancillary equipment with support and protection against physical damage and excessive stress that could potentially result from settlement, vibration, expansion, or contraction. Replacement supports will be made of the same or similar materials.

The evaporator glovebox tank component does not operate under pressure; therefore, excessive stress due to expansion and contraction is not anticipated. The evaporation glovebox component is not located within a saturated zone or seismic fault zone; therefore, floatation or dislodgment is unlikely. The component is located within a building, so frost effects are not expected.

All of the materials within the evaporator glovebox tank component are corrosion-resistant and are compatible with the evaporator bottoms stored in the tank component. No external portions of the tank component are in contact with soil or water.

H.1.2 Cementation Unit Pencil Tanks Component

The cementation unit pencil tanks component consists of five vertical tanks located perpendicular to the west wall of TA-55-4 in Room 401, as shown on Figure H-1. Each of the pencil tanks has a working capacity of 50 L (13 gal), an outside diameter of 6.625 in., a straight side height of 10 ft, a wall thickness of 0.28 in., and a conical bottom, as shown on Figure H-6. The pencil tanks are constructed of 316 stainless steel. The stainless steel materials are corrosion-resistant and are compatible with the liquid waste stored in the tanks, as confirmed by corrosion testing conducted in 1993 by TA-55 facility engineers. The vent trap and the vacuum trap operating within the cementation unit pencil tanks component have an outside diameter of 6.625 in. The vent trap has a straight side height of 9 in. and a maximum capacity of approximately 4 L. The vacuum trap has a straight side height of 37 in., a conical bottom, and a maximum capacity of approximately 17 L. The vent trap and the vacuum trap are constructed of 316 stainless steel for corrosion resistance and materials compatibility with the waste. All of the pencil tanks were designed in accordance with the latest applicable standards, including American Society of Mechanical Engineers (ASME) “Boiler and Pressure Vessel Code” (BPVC) (ASME, 1998), hereinafter referred to as ASME BPVC, Section VIII, Division 1. The pencil tanks are installed such that, if necessary, they can be replaced.

H.1.2.1 Piping and Ancillary Equipment

The piping associated with the cementation unit pencil tanks component includes the header/manifold, vacuum manifold, and lower manifold for the cementation unit pencil tanks component; the vent trap, vent line, and drain line; the transfer line from the evaporator glovebox tank component to the cementation unit pencil tanks component header/manifold; and the transfer line from the lower manifold to the cementation unit. Figures H-4 and H-7 provide a legend and piping and instrumentation diagram for the cementation unit pencil tanks component. All intertank piping and transfer piping is single-walled 0.75-in., Schedule 40, stainless steel pipe. Pipe diameters may change in the event that a portion of the piping requires replacement. All tank-to-piping connections are flanged.

The cementation unit pencil tanks component is equipped with a vacuum trap that is designed to collect any mists or carryover liquid that might accumulate in the vacuum or vent lines. The vacuum trap is equipped with a sight glass for local level indication and is normally empty. Each cementation unit pencil tank is equipped with three sight glasses located on the side of each tank for overfill protection.

H.1.2.2 Foundation and Support

The cementation unit pencil tanks component is erected upon a 10-in.-thick concrete floor in TA-55-4, Room 401. The 10-in.-thick concrete floor provides a foundation that will maintain the load of the tank component when full. The concrete floor and ceiling were constructed to conform to the building code requirements of ACI 318-71 for reinforced concrete (ACI, 1995). The reinforcing steel was detailed and fabricated in accordance with ACI 315 (ACI, 1992). The design, construction and tolerance of the framework around the concrete is in accordance with ACI 347 (ACI, 1994). The cementation unit pencil tanks component and its ancillary equipment are elevated and supported by a steel channel, Uni-strut® support frame. The Uni-strut® support frame is secured to the concrete floor with anchor bolts and provides the ancillary equipment with support and protection against physical damage and excessive stress due to settlement and vibration.

The cementation unit pencil tanks component does not operate under pressure; therefore, physical damage and excessive stress due to expansion and contraction is not anticipated. Furthermore, the cementation unit pencil tanks component is not within a saturated zone or seismic fault zone; therefore, flotation or dislodgment is not likely. The component is located within a building, so frost heave effects are not expected.

H.1.3 Pencil Tanks Component

The following information for the pencil tanks component is based upon a completed drawing package prepared by Johnson Controls of Northern New Mexico, dated July 2001. The pencil tanks component will consist of ten vertical tanks located perpendicular to the west wall of TA-55-4, Room 401, as shown on Figure H-1. Each pencil tank will have a capacity of 50 L (13 gal), a 6.625-in. outer diameter, a straight side height of 10 ft, a wall thickness of 0.28 in., and a conical bottom, as shown on Figure H-8. The pencil tanks will be constructed of seamless Schedule 40, 316 stainless steel pipe. These materials meet the chemical and physical characteristics given in ASTM “A312-Standard Specification for Seamless and Welded Austenitic Stainless Steel Pipes,” hereinafter referred to as ASTM A312 (ASTM, 1995). The tanks will be corrosion-resistant and compatible with the liquid waste to be stored in them. Each tank will be equipped with three sight glasses for local level indication and will have a high-level switch for prevention of spills or overfilling. The primary containment welds for each tank will be vacuum tight in accordance with the ASME BPVC Section VIII, Division 1, Subsection B, Part UW (ASME, 1998). All penetrations into the shells of the tanks will be designed and fabricated to ensure vacuum tightness and will comply with ASME BPVC Section VIII, Division 1 (ASME, 1998). However, an ASME stamp will not be required for the pencil tanks component because they will not be

operated as pressure vessels. Each pencil tank will be installed such that, if necessary, they can be replaced.

H.1.3.1 Piping and Ancillary Equipment

The pencil tanks component will be connected to system headers (for feed, ventilation, and vacuum) by a manifold that will be constructed of seamless stainless steel and that meets the chemical and physical characteristics given in ASTM A312 (ASTM, 1995). Figure H-9 provides a piping and instrumentation diagram for the pencil tanks component. The piping will be connected to the existing tank system intertank and transfer piping of 0.75 in., Schedule 40 pipe. It will meet the requirements of ASME "B31.3-Process Piping," hereinafter referred to as ASME B31.3 (ASME, 1996a), for normal fluid service, with a maximum design pressure of 15 pounds per square inch and design temperature of 10 degrees Fahrenheit. All piping connections will be via flanged and gasketed connections and will be provided in accordance with ASME "B16.5-Pipe Flanges and Flanged Fittings," hereinafter referred to as ASME B16.5 (ASME, 1996b). The flanges will be forged from stainless steel and will meet the Grade F316L requirements of ASTM "A182-Standard Specification for Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings and Valves, and Parts for High-Temperature Service," hereinafter referred to as ASTM A182 (ASTM, 1997b).

The pencil tanks component will be equipped with a vacuum trap that will be designed to collect any mists or carryover liquid that might accumulate in the vacuum or vent lines. The vacuum trap will be constructed of 6.25-in. outer diameter, Schedule 40, 316 seamless stainless steel. The vacuum trap will be equipped with a sight glass for local level indication will have a high-level switch for prevention of spills or overflowing and will normally be empty.

H.1.3.2 Foundation and Tank Support

The pencil tanks component and associated ancillary equipment will be integrated within a support stand assembly. The support stand assembly will be approximately 3-ft, 10-in. wide by 7-ft, 8-in. long, as shown on Figures H-10 and H-11, and will be bolted to the 10-in.-thick concrete floor of TA-55-4, Room 401. The floor provides a foundation that will maintain the load of the pencil tanks component when full. The concrete floor and ceiling were constructed to conform to the building code requirements of ACI 318-71 for reinforced concrete (ACI, 1995). The reinforcing steel was detailed and fabricated in accordance with ACI 315 (ACI, 1992). The design construction and tolerance of the framework around the concrete is in accordance with ACI 347 (ACI, 1994).

The support stand assembly superstructure will consist of braced frames that extend approximately 9 ft, 11 in. from the floor. The superstructure will be fabricated entirely from carbon steel. Connections will be welded, except where bolting is required for erection of subassemblies within Room 401. All carbon steel used for the superstructure will be painted in accordance with the Steel Structures Painting Council with a high build-up epoxy primer and finish coat.

The pencil tanks component will not operate under pressure; therefore, excessive stress due to expansion and contraction is not anticipated. The pencil tanks component will not be located within a saturated zone or seismic fault zone; therefore, floatation or dislodgment is unlikely. The component will be located within a building, so frost heave effects are not expected.

H.2 INSTALLATION, TESTING, AND CERTIFICATION [20.4.1 NMAC §270.16(a) and (f); 20.4.1 NMAC §264.191(b); §264.192(a),(b), and (d); and §264.193(I)]

H.2.1 Evaporator Glovebox Tank Component

The evaporator glovebox tank component is considered an existing tank component in accordance with 20.4.1 NMAC §264.191 [6-14-00], and has secondary containment that meets the requirements of 20.4.1 NMAC §264.193 [6-14-00]. Therefore, pursuant to 20.4.1 NMAC §264.191(a) [6-14-00], the requirement that the owner or operator of the tank determine that the tank is not leaking or is unfit for use is not applicable. In addition, the requirement that the owner or operator obtain and keep on file a written assessment attesting to the tank's integrity is also not applicable. However, for the purpose of demonstrating that the evaporator glovebox tank component will function as a completely leak-proof system and would meet the assessment requirements if they were applicable, a written assessment has been prepared in accordance with 20.4.1 NMAC §264.191(b), and 20.4.1 NMAC §270.16(a) [6-14-00], attesting that the tank component is adequately designed and has sufficient structural integrity and compatibility with the waste stored to ensure that it will not collapse, rupture, or fail. The written assessment, reviewed and certified by an independent, qualified, registered professional engineer, is included as Supplement H.1 of this permit application.

A helium leak-test using a mass spectrometer was performed on the evaporator glovebox tank component upon fabrication at Silver Engineering and again after it was installed and made operational at its present location in TA-55-4, Room 401. Because secondary containment (see Section H.3) is provided for this tank, the requirements in 20.4.1 NMAC §264.193(i) [6-14-00], are not applicable.

H.2.2 Cementation Unit Pencil Tanks Component

In accordance with 20.4.1 NMAC §264.192(a) [6-14-00], a written assessment has been prepared attesting that the cementation unit pencil tanks component has sufficient structural integrity and is acceptable for handling mixed waste. The written assessment, reviewed and certified by an independent, qualified, registered professional engineer, is included as Supplement H.2A of this permit application.

In accordance with 20.4.1 NMAC §264.192(d) [6-14-00], owners or operators of new tanks and ancillary equipment must ensure that the system is tested for tightness. The cementation unit pencil tanks component was tightness tested on May 30, 1996, at operating pressure (i.e., under a vacuum of 10 to 20 in. of mercury) and determined to be tight. The signed certification attesting to the tank's tightness, the detailed tightness-testing procedure adhered to during the tightness tests, and the results of the tightness tests are included as Supplement H.2B of this permit application.

In accordance with 20.4.1 NMAC §264.192(b) [6-14-00], owners or operators of new tank systems or tank components must ensure that proper handling procedures are adhered to during installation in order to prevent damage to the system. The new portions of this component (i.e., the transfer line from the evaporator glovebox tank component to the cementation unit pencil tanks component header/manifold and the cementation unit header/manifold) have been inspected by a qualified inspector for weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, and other structural damage or inadequate construction or installation. The signed certification attesting to the proper installation of the new components and a copy of the inspection checklist is included as Supplement H.2C of this permit application. Secondary containment (see Section H.3) for the cementation unit pencil tanks component is provided by Room 401; therefore, the requirements in 20.4.1 NMAC §264.193(i) [6-14-00], are not applicable.

H.2.3 Pencil Tanks Component

In accordance with 20.4.1 NMAC §264.192(a) [6-14-00], a written assessment has been prepared attesting that the pencil tanks component is designed to have sufficient structural integrity and is acceptable for handling mixed waste. The written assessment, reviewed and certified by an independent, qualified, registered professional engineer, is included as Supplement H.3 of this permit application.

In accordance with 20.4.1 NMAC §264.192(d) [6-14-00], owners or operators of new tanks and ancillary equipment must ensure that the system is tested for tightness. The pencil tanks component

will be tightness tested at operating pressure (i.e., under a vacuum of 10 to 20 in. of mercury) upon completion of installation and prior to use. A signed certification will be prepared and will include the tightness-testing procedures adhered to during the tightness tests and the results of the tightness tests.

In accordance with 20.4.1 NMAC §264.192(b) [6-14-00], owners or operators of new tank systems or components must ensure that proper handling procedures are adhered to during installation in order to prevent damage to the system. To ensure proper installation, the pencil tanks component and ancillary equipment (i.e., transfer piping, manifolds) will be inspected by a qualified inspector for weld breaks, punctures, scratches in the protective coatings, cracks, corrosion, and other structural damage or inadequate construction or installation. A signed certification attesting to the proper installation of the pencil tanks component and a copy of the inspection checklist will be prepared. Secondary containment (see Section H.3) for the pencil tanks component will be provided by Room 401; therefore, the requirements in 20.4.1 NMAC §264.193(i) [6-14-00], are not applicable.

H.3 SECONDARY CONTAINMENT [20.4.1 NMAC §270.16(g), 20.4.1 NMAC §264.193]

The following provides a detailed description of the secondary containment provided for the storage tank system in accordance with 20.4.1 NMAC §270.16(g), and 20.4.1 NMAC §264.193(a), (b), (c), (d), and (e)(1) [6-14-00]. The storage tank system is located at TA-55-4, inside Room 401. This room has a floor and walls that completely surround the tank system and serve as secondary containment, therefore, the secondary containment meets the requirements of 20.4.1 NMAC §264.193(1)(iv) for an external liner system. The walls and floor of Room 401 will prevent the migration of wastes or accumulated liquids to any soil, groundwater, or surface water and are capable of collecting releases and accumulated liquids until the material is removed. Because the storage tank system and secondary containment are inside a building, run-on or precipitation will not affect the containment capacity. The capacity of the containment area is sufficient to contain 100 percent of the capacity of the largest liquid-bearing tank within its boundary. The secondary containment capacity for the storage tank system is identified in Table H-3.

The floor of Room 401 consists of 10-in.-thick reinforced concrete slab that is compatible with the wastes stored in the storage tank system and will effectively prevent migration of waste. The concrete in Room 401 is sealed with an epoxy or similar coating to aid in decontamination should a spill occur. In addition, tertiary containment is provided by the floor of the basement level of TA-55-4, which also

consists of 10 in. of concrete. The construction joints in the floor slab and exterior walls are all constructed with chemical-resistant water stops in place. The conduit piping penetrating the floor of the room is secured with rubber boots, bushings, and flanges. All penetrations (i.e., holes for conduit) in the floor have been sealed to prevent liquids from entering the penetrations. Figures H-12 and H-13 provide structural drawings illustrating the first floor construction and the locations of floor penetrations.

The storage tank system components and the secondary containment will be inspected daily (during operation) to detect leaks, in accordance with 20.4.1 NMAC §264.195(b) [6-14-00]. Additional leak detection will be provided by continuous air monitors (CAM) at various locations throughout Room 401. CAMs will detect any airborne alpha contamination that would be present if a leak were to occur at any point in the system. Additionally, radiological control technicians periodically monitor for radioactive contamination and would detect any leaks during monitoring. Leaks or spills would be detected within 24 hours, as required by 20.4.1 NMAC §264.193(c)(3) [6-14-00]. The secondary containment will be operated to remove leaks and spills. In the event of a leak or spill into the secondary containment system, the liquids will be removed as quickly as possible with sorbents or vacuum-transferred, using the existing wet vacuum, into an available storage tank component. The collected materials will then be sampled as necessary. If the accumulated liquids are from an identifiable source, the resulting material can be characterized as a newly-generated waste using acceptable knowledge or may be analyzed, as applicable, for the hazardous waste constituents known to be components of the source. If the accumulated liquids are from other than an identifiable source, the resulting material will be analyzed for the appropriate potential parameters listed in Table E-3 of Appendix E in the most recent version of the "Los Alamos National Laboratory General Part B Permit Application." Containers of collected liquids will be stored with secondary containment, pending analytical results, which determine how the waste liquids will be managed. This method of removal and analysis of accumulated liquids fulfills the requirements of 20.4.1 NMAC §270.15(a)(5) [6-14-00], for responses to leaks or spills.

If it is determined that there has been a leak or spill from any of the storage tank components into the secondary containment, all free liquids will be removed within 24 hours unless "as low as reasonably achievable" concerns prevent accessibility. The affected component or portion thereof will be removed from service immediately and the requirements of 20.4.1 NMAC §264.196 [6-14-00], will be initiated.

H.4 SPECIAL REQUIREMENTS FOR IGNITABLE, REACTIVE, AND INCOMPATIBLE WASTES [20.4.1 NMAC §270.16 (j); 20.4.1 NMAC §§264.17, 264.198, and 264.199(a)]

No ignitable, reactive, or incompatible mixed wastes will be stored in the storage tank system.

H.5 AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS [20.4.1 NMAC §264.1064(k), and 20.4.1 NMAC, Subpart V, Part 264, Subpart BB]

The storage tank system is not subject to 20.4.1 NMAC, Subpart V, Part 264, Subpart BB [6-14-00], "Air Emission Standards for Equipment Leaks," with the exception of the reporting requirements specified in 20.4.1 NMAC §264.1064(k) [6-14-00]. None of the components or ancillary equipment associated with the storage tank system will contain or contact mixed waste with organic concentrations of at least 10 percent by weight.

In accordance with 20.4.1 NMAC §264.1064(k) [6-14-00], TA-55 personnel will use knowledge of the nature of the mixed waste stream(s) or knowledge of the process by which the mixed waste was produced to document exemptions to these standards. Production process information documenting that no organic compounds are contained or contacted by the components and ancillary equipment associated with the storage tank system will be recorded in TA-55's facility operating record.

A new determination will be made whenever there is a change in a process at TA-55 that produces mixed waste that could result in an increase in the total organic content of waste contained in or contacted by equipment currently determined not to be subject to these requirements.

H.6 ORGANIC AIR EMISSION STANDARDS [20.4.1 NMAC, Subpart V, Part 264, Subpart CC]

Tanks which store only mixed waste are not subject to the requirements of 20.4.1 NMAC, Subpart V, Part 264, Subpart CC [6-14-00], "Air Emission Standards for Tanks, Surface Impoundments, and Containers." Only mixed waste will be managed in the storage tank system; therefore, the storage tank system is not subject to 20.4.1 NMAC, Subpart V, Part 264, Subpart CC [6-14-00].

H.7 REFERENCES

ACI, 1995 and all approved updates, "318-71-Building Code Requirements for Structural Concrete and Commentary," American Concrete Institute, Detroit, Michigan.

ACI, 1994 and all approved updates, "347-Guide to Formwork for Concrete," American Concrete Institute, Detroit, Michigan.

ACI, 1992 and all approved updates, "315-Details and Detailing of Concrete Reinforcement," American Concrete Institute, Detroit, Michigan.

ASME, 1998 and all approved updates, "Boiler and Pressure Vessel Codes, Section VIII," American Society of Mechanical Engineers, New York, New York.

ASME, 1996a and all approved updates, “B31.3-Process Piping,” American Society of Mechanical Engineers, New York, New York.

ASME, 1996b and all approved updates, “B16.5-Pipe Flanges and Flanged Fittings,” American Society of Mechanical Engineers, New York, New York.

ASTM, 1998 and all approved updates, “A240-Standard Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels,“ American Society for Testing and Materials, Philadelphia, Pennsylvania.

ASTM, 1997a and all approved updates, “B29-Standard Specification for Refined Lead,” American Society for Testing and Materials, Philadelphia, Pennsylvania.

ASTM, 1997b and all approved updates, “A182-Standard Specification for Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings and Valves, and Parts for High-Temperature Service,” American Society for Testing and Materials, Philadelphia, Pennsylvania.

ASTM, 1995 and all approved updates, “A312-Standard Specification for Seamless and Welded Austentic Stainless Steel Pipes,” American Society for Testing and Materials, Philadelphia, Pennsylvania.

ASTM, 1987 and all approved updates, “A36-Standard Specification for Structural Steel for Welding,” American Society for Testing and Materials, Philadelphia, Pennsylvania.

Table H-1
Storage Tank System Components at Technical Area 55[a]

Tank Component	Location	Number of Tanks	Tank Capacity[b] (liters)	Tank Capacity[b] (gallons)	Tank Component Status
Evaporator Glovebox Tank	TA-55-4, Room 401	1	270	71	Constructed in 1986. Existing tank component.
Cementation Unit Pencil Tanks	TA-55-4, Room 401	5	50	13	Constructed in 1985. New tank component due to an equipment modification in 1996.
Pencil Tanks	TA-55-4, Room 401	10	50	13	To be constructed. New tank component.

a The storage tank system consists of 3 components that store the same waste matrix and share a common piping network. The overall capacity of the unit is 1,020 liters [~266 gallons].
b The tank capacity listed is for each individual tank associated with the component.

TA = technical area

Table H-2
Tank System Regulatory References and Corresponding Permit Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Permit Application
§270.16	Information requirements for tank systems	Attachment H
§264.13	General waste analysis	Attachment B[a]
§264.191	Assessment of existing tank system's integrity	H.1.1, H.2.1
§270.16	Tank systems	Attachment H
§270.16(a)	Written assessment and certification	Supplements H.1, H.2A, H.2B, H.2C, and H.3
§270.16(b)	Dimensions and capacity	H.1
§270.16(c)	Feed systems, safety cutoff, bypass systems, and pressure controls	H.1
§270.16(d)	Piping, instrumentation, and process flow diagrams	Attachment H
§270.16(e)	External corrosion protection	Supplements H.1, H.2A, H.3, and H.4
§270.16(f)	Installation of new tank systems	H.2.2 and H.2.3
§264.191(a)	Existing tank system w/o secondary containment	NA[a]
§264.191(b)	Written assessment of structural integrity	H.2.1, Supplement H.1
§264.191(b)(1)	Design standards	Supplement H.1
§264.191(b)(2)	Hazardous characteristics of waste	Supplement H.1
§264.191(b)(3)	Existing corrosion protection measures	Supplement H.1
§264.191(b)(4)	Documentation of tank age	Supplement H.1
§264.191(b)(5)	Results of leak test, internal inspection, or other tank integrity exam	Supplement H.1
§264.192	Design and installation of new tank systems or components	H.2.2 and H.2.3
§264.191(d)	Assessment reveals leaking	NA
§264.192(a)	Written assessment of structural integrity	Supplements H.2A, H.3, and H.4
§264.192(a)(1)	Design standards	Supplements H.2A, H.3, and H.4
§264.192(a)(2)	Hazardous characteristics of waste	Supplements H.2A, H.3, and H.4
§264.192(a)(3)(i)	Factors affecting the potential for corrosion	Supplements H.2A, H.3, and H.4
§264.192(a)(3)(ii)	Corrosion protection measures	Supplements H.2A, H.3, and H.4
§264.192(a)(4)	Determination of protection measures for underground tank system components	Supplements H.2A, H.3, and H.4
§264.192(a)(5)	Design considerations	H.1.2 and H.1.3
§264.192(b)	Precautions to prevent damage during installation	H.2.2 and H.2.3 Supplement H.2C
§264.192(c)	Backfill requirements	NA

See footnotes at end of table.

Table H-2 (continued)
Tank System Regulatory References and Corresponding Permit Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Permit Application
§264.192(d)	Tightness testing	H.2.2 and H.2.3 Supplement H.2B
§264.192(e)	Protection of ancillary equipment	H.1, Supplement H.2A and H.3
§264.192(f)	Independent corrosion expert recommendations	NA
§264.192(g)	Certification of proper design and installation	H.2, Supplement H.2C
§270.16(g)	Secondary containment systems	H.3
§264.193	Containment and detection of releases	H.3
§264.193(a)	Preventing the release of hazardous constituents to the environment	H.3
§264.193(a)(1)	Secondary containment of new tank systems	H.3
§264.193(a)(2)	Tank systems used to store or treat EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027, within two years after January 12, 1987	NA
§264.193(a)(3)	Existing tank systems of known and documented age, within two years after January 12, 1987 or when the tank system has reached 15 years of age	H.3
§264.193(a)(4)	Existing tank systems for which the age cannot be documented, within eight years of January 12, 1987	NA
§264.193(b)	Secondary containment system requirements	H.3
§264.193(b)(1)	Design, installation, and operation to prevent migration of waste or accumulated liquid out of system to the environment	H.3
§264.193(b)(2)	Detection and collection of releases and accumulated liquids	H.3
§264.193©	Secondary containment construction requirements	H.3
§264.193©(1)	Compatible construction materials of sufficient strength and thickness	H.3
§264.193©(2)	Foundation	H.1
§264.193©(3)	Leak detection system	H.3
§264.193©(4)	Sloped or designed to remove liquids from leaks, spills, or precipitation	H.3
§264.193(d)	Secondary containment devices	H.3
§264.193(e)	Additional construction requirements	H.3
§264.193(e)(1)	External liner	H.3
§264.193(e)(2)	Vault systems	NA
§264.193(e)(3)	Double-walled tanks	NA
§264.193(f)	Ancillary equipment	H.3
§270.16(h)	Tank systems with a variance	NA
§264.193(g)	Variance from the requirements of §264.193	NA
§264.193(h)	Secondary containment variance request procedures	NA

See footnotes at end of table.

Table H-2 (continued)
Tank System Regulatory References and Corresponding Permit Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Permit Application
§264.193(i)	Requirements pending provision of adequate secondary containment	NA
§264.194	General operating requirements	H.1, H.3
§264.194(a)	Prohibition of hazardous waste that could cause the tank or equipment to rupture, leak, corrode, or otherwise fail	H.1, Supplements H.1, H.2A and H.3
§270.16(i)	Description of controls and practices to prevent spills and overflows	H.1
§264.194(b)	Controls and practices to prevent spills and overflows	H.1
§264.194(b)(1)	Spill prevention controls	H.1
§264.194(b)(2)	Overfill prevention controls	H.1
§264.194(b)(3)	Maintenance of sufficient freeboard	NA
§264.195	Inspections	Attachment C[a]
§264.195(a)	Overfill control inspection schedule	Attachment C[a]
§264.195(b)	Inspection of tank system for corrosion or releases, data from monitoring and leak detection equipment, construction materials, and immediately surrounding area	Attachment C[a]
§264.195(c)	Inspection of cathodic protection system	NA
§264.196	Response to leaks or spills and disposition of leaking or unfit-for-use tank systems	H.3
§264.197	Closure and post-closure care	Attachment F.2
§264.197(a)	Removal and decontamination of all hazardous waste residues, contaminated containment system components (liners, etc.), contaminated soils, and structures and equipment	Attachment F.2
§264.197(b)	Demonstration that not all contaminated soils can be practicably removed or decontaminated	Attachment F.2
§264.197(c)	Tank system not having secondary containment that meets the requirements of §264.193(b) through (f) and has not been granted a variance from the secondary containment requirements	NA
§264.197(c)(1)	Plan for complying with removal and decontamination requirements	Attachment F.2
§264.197(c)(2)	A contingent post-closure plan	Attachment F.2
§264.197(c)(3)	Cost estimates calculated for closure and post-closure care	Attachment F.2
§264.197(c)(4)	Financial assurance based on cost estimates	Attachment F.2
§264.197(c)(5)	Contingent closure and post-closure plans must meet all of the closure, post-closure, and financial responsibility requirements for landfills	Attachment F.2
§270.16(j)	Special requirements for ignitable, reactive, or incompatible wastes	H.4
§264.198	Special requirements for ignitable or reactive wastes.	H.4

Regulatory Citation(s)	Description of Requirement	Location in this Permit Application

See footnotes at end of table.

Table H-2 (continued)
Tank System Regulatory References and Corresponding Permit Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Permit Application
§264.198(a)	Circumstances allowing ignitable or reactive waste in tanks	NA
§264.198(a)(1)	The waste is treated, rendered, or mixed before or immediately after placement in the tank system	NA
§264.198(a)(1)(I)	The resulting waste, mixture, or dissolved material no longer meets the definition of ignitable or reactive waste	NA
§264.198(a)(1)(ii)	Compliance with §264.17(b)	NA
§264.198(a)(2)	The waste is stored or treated in such a way that it is protected from any material or conditions that may cause the waste to ignite or react	H.4
§264.198(a)(3)	The tank system is used solely for emergencies	NA
§264.198(b)	Compliance with the requirements for the maintenance of protective distances between the waste management area and any public ways, streets, alleys, or an adjoining property line	H.4[a]
§264.199	Special requirements for incompatible wastes	H.4[a]
§264.199(a)	Incompatible wastes, or incompatible wastes and materials, must not be placed in the same tank system, unless §264.17(b) is complied with	H.4[a]
§264.199(b)	Hazardous waste must not be placed in a tank system that has not been decontaminated and that previously held an incompatible waste or material, unless §264.17(b) is complied with	H.4[a]
§270.16(k)	Air emission control equipment	H.6
§270.27	Information requirements for air emission controls	H.6
§264.200	Air emission standards	H.5, H.6

[a] Requirement or information is also addressed in the most recent version of the "Los Alamos National Laboratory General Part B Permit Application."

NA = not applicable.
EPA = U.S. Environmental Protection Agency

Table H-3
Secondary Containment Capacities for the Storage Tank System

Storage Tank System Component	No. of Tanks	Tank Capacity (gallons)	Location	Secondary Containment	Capacity of Secondary Containment (gallons)
Evaporator Glovebox Tank	1	71	TA-55-4, Room 401	TA-55-4, Room 401	10,773[b]
Cementation Unit Pencil Tanks	5	13			
Pencil Tanks	10	13			

a The tank capacity listed is for each individual tank associated with the component.
b Secondary containment capacity based on Room 401, which is recessed 2.5 inches and has dimensions of 60-ft-long by 75-ft-wide

TA = technical area

Figure H-1 has been provided confidentially under separate cover.

ATTACHMENT I

CEMENTATION UNIT

TABLE OF CONTENTS

LIST OF TABLES ii
LIST OF FIGURES iii
LIST OF SUPPLEMENTS iv
LIST OF ACRONYMS/ABBREVIATIONS v

CEMENTATION UNIT I-1

I.1 DESIGN CONSTRUCTION, MATERIALS, AND OPERATION I-1

I.2 CEMENTATION UNIT DEMONSTRATION OF TREATMENT EFFECTIVENESS I-3

I.3 ENVIRONMENTAL PERFORMANCE STANDARDS I-4

I.3.1 Protection of the Groundwater/Vadose Zone I-4

I.3.2 Protection of Surface Water/Wetlands/Soil Surface I-5

I.3.3 Protection of the Atmosphere I-5

I.4 SPECIAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE I-6

I.5 AIR EMISSIONS STANDARDS FOR EQUIPMENT LEAKS I-6

I.6 REFERENCES I-7

LIST OF TABLES

TABLE NO.	TITLE
I-1	Subpart X Miscellaneous Unit Regulatory References and Corresponding Permit Application Location

LIST OF FIGURES

FIGURE NO.	TITLE
I-1	Cementation Unit General Arrangement Diagram
I-2	Cementation Unit Process Flow Diagram
I-3	Cementation Unit Front Elevation
I-4	Cementation Unit Elevation and Plan View
I-5	Cementation Unit Mechanical Legend
I-6	Cementation Unit Piping and Instrumentation Diagram

LIST OF SUPPLEMENTS

SUPPLEMENT NO.	TITLE
I.1	Manufacturer's Information on Mixers
I.2	"Waste-Form Development for Conversion to Portland Cement at Los Alamos National Laboratory (LANL) Technical Area 55 (TA-55)"

LIST OF ABBREVIATIONS/ACRONYMS

20.4.1 NMAC	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
DOE	U.S. Department of Energy
ft	feet/foot
gal	gallon(s)
in.	inch(es)
L	liter(s)
LANL	Los Alamos National Laboratory
TA	technical area
TC	toxicity characteristic
TCLP	Toxicity Characteristic Leaching Procedure
WAC	Waste Acceptance Criteria
WIPP	Waste Isolation Pilot Plant

ATTACHMENT I
CEMENTATION UNIT

The information provided in this attachment is submitted to address the applicable miscellaneous unit requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), Subparts X and BB, revised June 14, 2000 [6-14-00], for the cementation unit. The attachment provides a description of the cementation unit that is used to cement or stabilize mixed waste generated at Technical Area (TA) 55 and the Chemistry and Metallurgy Research Building at TA-3. It includes detailed descriptions of the cementation unit and associated ancillary equipment. Detailed drawings are provided as Figures I-1 through I-7 and are provided for informational purposes only. Table I-1 summarizes applicable Subpart X miscellaneous unit regulatory references and the corresponding location where the requirement is addressed in this document.

I.1 DESIGN, CONSTRUCTION, MATERIALS, AND OPERATION [20.4.1 NMAC §270.23(a) and 20.4.1 NMAC §264.601]

The cementation unit is located in Glovebox GB-454 along the west wall of TA-55-4, Room 401 (Figure I-1). The unit has been in operation since 1991 and has a maximum capacity of 568 liters (L) (approximately 150 gallons [gal]). It consists of a pH adjustment column, a vacuum trap, two motor-driven mixers, four impellers, associated support structures, a glovebox, and piping (Figure I-2).

The pH column has a straight side height of 5 feet (ft) and an outside diameter of 6.66 inches (in.). The maximum capacity of the column is approximately 27 L. The column is raised above the glovebox floor approximately 3 in. by three steel legs and is secured to one wall of the glovebox with a steel bracket that binds the column approximately 3 ft up from the base of the column. The vacuum trap associated with the column has a straight side height of 2 ft and an inside diameter of 6 in. The maximum capacity of the vacuum trap is approximately 11 L. Both the pH column and the vacuum trap are constructed of PYREX® glass with stainless steel end plates similar to the glass columns in the evaporator glovebox tank component described in Attachment H. The glass and stainless steel materials are corrosion-resistant and compatible with the waste received in the column. The pH column is used to adjust the pH of approximately 5 L of waste to ensure compatibility with the cement used for solidification. A compressed-air line enters the glovebox and is connected to two pressurized air tanks outside of the glovebox. The compressed-air line is used for remote valve operation.

The two mixers within the unit are high-flow, gear-driven, fixed-mount mixers. (Manufacturer's information on the fixed-mount mixers is included in this attachment as Supplement I.1.) All couplings,

shafts, and impellers are constructed of 316 stainless steel. The shafts are 5 ft long. Two impellers are mounted to each shaft. Each impeller has a diameter of approximately 11 in. The mixers are driven by 3.5-horsepower motors encased within the mixer housing. The mixer housing is approximately 2.5 ft long. The maximum weight of each mixer is 225 pounds. Each mixer is mounted on steel plates and supported by two steel guides on either side of each mixer. Each guide is bolted to a 6-in. steel flange at either end and is secured to the glovebox floor and ceiling. Each motor is mounted to a center screw drive that allows the mixers to be independently raised and lowered within the glovebox (Figures I-3 and I-4).

The glovebox is constructed of a section of 0.75 in. lead between two sections of approximately 0.188-in.-thick low-carbon grade, 316 stainless steel. The floor of the glovebox contains two circular openings with removable covers that allow the shafts and impellers of each mixer to be lowered into drums attached beneath the glovebox.

During cementation operations, two 55-gal steel drums are positioned under the glovebox directly under the openings in the floor of the glovebox. A “bag-out” bag extends from the glovebox into each drum between the drum and the drum liner. This liner is fastened at the bottom of the glovebox with an elastic cord and clamped into place to prevent hazardous constituents from escaping the confinement of the glovebox and the drums during treatment operations. The cement and the waste to be solidified are transferred into the drums and homogeneously mixed inside the drums. Each drum is positioned on a steel platform/scale that is secured in a steel track. The platform allows the drums to be safely and easily removed from the unit after the cement has hardened.

The majority of the piping associated with the cementation unit is 316 stainless steel. Tygon® tubing is used to transfer sodium hydroxide and the contents of the pH column to the drums. The cement is transferred into the glovebox and drums from a hopper/screw feeder through rubber tubing. Figures I-5 and I-6 present a legend and piping and instrumentation diagram for the cementation unit.

Waste analysis and inspection procedures for the cementation unit are provided in Attachments B and C of this permit application, respectively. The closure plan for the cementation unit is provided in Attachment F.3 of this permit application. Section 4.0 provides information on corrective actions.

I.2 CEMENTATION UNIT DEMONSTRATION OF TREATMENT EFFECTIVENESS [20.4.1 NMAC §270.23(d)]

The cementation unit at TA-55, Building 4 (TA-55-4), Room 401 is considered a Subpart X miscellaneous unit and, as such, is subject to the miscellaneous unit requirements in 20.4.1 NMAC §270.23(d) [6-14-00] for "a report on the demonstration of treatment effectiveness of the treatment based on laboratory or field data." Supplement I.2 provides a technical paper entitled “Waste Form Development for Conversion to Portland Cement at Los Alamos National Laboratory (LANL) Technical Area 55 (TA-55)” (Veazey et. al., 1996). This technical paper contains detailed information that demonstrates that the cementation unit at TA-55 effectively treats the mixed waste based on the treatment objectives described below:

- Stabilize mixed waste solutions that contain various radionuclides and toxicity characteristic (TC) metals in a cement matrix so that the metals are not leachable as determined by the Toxicity Characteristic Leaching Procedure (TCLP) and thus no longer exhibit the TC following treatment. The TC metals of primary concern are chromium, arsenic, cadmium, mercury, and lead.

- Stabilize mixed waste solids that contain various radionuclides and TC metals in a cement matrix so that metals are not leachable as determined by TCLP.

- Produce solidified cement monoliths that meet Waste Isolation Pilot Plant (WIPP) Waste Acceptance Criteria (WAC), which prohibit free liquids (U.S. Department of Energy [DOE], 1999).

The technical paper in Supplement I.2 describes bench- and full-scale testing that was performed to evaluate the effectiveness of using Portland cement in the cementation unit to stabilize mixed waste. The goal of the project was to develop a Portland cement-based waste form that meets the WIPP WAC and reliably passes TCLP. The results discussed in this technical paper demonstrate that the use of Portland cement in the TA-55 cementation unit under the prescribed conditions produces a cement monolith that meets all of the performance standards devised for the project. These performance standards include no free liquids, passing TCLP, and meeting minimum compressive strength criteria. The use of these results in demonstrating the treatment effectiveness of the cementation unit is appropriate for the following reasons:

- The waste streams used in the testing are very similar or the same as those actually treated in the cementation unit;

- TA-55 uses Portland cement in their cementation process, as was done in the testing; and

- The testing conditions described in the technical paper were modeled to the actual cementation process at TA-55, to the extent practicable.

Additional constituents, in addition to those described in Supplement I.2, may be treated in the cementation unit to meet the physical criteria discussed above.

I.3 ENVIRONMENTAL PERFORMANCE STANDARDS [20.4.1 NMAC, Subpart V, Part 264, Subpart X]

The following information is provided to address the applicable hydrologic, geologic, and meteorological requirements of 20.4.1 NMAC §270.23(b) and (c) and 20.4.1 NMAC §264.601 [6-14-00] for the cementation unit at TA-55. The cementation unit is located within glovebox GB-454 in TA-55-4, Room 401. The location of the unit, the waste management practices outlined in Attachment J of this permit application, and the containment features described in the following sections prevent the deposition or migration of hazardous constituents into the groundwater, surface water, soil surface, or the atmosphere and ensure that the cementation unit is in compliance with the environmental performance standards of 20.4.1 NMAC §264.601 [6-14-00]. Waste analysis requirements for the cementation unit are addressed in Appendix B of the most recent version of the "Los Alamos National Laboratory General Part B Permit Application," hereinafter referred to as the LANL General Part B. Contingency measures applicable to the cementation unit are addressed in Appendix E of the LANL General Part B. Attachment F.3 provides closure information for the cementation unit.

I.3.1 Protection of the Groundwater/Vadose Zone [20.4.1 NMAC §264.601(a)]

In accordance with 20.4.1 NMAC §264.601(a) [6-14-00], the cementation unit is operated in a manner that prevents releases that may have adverse effects on human health or the environment due to migration of hazardous waste or hazardous constituents through the vadose zone to the groundwater. The cementation unit is located in a vacuum-pressurized glovebox at TA-55-4 inside Room 401. Room 401 provides secondary containment for the cementation unit. The floor of the room is recessed approximately 2.5 in. The room itself is approximately 60 ft long by 75 ft wide. The capacity of the secondary containment area is greater than 100 percent of the volume of waste that is treated in the cementation unit at any one time. The entire floor is constructed of a 10-in.-thick reinforced concrete slab. Certified operators inspect the cementation unit each working day to detect leaks. Eight continuous air monitors installed at various locations throughout TA-55-4, Room 401 detect any airborne alpha contamination that would be present if a leak were to occur resulting in a release outside of glovebox GB-454. In the event of a release, the materials in question are removed as

quickly as possible and are packaged in an appropriate container.

The cementation unit is located, designed, constructed, operated, and maintained, and will be closed in a manner that ensures protection of human health and the environment. The conditions outlined in 20.4.1 NMAC §264.601(a) [6-14-00] were considered and there is little or no potential for deposition or migration of waste constituents into the groundwater or subsurface environment. The cementation unit is located inside a building, provided with secondary containment, designed and constructed as described in Section I.1, operated and maintained in accordance with waste management procedures described in Attachment J of this document, and will be closed in accordance with the procedures described in Attachment F.3; therefore, adverse effects on human health or the environment due to the treatment operations conducted in the cementation unit are unlikely.

I.3.2 Protection of Surface Water/Wetlands/Soil Surface [20.4.1 NMAC §264.601(b)]

In accordance with 20.4.1 NMAC §264.601(b) [6-14-00], the cementation unit is operated in a manner that prevents releases that may have adverse effects on human health or the environment due to the deposition or migration of waste constituents into surface water, wetlands, or onto the soil surface. Section I.3.1 provides a detailed description of the effectiveness and reliability of the containment features to be utilized by the cementation unit to prevent releases.

The cementation unit is located, designed, constructed, operated, and maintained, and will be closed in a manner that will ensure protection of human health and the environment. The conditions outlined in 20.4.1 NMAC §264.601(b) [6-14-00] were considered and there is little or no potential for deposition or migration of waste constituents into surface water, wetlands, or soil surface. The cementation unit is located inside a building, provided with secondary containment, designed and constructed as described in Section I.1, operated and maintained in accordance with waste management procedures described in Attachment J of this document, and will be closed in accordance with the procedures described in Attachment F.3.

I.3.3 Protection of the Atmosphere [20.4.1 NMAC §264.601(c)]

In accordance with 20.4.1 NMAC §264.601(c) [6-14-00], the cementation unit is operated in a manner that prevents releases that may have adverse effects on human health or the environment due to the deposition or migration of waste constituents into the atmosphere. The cementation unit is located within a negative pressure glovebox that is connected to the TA-55-4 facility ventilation system. The

high-efficiency particulate air filters on the glovebox are on the air intake side of the ventilation and are designed to prevent escape of contamination from the glovebox in the event of a power failure. TA-55-4 is equipped with a backup generator that re-establishes power to all vital systems, providing exhaust to the glovebox. The unit is a batch waste treatment system. If a power failure occurs, all operations cease inside the glovebox until power is restored. In addition, the glovebox is located within three succeedingly greater pressure zones. These zones are (in order of increasing pressure) the glovebox, Room 401, and the main corridor outside of Room 401. These pressure zones are designed to create an airflow into Room 401 and the glovebox and limit the potential for hazardous constituents to migrate to the atmosphere.

Operation of the cementation unit does not impact air quality at LANL. The cementation unit is operated within a negative pressure environment and, therefore, adverse affects on human health or the environment due to migration of hazardous constituents to the atmosphere as a result of treatment operations conducted in the cementation unit are unlikely. The conditions outlined in 20.4.1 NMAC §264.601(c) [6-14-00] were considered and there is little or no potential for health risks caused by human exposure to waste constituents or for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents.

I.4 SPECIAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE [20.4.1 NMAC §270.14(b)(9) and §264.19]

No ignitable, reactive, or incompatible mixed wastes are treated in the cementation unit.

I.5 AIR EMISSIONS STANDARDS FOR EQUIPMENT LEAKS [20.4.1 NMAC, Subpart V, Part 264, Subpart BB]

The cementation unit addressed in this permit application is not subject to 20.4.1 NMAC, Subpart V, Part 264, Subpart BB [6-14-00], “Air Emission Standards for Equipment Leaks,” with the exception of the reporting requirements specified in 20.4.1 NMAC §264.1064(k) [6-14-00]. None of the equipment associated with the cementation unit at TA-55 contains or contacts mixed waste with organic concentrations of at least 10 percent by weight.

In accordance with 20.4.1 NMAC §264.1064(k) [6-14-00], TA-55 uses knowledge of the nature of the mixed waste stream(s) or knowledge of the process by which the mixed waste was produced to document their exemptions to these standards. Production process information documenting that no

organic compounds are contained in or contacted by equipment associated with the cementation unit is recorded in TA-55's facility operating record.

I.6 REFERENCES

Veazey, G.W., Schake, A.R., Shalek, P.D., Romero, D.A., Smith, C.A., 1996, “Waste Form Development for Conversion to Portland Cement at Los Alamos National Laboratory (LANL) Technical Area 55 (TA-55),” Los Alamos National Laboratory, Los Alamos, New Mexico.

DOE, 1999, “Waste Acceptance Criteria for the Waste Isolation Pilot Plant,” DOE/WIPP-069, REV 7, U.S. Department of Energy, Carlsbad Area Office, Carlsbad, New Mexico.

Table I-1
Subpart X Miscellaneous Unit Regulatory References and Corresponding Permit Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Permit Application
§264.601	Environmental performance standards	I.3
§264.601(a)	Prevention of release of contaminants to groundwater	I.3.1
§264.601(a)(1)	Volume and characteristics of waste considering potential for migration through containing structures	I.3.1
§264.601(a)(2)	Hydrologic/geologic characteristics	I.3.1
§264.601(a)(3)	Quality of groundwater including other sources of contamination and their cumulative impact on groundwater	I.3.1
§264.601(a)(4)	Quantity and direction of groundwater flow	I.3.1
§264.601(a)(5)	Proximity to and withdrawal rates of potential groundwater users	I.3.1
§264.601(a)(6)	Regional patterns of land use	I.3.1
§264.601(a)(7)	Potential for deposition and migration of waste constituents	I.3.1
§264.601(a)(8)	Potential for health risks caused by human exposure to waste constituents	I.3.1
§264.601(a)(9)	Potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents	I.3.1
§264.601(b)	Prevention of release of contaminants to surface water	I.3.2
§264.601(b)(1)	Volume and characteristics of the waste	I.3.2
§264.601(b)(2)	Effectiveness and reliability of containment, confinement, and collection systems and structures	I.3.2
§264.601(b)(3)	Hydrologic characteristics of the unit and local area	I.3.2
§264.601(b)(4)	Regional precipitation patterns	I.3.2
§264.601(b)(5)	Quantity, quality, and direction of groundwater flow	I.3.1
§264.601(b)(6)	Proximity of the unit to surface water	I.3.2
§264.601(b)(7)	Current and potential uses of nearby surface waters and water quality standards for those waters	I.3.2
§264.601(b)(8)	Quality of surface waters and soils including other sources of contamination and their cumulative impact on surface waters and soils	I.3.2
§264.601(b)(9)	Regional patterns of land use	Attachment A
§264.601(b)(10)	Potential for health risks caused by human exposure to waste constituents	I.3.2
§264.601(b)(11)	Potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents	I.3.2

See footnotes at end of table.

Table I-1 (continued)
Subpart X Miscellaneous Unit Regulatory References and Corresponding Permit Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Permit Application
§264.601(c)	Prevention of release of contaminants to air	I.3.3
§264.601(c)(1)	Volume and characteristics of waste including its potential for emission	I.3.3
§264.601(c)(2)	Effectiveness and reliability of systems/structures to reduce/prevent emissions of hazardous constituents to the air	I.3.3
§264.601(c)(3)	Operating characteristics of the unit	I.3.3
§264.601(c)(4)	Characteristics of the unit and the surrounding area	I.3.3
§264.601(c)(5)	Existing quality of the air including other sources of contaminants and their cumulative impact on the air	I.3.3
§264.601(c)(6)	Potential health risks caused by human exposure to waste constituents	I.3.3
§264.601(c)(7)	Potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents	I.3.3
§264.602	Monitoring, analysis, inspection, response, reporting, and corrective action	Attachment C[a], D[a], J, and I
§264.603	Post-closure care	Attachment F.3
§264.15	General inspection requirements	Attachment C[a]
§264.33	Testing and maintenance of equipment	
§264.75	Biennial report	Attachment J
§264.76	Unmanifested waste report	Attachment J
§264.77	Additional reports	Attachment J
§264.101	Corrective action for solid waste management units	4.0

a Requirement or information is also addressed in the most recent version of the "Los Alamos National Laboratory General Part B Permit Application."

Figure I-1 has been provided confidentially under separate cover.

Supplement I.1
Manufacturer's Information on Mixers

Supplement I.2

"Waste-Form Development for Conversion to Portland Cement at Los Alamos National Laboratory (LANL) Technical Area 55 (TA-55)"

ATTACHMENT J

GENERAL FACILITY OPERATIONS AND WASTE MANAGEMENT PRACTICES

TABLE OF CONTENTS

LIST OF FIGURES ii
LIST OF ABBREVIATIONS/ACRONYMS iii

GENERAL FACILITY OPERATIONS AND WASTE MANAGEMENT PRACTICES J-1
J.1 SECURITY AND ACCESS CONTROL J-1
J.2 PREPAREDNESS AND PREVENTION J-2
J.2.1 Required Equipment J-2
J.2.2 Testing and Maintenance of Equipment J-5
J.2.3 Access to Communications or Alarm Systems J-5
J.2.4 Aisle Space Requirements J-5
J.2.5 Support Agreements with Outside Agencies J-5
J.3 HAZARDS PREVENTION J-5
J.3.1 Preventing Hazards in Unloading J-6
J.3.2 Preventing Run-On/Runoff J-6
J.3.3 Preventing Water Supply Contamination J-6
J.3.4 Mitigating Effects of Power Outages J-7
J.3.5 Preventing Undue Exposure J-7
J.3.6 Preventing Releases to the Atmosphere J-8
J.4 RECORDKEEPING REQUIREMENTS J-8
J.5 REFERENCES J-8

LIST OF FIGURES

FIGURE NO.	TITLE
J-1	Location Map Showing Security Fences, Entry Gates, and Entry Station at Technical Area (TA) 55

LIST OF ABBREVIATIONS/ACRONYMS

20.4.1 NMAC	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
CAM	continuous air monitor
CAS	Central Alarm Station
cm	centimeters
cm/hr	centimeters per hour
CSU	container storage unit
FMCS	facility motor/control system
ft	feet/foot
HEPA	high-efficiency particulate air
LACFD	Los Alamos County Fire Department
LANL	Los Alamos National Laboratory
MSDS	Material Safety Data Sheets
PA	public address
S-10	Hazardous Materials Response Group
TA	technical area

ATTACHMENT J
GENERAL FACILITY OPERATIONS AND WASTE MANAGEMENT PRACTICES

This attachment provides an overview of current facility operations and waste management practices for the hazardous and mixed waste management units at Los Alamos National Laboratory (LANL) Technical Area (TA) 55.

J.1 SECURITY AND ACCESS CONTROL [20.4.1 NMAC §270.14(b)(4) and §270.14(b)(19)(viii) and 20.4.1 NMAC §264.14]

Security at TA-55 is maintained with both manmade and natural barriers. These barriers prevent the unknowing entry and minimize the possibility for unauthorized entry of persons or livestock into TA-55, and thus satisfy the requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC) §264.14, revised June 14, 2000 [6-14-00]. Two 12-foot (ft) high chain-link security fences with razor wire at the top surround the entire perimeter of TA-55, as shown on Figure J-1.

Three entry gates allow access to TA-55. One entry gate is located at the main entrance to TA-55 on the southeast side of the facility, one entry gate is located on the road to TA-48 at the northwest end of TA-55, and one entry gate is located at the northeast corner of TA-55 (for access to TA-55, Building 28 [TA-55-28] only). An entry station is located adjacent to the entry gate at the main entrance to the facility. The entry station is manned 24 hours a day by security personnel. Unescorted access to TA-55 is granted only to persons possessing appropriate security clearance and meeting specific training requirements.

TA-55 is patrolled by security personnel during both operational and nonoperational hours to ensure that the gates are locked and that unauthorized entry has not occurred. The entire length of both security fences is also inspected several times each day by on-site security personnel. In accordance with 20.4.1 NMAC §270.14(b)(19)(viii) [6-14-00], the locations of the security fences, entry gates, and entry stations are shown on Figure J-1. In addition to the fence and entry gates, cliffs and canyons surrounding TA-55 provide natural barriers to discourage unauthorized entry.

Warning signs are posted on the perimeter fences at approximately 40 to 110-ft intervals and can be seen from any approach to TA-55. Warning signs are also posted at each access to the waste management units in sufficient numbers to be seen from any approach. The legends on the signs are bilingual (i.e., English and Spanish) and indicate “No Trespassing By Order of the United States Department of Energy.” The signs are legible from a distance of 25 ft. The only exceptions are in

confined areas where space is limited. Signs for confined areas may be reduced in size, but are legible to personnel who require access to these areas.

J.2 PREPAREDNESS AND PREVENTION [20.4.1 NMAC, Subpart V, Part 264, Subpart C]

The following sections present how operations at TA-55 comply with the preparedness and prevention requirements of 20.4.1 NMAC, Subpart V, Part 264, Subpart C [6-14-00]. Additional information on the communication and alarm equipment available at LANL is presented in Appendix E of the most recent version of the "Los Alamos National Laboratory General Part B Permit Application," hereinafter referred to as the LANL General Part B. A list of the emergency equipment available for use at the hazardous and mixed waste management units at TA-55 is provided in Tables E-1 through E-4 of Attachment E of this document and in Table E-2 of the LANL General Part B. A videotape explaining the alarms and evacuation procedures at TA-55 must be viewed by new visitors prior to entering TA-55.

J.2.1 Required Equipment [20.4.1 NMAC §264.32]

Buildings at TA-55 are equipped with multiple audible and visual safety-alarm systems to alert personnel in the event of an emergency and to evacuate the area. These alarm systems are located both inside and outside buildings at TA-55 and are monitored and controlled by the facility monitor/control system (FMCS). The FMCS is in operation 24 hours a day and is located in the Operations Center at TA-55-4 with access through TA-55-3. Specific FMCS alarm systems at TA-55 are discussed below.

A TA-55 computer system monitors the smoke and heat sensors, fire-alarm pull boxes, and drop box push-button alarms located throughout TA-55. Fire-alarm pull boxes and/or drop box push-button alarms are located in the vicinity of the waste management units addressed in this permit application. Fire-alarm pull boxes may be used by personnel to activate a local fire alarm when a fire or other emergency is discovered. Fire-alarm pull boxes are located in TA-55-4, Room 401, and throughout the basement in the vicinity of the container storage units (CSU), storage tank system, and cementation unit. A fire-alarm pull box is readily available at TA-55-185 and on the outer west side of TA-55-4 (for personnel working at the container storage pad). Once manually activated, an alarm (a steady high-pitched tone) sounds in the TA-55-4 Operations Center and at the Los Alamos County Fire Department (LACFD). Automatic thermal alarms are also located in active gloveboxes at TA-55-4.

Buildings at TA-55 are equipped with fire-suppression alarm systems and/or smoke detectors. The fire-suppression alarms are activated when water flow is detected in the sprinkler pipes of the fire-suppression system. The smoke detectors, once activated, also sound an alarm. Both types of alarms

are area-specific and sound only in the affected area. Red lights are mounted both inside and outside of rooms and at strategic locations throughout TA-55. Upon activation of the fire-alarm system, the alarm sounds and the red lights flash to alert personnel of emergency conditions. All fire-alarm pull boxes, heat and smoke detection systems, and automatic fire-suppression systems at TA-55 are connected to the LACFD through LANL's Central Alarm Station (CAS).

A general evacuation alarm (a loud mid-range pulsating tone) is activated by gamma sensors on the ceilings of rooms on the first floor of TA-55-4 and in other areas of the basement. This evacuation alarm sounds throughout TA-55 and serves to alert personnel to evacuate. It may also be activated by the TA-55-4 Operations Center for other emergencies requiring evacuation.

Continuous air monitors (CAM) are located at various locations throughout TA-55. CAMs will be used as additional leak detection for the waste management units addressed in this permit application by detecting any airborne alpha contamination that would be present if a spill or leak of mixed waste were to occur.

TA-55-4 is also equipped with a ventilation alarm system designed to monitor air pressure and ambient air for personnel working in areas where hazardous or mixed waste is managed. The ventilation system creates zones within TA-55-4 which are at a lower pressure than the outside air. Air flows from the zones of highest pressure to the zones of lowest pressure (highest potential contamination areas). The airflow through the different zones is carefully balanced and controlled to provide the greatest protection to personnel as well as to the environment. If negative air pressure exceeds designated limits, a ventilation alarm (a slow, repeating chime sound) is activated.

In addition to the alarms described above, the public address (PA) system may also be used to announce an evacuation at TA-55. The PA system can be heard throughout TA-55 and is activated by the TA-55-4 Operations Center.

TA-55 is equipped with both local paging and conventional telephones to provide adequate communication and to summon external emergency assistance, if necessary. Local paging telephones and speakers and/or conventional telephones are located at or near the hazardous and mixed waste management units addressed in this permit application. Local paging telephones are used to page on-site personnel within the local paging area 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 general evacuation alarm system at TA-55 is interrupted when the TA-55 PA system is activated through the

TA-55-4 Operations Center. Personnel working at any of the waste management units at TA-55 may also use conventional telephones to call the Operations Center to summon emergency assistance from the Hazardous Materials Response Group (S-10), local police and fire departments, and state emergency response teams, if necessary.

Fire control equipment is readily available for the waste management units addressed in this permit application. Depending on the size of the fire and the fuel source, portable fire extinguishers may be used by on-site personnel. However, LANL policy encourages immediate evacuation of the area and notification of appropriate emergency personnel. All buildings at TA-55 are equipped with heat and smoke detection systems and/or automatic, heat-activated fire-suppression systems to aid in the timely response in the event of fires in these buildings.

Fire hydrants are located on the north, south, and west sides of TA-55-4. Water is supplied to the fire hydrants by a municipal water system which provides adequate volume and pressure (i.e., greater than 1,000 gallons per minute and 90 pounds per square inch static pressure) to multiple water hoses in the event of a fire. The LACFD will supply all water hoses needed in the event of a fire at TA-55.

Spill control at TA-55-4, Room 401, and the Vault is provided by recessed floors. Self-containment pallets or cabinets provide spill control at the B40 and K13 CSUs. Additional spill control equipment is available, as needed, from S-10.

Decontamination equipment is available at TA-55 for personnel working at any of the waste management units included in this permit application. The equipment includes portable eyewash stations and safety showers. Eyewash stations and safety showers are located in Room 401 and throughout the basement of TA-55-4. Eyewash stations are also located on the Container Storage Pad and outside on the south side of TA-55-4 near TA-55-185. TA-55-185 will be equipped with an eyewash station prior to wastes being managed there. Safety showers are readily available in the following locations: TA-55-4, Room 401; in the basement of TA-55-4; on the Container Storage Pad; and outside on the south side of TA-55-4. TA-55-185 will be equipped with a portable safety shower prior to wastes being managed there. Additional decontamination equipment may be provided by S-10 personnel. Material Safety Data Sheets (MSDS) provide useful exposure information and are available in Room 401 and in the basement of TA-55-4. MSDSs will also be located in TA-55-185 prior to wastes being managed there.

J.2.2 Testing and Maintenance of Equipment [20.4.1 NMAC §264.33]

All TA-55 communications and alarm systems, fire protection, and decontamination equipment are inspected, tested, and/or maintained as provided in Attachment D of this document. The frequency of inspection is adequate to ensure proper operation in the event of an emergency. Repair and replacement of emergency equipment are performed as required.

J.2.3 Access to Communications or Alarm Systems [20.4.1 NMAC §264.34]

Whenever waste is being handled at any of the TA-55 waste management units addressed in this permit application, 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, communication equipment at TA-55 allows personnel to contact the TA-55-4 Operations Center, the operating group management, S-10, and/or the CAS operator. In addition to communications and alarm systems, TA-55 personnel may carry pagers so that they can be contacted by TA-55 and other LANL emergency support personnel at all times.

J.2.4 Aisle Space Requirements [20.4.1 NMAC §264.35]

Waste containers in the TA-55 CSUs are arranged in rows with a minimum aisle space of 24 inches. Storage configuration within a row depends upon the type of container, its size, and its weight restrictions. Fifty-five-gallon drums and standard waste boxes are arranged in rows and may be stacked to a maximum of ten ft high. The 85-gallon drums are not stacked. Large waste boxes may also be stacked to a maximum of two high, unless size and weight restrictions prohibit stacking due to safety concerns.

J.2.5 Support Agreements with Outside Agencies [20.4.1 NMAC §264.37(a)]

LANL maintains support agreements with outside agencies for emergency response assistance. Information regarding these support agreements is provided in Section 2.1.2.4 of the LANL General Part B.

J.3 HAZARDS PREVENTION [20.4.1 NMAC, Subpart V, Part 264, Subpart C; 20.4.1 NMAC §270.14(b)(8)]

A description of the preventive procedures, structures, and equipment at TA-55 is presented below. This information is provided in accordance with the requirements of 20.4.1 NMAC, Subpart V, Part 264, Subpart C, and 20.4.1 NMAC §270.14(b)(8) [6-14-00]. Adherence to the procedures and proper use of the structures and equipment will help to prevent hazards, undue exposure of personnel to hazardous and mixed waste, and releases to the environment.

J.3.1 Preventing Hazards in Unloading [20.4.1 NMAC §270.14(b)(8)(i)]

Flatbed trucks, trailers, forklifts, or other appropriate vehicles may be used to transport waste containers to and from the waste management units at TA-55. Forklift operators may use a boom, if necessary, to improve handling capabilities. 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.

J.3.2 Preventing Run-On/Runoff [20.4.1 NMAC §270.14(b)(8)(ii)]

Runoff from the waste management units at TA-55 to other areas of the facility or to the environment is and will be prevented. Secondary containment is provided at each waste management unit included in this permit application where potential liquid-bearing containers are stored. Self-containment systems will be utilized at each CSU, as needed, and 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 20.4.1 NMAC §264.175(b)(3) [6-14-00]. TA-55-4, Room 401 serves as secondary containment for the storage tank system and the cementation unit. The storage tank system and the cementation unit will have adequate secondary containment as required in 20.4.1 NMAC §264.193 [6-14-00]. Runoff control of liquids resulting from fire-suppression activities and from leaks or spills will be accomplished by using a vacuum truck, a portable pump, a high-efficiency particulate air (HEPA) vacuum, and/or sorbents, depending on the volume and location of accumulated liquid. Accumulated liquids will be removed as soon as possible.

Run-on (e.g., sheet flooding) to any of the TA-55 waste management units addressed in this permit application is and will be prevented. With the exception of the Container Storage Pad, all of the CSUs are located indoors. The container storage pad is sloped, is elevated 2 to 4 inches above ground level, and has a culvert located beneath the pad running from the northwest side to the southeast corner to provide drainage and direct potential run-on away from the pad. In addition, containers stored on the pad are covered. Pursuant to the requirements of 20.4.1 NMAC §270.14(b)(19)(xi) [6-14-00], contours and surface drainage around the Container Storage Pad, TA-55-4, and TA-55-185 are shown on Figure A-9 in Attachment A of this document. These features will prevent run-on to the waste management units at TA-55.

J.3.3 Preventing Water Supply Contamination [20.4.1 NMAC §270.14(b)(8)(iii)]

The waste management units at TA-55 are located, designed, constructed, operated, and maintained in a manner that will ensure the prevention of water supply contamination. Each unit is either located

inside a building or provided with secondary containment. In the event of a release, the materials in question will be removed as quickly as possible and packaged in an appropriate container. Given these conditions, there is little or no potential for deposition or migration of waste constituents into the groundwater or other water supplies as a result of waste-handling operations at TA-55. In addition, the depth to groundwater at TA-55 is approximately 1,200 ft (LANL, 1998) and the average annual precipitation in the Los Alamos area (including both rain and water equivalent or frozen precipitation) is 48 centimeters (cm). The evaporation of freestanding water exceeds the annual precipitation. Permeability rates for soils at TA-55 range from 1.5 to 5.0 cm per hour (cm/hr) in the top layers to 0.15 to 5.0 cm/hr in the lower layers. Available water-holding capacity ranges from 0.14 to 0.21 percent (Nyhan et al., 1978). Collectively, the depth to the regional aquifer and the annual moisture deficit significantly limit the potential for contaminants to migrate to the groundwater in the unlikely event that contaminants reach the ground surface surrounding TA-55. In addition, all water supply lines are under pressure and are equipped with backflow prevention devices. Pursuant to the requirements of 20.4.1 NMAC §270.14(b)(8)(iii) [6-14-00], no impact to water supplies is expected.

J.3.4 Mitigating Effects of Power Outages [20.4.1 NMAC §270.14(b)(8)(iv)]

Electrical power is supplied to operate ventilation systems, the PA system, various instruments, and other electrical equipment at TA-55. In the event of a power failure, portable generators are available from the Facility and Waste Operations Division support office and at TA-55-3. These generators may be used as temporary power sources at any of the waste management units within TA-55. Evacuation alarms located throughout TA-55 are equipped with a battery back up and will continue to operate for eight hours during a power failure. Operations at any of the waste management units would be discontinued temporarily if electrical power was not restored quickly or if container-handling equipment failed. Neither a power nor an equipment failure would affect containment at any of the waste management units at TA-55.

J.3.5 Preventing Undue Exposure [20.4.1 NMAC §270.14(b)(8)(v)]

To prevent undue exposure of personnel to hazardous or mixed waste, personal protective equipment appropriate for the waste being handled is worn by all on-site personnel at TA-55 involved in waste management activities at any of the waste management units. Workers involved in waste handling at TA-55 are required to wear protective work uniforms and steel-toed/composite-toed shoes, as appropriate. Hard hats and gloves may also be worn while equipment is being operated and when containers are being loaded or unloaded.

J.3.6 Preventing Releases to the Atmosphere [20.4.1 NMAC §270.14(b)(8)(vi)]

Releases to the atmosphere are not anticipated from any of the TA-55 waste management units addressed in this permit application. Containers are kept closed during handling and storage except when, upon inspection, it is determined that containers need to be overpacked or the contents repackaged in new containers or when it is necessary to add or remove waste. Inspections are conducted to ensure the integrity of all stored containers. The cementation unit, located in TA-55-4, Room 401, is operated within a vacuum-pressured glovebox equipped with HEPA filters. This system prevents the release of any airborne contaminants from TA-55. The ventilation alarm system and/or other air monitoring equipment are located in the vicinity of the waste management units located in TA-55-4. In the event of an unexpected release, all personnel working within or near the area would be notified immediately to evacuate.

J.4 RECORDKEEPING REQUIREMENTS

Recordkeeping requirements applicable to the TA-55 CSUs, the storage tank system, and the cementation unit consist of the biennial report, unmanifested waste report, and additional reports. These reports are discussed in Section 2.6 of the LANL General Part B.

J.5 REFERENCES

LANL, 1998, “Hydrogeologic Workplan,” Revision 0.0, Los Alamos National Laboratory, Los Alamos, New Mexico.

Nyhan, J.W., L.W. Hacker, T.E. Calhoun, and D.L. Young, 1978, “Soil Survey of Los Alamos County, New Mexico,” LA-G779-MS, Los Alamos National Laboratory, Los Alamos, New Mexico.

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Los Alamos National Laboratory

Technical Area 55 Part B Permit Application

Revision 2.0

Prepared by:

Los Alamos National Laboratory
Solid Waste Regulatory Compliance
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TABLE OF CONTENTS

LIST OF TABLES ii
LIST OF ATTACHMENTS iii
LIST OF SUPPLEMENTS iv
LIST OF ACRONYMS/ABBREVIATIONS v

1.0 INTRODUCTION 1-1
2.0 WASTE MANAGEMENT UNITS 2-1
2.1 CONTAINER STORAGE 2-1
2.1.1 Storage Containers 2-2
2.1.2 Minimum Aisle Space and Storage Configuration 2-4
2.1.3 Authorized Waste 2-4
2.1.4 Condition of Containers 2-4
2.1.5 Compatibility of Waste with Containers 2-5
2.1.6 Management of Containers 2-5
2.1.6.1 Packaging and Overpacking 2-6
2.1.6.2 Labeling 2-6
2.1.6.3 Transportation of Containers 2-7
2.1.7 Containment Systems 2-7
2.1.8 Inspection Schedules and Procedures 2-8
2.1.9 Special Requirements for Ignitable, Reactive, and Incompatible Wastes 2-8
2.1.10 Closure 2-10
2.1.11 Control of Run-On/Runoff 2-10
2.2 STORAGE TANK SYSTEM 2-11
2.2.1 Authorized Waste 2-11
2.2.2 Containment Systems 2-11
2.2.3 Inspection Schedules and Procedures 2-12
2.2.4 Special Requirements for Ignitable, Reactive, and Incompatible Wastes 2-13
2.2.5 Closure 2-13
2.2.6 Control of Run-On/Runoff 2-13
2.3 MISCELLANEOUS UNIT – CEMENTATION UNIT 2-14
2.3.1 Authorized Waste 2-14
2.3.2 Containment Systems 2-14
2.3.3 Inspection Schedules and Procedures 2-14
2.3.4 Special Requirements for Ignitable, Reactive, and Incompatible Wastes 2-14
2.3.5 Closure 2-15
2.3.6 Control Run-On/Runoff 2-15
3.0 OTHER FEDERAL LAWS 3-1
4.0 CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS 4-1
5.0 CERTIFICATION 5-1
6.0 REFERENCES 6-1

LIST OF TABLES

TABLE NO.	TITLE
1-1	Regulatory References and Corresponding Permit Application Location
2-1	Container Storage Unit Locations and Maximum Capacities at Technical Area 55
2-2	Typical Storage Containers Used at the Technical Area 55 Container Storage Units
2-3	Storage Containers Used at Technical Area 55 for Mixed Transuranic Waste
2-4	Containment System Capacities for Container Storage at Technical Area 55
2-5	Storage Tank System at Technical Area 55
2-6	Secondary Containment Capacities for the Storage Tank System
2-7	Containment System Capacity Compared to the Capacity of the Storage Tank System and Cementation Unit
4-1	Technical Area (TA) 55 Solid Waste Management Units

LIST OF ATTACHMENTS

ATTACHMENT	TITLE
A	Facility Description
B	Waste Analysis Plan
C	Inspection Plan
D	Personnel Training Plan
E	Contingency Plan
F.1	Closure Plan for the Technical Area 55 Container Storage Units
F.2	Closure Plan for the Technical Area 55 Storage Tank System
F.3	Closure Plan for the Technical Area 55 Cementation Unit
G	Container Storage
H	Storage Tank System
I	Cementation Unit
J	General Facility Operations and Waste Management Practices

LIST OF SUPPLEMENTS

SUPPLEMENT	TITLE
4.1	Solid Waste Management Units at Technical Area 55 [Information Extracted from the 2003 “Solid Waste Management Unit Report”]

LIST OF ACRONYMS/ABBREVIATIONS

20.4.1 NMAC	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
ALARA	as low as reasonably achievable
CFR	Code of Federal Regulations
CSU	container storage unit(s)
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
ft	foot/feet
gal	gallon(s)
HEPA	high-efficiency particulate air
HRMB	Hazardous and Radioactive Materials Bureau
in.	inch(es)
L	liter(s)
LANL	Los Alamos National Laboratory
NMED	New Mexico Environment Department
NRC	Nuclear Regulatory Commission
SUP	Supply Chain Management Division
SWB	standard waste box
SWMU	solid waste management unit
TA	technical area

Los Alamos National Laboratory
Technical Area 55 Part B Permit Application, Revision 2.0
September 2003

Los Alamos National Laboratory
Technical Area 55 Part B Permit Application, Revision 2.0
September 2003

Los Alamos National Laboratory
Technical Area 55 Part B Permit Application, Revision 2.0
September 2003

Technical Area 55 (TA-55) RCRA Permit Application Documents Chronology	
Document Title	**Date**
Los Alamos National Laboratory, Technical Area 55 Part B Permit Application, Revision 0.0	June 1996
Los Alamos National Laboratory, Technical Area 55 Part B Permit Application, Revision 1.0	January 2002
Response to Notice of Deficiency; TA-55 Part B RCRA Permit Application, Revision 1.0, May 16, 2002	August 2002

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
General Comment 1	Throughout Application	LANL has revised the application to clarify details and correct errors/omissions in the document. Supplemental information provided for the NOD Response is not included in the revised application.	
General Comment 2	Section 2, Attachment G, Attachment H, Attachment I, & Attachment J	Waste management units are identified in these sections. Seven Container Storage Units (CSUs), one storage tank system, one cementation unit, and one vitrification unit. LANL has revised the application to clarify the number and capacity of all the waste management units at TA-55.	Attachment J was removed from the application. The vitrification unit will be addressed in a separate application.
General Comment 3	None	The application has been revised to include the procedures, requirements, and guidelines for the hazardous components of the waste. Revision, however, does not include details regarding the handling and/or radionuclide content of the waste streams stored and treated at the TA-55 units.	
General Comment 4	None	Please refer to General Comment 3	
General Comment 5	Section H.3 of Attachment H	Section's last paragraph addresses the requirements of 20.4.1 NMAC, Subpart B, 264.196 discussing removal from service and repair issues for tank system.	
General Comment 6	Section 4.1.2 and Attachments F.1, F.2, F.3, & F.4	All active hazardous waste units are described in Section 4.1.2 and it is stated that they will be closed in accordance with a RCRA closure plans, which are located in Attachments F.1, F.2, F.3, & F.4.	Section 4 and Supplement 4-1 describe hazardous waste management units. Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 1	Table 1-1 and Attachments F.1, F.2, F.3, & F.4	Post-closure considerations as well as "Closure cost estimate," "Liability insurance," and "Proof of financial coverage" are addressed in Attachments F.1, F.2, F.3, & F.4 as indicated in Table 1-1.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 2	Section 2.1	Please refer to General Comment 2	
Specific Comment 3a	Section 2.1.2	Specific information regarding the type of waste placed in each type of container beyond the hazardous and/or mixed waste classification has not been provided in the revised application. LANL has removed "may be, "may have," and "not limited to" from the application.	Section 2.1.1

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
	None	Additional information regarding typical storage containers utilized at TA-55 is also provided as Tables C-1 and C-2, in Attachment C of the NOD Response.	
Specific Comment 3b	Section 2.1.2	"Various small containers" to be used for waste storage at the TA-55 CSUs include 0.25, 0.5, 0.75, 1, 2, and 4, 6 Liter containers. Please refer to the response to Comment No. 3a for additional discussion.	Section 2.1.1- Quart container sizes were also added to container type listing.
Specific Comment 3c	None	Please refer to Specific Comment 3a	
Specific Comment 4a	None	Aisle space justification is presented in NOD response.	
Specific Comment 4b	None	Attachment D of the NOD Response included a container layout figure for each of the TA-55 CSUs. Those figures represent one possible storage configuration and provide the dimensions and location of potential aisle space at each CSU. The figures are provided for informational purposes only and the actual configuration and number of containers may vary up to the maximum capacity indicated on the figure. Please refer to the response to Comment No. 3a.	
Specific Comment 4c	None	The "Los Alamos National Laboratory General Part A Permit Application, Revision 3.0" submitted in August 2002 should reflect all of the CSUs seeking to be permitted at TA-55.	
Specific Comment 4d	Section 2.1.3	Section has been revised to clarify that containers will be stacked according to procedure.	Section 2.1.2
Specific Comment 5a	Section 2.1.5	Section has been revised to discuss that materials used for overpacks will be compatible with waste, packaging material, and the container to be overpacked.	Section 2.1.4 and Section 2.1.5
Specific Comment 5b	Section 2.1.7	Section has been revised to state how containers are shown to be free of surface contamination by incorporating the language outlined in the NOD response.	Section 2.1.8
Specific Comment 5c	Section 2.1.5	Section has been revised to discuss procurement procedures for containers by incorporating the language outlined in the NOD response.	Section 2.1.4
Specific Comment 6	Section 2.1.5	Discussion on compatibility of waste containers is located in NOD Response and response also refers to text added to application for Specific Comment 5c.	Section 2.1.4
Specific Comment 7a	Section 2.1.7.1	Section has been revised to include text discussing procedures followed while containers are opened.	Section 2.1.6.1- One procedure has been removed from text cited in NOD Response because it has been incorporated into another procedure listed.

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 7b	Section 2.1.7	Section has been revised to clarify that containers are closed properly.	Section 2.16
Specific Comment 8a	None	Please refer to General Comment 3	
Specific Comment 8b	None	Waste Profile form (WPF) was provided as Attachment E of the NOD response.	Further discussion of WPF can be found in the General Part B Permit Application.
Specific Comment 9a	Section 2.1.8	LANL databases and visual inspection will be used to determine the presence or absence of free liquids in waste containers. Further information on AK can be found in he General Part B Permit Application.	Section 2.1.7
Specific Comment 9b	Section G.2 of Attachment G	Section addresses the containment requirements outlined in 20.4.1 NMAC, Subpart V, 264.175(b)(1). Photographs of secondary containment are located in Attachment F of NOD Response.	
Specific Comment 9c	Section 2.1.8	Attachment G of the NOD Response provides a spreadsheet with dimensions and the capacity of the containment. Section has been revised to include table summarizing the capacity associated with the secondary containment at each CSU.	Section 2.1.7
Specific Comment 9d	Attachment H	Attachment has been revised to include the calculation spreadsheet that was included in Attachment G of the NOD Response.	Section G.2 of Attachment G
Specific Comment 9e	Section K.3.2 of Attachment K	Section states that accumulated liquids will be removed as soon as possible.	Section J.3.2 of Attachment J. Text also added to Section 2.1.7
Specific Comment 9f	Section G.2 of Attachment G	Section discusses how containers are kept from contact with potential accumulated liquids.	
Specific Comment 10a	Figure A-5 of Attachment A	Figure illustrates that all hazardous waste management units are located at least 50 feet from the LANL facility boundary.	Figure A-5 of Attachment A illustrates CSUs with respect to TA-Boundary. Figure A-1 of Attachment A illustrates TA-55 in relation to LANL facility boundary.
Specific Comment 10b	Section 2.1.10	Section revised to discuss specific policies to prevent accidental ignition or reaction of wastes within containers.	Section 2.1.9
Specific Comment 10c	Section 2.1.10	Please refer to Specific Comment 10b	Section 2.1.9
Specific Comment 10d	Section 2.1.10	Please refer to Specific Comment 10b	Section 2.1.9
Specific Comment 11	Section 2.1.11	Section has been revised to state that hazardous wastes and residues will be removed from a CSU when it is closed.	Section 2.1.10
Specific Comment 12a	Section 2, Attachment G, Attachment H, Attachment I, & Attachment J	Please refer to General Comment 2 and Table 3 in the NOD Response.	
Specific Comment 12b	Section 2.2	The section has been revised to remove the word "may" from the text.	

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 12c	None	No response required.	
Specific Comment 13a	Section 2.2.2 and Section G.2 of Attachment G	Section 2.2.2 has been revised to further discuss construction material compatibility, strength, and thickness. Section G.2 discusses spill removal and decontamination- also addressed in Appendix E of the General Part B Permit Renewal Application.	References to room 434A have been removed from the application because the vitrification unit (which will be in room 434A) will be addressed in a separate application.
Specific Comment 13b	Section 2.2.8	Section has been revised to include a table that summarizes the secondary containment provided for the storage tank system as well as spreadsheet in Attachment H of the NOD that provides the dimensions and the capacity of the containment.	Section 2.2.2
Specific Comment 13c	None	Photographs to demonstrate that the CSUs' secondary containment systems are currently free of cracks and/or gaps were provided in Attachment G of the NOD Response.	
Specific Comment 13d	Section 2.2.2	Section has been revised to include a statement that the containment system is designed to completely surround the tanks.	References to room 434A have been removed from the application because the vitrification unit (which will be in room 434A) will be addressed in a separate application.
Specific Comment 14a	Section 2.2.4	Section has been revised to state that no ignitable, reactive, or incompatible mixed waste will be stored in the storage tank system.	
Specific Comment 14b			
Specific Comment 14c			
Specific Comment 14d			
Specific Comment 14e			
Specific Comment 14f			
Specific Comment 14g			
Specific Comment 15	Section 2.2.5 and Attachment F.2	Section and Attachment have been revised to clarify what partial closure means for the storage tank system.	Section 2.2.5 and Section F.2.1.2 of Attachment F.2- language has been changed from the text cited in the NOD response to have more clarity about the definition of partial closure and final closure.
	Section 2.2.5	Section has been revised to clarify that hazardous wastes and residues will be removed or decontaminated during closure.	
Specific Comment 16a	Section 2.2.8	Please refer to Specific Comment 13b	Section 2.2.2
Specific Comment 16b	Section 2.2.6	Section has been revised to state that all free liquids will be removed within 24 hours or as accessibility permits.	
Specific Comment 17	None	No response required.	

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 18a	Section 2.3.2 and 2.4.2	Sections have been revised to include information about secondary containment presented in the NOD Response.	Section 2.3.2 describes the secondary containment of the cementation unit. Section 2.4.2 was removed because vitrification unit will be addressed in a separate application.
Specific Comment 18b	None	Please refer to Specific Comment 13c	
Specific Comment 18c	Section 2.3.2	Section has been revised to include a statement that the containment system is designed to completely surround the cementation unit.	
Specific Comment 19a	Section 2.3.4	Section has been revised to state that no ignitable, reactive, or incompatible mixed waste will be treated in the cementation unit.	
Specific Comment 19b	None	The tank system, cementation unit, and vitrification unit are used to store/treat mixed waste evaporator bottoms solutions, therefore, there is not an incompatibility issue with commingling resulting from a leak.	The vitrification unit will be addressed in a separate application.
Specific Comment 20	Section 2.3.5	Section has been revised to include text about the removal of hazardous wastes from the cementation unit at the time of closure of that unit.	
Specific Comment 21a	Section 2.3.2	Please refer to Specific Comment 18a.	
Specific Comment 21b	None	NOD Response includes Table 9 which provides a comparison of the secondary containment capacity associated with Rooms 401 and 434A and the waste management units located within.	References to room 434A have been removed from the application because the vitrification unit (which will be in room 434A) will be addressed in a separate application.
Specific Comment 21c	Section 2.3.6	Section has been revised to state that all free liquids will be removed within 24 hours or as accessibility permits.	
Specific Comment 22	Attachment J	Attachment discusses the vitrification unit, glovebox, ancillary equipment and the associated secondary containment.	Attachment J was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 23a	Section 2.4.2	Please refer to Specific Comment 18a.	Section 2.4.2 was removed, the vitrification unit will be addressed in a separate application.
Specific Comment 23b	None	Please refer to Specific Comment 13c	
Specific Comment 23c	Section 2.4.3	Section has been revised to include text describing the location of the vitrification unit.	Section 2.4.3 was removed, the vitrification unit will be addressed in a separate application.
Specific Comment 24	Section 2.4.4	Section has been revised to state that no ignitable, reactive, or incompatible mixed waste will be treated in the vitrification unit.	Section 2.4.4 was removed, the vitrification unit will be addressed in a separate application.

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 25	Section 2.4.5	Section and Attachment have been revised to clarify what partial closure means for the vitrification unit.	Section 2.4.5 was removed, the vitrification unit will be addressed in a separate application.
Specific Comment 26a	Section 2.4.2	Please refer to Specific Comment 18a.	Section 2.4.2 was removed, the vitrification unit will be addressed in a separate application.
Specific Comment 26b	None	Please refer to Specific Comment 21b.	References to room 434A have been removed from the application because the vitrification unit (which will be in room 434A) will be addressed in a separate application.
Specific Comment 26c	Section 2.4.6	Section has been revised to state that all free liquids will be removed within 24 hours or as accessibility permits.	Section 2.4.6 was removed, the vitrification unit will be addressed in a separate application.
Specific Comment 27a	Section 4 and Supplement 4.1	Section and Supplement discuss the SWMU located in the vicinity of TA-55 and TA-42. Supplement 4.1 was included as Attachment H of the NOD Response.	
Specific Comment 27b	Section 4	Section addresses active and closing hazardous waste management units for regulatory completeness only.	
Specific Comment 27c	Section 4 and Supplement 4.1	Section and Supplement discuss the SWMU located in the vicinity of TA-55 and TA-42. Supplement 4.1 was included as Attachment H of the NOD Response. Supplement includes all available information about the TA-55 and TA-42 SWMUs, however, this information does not necessarily include all of the examples of data noted in the HWB comments of the NOD.	
Specific Comment 27d	Supplement 4.1	Specific information on SWMU 42-001(a) is included in Supplement that was included as Attachment H of the NOD Response and appears in Supplement 4.1 of the application.	
Specific Comment 27e	Supplement 4.1	Specific information on SWMU 42-001(b) and 42-001(c) is included in Supplement that was included as Attachment H of the NOD Response and appears in Supplement 4.1 of the application.	
Specific Comment 27f	Supplement 4.1	Specific information on SWMU 55-009 is included in Supplement that was included as Attachment H of the NOD Response and appears in Supplement 4.1 of the application.	
Specific Comment 27g	Supplement 4.1	Specific information on SWMU 55-009 is included in Supplement that was included as Attachment H of the NOD Response and appears in Supplement 4.1 of the application.	
Specific Comment 27h	Supplement 4.1	There has not been a recorded release to the environment from any of the active TA-55 hazardous waste management units.	

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 28a	Supplement 4.1	The status of the characterization activities for releases from SWMUs at TA-55 and TA-42 is summarized in Supplement 4.1 which was included as Attachment H of the NOD Response.	
Specific Comment 28b			
Specific Comment 28c			
Specific Comment 28d			
Specific Comment 28e			
Specific Comment 28f			
Specific Comment 28g			
Specific Comment 28h			
Specific Comment 28i			
Specific Comment 28j			
Specific Comment 29	Supplement 4.1	Supplement provides a summary of corrective action activities completed to date and the current status of each SWMU. The specifics of future corrective actions activities are agreed upon by HWB and LANL and documented in the ER Project baseline.	
Specific Comment 30	Section A.1 of Attachment A and Attachments G, H, I, and J	A general description is provided in Section A.1. Section refers out to Attachments containing more detailed information.	Attachment J was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 31	General Part B, Appendix B	Former Attachments B.1 and B.2 of the application have been incorporated into the Waste Analysis Plan in the General Part B Permit Renewal Application.	
Specific Comment 32a	General Part B, Appendix B	Former Attachments B.1 and B.2 of the application have been incorporated into the Waste Analysis Plan in the General Part B Permit Renewal Application.	
Specific Comment 32b	None	Please refer to General Comment 3	
Specific Comment 33	None	Please refer to General Comment 3	
Specific Comment 34	General Part B, Appendix B	Former Attachments B.1 and B.2 of the application have been incorporated into the Waste Analysis Plan in the General Part B Permit Renewal Application. All waste analysis criteria are now located in Appendix B of the General Part B Permit Renewal Application.	
Specific Comment 35	General Part B, Appendix B	Please refer to Specific Comment 34	
Specific Comment 36	General Part B, Appendix B	Please refer to Specific Comment 34	
Specific Comment 37	General Part B, Appendix B	Please refer to Specific Comment 34	
Specific Comment 38	General Part B, Appendix B	Please refer to Specific Comment 34	
Specific Comment 39	None	Please refer to General Comment 3	
Specific Comment 40	General Part B, Appendix B	Please refer to General Comment 3 and Specific Comment 34	
Specific Comment 41	General Part B, Appendix B	Please refer to Specific Comment 34	
Specific Comment 42	General Part B, Appendix B	Please refer to Specific Comment 34	
Specific Comment 43	General Part B, Appendix B	Please refer to Specific Comment 34	

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 44	Section F.1.1.1 of Attachment F.1	Third bullet has been revised to read the same as the performance standard in 20.4.1 NMAC, Subpart V, 264.111(c).	
Specific Comment 45	Section F.1.1.2 of Attachment F.1	Section defines partial closure.	
Specific Comment 46	Section F.1.1.4 of Attachment F.1	Section addresses the requirements of 20.4.1 NMAC, Subpart V, 264.112(c).	
Specific Comment 47	Section F.1.1.4 of Attachment F.1	Refer to Specific Comment 46.	
Specific Comment 48	Section 2, Attachment G, Attachment H, Attachment I, & Attachment J	Please refer to General Comment 2 and Specific Comment 3a.	Attachment J was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 49	Attachment F.1	Closure plan addresses general sampling methods to be used for closure of the CSUs. A detailed Sampling and Analysis Plan (SAP) will be prepared prior to initiation of closure activities containing a more accurate closure schedule as well as the types of waste that will be shipped to each specific off-site facility.	
Specific Comment 50a	Attachment F.1	Attachment meets the closure criteria set forth in the regulations as outlined in the NOD response.	
Specific Comment 50b	Sections F.1.3.1 and F.1.3.3 of Attachment F.1	Section F.1.3.1 discussed soil sampling and section F.1.3.3 discusses the prevention of cross contamination of equipment.	Section F.1.3.3.5 generally discusses soil sampling. Specifics detailing potential decontamination and sampling will be discussed in the SAP.
Specific Comment 50c	None	Procedures are subject to frequent changes; therefore, it is inappropriate for them to be included in the application and subsequently the permit due to their dynamic nature, which could require a permit modification each time they are updated. The procedures cited in the application and the NOD Response are written to meet facility and applicable regulatory requirements.	
Specific Comment 50d	Attachment F.1	Refer to Specific Comment 49.	
Specific Comment 50e	Appendix D of the General Part B	Training requirements are addressed in Appendix D of the General Part B Permit Renewal Application.	
Specific Comment 50f	Attachment F.1	Closure plan addresses general sampling methods to be used for closure of the CSUs. A detailed SAP will be prepared prior to initiation of closure activities containing a more accurate closure schedule as well as the types of waste that will be shipped to each specific off-site facility and sampling of potentially contaminated areas. NOD response discusses differences in sampling methodology and the appropriateness of swipe sampling.	

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 50g	Sections F.1.3.1 and F.1.3.3 of Attachment F.1	Refer to Specific Comment 50b	Section F.1.3.3.5 generally discusses soil sampling. Specifics detailing potential decontamination and sampling will be discussed in the SAP.
Specific Comment 50h	Attachment F.1	Attachment has been revised to include the text outlined in the NOD.	Located in Section F.1.3.2.3 of Attachment F.1. Wording has changed slightly from NOD Response.
Specific Comment 51a	None	Refer to General Comment 3 for discussion regarding radionuclides. For decontaminating equipment that may have been contaminated with hazardous wastes, the wash water will consist of waste and an appropriate surfactant/solvent.	
Specific Comment 51b	Section F.1.2.4 of Attachment F.1	Section has been revised to delete the reference to wooden pallets because they are not used at TA-55 CSUs.	New Section F.1.3.3.2 of Attachment F.1
Specific Comment 51c	None	Portable berms will be used if the CSU does not have a sump or low area designed for collection of liquids.	
Specific Comment 51d	Sections F.1.2.4.1 and F.1.2.6 of Attachment F.1	Section F.1.3.3 details the wash down process of the CSU and the decontamination verification samples will be taken according to new Section F.1.3.4. Specific information will be detailed in the SAP.	New Sections F.1.3.3 and F.1.3.4 of Attachment F.1 contain information about the wash down process and decontamination verification. More information will be contained in the SAP.
Specific Comment 51e	None	"Sump" is used to describe all recessed areas located in the vicinity of the TA-55 waste management units. Most of these areas are not connected to any central drainage system.	
Specific Comment 51f	None	If the operating record of the unit (at the time of closure) indicates a spill or an event that with the potential to result in fixed contamination of hazardous constituents, an appropriate method for removal will be proposed. This may include sandblasting, removal of asphalt, and or chemical decontamination as appropriate to the situation.	Section F.1.3.2.2 of Attachment F.1
Specific Comment 51g	None	Refer to General Comment 3.	
Specific Comment 52	Section F.1.2.4 of Attachment F.1	Section contains information on the closure of the vault, indicating that alternative procedures may be required due to the presence of these items and ALARA concerns for closure procedures.	New Section F.1.3.3.3 of Attachment F.1
Specific Comment 53a	None	Units will be closed in accordance with the closure plans in Attachment F but has the option to remediate the storage pad under corrective action should contamination from storage activities prior to 1980 render the unit incapable of clean closure in accordance with the approved closure plan.	

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 53b	Section F.1.2.4 of Attachment F.1	Section describes the closure procedures that will be used to close the storage pad, including, additional steps that may have to be added because there may be leaching of organic compounds inherent to the composition of the asphalt.	Section F.1.3.3.4 of Attachment F.1
Specific Comment 53c	None	Refer to Specific Comment 51a.	
Specific Comment 53d	Section F.1.2.4 of Attachment F.1	Refer to Specific Comment 50b.	Section F.1.3.3.5 generally discusses soil sampling. Specifics detailing potential decontamination and sampling will be discussed in the SAP.
Specific Comment 53e	Section F.1.2.4 of Attachment F.1	Refer to Specific Comment 50b.	Section F.1.3.3.5 generally discusses soil sampling. Specifics detailing potential decontamination and sampling will be discussed in the SAP.
Specific Comment 53f	Section F.1.2.4 of Attachment F.1	Refer to Specific Comment 53b.	Section F.1.3.3.4 of Attachment F.1
Specific Comment 53g	Section F.1.2.4 of Attachment F.1	Refer to Specific Comment 53b.	Section F.1.3.3.4 of Attachment F.1
Specific Comment 54	Section F.1.2.6 of Attachment F.1	Section provides information about the decontamination of equipment and verification of decontamination.	Section F.1.3.3.5 generally discusses soil sampling. Specifics detailing potential decontamination and sampling will be discussed in the SAP.
Specific Comment 55a	None	Refer to General Comment 3.	
Specific Comment 55b	Attachment F.1	Refer to Specific Comment 49.	
Specific Comment 55c	Attachment F.1	Closure plan addresses general sampling methods to be used for closure. A detailed Sampling and Analysis Plan (SAP) will be prepared prior to initiation of closure activities containing specific statistical methods that will be used to determine if wash down water show a significant increase in analytical parameters.	
Specific Comment 55d	None	Operating record of the unit at the time of closure to establish the presence of "hot spots" based on the inspection record and records associated with spills.	
Specific Comment 55e	None	Refer to General Comment 3.	
Specific Comment 55f	None	Refer to General Comment 3.	
Specific Comment 55g	Attachment F.1	Refer to Specific Comment 50f.	
Specific Comment 55h	Section F.1.3.1 and F.1.3.3 of Attachment F.1	Refer to Specific Comment 50b.	Section F.1.3.3.5 generally discusses soil sampling. Specifics detailing potential decontamination and sampling will be discussed in the SAP.

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 55i	Section F.1.3.1 and F.1.3.3 of Attachment F.1	Refer to Specific Comment 50b.	Section F.1.3.3.5 generally discusses soil sampling. Specifics detailing potential decontamination and sampling will be discussed in the SAP.
Specific Comment 56	Attachment F.1	Refer to Specific Comment 49.	
Specific Comment 57a	Section F.1.3.1 and F.1.3.3 of Attachment F.1	Refer to Specific Comment 50b.	Section F.1.3.3.5 generally discusses soil sampling. Specifics detailing potential decontamination and sampling will be discussed in the SAP.
Specific Comment 57b	Attachment F.1	Refer to Specific Comment 49.	
Specific Comment 58	Attachment F.1	Refer to Specific Comment 50f.	
Specific Comment 59a	None	Refer to General Comment 3.	
Specific Comment 59b	None	Refer to General Comment 3.	
Specific Comment 60	Section F.2.1.1 of Attachment F.2	Refer to Specific Comment 44.	
Specific Comment 61a	Attachment H	The storage tank system, ancillary equipment, and associated secondary containment are described in Attachment H.	
Specific Comment 61b	Section 2.2.5 and Section F.2.1.2 of Attachment F.2	Please refer to Specific Comment 15.	Section 2.2.5 and Section F.2.1.2 of Attachment F.2- language has been changed from the text cited in the NOD response to have more clarity about the definition of partial closure and final closure.
Specific Comment 62	Section F.2.1.4 of Attachment F.2	Section addressed the requirements of 20.4.1, Subpart V, 264.112(c).	
Specific Comment 63	Section F.2.1.4 of Attachment F.2	Please refer to Specific Comment 62.	
Specific Comment 64	Section 2, Attachment G, Attachment H, Attachment I, & Attachment J	Please refer to General Comment 2.	Attachment J was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 65a	Table F.2-2 of Attachment F.2	A list of potential hazardous constituents is provided in table and represent the breadth of EPA Hazardous Waste Numbers capable of being treated in the unit as identified in the LANL General Part A Application.	Table F.2-2 was removed and a listing of potentially hazardous constituents will be included in the unit-specific SAP.
Specific Comment 65b	Table F.2-2 of Attachment F.2	Please refer to Specific Comment 65a.	Table F.2-2 was removed and a listing of potentially hazardous constituents will be included in the unit-specific SAP.

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 66a	Attachment F.2	Attachment meets the closure criteria set forth in the regulations as outlined in the NOD response.	
Specific Comment 66b	Attachment F.2	Closure plan addresses general sampling methods to be used for closure of the tanks. A detailed SAP will be prepared prior to initiation of closure activities containing specific QA/QC procedures. Also please refer to Specific Comment 50c.	
Specific Comment 66c	Attachment F.2	Please refer to Specific Comment 50d.	
Specific Comment 66d	Appendix D of the General Part B	Please refer to Specific Comment 50e.	
Specific Comment 67a	Attachment F.2	The storage tank system, ancillary equipment, and associated secondary containment will be removed and cut up into pieces that can be packaged into containers. Details regarding these activities will be provided in the detailed SAP prepared prior to initiation of closure.	
Specific Comment 67b	Table F.2-2 of Attachment F.2	Please refer to Specific Comment 65a.	Table F.2-2 was removed and a listing of potentially hazardous constituents will be included in the unit-specific SAP.
Specific Comment 68a	Section 2.2.5 and Attachment F.2	Please refer to Specific Comment 15.	Section F.2.3 of Attachment F.2 discusses general closure procedure.
Specific Comment 68b	Attachment F.2	Please refer to Specific Comment 67a.	Section F.2.3 of Attachment F.2 discusses general closure procedure.
Specific Comment 68c	Table F.2-2 of Attachment F.2	Please refer to Specific Comment 65a.	Table F.2-2 was removed and a listing of potentially hazardous constituents will be included in the unit-specific SAP.
Specific Comment 68d	None	Refer to General Comment 3.	
Specific Comment 68e	Table F.2-2 of Attachment F.2	Please refer to Specific Comment 65a.	Table F.2-2 was removed and a listing of potentially hazardous constituents will be included in the unit-specific SAP.
Specific Comment 68f	None	Please refer to Specific Comments 50f and 55d.	
Specific Comment 68g	Attachment F.2	Please refer to General Comment 3.	
Specific Comment 68h	Attachment F.2	Please refer to Specific Comments 50f.	
Specific Comment 68i	Table F.2-2 of Attachment F.2	Please refer to Specific Comment 65a.	Table F.2-2 was removed and a listing of potentially hazardous constituents will be included in the unit-specific SAP.
Specific Comment 69a	Table F.2-2 of Attachment F.2	Please refer to Specific Comment 65a.	Table F.2-2 was removed and will be included in the unit-specific SAP.
Specific Comment 69b	None	Swipe samples are to be taken from the surfaces in Rooms 401 and 434A adjacent to the storage tanks system, this is the secondary containment.	

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 69c	None	Please refer to Specific Comment 51e.	
Specific Comment 69d	None	Please refer to Specific Comment 51e.	
Specific Comment 69e	Table F.2-2 of Attachment F.2	Please refer to Specific Comment 65a.	Table F.2-2 was removed and a listing of potentially hazardous constituents will be included in the unit-specific SAP.
Specific Comment 70	Section F.2.2.6 of Attachment F.2	Section provides detailed information for decontamination verification, inclusive of the decontamination equipment.	New Section F.2.3.3.4 of Attachment F.2 gives general information on decontamination of equipment used during closure. Section F.2.3.4 discusses decontamination verification. More detailed information will be provided in the unit-specific SAP.
Specific Comment 71a	None	Refer to General Comment 3.	
Specific Comment 71b	Table F.2-2 of Attachment F.2	Please refer to Specific Comment 65a.	Table F.2-2 was removed and a listing of potentially hazardous constituents will be included in the unit-specific SAP.
Specific Comment 71c	Attachment F.2	Please refer to Specific Comment 55c.	
Specific Comment 71d	Attachment F.2	Please refer to Specific Comments 50f and 55d.	
Specific Comment 71e	None	Please refer to General Comment 3.	
Specific Comment 71f	None	Please refer to General Comment 3.	
Specific Comment 71g	Attachment F.2	Please refer to Specific Comment 50f.	
Specific Comment 71h	Section F.2.1.4 of Attachment F.2	Please refer to Specific Comment 62.	
Specific Comment 72	Attachment F.2	Please refer to Specific Comment 50f.	
Specific Comment 73a	None	Please refer to General Comment 3.	
Specific Comment 73b	None	Please refer to General Comment 3.	
Specific Comment 74	Section F.3.1.1 of Attachment F.3	Please refer to Specific Comment 44.	
Specific Comment 75a	Attachment I	The cementation unit, glovebox, ancillary equipment, and associated secondary containment are described in Attachment I.	
Specific Comment 75b	Attachment F.3	Piping and ductwork associated with the cementation unit will be removed to the header that connects them to the facility system. Secondary containment systems associated with the cementation unit will be decontaminated and left in place. More detailed information will be contained in the unit-specific SAP.	
Specific Comment 76	Section F.3.1.4 of Attachment F.3	Section addresses the requirements of 20.4.1 NMAC, Subpart V, 264.112(c).	
Specific Comment 77	Section F.3.1.4 of Attachment F.3	Please refer to Specific Comment 76.	

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 78	None	Please refer to General Comment 2.	
Specific Comment 79	Throughout Application	The application has been revised to remove the terms "typically," "generally," and "may." Specific details on how waste will be removed from each of the units will be addressed in a detailed SAP that will be prepared prior to initiation of closure activities.	
Specific Comment 80a	None	Specific details on how waste will be removed from each of the units will be addressed in a detailed SAP that will be prepared prior to initiation of closure activities.	
Specific Comment 80b	None	Please refer to Specific Comment 80a.	
Specific Comment 81	Attachment F.3	Attachment meets the closure criteria set forth in the regulations as outlined in the NOD response.	
Specific Comment 82a	Attachment F.3	Please refer to Specific Comment 75b.	
Specific Comment 82b	Attachment F.3	The cementation unit and ancillary equipment to be closed will be cut up into pieces that can be packaged into containers. Details regarding how this will be conducted will be provided in the detailed SAP that will be prepared prior to initiation of closure activities.	
Specific Comment 82c	None	Please refer to Specific Comment 80a.	
Specific Comment 82d	None	Please refer to General Comment 3.	
Specific Comment 82e	None	Please refer to Specific Comment 80a.	
Specific Comment 82f	Attachment F.3	Please refer to Specific Comments 50f and 55d.	
Specific Comment 82g	None	Please refer to General Comment 3.	
Specific Comment 82h	None	Please refer to General Comment 3.	
Specific Comment 82i	Attachment F.3	Please refer to Specific Comment 50f.	
Specific Comment 82j	None	Please refer to Specific Comment 80a.	
Specific Comment 83a	None	Please refer to Specific Comment 80a.	
Specific Comment 83b	None	Please refer to Specific Comment 80a.	
Specific Comment 83c	None	Please refer to Specific Comment 80a.	
Specific Comment 83d	None	Please refer to General Comment 3.	
Specific Comment 83e	None	Please refer to Specific Comment 80a.	
Specific Comment 83f	Attachment F.3	Please refer to Specific Comments 50f and 55d.	
Specific Comment 83g	None	Please refer to General Comment 3.	
Specific Comment 83h	None	Please refer to General Comment 3.	
Specific Comment 83i	None	Please refer to Specific Comment 80a.	
Specific Comment 83j	Attachment F.3	Please refer to Specific Comment 50f.	
Specific Comment 84a	Throughout Application	Please refer to Specific Comment 80a and General Comment 1.	
Specific Comment 84b	None	Swipe samples are to be taken from the surfaces in Room 401 adjacent to the cementation unit, this is the secondary containment.	
Specific Comment 84c	None	Please refer to Specific Comment 13c.	
Specific Comment 84d	None	Please refer to Specific Comment 80a.	

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 85	Section F.3.2.6 of Attachment F.3	Section provides detailed information for decontamination verification, inclusive of the decontamination equipment.	New Section F.3.3.4 of Attachment F.3 gives general information on decontamination verification. Section F.3.3.3.4 gives information about equipment used during closure.
Specific Comment 86a	None	The five criteria identified as means of achieving successful decontamination have been approved by NMED in past closure plans. These criteria provide a spectrum of methods that allow the necessary flexibility in the closure plan for conducting a closure.	
Specific Comment 86b	None	Please refer to General Comment 3.	
Specific Comment 86c	None	Please refer to Specific Comment 80a.	
Specific Comment 86d	Attachment F.3	Please refer to Specific Comment 55c.	
Specific Comment 86e	Attachment F.3	Please refer to Specific Comments 50f and 55d.	
Specific Comment 86f	None	Please refer to General Comment 3.	
Specific Comment 86g	None	Please refer to General Comment 3.	
Specific Comment 86h	Attachment F.3	Please refer to Specific Comment 50f.	
Specific Comment 86i	None	Please refer to Specific Comment 76.	Section F.3.1.4 of Attachment F.3
Specific Comment 87	Attachment F.3	Please refer to Specific Comments 50f.	
Specific Comment 88a	None	Please refer to General Comment 3.	
Specific Comment 88b	None	Please refer to General Comment 3.	
Specific Comment 89	Section F.3.1.1 of Attachment F.3	Please refer to Specific Comment 44.	
Specific Comment 90a	Attachment J	Please refer to Specific Comment 22.	Attachment J was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 90b	None	Piping and ductwork associated with the vitrification unit will be removed to the header that connects them to the facility system.	The vitrification unit will be addressed in a separate application.
Specific Comment 91	Section F.4.1.4 of Attachment F.4	Section addressed the requirements of 20.4.1, Subpart V, 264.112(c).	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 92	Section F.4.1.4 of Attachment F.4	Please refer to Specific Comment 91	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 93	None	Please refer to General Comment 2.	
Specific Comment 94a	None	Solidified waste from the vitrification unit will be removed and transported to a permitted CSU prior to disposal at a permitted facility as described in Section F.3.2.3. Specific details of closure procedures will be addressed in the SAP that will be prepared prior to initiation of closure activities	The vitrification unit will be addressed in a separate application.

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 94b	None	Please refer to Specific Comment 94a.	The vitrification unit will be addressed in a separate application.
Specific Comment 95	Attachment F.4	Attachment meets the closure criteria set forth in the regulations as outlined in the NOD Response.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 96a	None	Please refer to Specific Comment 90b.	
Specific Comment 96b	None	The vitrification unit and ancillary equipment will be removed and cut up into pieces that can be packaged into containers. Details regarding how this will be conducted will be provided in the detailed SAP that will be prepared prior to initiation of closure activities.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 96c	None	Please refer to Specific Comment 94a.	The vitrification unit will be addressed in a separate application.
Specific Comment 96d	None	Please refer to General Comment 3.	
Specific Comment 96e	None	Please refer to Specific Comment 94a.	The vitrification unit will be addressed in a separate application.
Specific Comment 96f	Attachment F.4	Please refer to Specific Comments 50f and 55d.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 96g	None	Please refer to General Comment 3.	
Specific Comment 96h	None	Please refer to General Comment 3.	
Specific Comment 96i	Attachment F.4	Please refer to Specific Comment 50f.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 96j	None	Please refer to Specific Comment 94a.	The vitrification unit will be addressed in a separate application.
Specific Comment 97a	None	Please refer to Specific Comment 90b.	The vitrification unit will be addressed in a separate application.
Specific Comment 97b	None	Please refer to Specific Comment 94a.	The vitrification unit will be addressed in a separate application.
Specific Comment 97c	None	Please refer to Specific Comment 94a.	The vitrification unit will be addressed in a separate application.
Specific Comment 97d	None	Please refer to General Comment 3.	
Specific Comment 97e	None	Please refer to Specific Comment 94a.	The vitrification unit will be addressed in a separate application.
Specific Comment 97f	Attachment F.4	Please refer to Specific Comments 50f and 55d.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 97g	None	Please refer to General Comment 3.	
Specific Comment 97h	None	Please refer to General Comment 3.	

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 97i	Attachment F.4	Please refer to Specific Comment 50f.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 97j	None	Please refer to Specific Comment 94a.	The vitrification unit will be addressed in a separate application.
Specific Comment 98a	None	Please refer to Specific Comment 94a and General Comment 3.	The vitrification unit will be addressed in a separate application.
Specific Comment 98b	Attachment F.4	Swipe samples are to be taken from the surfaces in Room 434A adjacent to the vitrification unit. Also, please refer to Specific Comment 50f.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 98c	None	Please refer to Specific Comment 13c.	The vitrification unit will be addressed in a separate application.
Specific Comment 98d	None	Please refer to Specific Comment 94a.	The vitrification unit will be addressed in a separate application.
Specific Comment 99	Section F.4.2.6 of Attachment F.4	Section provides detailed information for decontamination verification, inclusive of the decontamination equipment.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 100a	None	Please refer to General Comment 3.	
Specific Comment 100b	None	Please refer to Specific Comment 94a.	The vitrification unit will be addressed in a separate application.
Specific Comment 100c	Attachment F.4	Please refer to Specific Comment 55c.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 100d	Attachment F.4	Please refer to Specific Comments 50f and 55d.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 100e	None	Please refer to General Comment 3.	
Specific Comment 100f	None	Please refer to General Comment 3.	
Specific Comment 100g	Attachment F.4	Please refer to Specific Comment 50f.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 100h	Section F.4.1.4 of Attachment F.4	Please refer to Specific Comment 91.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 101	Attachment F.4	Please refer to Specific Comment 50f.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 102a	None	Please refer to General Comment 3.	
Specific Comment 102b	None	Please refer to General Comment 3.	

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 103	Figures G-1, G-2, G-3, and G-4 of Attachment G	Figures provide engineering drawings for the CSUs at TA-55.	
Specific Comment 104	Section 2.1.2	Please refer to Specific Comments 3a and b.	Sections 2.1.2 and 2.1.1- Quart container sizes were also added to container type listing.
Specific Comment 105a	Sections 2.1.2 and 2.1.8	Please refer to Specific Comments 3a and 9c.	Section 2.1.2 and 2.1.7
Specific Comment 105b	None	Please refer to Specific Comment 9a.	Section 2.1.7
Specific Comment 105c	Attachment G	Attachment has been revised to include text about secondary containment and run-on and run-off	
Specific Comment 105d	Attachment G	Attachment will be revised to indicate that the wastes allowed to be stored in TA-55 CSUs are identified in the General Part A Application.	
Specific Comment 106a	Figure A-5 of Attachment A	Please refer to figure referenced.	Figure A-5 of Attachment A illustrates CSUs with respect to TA-Boundary. Figure A-1 of Attachment A illustrates TA-55 in relation to LANL boundary.
Specific Comment 106b	Section 2.1.10	Please refer to Specific Comment 10b.	Section 2.1.9
Specific Comment 106c	Section 2.1.10	Please refer to Specific Comment 10b.	Section 2.1.9
Specific Comment 106d	Section 2.1.10	Please refer to Specific Comment 10b.	Section 2.1.9
Specific Comment 106e	Section 2.1.10	Please refer to Specific Comment 10b.	Section 2.1.9
Specific Comment 107	Section 2.1.2	Please refer to Specific Comment 3a.	
Specific Comment 108a	Section I.2 of Attachment I and Section J.2 of Attachment J	Wastes will be treated in the cementation unit or vitrification unit based upon the radionuclide and chemical content. Please refer to referenced section for more discussion.	Attachment J was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 108b	None	Please refer to General Comment 3.	
Specific Comment 108c	None	If the evaporator bottom solutions are above the plutonium discard limit they are sent back to the TA-55 recovery process where the plutonium is recovered for programmatic use. In addition, please refer to General Comment 3.	
Specific Comment 109a	Section 2.2.8	Please refer to Specific Comment 13b.	Section 2.2.2
Specific Comment 109b	Section 2.2.8	Please refer to Specific Comment 13b.	Section 2.2.2
Specific Comment 109c	None	Please refer to Specific Comment 13c.	
Specific Comment 109d	Section 2.2.2	Please refer to Specific Comment 13d.	References to room 434A have been removed from the application because the vitrification unit (which will be in room 434A) will be addressed in a separate application.

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 109e	Section 2.2.6	Please refer to Specific Comment 16b.	
Specific Comment 110a	Section 2.2.4	Please refer to Specific Comment 14.	The vitrification unit will be addressed in a separate application.
Specific Comment 110b			
Specific Comment 110c			
Specific Comment 110d			
Specific Comment 110e			
Specific Comment 110f			
Specific Comment 110g			
Specific Comment 111	Attachment I	Attachment has been revised with text about the cementation unit's glovebox.	
Specific Comment 112a	Section 2.3.4	Please refer to Specific Comment 19a.	
Specific Comment 112b			
Specific Comment 112c			
Specific Comment 112d			
Specific Comment 112e			
Specific Comment 112f			
Specific Comment 112g			
Specific Comment 113a	None	LANL is seeking to permit the vitrification unit prior to its construction at TA55-4 and is award that additional information may be required before commencing waste operations. Attachment B of the NOD Response provided a final design report for the vitrification unit.	The vitrification unit will be addressed in a separate application.
Specific Comment 113b			
Specific Comment 113c			
Specific Comment 113d			
Specific Comment 113e			
Specific Comment 113f			
Specific Comment 113g			
Specific Comment 113h			
Specific Comment 113i			
Specific Comment 114	None	Please refer to Specific Comment 113a.	The vitrification unit will be addressed in a separate application.
Specific Comment 115	None	Please refer to Specific Comment 113a.	The vitrification unit will be addressed in a separate application.
Specific Comment 116a	Attachment J	Attachment has been revised to include text about the facility wet vacuum system.	Attachment J was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 116b	Attachment J	Attachment has been revised to include text about the maintenance of negative pressure within the glovebox.	Attachment J was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 116c	Attachment J	Attachment has been revised to include new text about the Zone 1 ventilation system.	Attachment J was removed from the application. The vitrification unit will be addressed in a separate application.

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 116d	None	Gases released into the glovebox will pass into the Zone 1 ventilation system. This system does not prevent the release of NOx to the environment.	
Specific Comment 117	None	Please refer to Specific Comment 19b.	The vitrification unit will be addressed in a separate application.
Specific Comment 118	None	Please refer to Specific Comment 4a.	
Specific Comment 119	None	The glovebox that the cementation unit is contained in is connected to the TA-55-4 facility ventilation system and is equipped with a backup generator.	
Specific Comment 120	Section 2, Attachment G, Attachment H, Attachment I, & Attachment J	Please refer to General Comment 2.	Attachment J was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 121	Section K.4.1 of Attachment K	Section states that the biennial report must cover facility activities during the previous calendar year.	

Changes Since Revision 1.0 Not Associated with August 2002 NOD Response	
Section	**Change**
Section 2.1.1	Quart sized containers were added to the listing of types of containers.
Section 2.2.5 and Section F.2.1.2 of Attachment F.2	Language has been changed from the text in the NOD response to have more clarity about the definitions of partial closure and final closure.
Throughout Application	Storage capacity of container storage unit TA-55-4-K13 has been changed from 3,500 gallons to 2,500 gallons for accuracy and consistency with the capacity calculated for the NOD response.
Throughout Application	All references to the proposed vitrification unit have been removed from the application. The unit will be addressed in a separate application.
Section 4 and Supplement 4-1	Section 4 has been shortened and refers directly to the TA-42 and TA-55 Section of the SWMU Report contained in Supplement 4-1. This was changed to decrease the duplication of information and simplify the application.

LA-UR-02-5041
August 2002

Response to Notice of Deficiency; TA-55 Part B RCRA Permit Application, Revision 1.0, May 16, 2002

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TABLE OF CONTENTS

LIST OF TABLES ii
LIST OF ATTACHMENTS iii

INTRODUCTION 1

LANL GENERAL COMMENTS 1

NOD COMMENTS AND RESPONSES 3

General Comments 3

Specific Comments 7

Comment No. 1, Section 1.0 - Introduction 7

Comment Nos. 2 - 26, Section 2.0 – Waste Management Units 7

Comment Nos. 27- 29, Section 4.0 – Solid Waste Management Units 33

Comment No. 30, Attachment A – Facility Description 37

Comment Nos. 31-43 , Attachments B.1 and B.2 – Waste Analysis Plan 37

Comment Nos. 44-59 , Attachment F.1 – Closure Plan for Container Storage Units 41

Comment Nos. 60-73 , Attachment F.2 – Closure Plan for the Storage Tank System 56

Comment Nos. 74-88, Attachment F.3 – Closure Plan for the Cementation Unit 65

Comment Nos. 89-102, Attachment F.4 – Closure Plan for the Vitrification Unit 75

Comment Nos. 103-107, Attachment G – Container Storage 85

Comment Nos. 108-110, Attachment H – Storage Tank System 87

Comment Nos. 111-112, Attachment I – Cementation Unit 89

Comment Nos. 112-117, Attachment J – Vitrification Unit 90

Comment Nos. 118-121, Attachment K – Waste Management Practices 94

REFERENCES 95

LIST OF TABLES

TABLE NO.	TITLE
1	Container Storage Units at TA-55
2	Storage Tank System at TA-55
3	Subpart X Treatment Units at TA-55
4	General Part A and TA-55 Part B Permit Applications Crosswalk for Container Storage Unit Identifications and Capacities
5	Identification of Packing Group
6	Secondary Containment Capacities for Container Storage at TA-55
7	Secondary Containment Capacities for the Storage Tank System
8	Secondary Containment Capacities for the Subpart X Treatment Units at TA-55
9	Secondary Containment System Capacity Verses Waste Management Unit Capacity

LIST OF ATTACHMENTS

ATTACHMENT NO.	TITLE
A	Notice of Deficiency; TA-55 Part B RCRA Permit Application, Revision 1.0, May 16, 2002
B	Final Design Report for DP Surety Vitrification System
C	Typical Storage Containers Utilized at TA-55
D	Potential Storage Configurations for the TA-55 Container Storage Units
E	Example - Waste Profile Form
F	Photos of the Secondary Containment for the TA-55 Waste Management Units
G	Spreadsheet for the Calculations of Secondary Containment Capacities at the TA-55 Waste Management Units
H	TA-55 Solid Waste Management Units Report
I	Cross Reference Table for the TA-55 and TA-42 SWMU Report and Section 4.1.1 and 4.1.2 of the TA-55 Part B Permit Application

Response to Notice of Deficiency; TA-55 Part B RCRA Permit Application January 2002, Revision 1.0, May 16, 2002

INTRODUCTION

The following document provides the response by Los Alamos National Laboratory (LANL) to a Notice of Deficiency (NOD) sent by the New Mexico Environment Department (NMED) on May 16, 2002. The full title of the NOD is "Notice of Deficiency, TA-55 Part B RCRA Permit Application, January 2002, Revision 1.0, Los Alamos National Laboratory, EPA ID No. NM0890010515," officially received by the U.S. Department of Energy (DOE) Office of Los Alamos Site Operations on May 17, 2002. The NMED required that the comments provided in the NOD be resolved in order for the "Los Alamos National Laboratory Technical Area 55 Part B Permit Application," Revision 1.0 (LANL, 2002a), submitted to the NMED in January 2002, to be evaluated for technical adequacy. Hereinafter, the permit application document will be referred to as "the application".

This document responds to the 127 comments contained in the NOD and includes appendices with information to supplement the individual responses to the numbered comments. The original comments from NMED are included as italicized text for ease of review. A copy of the original NOD is also included as Attachment A.

LANL GENERAL COMMENTS

LANL General Comment #1: LANL has reviewed its waste management operations at technical area (TA) 55, and will revise its application to permit seven container storage units (CSUs), one storage tank system, one cementation unit, and one vitrification unit. The B38 CSU will be closed under interim status and has a closure plan currently in development. This closure plan will be delivered to the Hazardous Waste Bureau (HWB) this fall for review and approval. The proposed FLO1 CSU is no longer necessary for operations in Room 401 and will not be permitted. Please note that this CSU was never permitted for hazardous waste storage. LANL will revise the application to remove the applicable information associated with these CSUs.

LANL General Comment #2: LANL submitted a permit application to HWB for review, and will provide any additional information needed by the agency to complete its technical review of the permit application. LANL has determined it is not in its best interest to revise the permit application other than to clarify details or correct errors/ omissions in that document. For LANL to make any other changes would result in an application that is a hybrid of LANL and HWB positions. This would be confusing to the reader and limit LANL's rights and abilities to subsequently comment and appeal a given section of the draft permit. The LANL permit application describes and supports LANL's waste management activities at TA-55. In response to the application, LANL expects that the HWB will draft a permit that complies with regulatory requirements and reflects its position on waste management practices. Keeping this in mind, LANL agrees to revise the TA-55 Permit Application to include all of the changes agreed upon in this and any subsequent RSI/NOD letters provided by the HWB. This revision will be conducted upon completion and mutual resolution of the RSI/NOD process with the HWB.

LANL General Comment #3: LANL will follow all applicable DOE and Nuclear Regulatory

Commission (NRC) procedures, requirements, and guidelines as they apply to the storage, treatment, and decontamination of radioactive constituents at the TA-55 waste management units. The DOE and NRC regulations are not preempted by the federal or state regulations governing the handling of hazardous waste. Compliance with all available DOE and NRC requirements is protective of human health and the environment. The Permit Application will not be revised to include the DOE and NRC procedures, requirements, and guidelines, nor will it be revised to include details regarding the handling and/or radionuclide content of the waste streams stored and treated at the TA-55 units.

LANL General Comment #4: Facility specific procedures for waste management at TA-55 and LANL are intended to meet the operational requirements of the facility and are subject to frequent changes to update management structure, non-hazardous waste operations, and/or developing missions. It is inappropriate for these procedures to be included in the application and subsequently the permit due to their dynamic nature, which could require a permit modification each time they are updated. The procedures cited in the application and this NOD Response are written to meet facility and applicable regulatory requirements.

LANL General Comment #5: LANL is seeking to permit the vitrification unit prior to its construction at TA-55-4 and is aware that additional information may be required before commencing waste operations. The application provides the information available at the time it was issued and was intended as a placeholder pending submittal and approval of a permit modification at a later date. The "Final Design Report for DP Surety Vitrification System," (INEEL, 2001) is provided as Attachment B of this NOD Response and provides more detailed information on the unit. This information is subject to changes as the unit is constructed.

NOD COMMENTS AND RESPONSES

General Comments

1. *The Application lacks sufficient detail, especially in regard to the container storage units (CSU's). The Application does not provide detail as to how specifically the CSUs and the other waste storage and treatment activities and equipment will meet regulatory requirements. Revise the Application to include details on how the hazardous waste management units and the hazardous waste management activities will comply with requirements of the regulations.*

   LANL Response: The U.S. Environmental Protection Agency (EPA) has proposed a "Standardized Permit" for CSUs because they are routine and repetitive. The EPA suggests that, in lieu of an application, a letter of intent to operate a hazardous waste CSU be submitted to the regulatory agency. All other required documentation would be maintained on site. The existing regulations provide goals such as the closure performance standard. If that standard is met, then the closure is complete. LANL is concerned that the amount of detail being requested through the NOD process will result in an overly prescriptive permit that is difficult to implement. A more complex permit will require frequent and costly modifications to keep current, burdening both NMED and LANL without commensurate benefit. Please refer to LANL General Comment No. 2 for a discussion regarding the revision of the application.

2. *The Application does not specifically and consistently identify hazardous waste management units which are requested to be permitted. The Application refers variously to eight and nine CSU's. Page I-I states that there are nine CSU's; Page 2-1, paragraph 1, states that there are eight CSU's; Section 2.1 states there are nine CSU's; and page 2-1, Sections 2.1 and 2.1.1 list eight CSU's. Page 4-4, Section 4.1.2.3, identifies TA-55-4, Room 401, that "may be used to store hazardous waste," and is not identified elsewhere in the Application text. Figure G-1, "Basement Container Storage Units," includes Room B38, which is not identified elsewhere as a CSU to be permitted. Page 4-4, Section 4.1.2.3, states that B38 is an inactive CSU "that is scheduled for closure under interim status," though no schedule for closure is provided and B38 is not included in the TA-55 Closure Plan. The number of tanks in the storage tank system is not identified. NMED requests that Permittees review for internal consistency and accuracy all documents submitted to NMED. Revise the Application to include a list and description with identifiable locations of all hazardous waste management units included in the Application.*

   LANL Response: The application identifies the waste management units to be permitted in Section 2.0, Attachment G, Attachment H, Attachment I, and Attachment J. For additional clarification:

   There are a total of seven CSUs to be permitted at TA-55. The other two CSUs mentioned in the application consists of a proposed CSU (FLO-1) that will not be permitted and a CSU (B38) that will be closed under interim status (see LANL General Comment No. 1). Table 1 identifies each of the CSUs to be permitted including its location and capacity.

Table 1
Container Storage Units at TA-55

Unit Name	Location	Capacity [a] (gallons)
B40	TA-55-4, Basement	21,500
B05	TA-55-4, Basement	3,600
K13	TA-55-4, Basement	3,400
B45	TA-55-4, Basement	11,000
Vault	TA-55-4, Basement	4,000
Storage Pad	Northwest of TA-55-4	135,000
TA-55-185	West of TA-55-4	30,000

a This has been revised since the application to reflect the calculation of maximum capacities with a minimum aisle space of 2 feet. Please refer to the response to Comment No. 4b.

There is one storage tank system at TA-55. This tank system is composed of 4 tank components and consists of a total of 18 tanks with a maximum storage capacity of 1,200 liters or approximately 336 gallons. Table 2 identifies each tank component, its location, the number of tanks, and capacity of each tank.

Table 2
Storage Tank System at TA-55 [a]

Tank Component	Location	Number of Tanks	Tank Capacity (liters) [b]	Tank Capacity (gallons) [b]
Evaporator Glovebox Tank	TA-55-4, Room 401	1	270	71
Cementation Unit Pencil Tanks	TA-55-4, Room 401	5	50	13
Pencil Tanks	TA-55-4, Room 401	10	50	13
Vitrification Unit Slab Tanks	TA-55-4, Room 434B	2	125	33

a The storage tank system consists of 4 components that store the same waste matrix and share a common piping network. The overall capacity of the unit is 1,200 liters [~336 gallons].
b The tank capacity listed is for each individual tank associated with the component.

There are two Subpart X treatment units at TA-55. Table 3 identifies each unit, its location, and capacity.

Table 3
Subpart X Treatment Units at TA-55

Treatment Unit	Location	Capacity (liters)	Capacity (gallons)
Cementation Unit	TA-55-4, Room 401	568	150
Vitrification Unit	TA-55-4, Room 434B	50 liters/hour	13.2 gallons/hour

The unit identified in Section 4.1.2.3 that “may be used to store hazardous waste” in TA-55-4, Room 401 is FLO1, which will no longer be permitted as discussed in LANL General Comment No. 1.

The CSU at B38 is undergoing closure under interim status this fall. It is not included in the closure plan because it has a separate unit-specific closure plan containing specific information applicable to the CSU including data from the operating record. This closure plan will be submitted to NMED for approval upon completion.

LANL will revise the application to clarify the number and capacity of all the waste management units at TA-55.

3. *The Application does not address the radiological components of the wastes. Radiological characterization is required for storage, treatment, transportation and packaging of treated waste, disposal, decontamination, and verification for closure. The Application should address these issues or provide adequate references to documents that do address the radiological components of the waste.*

   LANL Response: Please refer to LANL General Comment No. 3.

4. *Attachments B.1 and B.2, the waste analysis plans for the cementation unit and vitrification unit, respectively, only provide information related to the waste analysis plan for the hazardous waste component of the mixed wastes and not the radiological component.*

   LANL Response: Please refer to LANL General Comment No. 3.

5. *In the event that there is leak or spill from one of the storage tanks (e.g., storage tank system, cementation unit tank component and/or vitrification unit tank component), the tank must be removed from service until the requirements of 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.196) have been met. If major repairs are warranted, the tank system cannot be returned to service until certification by an independent, qualified, registered, professional engineer has been obtained demonstrating that the repaired system is capable of handling hazardous wastes without a release for the intended life of the system. This certification must be submitted to NMED within seven days after returning the tank system to use. Revise the Application to discuss repair issues for each of the tank systems and include a discussion of the certification of major repairs.*

   LANL Response: LANL addressed the requirements of 20.4.1 NMAC, Subpart V, 264, 196 [6-14-00] in Attachment H, Section H.3 of the application. The final paragraph reads as follows:

   > "If it is determined that there has been a leak or spill from any of the storage tank components into the secondary containment, the affected component or portion thereof will be removed from service immediately and the requirements of 20.4.1 NMAC, Subpart V, 264, 196 [6-14-00], will be initiated."

   In the event of a leak or spill from one of the tank components associated with the storage tank systems (e.g., cementation pencil tanks) the tank must be removed from service until the requirements of 20.4.1 NMAC, Subpart V, 264.196 have been met. If a major repair were needed to a storage tank system component, the component would likely be replaced not repaired. In either case, an independent certification will be needed prior to returning the tank component to service.

6. *The Application references the definition for a solid waste management unit (SWMU) in Section 4.0. However, hazardous waste management units and regulated units are not*

addressed. Closure of hazardous waste management units must be addressed in the Application, not under general LANL corrective action, and compliance must be demonstrated with all requirements under 40 C.F.R Part 264, Subpart G.

LANL Response: All of the hazardous waste management and regulated units (as applicable) located at TA-55 are addressed in Section 4.1.2 of the application. These units are, by definition, solid waste management units (SWMUs) as provided in Module VIII of the LANL Hazardous Waste Facility permit, which states that a SWMU is

> "any discernable unit at which solid wastes have been placed at any time..."

The SWMUs at TA-55 that are active hazardous waste management units are not included in Module VIII of the permit and are not subject to corrective action requirements. Section 4.1.2 of the application states that these units

> "…..are active hazardous/mixed waste management units operating under interim status standards and will be closed in accordance with a RCRA closure plan."

Closure for these active units is addressed in Attachments F.1, F.2, F.3, and F.4 of the application.

Specific Comments

Comment No. 1, Section 1.0 - Introduction

1. *Section 1.0, Table 1-1*

Delete or indicate as NA references to "post-closure plans," "post-closure," "post-closure care," "Post-closure notices," and "Post-closure cost estimate. " Treatment, storage, and miscellaneous units at TA-55 must be closed by removal or decontamination of hazardous waste and hazardous waste residues, and post-closure care with waste left in place is not an option at those units.

LANL Response: Table 1-1 was generated from the Review Checklist for Part B General Requirements found in the "HRMB Standard Operating Procedures Manual" (HRMB, 1998). These items are listed in Table 1-1 to ensure compatibility with the checklist. Post closure plans, post closure, post closure care, post closure notices, and post closure cost estimate may not be an available option at these units, but they are an option for surrounding soils and adjacent SWMUs. Because they are an option for these areas they are addressed in Attachments F.1, F.2, F.3, and F.4 as indicated in the table.

Delete or indicate as NA references to "Closure cost estimate, "Post-closure cost estimate," "Liability insurance, " and "Proof of financial coverage. " Permittees as state and federal governments are exempt from those requirements under 20.4.1.500 (incorporating 40 C.F.R § 264.140(c)).

LANL Response: Table 1-1 was generated from the Review Checklist for Part B General Requirements found in the "HRMB Standard Operating Procedures Manual" (HRMB, 1998). These items are listed in Table 1 to ensure compatibility with the checklist. LANL agrees that, as a DOE facility, it is exempt from the closure cost estimate, post-closure cost estimate, liability insurance, and proof of financial coverage requirements of 20.4.1 NMAC, Subpart V, 264.140 (c). However, these items are addressed in Attachments F.1, F.2, F.3, and F.4 as indicated in the table.

Comment Nos. 2 - 26, Section 2.0 – Waste Management Units

2. *Section 2.1. Container Storage (40 C.F.R. §§ 270.15 and 264.170 through 264.178)*

The Application refers to eight and nine CSU's. Revise the Application to accurately describe the hazardous waste management units for which a permit is being requested.

LANL Response: Please refer to the response to General Comment No. 2.

3. *Section 2.1.2. Storage Containers (40 C.F .R. § 264.172)*

a) *The Application must discuss each type of waste container that will be used to store each type of waste at each CSU. Revise the Application to strike vague descriptors such as the words "may be," "may have," and "not limited to" and revise the Application to include all types of waste containers that will be used to store waste at all CSU's.*

LANL Response: LANL conducts basic research in a variety of disciplines for a number of government agencies, including the DOE, the U.S. Department of Defense, and the National Aeronautics and Space Administration. In addition, the University of California (UC) (the operator of the laboratory) receives a fee from the DOE under its contract to perform Locally-Directed Research and Development. This allows UC to conduct basic research in areas of its own direction. There are a number of mature programs at LANL where specific containers can be identified for future use. However, the broad range of research that could be conducted during the term of the renewed permit makes it difficult to identify all of the containers that might ever be used at TA-55.

As discussed with the HWB on May 23, 2002, LANL will not limit the flexibility of its CSUs by specifying the type of containers to be stored in them. In addition, LANL requires the flexibility to place waste types in various sized containers to maximize packaging and storage efficiency at its CSUs. For this reason and as agreed upon at the May 23, 2002 discussion, specific information regarding the type of waste placed in each type of container beyond the hazardous and/or mixed waste classifications is not provided.

LANL will remove "may be," "may have," and "not limited to" and revise the application to include the following basic container sizes:

- 0.25, 0.5, 0.75, 1, 2, and 4, 6 Liter Containers
- 5, 10, 12, and 15 Gallon Containers
- 30, 55, and 85 Gallon Steel Drums
- Special Order Waste Boxes
- Large Waste Boxes
- Standard Waste Boxes (SWB)

Additional information regarding typical storage containers utilized at TA-55 is also provided as Tables C-1 and C-2, in Attachment C of this NOD Response. Please note that these tables do not contain information on all of the possible containers to be used and that the containers are identified by size without limiting the materials of construction.

b) *Several types of containers are mentioned in the Application including "various small containers." These various small containers are not described in Section 2.1.2 or anywhere else in the Application. Revise the Application to include a detailed description of all containers to be permitted for use for storage of any hazardous waste.*

LANL Response: The "various small containers" to be used for waste storage at the TA-55 CSUs include 0.25, 0.5, 0.75, 1, 2, and 4, 6 Liter containers. Please refer to the response to Comment No. 3a for additional discussion.

c) *For each type of container listed, the maximum number of each type of container allowed at each CSU must be provided. In addition, the type of waste placed in each container should also be provided. Revise the Application to include this information.*

LANL Response: Please refer to the response to Comment No. 3a.

4. *Section 2.1.3, Minimum Aisle Space and Storage Configuration (40 C.F.R. § 264.35)*

a) *The requirements for aisle space as outlined in 20.4.1.500 NMAC (incorporating 40 C.F .R § 264.35) state that aisle space must be maintained that will allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the facility in an emergency. The Application indicates that, for all storage locations, a minimum aisle space of two feet will be used. It is questionable whether an aisle space of two feet will be adequate to meet the above stated requirements. Standard industry practice is to use an aisle space of three feet. Either provide adequate justification for the use of an aisle space of two feet in all storage locations within TA-55 or revise the Application to specify a minimum of three feet of aisle space.*

LANL Response: LANL has reviewed the hazardous waste regulatory requirements for aisle space and has not found a specified width for CSUs. The regulatory requirement in 20.4.1 NMAC, Subpart V, 264.35 states:

> "The owner or operator must maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency, unless it can be demonstrated to the Regional Administrator that aisle space is not needed for any of these purposes."

LANL can justify a two-foot minimum aisle space, as follows:

- Waste storage operations at the active TA-55 CSUs currently utilize a minimum two-foot aisle space. This includes the use of

this aisle space for routine hazardous waste inspections, which have been unhindered, successfully completed, and documented.

- The current LANL Hazardous Waste Facility Permit provides a precedent for the two-foot aisle space at TA-54 as an established permit condition.

- The aisle spacing in between rows of drums at the CSUs is considered a "means of egress." As stated in OSHA (29 CFR § 1910.37(c)(2)) "a means of egress shall be measured in units of exit width of 22 inches." Because the aisle spacing at each of the CSUs is a minimum of two feet, this OSHA requirement is met.

- Four of the seven CSUs (Storage Pad, B40, K13, and the Vault) discussed in the application will be used to store liquid and/or potentially liquid hazardous/mixed wastes. Since these CSUs have the potential for a spill, the necessary spill control equipment is available and will be hand carried between the rows of drums. This hand carried spill equipment easily fits within the two-foot aisle space.

- Combustible materials at the CSUs are kept at a minimum and the majority of waste storage is conducted in steel containers (e.g., drums, SWBs). Fire protection at the TA-55 CSUs is provided either by a room sprinkler system or by fire extinguishers that can be hand carried within two-foot aisle spaces. The routine procedure in the event of a fire is for an individual to evaluate the situation and, if the situation will not put the individual at risk, use the fire extinguisher if he/she is trained to operate the extinguisher. The individual's main responsibility is to pull the fire alarm, safely exit the structure, and await the arrival of the emergency response team and the fire department; the activities by the response crews would not likely involve fighting the fire at close proximity.

b) *A container layout figure for each of the CSU's within TA-55 must be provided. The figure must contain a layout of the storage location, location of each type of storage container, location of aisles, and containment systems. Revise the Application to include container layout figures for each of the CSU's.*

LANL Response: A container layout figure for each of the TA-55 CSUs is provided in Attachment D of this NOD Response. These figures represent one possible storage configuration and provide the dimensions and location of potential aisle space at each CSU. Please note that the figures in Attachment D are provided for informational purposes only and that the actual configuration and number of containers may vary up to the maximum capacity indicated on the figure. Please refer to the response to Comment No. 3a for additional discussion regarding container sizes and types.

c) *Six CSU's are requested to be permitted in the April 1998 General Part A Application. There are eight or nine proposed CSU's in the TA-55 Permit Application. The numbering scheme for the container storage, vitrification, and cementation units must provide a cross reference to the numbering scheme found in the General Part A Application. Additionally, the capacities found in the General Part A are inconsistent with the TA-55 Permit Application. For example, the Building 185 CSU has a maximum storage capacity of 55,000 gallons in the TA-55 Application and a maximum storage capacity of 27,500 gallons in the General Part A Application. Revise the Applications to be accurate and consistent with one another.*

LANL Response: Table 4 provides a summary of the differences between the "Los Alamos National Laboratory General Part A Permit Application" (LANL, 1998a), hereinafter referred to as the General Part A, and the application:

Table 4
General Part A and TA-55 Part B Permit Applications Crosswalk for Container Storage Unit Identifications and Capacities

1998 General Part A Application [a]		2002 TA-55 Part B Application [b]		Status
Unit ID	Capacity (gallons)	Unit ID	Capacity (gallons)	
Area 1	27,500 [c]	B40	21,500	Active CSU
Area 2		B38	3.000	To be closed
Area 3		B05	3,000	Active CSU
Area 4	3,400	K13	3,400	Active CSU
Area 5	3,400	B45	3,400	Active CSU
Area 6	4,000	Vault	4,000	Active CSU
Storage Pad	135,000	Storage Pad	135,000	Active CSU
TA-55-185	27,500	TA-55-185	55,000 [d]	Proposed CSU

a LANL, 1998, "Los Alamos National Laboratory General Part A Permit Application," Revision 0.0, Los Alamos National Laboratory, Los Alamos, New Mexico.
b LANL, 2002, "Los Alamos National Laboratory TA-55 Part B Permit Application," Revision 1.0, Los Alamos National Laboratory, Los Alamos, New Mexico.
c Total combined capacity for all three areas.
d Previous capacity was based on use of only half the building for storage. The waste management needs of the facility have changed such that the entire building will now be used.

The application represents the most up to date information for the CSUs at TA-55 and supercedes the General Part A. LANL is in the process of revising the LANL General Part A to match the numbering scheme and capacities identified in the application as revised due to the RSI/NOD process. This revised General Part A application will be delivered to the HWB in August of this year.

Please refer to the response to General Comment 2 for the revised capacity, which was updated to reflect minimum aisle space requirements.

d) *The Application states that large containers may be stacked to a maximum of two "high unless size and weight restrictions prohibit it for safety reasons. Revise the Application to include a discussion of specific criteria and methods that will be used to determine the maximum stacking height for each type of container.*

LANL Response: LANL will revise the application to clarify that containers will be stacked to a maximum of two high unless they are to large or heavy to be supported by the container(s) to be located underneath and/or maneuvered with the available forklift/crane/hoist. Containers will be arranged in rows and stacked to a maximum of 10 feet high, based on the requirements in 49 CFR 178.606 (c), "Performance-Oriented Stack Test."

5. *Section 2.1.5, Condition of Containers (40 C.F.R. § 264.171)*

a) *The Application states that any waste container not in good condition will be overpacked or the waste will be repackaged in a container in good condition. The materials of the overpack container must be compatible with both the waste and the other container. In addition, the overpack container and/or new container must be compatible and resistant to environmental conditions (e.g., corrosion). Revise the Application to include a discussion of this information.*

LANL Response: LANL will revise Section 2.1.5 as follows:

"Containers must be without severe rust, dents, deep scratches, bulges, or other structural defects. Any waste container that is not in good condition (e.g., severe rusting, apparent structural defects) is overpacked or the waste is repackaged in a container that is in good condition and is compatible with the waste, packaging material, and/or other container. Overpack and/or new containers must also be compatible with and resistant to environmental conditions. This meets the requirements of 20.4.1 NMAC, Subpart V, 264.171 [6-14-00]. "

b) *Containers must be shown to be free of surface contamination. Revise the Application to discuss how containers will be examined or surveyed to determine if the outside surfaces are free of contamination.*

LANL Response: LANL will add the following paragraph to Section 2.1.7 as follows:

"All containers are regularly inspected for evidence (e.g., corrosion, visible staining, bulges, rupture, dents, leaks) that may indicate surface contamination. If any evidence of surface contamination is detected, the waste container is either overpacked in an appropriate container or the waste is repackaged in a new container as discussed in Section 2.1.5."

c) *Container liners are not discussed, although it is mentioned in Section 2.1.2 that some drums may have liners. These liners are typically procured to a specification describing the functional requirements of fitting inside the drum, material thickness and tolerances, and quality controls and required testing. Also, a quality control program is established to ensure liners meet the specifications. Revise the Application to discuss liners for all containers, requirements (including waste and container compatibility) and quality control procedures to ensure compliance with the requirements.*

LANL Response: LANL will revise Section 2.1.5 to include the following paragraphs:

"TA-55 uses the LANL procurement system, administered by the Business Operations (BUS) Division, for procurement of waste container components. Suppliers of waste container components are audited by BUS for qualification prior to conducting business transactions. BUS also uses approved procurement product specifications that include quality assurance and ensure that the container package meets U.S. Department of Transportation (DOT) (49 CFR 173.410) requirements for Type A/7A packages.

Containers procured by BUS include liners if required for the container to pass the manufacturer's tests for A/7A compliance. When liners are procured individually, a representative sample of the purchased liners is inspected for compliance with appropriate specifications using an approved inspection procedure. It is the generator's responsibility to ensure the container and pedigree is inspected for compliance with the specification provided to the supplier. Containers that do not pass inspection are segregated from those that are acceptable to prevent inadvertent use.

Prior to filling the container with waste, all container components (e.g., lid, liner, and interior/exterior surface) are inspected by the waste generator to ensure container integrity as well as compatibility with the type of waste to be placed into the container. The "Los Alamos National Laboratory Waste Acceptance Criteria," hereinafter referred to as the LANL waste acceptance criteria (WAC) (LANL, 2002b) requires waste generators to ensure the compatibility of the waste container, including liners, with the waste to be containerized. Information regarding the liner's compatibility with the waste components can be obtained from the container/liner manufacturer."

6. *Section 2.1.6, Compatibility of Waste with Containers (40 C.F.R. § 264.172)*

a) *The Application states that only containers made of, or lined with, materials that will not react with wastes stored in them will be used. Revise the Application to provide a discussion of the documentation of waste compatibility for each of the containers and liners to be used. In addition, discuss what types of waste will be used in each type of container.*

LANL Response: The TA-55 CSUs are used to consolidate mixed waste generated at the Plutonium Facility. Transuranic mixed wastes are packaged in chemically compatible waste containers and prior to being shipped to TA-54 are placed in a container that is in compliance with the DOT requirements for containers. Low-level mixed wastes are packaged in chemical compatibility waste containers. Prior to shipping to the centralized treatment, storage, and disposal facility at TA-54, these low-level mixed waste containers are repackaged in compliance with the DOT requirements for containers.

DOT packaging requirements are based on the Packing Group of the material, its vapor pressure, and the chemical compatibility between the package and the hazardous material. In addition, for non-bulk containers, DOT requires performance-oriented testing. The required performance tests include the drop test, the leak-proofness test, the hydrostatic pressure test, the stacking test, the cooperage test for bung-type wooden barrels, and vibration standard. Bulk containers are divided into specification containers and intermediate containers. For specification bulk containers, DOT has developed detailed specification that covers the design, fabrication, and certification of these containers. For intermediate bulk containers, DOT has established performance testing that these containers must pass. In addition to the performance tests required for non-bulk packaging, intermediate bulk containers must also pass the bottom and top lift test, the topple test, the righting test, and the tear test. To verify that each bulk and non-bulk package has been manufactured to meet the requirements established by DOT, each authorized container must be specifically marked in accordance with DOT requirements. Manufactures who apply this marking must register with and are periodically inspected by the DOT. DOT regulations allow the user to accept these markings in determining the packaging compliance. In addition to the design qualification testing performed by the manufacturer, DOT also requires periodic re-testing.

For each hazardous material there is one and only one proper shipping name. DOT regulations provide specific guidance in determining this proper shipping name. Based on this proper shipping name, the Hazardous Materials Table identifies the Packing Group for this material as indicated in Table 5. The Packing Group is designed to indicate the degree of danger presented by the material.

Table 5
Identification of Packing Group

Packing Group	Degree of Danger
I	Great
II	Medium
III	Minor

For each proper shipping name, the Hazardous Materials Table also identifies the specific non-bulk and bulk containers authorized for the packaging of that material. The authorized containers are identified by reference to the specific numerical section in 49 CFR Part 173 that is applicable to that hazardous material. The authorized containers are identified by either their DOT specification or the United Nations (UN) standard. In addition to specifying the specific non-bulk or bulk containers that must be used, the numerical section also identifies any additional packaging requirement that must also be met, if applicable.

The container standards developed by DOT are designed to protect the health and safety of the workers, the public, and the environment from the hazards associated with the transport of hazardous materials. In conducting their evaluation, DOT examined all operations and conditions associated with and involved in the movement of hazardous materials; these include the design, fabrication, and maintenance of packaging, and the preparation, consigning, handling, carriage, storage, and receipt of packaged hazardous waste. A number of the performance tests are directly related to storage, such as the stacking test. In this test, the package is subjected to a force applied to the top surface of the test sample equivalent to the total weight of identical packages that may be stacked on it during storage or transport. The minimum stack height is 10 feet for a maximum duration of 28 days. The stacking test for DOT Type 7A-specification packaging for the shipment of radioactive material is more stringent. These packages must be able to withstand the compressive load equivalent to five times the mass of the actual package or 1.9 pounds per square inch multiplied by the vertically projected area of the package, whichever is greater.

Some containers will be used for storage of waste prior to placement of the container in an approved DOT shipping container. These non-DOT approved storage containers will receive the same scrutiny when selecting the container as would be used for selecting a DOT shipping container. This selection ensures that there are no waste/container incompatibility problems.

Please refer to the response to Comment No. 5c for additional discussion.

7. *Section 2.1.7 Management of Containers*

a) *The Application states that waste containers will be opened when waste is added or removed or if the container's contents require repackaging. The Application does not discuss whether containers will be opened within a work enclosure that provides confinement, preventing any release of waste constituents. A detailed description of the waste enclosure, including any special ventilation systems, waste containment systems, and special handling requirements should be provided in the Application. Revise the Application to outline specific waste handling requirements for opening waste containers and the work enclosure area for handling each type of waste container and waste type.*

LANL Response: LANL will revise Section 2.1.7.1 to include the following paragraphs:

"Waste repackaging at TA-55 involves the addition of waste received from the waste generators into a partially filled secondary container or movement of waste from one secondary container to another. If the primary container requires overpacking due to container failure, it will be overpacked into a container that will become the primary container. Waste repackaging will occur at the K13 and the B40 CSUs except for overpacking, which will occur at any TA-55 CSU.

K13 and B40 are also used to packaged waste received from the waste generators. Waste received into K13 consists of small waste items that are eventually packed into secondary containers to maximize storage and shipping efficiency. B40 receives large waste items that need to be packaged into an SWB or ST45/ST90 shipping container. The following procedures are used to package and repackage waste:

- "Packing TRU Waste Containers," NMT7-WI3-SOP-TA55-013 (LANL, 2002c).
- "Managing Solid Low-Level Waste at TA-55," NMT7-HCP-TA55-DP-02L (LANL, 2002d).
- "Certification and Disposal of Low-level," NMT7-SOP-TA55-DP-01L (LANL, 2002e).
- "Certification and Disposal of Low-Level, Oversize Waste," NMT7-WI3-TA55-HCP-DP-02L (LANL, 1999a).

The TA-55-4 basement floors and walls provide secondary containment for the K13 and B40 CSUs. Each CSU is provided with ventilation from the TA-55-4 facility ventilation system. This ventilation system is designed to monitor air pressure and ambient air for personnel working in areas where hazardous or mixed waste is managed. It creates zones within TA-55-4, which are at a lower pressure than the outside air. Air flows from the zones of highest pressure to the zones of lowest pressure (highest potential

contamination areas). The airflow through the different zones is carefully balanced and controlled to provide the greatest protection to personnel as well as to the environment. If negative air pressure exceeds designated limits, a ventilation alarm (a slow, repeating chime sound) is activated.

b) *In addition to containers being closed, 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.1086(c)(ii)) also requires that the cover and closure devices form a continuous barrier over the container openings such that when the cover and closure devices are secured in the closed position, there are no visible holes, gaps or other open spaces into the interior of the container. Revise the Application to clarify that in addition to containers being closed, the closing devices will be secured in a manner that there are no visible holes, gaps, or other open spaces into the interior of the container.*

LANL Response: LANL will revise the first paragraph of Section 2.1.7 to state the following:

"Waste containers stored at the TA-55 CSUs are handled in a manner that will not cause them to rupture or leak, as required in 20.4.1 NMAC, Subpart V, 264.173(b) [6-14-00]. All containers are kept closed during storage in accordance with 20.4.1 NMAC, 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. In addition to the containers being closed, the closing devices will be secured in a manner that provides no visible holes, gaps, or other open spaces into the interior of the container, in accordance with 20.4.1 NMAC, Subpart V, 264.1086(c)(1)(ii). Inspections of the containers while they are in storage will be used to verify that there are no visible holes, gaps, or other open spaces into the interior of containers while they are in storage. These inspections will be conducted in accordance with "Storage Area Inspections" NMT7-WI1-HCP-TA-55-011 (LANL, 2001).

8. *Section 2.1.7.2, Labeling, Recording and Sampling System*

a) *The Application indicates that, where necessary, a "Radioactive Material/Radioactive Waste" label will be attached to waste containers, Revise the Application to include the specific criteria that is used to determine whether containers require radioactive labeling. Include whether the radioactive criteria applies to levels of activity of the waste inside the container and if it applies to external radiological container activity readings.*

LANL Response: Please refer to LANL General Comment No. 3.

b) *Revise the Application to include a copy or example of the Waste Profile Form (WPF) that will accompany all wastes.*

LANL Response: An example of the waste profile form (WPF) is

provided as Attachment E to this NOD response. The WPF is provided for information purposed only.

9. *Section 2.1.8. Containment Systems (40 C.F.R §§ 270.15(a-b) and 264.175(a-b))*

a) *The Application states that LANL databases may be used initially to verify the absence or presence of free liquids in containers. The Application must provide the methodologies that will be used in addition to acceptable knowledge (AK) to determine the presence and amount of or absence of free liquids. Revise the Application to include these methodologies.*

LANL Response: The word "may" was used to indicate the possible use of the LANL databases as a source of AK information to determine the presence or absence of free liquids in waste containers. In addition to AK, visual examination and/or verification will be used. This visual verification is used as a quality assurance tool to ensure that the waste matches its associated waste profile description and meets LANL waste acceptance criteria.

Please refer to the "Response to Notice of Deficiency; RCRA Permit Application General Part A, April 1998, Revision 0.0; General Part B, October 1998, Revision 1.0; Los Alamos National Laboratory; May 16, 2002" (LANL, 2002f) for a more detailed description of the AK process.

b) *The containment requirements as outlined in 20.4.1.500 NMAC (incorporating 40 C.F.R § 264.175(b)(1)) are not addressed in the Application. Specifically, the Application must discuss the underlying base of the containment systems and demonstrate that the base will be free of cracks or gaps and will be sufficiently impervious to contain leaks, spills, and accumulated precipitation until the collected material is detected and removed. Revise the Application to discuss the base of the containment systems and to demonstrate compliance with the appropriate regulation.*

LANL Response: The containment requirements outlined in 20.4.1 NMAC, Subpart V, 264.175(b)(1) are addressed in Attachment G, Section G.2. In addition, photographs of the secondary containment associated with the applicable TA-55 CSUs are provided in Attachment F of this NOD Response.

c) *The Application should provide calculations showing the requirements for secondary containment at each CSU. The calculations should demonstrate the amount of liquid and necessary containment requirements. Revise the Application to include containment calculations.*

LANL Response: Table 6 is provided to summarize the capacity associated with the secondary containment provided for each container storage unit at TA-55.

Table 6
Secondary Containment Capacities for Container Storage at TA-55

Container Storage Unit	Location	Waste Types	Maximum Capacity (gallons)	Secondary Containment	Capacity of Secondary Containment (gallons)
B05	TA-55-4, Basement	Solid	3,600	Basement	46,258
B40		Solid and Liquid	21,500		
B45		Solid	11,000		
K13		Solid and Liquid	3,400		
Vault		Solid and Liquid	4,000		
TA-55-185	West of TA-55-4	Solid	30,000	NA	NA
Storage Pad	Northwest of TA-55-4	Solid and Liquid	135,000	Covered Self-Containment Pallets	112[a]

a No more then 110 gallons (i.e., 2 55-gallon drums) of free liquids will be stored on an individual self-containment pallet.

Attachment G of this NOD Response provides a spreadsheet that includes the dimensions of the secondary containment, the total surface area, maximum quantity of liquid to cover the area, and the capacity of the containment. LANL will revise Section 2.1.8 of the application to include Table 6.

d) *The description of secondary containment must also include a calculation of the surface area and the quantities of liquid that would cover the area for each CSU. Revise the Application to include this calculation.*

LANL Response: Attachment G of this NOD Response provides a spreadsheet that includes the dimensions of the secondary containment, the total surface area, maximum quantity of liquid to cover the area, and the capacity of the containment. Please note that these calculations were generated under the assumption that the total volume of the CSU was liquid and was released. This is an extremely conservative assumption and represents the maximum volume capable of being released into the secondary containment. LANL will revise Attachment H of the application to include the spreadsheet calculation provided in Attachment G.

e) *The Application states that accumulated liquids will be removed from containment areas. However, 20.4.1.500 NMAC (incorporating 40 C.F.R § 264.175(b)(5)) specifically states that spilled and leaked waste and all accumulated liquids must be removed in a timely manner to prevent overflow of the collection system. Revise the Application to state that all accumulated liquids will be removed in a timely manner to prevent overflow of the collection system.*

LANL Response: Attachment K, Section K.3.2 of the application states the following:

> "Runoff control of liquids resulting from fire-suppression activities and from leaks or spills will be accomplished by using a vacuum truck, a portable pump, a high-efficiency particulate air (HEPA)

vacuum, and/or sorbents, depending on the volume and location of accumulated liquid. Accumulated liquids will be removed as soon as possible."

Please note that this text is applicable to all of the waste management units at TA-55.

f) *Provide a discussion that demonstrates how containers will be kept from contact with any potentially accumulated liquids.*

LANL Response: A discussion demonstrating how containers are kept from contact with potentially accumulated liquids is provided in Attachment G, Section G.2, Page G-4. This discussion includes the following text:

"Containers holding hazardous or mixed waste in each CSU will be protected from potential contact with accumulated liquids that could be introduced in the event of a plumbing failure or as a result of fire-suppression activities, leaks, spill, or precipitation by either being elevated or stored in an area that is designed and operated to removed accumulated liquids."

10. *Section 2.1.10, Special Requirements for Ignitable, Reactive, and Incompatible Wastes (40 C.F.R. && 270.14(b)(9), 270.15(b-c), 264.17(a-b). 264.176, and 264.177)*

a) *The Application must include engineering drawings or other data that show the storage location for containers of ignitable and/or reactive wastes and which demonstrate that the containers are located 50 feet from the TA boundary. Revise the Application to include this figure(s).*

LANL Response: 20.4.1 NMAC 264.176 states that containers holding ignitable or reactive waste must be located at least 50 feet from the facility property line. Please note that LANL considers the facility boundary to be the boundary of the entire laboratory. The topographic map included as Figure A-5 of the application shows that all of the CSUs at TA-55 are located at least 50 feet from the LANL facility boundary. Furthermore, the nearest public access road to TA-55 is Pajarito Road. The closest TA-55 CSU resides over 400 feet from Pajarito road.

b) *The Application states ignitable and reactive waste containers are protected from the possibility of accidental ignition or reaction. Revise the Application to include a discussion of these specific policies. Precautions to be taken should include prevention of ignition, spontaneous ignition, and radiant heat.*

LANL Response: LANL will revise Section 2.1.10 of the application to include the following text:

"Ignitable or reactive waste is stored at the K13 CSU and on the container storage pad. Pursuant to 20.4.1 NMAC, Subpart V, 264.17 [6-14-00], LANL will follow specific waste management

procedures for ignitable and reactive waste. Containers with ignitable or reactive wastes are located at least 50 feet from the facility property line at all times and are protected from sources of ignition or reaction. Waste management practices at the TA-55 CSUs minimize the possibility of accidental ignition. There are no sources of open flames allowed at the CSUs, and smoking is prohibited. Cutting and welding activities are never conducted in the vicinity of waste containers without proper controls. Ignitable and reactive wastes are segregated and separated by distance and are stored in either a flammable cabinet or self-containment unit. Only non-sparking tools are used in handling waste containers, and lightning rods are located on all storage structures. "No Smoking" signs are conspicuously placed wherever there is a potential hazard from ignitable or reactive waste.

Precautions are taken to prevent reactions that may produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment, or produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions include keeping containers closed during storage and venting containers of mixed transuranic waste. Together, these measures meet the requirements of 20.4.1 NMAC, Subpart V, 264.17(a) and (b) and 264.176.

Incompatible wastes, if any, are segregated and separated during storage. All waste is segregated and stored in accordance with the following DOT compatibility groups:

- Flammables (Class 3)
- Oxidizers (Class 5.1)
- Combustible/Noncombustible Miscellaneous Hazardous Material (Class 9)
- Corrosives (Class 8)
- Poisons (Class 6)
- Radioactive (Class 7)
- Acids (Class 8)
- Reactive (Class 4)
- Non-regulated materials.

Incompatible wastes are separated and segregated from other wastes and materials by means of berm, dike, wall, or other specific means (e.g., secondary containment pallets, modular sheds, and distance). 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 20.4.1 NMAC, Subpart V, 264.177(a) and (b), and 20.4.1 NMAC, Subpart IX, 270.15(d).

Ignitable, reactive, and incompatible wastes will not be stored at TA-55-4, B40, B05, B45, the Vault, and TA-55-185; therefore the requirements of 20.4.1 NMAC, Subpart V, 264.17, and 20.4.1 NAMC, Subpart IX, 270.15 (c) and (d) [6-14-00] do not apply."

c) *The Application must also describe all processes that will be used to prevent reactions that may generate extreme heat, pressure, fire, explosions, or violent reactions; produce uncontrolled flammable fumes, dust, or gases in sufficient quantities to threaten human health or the environment; produce uncontrolled flammable fumes, dust, or gases in sufficient quantities to pose a risk of fire or explosions; damage the structural integrity of the facility; or be a threat to human health or the environment. Revise the Application to include a discussion of these preventative processes.*

LANL Response: Please refer to the response to Comment No. 10b.

d) *Under 20.4.1.500 NMAC (incorporating 40 C.F.R § 246.1101(a)(3)), the Application must ensure the management of incompatible wastes within a CSU where secondary containment systems will be used and show that the presence of incompatible wastes will not cause the secondary containment system to leak, corrode, or fail. Revise the Application to discuss safeguards that are in place to ensure the compatibility of incompatible wastes with the secondary containment systems.*

LANL Response: Please refer to the response to Comment No. 10b.

11. *Section 2.1.11. Closure (40 C.F.R. § 264.111 and 264.178)*

Revise the Application to state that at closure of a CSU all hazardous waste will be removed from the CSU and all hazardous waste and hazardous waste residues will be removed or decontaminated in compliance with 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.178).

LANL Response: LANL will revise Section 2.1.11 to include the following text:

"Partial closure will be accomplished by removal of hazardous wastes and residues from the surfaces and/or equipment associated with the CSU to be closed and that may have come into contact with the wastes."

Refer to specific comments on Attachment F.1 of the Application.

LANL Response: No response required.

12. *Section 2.2, Storage Tank System (40 C.F.R. §§ 270.15 and 264.191 through 194)*

a) *Identify the number of tanks in the storage system.*

LANL Response: Please refer to Table 2 of the response to General Comment No. 2.

b) *The Application indicates types of wastes that "may" be stored in the tank system. The Application must include all types of wastes to be permitted for the tank system. Either remove the word "may" or revise the Application to include a discussion of all the specific types of wastes to be permitted for the tank system.*

LANL Response: The word "may" is used to indicate that the waste is allowed to be stored in the storage tank system. Only mixed waste evaporator bottoms solutions will be stored in the storage tank system. These mixed waste solutions are assigned the EPA Hazardous Waste Numbers presented in the LANL General Part A. LANL will remove the word "may" from the text.

c) *More detailed information on the storage tank system was provided in Attachment H of the Application. Refer also to comments related to Attachment H.*

LANL Response: No response required.

13. *Section 2.2.2 Containment Systems (40 C.F.R. §§ 270.16(g) and 264.193(a-d))*

a) *The secondary containment areas in TA-55-4, rooms 401 and 434A, consist of 10- inch thick, steel reinforced concrete floors. While the concrete appears to have sufficient strength and thickness to prevent containment failure, it is not clear how the surface of the concrete will decontaminated in the event of a system or tank failure. The overall decontamination plan was presented, however this plan does not address periodic decontamination of secondary containment systems in the event of a leak. The Application also does not address whether the concrete floors have an epoxy or similar coating to aid in removal of contaminants and to prevent contaminants from seeping into the concrete. Revise the Application to address these issues.*

LANL Response: These requirements specify that the containment be constructed of materials compatible with the waste and have sufficient strength and thickness to prevent failure. Section 2.2.2 provides this information. Discussion regarding the removal of spills from the containment is addressed in Attachment G, Section G.2. Spill removal and decontamination is also addressed in Attachment E of the Permit Application and Appendix E of the "Los Alamos National Laboratory General Part B Permit Application" (LANL, 1998b), hereinafter referred to as the General Part B.

In addition, LANL will revise the Section 2.2.2 of the application to include the following text:

> "The concrete in Rooms 401 and 434A is sealed with an epoxy or similar coating to aid in decontamination should a spill occur. Rooms 401 and 434A have a floor, which consists of 10 inches of concrete though which the constituents must migrate. This provides secondary containment. In addition, tertiary containment is provided by the basement level of TA-55-4, which also consists

of 10 inches of concrete. The tanks are located inside a building which prevent them from exposure to precipitation and prevent contaminate mobility out of the containment system."

b) *The Application must include calculations to show that the external liner system is designed to contain 100 percent of the capacity of the largest tank within its boundary. Revise the Application to include these calculations.*

LANL Response: Table 7 has been provided to summarize the secondary containment provided for the storage tank system.

Table 7
Secondary Containment Capacities for the Storage Tank System

Storage Tank System Component	No. of Tanks	Capacity of Each Tank (gallons)	Location	Secondary Containment	Capacity of Secondary Containment (gallons)
Evaporator Glovebox Tank	1	71	TA-55-4, Room 401	TA-55-4, Room 401	10,773
Cementation Unit Pencil Tanks	5	13			
Pencil Tanks	10	13			
Vitrification Slab Tanks	2	33	TA-55-4, Room 434A	TA-55-4, Room 434A	1,344

Attachment G of this NOD Response provides a spreadsheet that includes the dimensions of the secondary containment, the total surface area, maximum quantity of liquid to cover the area, and the capacity of the containment. LANL will revise Section 2.2.8 of the application to include Table 7.

c) *The reinforced concrete floor that will serve as the containment system must be demonstrated to be free of cracks or gaps. Provide this information.*

LANL Response: To demonstrate that the secondary containment systems are currently free of cracks and/or gaps which compromise the containment, LANL has provided photographs of the floors in and around the TA-55 CSUs, storage tank system, cementation unit, and vitrification unit. These photographs are provided in Attachment G of this NOD response.

d) *Revise the Application to include a statement that the containment system is designed to completely surround the tanks.*

LANL Response: LANL will revise Section 2.2.2 to include the following text:

"The tanks are located at TA-55-4 inside Rooms 401 and 434A. These rooms have a floor, walls, and ceiling which completely surround the tanks and serve as secondary containment, therefore, the secondary containment meets the requirements of

20.4.1 NMAC, Subpart 264.193(1)(iv). "

14. *Section 2.2.4. Special Requirements for Ignitable, Reactive, and Incompatible Wastes (40 C.F.R. §§ 270.16(1).264.198 (a-b) and 264.199(a-b))*

In the event that ignitable or reactive waste is stored in any part of the storage tank system, the following must be either provided or demonstrated. Revise the Application to address these issues:

a) *Provide the operating pressure and temperature specifications for the tanks;*

b) *Demonstrate that waste is treated, rendered, or mixed before or immediately after placement in the tank systems so that it is no longer is ignitable or reactive;*

c) *Demonstrate that the wastes are not placed in the same tank system unless there is compliance with 20.4.1 500 NMAC (incorporating 40 C.F.R § 264.17(b));*

d) *Demonstrate that the waste is stored or treated in a manner such that it protects against ignition or reaction;*

e) *Demonstrate that the requirements for the maintenance of protective distances between waste management areas and any public ways, streets, alleys, or adjoining property lines;*

f) *Provide procedures assuring that hazardous waste will not be placed in a tank that previously held an incompatible waste or material unless it has been decontaminated or unless precautions have been taken per 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.17(b)) to prevent reactions; and*

g) *Indicate whether the tank system is used solely for emergencies.*

LANL Response: LANL will revise Section 2.2.4 to state the following:

> "No ignitable, reactive, or incompatible mixed waste will be stored in the storage tank system.

15. *Section 2.2.5. Closure (40 C.F.R. & 264.111)*

Revise the Application to specify that partial closure means closure of all of a tank and its associated piping and underlying containment system, and that closure of parts of a hazardous waste management unit is not permitted.

LANL Response: The storage tank system at TA-55-4 is composed of 4 distinct components that share a common piping system and secondary containment (i.e. Rooms 401 and 434B). Closure of these components is defined as follows:

- Partial closure of the storage tank system will consist of the removal of a given tank component (e.g. the 5 cementation pencil tanks) and the ancillary equipment (i.e., piping, valves) connected directly to it. What remains in place will consist of the portions of the piping system which all of the tank

components share and the secondary containment. The secondary containment will be decontaminated in the vicinity of the tank component being removed in accordance with the closure plan found in Attachment F.2 of the application.

- Final closure of the storage tank system will include removal of all of the tank components and ancillary equipment, including the shared portions of the piping system. The facility headers for ventilation, the wet vacuum system, and the radioactive liquid waste collection system will be left in place for other uses.

LANL will revise Section 2.2.5 and Attachment F.2 to clarify.

Revise the Application to specify that at closure of a tank all hazardous waste will be removed from the tank and all hazardous waste and hazardous waste residues will be removed or decontaminated in compliance with 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.197).

LANL Response: LANL will revise Section 2.2.5 to include the following text:

> "Partial closure will be accomplished by removal of hazardous wastes and residues from the surfaces and/or equipment associated with the tank component being closed and that may have come into contact with the wastes."

Refer to the specific comments on the Storage Tank Closure Plan, Attachment F .2

LANL Response: No response required.

16. *Section 2.2.6 Control of Runoff (40 C.F.R. §§ 270.14(b)(8)(ii) and 264.193(e)(i-ii)*

a) *The prevention of runoff from the storage tank system is based upon the assumption that the secondary containment system is sufficient to contain 100 percent of the volume of the largest tank. Provide calculations demonstrating that each secondary containment system is sufficient to contain 100 percent of the volume of the largest tank within the containment.*

LANL Response: Please refer to the response to Comment No. 13b.

b) *The Application states that any accumulated liquids will be removed as soon as possible. Pursuant to 20.4.1.500 NMAC (incorporating 40 C.F .R § 264.193(c)(3)), all hazardous wastes and/or accumulated liquids must be removed from the secondary containment system within 24 hours to prevent harm to human health and the environment. If adequate information is provided to NMED that removal of released waste or accumulated liquids cannot be accomplished within 24 hours, then the liquids and waste may be removed in as timely a manner a possible. Either revise the Application to state that accumulated wastes and liquids will be removed within 24 hours or provide adequate justification as to why removal of liquids cannot be accomplished within 24 hours.*

LANL Response: LANL will revise Section 2.2.6 to include the following text:

> "In the event of a hazardous and/or mixed waste spill that results in the accumulation of free liquids in the secondary containment system, all free liquids will be removed within 24 hours unless "as low as reasonably achievable" (ALARA) concerns prevent accessibility.

17. *Section 2.3. Miscellaneous Unit -Cementation Unit*

More detailed information on the cementation unit was provided in Attachment I of the Application. Refer also to specific comments related to Attachment I.

LANL Response: No response required.

18. *Section 2.3.2. Containment Systems (40 C.F.R. §§ 270.16(g) and 264.193(a-d))*

a) *The Application must include calculations to show that the external liner system is designed to contain 100 percent of the capacity of the largest tank within its boundary. Revise the Application to include these calculations.*

LANL Response: Table 8 summarizes the secondary containment provided for the treatment units at TA-55.

Table 8
Secondary Containment for the Subpart X Treatment Units at TA-55

Subpart X Treatment Unit	Capacity (gallons)	Location	Secondary Containment	Capacity the Secondary Containment (gallons)
Cementation Unit	150	TA-55-4, Room 401	TA-55-4, Room 401	10,773
Vitrification Unit	17.7	TA-55-4, Room 434A	TA-55-4, Room 434A	1,344

Attachment G of this NOD Response provides a spreadsheet that includes the dimensions of the secondary containment, the total surface area, maximum quantity of liquid to cover the area, and the capacity of the containment. LANL will revise Section 2.3.2 and 2.4.2 of the application to include the information in Table 8.

b) *The reinforced concrete floor that is designated as the containment system must be demonstrated to be free of cracks or gaps. Provide this information.*

LANL Response: Please refer to the response to Comment No. 13c.

c) *Revise the Application to include a statement that the containment system is designed to completely surround the cementation unit.*

LANL Response: LANL will revise Section 2.3.2 of the application to include the following text:

> "The cementation unit is located at TA-55-4 inside Room 401. This Room has a floor, walls, and ceiling which completely surround the unit and serve as secondary containment, therefore, the secondary containment meets the requirements of 20.4.1 NMAC, Subpart 264.193(1)(iv)."

19. *Section 2.3.4. Special Requirements for Ignitable, Reactive, and Incompatible Wastes (40 C.F.R. §§ 270.16(1).264.198 (a-b) and 264.199(a-b))*

a) *In the event that ignitable or reactive waste is stored in any part of the storage tank system, the following must be either provided or demonstrated. Revise the Application to address these issues:*

- *Provide the operating pressure and temperature specifications for the tanks; Demonstrate that waste is treated, rendered, or mixed before or immediately after placement in the tank system so that it no longer is ignitable or reactive;*
- *Demonstrate that the wastes are not placed in the same tank system unless 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.17(b)) is complied with;*
- *Demonstrate that the waste is stored or treated in a manner such that it protects against ignition or reaction;*
- *Demonstrate that the requirements for the maintenance of protective distances between waste management areas and any public ways, streets, alleys, or adjoining property lines;*
- *Provide procedures assuring that hazardous waste will not be placed in a tank that previously held an incompatible waste or material unless it has been decontaminated or unless precautions have been taken per 20.4.1.500 NMAC (incorporating 40 C.F.R § 264.17(b)) to prevent reactions; and*
- *Indicate whether the tank system is used solely for emergencies.*

LANL Response: LANL will revise Section 2.3.4 to state the following:

> "No ignitable, reactive, or incompatible mixed waste will treated in the cementation unit."

b) *In addition, the containment system for the cementation unit is the same System to be used for the storage tanks and vitrification unit. The Application must address the potential for incompatible wastes commingling as a result of a leak or spill from either the storage tanks, vitrification units, and/or the cementation unit.*

LANL Response: The tank system, cementation unit, and vitrification unit are used to store/treat mixed waste evaporator bottoms solutions, therefore, there is not an incompatibility issue with commingling resulting from a leak**.**

20. *Section 2.3.5. Closure (40 C.F.R. § 264.111)*

Revise the Application to specify that at closure of the cementation unit all hazardous waste will be removed from the cementation unit and all hazardous waste and hazardous waste residues will be removed or decontaminated in compliance with 20.4.1.500 NMAC (incorporating 40 C.F .R. § 264.197).

LANL Response: LANL will revise Section 2.3.5 of the application to include the following text:

> "Partial closure will be accomplished by removal of hazardous wastes and residues from the surfaces and/or equipment associated with the cementation unit that may have come into contact with the wastes. Closure will include decontamination and disposal activities that will ensure the removal of hazardous wastes and residues to established cleanup levels."

Refer to specific comments on the cementation unit Closure Plan, Attachment F .3

LANL Response: No response required.

21. *Section 2.3.6. Control of Runoff (40 C.F.R. § 270.1402)(8)(ii))*

a) *The prevention of runoff from the cementation unit is based upon the assumption that the secondary containment system is sufficient to contain 100 percent of the volume of the largest tank. Provide calculations demonstrating that each secondary containment system is sufficient to contain 100 percent of the volume of the largest tank within the containment system.*

LANL Response: Please refer to the response to Comment No. 18a.

b) *The containment system for the cementation unit is also the same containment system to be used for the storage tank system and the vitrification unit. In the unlikely event that a leak occurs in both the storage tank system and/or the vitrification unit and the cementation unit, the containment system will have to be sufficient to contain liquids from all units. Provide a discussion of how the containment system will handle a leak in the storage tank system, the vitrification unit, and/or the cementation unit.*

LANL Response: The secondary containment system for the storage tank system, cementation unit, and vitrification unit consists of the floor, walls, and ceiling associated with Rooms 401 and 434A at TA-55-4. The system is

- completely surrounds the waste management units;
- constructed of concrete that is sealed with an epoxy or similar coating to aid in decontamination should a spill occur;

- managed such that in the event of a spill, which results in accumulation of free liquids in the secondary containment system, all free liquids will be removed within 24 hours; and

- consists of adequate capacity to contain both a catastrophic spill from a single unit as well as any combination of units.

Table 9 provides a comparison of the secondary containment capacity associated with Rooms 401 and 434A and the waste management units located within it.

Table 9
Containment System Capacity Verses
Waste Management Unit Capacity

Location	Secondary Containment Capacity (gallons)	Waste Management Units	
		Unit	Total Capacity (gallons)
TA-55-4, Room 401	10,773	Storage Tank System *(Evaporator Storage Tank, Cementation Unit Pencil Tanks, Pencil Tanks)*	266
		Cementation Unit	150
TA-55-4, Room 434A	1,344	Storage Tank System *(Vitrification Slab Tanks)*	66
		Vitrification Unit	17.7

c) The Application states that any accumulated liquids will be removed as soon as possible. Pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R.§ 264.193(c)(3)), all hazardous wastes and accumulated liquids must be removed from the secondary containment system within 24 hours to prevent harm to human health and the environment. If adequate information is provided to NMED that removal of released waste or accumulated liquids cannot be accomplished within 24 hours, then the liquids and waste may be removed in as timely a manner a possible. Either revise the Application to state that accumulated wastes and liquids will be removed within 24 hours or provide adequate justification as to why removal of liquids cannot be accomplished within 24 hours.

LANL Response: LANL will revise Section 2.3.6 to include the following text:

> "In the event of a hazardous and/or mixed waste spill that results in the accumulation of free liquids in the secondary containment system, all free liquids will be removed within 24 hours unless ALARA concerns prevent accessibility."

22. Section 2.4, Miscellaneous Unit -Vitrification Unit

Revise the Application to include a definition of the vitrification unit that describes all the ancillary piping and equipment and other components that are included as part of the unit.

LANL Response: The vitrification unit, glovebox, ancillary equipment, and associated secondary containment are described in Attachment J of the application.

More detailed information on the vitrification unit was provided in Attachment J of the Application. Refer to specific comments related to Attachment J.

LANL Response: No response required.

23. *Section 2.4.2, Containment Systems (40 C.F.R. §§ 270.16(g) and 264.193(a-d))*

a) *The Application must include calculations to show that the external liner system is designed to contain 100 percent of the capacity of the largest tank within its boundary. Revise the Application to include these calculations.*

LANL Response: Please refer to the response to Comment No. 18a.

b) *The reinforced concrete floor that will serve as the containment system must be demonstrated to be free of cracks or gaps. Provide this information.*

LANL Response: Please refer to the response to Comment No. 13c.

c) *Revise the Application to include a statement that the containment system is designed to completely surround the vitrification unit.*

LANL Response: LANL will revise Section 2.4.3 of the application to include the following text:

> "The vitrification unit is located at TA-55-4 inside Room 434A. This Room has a floor, walls, and ceiling which completely surround the unit and serve as secondary containment, therefore, the secondary containment meets the requirements of 20.4.1 NMAC, Subpart 264.193(1)(iv).

24. *Section 2.4.4, Special Requirements for Ignitable, Reactive and Incompatible Wastes (40 C.F.R. §§ 270.16(i), 264.198 (a-b) and 264.199(a-b))*

While reactive, ignitable, and incompatible wastes will not be treated in the vitrification unit itself, the containment system to be used by the vitrification unit is the same as that to be used for the storage tanks and cementation unit, which may be used to Store or treat reactive, ignitable, and incompatible wastes. The Application must address the potential for the vitrification unit to come into contact with these wastes as a result of a leak, rupture, spill, etc. from either a storage tank or the cementation unit. Revise the Application to include this discussion.

LANL Response: LANL will revise Section 2.4.4 to state the following:

> "No ignitable, reactive, or incompatible mixed waste will be treated in the vitrification unit."

25. *Section 2.4.5. Closure (40 C.F.R. § 264.111)*

Revise the Application to specify that partial closure means closure of all of the vitrification unit, and that closure of parts of a hazardous waste management unit is not permitted.

LANL Response: LANL will revise Section 2.4.5 of the application to include the following text:

> "Partial closure will consist of closing the vitrification unit, vitrification unit ancillary equipment (e.g., glass frit feed system, off-gas system, associated structures, piping), and/or glovebox at TA-55, while leaving the other waste management units at LANL in service."

Revise the Application to specify that at closure of the vitrification unit all hazardous waste will be removed from the vitrification unit and all hazardous waste and hazardous waste residues will be removed or decontaminated in compliance with 20.4.1.500 NMAC (incorporating 40 C.F.R § 264.197).

LANL Response: LANL will revise Section 2.4.5 of the application to include the following text:

> "Partial closure will be accomplished by removal of hazardous wastes and residues from the surfaces and/or equipment associated with the vitrification unit that may have come into contact with the wastes."

Refer to specific comments on the vitrification unit Closure Plan, Attachment F.4

LANL Response: No response required.

26. *Section 2.4.6. Control of Runoff (40 C.F.R. § 270.14(b)(8)(ii))*

a) *The prevention of runoff from the vitrification unit is based upon the assumption that the secondary containment system is sufficient to contain 100 percent of the volume of the largest tank. Provide calculations demonstrating that each secondary containment system is sufficient to contain 100 percent of the volume of the largest tank within the containment.*

LANL Response: Please refer to the response to Comment No. 18a.

b) *The containment system for the vitrification unit is also the same containment system to be used for the storage tank system and cementation unit. In the unlikely event that a leak occurs in the storage tank system, the cementation unit, and the vitrification unit, the containment system will have to be sufficient to contain liquids from all units. Provide a discussion of how the containment system will handle a leak in the storage tank system, the cementation unit and the vitrification unit.*

LANL Response: Please refer to the response to Comment No. 21b.

c) *The Application states that any accumulated liquids will be removed as soon as possible. Pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R § 264.193(c)(3)), all hazardous wastes and accumulated liquids must be removed from the secondary containment system within 24 hours to prevent harm to human health and the environment. If adequate information is provided to NMED that removal of released waste or accumulated liquids cannot be accomplished within 24 hours, then the liquids and waste may be removed in as timely a manner a possible. Either revise the Application to state that accumulated wastes and liquids will be removed within 24 hours or provide adequate justification as to why removal of liquids cannot be accomplished within 24 hours.*

LANL Response: LANL will revise Section 2.4.6 to include the following text:

> "In the event of a hazardous and/or mixed waste spill that results in the accumulation of free liquids in the secondary containment system, all free liquids will be removed within 24 hours unless ALARA concerns prevent accessibility."

Comment Nos. 27 - 29, Section 4.0 – Solid Waste Management Units

27. *Section 4.2. Releases (40 C.F.R. § 270.16(d)(2))*

a) *Revise the Application to reference the SWMU Reports that will be submitted to comply with the requirements of 20.4.1.900 NMAC (incorporating 40 C.F.R. § 270.14(d)).*

LANL Response: As discussed previously with the HWB, LANL has proposed submitting the most recent SWMU reports produced through LANL's Environmental Restoration (ER) Project in lieu of summarizing that information in Section 4.0 of all permit applications. This approach is intended to reduce redundancy and improve overall quality by providing the most recent and accurate information available. This approach will still meet the requirements of 20.4.1 NMAC, Subpart IX, 270.14(d).

The ER Project is in the process of updating LANL's 1990 SWMU Report as a vehicle to provide the HWB and the public with the most recent information regarding the SWMUs located at LANL. LANL negotiated the format of the revised SWMU Report with the HWB prior to beginning the process. A prototype version was presented to the HWB to ascertain whether or not the new report would meet the HWB's needs, and LANL has incorporated the HWB's comments into the final version of the report.

The final version of the TA-55 and TA-42 SWMU Reports are provided as Attachment H of this NOD Response. These SWMU Reports summarize all available information about each SWMU in those TAs. Please note that many of the active waste management sites listed in the application are not listed in Module VIII of the LANL Hazardous Waste Facility Permit and therefore are not included in the updated SWMU Report.

To facilitate review of SWMU information, the table included herein as Attachment I provides a cross reference of SWMUs listed in Sections 4.1.1 and 4.1.2 of the application to the TA-55 and TA-42 SWMU Reports sections included as Attachment H of this NOD Response.

b) *Provide an explanation for why active and closing hazardous waste management units are included in this Section and not in the Closure Plan for TA-55. Section 4.1.2 states that these active units "will be closed in accordance with an applicable RCRA closure plan." The "applicable RCRA closure plan" is the TA-55 Closure Plan, which is Attachment F to the Application. Section 4.1.2.3 identifies "storage location B38" that is "scheduled for closure under interim status." B38 is not included in the Closure Plan. B38 and other hazardous waste management units must be either permitted or closed prior to issuance of the Permit. Provide a schedule for closure of B3 8, revise the Closure Plan to include B38, and provide an explanation for why B38 was not included in the Closure Plan.*

LANL Response: Active and closing hazardous waste management units are addressed in Section 4.0 for regulatory completeness; by definition, they are SWMUs.

All of the active hazardous waste management units at TA-55 are addressed in the closure plans found in Attachments F.1, F.2, F.3, and F.4 of the application. B38 is an inactive CSU that will be closed under interim status. It is not included in the closure plan found in Attachment F.1 of the application because it is not intended to be a permitted unit. A closure plan for B38 is presently being developed and will be submitted to NMED separate from this NOD Response. The closure plan for B38 will be submitted to NMED this fall.

c) *The Application must identify all releases that may have occurred from all of the Swami's identified in Section 4.1 of the Application or provide documentation that no release occurred from a particular SWMU. Releases may include spills, leaks, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing to the environment. In addition, the date of the release(s), type of waste released, quantity or volume released, nature of the release(s), and groundwater monitoring and other analytical data available to describe the nature and extent of the release(s) should be provided. Other data may include physical evidence of distressed vegetation or soil contamination, historical evidence of releases, state, federal, or local enforcement actions, public complaints, and any other information showing the incidence of or migration of a release. Revise the Application to include this information.*

LANL Response: The status of the characterization activities for releases from SWMUs at TA-55 and TA-42 is summarized in the updated SWMU Reports, provided as Attachment H of this NOD Response. The SWMU Reports provide a comprehensive summary of all available information about the TA-55 and TA-42 SWMUs, however, this information does not necessarily include all of the examples of data noted in the HWBs comments.

d) *The incinerator complex, SWMU 42-001(a), was shut down due to operational problems. Discuss whether these operational problems (e.g., system failures, startup or shutdown releases, and/or filtration breakthrough) resulted in releases of contaminants to the atmosphere. Also discuss the waste feed system and any potential releases associated with it.*

LANL Response: Information concerning potential releases from SWMU 42-001(a) is included in the TA-42 SWMU Report provided in Attachment H of this NOD Response.

e) *The discussion of SWMU Nos. 42-001(b) and (c) does not address whether there were any leaks from the underground drain lines or the tanks, which could have led to contamination of surface soils, subsurface soils, and potentially groundwater and the environment. Revise the Application to address potential leaks from the underground drainlines and tanks.*

LANL Response: Information concerning potential releases from SWMUs 42-001(b) and (c) is included in the TA-42 SWMU Report provided in Attachment H of this NOD Response.

f) *The sumps, pumps, and tanks, drains, and drainlines associated with SWMU 55-008 are not addressed as having any releases. Provide documentation that no releases occurred, or provide a discussion of potential releases from these systems.*

LANL Response: Information concerning potential releases from SWMU 55-008 is included in the TA-55 SWMU Report provided in Attachment H of this NOD Response.

g) *Provide a discussion of whether there were any releases from the concrete enclosure, SWMU 55-009.*

LANL Response: Information concerning potential releases from SWMU 55-009 is included in the TA-55 SWMU Report provided in Attachment H of this NOD Response.

h) *The Application does not address releases from any of the active hazardous waste management units. Revise the Application to discuss whether there have been any releases from these active units.*

LANL Response: There has not been a recorded release to the environment from any of the active TA-55 hazardous waste management units. In addition, there has not been a recorded release from the inactive B38 CSU that will be closed under interim status as discussed in the response to Comment No. 27b.

28. *Section 4.3. Characterization of Release*

Information related to the characterization of releases is referenced to documents not provided with the Application, such as the 1990 SWMU Report and the RFI Work Plan for Operable Unit 1129. However, the Application states that, at a minimum, the corrective action process will include investigations to verify whether or not a release has occurred. However, for a RCRA Part B Permit Application, characterization of releases must include the following types of available information concerning prior or current releases:

a) Date of the release;
b) Type of waste or constituent released;
c) Quantity or volume released;
d) Nature of the release: (e.g., spill, overflow, ruptured tank or pipe, construction failure, etc.);
e) Groundwater monitoring and other analytical data available to describe nature and extent of release;
f) Physical evidence of distressed vegetation or soil contamination;
g) Historical evidence of releases such as tanker truck accidents;
h) Any state, local, or federal enforcement action that may address releases;
i) Any public citizen complaints about the facility that could indicate a release; and
j) Any information showing the migration of the release.

Revise the Application to include, at a minimum, the above-listed information.

LANL Response: The status of the characterization activities for releases from SWMUs at TA-55 and TA-42 is summarized in the updated TA-55 and TA-42 SWMU Reports, provided as Attachment H of this NOD Response. The SWMU reports summarize all available information about each SWMU, to the extent that it is available; however, this information does not necessarily include all of the examples of data noted in the HWB comments.

29. *Section 4.4. Corrective Actions (40 C.F.R. § 264.101)*

The Application states that corrective action will be conducted in accordance with approved NMED and LANL ER corrective action activities and that the corrective action will generally follow the RCRA Facility Investigation/Corrective Measures Study (RFI/CMS) process. However, 20.4.1.500 NMAC (incorporating 40 C.F.R § 264.101) and proposed 40 C.F .R Part 264, Subpart S, language, requires that the Application specify corrective actions and how they will be implemented for each SWMU. The Permittees must include a summary of completed corrective action activities and a schedule for future corrective action activities in the Application rather than only reference the corrective action program of the LANL ER Project. Revise the Application to specify corrective action investigation and remediation for releases from SWMU's at TA-55. The corrective actions must include implementation beyond area boundaries where necessary to protect human health and the environment.

LANL Response: The status of the characterization activities for releases from SWMUs at TA-55 and TA-42 is summarized in the TA-55 and TA-42 SWMU Reports, provided as Attachment H of this NOD

Response. The SWMU Reports provide a summary of corrective action activities completed to date and the current status of each SSWMU or AOC. Please note that the schedule for future corrective action activities is beyond the scope f the application. The specifics of future corrective action activities are agreed upon by HWB and LANL and documented in the ER Project baseline, in accordance with the existing schedule of compliance included in Module VIII of the Hazardous Waste Facility Permit.

Comment No. 30, Attachment A – Facility Description

30. *Attachment A.1, TA-55 General Description (40 C.F.R. § 270.14(b)(1)*

The description of the Facility must briefly describe the processes involved in the generation of hazardous wastes, including mixed wastes. Revise the Application to include this discussion as part of the general Facility description.

LANL Response: 20.4.1 NMAC, Subpart IX, 270.14(b)(1) requires "a general description of the facility." This is provided in Section A.1 as written. In addition, Section A.1 refers to Attachments G, H, I, and J for detailed descriptions of the waste management units at TA-55. These attachments each provide description of the processes involved in the generation of hazardous and mixed waste due to TA-55 waste management operations.

Comment Nos. 31-43, Attachments B.1 and B.2 – Waste Analysis Plan

31. *Attachments B.1 and B.2, Waste Analysis Plans for the Cementation Unit and Vitrification Unit*

Incorporate Attachments B.1 and B.2, the Waste Analysis Plans (WAP's) for the TA-55 cementation unit and vitrification unit, into the Facility-wide WAP included with the Facility-wide General Application. Address Comment Nos. 32 through 43 in the Facility-wide WAP.

LANL Response: LANL will incorporate Attachments B.1 and B.2 into the LANL-Wide WAP.

32. *Attachment B.1.2, Description of Waste (40 C.F.R. §§ 270.14(b)(2) and 264.13(a)(1))*

a) *The Application uses several vague descriptors (e.g., primarily, generally, and typically) as to the source of waste, type of waste, and components of the waste. The Application must discuss all waste streams that will be treated at the cementation unit, and Table B.1-1 should reflect all the waste streams and waste descriptions. Revise the Application accordingly.*

LANL Response: Section B.1.2 and Table B.1-1 of the application contain the waste descriptions and waste streams to be treated in the cementation unit. The descriptors of primarily, generally, and typically were added because TA-55 and LANL conducts basic research in a variety of disciplines for a number of government agencies, including

DOE, DOD, and NASA. In addition, UC (the operator of the laboratory) receives a fee from the DOE under its contract to perform Locally-Directed Research and Development. This allows UC to conduct basic research in areas of its own direction.

The waste streams destined for treatment in the cementation unit are limited to solid and liquid hazardous/mixed wastes that carry the EPA Hazardous Waste Numbers identified in the LANL General Part A (LANL, 1998).

b) *The WAP does not address the radiological component of the waste. The radioactivity of the waste is critical in determining health and safety measures, packing, labeling and transportation requirements, and decontamination and verification processes. Revise the Application to include a description of the radiological components of the waste.*

LANL Response: Please refer to LANL General Comment No. 3.

33. *Attachment B.1.3.1, Proposed Analytical Parameters and Methods (40 C.F.R 270.14(b)(2) and 264.13(b)(1-2))*

Pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.13(b)(2)), the Application must include all of the test methods that will be used for the chosen parameters and not just methods that may be used. These parameters should be for both hazardous and radiological components. Revise the Application to include all the test methods that will be used for the chosen parameters.

LANL Response: Table B.1-2 of the application summarizes the test methods that will be used to characterize the hazardous components of waste to be treated by cementation at TA-55. In addition, please refer to LANL General Comment No. 3.

34. *Attachment B.1.3.2, Criteria and Rationale for Parameter Selection (40 C.F.R. 264.13(b)(1))*

The Application indicates that acceptable knowledge (AK) will be used for waste characterization where possible. AK is acceptable only when adequate documentation and data from the process generator is available which shows consistency of the waste streams. However, where there is variability in waste streams, sampling must occur on a regular basis. A schedule of the frequency of sampling and sampling methods (pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.13(b)(3) and (4)) must be included in the WAP, as well as a specific decision-making process that describes when AK is acceptable and when sampling should be conducted. Revise the Application to include this information.

LANL Response: The information requested is provided in the LANL General Part B, WAP (LANL, 1998) and/or its subsequent revisions. In addition, the specific decision-making process for AK acceptability consistent with the WAP is established in the following:

- LIG 404-00-02, "Acceptable Knowledge Guidance" (LANL, 1999b) and the PLAN-WASTEMGMT-002,
- "LANL Waste Acceptance Criteria" (LANL, 2002b).
- "Los Alamos National Laboratory Transuranic Waste Certification Plan," (TWCP) (LANL, 2002g).

Please refer to the "Response to Notice of Deficiency; RCRA Permit Application General Part A, April 1998, Revision 0.0; General Part B, October 1998, Revision 1.0; Los Alamos National Laboratory; May 16, 2002" (LANL, 2002f) for a more detailed description of the AK process.

35. *Attachment B.1.4, Characterization Procedures (40 C.F.R. §§ 270.14(b)(2), 264.13(a)(1-3) and 264.13(b)(2))*

The Application indicates that most of the waste characterization will be based on AK. However, there is no decision tree to indicate when AK will not meet characterization requirements and when sampling is required, or the frequency at which sampling will be conducted.' Also, the Application must address how often sampling of waste streams will be conducted to ensure that the waste streams are consistent, indicating that AK is applicable. Revise the Application accordingly.

LANL Response: Please refer to the response to Comment No. 34.

36. *Attachment B.1.4.1, Characterization Procedures for Waste to be Treated (40 C.F.R. §§ 270.14(b)(2) and 264.13(b)(2-4))*

The Application must include a decision tree indicating how it will be determined that AK is sufficient to define waste streams and specifically when sampling will be required, In addition, if sampling is necessary, the sampling frequency and analytical parameters must be clearly identified. The sampling methods to be used to obtain a representative sampling of each waste stream and the appropriateness of these methods must also be provided. If LANL-specific protocol is to be used for sample collection, preservation, QA/QC and health and safety issues, then either this information must be contained within the Application or a specific reference to the protocol to be followed must be provided in the Application. Revise the Application to include this information.

LANL Response: The information requested is provided in the LANL General Part B, WAP (LANL, 1998b) and/or its subsequent revision. Sampling methods consistent with "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," (SW-*846)* (EPA, 1986) will be utilized in addition to the requirements specified in the response to Comment No. 34.

In addition, please refer to the "Response to Notice of Deficiency; RCRA Permit Application General Part A, April 1998, Revision 0.0; General Part B, October 1998, Revision 1.0; Los Alamos National Laboratory; May 16, 2002" (LANL, 2002f) for a more detailed description of the AK process.

37. *B.1.4.2, Characterization Procedures for Treated Waste (40 C.F.R. §§ 270.14) and 264.13(b)(2-4))*

The characterization processes to be used on the treated waste are referenced to the "LANL Transuranic Waste Certification Plan, " the "Waste Isolation Pilot Plant (WIPP) Waste Analysis Plan" permit conditions, and LANL-specific protocol. The LANL- specific protocol to be used for sampling techniques should be either included in the Application or specifically referenced by document and/or protocol number, so that the applicability and appropriateness of the methods can be determined. Revise the Application to include this information on the LANL-specific protocols.

LANL Response: Please refer to the response to Comment No. 36.

38. *Attachment B.1.4.5, Reevaluation Frequencies (40 C.F.R. §§ 264.13(a)(3) and 264.13(b)(4))*

The Application is vague as to how waste stream verification will be conducted and when waste stream verification will be conducted for non-routinely generated wastes. No decision criteria are provided for the frequency of reevaluation of non-routinely generated wastes. Revise the Application to discuss how and when waste stream verification for non-routinely generated wastes will be conducted. Also provide a decision tree outlining when and how reevaluation for non-routinely generated wastes will be done.

LANL Response: Please refer to the response to Comment No. 34.

39 *Attachment B.2.2, Description of Waste (40 C.F.R. §§ 270.14(b)(2) and 264.13(a)(1))*

The WAP does not address the radiological component of the waste. The radioactivity of the waste is critical in determining health and safety measures, packing, labeling and transportation requirements, and decontamination and verification processes. Revise the Application to include a description of the radiological components of the waste.

LANL Response: Please refer to LANL General Comment No. 3.

40. *Attachment B.2.3.2, Criteria and Rationale for Parameter Selection (40 C.F.R. §§ 264.13(b)(1-4))*

The Application indicates that AK will be used for waste characterization where possible. AK is acceptable only when adequate documentation and data from the process generator is available which shows consistency of the waste streams. However, where there is variability in waste streams, sampling must occur on a regular basis. A schedule of the frequency of sampling and sampling methods (pursuant to 20.4.1.500 NMAC, incorporating 40 C.F.R § 264.13(b)(3) and (4)) must be included in the waste analysis plan as well as a specific decision-making process for when AK is acceptable and when sampling should be conducted. Methods for radiological screening of samples to determine whether health and safety issues are a concern should also be provided as part of characterization. Revise the Application to address these issues.

LANL Response: Please refer to the response to Comment No. 34 and LANL General Comment No. 3.

41. *Attachment B.2.4.1, Characterization Procedures for Waste to be Treated (40 C.F.R. §§ 270.14(b)(2) and 264.13(b)(2-4))*

The sampling methods to be used to obtain a representative sampling of each waste stream and the appropriateness of these methods must be provided. Sample collection frequency must also be discussed. If LANL-specific protocol is to be used for sample collection, preservation, QA/QC, and health and safety issues, then a specific reference to the protocol to be followed must be provided in the Application. Revise the Application to include this information.

LANL Response: Please refer to the response to Comment Nos. 34 and 36.

42. *B.2.4.2, Characterization Procedures for Treated Waste (40 C.F.R. §§ 270.14(b)(2) and 264.13(b)(2-4))*

The characterization processes to be used on the treated waste are referenced to the "LANL Transuranic Waste Certification Plan", the "Waste Isolation Pilot Plant (WIPP) Waste Analysis Plan" permit conditions, and LANL-specific protocol. The LANL- specific protocol to be used for sampling techniques should be specifically referenced so that the applicability and appropriateness of the methods can be determined. Revise the Application to include these references.

LANL Response: Please refer to the response to Comment No. 36.

43. *Attachment B.2.4.5, Reevaluation Frequencies (40 C.F.R. §§ 264.13(a)(3) and 264.13(b)(4))*

The Application is vague as to how and when waste stream verification will be conducted for non-routinely generated wastes. No decision criteria are provided for the frequency of reevaluation of non-routinely generated wastes. Revise the Application to discuss how and when waste stream verification for non-routinely generated wastes will be conducted. Also provide a decision tree outlining when and how reevaluation for non-routinely generated wastes will be done.

LANL Response: Please refer to the response to Comment No. 38.

Comment Nos. 44 - 59, Attachment F.1 – Closure Plan for Container Storage Units

44. *Attachment F.1.1.1, Closure Performance Standard*

Delete "and post-closure" from the third bullet.

LANL Response: The third bullet will be revised to read the same as the performance standard in 20.4.1 NMAC, Subpart V, 264.111(c).

45. *Attachment F.1.1.2, Partial and Final Closure Activities 40 C.F.R. §§ 270.14(b)(13), 270.14(b)(15-18), 264.110 through 264.151 and 264.178)*

Revise the Application to discuss which structure(s) within the CSU's may be left in service during closure activities.

LANL Response: Section F.1.1.2 of the application states:

> "Partial closure may consist of closing one or more of the CSUs at TA-55 while leaving the other regulated hazardous/mixed waste units at LANL in service."

There are not any structures within the units that will be left in service, however, the units themselves are located in buildings and rooms that will be decontaminated and reused for other LANL missions upon certification of closure.

46. *Attachment F.1.1.9, Survey Plat and Post-Closure Requirements (40 C.F.R §§ 270.14(b)(13), 270.14(b2)(15-18), 264.110 through 264.151 and 264.178)*

Any criteria used to demonstrate compliance for closure that is not permitted in this Application will require a permit modification. Revise the Application to indicate that the requirements for a permit modification pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R. §264.112(c)), will be followed in the event that an amendment to the closure plan is warranted.

LANL Response: The requirements of 20.4.1 NMAC, Subpart V, 264.112(c) are addressed in Section F.1.1.4.

47. *Attachment F.1.2, Closure Procedures*

The Application states that, if necessary, the closure plan will be modified and that the modified closure plan will be submitted to the NMED for review and approval. Pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.112(c)). a written notification of, or request for. a permit modification to authorize a change in operating plans. facility design, or the approved closure plan must be submitted to NMED. In addition, the requirements for a permit modification, also outlined in 40 C.F.R. § 264.112(c). must be met. Revise the Application to address the written notification requirement.

LANL Response: Please refer to the response to Comment No. 46.

48. *Attachment F.1.2.1, Estimate of Maximum Waste in Storage (40 C.F.R. § 264.112(b)(3))*

The Application must provide an estimate of the maximum inventory for each type of waste and within what types of containers that waste is contained. In addition, the Application must include a discussion of how much waste and the type of wastes that are located at each CSU. Revise the Application to include, for each CSU, the maximum quantity of waste, waste type, maximum capacity based on area, and the maximum number of containers by container type.

LANL Response: Please refer to the response to General Comment No. 2 and Specific Comment No 3a.

49. *Attachment F.1.2.3, Removal of Waste (40 C.F.R. §§ 264.112(b)(3) and 264.178)*

According to 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.112(b)(3))), the types(s) of off-site hazardous waste management facilities to be used must be identified. Revise the Application to discuss the types of waste that will be shipped to each specific off-site facility.

LANL Response: LANL intends to develop a unit-specific closure/sampling plan for the TA-55 CSUs at the time of each closure that is consistent with the operating record. This approach was discussed with Carl Will of the HWB on April 23 and June 7, 2002, regarding the closure of the TA-54 CSUs. LANL would like to establish the same approach for the TA-55 storage tank system as described below.

LANL intends to develop a unit-specific closure/sampling plan. This plan will utilize the operating record of the unit at the time of its closure to determine the hazardous constituents that were actually stored in the unit and to identify the nature and extent of spills (if any) that may have occurred. The use of the operating record will narrow the range of hazardous constituents to be sampled for and be more representative of the potential contamination at the unit. A list of potential hazardous constituents for the TA-55 CSUs is provided in Table F.1-2 of the application and represents the breadth of EPA Hazardous Waste Numbers capable of being stored in the unit as identified in the LANL General Part A (LANL, 1998a).

In addition, this unit-specific closure/sampling plan will utilize the operating record of the unit to determine:

- The waste types that will be removed prior to and during closure.
- The final disposal destination for the waste in the unit and for any wastes generated as a result of the decontamination and disposal operations.
- The most recent procedures, technologies, and innovations to provide clean closure of the unit and protect human health and the environment.

50. *Attachment F.1.2.4, Closure Procedures and Decontamination*

a) *As outlined in 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.112(b)(4)) a detailed description for the closure of each CSU must include the steps needed to remove or decontaminate all hazardous waste residues and contaminated containment system components, equipment, structures, and soils during partial and final closure, including, but not limited to, procedures for cleaning equipment and removing contaminated soils, methods for sampling and testing surrounding soils, and criteria for determining the extent of decontamination required to*

satisfy the closure performance standard. Revise the Application to provide detailed descriptions of the closure procedures and decontamination techniques for each CSU.

LANL Response: LANL maintains that Attachment F.1 of the Permit Application meets the closure criteria set forth in the regulations with the following sections:

- Section F.1.2.4 - general decontamination information applicable to all of the CSUs at TA-55 including PPE, pre-closure activities, and inspection criteria.
- Section F.1.2.4.1 - specific decontamination information for the indoor CSUs.
- Section F.1.2.4.2 - specific decontamination information for the Vault.
- Section F.1.2.4.3 – specific decontamination information for the outdoor storage pad including a discussion regarding the decontamination and/or removal of the asphalt.
- Section F.1.2.5 - decontamination of the equipment used to conduct the closure.
- Section F.1.2.6 - verification method to ensure adequate decontamination.
- Section F.1.3 – sampling and analytical procedures including both soils and liquid.

b) *The Application does not address methods for sampling and testing surrounding soils and removing contaminated soils during either partial closure or closure. Revise the Application to address surrounding soils and soil that underlies CSU's, particularly the outdoor storage pad.*

LANL Response: Soil and sediment sampling is discussed in Section F.1.3.1, which states the following:

> "Soil samples (if required) will be collected from various depths to determine the vertical extent of contamination. Sediment samples will be collected from the surface or near surface. Sampling procedures will be performed in accordance with the most recent version of ER-SOP-6.09, "Spade and Scoop Method for Collection of Soil Samples" (LANL, 1995); ER-SOP-6-10, "Hand Auger and Thin-Walled Tube Samples" (LANL, 1998); or other appropriate ER SOPs or NMED approved methods."

The sited procedures have methods that are consistent with SW-846 for sampling and prevention of potential cross contamination. In addition, Section F.1.3.3 (which is applicable to all decontamination efforts) states:

> "To prevent cross contamination, it is important to clean non-disposable samplers after each ample is collected. Cleaning of samplers will be performed in accordance with ER-SOP-1.08, "Field Decontamination of Drilling and Sampling Equipment" (LANL, 2001)."

LANL intends to determine the necessity of soil sampling at the TA-55 storage pad at the time of closure based upon the operating and inspection record associated with the unit. If a spill is indicated in the operating record, soil sampling and/or remediation will be conducted according to the procedures identified in the unit-specific closure plan as discussed in the response to Comment No. 49.

Please note that the B05, B40, B45, K13 and the Vault CSUs are located inside Building 4 at TA-55. The floor of these CSUs consists of a 10-in. thick reinforced concrete slab that is maintained to remain free of cracks and gaps and is compatible with the wastes stored in the CSUs. The TA-54-185 CSU is also located inside a building on top of a concrete slab that is maintained to remain free of cracks and gaps and is compatible with the waste stored in the CSU. Inspections and maintenance of the floors and walls in each CSU is effective at preventing migration of waste to the environment, therefore, soil sampling activities will not be applicable to these CSUs.

c) *The Application states that all sampling will be done in accordance with Quality Assurance/Quality Control (QA/QC) procedures. Revise the Application to include these QA/QC procedures.*

LANL Response: Please refer to LANL General Comment No. 4.

d) *The schedule for closure activities for the CSU's are presented in Table F.1-1. However, the schedule does not appear to allow for the sampling, analysis, and potential removal of contaminated soils surrounding the CSU's. It is not apparent that the schedule allows time for proper data validation, time to treat wastes, time for additional leaching tests for the asphalt, or adequate time for transporting wastes to disposal sites, if warranted. In addition, some structures in the CSU's may be left in service during partial closure. Revise the schedule to be comprehensive of all potential activities for closure and partial closure.*

LANL Response: The schedule presented in the closure plan is a placeholder for a comprehensive schedule to be provided in the unit-specific closure/sampling plan as discussed in the response to Comment No. 49. The comprehensive schedule will utilize the operating record of the unit to determine appropriate timeframes for data validation, waste treatment, leach testing, and/or transportation of wastes.

e) *The Application states that all workers will have proper training and medical monitoring. Reference the appropriate section(s) of the Application that discuss the training requirements and medical monitoring requirements for workers.*

LANL Response: Training requirements for TSDF workers/supervisors, site workers (LANL and contractor), and emergency responders are addressed in Appendix D of the LANL General Part B. Personnel (LANL and contractor) involved in the closure of the TA-55 CSUs are required to meet the minimum training requirements for a general site worker as outlined in Table D-1. In addition to the training outlined in Table D-1, personnel (LANL and contractor) are required to attend General Employee Training (GET) if they will be working 10 days or more on-site. GET includes an overview of the Occupational Medicine Program, which is managed by the Occupational Medicine Group (HSR-2).

All new LANL employees are provided with a full medical evaluation at the Occupational Medicine building (TA-3-409) to provide baseline medical information. In addition to this baseline assessment, some job assignments require medical surveillance and/or certification evaluations every year (e.g., those who work with identified carcinogens) to monitor for early signs of health effects and/or to ensure their health meets job-performance standards. Before leaving LANL employment, personnel are required to schedule an appointment with HSR-2 to review their health status. HSR-2 maintains an occupational medical record on each LANL employee; these confidential medical records are released to others only with the employee's written consent, except as required by law.

Contract personnel are required to meet the occupational medical monitoring requirements provided by the company they work for in accordance with OSHA.

f) Revise the Closure Plan for the closure of CSU's to include the sampling of potential contaminated areas using swipe sampling rather than sampling the rinse water to determine if a release has occurred and to determine if contamination has been remediated.

LANL Response: LANL maintains that the use of swipe sampling is not the best or only method for closure decontamination verification. Swipe samples are not an approved methodology for hazardous waste constituent sampling. In addition, their use is not necessarily appropriate for all types of hazardous constituents or closure circumstances.

LANL has only been able to verify the following approved sampling methodologies for swipe sampling:

- Polychlorinated biphenyl (PCB) - "Verification of PCB Spill Cleanup by Sampling and Analysis" EPA-560/5-85-026 (EPA, 1985), and as included in Attachment A of SW-846, Method 8290A)

- Surface Contamination - Occupational Safety and Health Administration (OSHA) (OSHA, 1999).

The first is limited to sampling for PCBs, which are non-volatile,

somewhat viscous compounds. The technical intent of this sampling method is also limited to establishing the presence of the compounds at concentrations of 10 ppm or higher. This is a relatively high level of contamination compared to the risk-based concentration limits required for closure determinations. The second method limits the use of swipe sampling to act as a quality control measure to ensure that a cleaning procedure is being implemented effectively. The method states specifically that this type of sampling is not intended to assess health risk resulting from contamination. The use of these sampling methodologies has not been expressly extended or approved beyond the stated purpose or context. LANL stipulates that swipe sampling is commonly used as a screening tool to determine the presence of hazardous constituents quantitatively.

Swipe sampling, by nature, does not involve the collection of samples from the entire surface being verified. The method relies upon a statistical random sampling approach that will require a large number of samples (with associated costs) to ensure a high confidence level for the verification data. Swipe sampling is dependent upon the efficiency of the contact between the analyte and the collection medium. This can effect the reproducibility of data for each swipe per surface contact over the time frame of the closure and from one contact surface to another within the same CSU. This is due to inherent limitations associated with the collection medium and the total surface area contacted. In addition, swipe sampling may not be the best or most appropriate method for the full range of hazardous constituents found at the TA-55 CSUs and/or the differing materials of construction. Constituents that have hardened, reside in relatively rougher surface features (e.g., cracks, surface irregularities), or will not be absorbed by collection medium used may not be successfully collected using a swipe. Furthermore, the conditions during the closure may also prevent a successful collection.

Wash water sampling, as described in the application, presents two areas in which it may be superior for decontamination verification. The first has to do with the composition of the wash water solution, which consists of water and a surfactant/solvent. This solution is more effective at the removal of hazardous constituents because there is a higher potential that an acknowledged decontamination surfactant/solvent (e.g. Alconox) will solubilize the full range of hazardous constituents found at the TA-55 CSUs verses a compound-specific material utilized on a swipe (see SW-846 Method 8290A). The second has to do with surface contact, which is arguably more significant when the entire surface of the CSU is wiped down with wash water as opposed to random samples using swipes.

LANL proposes a method of utilizing wash water samples that minimizes dilution and provides a specific set of criteria by which the verification results can be compared as follows:

1. Minimize dilution of hazardous constituents by limiting the wash water solution to an amount that is sufficient to wipe down the surface to be verified and collect the required number of samples.

2. Limit the sampling area to a specific discrete location (e.g., a wall or portion thereof depending on the size of the unit).

3. Verify decontamination by comparing the discrete sample results to a blank result obtained from the wash water solution prior to its use for the verification wipe down. If the result is at or below that of the blank, the closure is considered complete. If the result is above the blank, apply one or all of the following options:

    - Repeat the decontamination and verification of the discrete location.

    - Compare the result to the Region 9 Risk Based levels for drinking water. If below, apply for an alternate demonstration of closure.

    - Disposal of the surface (e.g. asphalt) at an appropriate on-site location.

This proposed method minimizes dilution and establishes an extremely conservative set of criteria (blank results or drinking water standards) by which to establish verification.

Finally, LANL has established wash water sampling for decontamination verification during container storage closure at both TA-21-61 and TA-50-37. The approach has never been previously questioned by NMED permit writers/inspectors and it is currently included in the approved closure plans in LANL's Hazardous Waste Facility Permit. Additionally, NMED has usually required prior approval of detailed sampling and decontamination activities prior to the start of the closure process unless LANL proceeds "at risk" (i.e., subject to changes made by NMED). Rinse water sampling has not been identified as a problem in previous closure plan reviews and approvals.

g) *There is no discussion of how background levels for soils will be determined. At closure of a CSU, Permittees must demonstrate that hazardous waste and hazardous waste residues have been removed from all soils surrounding the CSU. Revise the Application to reference "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory," Ryti et al., 1998, for determination of background soil levels.*

LANL Response: Please refer to the response to Comment No. 50b.

h) *The Application states that each storage structure will be inspected for any cracks or conditions that would potentially lead to loss of decontamination liquids, and that, if any defects affecting containment are found, appropriate remedial actions, for example repairs, maintenance, or replacement, will be conducted. It is unclear from the Application whether the cracks or other flaws will be*

monitored for contamination prior to sealing or other treatment. Contamination could be sealed within a crack of a structure. Revise the Application to discuss how these defects in storage Structures will be investigated to ensure that no contamination has migrated into the defect prior to remedial action.

LANL Response: LANL will revise Attachment F of the application to include the following:

> "Preventive maintenance inspections are conducted routinely (i.e., weekly) at each of the TA-55 CSUs while waste is in storage. If any defects, deterioration, damage, or hazards affecting containment have developed, appropriate remedial actions (including sampling, repairs, maintenance, or replacement) are completed immediately. Prior to beginning of any decontamination activities at the TA-55 CSUs, the base or secondary containment of each CSU will be inspected for any cracks or conditions that could potentially lead to loss of decontamination water and/or verification wash water during closure. If a crack or gap is present, a swipe sample or a representative sample of the media (i.e., concrete, metal) will be taken to determine the presence of contamination. The sample will be analyzed for the hazardous contaminates identified in the operating record of the CSU. If contamination is detected, the surface flaw will be decontaminated prior to repairing the crack/gap. Complete or partial removal (e.g., scabbling) of the material may be performed until contamination is no longer detected. If partial removal is successful in eliminating the contamination, it will be assumed that the remaining material is clean."

51. *Attachment F.1.2.4.1, Indoor Storage Area (40 C.F.R. § 264.112(b)(4))*

a) *The Application states that a wash water solution will be used in the decontamination of portable equipment. Discuss what will comprise the wash solution and discuss the appropriateness of this solution for organics, inorganics, and radionuclides.*

LANL Response: The wash water solution will consist of water and an appropriate surfactant/solvent. This surfactant/solvent will be determined at the time of closure based its capability to remove the hazardous constituents identified in the operating record for the CSU. General laboratory surfactants (e.g. Alconox) will be used for the majority of the closures with specialized solvents used for more focused removal, if necessary.

Please refer to LANL General Comment No. 3 for discussion regarding radionuclides.

b) *The description of portable equipment also includes wooden pallets. The use of a wash water solution on wood, which is known to absorb water, could result in additional contamination of the pallet. Discuss mitigative measures that will be*

used to ensure the pallets do not absorb any potentially contaminated wash water, becoming contaminated by the decontamination procedure.

LANL Response: LANL will revise Section F.1.2.4 to delete the reference to wooden pallets. Please note that there are not any in use at the TA-55 CSUs.

c) *The Application states that a portable berm may be used to collect and contain wash water. Discuss what alternate methods may be used, if the portable berm is not used, for containment of wash water.*

LANL Response: The word "may" in this case is used to indicate that portable berms are allowed to be used for wash water collection and containment. They will be used if the CSU does not have a sump or low area designed for collection.

d) *The Application indicates that wash water will be allowed to accumulate in the bottom of recessed areas (e.g., sumps), where the water will be removed and tested for potential contamination. The Application does not discuss how the recessed area where the wash water was allowed to collect will be decontaminated if the results from the wash water indicate contamination. Revise the Application to discuss how the entire recessed area will be decontaminated and verified.*

LANL Response: The second paragraph in Section F.1.2.4.1 states the following:

> "After the walls and floors have been washed down, any recessed areas present (e.g. sumps) will be wiped down with wash water. The used wash water will collect in the recessed area where it will be sampled."

This indicates that the recessed areas will be decontaminated and the wash water is allowed to accumulate in the recessed area (if present). Decontamination verification samples will only be taken after wash cycles have been completed as described in Section F.1.2.6.

e) *Sumps are often connected to a central drainage system. Include in the Application a discussion of how drain lines connected to sumps and other recessed areas will be investigated and decontaminated.*

LANL Response: The word "sump" is used to describe all recessed areas located in the vicinity of the TA-55 waste management units. Most of these areas are not connected to any central drainage system. Drains, if any, will be blocked off (using berms and/or metal plates) during decontamination to prevent the loss of water.

f) *The Application infers that the decontamination procedures are only for loose contamination and that any item that is shown to have fixed contamination will be removed and disposed of properly. Clarify the Application accordingly*.

LANL Response: It is anticipated that due to the presence of painted surfaces and operating procedures designed to prevent spills there will be little or no contamination present. This would require only the surface decontamination procedures described in the closure plan presented in the application. However, if the operating record of the unit (at the time of closure) indicates a spill or an event that with the potential to result in fixed contamination of hazardous constituents, an appropriate method for removal will be proposed. This may include sandblasting, removal of asphalt, and or chemical decontamination as appropriate to the situation.

g) *The Application states that the wash water will only be analyzed for hazardous constituents. At closure of a CSU, Permittees must determine that there is no fixed radiological contamination. Revise the Application to address radiological contamination and decontamination.*

LANL Response: Please refer to LANL General Comment No. 3.

52. *Attachment F.1.2.4.2, Vault (40 C.F.R. § 264.112(b)(4))*

The Application must contain a description, of all measures of decontamination (i.e., decontamination measures will be initiated to accomplish chemical decontamination, as well as to satisfy ALARA requirements for mixed waste in accordance with applicable DOE Orders) that will be applied in decontaminating the vault. Revise the Application to include a detailed description of the alternative decontamination measures.

LANL Response: LANL intends to close the Vault using the procedures described in Section F.1.2.4 and F.1.2.4.1. It is important to note that storage in the Vault is not limited to hazardous and mixed waste. Other items with radiological constituents are and will be present in the Vault. Section F.1.2.4.2 is provided to indicate that alternative procedures may be required due to the presence of these items and ALARA concerns for closure personnel inside the Vault at the time of closure. LANL will evaluate the contents of the Vault and the operating record at the time of closure to determine if an alternate approach is necessary. This approach will be detailed in a CSU specific closure plan to be presented to the NMED at the time of closure.

53. *Attachment F.1.2.4.3, Outdoor Storage Pad (40 C.F.R. §§ 264.112(b)(4))*

a) *The Application states that "potential closure activities...include...future remediation under RCRA corrective actions," "a final option may be to remediate the asphalt storage pad as part of LANL's RCRA corrective actions," and "the final assessment and remediation of the container storage pad and the soil at this CSU location will be integrated and coordinated under a corrective action program at LANL." The meaning of these terms is uncertain, but seem to state that Permittees will choose whether or not to comply with the closure regulations at 20.4.1.500 NMAC (incorporating 40 C.F .R. Part 264, Subpart G and § 264.178) when closing the outdoor storage pad. Revise the Application to demonstrate compliance with 20.4.1.500 NMAC (incorporating 40 C.F.R. Part 264, Subpart G and § 264.178).*

LANL Response: The storage pad at TA-55 was constructed for use as a storage area prior to the implementation of RCRA regulations in 1980 and mixed waste in 1990. This establishes the pad and any contamination from it as being subject to the LANL Corrective Action Program. LANL intends to close the unit in accordance with the closure plan found in Attachment F.1 but has the option to remediate the storage pad under corrective action should contamination from storage activities prior to 1980 render the unit incapable of clean closure in accordance with the approved closure plan.

b) *The Application states that decontamination procedures similar to those described in Application Section F.1.2.4.1 may be used for the storage pad. It is not clear what other procedures may be used in lieu of those listed in Application Section F.1.2.4.1 or described in this Section. It is also unclear what deviations from the procedure may be applied. Revise the Application to include a discussion of all procedures that will be used to decontaminate the storage pad.*

LANL Response: LANL intends to close the storage pad according to the procedures identified in Section F.1.2.4 and F.1.2.4.1. The storage pad, however, presents some difficulties, which include the leaching of anomalously high levels of organic compounds inherent to the composition of the asphalt. At the time of closure the operating record of the unit will be reviewed to determine the location and presence of spills, if any. If a spill occurred, an alternative demonstration of closure may be required to determine the presence of constituents due to the spill verses those associated with the asphalt. The alternative will be based on the constituents of concern and may include:

- Sampling of "clean asphalt" using the same wash water to eliminate constituents associated only with the asphalt.
- Comparison of wash water sample results to the EPA Region 9 Human Health risk based values for drinking water.
- Comparison of soil sample results to the EPA Region 9 Human Health risk based values for soil.

If an adequate demonstration cannot be made, the pad or portion thereof will be removed. At the time of closure, a unit specific closure plan will be submitted to NMED for approval. This plan will include details for any proposed alternative demonstration if necessary.

c) *The Application states that a wash water solution will be used in the decontamination of equipment. Discuss what will comprise the wash solution and discuss the appropriateness of this solution for organics, inorganics, and radionuclides.*

LANL Response: Please refer to the response to Comment No. 51a.

d) *If decontamination verification of asphalt cannot be determined, the Application indicates that the material will be removed from the site. If the asphalt is removed, sampling of the soil underlying the removed asphalt must be conducted in accordance with 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.112 (b)(4)). In addition, all contaminated underlying soil must also be removed and verification sampling conducted. Revise the Application to include a discussion of sampling the underlying soils, removal methods for any contaminated soils, and verification procedures for the remaining soils.*

LANL Response: Please refer to the response to Comment No. 50b.

e) *20.4.1.500 NMAC (incorporating 40 C.F.R § 264.112(b)(4)) requires that all surrounding soils be sampled and tested for potential contamination. The Application does not discuss how soils surrounding the storage pad will be sampled, how many samples will be taken, what sampling methods will be applied, and how contaminated soils will be removed. Revise the Application to discuss these issues regarding surrounding soils.*

LANL Response: Please refer to the response to Comment No. 50b.

f) *The Application states that additional testing may be used to determine if leaching of contaminants from the asphalt is contributing to elevated readings in the wash water. Revise the Application to include what sampling and analytical methods will be used to determine if leaching from the asphalt is the source of contamination in the wash water.*

LANL Response: Please refer to the response to Comment No. 53b.

g) *The Application states that, if verification cannot be demonstrated, an alternative demonstration of decontamination will be used. Provide, discuss, and justify the alternative demonstration of decontamination.*

LANL Response: Please refer to the response to Comment No. 53b.

54. *Attachment F.1.2.5, Decontamination Equipment (40 C.F.R. § 264.112(b)(4))*

The Application discusses cleaning of equipment, but neither this Section of the Application nor Section F .1.4.2.1 discusses how the decontamination of equipment used during decontamination procedures of other equipment will be verified. Revise the Application to include procedures for the verification of decontamination of equipment and how levels of residual contamination will be determined.

LANL Response: Section F.1.2.6 provides detailed information for decontamination verification. This is inclusive of the decontamination equipment.

55. *Attachment F.1.2.6, Decontamination Verification (40 C.F.R. §§ 264.112(b)(4-5) and 264.178)*

a) *The Application states that sampling and analysis will be used to demonstrate*

that hazardous constituents are not present above regulatory limits after closure. However, the Application does not address radiological decontamination or acceptable levels of radiological contamination for closure. Revise the Application to include a discussion of radiological decontamination verification.

LANL Response: Please refer to LANL General Comment No. 3.

b) *The Application should provide a listing of expected contaminants (parameters) that may be present at each CSU. Revise the Application to include a listing of potential contaminants at each CSU.*

LANL Response: Please refer to the response to Comment No. 49.

c) *The Application states that the significance of an increase in contaminant levels in wash down waters is to be determined using statistical methods defined in SW-846. The specific statistical methods that are to be applied must be discussed and provided in the Application. Revise the Application to include the specific statistical methods that will be used to determine if wash down waters show a significant increase in analytical parameters when compared to clean wash water solutions. Also, define numerically a significant increase.*

LANL Response: The specific statistical methods to be utilized are determined by the hazardous constituent and analytical method as identified in SW-846. LANL intends to develop a unit-specific closure/sampling plan at the time of closure that is consistent with the operating record as described in the response to Comment No. 49. This plan will identify the specific hazardous constituents and statistical methods as they are applicable to that specific closure. In addition, decontamination verification may be conducted utilizing a clean closure equivalency based on EPA Region 9 Human Health Risk values for drinking water.

d) *The practice of testing wash water for determination of decontamination can result in significant dilution of constituents. This method also does not allow for the detection of potential hot spots. Revise the Application to discuss the potential uncertainties associated with this method of decontamination verification and to address the investigation methods for detecting hot spots and the methods for verification of decontamination.*

LANL Response: LANL intends to utilize the operating record of the unit at the time of its closure to establish the presence of "hot spots" based on the inspection record and records associated with spills. If any hot spots are identified, special attention will be given to them during decontamination and subsequently during verification. Please note that the TA-55 waste management units are carefully managed to prevent spills and contamination of the surfaces. Decontamination efforts conducted prior to verification will likely remove what little contamination (if any) may be present.

e) *Decontamination verification for radionuclides must include swipe sample*

analyses of CSU surfaces, structures, and "equipment that is to be left on site, in accordance with NRC Regulatory Guide 1.86, to verify that radioactive contamination has been adequately removed and that there are no remaining hot spots of unacceptable levels. Revise the Application to include the use of swipe sampling methods and to discuss how many swipes will be taken, the amount of coverage of the area requiring swipe sampling, and the method of analysis.

LANL Response: Please refer to LANL General Comment No. 3.

f) *In addition, surveying, using appropriate radiation instruments, should be conducted in areas where radiological contamination may have been present. If radiological contaminants exist as fixed contamination, analysis of the wash down water will not indicate the presence of fixed radiological contamination. Revise the Application to provide for surveying of each CSU where radiological contamination is a suspected contaminant to verify that no fixed contamination above acceptable levels remains and that there are no unacceptable hot spots.*

LANL Response: Please refer to LANL General Comment No. 3.

g) *Decontamination verification of CSU surface areas for hazardous waste residues must also be verified using swipe analysis, similar to that as outlined in Comment e) above. Revise the Application to include swipe sampling and analysis for hazardous waste residues. The discussion should include how many swipes will be taken, percent surface coverage, and the method of analysis.*

LANL Response: Please refer to the response to Comment No. 50f.

h) *The Application does not discuss how surrounding soils will be sampled to ensure that no cross contamination as a result of decontamination activities have occurred. Revise the Application to include a discussion of how soils around areas to be decontaminated will be sampled and verified for potential cross contamination as a result of decontamination procedures.*

LANL Response: Please refer to the response to Comment No. 50b.

i) *The Application does not discuss soils under or around a CSU, in particular the outdoor pad, that are to be decontaminated. 20.4.1.500 NMAC (incorporating 40 C.F .R § 264.112(b)(4)) requires that the Application include methods for sampling and testing surrounding soils and verification that these soils meet closure performance standards. Revise the Application to include the methods for sampling and testing surrounding soils at each CSU.*

LANL Response: Please refer to the response to Comment No. 50b.

56. *Attachment F.1.3, Sampling and Analytical Procedures (40 C.F.R. § 264.112(b)(4))*

The Application states that sampling and analysis will be conducted in accordance with procedures outlined in SW-846 or other approved procedures or methods. Revise the Application to include references for all proposed procedures and methods that will be used. Revise Tables F.1-1, F.1-2, F.1-5 and F.1-6, as necessary.

LANL Response: Please refer to the response to Comment No. 49.

57. *Attachment F.1.3.1, Soil and Sediment Sampling*

a) *Discuss when soil or sediment sampling is appropriate and required as well as the criteria that will be used to determine when soil or sediment sampling will be conducted.*

LANL Response: Please refer to the response to Comment No. 50b.

b) *The soil sampling protocol does not address how many samples will be taken and how soil sample locations will be determined. Revise the Application to include this information.*

LANL Response: Please refer to the response to Comment No. 49.

58. *Attachment F.1.3.2, Liquid Sampling*

Samples of used wash water are to be collected and analyzed to determine when a structure or piece of equipment is deemed sufficiently decontaminated. However, this method appears to lead to uncertainty, as contamination can become diluted as wash water volume increases. Include a discussion regarding the frequency of analysis of the used wash water and provide the minimum and maximum surface area that will be cleaned using one volume of wash water.

LANL Response: Please refer to the response to Comment No. 50f.

59. *Attachment F.1.3.4, Sampling Handling and Documentation*

a) *The Application states that sample container surfaces will be screened for radiological contamination and decontaminated if necessary. Provide the methodology and proposed instrumentation for screening of samples. Also provide the criteria for determining if decontamination is necessary.*

LANL Response: Please refer to LANL General Comment No. 3.

b) *Discuss special labeling and shipping requirements for radiological samples.*

LANL Response: Please refer to LANL General Comment No. 3.

Comment Nos. 60 - 73, Attachment F.2 – Closure Plan for the Storage Tank System

60. *Attachment F.2.1.1, Closure Performance Standard*

Delete "and post-closure" from the performance standard third bullet.

LANL Response: Please refer to the response to Comment No. 44.

61. *Attachment F.2.1.2, Partial and Final Closure Activities (40 C.F.R. § 270.14(b)(13), 270.14(b)(15-18), 264.110 through 264.151 and 264.197)*

a) *Define what is included in the storage tank system, including ancillary equipment and secondary containment, and use the term consistently throughout.*

LANL Response: The storage tank system, ancillary equipment, and associated secondary containment are described in Attachment H of the application.

b) *Discuss the structure(s) within the storage tank system that may be left in service during closure activities.*

LANL Response: Please refer to the response to Comment No. 15.

62. *Attachment F.2.1.9, Survey Plat and Post-Closure Requirements*

Any criteria used to demonstrate compliance for closure that is not permitted in this Application will require a permit modification. Revise the Application to indicate that the requirements for a permit modification pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.112(c)), will be followed in the event that an amendment to the closure plan is warranted.

LANL Response: The requirements of 20.4.1, Subpart V, 264.112(c) are addressed in Section F.2.1.4.

63. *Attachment F.2.2, Closure Procedures*

The Application states that, if necessary, the closure plan will be modified and the modified closure plan will be submitted to the NMED for review and approval. Pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.112(c)), a written notification of or request for a permit modification to authorize a change in operating plans, facility design or the approved closure plan must be submitted to NMED. In addition, the requirements for a permit modification, also outlined in 40 C.F .R § 264.112(c), must be met. Revise the Application to address the written notification requirement.

LANL Response: Please refer to the response to Comment No. 62.

64. *Attachment F.2.2.1, Estimate of Maximum Waste in Storage (40 C.F.R. § 264.112(b)(3))*

The Application must provide an estimate of the maximum inventory for each type of waste and within what components of the storage tank system that waste is contained. Revise the Application to include, for each component of the storage tank system, the maximum quantity of waste, waste type, and maximum capacity.

LANL Response: Please refer to the response to General Comment No. 2.

65. *Attachment F.2.2.3, Removal of waste (40 C.F.R. § 264.112(b)(3-4) and 264.197)*

a) *The Application must address the requirements in 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.112(b)(4)), which states that a detailed plan of*

how waste is to be removed shall be included in the closure plan. Revise the Application to include a detailed discussion of how waste will be removed from each of the components of the storage tank system.

LANL Response: The waste removed from the tank system will be solidified in the cementation or vitrification units as discussed in Section F.2.2.3. LANL intends to develop a unit-specific closure/sampling plan for the storage tank system component(s) at the time of closure that is consistent with the operating record. This approach was discussed with Carl Will of the HWB on April 23 and June 7, 2002, regarding the closure of the TA-54 CSUs. LANL would like to establish the same approach for the TA-55 storage tank system as described below.

LANL intends to develop a unit-specific closure/sampling plan. This plan will utilize the operating record at the time of closure to determine the hazardous constituents that were actually stored and to identify the nature and extent of spills (if any) that may have occurred. The use of the operating record will narrow the range of hazardous constituents to be sampled for and be more representative of the potential contamination at the unit. A list of potential hazardous constituents is provided in Table F.2-2 and represents the breadth of EPA Hazardous Waste Numbers capable of being treated in the unit as identified in the LANL General Part A (LANL, 1998b).

In addition, this unit-specific closure/sampling plan will utilize the operating record to determine:

- The waste types that will be removed prior to and during closure.
- The final disposal destination for the waste and for any wastes generated as a result of the decontamination and disposal operations.
- The most recent procedures, technologies, and innovations to provide clean closure of the unit and protect human health and the environment.

b) The Application must also address how removed waste will be handled. Pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R § 264.112(b)(3)), the types of off-site hazardous waste, management facilities to be used must be identified. Revise the Application to describe the handling and disposal of removed waste and, if waste is to be shipped to an off-site location, the types of waste that will be shipped to each specific off-site facility.

LANL Response: Please refer to the response to Comment No. 65a.

66. Attachment F.2.2.4, Closure Procedures and Decontamination (40 C.F.R. §§ 264.112(b)(3-4) and 264.197)

a) Pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R. §§ 264.112(b)(3) and (4)) a detailed description for the closure of each component of the storage tank

system must include the steps needed to remove or decontaminate all hazardous waste residues and contaminated containment system components, equipment, structures, and soils during partial and final closure, including, but not limited to, procedures for cleaning equipment and removing contaminated soils, methods for sampling and testing surrounding soils, and criteria for determining the extent of decontamination required to satisfy the closure performance standard. Subsections F.2.2.4.1 through F.2.2.4.3 do not provide information to fulfill the requirements. Revise the Application to adequately address the requirements for closure, decontamination, and verification.

LANL Response: LANL maintains that Attachment F.2 of the Permit Application meets the closure criteria set forth in the regulations with the following sections:

- Section F.2.2.4 - general decontamination information including PPE, pre-closure activities, and inspection criteria.
- Section F.2.2.4.1 - specific information for the storage tank components.
- Section F.2.2.4.2 - specific information for the ancillary equipment.
- Section F.2.2.4.3 – specific decontamination information for the areas adjacent to the storage tank system (i.e., secondary containment).
- Section F.2.2.5 - decontamination of the equipment used to conduct the closure
- Section F.2.2.6 - verification method to ensure adequate decontamination.
- Section F.2.3 – sampling and analytical procedures including both soils and liquid.

b) *The Application states that all sampling will be done in accordance with Quality Assurance/Quality Control (QA/QC) procedures, however, the procedures are not provided. Revise the Application to include these QA/QC procedures.*

LANL Response: Please refer to LANL General Comment No. 4.

c) *The schedule for closure activities for the storage tank system is presented in Table F .2-1. However. it is not apparent that the schedule allows time for proper data validation, time to treat wastes, or adequate time for transporting wastes to disposal sites, if warranted. In addition, some structures in the storage tank system area may be left in service during partial closure. Revise the schedule to be comprehensive of all potential activities for closure and partial closure.*

LANL Response: Please refer to the response to Comment No. 50d.

d) *The Application states that all workers will have proper training and medical monitoring. Reference the appropriate portions of the Application that discuss the training requirements and medical monitoring requirements for workers.*

LANL Response: Please refer to the response to Comment No. 50e.

67. *Section F.2.2.4.1, Storage Tank System Components*

a) *Pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.112(b)(4)), a detailed description of all the steps needed to remove all hazardous waste residues and contaminated containment system components, equipment, and structures must be provided. The Application does not delineate how the storage tank system will be disassembled, broken down into containerizable pieces, and managed. Revise the Application to include a detailed discussion of all the steps for removing all hazardous waste residue's and contaminated containment system components, equipment, and structures of the storage tank system.*

LANL Response: The storage tank system component(s) and/or ancillary equipment to be closed will be removed and cut up into pieces that can be packaged into containers. Details regarding exactly how this will be conducted will be provided in the unit-specific closure/sampling plan at the time of closure as discussed in the response to Comment No. 65a.

b) *Provide the regulations that will be applicable for managing the containerized components of the storage tank system.*

LANL Response: Please refer to the response to Comment No. 65a.

68. *Section F.2.2.4.2, Ancillary Equipment*

a) *The Application states that ancillary equipment will be either decontaminated, decommissioned, or dismantled depending on anticipated disposition or use after closure. Clarify whether this statement means that certain pieces of ancillary equipment may be decontaminated for future use.*

LANL Response: Please refer to the response Comment No. 15.

b) *Pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.112(b)(4)), a detailed description of all the steps needed to remove all hazardous waste residues and contaminated containment system components, equipment, and structures must be provided. The Application does not delineate how ancillary equipment will be disassembled, broken down into containerizable pieces, and managed. Revise the Application to include a detailed discussion of all the steps for removing all hazardous and radiological waste residues and contaminated ancillary equipment components of the storage tank system.*

LANL Response: Please refer to the response to Comment No. 67a.

c) *Revise the Application to reference the regulations that will be applicable for managing the containerized ancillary equipment components.*

LANL Response: Please refer to the response to Comment No. 65a.

d) *The Application states that sampling and analysis will be used to demonstrate that hazardous constituents are not present above regulatory limits after closure. However, the Application does not address radiological decontamination or acceptable levels of radiological contamination for closure. Revise the Application to include a discussion of radiological decontamination verification.*

LANL Response: Please refer to LANL General Comment No. 3.

e) *The Application should provide a listing of expected contaminants (parameters) that may be present in the ancillary equipment. Revise the Application to include a listing of potential contaminants in the ancillary equipment.*

LANL Response: Please refer to the response to Comment No. 65a

f) *The practice of testing wash water for determination of decontamination can result in significant dilution of constituents. This method also does not allow for the detection of potential hot spots. Revise the Application to discuss the potential uncertainties associated with this method of decontamination verification and to address the investigation methods for detecting hot spots and the methods for verification of decontamination.*

LANL Response: Please refer to the response to Comment Nos. 50f and 55d.

g) *Decontamination verification for radionuclides must include swipe analyses of structures or other equipment that are to be left on site, in accordance with NRC Regulatory Guide 1.86, to verify that radioactive contamination has been adequately removed and that there are no remaining hot spots of unacceptable levels. Revise the Application to include the use of Swipe sampling methods and to discuss how many swipes will be taken, the amount of coverage of the surface requiring swipe sampling, and the method of analysis.*

LANL Response: Please refer to LANL General Comment No. 3.

h) *Decontamination verification of hazardous waste management unit surfaces for hazardous waste residues must be verified using swipe analysis, similar to that as outlined in Comment g) above. Revise the Application to include swipe sampling methods and analysis for hazardous waste residues. The discussion should include how many swipes will be taken, percent surface coverage, and the method of analysis.*

LANL Response: Please refer to the response to Comment No. 50f.

i) *The Application states that the wash cycles will continue until equipment has been cleaned to established levels. Provide the methodology for determining the*

prescribed established levels and provide these levels. Include contaminant-specific levels where applicable.

LANL Response: Please refer to the response to Comment No. 65a.

69. *Section F.2.2.4.3, Areas Adjacent to the Storage Tank System*

a) *The Application states that random swipes will be taken from the area adjacent to the storage tank system. Revise the Application to include how many swipes will be taken, what percentages of area will be swiped, and the size of the swipe samples. Also, indicate that swipe samples will be taken for both hazardous and radiological constituents.*

LANL Response: Please refer to the response to Comment No. 65a

b) *Clarify whether swipe samples will be taken from secondary containment systems.*

LANL Response: The swipe samples are to be taken from the surfaces in Rooms 401 and 434A adjacent to the storage tank system, this is the secondary containment.

c) *The Application states that swipe samples will be taken from sumps and drains. Discuss how the extent of contamination, for example to the trap or past the trap into the drain system, will be determined. If the swipe analysis indicates the presence of contamination, discuss how sumps and drains past the trap will be sampled. Also, if drains are found to be contaminated, discuss how drain systems will either be removed or decontaminated. Also, for any decontaminated drain system, soils surrounding the drain system must be sampled to ensure that soils have not been contaminated as a result of leakages. Revise the Application to address these issues.*

LANL Response: Please refer to the response to Comment No. 51e.

d) *The Application indicates that drains will be washed down. Clarify how a drain is washed down and clarify how wash water will be prevented from entering the drain lines.*

LANL Response: Please refer to the response to Comment No. 51e.

e) *The Application states that the wash cycles will continue until equipment has been cleaned to established levels. Provide the methodology for determining the prescribed established levels and provide these levels. Include contaminant-specific levels where applicable.*

LANL Response: Please refer to the response to Comment No. 65a.

70. *Attachment F.2.2.5, Decontamination Equipment (40 C.F.R. && 264.112(b)(3-4) and 264.197)*

The Application discusses cleaning of equipment, but it does not discuss how the decontamination of equipment used during decontamination procedures of other equipment will be verified. Revise the Application to include procedures for the verification of decontamination of equipment and how levels of residual contamination will be determined.

LANL Response: Section F.2.2.6 provides detailed information for decontamination verification. This is inclusive of the decontamination equipment.

71. *Attachment F.2.2.6, Decontamination Verification (40 C.F.R. && 264.112(b)(3-5))*

a) *Sampling and analysis will be used to demonstrate that hazardous constituents are not present above regulatory limits after closure. However, the Application does not address radiological decontamination or acceptable levels of radiological contamination for closure. Revise the Application to include a discussion of radiological decontamination verification.*

LANL Response: Please refer to LANL General Comment No. 3.

b) *The Application should provide a listing of expected contaminants (parameters) that may be present within the storage tank system. Revise the Application to include a listing of potential contaminants within the storage tank system.*

LANL Response: Please refer to the response to Comment No. 65a.

c) *The Application states that the significance of increased constituent concentrations in contaminated wash down waters is to be determined using statistical methods defined in SW-846. The specific statistical methods that are to be applied must be provided in the Application. Revise the Application to include the specific statistical methods that will be used to determine if wash down waters show a significant increase in analytical parameters when compared to clean wash water solutions. Also, define numerically a significant increase.*

LANL Response: Please refer to the response to Comment No. 55c.

d) *The practice of testing wash water for determination of decontamination can result in significant dilution of constituents. This method also does not allow for the detection of potential hot spots. Revise the Application to discuss the potential uncertainties associated With this method of decontamination verification and to address the investigation methods for detecting hot spots and the methods for verification of decontamination.*

LANL Response: Please refer to the response to Comment Nos. 50f and 55d.

e) *Decontamination verification for radionuclides must include swipe analyses of storage tank system surfaces and structures or other equipment that are to be*

left on site, in accordance with NRC Regulatory Guide 1.86, to verify radioactive contamination has been adequately removed and that there are no remaining hot spots of unacceptable levels. Revise the Application to include the use of swipe sampling methods and to discuss how many swipes will be taken, the amount of coverage of surfaces requiring swipe sampling, and the method of analysis.

LANL Response: Please refer to LANL General Comment No. 3.

f) *In addition, surveying, using appropriate radiation instruments, must be conducted in areas where radiological contamination may have been present. If the radiological contaminants exist as fixed contamination, analysis of the wash down water will not indicate the presence of potential fixed radiological contamination. Revise the Application to provide for surveying ancillary equipment and adjacent areas where radiological contamination is a suspected contaminant to verify that no fixed contamination above acceptable levels remains and that there are no unacceptable hot spots.*

LANL Response: Please refer to LANL General Comment No. 3.

g) *Decontamination verification of storage tank system surfaces for hazardous waste residues must be verified using swipe analysis, similar to that outlined in Comment e) above. Revise the Application to include swipe sampling methods and analysis for hazardous waste residues. The discussion should include how many swipes will be taken, percent surface coverage, and the method of analysis.*

LANL Response: Please refer to the response to Comment No. 50f.

h) *The Application states that an alternative demonstration of decontamination may be proposed and justified at the time of closure. Using an alternative method from that outlined in the Application for demonstrating decontamination would constitute a modification of the closure plan. The modified closure plan, outlining the alternative demonstration of decontamination, must be submitted to NMED for review and approval. Pursuant to 20.4.1.500 NMAC (incorporating 40 C.F .R. § 264.112(c)), a written notification of or request for a permit modification to authorize a change in operating plans, facility design, or the approved closure plan must be submitted to NMED. In addition, the requirements for a permit modification, also outlined in 40 C.F.R § 264.112(c), must be met. Revise the Application to address the written notification requirement.*

LANL Response: Please refer to the response to Comment No. 62.

72. *Attachment F.2.3.2, Liquid Sampling*

The Application states that samples of used wash water are to be collected and analyzed to determine when a structure or piece of equipment is deemed sufficiently decontaminated, However, this method appears to lead to uncertainty, as contamination can become diluted as wash water volume increases. Include a discussion regarding the frequency of analysis of the used wash water and provide the minimum and maximum surface area that will be cleaned using one volume of wash water.

LANL Response: Please refer to the response to Comment No. 50f.

73. *Attachment F.2.3.4, Sampling Handling and Documentation*

a) *The Application states that sample container surfaces will be screened for radiological contamination and decontaminated if necessary. Provide the methodology and proposed instrumentation for screening of samples. Also provide the criteria for determining if decontamination is necessary.*

LANL Response: Please refer to LANL General Comment No. 3.

b) *Discuss special labeling and shipping requirements for radiological samples.*

LANL Response: Please refer to LANL General Comment No. 3.

Comment Nos. 74 - 88, Attachment F.3 – Closure Plan for the Cementation Unit

74. *Attachment F.3.1.1, Closure Performance Standard*

Delete "and post-closure" from the performance standard third bullet.

LANL Response: Please refer to the response to Comment No. 44.

75. *Attachment F.3.1.2, Partial and Final Closure Activities (40 C.F.R. §§ 270.14(b)(13), 270.14(b)(15-18), and 264.110 through 264.151)*

a) *Page F.3-1 states that the cementation unit includes the glovebox and associated structures and piping. Section F.3.1.2 refers to the cementation unit, ancillary equipment, and glovebox. Section F.3.2.4 is titled cementation unit and glovebox. Define what is included in the cementation unit and use the term consistently throughout.*

LANL Response: The cementation unit, glovebox, ancillary equipment, and associated secondary containment are described in Attachment I of the application.

b) *Discuss which structure(s) within the cementation unit may be left in service during closure activities.*

LANL Response: The cementation unit is connected to the TA-50-4 facility ventilation, and wet vacuum systems. At closure the piping and ductwork (i.e., ancillary equipment) associated with the unit will be removed to the header that connects them to the facility system. Please note that the facility systems are protected from contamination by vacuum traps, which will also be removed at closure. The facility portions of the ventilation and wet vacuum systems will be left in place to be used by other LANL missions.

In addition, the secondary containment surfaces (i.e. walls and floor) associated with the cementation unit will be decontamination and left in

place to be used by other LANL missions.

76. *Attachment F .3.1.9, Survey Plat and Post-Closure Requirements*

Any criteria used to demonstrate compliance that is not permitted in this Application will require a permit modification. Revise the Application to indicate that the requirements for a permit modification pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R § 264.112(c)), will be followed in the event that an amendment to the closure plan is warranted.

LANL Response: The requirements of 20.4.1 NMAC, Subpart V, 264.112(c) are addressed in Section F.3.1.4.

77. *Attachment F .3.2, Closure Procedures*

The Application states that, if necessary, the closure plan will be modified and that the modified closure plan will be submitted to NMED for review and approval. Pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R § 264.112(c)), a written notification of or request for a permit modification to authorize a change in operating plans, facility design, or the approved closure plan must be submitted to NMED. In addition, the requirements for a permit modification," also outlined in 40 C.F.R § 264.112(c), must be met. Revise the Application to address the written notification requirement.

LANL Response: Please refer to the response to Comment No. 76.

78. *Attachment F.3.2.1, Estimate of Maximum Waste in Storage (40 C.F.R. § 264.112(b)(3))*

The Application must provide an estimate of the maximum inventory for each type of waste and within what components of the cementation unit that waste is contained. Revise the Application to include the maximum quantity of waste, waste type, and maximum capacity for the cementation unit.

LANL Response: Please refer to the response to General Comment No. 2.

79. *Attachment F.3.2.2, Description of waste (40 C.F.R. & 264.112(b)(3))*

The description of the waste includes several generalities, such as "typically," "generally," and "may." Revise the Application to remove these generalities and discuss all of the waste streams and waste types that will be treated in the cementation unit.

LANL Response: LANL will revise the application to remove the terms “typically,” “generally,” and “may.” In addition, please refer to the response to Comment No. 80a.

80. *Attachment F .2.2.3, Removal of Waste (40 C.F.R. §§ 264.112(b)(3-4)*

a) *The Application must address the requirements in 20.4.1.500 NMAC (incorporating 40 C.F .R. § 264.112(b)(4), which requires submittal of a detailed plan for waste removal. Revise the Application to include a detailed discussion of how waste will be removed from each of the components of the cementation unit.*

LANL Response: Solidified waste from the cementation unit will be removed and transported to a permitted CSU prior to disposal at a permitted facility as described in Section F.3.2.3. LANL intends to develop a unit-specific closure/sampling plan for the cementation unit at the time of its closure that is consistent with the operating record. This approach was discussed with Carl Will of the HWB on April 23 and June 7, 2002, regarding the closure of the TA-54 CSUs. LANL would like to establish the same approach for the TA-55 storage tank system as described below.

LANL intends to develop a unit-specific closure/sampling plan. This plan will utilize the operating record of the unit at the time of its closure to determine the hazardous constituents that were actually stored in the unit and to identify the nature and extent of spills (if any) that may have occurred. The use of the operating record will narrow the range of hazardous constituents to be sampled for and be more representative of the potential contamination at the unit. A list of potential hazardous constituents for the cementation unit is provided in Table F.3-2 and represents the breadth of EPA Hazardous Waste Numbers capable of being treated in the unit as identified in the "Los Alamos National Laboratory General Part A Permit Application," (LANL, 1998b).

In addition, this unit-specific closure/sampling plan will utilize the operating record of the unit to determine:

- The waste types that will be removed prior to and during closure.
- The final disposal destination for the waste in the tank component(s) and for any wastes generated as a result of the decontamination and disposal operations.
- The most recent procedures, technologies, and innovations to provide clean closure of the unit and protect human health and the environment.

b) The Application must also address how removed waste will be handled. Pursuant to 20.4.1.500 NMAC (incorporating 40 C.F .R. § 264.112(b)(3)), the types of off-site hazardous waste management facilities to be used must be identified. Revise the Application to discuss the management and disposal of removed waste. If waste will be shipped to an off-site location, describe the types of waste that will be shipped to each specific off-site facility.

LANL Response: Please refer to the response to Comment No. 80a.

81. Attachment F.3.2.4, Closure Procedures and Decontamination (40 C.F.R. §§ 264.112(b)(3-4))

As outlined in 20.4.1.500 NMAC (incorporating 40 C.F.R §§ 264.112(b)(3) and (4)) a detailed description for the closure of each hazardous waste management unit must include the steps needed to remove or decontaminate all hazardous waste residues and

contaminated containment system components, equipment, structures, and soils during partial and final closure, including, but not limited to, procedures for cleaning equipment and removing contaminated soils, methods for sampling and testing surrounding soils, and criteria for determining the extent of decontamination required to satisfy the closure performance standard. Subsections F.3.2.4.1 through F.3.2.4.3 do not provide information sufficient to fulfill these requirements.

LANL Response: LANL maintains that Attachment F.1 of the Permit Application meets the closure criteria set forth in the regulations with the following sections:

- Section F.3.2.4 - general decontamination information applicable to the cementation unit including PPE, pre-closure activities, and inspection criteria.
- Section F.3.2.4.1 - specific decontamination information for the cementation unit and the glovebox it is contained in.
- Section F.3.2.4.2 - specific decontamination information for the ancillary equipment associated with the unit.
- Section F.3.2.4.3 – specific decontamination information for the decontamination of the surface areas adjacent to the unit, which includes the secondary containment.
- Section F.3.2.5 - decontamination of the equipment used to conduct the closure.
- Section F.3.2.6 - verification method to ensure adequate decontamination.
- Section F.3.3 – sampling and analytical procedures including both soils and liquid.

82. *Attachment F.3.2.4.1, Cementation Unit and Glove Box*

a) *The Application states that the cementation unit equipment and glove box will be either decontaminated, decommissioned, or dismantled depending on anticipated disposition or use after closure. Clarify whether this statement means that certain pieces of equipment may be decontaminated for future use.*

LANL Response: Please refer to the response to Comment No. 75b.

b) *Pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.112(b)(4)), a detailed description of all the steps needed to remove all hazardous waste residues and contaminated containment system components, equipment, and structures must be provided. The Application does not delineate how equipment and pieces of the cementation unit will be disassembled, broken down into container-sized pieces, and managed. Revise the Application to include a detailed discussion of all the steps for removing all hazardous waste residues and contaminated equipment components of the cementation unit and glove box.*

LANL Response: The cementation unit and/or ancillary equipment to be closed will be removed and cut up into pieces that can be packaged into containers. Details regarding exactly how this will be provided in the unit-specific closure plan at the time of closure as discussed in the response to Comment No. 80a.

c) *Revise the Application to include a reference to the regulations that will be applicable for managing the containerized components and removed waste.*

LANL Response: Please refer to the response to Comment No. 80a.

d) *The Application states that sampling and analysis will be used to demonstrate that hazardous constituents are not present above regulatory limits after closure. However, the Application does not address radiological decontamination or acceptable levels of radiological contamination for closure. Revise the Application to include a discussion of radiological decontamination verification.*

LANL Response: Please refer to LANL General Comment No. 3.

e) *The Application should provide a listing of expected contaminants (parameters) that may be present in the cementation unit equipment and glove box. Revise the Application to include a listing of potential contaminants in the cementation unit equipment and glove box.*

LANL Response: Please refer to the response to Comment No. 80a.

f) *The practice of testing wash water for determination of decontamination can result in significant dilution of constituents. This method also does not allow for the detection of potential hot spots. Revise the Application to discuss the potential uncertainties associated with this method of decontamination verification and to address the investigation methods for detecting hot spots and the methods for verification of decontamination.*

LANL Response: Please refer to the response to Comment Nos. 50f and 55d.

g) *Decontamination verification for radionuclides must include swipe analyses of cementation unit surfaces and structures or other equipment that are to be left on site, in accordance with NRC Regulatory Guide 1.86, to verify that radioactive contamination has been adequately removed and that there: are no remaining hot spots of unacceptable level. Revise the Application to include the use of swipe sampling methods and to discuss how many swipes will be taken, the amount of coverage of the surface requiring swipe sampling, and the method of analysis.*

LANL Response: Please refer to LANL General Comment No. 3.

h) *In addition, surveying, using appropriate radiation instruments, must be conducted in areas where radiological contamination may have been present. If*

the radiological contaminants exist as fixed contamination, analysis of the wash down water will not indicate the presence of potential fixed radiological contamination. Revise the Application to provide for surveying ancillary equipment and adjacent areas where radiological contamination is a suspected contaminant to verify that no fixed contamination above acceptable levels remains and that there are no unacceptable hot spots.

LANL Response: Please refer to LANL General Comment No. 3.

i) *Decontamination verification for hazardous waste residues must be verified using swipe analysis, similar to that outlined in Comment g) above. Revise the Application to include swipe sampling and analysis for hazardous waste residues. The discussion should include how many swipes will be taken, percent surface coverage, and the method of analysis.*

LANL Response: Please refer to the response to Comment No. 50f.

j) *The Application states that the wash cycles will continue until equipment has been cleaned to established levels. Provide the methodology for determining the prescribed established levels and provide these levels. Include contaminant-specific levels where applicable.*

LANL Response: Please refer to the response to Comment No. 80a.

83. *Section F.3.2.4.2, Cementation Unit Ancillary Equipment*

a) *The Application states that ancillary equipment will be either decontaminated, decommissioned, or dismantled depending on anticipated disposition or use after closure. Clarify whether this statement means that certain pieces of ancillary equipment may be decontaminated for future use.*

LANL Response: Please refer to the response to Comment No. 80a.

b) *Pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.112(b)(4)), a detailed description of all the steps needed to remove all hazardous waste residue and contaminated containment system components, equipment, and structures must be provided. The Application does not delineate how ancillary equipment will be disassembled, broken down into containerizable pieces, and managed. Revise the Application to include a detailed discussion of all the steps for removing all hazardous waste residue and contaminated ancillary equipment components of the cementation unit.*

LANL Response: Please refer to the response to Comment No. 80a.

c) *Revise the Application to include a reference to the regulations that will be applicable, for managing the containerized ancillary equipment components.*

LANL Response: Please refer to the response to Comment No. 80a.

d) *Sampling and analysis will be used to demonstrate that hazardous constituents*

are not present above regulatory limits after closure. However, the Application does not address radiological decontamination or acceptable levels of radiological contamination for closure. Revise the Application to include a discussion of radiological decontamination verification.

LANL Response: Please refer to LANL General Comment No. 3.

e) *The Application should provide a listing of expected contaminants (parameters) that may be present in the ancillary equipment. Revise the Application to include a listing of potential contaminants in the ancillary equipment.*

LANL Response: Please refer to the response to Comment No. 80a.

f) *The practice of testing wash water for determination of decontamination can result in significant dilution of constituents. This method also does not allow for the detection of potential hot spots. Revise the Application to discuss the potential uncertainties associated with this method of decontamination verification and to address the investigation methods for detecting hot spots and the methods for verification of decontamination.*

LANL Response: Please refer to the response to Comment Nos. 50f and 55d.

g) *Decontamination verification for radionuclides must include swipe analyses of surfaces and Structures or other equipment that are to be left on-site, in accordance with NRC Regulatory Guide 1.86, to verify that radioactive contamination has been adequately removed and that there are no remaining hot spots of unacceptable level. Revise the Application to discuss how many swipes will be taken, the amount of coverage of the item requiring swipe sampling, and the method of analysis.*

LANL Response: Please refer LANL General Comment No. 3.

h) *In addition, surveying, using appropriate radiation instruments, must be conducted in areas where radiological contamination may have been present. If the radiological contaminants exist as fixed contamination, analysis of the wash down water will not indicate the presence of potential fixed radiological contamination. Revise the Application to provide for surveying ancillary equipment and adjacent areas where radiological contamination is a suspected ;contaminant to verify that no fixed contamination above acceptable levels remains and that there are no unacceptable hot spots.*

LANL Response: Please refer to LANL General Comment No. 3.

i) *Decontamination verification for hazardous waste residues must be verified using swipe analysis, similar to that outlined in Comment g) above. Revise the Application to include swipe sampling and analysis for hazardous waste residues. The discussion should include how many swipes will be taken, percent surface coverage, and the method of analysis.*

LANL Response: Please refer to the response to Comment No. 50f.

j) *The Application States that the wash cycles will Continue until equipment has been cleaned to established levels. Provide the methodology for determining the prescribed established levels and provide these levels. Include contaminant-specific levels where applicable.*

LANL Response: Please refer to the response to Comment No. 80a.

84. *Attachment F.3.2.4.3, Areas Adjacent to the Cementation Unit Glove Box*

a) *The Application states that random swipes are to be taken from the area adjacent to the cementation unit glove box. Revise the Application to include how many swipes will be taken, what percentages of area will be swiped, and the size of the swipe samples. Also indicate that swipes will be taken for both hazardous and radiological constituents.*

LANL Response: Please refer to the response to Comment No. 80a and LANL General Comment No. 1.

b) *Clarify whether swipes will be taken of secondary containment systems other than the floor.*

LANL Response: Swipe samples will be collected from the surfaces in Room 401 adjacent to the cementation unit, this is the secondary containment.

c) *Revise the Application to address investigation of any cracks or fractures in the floors and walls prior to decontamination activities.*

LANL Response: Please refer to the response to Comment No. 13c.

d) *The Application states that the wash cycles will continue until equipment has been cleaned to established levels. Provide the methodology for determining the prescribed established levels and provide those levels. Include contaminant-specific levels where applicable.*

LANL Response: Please refer to the response to Comment No. 80a.

85. *Attachment F.3.2.5, Decontamination Equipment (40 C.F.R. §§ 264.112(b)(3-4))*

The Application discusses cleaning of equipment, but the Application does not discuss how the decontamination of equipment used during decontamination procedures of other equipment will be verified. Revise the Application to include procedures for the verification of decontamination of equipment and how levels of residual contamination will be determined.

LANL Response: Section F.3.2.6 provides detailed information for decontamination verification. This is inclusive of the decontamination equipment.

86. *Attachment F.3.2.6, Decontamination Verification (40 C.F.R. §§ 264.112(b)(5))*

a) *Delete the decontamination criteria. At closure all hazardous waste and hazardous waste residues must be removed or decontaminated.*

LANL Response: The five criteria identified as means of achieving successful decontamination have been approved by NMED in past closure plans. These criteria provide a spectrum of methods that allow the necessary flexibility in the closure plan for conducting a closure. In the past, inordinate amounts of time have been spent modifying closure plans due to unforeseen circumstances that only allowed a single-option approach to successfully demonstrate decontamination. The multi-option approach has proven to be a successful and expedient approach to conducting closures.

b) *The Application states that sampling and analysis will be used to demonstrate that hazardous constituents are not present above regulatory limits after closure. However, the Application does not address radiological decontamination of acceptable levels of radiological contamination for closure. Revise the Application to include a discussion of radiological decontamination verification. Also provide the regulatory limits for the hazardous constituents.*

LANL Response: Please refer to LANL General Comment No. 3.

c) *The Application must provide a listing of expected contaminants (parameters) that may be present within the cementation unit. Revise the Application to include a listing of potential contaminants within the cementation unit.*

LANL Response: Please refer to the response to Comment No. 80a.

d) *The significance of increased constituent concentrations in contaminated wash down waters is to be determined using statistical methods defined in SW -846. The specific statistical methods that are to be applied must be discussed and provided in the Application. Revise the Application to include the specific statistical methods that will be used to determine if wash down waters show a significant increase in analytical parameters when compared to clean wash water solutions. Also, define numerically a significant increase.*

LANL Response: Please refer to the response to Comment No. 55c.

e) *The practice of testing wash water for determination of decontamination can result in significant dilution of constituents. This method also does not allow for the detection of potential hot spots. Revise the Application to discuss the potential uncertainties associated with this method of decontamination verification and to address the investigation methods for detecting hot spots and the methods for verification of decontamination.*

LANL Response: Please refer to the response to Comment Nos. 50f and 55d.

f) *Decontamination verification for radionuclides must include swipe analyses of surfaces, structures, or other equipment that are to be left on site, in accordance with NRC Regulatory Guide 1.86, to verify that radioactive contamination has been adequately removed and that there are no remaining hot spots of unacceptable levels. Revise the Application to include the use of swipe sampling methods and discuss how many swipes will be taken, the amount of coverage of the surface requiring swipe sampling, and the method of analysis.*

LANL Response: Please refer to LANL General Comment No. 3.

g) *In addition, surveying, using appropriate radiation instruments, must be conducted in areas where radiological contamination may have been present. If the radiological contaminants exist as fixed contamination, analysis of the wash down water will not indicate the presence of potential fixed radiological contamination. Revise the Application to provide for surveying equipment and adjacent areas where radiological contamination is a suspected contaminant to verify that no fixed contamination above acceptable levels remains and that there are no unacceptable hot spots.*

LANL Response: Please refer to LANL General Comment No. 3.

h) *Decontamination verification of cementation unit surfaces for hazardous waste residues must be verified using swipe analysis, similar to that as outlined in Comment f) above. Revise the Application to include swipe sampling of surfaces and analysis for hazardous waste residues. The discussion should include how many swipes will be taken, percent surface coverage, and the method of analysis.*

LANL Response: Please refer to the response to Comment No. 50f.

i) *The Application states that an alternative demonstration of decontamination may be proposed and justified at the time of closure. Using an alternative method from that outlined in the Application for demonstrating decontamination would constitute a modification of the closure plan. The modified closure plan, outlining the alternative demonstration of decontamination, must be submitted to NMED for review and approval. Pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.112(c)), a written notification of or request for a permit modification to authorize a change in operating plans, facility design, or the approved closure plan must be submitted to NMED. In addition, the requirements for a permit modification, also outlined in 40 C.F .R. § 264 .112(c), must be met. Revise the Application to discuss the written notification requirement.*

LANL Response: Please refer to the response to Comment No. 76.

87. *Attachment F.3.3.2, Liquid Sampling (40 C.F.R 264.112(b)(4))*

Samples of used wash water are to be collected and analyzed to determine when a structure or piece of equipment is deemed sufficiently decontaminated. However, this method appears to lead to uncertainty, as contamination can become diluted as wash

water volume increases. Include a discussion regarding the frequency of analysis of the used wash water and provide the minimum and maximum surface area that will be cleaned using one volume of wash water.

LANL Response: Please refer to the response to Comment No. 50f.

88. *Attachment F.3.3.4, Sampling Handling and Documentation (40 C.F.R. & 264.112(b)(4))*

a) *The Application states that sample container surfaces will be screened for radiological contamination and decontaminated if necessary. Provide the methodology and proposed instrumentation for screening of samples. Also provide the criteria for determining if decontamination is necessary.*

LANL Response: Please refer to LANL General Comment No. 3.

b) *Discuss special labeling and shipping requirements for radiological samples.*

LANL Response: Please refer to LANL General Comment No. 3.

Comment Nos. 89 - 102, Attachment F.4 – Closure Plan for the Vitrification Unit

89. *Attachment F.4.1.1, Closure Performance Standard (40 C.F.R. 264.11)*

Delete "and post-closure" from the performance standard third bullet.

LANL Response: Please refer to the response to Comment No. 44.

90. *Attachment F.4.1.2, Partial and Final Closure Activities (40 C.F.R. 270.14(b)(13), 270.14(b)(15-18), and 264.110 through 264.151)*

a) *Define the vitrification unit and use the term consistently throughout.*

LANL Response: Please refer to the response to Comment No. 22.

b) *Discuss the structures within the vitrification unit that may be left in service during closure activities.*

LANL Response: The vitrification unit is connected to the TA-50-4 facility ventilation of wet vacuum systems. At closure the piping and duct work associated with this unit will be removed to the header which connects them to the facility system. Please note that the facility systems are protected from contamination by vacuum traps, which will also be removed at closure. The facility portions of the ventilation and wet vacuum systems will be left in place to be used by other LANL missions.

91. *Attachment F. 4.1.9, Survey Plat and Post-Closure Requirements*
Any criteria used to demonstrate compliance that is not permitted in this Application will require a permit modification. Revise the Application to indicate that the requirements for a permit modification pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.112(c)), will be followed in the event that an amendment to the closure plan is warranted.

LANL Response: The requirements of 20.4.1 NMAC, Subpart V, 264.112(c) are addressed in Section F.4.1.4.

92. *Attachment F.4.2, Closure Procedures*

The Application states that, if necessary, the closure plan will be modified and that the modified closure plan will be submitted to NMED for review and approval. Pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.112(c)), a written notification of, or request for, a permit modification to authorize a change in operating plans, facility design or the approved closure plan must be submitted to NMED. In addition, the requirements for a permit modification, also outlined in 40 C.F .R. § 264.112(c), must be met. Revise the Application to discuss the written notification requirement.

LANL Response: Please refer to the response to Comment No. 91.

93. *Attachment F.4.2.1, Estimate of Maximum Waste in Storage (40 C.F.R § 264.112(b)(3))*

The Application must provide an estimate of the maximum inventory for each type of waste and identify the components of the vitrification unit where that waste is contained Revise the Application to include for each component of the vitrification unit, the maximum quantity of waste, waste type, and maximum capacity.

LANL Response: Please refer the response to General Comment No. 2.

94. *Attachment F .4.2.3, Removal of waste (40 C.F .R. §§ 264.112(b)(3-4))*

a) *The Application must address the requirements in 20.4.1.500 NMAC (incorporating 40 C.F.R § 264.112(b)(4)), which requires the submittal of a detailed plan for waste removal. Revise the Application to include a detailed discussion of how waste will be removed from each of the components of the vitrification unit.*

LANL Response: Solidified waste from the vitrification unit will be removed and transported to a permitted CSU prior to disposal at a permitted facility as described in Section F.3.2.3. LANL intends to develop a unit-specific closure/sampling plan for the vitrification unit at the time of its closure that is consistent with the operating record. This approach was discussed with Carl Will of the HWB on April 23 and June 7, 2002, regarding the closure of the TA-54 CSUs. LANL would like to establish the same approach for the TA-55 storage tank system as described below.

LANL intends to develop a unit-specific closure/sampling plan. This plan will utilize the operating record of the unit at the time of its closure to determine the hazardous constituents that were actually stored in the unit

and to identify the nature and extent of spills (if any) that may have occurred. The use of the operating record will narrow the range of hazardous constituents to be sampled for and be more representative of the potential contamination at the unit. A list of potential hazardous constituents for the vitrification unit is provided in Table F.4-2 and represents the breadth of EPA Hazardous Waste Numbers capable of being treated in the unit as identified in the "Los Alamos National Laboratory General Part A Permit Application," (LANL, 1998b).

In addition, this unit-specific closure/sampling plan will utilize the operating record of the unit to determine:

- The waste types that will be removed prior to and during closure.
- The final disposal destination for the waste in the unit and for any wastes generated as a result of the decontamination and disposal operations.
- The most recent procedures, technologies, and innovations to provide clean closure of the unit and protect human health and the environment.

b) *The Application must also address how removed waste will be handled. Pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R § 264.112(b)(3)), the types(s) of off-site hazardous waste management facilities to be used must be identified. Revise the Application to discuss the management and disposal of removed waste If waste will be shipped to an off-site location, describe the types of waste that will be shipped to each specific off-site facility.*

LANL Response: Please refer to the response to Comment No. 94a.

95. *Attachment F.4.2.4, Closure Procedures and Decontamination*

As outlined in 20.4.1.500 NMAC (incorporating 40 C.F.R. §§ 264.112(b)(3) and (4)), a detailed description for the closure of each hazardous waste management unit must include the steps needed to remove or decontaminate all hazardous waste residues and contaminated containment system components, equipment, structures, and soils during partial and final closure, including, but not limited to, procedures for cleaning equipment and removing contaminated soils, methods for sampling and testing surrounding soils, and criteria for determining the extent of decontamination required to satisfy the closure performance standard. Subsections F.4.2.4.1 through F.4.2.4.3 do not provide information to fulfill the requirements.

LANL Response: Attachment F.4 of the Permit Application meets the closure criteria set forth in the regulations with the following sections:

- Section F.4.2.4 - general decontamination information applicable to the vitrification unit including PPE, pre-closure activities, and inspection criteria.

- Section F.4.2.4.1 - specific decontamination information for the vitrification unit and glovebox.

- Section F.4.2.4.2 - specific decontamination information for the ancillary equipment associated with the unit.

- Section F.4.2.4.3 – specific decontamination information for the decontamination of the surface areas adjacent to the unit which includes the secondary containment.

- Section F.4.2.5 - decontamination of the equipment used to conduct the closure.

- Section F.4.2.6 - verification method to ensure adequate decontamination.

- Section F.4.3 – sampling and analytical procedures including both soils and liquid.

96. *Attachment F.4.2.4.1, Vitrification Unit and Glove Box*

a) *The Application states that the vitrification unit equipment and glove box will be either decontaminated, decommissioned, or dismantled depending on anticipated disposition or use after closure. Clarify whether this statement means that certain pieces of equipment may be decontaminated for future use.*

LANL Response: Please refer to the response to comment Nos. 90b.

b) *Pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.112(b)(4)), a detailed description of all the steps needed to remove all hazardous waste residues and contaminated containment system components, equipment, and structures must be provided. The Application does not delineate how equipment or pieces of the vitrification unit will be disassembled, broken down into containerizable pieces, and managed. Revise the Application to include a detailed discussion of all the steps for removing all hazardous waste residue and contaminated equipment components of the vitrification unit.*

LANL Response: The vitrification unit and/or ancillary equipment to be closed will be removed and cut up into pieces that can be packaged into containers. Details regarding exactly how this will be provided in the unit-specific closure plan at the time of closure as discussed in the response to Comment No. 94a.

c) *Revise the Application to include a reference to the regulations that will be applicable for managing the containerized components and removed waste.*

LANL Response: Please refer to the response to Comment No. 94a.

d) *The Application states that sampling and analysis will be used to demonstrate that hazardous constituents are not present above regulatory limits after closure.*

However, the Application does not address radiological decontamination or acceptable levels of radiological contamination for closure. Revise the Applicati9n to include a discussion of radiological decontamination verification.

LANL Response: Please refer to LANL General Comment No. 3.

e) *The Application must provide a listing of expected contaminants (parameters) that may be present in the vitrification unit equipment and glove box. Revise the Application to include a listing of potential contaminants in the vitrification unit equipment and glove box.*

LANL Response: Please refer to the response to Comment No. 94a.

f) *The practice of testing wash water for determination of decontamination can result in significant dilution of constituents. This method also does not allow for the detection of potential hot spots. Revise the Application to discuss the potential uncertainties associated with this method of decontamination verification and to-address the investigation methods for detecting hot spots and the methods for verification of decontamination.*

LANL Response: Please refer to the response to Comment Nos. 50f and 55d.

g) *Decontamination verification for radionuclides must include swipe analyses of surfaces, structures, or other equipment that are to be left on site, in accordance with NRC Regulatory Guide 1.86, to verify that radioactive contamination has been adequately removed and that there are no remaining hot spots of unacceptable levels. Revise the Application to include the use of swipe sampling methods and to discuss how many swipes will be taken, the amount' of coverage of the surface requiring swipe sampling, and the method of analysis.*

LANL Response: Please refer to LANL General Comment No. 3.

h) *In addition, surveying, using appropriate radiation instruments, must be conducted in areas where radiological contamination may have been present. If the radiological contaminants exist as fixed contamination, analysis of the wash down water will not indicate the presence of potential fixed radiological contamination. Revise the Application to provide for surveying equipment and adjacent areas where radiological contamination is a suspected contaminant to verify that no fixed contamination above acceptable levels remains and that there are no unacceptable hot spots.*

LANL Response: Please refer to LANL General Comment No. 3.

i) *Decontamination verification for hazardous waste residues must be verified using swipe analysis, similar to that as outlined in the Comment g) above. Revise the Application to include swipe sampling and analysis for hazardous waste residues. The discussion should include how many swipes will be taken, percent surface coverage, and the method of analysis.*

LANL Response: Please refer to the response to Comment No. 50f.

j) *The Application states that the wash cycles will continue until equipment has been cleaned to established levels. Provide the methodology for determining the prescribed established levels and provide these levels. Include contaminant-specific levels where applicable.*

LANL Response: Please refer to the response to Comment No. 94a.

97. *Section F.4.2.4.2, Vitrification Unit Ancillary Equipment*

a) *The Application states that vitrification unit ancillary equipment will be either decontaminated, decommissioned, or dismantled depending on anticipated disposition or use after closure. Clarify whether this statement means that certain pieces of ancillary equipment may be decontaminated for future use.*

LANL Response: Please refer to the response to Comment No. 90b.

b) *Pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R § 264.112(b)(4)), a detailed description of all the steps needed to remove all hazardous waste residues and contaminated containment system components, equipment, and structures must be provided. The Application does not delineate how vitrification unit ancillary equipment .will be disassembled, broken down into containerizable pieces, and managed. Revise the Application to include a detailed discussion of all the steps for removing all hazardous waste residues and contaminated ancillary equipment components of the vitrification unit.*

LANL Response: Please refer to the response to Comment No. 94a.

c) *Revise the Application to include a reference to the regulations that will be applicable for managing the containerized ancillary equipment components.*

LANL Response: Please refer to the response to Comment No. 94a.

d) *The Application states that sampling and analysis will be used to demonstrate that hazardous constituents are not present above regulatory limits after closure. However, the Application does not address radiological decontamination or acceptable levels of radiological contamination for closure. Revise the Application to include a discussion of radiological decontamination verification.*

LANL Response: Please refer to LANL General Comment No. 3.

e) *The Application must provide a listing of expected contaminants (parameters) that may be present in the vitrification unit. Revise the Application to include a listing of potential contaminants in the vitrification unit.*

LANL Response: Please refer to the response to Comment No. 94a.

f) *The practice of testing wash water for determination of decontamination can result in significant dilution of constituents. This method also does not allow for*

the detection of potential hot spots. Revise the Application to discuss the potential uncertainties associated with this method of decontamination verification and to address the investigation methods for detecting hot spots and the methods for verification of decontamination.

LANL Response: Please refer to the response to Comment Nos. 50f and 55d.

g) *Decontamination verification for radionuclides must include swipe analyses of surfaces, structures, or other equipment that are to be left on site, in accordance with NRC Regulatory Guide 1.86, to verify that radioactive contamination has been adequately removed and that there are no remaining hot spots of unacceptable levels. Revise the Application to discuss how many swipes will be taken, the amount of coverage of the surface requiring swipe sampling, and the method of analysis.*

LANL Response: Please refer to LANL General Comment No. 3.

h) *In addition, surveying, using appropriate radiation instruments, must be conducted in areas where radiological contamination may have been present. If the radiological contaminants exist as fixed contamination, analysis of the wash down water will not indicate the, present of fixed radiological contamination. Revise the Application to provide for surveying equipment and adjacent areas where radiological contamination is a suspected contaminant to verify that no fixed contamination above acceptable levels remains and that there are no unacceptable hot spots.*

LANL Response: Please refer to LANL General Comment No. 3.

i) *Decontamination verification for hazardous waste residues must be verified using swipe analysis similar to that as outlined in the Comment g) above. Revise the Application to include swipe sampling and analysis for hazardous waste residues. The discussion should include how many swipes will be taken, percent surface coverage. and the method of analysis.*

LANL Response: Please refer to the response to Comment No. 50f.

j) *The Application states that the wash cycles will continue until equipment has been cleaned to established levels. Provide the methodology for determining the prescribed established levels and provide those levels. Include contaminant-specific levels where applicable.*

LANL Response: Please refer to the response to Comment No. 94a.

98. *Attachment F .4.2.4.3, Areas Adjacent to the Vitrification Unit Glove Box*

a) *The Application states that random swipes are to be taken from the area adjacent to the vitrification unit glove box. Revise the Application to include how many swipes will be taken, what percentages of area will be swiped, and the size of the swipe samples. Also indicate that swipes will be taken for both hazardous and radiological constituents.*

LANL Response: Please refer to the response to Comment No. 94a and LANL General Comment No. 3.

b) *Clarify whether swipes will be taken of secondary containment systems other than the floor.*

LANL Response: Swipe samples will be taken from the surfaces in Room 434A adjacent to the vitrification unit to determine the presence of hazardous constituents, if any. Please refer to the response to Comment No. 50f.

c) *Revise the Application to address investigation of any cracks or fractures in the floors and walls prior to decontamination activities.*

LANL Response: Please refer to the response to Comment No. 13c.

d) *The Application states that the wash cycles will continue until equipment has been cleaned to established levels. Provide the methodology for determining the prescribed established levels and provide these levels. Include contaminant-specific levels where applicable.*

LANL Response: Please refer to the response to Comment No. 94a.

99. *Attachment F.4.2.5, Decontamination Equipment (40 C.F.R. §§ 264.112(b)(3-4))*

The Application discusses cleaning of equipment, but the Application does not discuss how the equipment used during decontamination procedures of other equipment will be verified. Revise the Application to include procedures for the verification of decontamination of equipment and how levels of residual contamination will be determined.

LANL Response: Section F.4.2.6 provides detailed information for decontamination verification. This is inclusive of the decontamination equipment, if applicable.

100. *Attachment F.4.2.6, Decontamination Verification (40 C.F.R. § 264.112(b)(5))*

a) *The Application states that sampling and analysis will be used to demonstrate that hazardous constituents are not present above regulatory limits after closure. However, the Application does not address radiological decontamination or acceptable levels of radiological contamination for closure. Revise the Application to include a discussion of radiological decontamination levels and verification. Also provide the regulatory limits for the hazardous constituents.*

LANL Response: Please refer to LANL General Comment No. 3.

b) *The Application must provide a listing of expected contaminants (parameters) that may be present within the vitrification unit. Revise the Application to include a listing of potential contaminants within the vitrification unit.*

LANL Response: Please refer to the response to Comment No. 94a.

c) *The Application states that the significance of increased constituent concentrations in contaminated wash down waters is to be determined using statistical methods defined in SW-846. The specific statistical methods that are to be applied should be discussed and provided in the Application. Revise the Application to include the specific statistical methods that will be used to determine if wash down waters show a significant increase in analytical parameters when compared to clean wash water solutions. Also, define numerically a significant increase.*

LANL Response: Please refer to the response to Comment No. 55c.

d) *The practice of testing wash water for determination of decontamination can result in significant dilution of constituents. This method also does not allow for the detection of potential hot spots. Revise the Application to discuss the potential uncertainties associated with this method of decontamination verification and to address the investigation methods for detecting hot spots and the methods for verification of decontamination.*

LANL Response: Please refer to the response to Comment Nos. 50f and 55d.

e) *Decontamination verification for radionuclides must also include swipe analyses of surfaces, structures, or other equipment that are left on site, in accordance with NRC Regulatory Guide 1.86, to verify that radioactive contamination has been adequately removed and that there are no remaining hot spots of unacceptable level. Revise the Application to include the use of swipe sampling methods and discuss how many swipes will be taken, the amount of coverage of the surface requiring swipe sampling, and the method of analysis.*

LANL Response: Please refer to LANL General Comment No. 3.

f) *In addition, surveying, using appropriate radiation instruments, must be conducted in areas where radiological contamination may have been present; If*

the radiological contaminants exist as fixed contamination, analysis of the wash down water will not indicate the presence of potential fixed radiological contamination. Revise the Application to provide for surveying equipment and adjacent areas where radiological contamination is a suspected contaminant to verify that no fixed contamination above acceptable levels remains and that there are no unacceptable hot spots.

LANL Response: Please refer to LANL General Comment No. 3.

g) *Decontamination verification of the vitrification unit for hazardous waste residues must also be verified using swipe analysis, similar to that as outlined in the Comment e) above. Revise the Application to include swipe sampling of surfaces and analysis for hazardous waste residues. The discussion must include how many swipes will be taken, percent surface coverage, and the method of analysis.*

LANL Response: Please refer to the response to Comment No. 50f.

h) *The Application states that an alternative demonstration of decontamination may be proposed and justified at the time of closure. Using an alternative method from that outlined in the Application for demonstrating decontamination would constitute a modification of the closure plan. The modified closure plan, outlining the alternative demonstration of decontamination must be submitted to NMED for review and approval. Pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R § 264.112(c)), a written notification of or request for a permit modification to authorize a change in operating plans, facility design, or the approved closure plan must be submitted to NMED. In addition, the requirements for a permit modification, also outlined in 40 C.F.R § 264.112(c), must be met. Revise the Application to discuss the written notification requirement.*

LANL Response: Please refer to the response to Comment No. 91.

101. *Attachrnent F.4.3.2, Liquid Sampling (40 C.F.R. & 264.112(b)(4))*

The Application states that samples of used wash water are to be collected and analyzed to determine when a structure or piece of equipment is deemed sufficiently decontaminated. However, this method appears to lead to uncertainty, as contamination can become diluted as wash water volume increases. Include a discussion regarding the frequency of analysis of the used wash water and provide the minimum and maximum surface area that will be cleaned using one volume of wash water.

LANL Response: Please refer to the response to Comment No. 50f.

102. *Attachment F.4.3.4, Sampling Handling and Documentation (40 C.F.R. § 264.112(b)(4))*

a) *The Application states that sample container surfaces will be screened for radiological contamination and decontaminated if necessary. Provide the methodology and proposed instrumentation for screening of samples. Also provide the criteria for determining if decontamination is necessary.*

LANL Response: Please refer to LANL General Comment No. 3.

b) Discuss special labeling and shipping requirements for radiological samples.

LANL Response: Please refer to LANL General Comment No. 3.

Comment Nos. 103 - 107, Attachment G – Container Storage

103. Attachment G, Container Storage (40 C.F.R. § 270.15 and 264 Subpart I)

The Application does not provide engineering drawings or figures for each CSU showing container layout, including waste placement by waste container type and locations of aisles. In addition, drawings must demonstrate locations of containment systems and flow of liquids to collection areas. Revise the Application to include these drawings for each CSU.

LANL Response: Engineering Drawings are provided as Figures G-1, G-2, G-3, and G-4 in attachment G of the Application. Additional Figures are provided in Attachment D of this NOD Response and provide one potential container layout for 55-gallon and SWB's at the CSUs for the purposes of determining capacity.

104. Attachment G.1, Container Storage at TA-55 (40 C.F.R. 270.14(h)(1 and 264.172)

It is not clear that all types of waste containers to be used for storage of hazardous waste have been identified. The Application must identify all waste containers to be permitted for storage at all CSU's. Revise the Application to remove the term "but are not limited to" and indicate all the types of waste containers that will be used at all CSU's.

LANL Response: Please refer to the response to Comment Nos. 3a and b.

105. Attachment G.2, Containment Systems (40 C.F.R. 270.15(a)(1-5), 270 and 264.175)

a) For containers bearing liquid wastes, the Application does not provide the dimensions for containment systems and the number of containers, by container type, the containment systems are designed for. In addition, the calculations of the capacity of the containment system relative to waste containers must be provided. Revise the Application accordingly.

LANL Response: Please refer to the response to Comment Nos. 3a and 9c.

b) For containers that will not contain liquid wastes, the Application must provide the test procedures and results or other documentation for demonstrating that containers do not contain free liquids. The Application must also identify each specific type of waste that will be permitted for storage at each of the CSU's storage areas. Revise the Application accordingly.

LANL Response: Please refer to the response to Comment No. 9a.

c) The Application implies that since wastes to be stored at TA-55-4, B05, B45 and TA-55-185 will not contain liquids, secondary containment requirements are not

required. While the secondary containment requirements outlined in 20.4.1.900 NMAC (incorporating 40 C.F.R § 270.15(a)) are not applicable, the requirements of 20.4.1.900 NMAC (incorporating 40 C.F.R § 270.15(b)), must be met. This includes demonstrating how the CSUs are designed to drain and remove liquids and how containers will be kept from contact with liquids. Revise the Application to address these issues.

LANL Response: LANL will revise Attachment G to include the following:

> "The CSUs in TA-55-4 (B05 and B45), and TA-55-185 all reside in a building so run-on and run-off from storm events are not applicable. In the event of a water leak from facility systems the TA-55-4 basement has sumps to contain the liquid. On working days a daily inspection of each CSUs is usually conducted. Some drummed waste are placed on pallets or stored in self-containment structures. Standard waste boxes are placed in pallets and our large waste boxes have raised legs. All waste items placed in TA-55-185 will either be placed on pallets or have raised legs."

d) The Application implies that wastes to be stored at TA-55-4, B05, B45, and TA-55-185 include but are not limited to cemented, mixed heterogeneous, and vitrified wastes. Revise the Application to specify all wastes to be permitted for storage at TA-55-4, B05, B45, and TA-55-185.

LANL Response: LANL will revise the application to indicate that the wastes allowed to be stored in TA-55 CSUs are identified in the General Part A.

106. Attachment G.3, Special Requirements for Ignitable, Reactive and Incompatible Wastes (40 C.F.R. §& 270.14(b)(9). 270.15(c-d). 264.17.264.176 and 264.177)

a) The Application must include engineering drawings or other data that will demonstrate the containers of ignitable or reactive waste are located 50 feet from the TA boundary. Revise the Application to include this figure(s).

LANL Response: Please refer to Figure A-5 of the application.

b) Provide specific policies that are in place to ensure that precautions are taken to include prevention of ignition, spontaneous ignition, and radiant heat.

LANL Response: Please refer to the response to Comment No. 10b.

c) *The requirements for incompatible waste outlined in 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.177(c)) are not addressed. A storage container with incompatible hazardous waste must be separated from other materials or be protected from other materials by means of a berm, dike, wall, or other device. Revise the Application to clarify that incompatible wastes will be separated and , segregated from other wastes and materials by means of a berm, dike, wall, or other specific means.*

LANL Response: Please refer to the response to Comment No. 10b.

d) *The Application must describe all processes that will be used to prevent reactions that may generate extreme heat, pressure, fire, explosions, or violent reactions; produce uncontrolled flammable fumes, dust, or gases in sufficient quantities to threaten human health or the environment; produce uncontrolled flammable fumes, dust, or gases in sufficient quantities to pose a risk of fire or explosions; damage the structural integrity of the facility; or be a threat to human health or the environment. Revise the Application to include a discussion of these preventative processes.*

LANL Response: Please refer to the response to Comment No. 10b.

e) *Pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.17(b)(4)), the Application must ensure the management of incompatible wastes within a CSU where secondary containment systems will be used and show that the presence of incompatible wastes will not cause the secondary containment system to leak, corrode, or fail. Revise the Application to discuss safeguards that are in place to ensure the compatibility of incompatible wastes with the secondary containment systems.*

LANL Response: Please refer to the response to Comment No. 10b.

107. *Attachment G.4, Air Emission Standards for Containers*

The Application refers to containers meeting the U.S. Department of Transponation (DOT) specifications of 49 C.F.R Part 178. Revise the Application to include a description of the specific specifications in 49 C.F.R Part 178 and the criteria for determining compliance with these specifications for each type of container to be used for storage at each CSU.

LANL Response: Please refer to the response to Comment No. 3a and Attachment B of this NOD Response.

Comment Nos. 108 - 110, Attachment H – Storage Tank System

108. *Attachment H.1, Design, Construction, Materials and Operation (40 C.F.R. 270.16(b-d) and 264.191(b)(1 and 3))*

a) *Revise the Application to provide the criteria that will be used to determine whether wastes will be treated in the cementation unit or the vitrification unit.*

LANL Response: Wastes will be treated in the cementation unit or vitrification unit based upon the radionuclide and chemical content. Please refer to Attachment I, Section I.2 and Attachment J, Section J.2 for additional discussion regarding treatment effectiveness for each unit.

b) *Revise the Application to provide the radionuclide discard limit that will be used to determine if wastes will be transferred to the cementation unit pencil tank or, the pencil tanks.*

LANL Response: Please refer to LANL General Comment No. 3.

c) *The Application states that if sample analysis indicates that concentrations are above the discard limit the solutions will be re-circulated. It is not clear from the Application how they will be re-circulated and what the re-circulation process does to lower concentrations, for example by dilution into other solutions. Provide a discussion of the re-circulation process and how this process will affect radionuclide concentrations in solutions.*

LANL Response: If the evaporator bottom solutions are above the plutonium discard limit they are sent back to the TA-55 recovery process where the plutonium is recovered for programmatic use. Please refer to LANL General Comment No. 3.

109. *Attachment H.3, Secondary Containment (40 C.F.R. §§ 270.16(g) and 264.193)*

a) *Information must be included in the Application that demonstrates, using calculations, that the external liner system is designed to contain 100 percent of the capacity of the largest tank within its boundary. Revise the Application to include these calculations.*

LANL Response: Please refer to the response to Comment No. 13b.

b) *The Application is not clear whether the floor, which will act as the secondary containment system, is sloped to allow collection of liquids. Discuss this issue.*

LANL Response: The floor is not sloped to allow for the collection of liquids. Please refer to the response to Comment No. 13b.

c) *The reinforced concrete floor that will serve as the containment system must be demonstrated to be free of cracks or gaps. Provide this information.*

LANL Response: Please refer to the response to Comment No. 13c.

d) *Revise the Application to include a statement that the containment system is designed to completely surround the storage tank system.*

LANL Response: Please refer to the response to Comment No. 13d.

e) *The Application states that any accumulated liquids will be removed as soon as possible. Revise the Application to include the requirements of 20.4.1.500 NMAC (incorporating 40 C.F.R § 264.193(c)(4)) that all hazardous waste and accumulated liquids must be removed from the secondary containment system within 24 hours, unless Permittees demonstrate. to NMED that removal of the hazardous waste or accumulated liquids cannot be .accomplished in 24 hours, in which case the hazardous waste and liquids must be removed in as timely a manner as possible to prevent harm to human health and the environment.*

LANL Response: Please refer to the response to Comment No. 16b.

110. *Attachment H.4, Special Requirements for Ignitable, Reactive and Incompatible Wastes (40 C.F.R. 66 270.16(g-h). 264.17.264.198 and 264.199)*

In the event that ignitable or reactive waste is stored in any part of the storage tank system, the following must be either provided or demonstrated. Revise the Application to address these issues:

a) *Provide the operating pressure and temperature specifications for the tanks;*
b) *Demonstrate that waste is treated, rendered, or mixed before or immediately after placement in the tank systems so that it no longer is ignitable or reactive;*
c) *Demonstrate that the wastes are not placed in the same tank system unless there is compliance with 20.4.1.500 NMAC (incorporating 40 C.F.R § 264.17(b));*
d) *Demonstrate that the waste is stored or treated in a manner such that it protects against ignition or reaction;*
e) *Demonstrate that the requirements are met for the maintenance of protective distances between waste management areas and any public ways, streets, alleys, or adjoining property lines;*
f) *Provide procedures assuring that hazardous waste will not be placed in a tank that previously held an incompatible waste or material unless it has been decontaminated or unless precautions have been taken per 20.4.1.500 NMAC (incorporating 40 C.F.R § 264.17(b)) to prevent reactions; and*
g) *Indicate whether the tank system is used solely for emergencies.*

LANL Response: Please refer to the response to Comment No. 14.

Comment Nos. 111 - 112, Attachment I – Cementation Unit

111. *Attachment I.3.3, Protection of the Atmosphere (40 C.F.R. §§ 270.23(b-c) and 264.601(a-c))*

The cementation unit has a system of negative pressure zones and high-efficiency particulate filters (HEPA) that are designed to work together to prevent releases of contaminants to the atmosphere. Attachment K.3.4 of the Application states that backup generators are available at TA-55 in the event of a power outage. However, it appears that there is no immediately available backup system for the cementation unit. The Application must address how releases to the atmosphere will be prevented in the event of a power outage causing a temporary shutdown of the negative pressure zones and HEPA filter system. In addition, the Application must address how long the system will

be shut down before the backup generators can be activated to operate the cementation unit pressure regulation system. Revise the Application to address these issues.

LANL Response: LANL will revise the application to include the following:

> "The cementation unit is contained inside a glovebox that is connected to the TA-55-4 facility ventilation system. The HEPA filters on the glovebox are on the air intake side of the ventilation and are designed to prevent escape of contamination from the glovebox in the event of a power failure. TA-55-4 is equipped with a backup generator that re-establishes power to all vital systems which provides exhausts to the glovebox. The unit is a batch waste treatment system, if a power failure occurs all operations cease inside the glovebox until power is restored."

112. *Attachment I.4, Special Requirements for Ignitable, Reactive, and Incompatible Wastes (40 C.F.R §§ 270.14(b)(9), 264.17, 264.198 and 264.199)*

In the event that ignitable or reactive waste is stored in any part of the cementation unit, the following must be either provided or demonstrated. Revise the Application to address these issues.

a) *Provide the operating pressure and temperature specifications for the system and associated tanks;*

b) *Demonstrate that waste is treated, rendered, or mixed before or immediately after placement in the system so that it no longer is ignitable or reactive;*

c) *Demonstrate that the wastes are not placed in the same system unless there is compliance with 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.17(b));*

d) *Demonstrate that the waste is stored or treated in a manner such that it protects against ignition or reaction;*

e) *Demonstrate that the requirements are met for the maintenance of protective distances between waste management areas and any public ways, streets, alleys, or adjoining property lines;*

f) *Provide procedures assuring that hazardous waste will not be placed in a system that previously held an incompatible waste or material unless it has been decontaminated or unless precautions have been taken per 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.17(b)) to prevent reactions; and*

g) *Indicate whether the system is used solely for emergencies.*

LANL Response: Please refer to the response to Comment No. 19a.

Comment Nos. 113 - 117, Attachment J – Vitrification Unit

113. *Attachment J.1.4, Off-Gas System (40 C.F.R. § 270.23(a))*

a) *This Section describes a caustic scrubber column for cleaning the off-gas. The rationale for the choice of a caustic scrubber is not provided. Identify and provide measured or estimated concentrations of all contaminants in the off-gas that are to be controlled by the caustic scrubber column. Also provide the scrubber's design removal efficiency and the outlet concentrations for each contaminant.*

LANL Response: Please refer to LANL General Comment No. 5.

b) *The description of the scrubber is incomplete in that it does not identify the type or size of the packing nor the concentration of caustic (or pH) of the scrubber solution. Provide this information.*

LANL Response: Please refer to LANL General Comment No. 5.

c) *The second paragraph indicates that the off-gas will be cooled by a quencher before entering the scrubber. This quencher is not described and the temperature to which the gas will be cooled is not given. Revise the Application to provide a description of the quencher and indicate the design outlet temperature.*

LANL Response: Please refer to LANL General Comment No. 5.

d) *The scrubber is stated to exhaust to the building wet/dry vacuum system. This system is not described. Revise the Application to provide a brief description of this system, oriented towards its ability to control any contaminants remaining in the scrubber exhaust.*

LANL Response: Please refer to LANL General Comment No. 5.

e) *Once the off-gas system has been constructed, a performance evaluation must be completed to determine the effectiveness of the system. The evaluation must include a determination of the actual control efficiency of the scrubber, emission rates, and whether any additional controls to supplement the efficiency of the scrubber are required.*

LANL Response: Please refer to LANL General Comment No. 5.

f) *As it is unlikely that a 100 percent control efficiency for mercury can be obtained, measurements of the actual control efficiency must be made. Also, the amount of mercury that is actually vaporized must be determined. Include these in the performance evaluation.*

LANL Response: Please refer to LANL General Comment No. 5.

g) *In addition. provide a detailed plan for how the performance evaluation will be conducted, including how and where within the system influent and effluent samples will be taken. how these samples will be evaluated and against what performance criteria, and the specific constituents that will be monitored.*

LANL Response: Please refer to LANL General Comment No. 5.

h) *During start up and shut down of the system, waste must not be fed into the vitrification unit unless it is demonstrated that the off-gas system is operating within the parameters specified in the Application. Revise the Application to discuss start up and shut down procedures.*

LANL Response: Please refer to LANL General Comment No. 5.

i) *Discuss monitoring that will be conducted to ensure continued operational effectiveness of the off-gas system.*

LANL Response: Please refer to LANL General Comment No. 5.

114. *Attachment J.1.5, Glove Box (40 C.F.R. & 270.23(a))*

The Application states that a small cooling system for the glove box will be used if necessary to maintain temperatures within specification. This cooling system is not addressed in any of the supporting engineering information provided with the Application. Revise the Application to include a description and design of the cooling system, operating conditions, and the location of the cooling system in the glove box.

LANL Response: Please refer to LANL General Comment No. 5.

115. *Attachment J.2, Vitrification Unit Demonstration of Treatment Effectiveness C.F.R. § 270.23(d)*

The Application States that the Permittees will implement appropriate waste management options for mercury in the scrubber solution. Revise the Application to provide these waste management options.

LANL Response: Please refer to LANL General Comment No. 5.

116. *Attachment J.3.3, Protection of the Atmosphere (40 C.F.R §§ 270.23(b-c) and 264.601(c))*

a) *The vitrification unit has a system of negative pressure zones and HEP A filters that are designed to work together to prevent releases of contaminants to the atmosphere. Attachment K.3.4 of the Application states that backup generators are available at TA-55 in the event of a power outage. However, it appears that there is no immediately available backup system for the vitrification unit to ensure there will be no downtime in the operation of the off-gas system. The Application must address how releases to the atmosphere will be prevented in the event of a power outage causing a temporary shutdown of the negative pressure zones and the off-gas system. In addition, the Application must address how long the system will be shut down until the backup generators can be activated to operate the vitrification unit pressure regulation system. Revise the Application to address these issues.*

LANL Response: LANL will revise the application to include the following:

> "The negative pressure on the melter and off-gas system is provided by the facility wet vacuum system. In the event that the wet vacuum system goes down, the melter will be shut down. Gases in the system at the time of shut down will continue to exhaust through the off-gas system (which will remain operating – pumps are connected to a independent UPS) until the internal

pressure of the melter cannot overcome the pressure drop associated with the scrubber packing (approximately 5 psi). No release to the glove box or room is anticipated in the event of wet vacuum failure."

b) *This Section describes the fugitive emission prevention system. It does not appear that a fan in the off-gas system is used and that the building wet/dry vacuum system provides the suction to move the gas. Revise the Application to specify that the system will keep the off-gas system at a pressure below that of the glove box and describe how this is achieved.*

LANL Response: LANL will revise the application to include the following:

"The wet vacuum system maintains the off-gas system and the melter at a negative pressure relative to the glove box. The glove box is maintained at a negative pressure relative to the room through the Zone 1 ventilation system. These systems are independent and maintained at the desired set points through associated control systems."

c) *It appears that cascaded levels of negative pressure are being used to collect fugitive emissions. Revise the Application to include the methods that the facility glove box exhaust system will employ to control what is collected.*

LANL Response: LANL will revise the application to include the following:

"The facility-wide ventilation system is designed maintain series of progressively more negative pressure zones (i.e. air flows from the PF-4 corridors into the rooms, then into the glove boxes) and is then discharged into the Zone 1 ventilation system. Air flowing through Zone 1 passes through 3 stages of HEPA filters before being discharged through a stack to the environment. Zone 1 does not provide for the removal of chemical constituents unless they are in a particulate form."

d) *The HEPA filter on the glove box will not control NOx emissions that might get into the glove box. Discuss whether NOx will be controlled and if NOx will be vented to the atmosphere.*

LANL Response: Gases released into the glovebox will pass into the Zone 1 ventilation system. This system does not prevent the release of NO_x to the environment.

117. *Attachment J.4, Special Requirements for Ignitable, Reactive, or Incompatible Wastes (40 C.F.R. §§ 270.14(b)(9), 264.17, 264.198 and 264.199)*

While no ignitable, reactive, or incompatible wastes will be treated in the vitrification unit, the unit is located in the same room and utilizing the same secondary containment system as the storage tanks, which may be used for ignitable, reactive, or incompatible

wastes. Therefore, the Application must address the potential for contact of these wastes with the vitrification unit and associated waste streams in the event of a leak of either ignitable, reactive, or incompatible: waste from either the storage tank system, cementation unit. or vitrification unit.

LANL Response: Please refer to the response to Comment No. 19b.

Comment Nos. 118 - 121, Attachment K – Waste Management Practices

118. *Attachment K.2.4, Aisle Space Requirements (40 C.F.R. § 264.35)*

The requirements for aisle space as outlined in 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.35) state that aisle space must be maintained that will allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the facility in an emergency. It is not apparent that the proposed aisle space meets this requirement. Revise the Application to indicate that a minimum aisle space of three feet will be used, or provide adequate justification for the use of a smaller aisle space.

LANL Response: Please refer to the response to Comment No. 4a.

119. *Attachment K.3.4, Mitigating Effects of Power Outages (40 C.F.R. § 270.14(b)(8) and 264 Subpart C)*

The Application states that, in the event of a power outage, portable generators are available. This statement allows that there is no immediate backup generator system that would provide immediate power in the event of an outage. This is especially a concern for the off-gas system of the vitrification unit. Provide a discussion regarding the prevention of process upsets and system failures in the vitrification unit off-gas system in the event of a power failure.

LANL Response: The cementation unit is contained inside a glovebox that is connected to the TA-55-4 facility ventilation system. The HEPA filters on the glovebox are on the air intake side of the ventilation and are designed to prevent escape of contamination from the glovebox in the event of a power failure. TA-55-4 is equipped with a backup generator that re-establishes power to all vital systems which provides exhausts to the glovebox. The unit is a batch waste treatment system, if a power failure occurs all operations cease inside the glovebox until power is restored.

120. *Attachment K.3.6, Preventing Releases to the Atmosphere (40 C.F.R. § 270.14(b)(8) and 264 Subpart C)*

As discussed in previous comments, a performance evaluation demonstrating the effectiveness of the vitrification system's off-gas unit must be provided to demonstrate that there will be no releases of either hazardous or radiological constituents to the atmosphere. Include a reference to the vitrification off-gas system performance evaluation.

LANL Response: Please refer to LANL General Comment No. 2.

121. *Attachment K.4.1, Hazardous Waste Report (Biennial Report)*

Pursuant to 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.75), the biennial report must cover activities during the previous calendar year only. The Application indicates that more than one calendar year may be covered by the report. While some activities may overlap into more than one year, the report should focus on one calendar year. Clarify that the report will primarily address only the previous calendar year.

LANL Response: Section K.4.1 states the following:

"The report will cover facility activities during the previous calendar year…"

REFERENCES

EPA, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," (SW-846) Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington D.C..

EPA, 1985, "Verification of PCB Spill Cleanup by Sampling and Analysis," EPA-560/5-85-026, U.S. Environmental Protection Agency, Washington D.C.

HRMB, 1998, "Standard Operating Procedures Manual," Volume1, Hazardous and Radioactive Materials Bureau, Santa Fe, New Mexico, March 1998.

INEEL, 2001, "Final Design Report for DP Surety Vitrification System," Rev. 2.0, Idaho Engineering and Environmental Laboratory, Idaho Falls, Idaho.

LANL, 2002a, "Los Alamos National Laboratory Technical Area 55 Part B Permit Application, " LA-UR-02-561, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 2002b, "LANL Waste Acceptance Criteria, "PLAN-WASTEMGMT-002, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 2002c, "Packing TRU Waste Containers," NMT7-WI3-SOP-TA55-013, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 2002d, "Managing Solid Low-Level Waste at TA-55," NMT7-HCP-TA55-DP-02L, R0.3, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 2002e, "Certification and Disposal of Low-level," NMT7-SOP-TA55-DP-01L, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 2002f, "Response to Notice of Deficiency; RCRA Permit Application General Part A, April 1998, Revision 0.0; General Part B, October 1998, Revision 1.0; Los Alamos National Laboratory; May 16, 2002," Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 2002g, "Los Alamos National Laboratory Transuranic Waste Certification Plan," Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 2001, "Storage Area Inspections, " NMT7-WI1-HCP-TA-55-011, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 1999a, “Certification and Disposal of Low-Level, Oversize Waste,” NMT7-WI13-TA55-HCP--DP-2L, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 1999b, “Acceptable Knowledge Guidance,” LIG 404-00-02, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 1998a, “Los Alamos National Laboratory General Part A Permit Application, “Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 1998b, “Los Alamos National Laboratory General Part B Permit Application,” Los Alamos National Laboratory, Los Alamos, New Mexico.

OSHA, 1999, “Surface Contamination,” Occupational Safety and Health Administration.

Technical Area 55 (TA-55) RCRA Permit Application Documents Chronology	
Document Title	**Date**
Los Alamos National Laboratory, Technical Area 55 Part B Permit Application, Revision 0.0	June 1996
Los Alamos National Laboratory, Technical Area 55 Part B Permit Application, Revision 1.0	January 2002
Response to Notice of Deficiency; TA-55 Part B RCRA Permit Application, Revision 1.0, May 16, 2002	August 2002

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
General Comment 1	Throughout Application	LANL has revised the application to clarify details and correct errors/omissions in the document. Supplemental information provided for the NOD Response is not included in the revised application.	
General Comment 2	Section 2, Attachment G, Attachment H, Attachment I, & Attachment J	Waste management units are identified in these sections. Seven Container Storage Units (CSUs), one storage tank system, one cementation unit, and one vitrification unit. LANL has revised the application to clarify the number and capacity of all the waste management units at TA-55.	Attachment J was removed from the application. The vitrification unit will be addressed in a separate application.
General Comment 3	None	The application has been revised to include the procedures, requirements, and guidelines for the hazardous components of the waste. Revision, however, does not include details regarding the handling and/or radionuclide content of the waste streams stored and treated at the TA-55 units.	
General Comment 4	None	Please refer to General Comment 3	
General Comment 5	Section H.3 of Attachment H	Section's last paragraph addresses the requirements of 20.4.1 NMAC, Subpart B, 264.196 discussing removal from service and repair issues for tank system.	
General Comment 6	Section 4.1.2 and Attachments F.1, F.2, F.3, & F.4	All active hazardous waste units are described in Section 4.1.2 and it is stated that they will be closed in accordance with a RCRA closure plans, which are located in Attachments F.1, F.2, F.3, & F.4.	Section 4 and Supplement 4-1 describe hazardous waste management units. Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 1	Table 1-1 and Attachments F.1, F.2, F.3, & F.4	Post-closure considerations as well as "Closure cost estimate," "Liability insurance," and "Proof of financial coverage" are addressed in Attachments F.1, F.2, F.3, & F.4 as indicated in Table 1-1.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 2	Section 2.1	Please refer to General Comment 2	
Specific Comment 3a	Section 2.1.2	Specific information regarding the type of waste placed in each type of container beyond the hazardous and/or mixed waste classification has not been provided in the revised application. LANL has removed "may be, "may have," and "not limited to" from the application.	Section 2.1.1

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
	None	Additional information regarding typical storage containers utilized at TA-55 is also provided as Tables C-1 and C-2, in Attachment C of the NOD Response.	
Specific Comment 3b	Section 2.1.2	"Various small containers" to be used for waste storage at the TA-55 CSUs include 0.25, 0.5, 0.75, 1, 2, and 4, 6 Liter containers. Please refer to the response to Comment No. 3a for additional discussion.	Section 2.1.1- Quart container sizes were also added to container type listing.
Specific Comment 3c	None	Please refer to Specific Comment 3a	
Specific Comment 4a	None	Aisle space justification is presented in NOD response.	
Specific Comment 4b	None	Attachment D of the NOD Response included a container layout figure for each of the TA-55 CSUs. Those figures represent one possible storage configuration and provide the dimensions and location of potential aisle space at each CSU. The figures are provided for informational purposes only and the actual configuration and number of containers may vary up to the maximum capacity indicated on the figure. Please refer to the response to Comment No. 3a.	
Specific Comment 4c	None	The "Los Alamos National Laboratory General Part A Permit Application, Revision 3.0" submitted in August 2002 should reflect all of the CSUs seeking to be permitted at TA-55.	
Specific Comment 4d	Section 2.1.3	Section has been revised to clarify that containers will be stacked according to procedure.	Section 2.1.2
Specific Comment 5a	Section 2.1.5	Section has been revised to discuss that materials used for overpacks will be compatible with waste, packaging material, and the container to be overpacked.	Section 2.1.4 and Section 2.1.5
Specific Comment 5b	Section 2.1.7	Section has been revised to state how containers are shown to be free of surface contamination by incorporating the language outlined in the NOD response.	Section 2.1.8
Specific Comment 5c	Section 2.1.5	Section has been revised to discuss procurement procedures for containers by incorporating the language outlined in the NOD response.	Section 2.1.4
Specific Comment 6	Section 2.1.5	Discussion on compatibility of waste containers is located in NOD Response and response also refers to text added to application for Specific Comment 5c.	Section 2.1.4
Specific Comment 7a	Section 2.1.7.1	Section has been revised to include text discussing procedures followed while containers are opened.	Section 2.1.6.1- One procedure has been removed from text cited in NOD Response because it has been incorporated into another procedure listed.

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 7b	Section 2.1.7	Section has been revised to clarify that containers are closed properly.	Section 2.16
Specific Comment 8a	None	Please refer to General Comment 3	
Specific Comment 8b	None	Waste Profile form (WPF) was provided as Attachment E of the NOD response.	Further discussion of WPF can be found in the General Part B Permit Application.
Specific Comment 9a	Section 2.1.8	LANL databases and visual inspection will be used to determine the presence or absence of free liquids in waste containers. Further information on AK can be found in he General Part B Permit Application.	Section 2.1.7
Specific Comment 9b	Section G.2 of Attachment G	Section addresses the containment requirements outlined in 20.4.1 NMAC, Subpart V, 264.175(b)(1). Photographs of secondary containment are located in Attachment F of NOD Response.	
Specific Comment 9c	Section 2.1.8	Attachment G of the NOD Response provides a spreadsheet with dimensions and the capacity of the containment. Section has been revised to include table summarizing the capacity associated with the secondary containment at each CSU.	Section 2.1.7
Specific Comment 9d	Attachment H	Attachment has been revised to include the calculation spreadsheet that was included in Attachment G of the NOD Response.	Section G.2 of Attachment G
Specific Comment 9e	Section K.3.2 of Attachment K	Section states that accumulated liquids will be removed as soon as possible.	Section J.3.2 of Attachment J. Text also added to Section 2.1.7
Specific Comment 9f	Section G.2 of Attachment G	Section discusses how containers are kept from contact with potential accumulated liquids.	
Specific Comment 10a	Figure A-5 of Attachment A	Figure illustrates that all hazardous waste management units are located at least 50 feet from the LANL facility boundary.	Figure A-5 of Attachment A illustrates CSUs with respect to TA-Boundary. Figure A-1 of Attachment A illustrates TA-55 in relation to LANL facility boundary.
Specific Comment 10b	Section 2.1.10	Section revised to discuss specific policies to prevent accidental ignition or reaction of wastes within containers.	Section 2.1.9
Specific Comment 10c	Section 2.1.10	Please refer to Specific Comment 10b	Section 2.1.9
Specific Comment 10d	Section 2.1.10	Please refer to Specific Comment 10b	Section 2.1.9
Specific Comment 11	Section 2.1.11	Section has been revised to state that hazardous wastes and residues will be removed from a CSU when it is closed.	Section 2.1.10
Specific Comment 12a	Section 2, Attachment G, Attachment H, Attachment I, & Attachment J	Please refer to General Comment 2 and Table 3 in the NOD Response.	
Specific Comment 12b	Section 2.2	The section has been revised to remove the word "may" from the text.	

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 12c	None	No response required.	
Specific Comment 13a	Section 2.2.2 and Section G.2 of Attachment G	Section 2.2.2 has been revised to further discuss construction material compatibility, strength, and thickness. Section G.2 discusses spill removal and decontamination- also addressed in Appendix E of the General Part B Permit Renewal Application.	References to room 434A have been removed from the application because the vitrification unit (which will be in room 434A) will be addressed in a separate application.
Specific Comment 13b	Section 2.2.8	Section has been revised to include a table that summarizes the secondary containment provided for the storage tank system as well as spreadsheet in Attachment H of the NOD that provides the dimensions and the capacity of the containment.	Section 2.2.2
Specific Comment 13c	None	Photographs to demonstrate that the CSUs' secondary containment systems are currently free of cracks and/or gaps were provided in Attachment G of the NOD Response.	
Specific Comment 13d	Section 2.2.2	Section has been revised to include a statement that the containment system is designed to completely surround the tanks.	References to room 434A have been removed from the application because the vitrification unit (which will be in room 434A) will be addressed in a separate application.
Specific Comment 14a	Section 2.2.4	Section has been revised to state that no ignitable, reactive, or incompatible mixed waste will be stored in the storage tank system.	
Specific Comment 14b			
Specific Comment 14c			
Specific Comment 14d			
Specific Comment 14e			
Specific Comment 14f			
Specific Comment 14g			
Specific Comment 15	Section 2.2.5 and Attachment F.2	Section and Attachment have been revised to clarify what partial closure means for the storage tank system.	Section 2.2.5 and Section F.2.1.2 of Attachment F.2- language has been changed from the text cited in the NOD response to have more clarity about the definition of partial closure and final closure.
	Section 2.2.5	Section has been revised to clarify that hazardous wastes and residues will be removed or decontaminated during closure.	
Specific Comment 16a	Section 2.2.8	Please refer to Specific Comment 13b	Section 2.2.2
Specific Comment 16b	Section 2.2.6	Section has been revised to state that all free liquids will be removed within 24 hours or as accessibility permits.	
Specific Comment 17	None	No response required.	

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 18a	Section 2.3.2 and 2.4.2	Sections have been revised to include information about secondary containment presented in the NOD Response.	Section 2.3.2 describes the secondary containment of the cementation unit. Section 2.4.2 was removed because vitrification unit will be addressed in a separate application.
Specific Comment 18b	None	Please refer to Specific Comment 13c	
Specific Comment 18c	Section 2.3.2	Section has been revised to include a statement that the containment system is designed to completely surround the cementation unit.	
Specific Comment 19a	Section 2.3.4	Section has been revised to state that no ignitable, reactive, or incompatible mixed waste will be treated in the cementation unit.	
Specific Comment 19b	None	The tank system, cementation unit, and vitrification unit are used to store/treat mixed waste evaporator bottoms solutions, therefore, there is not an incompatibility issue with commingling resulting from a leak.	The vitrification unit will be addressed in a separate application.
Specific Comment 20	Section 2.3.5	Section has been revised to include text about the removal of hazardous wastes from the cementation unit at the time of closure of that unit.	
Specific Comment 21a	Section 2.3.2	Please refer to Specific Comment 18a.	
Specific Comment 21b	None	NOD Response includes Table 9 which provides a comparison of the secondary containment capacity associated with Rooms 401 and 434A and the waste management units located within.	References to room 434A have been removed from the application because the vitrification unit (which will be in room 434A) will be addressed in a separate application.
Specific Comment 21c	Section 2.3.6	Section has been revised to state that all free liquids will be removed within 24 hours or as accessibility permits.	
Specific Comment 22	Attachment J	Attachment discusses the vitrification unit, glovebox, ancillary equipment and the associated secondary containment.	Attachment J was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 23a	Section 2.4.2	Please refer to Specific Comment 18a.	Section 2.4.2 was removed, the vitrification unit will be addressed in a separate application.
Specific Comment 23b	None	Please refer to Specific Comment 13c	
Specific Comment 23c	Section 2.4.3	Section has been revised to include text describing the location of the vitrification unit.	Section 2.4.3 was removed, the vitrification unit will be addressed in a separate application.
Specific Comment 24	Section 2.4.4	Section has been revised to state that no ignitable, reactive, or incompatible mixed waste will be treated in the vitrification unit.	Section 2.4.4 was removed, the vitrification unit will be addressed in a separate application.

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 25	Section 2.4.5	Section and Attachment have been revised to clarify what partial closure means for the vitrification unit.	Section 2.4.5 was removed, the vitrification unit will be addressed in a separate application.
Specific Comment 26a	Section 2.4.2	Please refer to Specific Comment 18a.	Section 2.4.2 was removed, the vitrification unit will be addressed in a separate application.
Specific Comment 26b	None	Please refer to Specific Comment 21b.	References to room 434A have been removed from the application because the vitrification unit (which will be in room 434A) will be addressed in a separate application.
Specific Comment 26c	Section 2.4.6	Section has been revised to state that all free liquids will be removed within 24 hours or as accessibility permits.	Section 2.4.6 was removed, the vitrification unit will be addressed in a separate application.
Specific Comment 27a	Section 4 and Supplement 4.1	Section and Supplement discuss the SWMU located in the vicinity of TA-55 and TA-42. Supplement 4.1 was included as Attachment H of the NOD Response.	
Specific Comment 27b	Section 4	Section addresses active and closing hazardous waste management units for regulatory completeness only.	
Specific Comment 27c	Section 4 and Supplement 4.1	Section and Supplement discuss the SWMU located in the vicinity of TA-55 and TA-42. Supplement 4.1 was included as Attachment H of the NOD Response. Supplement includes all available information about the TA-55 and TA-42 SWMUs, however, this information does not necessarily include all of the examples of data noted in the HWB comments of the NOD.	
Specific Comment 27d	Supplement 4.1	Specific information on SWMU 42-001(a) is included in Supplement that was included as Attachment H of the NOD Response and appears in Supplement 4.1 of the application.	
Specific Comment 27e	Supplement 4.1	Specific information on SWMU 42-001(b) and 42-001(c) is included in Supplement that was included as Attachment H of the NOD Response and appears in Supplement 4.1 of the application.	
Specific Comment 27f	Supplement 4.1	Specific information on SWMU 55-009 is included in Supplement that was included as Attachment H of the NOD Response and appears in Supplement 4.1 of the application.	
Specific Comment 27g	Supplement 4.1	Specific information on SWMU 55-009 is included in Supplement that was included as Attachment H of the NOD Response and appears in Supplement 4.1 of the application.	
Specific Comment 27h	Supplement 4.1	There has not been a recorded release to the environment from any of the active TA-55 hazardous waste management units.	

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 28a	Supplement 4.1	The status of the characterization activities for releases from SWMUs at TA-55 and TA-42 is summarized in Supplement 4.1 which was included as Attachment H of the NOD Response.	
Specific Comment 28b			
Specific Comment 28c			
Specific Comment 28d			
Specific Comment 28e			
Specific Comment 28f			
Specific Comment 28g			
Specific Comment 28h			
Specific Comment 28i			
Specific Comment 28j			
Specific Comment 29	Supplement 4.1	Supplement provides a summary of corrective action activities completed to date and the current status of each SWMU. The specifics of future corrective actions activities are agreed upon by HWB and LANL and documented in the ER Project baseline.	
Specific Comment 30	Section A.1 of Attachment A and Attachments G, H, I, and J	A general description is provided in Section A.1. Section refers out to Attachments containing more detailed information.	Attachment J was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 31	General Part B, Appendix B	Former Attachments B.1 and B.2 of the application have been incorporated into the Waste Analysis Plan in the General Part B Permit Renewal Application.	
Specific Comment 32a	General Part B, Appendix B	Former Attachments B.1 and B.2 of the application have been incorporated into the Waste Analysis Plan in the General Part B Permit Renewal Application.	
Specific Comment 32b	None	Please refer to General Comment 3	
Specific Comment 33	None	Please refer to General Comment 3	
Specific Comment 34	General Part B, Appendix B	Former Attachments B.1 and B.2 of the application have been incorporated into the Waste Analysis Plan in the General Part B Permit Renewal Application. All waste analysis criteria are now located in Appendix B of the General Part B Permit Renewal Application.	
Specific Comment 35	General Part B, Appendix B	Please refer to Specific Comment 34	
Specific Comment 36	General Part B, Appendix B	Please refer to Specific Comment 34	
Specific Comment 37	General Part B, Appendix B	Please refer to Specific Comment 34	
Specific Comment 38	General Part B, Appendix B	Please refer to Specific Comment 34	
Specific Comment 39	None	Please refer to General Comment 3	
Specific Comment 40	General Part B, Appendix B	Please refer to General Comment 3 and Specific Comment 34	
Specific Comment 41	General Part B, Appendix B	Please refer to Specific Comment 34	
Specific Comment 42	General Part B, Appendix B	Please refer to Specific Comment 34	
Specific Comment 43	General Part B, Appendix B	Please refer to Specific Comment 34	

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 44	Section F.1.1.1 of Attachment F.1	Third bullet has been revised to read the same as the performance standard in 20.4.1 NMAC, Subpart V, 264.111(c).	
Specific Comment 45	Section F.1.1.2 of Attachment F.1	Section defines partial closure.	
Specific Comment 46	Section F.1.1.4 of Attachment F.1	Section addresses the requirements of 20.4.1 NMAC, Subpart V, 264.112(c).	
Specific Comment 47	Section F.1.1.4 of Attachment F.1	Refer to Specific Comment 46.	
Specific Comment 48	Section 2, Attachment G, Attachment H, Attachment I, & Attachment J	Please refer to General Comment 2 and Specific Comment 3a.	Attachment J was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 49	Attachment F.1	Closure plan addresses general sampling methods to be used for closure of the CSUs. A detailed Sampling and Analysis Plan (SAP) will be prepared prior to initiation of closure activities containing a more accurate closure schedule as well as the types of waste that will be shipped to each specific off-site facility.	
Specific Comment 50a	Attachment F.1	Attachment meets the closure criteria set forth in the regulations as outlined in the NOD response.	
Specific Comment 50b	Sections F.1.3.1 and F.1.3.3 of Attachment F.1	Section F.1.3.1 discussed soil sampling and section F.1.3.3 discusses the prevention of cross contamination of equipment.	Section F.1.3.3.5 generally discusses soil sampling. Specifics detailing potential decontamination and sampling will be discussed in the SAP.
Specific Comment 50c	None	Procedures are subject to frequent changes; therefore, it is inappropriate for them to be included in the application and subsequently the permit due to their dynamic nature, which could require a permit modification each time they are updated. The procedures cited in the application and the NOD Response are written to meet facility and applicable regulatory requirements.	
Specific Comment 50d	Attachment F.1	Refer to Specific Comment 49.	
Specific Comment 50e	Appendix D of the General Part B	Training requirements are addressed in Appendix D of the General Part B Permit Renewal Application.	
Specific Comment 50f	Attachment F.1	Closure plan addresses general sampling methods to be used for closure of the CSUs. A detailed SAP will be prepared prior to initiation of closure activities containing a more accurate closure schedule as well as the types of waste that will be shipped to each specific off-site facility and sampling of potentially contaminated areas. NOD response discusses differences in sampling methodology and the appropriateness of swipe sampling.	

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 50g	Sections F.1.3.1 and F.1.3.3 of Attachment F.1	Refer to Specific Comment 50b	Section F.1.3.3.5 generally discusses soil sampling. Specifics detailing potential decontamination and sampling will be discussed in the SAP.
Specific Comment 50h	Attachment F.1	Attachment has been revised to include the text outlined in the NOD.	Located in Section F.1.3.2.3 of Attachment F.1. Wording has changed slightly from NOD Response.
Specific Comment 51a	None	Refer to General Comment 3 for discussion regarding radionuclides. For decontaminating equipment that may have been contaminated with hazardous wastes, the wash water will consist of waste and an appropriate surfactant/solvent.	
Specific Comment 51b	Section F.1.2.4 of Attachment F.1	Section has been revised to delete the reference to wooden pallets because they are not used at TA-55 CSUs.	New Section F.1.3.3.2 of Attachment F.1
Specific Comment 51c	None	Portable berms will be used if the CSU does not have a sump or low area designed for collection of liquids.	
Specific Comment 51d	Sections F.1.2.4.1 and F.1.2.6 of Attachment F.1	Section F.1.3.3 details the wash down process of the CSU and the decontamination verification samples will be taken according to new Section F.1.3.4. Specific information will be detailed in the SAP.	New Sections F.1.3.3 and F.1.3.4 of Attachment F.1 contain information about the wash down process and decontamination verification. More information will be contained in the SAP.
Specific Comment 51e	None	"Sump" is used to describe all recessed areas located in the vicinity of the TA-55 waste management units. Most of these areas are not connected to any central drainage system.	
Specific Comment 51f	None	If the operating record of the unit (at the time of closure) indicates a spill or an event that with the potential to result in fixed contamination of hazardous constituents, an appropriate method for removal will be proposed. This may include sandblasting, removal of asphalt, and or chemical decontamination as appropriate to the situation.	Section F.1.3.2.2 of Attachment F.1
Specific Comment 51g	None	Refer to General Comment 3.	
Specific Comment 52	Section F.1.2.4 of Attachment F.1	Section contains information on the closure of the vault, indicating that alternative procedures may be required due to the presence of these items and ALARA concerns for closure procedures.	New Section F.1.3.3.3 of Attachment F.1
Specific Comment 53a	None	Units will be closed in accordance with the closure plans in Attachment F but has the option to remediate the storage pad under corrective action should contamination from storage activities prior to 1980 render the unit incapable of clean closure in accordance with the approved closure plan.	

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 53b	Section F.1.2.4 of Attachment F.1	Section describes the closure procedures that will be used to close the storage pad, including, additional steps that may have to be added because there may be leaching of organic compounds inherent to the composition of the asphalt.	Section F.1.3.3.4 of Attachment F.1
Specific Comment 53c	None	Refer to Specific Comment 51a.	
Specific Comment 53d	Section F.1.2.4 of Attachment F.1	Refer to Specific Comment 50b.	Section F.1.3.3.5 generally discusses soil sampling. Specifics detailing potential decontamination and sampling will be discussed in the SAP.
Specific Comment 53e	Section F.1.2.4 of Attachment F.1	Refer to Specific Comment 50b.	Section F.1.3.3.5 generally discusses soil sampling. Specifics detailing potential decontamination and sampling will be discussed in the SAP.
Specific Comment 53f	Section F.1.2.4 of Attachment F.1	Refer to Specific Comment 53b.	Section F.1.3.3.4 of Attachment F.1
Specific Comment 53g	Section F.1.2.4 of Attachment F.1	Refer to Specific Comment 53b.	Section F.1.3.3.4 of Attachment F.1
Specific Comment 54	Section F.1.2.6 of Attachment F.1	Section provides information about the decontamination of equipment and verification of decontamination.	Section F.1.3.3.5 generally discusses soil sampling. Specifics detailing potential decontamination and sampling will be discussed in the SAP.
Specific Comment 55a	None	Refer to General Comment 3.	
Specific Comment 55b	Attachment F.1	Refer to Specific Comment 49.	
Specific Comment 55c	Attachment F.1	Closure plan addresses general sampling methods to be used for closure. A detailed Sampling and Analysis Plan (SAP) will be prepared prior to initiation of closure activities containing specific statistical methods that will be used to determine if wash down water show a significant increase in analytical parameters.	
Specific Comment 55d	None	Operating record of the unit at the time of closure to establish the presence of "hot spots" based on the inspection record and records associated with spills.	
Specific Comment 55e	None	Refer to General Comment 3.	
Specific Comment 55f	None	Refer to General Comment 3.	
Specific Comment 55g	Attachment F.1	Refer to Specific Comment 50f.	
Specific Comment 55h	Section F.1.3.1 and F.1.3.3 of Attachment F.1	Refer to Specific Comment 50b.	Section F.1.3.3.5 generally discusses soil sampling. Specifics detailing potential decontamination and sampling will be discussed in the SAP.

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 55i	Section F.1.3.1 and F.1.3.3 of Attachment F.1	Refer to Specific Comment 50b.	Section F.1.3.3.5 generally discusses soil sampling. Specifics detailing potential decontamination and sampling will be discussed in the SAP.
Specific Comment 56	Attachment F.1	Refer to Specific Comment 49.	
Specific Comment 57a	Section F.1.3.1 and F.1.3.3 of Attachment F.1	Refer to Specific Comment 50b.	Section F.1.3.3.5 generally discusses soil sampling. Specifics detailing potential decontamination and sampling will be discussed in the SAP.
Specific Comment 57b	Attachment F.1	Refer to Specific Comment 49.	
Specific Comment 58	Attachment F.1	Refer to Specific Comment 50f.	
Specific Comment 59a	None	Refer to General Comment 3.	
Specific Comment 59b	None	Refer to General Comment 3.	
Specific Comment 60	Section F.2.1.1 of Attachment F.2	Refer to Specific Comment 44.	
Specific Comment 61a	Attachment H	The storage tank system, ancillary equipment, and associated secondary containment are described in Attachment H.	
Specific Comment 61b	Section 2.2.5 and Section F.2.1.2 of Attachment F.2	Please refer to Specific Comment 15.	Section 2.2.5 and Section F.2.1.2 of Attachment F.2- language has been changed from the text cited in the NOD response to have more clarity about the definition of partial closure and final closure.
Specific Comment 62	Section F.2.1.4 of Attachment F.2	Section addressed the requirements of 20.4.1, Subpart V, 264.112(c).	
Specific Comment 63	Section F.2.1.4 of Attachment F.2	Please refer to Specific Comment 62.	
Specific Comment 64	Section 2, Attachment G, Attachment H, Attachment I, & Attachment J	Please refer to General Comment 2.	Attachment J was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 65a	Table F.2-2 of Attachment F.2	A list of potential hazardous constituents is provided in table and represent the breadth of EPA Hazardous Waste Numbers capable of being treated in the unit as identified in the LANL General Part A Application.	Table F.2-2 was removed and a listing of potentially hazardous constituents will be included in the unit-specific SAP.
Specific Comment 65b	Table F.2-2 of Attachment F.2	Please refer to Specific Comment 65a.	Table F.2-2 was removed and a listing of potentially hazardous constituents will be included in the unit-specific SAP.

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 66a	Attachment F.2	Attachment meets the closure criteria set forth in the regulations as outlined in the NOD response.	
Specific Comment 66b	Attachment F.2	Closure plan addresses general sampling methods to be used for closure of the tanks. A detailed SAP will be prepared prior to initiation of closure activities containing specific QA/QC procedures. Also please refer to Specific Comment 50c.	
Specific Comment 66c	Attachment F.2	Please refer to Specific Comment 50d.	
Specific Comment 66d	Appendix D of the General Part B	Please refer to Specific Comment 50e.	
Specific Comment 67a	Attachment F.2	The storage tank system, ancillary equipment, and associated secondary containment will be removed and cut up into pieces that can be packaged into containers. Details regarding these activities will be provided in the detailed SAP prepared prior to initiation of closure.	
Specific Comment 67b	Table F.2-2 of Attachment F.2	Please refer to Specific Comment 65a.	Table F.2-2 was removed and a listing of potentially hazardous constituents will be included in the unit-specific SAP.
Specific Comment 68a	Section 2.2.5 and Attachment F.2	Please refer to Specific Comment 15.	Section F.2.3 of Attachment F.2 discusses general closure procedure.
Specific Comment 68b	Attachment F.2	Please refer to Specific Comment 67a.	Section F.2.3 of Attachment F.2 discusses general closure procedure.
Specific Comment 68c	Table F.2-2 of Attachment F.2	Please refer to Specific Comment 65a.	Table F.2-2 was removed and a listing of potentially hazardous constituents will be included in the unit-specific SAP.
Specific Comment 68d	None	Refer to General Comment 3.	
Specific Comment 68e	Table F.2-2 of Attachment F.2	Please refer to Specific Comment 65a.	Table F.2-2 was removed and a listing of potentially hazardous constituents will be included in the unit-specific SAP.
Specific Comment 68f	None	Please refer to Specific Comments 50f and 55d.	
Specific Comment 68g	Attachment F.2	Please refer to General Comment 3.	
Specific Comment 68h	Attachment F.2	Please refer to Specific Comments 50f.	
Specific Comment 68i	Table F.2-2 of Attachment F.2	Please refer to Specific Comment 65a.	Table F.2-2 was removed and a listing of potentially hazardous constituents will be included in the unit-specific SAP.
Specific Comment 69a	Table F.2-2 of Attachment F.2	Please refer to Specific Comment 65a.	Table F.2-2 was removed and will be included in the unit-specific SAP.
Specific Comment 69b	None	Swipe samples are to be taken from the surfaces in Rooms 401 and 434A adjacent to the storage tanks system, this is the secondary containment.	

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 69c	None	Please refer to Specific Comment 51e.	
Specific Comment 69d	None	Please refer to Specific Comment 51e.	
Specific Comment 69e	Table F.2-2 of Attachment F.2	Please refer to Specific Comment 65a.	Table F.2-2 was removed and a listing of potentially hazardous constituents will be included in the unit-specific SAP.
Specific Comment 70	Section F.2.2.6 of Attachment F.2	Section provides detailed information for decontamination verification, inclusive of the decontamination equipment.	New Section F.2.3.3.4 of Attachment F.2 gives general information on decontamination of equipment used during closure. Section F.2.3.4 discusses decontamination verification. More detailed information will be provided in the unit-specific SAP.
Specific Comment 71a	None	Refer to General Comment 3.	
Specific Comment 71b	Table F.2-2 of Attachment F.2	Please refer to Specific Comment 65a.	Table F.2-2 was removed and a listing of potentially hazardous constituents will be included in the unit-specific SAP.
Specific Comment 71c	Attachment F.2	Please refer to Specific Comment 55c.	
Specific Comment 71d	Attachment F.2	Please refer to Specific Comments 50f and 55d.	
Specific Comment 71e	None	Please refer to General Comment 3.	
Specific Comment 71f	None	Please refer to General Comment 3.	
Specific Comment 71g	Attachment F.2	Please refer to Specific Comment 50f.	
Specific Comment 71h	Section F.2.1.4 of Attachment F.2	Please refer to Specific Comment 62.	
Specific Comment 72	Attachment F.2	Please refer to Specific Comment 50f.	
Specific Comment 73a	None	Please refer to General Comment 3.	
Specific Comment 73b	None	Please refer to General Comment 3.	
Specific Comment 74	Section F.3.1.1 of Attachment F.3	Please refer to Specific Comment 44.	
Specific Comment 75a	Attachment I	The cementation unit, glovebox, ancillary equipment, and associated secondary containment are described in Attachment I.	
Specific Comment 75b	Attachment F.3	Piping and ductwork associated with the cementation unit will be removed to the header that connects them to the facility system. Secondary containment systems associated with the cementation unit will be decontaminated and left in place. More detailed information will be contained in the unit-specific SAP.	
Specific Comment 76	Section F.3.1.4 of Attachment F.3	Section addresses the requirements of 20.4.1 NMAC, Subpart V, 264.112(c).	
Specific Comment 77	Section F.3.1.4 of Attachment F.3	Please refer to Specific Comment 76.	

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 78	None	Please refer to General Comment 2.	
Specific Comment 79	Throughout Application	The application has been revised to remove the terms "typically," "generally," and "may." Specific details on how waste will be removed from each of the units will be addressed in a detailed SAP that will be prepared prior to initiation of closure activities.	
Specific Comment 80a	None	Specific details on how waste will be removed from each of the units will be addressed in a detailed SAP that will be prepared prior to initiation of closure activities.	
Specific Comment 80b	None	Please refer to Specific Comment 80a.	
Specific Comment 81	Attachment F.3	Attachment meets the closure criteria set forth in the regulations as outlined in the NOD response.	
Specific Comment 82a	Attachment F.3	Please refer to Specific Comment 75b.	
Specific Comment 82b	Attachment F.3	The cementation unit and ancillary equipment to be closed will be cut up into pieces that can be packaged into containers. Details regarding how this will be conducted will be provided in the detailed SAP that will be prepared prior to initiation of closure activities.	
Specific Comment 82c	None	Please refer to Specific Comment 80a.	
Specific Comment 82d	None	Please refer to General Comment 3.	
Specific Comment 82e	None	Please refer to Specific Comment 80a.	
Specific Comment 82f	Attachment F.3	Please refer to Specific Comments 50f and 55d.	
Specific Comment 82g	None	Please refer to General Comment 3.	
Specific Comment 82h	None	Please refer to General Comment 3.	
Specific Comment 82i	Attachment F.3	Please refer to Specific Comment 50f.	
Specific Comment 82j	None	Please refer to Specific Comment 80a.	
Specific Comment 83a	None	Please refer to Specific Comment 80a.	
Specific Comment 83b	None	Please refer to Specific Comment 80a.	
Specific Comment 83c	None	Please refer to Specific Comment 80a.	
Specific Comment 83d	None	Please refer to General Comment 3.	
Specific Comment 83e	None	Please refer to Specific Comment 80a.	
Specific Comment 83f	Attachment F.3	Please refer to Specific Comments 50f and 55d.	
Specific Comment 83g	None	Please refer to General Comment 3.	
Specific Comment 83h	None	Please refer to General Comment 3.	
Specific Comment 83i	None	Please refer to Specific Comment 80a.	
Specific Comment 83j	Attachment F.3	Please refer to Specific Comment 50f.	
Specific Comment 84a	Throughout Application	Please refer to Specific Comment 80a and General Comment 1.	
Specific Comment 84b	None	Swipe samples are to be taken from the surfaces in Room 401 adjacent to the cementation unit, this is the secondary containment.	
Specific Comment 84c	None	Please refer to Specific Comment 13c.	
Specific Comment 84d	None	Please refer to Specific Comment 80a.	

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 85	Section F.3.2.6 of Attachment F.3	Section provides detailed information for decontamination verification, inclusive of the decontamination equipment.	New Section F.3.3.4 of Attachment F.3 gives general information on decontamination verification. Section F.3.3.3.4 gives information about equipment used during closure.
Specific Comment 86a	None	The five criteria identified as means of achieving successful decontamination have been approved by NMED in past closure plans. These criteria provide a spectrum of methods that allow the necessary flexibility in the closure plan for conducting a closure.	
Specific Comment 86b	None	Please refer to General Comment 3.	
Specific Comment 86c	None	Please refer to Specific Comment 80a.	
Specific Comment 86d	Attachment F.3	Please refer to Specific Comment 55c.	
Specific Comment 86e	Attachment F.3	Please refer to Specific Comments 50f and 55d.	
Specific Comment 86f	None	Please refer to General Comment 3.	
Specific Comment 86g	None	Please refer to General Comment 3.	
Specific Comment 86h	Attachment F.3	Please refer to Specific Comment 50f.	
Specific Comment 86i	None	Please refer to Specific Comment 76.	Section F.3.1.4 of Attachment F.3
Specific Comment 87	Attachment F.3	Please refer to Specific Comments 50f.	
Specific Comment 88a	None	Please refer to General Comment 3.	
Specific Comment 88b	None	Please refer to General Comment 3.	
Specific Comment 89	Section F.3.1.1 of Attachment F.3	Please refer to Specific Comment 44.	
Specific Comment 90a	Attachment J	Please refer to Specific Comment 22.	Attachment J was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 90b	None	Piping and ductwork associated with the vitrification unit will be removed to the header that connects them to the facility system.	The vitrification unit will be addressed in a separate application.
Specific Comment 91	Section F.4.1.4 of Attachment F.4	Section addressed the requirements of 20.4.1, Subpart V, 264.112(c).	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 92	Section F.4.1.4 of Attachment F.4	Please refer to Specific Comment 91	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 93	None	Please refer to General Comment 2.	
Specific Comment 94a	None	Solidified waste from the vitrification unit will be removed and transported to a permitted CSU prior to disposal at a permitted facility as described in Section F.3.2.3. Specific details of closure procedures will be addressed in the SAP that will be prepared prior to initiation of closure activities	The vitrification unit will be addressed in a separate application.

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 94b	None	Please refer to Specific Comment 94a.	The vitrification unit will be addressed in a separate application.
Specific Comment 95	Attachment F.4	Attachment meets the closure criteria set forth in the regulations as outlined in the NOD Response.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 96a	None	Please refer to Specific Comment 90b.	
Specific Comment 96b	None	The vitrification unit and ancillary equipment will be removed and cut up into pieces that can be packaged into containers. Details regarding how this will be conducted will be provided in the detailed SAP that will be prepared prior to initiation of closure activities.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 96c	None	Please refer to Specific Comment 94a.	The vitrification unit will be addressed in a separate application.
Specific Comment 96d	None	Please refer to General Comment 3.	
Specific Comment 96e	None	Please refer to Specific Comment 94a.	The vitrification unit will be addressed in a separate application.
Specific Comment 96f	Attachment F.4	Please refer to Specific Comments 50f and 55d.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 96g	None	Please refer to General Comment 3.	
Specific Comment 96h	None	Please refer to General Comment 3.	
Specific Comment 96i	Attachment F.4	Please refer to Specific Comment 50f.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 96j	None	Please refer to Specific Comment 94a.	The vitrification unit will be addressed in a separate application.
Specific Comment 97a	None	Please refer to Specific Comment 90b.	The vitrification unit will be addressed in a separate application.
Specific Comment 97b	None	Please refer to Specific Comment 94a.	The vitrification unit will be addressed in a separate application.
Specific Comment 97c	None	Please refer to Specific Comment 94a.	The vitrification unit will be addressed in a separate application.
Specific Comment 97d	None	Please refer to General Comment 3.	
Specific Comment 97e	None	Please refer to Specific Comment 94a.	The vitrification unit will be addressed in a separate application.
Specific Comment 97f	Attachment F.4	Please refer to Specific Comments 50f and 55d.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 97g	None	Please refer to General Comment 3.	
Specific Comment 97h	None	Please refer to General Comment 3.	

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 97i	Attachment F.4	Please refer to Specific Comment 50f.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 97j	None	Please refer to Specific Comment 94a.	The vitrification unit will be addressed in a separate application.
Specific Comment 98a	None	Please refer to Specific Comment 94a and General Comment 3.	The vitrification unit will be addressed in a separate application.
Specific Comment 98b	Attachment F.4	Swipe samples are to be taken from the surfaces in Room 434A adjacent to the vitrification unit. Also, please refer to Specific Comment 50f.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 98c	None	Please refer to Specific Comment 13c.	The vitrification unit will be addressed in a separate application.
Specific Comment 98d	None	Please refer to Specific Comment 94a.	The vitrification unit will be addressed in a separate application.
Specific Comment 99	Section F.4.2.6 of Attachment F.4	Section provides detailed information for decontamination verification, inclusive of the decontamination equipment.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 100a	None	Please refer to General Comment 3.	
Specific Comment 100b	None	Please refer to Specific Comment 94a.	The vitrification unit will be addressed in a separate application.
Specific Comment 100c	Attachment F.4	Please refer to Specific Comment 55c.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 100d	Attachment F.4	Please refer to Specific Comments 50f and 55d.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 100e	None	Please refer to General Comment 3.	
Specific Comment 100f	None	Please refer to General Comment 3.	
Specific Comment 100g	Attachment F.4	Please refer to Specific Comment 50f.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 100h	Section F.4.1.4 of Attachment F.4	Please refer to Specific Comment 91.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 101	Attachment F.4	Please refer to Specific Comment 50f.	Attachment F.4 was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 102a	None	Please refer to General Comment 3.	
Specific Comment 102b	None	Please refer to General Comment 3.	

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 103	Figures G-1, G-2, G-3, and G-4 of Attachment G	Figures provide engineering drawings for the CSUs at TA-55.	
Specific Comment 104	Section 2.1.2	Please refer to Specific Comments 3a and b.	Sections 2.1.2 and 2.1.1- Quart container sizes were also added to container type listing.
Specific Comment 105a	Sections 2.1.2 and 2.1.8	Please refer to Specific Comments 3a and 9c.	Section 2.1.2 and 2.1.7
Specific Comment 105b	None	Please refer to Specific Comment 9a.	Section 2.1.7
Specific Comment 105c	Attachment G	Attachment has been revised to include text about secondary containment and run-on and run-off	
Specific Comment 105d	Attachment G	Attachment will be revised to indicate that the wastes allowed to be stored in TA-55 CSUs are identified in the General Part A Application.	
Specific Comment 106a	Figure A-5 of Attachment A	Please refer to figure referenced.	Figure A-5 of Attachment A illustrates CSUs with respect to TA-Boundary. Figure A-1 of Attachment A illustrates TA-55 in relation to LANL boundary.
Specific Comment 106b	Section 2.1.10	Please refer to Specific Comment 10b.	Section 2.1.9
Specific Comment 106c	Section 2.1.10	Please refer to Specific Comment 10b.	Section 2.1.9
Specific Comment 106d	Section 2.1.10	Please refer to Specific Comment 10b.	Section 2.1.9
Specific Comment 106e	Section 2.1.10	Please refer to Specific Comment 10b.	Section 2.1.9
Specific Comment 107	Section 2.1.2	Please refer to Specific Comment 3a.	
Specific Comment 108a	Section I.2 of Attachment I and Section J.2 of Attachment J	Wastes will be treated in the cementation unit or vitrification unit based upon the radionuclide and chemical content. Please refer to referenced section for more discussion.	Attachment J was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 108b	None	Please refer to General Comment 3.	
Specific Comment 108c	None	If the evaporator bottom solutions are above the plutonium discard limit they are sent back to the TA-55 recovery process where the plutonium is recovered for programmatic use. In addition, please refer to General Comment 3.	
Specific Comment 109a	Section 2.2.8	Please refer to Specific Comment 13b.	Section 2.2.2
Specific Comment 109b	Section 2.2.8	Please refer to Specific Comment 13b.	Section 2.2.2
Specific Comment 109c	None	Please refer to Specific Comment 13c.	
Specific Comment 109d	Section 2.2.2	Please refer to Specific Comment 13d.	References to room 434A have been removed from the application because the vitrification unit (which will be in room 434A) will be addressed in a separate application.

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 109e	Section 2.2.6	Please refer to Specific Comment 16b.	
Specific Comment 110a	Section 2.2.4	Please refer to Specific Comment 14.	The vitrification unit will be addressed in a separate application.
Specific Comment 110b			
Specific Comment 110c			
Specific Comment 110d			
Specific Comment 110e			
Specific Comment 110f			
Specific Comment 110g			
Specific Comment 111	Attachment I	Attachment has been revised with text about the cementation unit's glovebox.	
Specific Comment 112a	Section 2.3.4	Please refer to Specific Comment 19a.	
Specific Comment 112b			
Specific Comment 112c			
Specific Comment 112d			
Specific Comment 112e			
Specific Comment 112f			
Specific Comment 112g			
Specific Comment 113a	None	LANL is seeking to permit the vitrification unit prior to its construction at TA55-4 and is award that additional information may be required before commencing waste operations. Attachment B of the NOD Response provided a final design report for the vitrification unit.	The vitrification unit will be addressed in a separate application.
Specific Comment 113b			
Specific Comment 113c			
Specific Comment 113d			
Specific Comment 113e			
Specific Comment 113f			
Specific Comment 113g			
Specific Comment 113h			
Specific Comment 113i			
Specific Comment 114	None	Please refer to Specific Comment 113a.	The vitrification unit will be addressed in a separate application.
Specific Comment 115	None	Please refer to Specific Comment 113a.	The vitrification unit will be addressed in a separate application.
Specific Comment 116a	Attachment J	Attachment has been revised to include text about the facility wet vacuum system.	Attachment J was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 116b	Attachment J	Attachment has been revised to include text about the maintenance of negative pressure within the glovebox.	Attachment J was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 116c	Attachment J	Attachment has been revised to include new text about the Zone 1 ventilation system.	Attachment J was removed from the application. The vitrification unit will be addressed in a separate application.

Outline of Changes to TA-55 RCRA Part B Permit Application Associated With August 2002 Notice of Deficiency (NOD) Response			
Comment #	**Application Section**	**Issue**	**Final Application Section or Other Comments**
Specific Comment 116d	None	Gases released into the glovebox will pass into the Zone 1 ventilation system. This system does not prevent the release of NOx to the environment.	
Specific Comment 117	None	Please refer to Specific Comment 19b.	The vitrification unit will be addressed in a separate application.
Specific Comment 118	None	Please refer to Specific Comment 4a.	
Specific Comment 119	None	The glovebox that the cementation unit is contained in is connected to the TA-55-4 facility ventilation system and is equipped with a backup generator.	
Specific Comment 120	Section 2, Attachment G, Attachment H, Attachment I, & Attachment J	Please refer to General Comment 2.	Attachment J was removed from the application. The vitrification unit will be addressed in a separate application.
Specific Comment 121	Section K.4.1 of Attachment K	Section states that the biennial report must cover facility activities during the previous calendar year.	

Changes Since Revision 1.0 Not Associated with August 2002 NOD Response	
Section	**Change**
Section 2.1.1	Quart sized containers were added to the listing of types of containers.
Section 2.2.5 and Section F.2.1.2 of Attachment F.2	Language has been changed from the text in the NOD response to have more clarity about the definitions of partial closure and final closure.
Throughout Application	Storage capacity of container storage unit TA-55-4-K13 has been changed from 3,500 gallons to 2,500 gallons for accuracy and consistency with the capacity calculated for the NOD response.
Throughout Application	All references to the proposed vitrification unit have been removed from the application. The unit will be addressed in a separate application.
Section 4 and Supplement 4-1	Section 4 has been shortened and refers directly to the TA-42 and TA-55 Section of the SWMU Report contained in Supplement 4-1. This was changed to decrease the duplication of information and simplify the application.

Figure H-8
Pencil Tanks Component
Isometric and Flow Diagram

Figure H-9
Pencil Tanks Component
Piping and Instrumentation Diagram

Figure H-10
Pencil Tanks Component
Support Structure

Figure H-11
Pencil Tanks Component
Support Structure (continued)

Figure H-12
Technical Area 55, Building 4
First Floor Foundation Plan

Figure H-13
Technical Area 55, Building 4
First Floor Plan Showing Penetration Locations

Figure A-9
Drainage Control Features
At Technical Area (TA) 55

1.0 INTRODUCTION

This "Los Alamos National Laboratory Technical Area 55 Part B Permit Application" is submitted to address the requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), revised June 14, 2000 [6-14-00], specific to hazardous and mixed waste operations at Los Alamos National Laboratory (LANL) Technical Area (TA) 55. Additional information is provided in this permit application beyond that necessary for regulatory compliance to demonstrate how LANL meets regulatory standards. This information is not intended for inclusion in LANL's hazardous waste permit. Waste management units to be permitted include seven container storage units (CSU), a storage tank system, and one Subpart X treatment unit (a cementation unit). This document serves as Revision 2.0 to "Technical Area 55 Part B Permit Application," Revisions 0.0 and 1.0, submitted to the New Mexico Environment Department (NMED) in June 1996 and January 2002, respectively.

This document has been formatted to meet the permitting strategy outlined by the NMED Hazardous and Radioactive Materials Bureau (HRMB) in correspondence dated February 5, 1998 (NMED, 1998a). As presented in the 1998 correspondence, TA-specific permit applications, permit modification requests, and permit renewal applications would include any details and/or requirements not addressed in the "Los Alamos National Laboratory General Part B Permit Application." The most recent version of that document, hereinafter referred to as the LANL General Part B, complements this permit application. Certain portions of the LANL General Part B will serve in the operating permit as an "umbrella" document, covering the requirements of the New Mexico Hazardous Waste Act and implementing regulations, specifically 20.4.1 NMAC [6-14-00], common to all waste management units. Together, information provided in this permit application and in the LANL General Part B will meet the applicable requirements specified in 20.4.1 NMAC, Subparts V and IX [6-14-00].

This revised document also addresses the following:

- Revisions agreed upon in the "Response to Notice of Deficiency; TA-55 Part B RCRA Permit Application, January 2002, Revision 1.0, May 16, 2002," LA-UR-02-5041 (LANL, 2002a).

- Permitting requirements for a modification to the existing storage tank system. The two storage tank systems identified in Revision 0.0 of the TA-55 Permit Application as the evaporator glovebox storage tank system and the cementation unit storage tank system have been combined and modified into a single storage tank system. The storage tank system, as presented in this document, is comprised of two existing components and one new component. The two existing components include the evaporator glovebox tank component (formerly identified as the evaporator glovebox storage tank system) and the cementation unit pencil tanks component (formerly identified as the cementation unit storage tank system). The one new component includes additional pencil tanks.

- Permitting requirements for a new CSU to be located at TA-55-185.

In accordance with HRMB's 1998 permitting strategy, LANL submitted the "Los Alamos National Laboratory General Part A Permit Application." The most recent version of this document, hereinafter referred to as the LANL General Part A, consolidates information from previous site-wide and TA-specific Part A submittals into one comprehensive document, identifying all hazardous and mixed waste treatment, storage, and disposal facilities at LANL subject to 20.4.1 NMAC, Subparts V, VI, and IX [6-14-00] at that time. The LANL General Part A serves as a companion document to the LANL General Part B and TA-specific permit applications, permit modification requests, and permit renewal applications, including this revised permit application.

In the LANL General Part A, the LANL General Part B, and this revised permit application, a unit to be permitted may sometimes be referred to as a facility. The term "facility," as it appears in this context, is used only to denote building or area names and does not imply the regulatory meaning of "facility" as defined in 20.4.1 NMAC §260.1 [6-14-00]. However, pursuant to 20.4.1 NMAC §260.1 [6-14-00], the "LANL facility" as a whole does meet the regulatory definition of a facility.

Table 1-1 provides a list of regulatory references and the corresponding location in this permit application, as appropriate. Where applicable, regulatory citations in this document reference 20.4.1 NMAC, which adopts, with a few exceptions, all of the Code of Federal Regulations, Title 40, Parts 260 to 266, Part 268, and Part 270.

Table 1-1
Regulatory References and Corresponding Permit Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Permit Application
§270.14(b)(1)	General facility description	Attachment A
§270.14(b)(2)	Chemical and physical analyses of hazardous waste	Attachment B[a]
§270.14(b)(3)	Waste analysis plan	Attachment B[a]
§264.13(b)	Development and implementation of a written waste analysis plan	Attachment B[a]
§264.13(c)	Off-site waste analysis requirements	Attachment B[a]
§270.14(b)(4)	Security procedures and equipment	Attachment J
§264.14	Security procedures and equipment	Attachment J
§270.14(b)(5)	General inspection schedule	Attachment C[a]
§264.15(b)	General inspection schedule	Attachment C[a]
§264.174	Inspections/containers	Attachment C[a]
§264.193(i)	Tank system inspections pending provision of adequate secondary containment	NA
§264.195	Overfill control inspections	Attachments C[a], H, and I
§264.226	Surface impoundment monitoring and inspection	NA
§264.254	Waste pile monitoring and inspection	NA
§264.273	Land treatment and operating requirements	NA
§264.303	Landfill monitoring and inspection	NA
§264.602	Miscellaneous units	Attachment I
§264.1033	Process vent standards	Attachments H and I
§264.1052	Equipment leak air emission standards	Attachments H and I
§264.1053	Compressor standards	NA

See footnotes at end of table.

Table 1-1 (continued)
Regulatory References and Corresponding Permit Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Permit Application
§264.1058	Standards for pumps, valves, pressure relief devices, flanges, and connections	Attachments H and I
§270.14(b)(6)	Request for waiver from preparedness and prevention requirements of 264 Subpart C	NA
§264.30-37	Preparedness and prevention: applicability, design and operation, required equipment, testing and maintenance of equipment, access to communications or alarm systems, required aisle space, and arrangements with local authorities	NA
§264.227	Surface impoundment emergency repairs	NA
§270.14(b)(7)	Contingency Plan	Attachment E[a]
§264.50-56	Contingency plan and emergency procedures: applicability, purpose/implementation of contingency plan, content of contingency plan, copies of contingency plan, amendment to contingency, emergency coordinator, and emergency procedures	Attachment E[a]
§270.14(b)(8)	Description of preparedness and prevention	Attachment J
§270.14(b)(8)(i)	Hazard prevention in unloading operations	Attachment J
§270.14(b)(8)(ii)	Runoff prevention	Attachment J
§270.14(b)(8)(iii)	Contamination prevention of water supplies	Attachment J
§270.14(b)(8)(iv)	Mitigation of equipment failure and power outages	Attachment J
§270.14(b)(8)(v)	Prevention of undue exposure of personnel to hazardous waste	Attachment J
§270.14(b)(8)(vi)	Prevention of releases to the atmosphere	Attachment J
§270.14(b)(9)	Prevention of accidental ignition or reaction of ignitable, reactive, or incompatible wastes	Attachments G, H and I
§264.17	Procedures to prevent accidental ignition, reaction of ignitables, reaction of reactives, reaction of incompatibles, and documentation of compliance with 264.17 (general requirements for ignitable, reactive, or incompatible wastes)	Attachments G, H and I

Table 1-1 (continued)
Regulatory References and Corresponding Permit Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Permit Application
§270.14(b)(10)	Traffic pattern: volume, controls, and access	Attachment A
264.18(a)	Seismic considerations	
§270.14(b)(11)	Facility/unit identification and location information	Attachment A
§270.14(b)(11)(i)	Seismic standard applicability [264.18(a)]	Attachment A
§270.14(b)(11)(ii)	Seismic standard requirements	Attachment A
§270.14(b)(11)(ii)(A)	No fault within 3,000 feet (ft) with displacement in Holocene time	Attachment A
§270.14(b)(11)(ii)(B)	If faults which have displacement in Holocene time are present within 3,000 ft, no faults pass within 200 ft of portions of the facility where treatment, storage, or disposal will be conducted	NA
§270.14(b)(11)(iii)	100-year floodplain standard	Attachment A[a]
§270.14(b)(11)(iv)(A-C)	Facilities located within the 100-year floodplain	NA
§270.14(b)(11)(v)	Compliance schedule for 264.18(b)	NA
§270.14(b)(12)	Personnel training program	Attachment D[a]
§270.14(b)(13)	Closure and post-closure plans	Attachments F.1, F.2, and F.3
§264, Subpart G	Closure and post-closure	Attachments F.1, F.2, and F.3
§264.178	Closure/containers	Attachment F.1
§264.197	Closure and post-closure care/tanks	Attachment F.2
§264.228	Surface impoundments	NA
§264.258	Waste piles	NA
§264.280	Land treatment	NA

See footnotes at end of table

Table 1-1 (continued)
Regulatory References and Corresponding Permit Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Permit Application
§264.310	Landfills	NA
§264.351	Incinerators	NA
§264.601	Closure/miscellaneous units	Attachment F.3
§264.603	Requirements by the Secretary	Attachment F.3
§270.14(b)(14)	Deed restrictions/post-closure notices (264.119)	Attachments F.1, F.2, and F.3
§270.14(b)(15)	Closure cost estimate (264.142)	Attachments F.1, F.2, and F.3
§270.14(b)(16)	Post-closure cost estimate (264.144)	Attachments F.1, F.2, and F.3
§270.14(b)(17)	Liability insurance (264.147)	Attachments F.1, F.2, and F.3
§270.14(b)(18)	Proof of financial coverage (264.149-150)	Attachments F.1, F.2, and F.3
§270.14(b)(19)	Topographic map requirements	Attachment A[b]
§270.14(b)(19)(i)	Map scale and date	Attachment A[b]
§270.14(b)(19)(ii)	100-year floodplain area	Attachment A[b]
§270.14(b)(19)(iii)	Surface waters	Attachment A
§270.14(b)(19)(iv)	Surrounding land uses	Attachment A
§270.14(b)(19)(v)	Wind rose	Attachment A
§270.14(b)(19)(vi)	Map orientation	Attachment A[b]
§270.14(b)(19)(vii)	Legal boundaries	Attachment A[b]

See footnotes at end of table.

Table 1-1 (continued)
Regulatory References and Corresponding Permit Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Permit Application
§270.14(b)(19)(viii)	Access control	Attachment A
§270.14(b)(19)(ix)	Wells	Attachment A
§270.14(b)(19)(x)	Buildings	Attachment A
§270.14(b)(19)(xi)	Drainage barriers or flood control	Attachment A
§270.14(b)(19)(xii)	Location of operational units	Attachment A
§270.3(b)(20)	Other federal laws	3.0[a]
§270.3(a)	Wild and Scenic Rivers Act	3.0[a]
§270.3(b)	National Historic Preservation Act	3.0[a]
§270.3(c)	Endangered Species Act	3.0[a]
§270.3(d)	Coastal Zone Management	3.0[a]
§270.3(e)	Fish and Wildlife Coordination Act	3.0[a]
§270.3(f)	Executive Orders	3.0[a]
§270.14(b)(21)	Notice of extension approval for land disposal facilities	NA
§270.14(c)	Groundwater monitoring requirements	Attachment A[a]
§270.14(c)(3)	Topographic map with points of compliance	NA
§270.14(c)(3)	Proposed location of groundwater monitoring wells	NA
§270.14(c)(4)	Description of plume of contamination that has entered the groundwater from a regulated unit at the time the application was submitted	NA
§270.14(c)(4)(i)	Extent of plume indicated on topographic map	NA
§270.14(c)(4)(ii)	Identification of constituents and concentration	NA
§270.14(c)(5)	Detailed plan and engineering report describing proposed groundwater monitoring program	

See footnotes at end of table.

Table 1-1 (continued)
Regulatory References and Corresponding Permit Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Permit Application
§270.14(c)(6)	If no release detected at date of submitted, then submit following	
§270.14(c)(6)(i)	List of proposed indicator parameters, waste constituents, and reaction products	NA
§270.14(c)(16)(ii)	Proposed groundwater monitoring system	NA
§270.14(c)(16)(iii)	Background values for each proposed monitoring parameter	NA
§270.14(c)(16)(iv)	Description of proposed sampling, analysis, and statistic comparisons to be used	NA
§270.14(c)(7)	If a release is detected at the point of compliance, then corrective actions	NA
§270.14(d)	Information requirements for solid waste management units (SWMU)	4.0
§270.14(d)(1)(i)	Location of SWMUs on topographic map	4.0
§270.14(d)(1)(ii)	Types of SWMUs	4.0
§270.14(d)(1)(iii)	Dimensions and descriptions of SWMUs	4.0
§270.14(d)(1)(iv)	Dates of SWMU operations	4.0
§270.14(d)(1)(v)	Waste types managed at SWMUs	4.0
§270.14(d)(2)	Information on releases from SWMUs	4.0
§270.14(d)(3)	RCRA Facility Assessment sampling and analysis results	NA
§270.15	Information requirements for containers	Attachment G
§270.16	Information requirements for tank systems	Attachment H
§270.16(a)	Written assessment of tank, structural integrity and suitability submitted by an independent, certified, registered professional engineer	Attachment H

See footnotes at end of table.

Table 1-1 (continued)
Regulatory References and Corresponding Permit Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Permit Application
§270.16(b)	Dimensions and capacity of each tank	Attachment H
§270.16(c)	Feed system description	Attachment H
§270.16(d)	Piping diagram	Attachment H
§270.16(e)	External corrosion protection description	Attachment H
§270.16(f)	New tank installation	NA
§270.16(g)	Detailed description of secondary containment	Attachment H
§270.16(h)	Request for variance	Attachment H
§270.16(i)	Description of procedures and controls to prevent spills and overflows	Attachment H
§270.23	Information requirements for miscellaneous units	Attachment I

a Requirement or information is also addressed in the most recent version of the "Los Alamos National Laboratory General Part B Permit Application," as appropriate.
b Some of the topographic map requirements are addressed in the most recent version of the "Los Alamos National Laboratory General Part A Permit Application," as appropriate.

ft = feet
NA = not applicable
SWMU = Solid Waste Management Unit

2.0 WASTE MANAGEMENT UNITS

The waste management units described in this permit application are located at Technical Area (TA) 55 in the central portion of the Los Alamos National Laboratory (LANL) as shown in Attachment A on Figure A-1. These units include:

- Seven Container Storage Units (CSU) - B45, B40, B05, K13, and the Vault located at TA-55-4; a container storage pad located northwest of TA-55-4; and TA-55-185.
- One Storage Tank System – consisting of 3 tank components, a total of 16 tanks located in Room 401 at TA-55-4.
- One Cementation Unit – including a pH column, vacuum trap, two motor-driven mixers, four impellers, piping and a glovebox, located in Room 401 at TA-55-4.

The general location of the each waste management unit is shown in Attachment A of this permit application on Figure A-2. Detailed information on and design drawings for each are presented in Attachments G, H and I, respectively. Attachment J of this permit application contains detailed information on general facility operations and management practices.

2.1 CONTAINER STORAGE

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 (20.4.1 NMAC) §270.15, and 20.4.1 NMAC §264, Subpart I, revised June 14, 2000 [6-14-00]. Container storage at TA-55 consists of seven CSUs that provide storage for hazardous and mixed wastes. Table 2-1 identifies each of the CSUs to be permitted, including the location and maximum storage capacity.

Table 2-1
Container Storage Unit Locations and Maximum Capacities at Technical Area 55

CSU Name	Location	Capacity[a] (gallons)
B40	TA-55-4, Basement	21,500
B05	TA-55-4, Basement	3,600
K13	TA-55-4, Basement	2,500
B45	TA-55-4. Basement	11,000
Vault	TA-55-4, Basement	4,000
Storage Pad	Northwest of TA-55-4	135,000
TA-55-185	West of TA-55-4	30,000

a Reflects the calculation of maximum capacities with a minimum aisle space of 2 feet.

TA = Technical Area
CSU = container storage unit

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The following sections provide a brief description of the waste management practices associated with the TA-55 CSUs. General dimensions, containment features, and materials of construction for each CSU are provided in Attachment G of this permit application to satisfy the requirements of 20.4.1 NMAC §270.15(a)(1) and (2) [6-14-00].

2.1.1 Storage Containers

Waste containers stored in the TA-55 CSUs include: 0.25, 0.5, 0.75, 1, 2, 4, and 6 liter (L)/quart containers; 5, 10, 12, and 15 gallon (gal) containers, 30-, 55-, and 85-gal drums; special order waste boxes; large waste boxes; and standard waste boxes (SWB). Additional information regarding typical storage containers utilized at the TA-55 CSUs is provided in Tables 2-2 and 2-3. These tables do not contain information on all of the possible containers to be used and each container is identified by size without limiting the materials of construction.

Table 2-2
Typical Storage Containers Used at the Technical Area 55 Container Storage Units

Container Type	Description	Requirements
Non-Bulk Performance-Oriented Packaging [a]	Steel drums	• 49 CFR §178.504. • Maximum capacity not to exceed 119 gal. • Maximum net mass not to exceed 882 lbs.
	Aluminum drums	• 49 CFR §178.505. • Maximum capacity will not exceed 119 gal. • Maximum net mass will not exceed 882 lbs.
	Metal drums other than steel or aluminum	• 49 CFR §178.506. • Maximum capacity will not exceed 119 gal. • Maximum net mass will not exceed 882 lbs.
	Fiber drums	• 49 CFR §178.508. • Maximum capacity will not exceed 119 gal. • Maximum net mass will not exceed 882 lbs.
	Plastic drums	• 49 CFR §178.509. • Maximum capacity will not exceed 119 gal. • Maximum net mass will not exceed 882 lbs.
	Plastic Jerricans	• 49 CFR §178.509. • Maximum capacity will not exceed 16 gal. • Maximum net mass will not exceed 265 lbs.
	Steel or aluminum boxes	• 49 CFR §178.512. • Maximum net mass will not exceed 882 lbs.
	Aluminum or steel Jerricans	• 49 CFR §178.511. • Maximum capacity will not exceed 16 gal. • Maximum net mass will not exceed 265 lbs.
	Plywood boxes	• 49 CFR §178.514. • Maximum net mass will not exceed 882 lbs.
	Fiberboard boxes	• 49 CFR §178.516. • Maximum net mass will not exceed 882 lbs.
	Composite packaging with inner receptacles	• 49 CFR §178.522. • Maximum capacity will not exceed 66 gallons. • Maximum net mass will not exceed 882 lbs.

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Table 2-2 (continued)
Typical Storage Containers Used at the Technical Area 55 Container Storage Units

Container Type	Description	Requirements
Non-Bulk Performance-Oriented Packaging [a] (continued)	Composite packaging with inner glass, porcelain, or stone receptacles	• 49 CFR §178.523. • Maximum net capacity for liquids is 16 gal. • Maximum net mass for solids is 165 lbs.
Intermediate Bulk Performance-Oriented Packaging [b]	Metal intermediate bulk containers	49 CFR §178.705.
	Rigid plastic intermediate bulk containers	49 CFR §178.706.
	Composite intermediate bulk containers	49 CFR §178.707.
	Fiberboard intermediate bulk containers	49 CFR §178.708.
	Wooden intermediate bulk containers	49 CFR §178.709.
	Flexible intermediate bulk containers	49 CFR §178.710.
Cylinders [c]	Seamless steel cylinders	DOT Specification 3A, 3AX, 3AA, 3AAX, 3B, 3E, or 3T in 49 CFR, Part 178, Subpart C.
	Welded or brazed steel cylinders	DOT Specification 4B, 4BA, 4B240ET, 4AA480, 4L, or 4BW in 49 CFR, Part 178, Subpart C.
	Seamless or welded aluminum cylinders	DOT Specification 3AL or 4E in 49 CFR, Part 178, Subpart C.
	Seamless nickel cylinders	DOT Specification 3BN in 49 CFR, Part 178, Subpart C.
Containers Used for Transport of Radioactive Materials	DOT Containers	DOT Specification 7A in 49 CFR §178.350.
	IP Containers	Industrial Packaging IP-1, IP-2, or IP-3 in 49 CFR §173.411.
	Exceptions	49 CFR §173.410.

a Manufacturer has provided the required UN marking in accordance with 49 CFR §178.503.
b Marked by the manufacturer in accordance with 49 CFR §178.703.
c Marked with the applicable DOT specification number in accordance with 49 CFR §178.35.

CFR = Code of Federal Regulations
DOT = U.S. Department of Transportation
IP = Industrial Packaging
gal = gallons
lbs = pounds

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Table 2-3
Storage Containers Used at Technical Area 55 for Mixed Transuranic Waste

Container Type	Description	Requirements	Filter Vents [a]
Standard 55-gallon Drum	• Gross internal volume of 7.3 ft^3 (0.21 m^3). • Constructed of mild steel. • May also contain ridge, molded polyethylene (or other compatible material) liner.	DOT Specification 7A in 49 CFR §178.350.	One or more filter vents installed on top of the container.
Standard Waste Box	Gross internal volume of 66 ft^3 (1.88 m^3).	DOT Specification 7A in 49 CFR §178.350.	
Standard 85-gallon Drum Over Pack	• Gross internal volume of 11.3 ft^3 (0.32 m^3). • Used for overpacking contaminated 55-gallon drums.	Not Applicable	
Oversized Waste Box	• Gross internal volume greater than 11.3 ft^3 (0.32 m^3). • Used for oversized waste.	Not Applicable	Two or more filter vents installed on sides of container.

a Vents are high-efficiency particulate air grade filters to preclude container pressurization caused by gas generation and to prevent particulate material from escaping. Vents have an orifice approximately 0.375 inches (9.53 millimeters [mm]) in diameter through which internally generated gas may pass. Filter media can be any material (e.g., composite carbon, sintered metal).

CFR = Code of Federal Regulations
DOT = U.S. Department of Transportation
ft^3 = cubic feet
m^3 = cubic meters

2.1.2 Minimum Aisle Space and Storage Configuration

Waste containers at the TA-55 CSUs are arranged in rows with a minimum aisle space of 24 inches (in.). Storage configuration within a row depends upon the type of container, its size, and its weight restrictions. Containers will be stacked to a maximum of two high unless they are too large or heavy to be supported by the container(s) to be located underneath and/or maneuvered with available forklift/crane/hoist. Fifty-five-gal drums, SWBs, and large waste boxes are arranged in rows and can be stacked to a maximum of 10 feet (ft) high, based on the Code of Federal Regulations (CFR) requirements in 49 CFR 178.606(c), "Performance-Oriented Stack Test".

2.1.3 Authorized Waste

The TA-55 CSUs are used to store hazardous and mixed waste containers bearing one or more of the U.S. Environmental Protection Agency (EPA) Hazardous Waste Numbers presented in the most recent version of the "Los Alamos National Laboratory General Part A," hereinafter referred to as the General Part A.

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2.1.4 Condition of Containers [20.4.1 NMAC §264.171]

Any container at the TA-55 CSUs that is not in good condition either during or prior to storage (e.g., severe rusting, apparent structural defects) is overpacked or the wastes are repackaged in containers that are in good condition. Containers must be without severe rust, dents, deep scratches, bulges, or other structural defects. Any waste container that is not in good condition (e.g., severe rusting, apparent structural defects) is overpacked, or the waste is repackaged in a container that is in good condition and is compatible with the waste materials, packaging materials, and/or other container. Overpacked and/or new containers must also be compatible with and resistant to environmental conditions. This meets the requirements of 20.4.1 NMAC §264.171 [6-14-00].

TA-55 uses the LANL procurement system, administered by the Supply Chain Management Division (SUP), for procurement of waste container components. Suppliers of waste container components are audited by SUP for qualification prior to conducting business transactions. SUP also uses approved procurement product specifications that include quality assurance requirements and ensure that container package specifications meet U.S. Department of Transportation (DOT) (49 CFR 173.410) requirements for Type A/7A packages.

Containers procured by SUP include liners if required for the container to pass the manufacturer's tests for Type A/7A compliance. When liners are procured individually a representative sample of the purchased liners is inspected for compliance with appropriate specifications using an approved inspection procedure. It is the generator's responsibility to ensure the container and pedigree is inspected for compliance with the specification provided to the supplier. Containers that do not pass inspection are segregated from those that are acceptable to prevent inadvertent use.

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2.1.5 Compatibility of Waste with Containers [20.4.1 NMAC §264.172]

The TA-55 CSUs will only store containers made of or lined with materials that will not react with and are otherwise compatible with the wastes stored in them. Prior to filling the container with waste, all container components (e.g., lid, liner, and interior/exterior surface) are inspected to ensure container integrity as well as compatibility with the type of waste to be placed into the container. The "Los Alamos National Laboratory Waste Acceptance Criteria" (LANL, 2003a) requires that compatibility of the waste container, including liners, and the waste to be containerized is ensured. Information regarding the liner's compatibility with the waste components can be obtained from the container/liner manufacturer. This fulfills the requirements of 20.4.1 NMAC §264.172 [6-14-00].

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Prior to filling the container with waste, all container components (e.g., lid, liner, and interior/exterior surface) are inspected by the waste generator to ensure container integrity as well as compatibility with the type of waste to be placed into the container. The "Los Alamos National Laboratory Waste Acceptance Criteria" (LANL, 2002c) requires waste generators to ensure the compatibility of the waste container, including liners, with the waste to be containerized. Information regarding the liner's compatibility with the waste components can be obtained from the container/liner manufacturer.¶

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2.1.6 Management of Containers [20.4.1 NMAC §264.173(a) and (b)]

Waste containers stored at the TA-55 CSUs are handled in a manner that will not cause them to rupture or leak, as required in 20.4.1 NMAC §264.173(b) [6-14-00]. All containers are kept closed during storage in accordance with 20.4.1 NMAC §264.173(a) [6-14-00], except when waste is added to or removed from the container or when a container's contents need to be repackaged. In addition to the containers being closed, the closing devices will be secured in a manner that provides no visible holes, gaps, or other open spaces into the interior of the container, in accordance with 20.4.1 NMAC §264.1086(c)(1)(iii)[6-14-00].

Five of the CSUs are provided with ventilation from the TA-55-4 facility ventilation system. This ventilation system is designed to monitor air pressure and ambient air for personnel working in areas where hazardous or mixed waste is managed. It creates zones within TA-55-4 that are at a lower pressure than the outside air (negative pressure) to prevent the movement of contaminants from the building. Air flows from the zones of highest pressure to those of lowest pressure (i.e., highest potential contamination areas). The airflow through the different zones is carefully balanced and controlled to provide the greatest protection to personnel as well as to the environment. If negative air pressure exceeds designed limits, a ventilation alarm (a slow, repeating chime sound) is activated.

Detailed information on general facility operations and container management practices are contained in Attachments G and J of this permit application.

2.1.6.1 Packaging and Overpacking

Waste packaging/repackaging at TA-55 is conducted at the K13 and B40 CSUs. It includes the addition of waste received from generators into secondary containers or movement of waste from one secondary container to another. Waste received into the K13 CSU consists of small waste items that are eventually packed into secondary containers to maximize storage and shipping efficiency. The B40 CSU receives large waste items that need to be packaged into an SWB or ST45/ST90 shipping container. The following procedures are used to package and repackage waste:

- "Packing TRU Waste Containers," NMT7-WI3-SOP-TA55-013 (LANL, 2002b).
- "Managing Solid Low-Level Waste at TA-55," NMT7-HCP-TA55-DP-02L (LANL, 2002c).
- "Certification and Disposal of Low-Level, Oversize Waste," NMT7-WI3-TA55-HCP-DP-02L (LANL, 1999).

Overpacking will occur at all of the TA-55 CSUs when a primary container fails to provide adequate containment. The overpack container will then be considered the primary container.

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All containers are regularly inspected for evidence (e.g., corrosion, visible staining, bulges, rupture, dents, leaks) that may indicate surface contamination. If any evidence of surface contamination is detected, the waste container is either overpacked in an appropriate container or the waste is repackaged in a new container as discussed in Section 2.1.4.
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2.1.6.2 Labeling

Each container of waste will be labeled with a "Hazardous Waste" label bearing the following information:

- Generator name and address
- EPA Identification Number
- The accumulation start date
- The applicable EPA Hazardous Waste Number(s)

A "Radioactive Material/Radioactive Waste" label is applied, if appropriate. LANL will follow all applicable U.S. Department of Energy (DOE) and Nuclear Regulatory Commission (NRC) procedures, requirements and guidelines as they apply to storage, treatment, and radioactive decontamination of the TA-55 waste management units. The DOE and NRC regulations are not preempted by federal or state regulations governing the handling of hazardous waste. Compliance with all available DOE and NRC requirements is protective of human health and the environment.

2.1.6.3 Transportation of Containers

Flatbed trucks, trailers, and/or forklifts may be used to transport waste containers to and from the waste management units at TA-55. Forklift operations may use a boom, if necessary, to improve handling capabilities. 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.

2.1.7 Containment Systems [20.4.1 NMAC §270.15(a)(1-5) and 270.15(b)(1-2)]

In accordance with 20.4.1 NMAC §270.15(b)(1) [6-14-00], information contained in LANL's waste databases or waste characterization records can be used initially to verify the absence of free liquids in containers. In addition to records, visual examination can be used to verify the absence of free liquids. Potential liquids that might accumulate at the TA-55 CSUs are contained within containment systems (e.g., self-containment pallets) at each storage location until the liquid is removed. All secondary containment systems are designed 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 20.4.1 NMAC §264.175(b)(3) [6-14-00]. Table 2-4 summarizes the capacity associated with the containment systems provided for each CSU at TA-55.

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The TA-55-4 basement floors and walls provide secondary containment for the K13 and B40 CSUs as described in Section 2.1.7. Each CSU is provided with ventilation from the TA-55-4 facility ventilation system. This ventilation system is designed to monitor air pressure and ambient air for personnel working in areas where hazardous or mixed waste is managed. It creates zones within TA-55-4, which are at a lower pressure than the outside air. Air flows from the zones of lowest pressure (highest potential contamination areas). The airflow through the different zones is carefully balanced and controlled to provide the greatest protection to personnel as well as to the environment. If negative air pressure exceeds designed limits, a ventilation alarm (a slow, repeating chime sound) is activated.¶
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The methods used to move containers into and within the TA-55 CSUs will be selected based on the size and weight of containers to prevent hazards while moving containers. Damaged containers (e.g., severely corroded drums) must be repaired or overpacked or the wastes repackaged in new containers before being stored at any TA-55 CSU.¶

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The CSUs at TA-55 are used to store solid hazardous and mixed wastes. Containers with suspect or known free liquids are placed on self-containment pallets. If incompa ... [4]

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Table 2-4
Containment System Capacities for Container Storage at Technical Area 55

Container Storage Unit	Location	Waste Types	Maximum Capacity (gallons)	Containment System(s)	Containment Capacity (gallons)
B40	TA-55-4, Basement	Solid and Liquid	21,500	Self-Containment Pallets Covered Self-Containment Pallets Single-drum Containment Pallets	112[a] 112[a] 55
K13		Solid and Liquid	2,500	Cabinets Basement	10 46,258
Vault	TA-55-4, Basement	Solid and Liquid	4,000	Self-Containment Pallets Basement	112[a] 46,258
B05	TA-55-4, Basement	Solid	3,600	NA	NA
B45	TA-55-4, Basement	Solid	11,000	NA	NA
TA-55-185	West of TA-55-4	Solid	30,000	NA	NA
Storage Pad	Northwest of TA-55-4	Solid and Liquid	135,000	Covered Self-Containment Pallets	112[a]

a No more than 110 gallons (i.e., two 55-gal drums) of free liquids will be stored on an individual self-containment pallet.

TA = technical area
NA = not applicable because this CSU stores waste that is in the solid form only.

Any accumulated liquids are removed in a timely manner to prevent overflow of the containment system. The collected liquids are then transferred to appropriate containers and sampled, as necessary. If the accumulated liquids are from an identifiable source, or from water generated during fire-suppression activities, the resulting material may be characterized as a newly-generated waste and analyzed for constituents known to be components of the source. If the accumulated liquids are from other than an identifiable source, the resulting material will be analyzed for the appropriate potential parameters listed in Appendix E of the most recent version of the "Los Alamos National Laboratory General Part B Permit Application," hereinafter referred to as the LANL General Part B. Containers of collected liquids are stored with secondary containment, pending analytical results, which determine how the waste liquids will be managed. This method of removal and analysis of accumulated liquids fulfills the requirements of 20.4.1 NMAC §270.15(a)(5) [6-14-00], for prevention of overflow.

2.1.8 Inspection Schedules and Procedures

The purpose of inspections is to identify leaking containers, deterioration of containers, and/or loss of integrity of the containment system, as required by 20.4.1 NMAC §264.174 [6-14-00]. The inspections include checking the structural integrity of the containers (e.g., for bulging or warping). Inspections will follow the Inspection Plan in Attachment C of this permit application.

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Inspections of the containers while they are in storage will be used to verify that there are no visible holes, gaps, or other open spaces into the interior of containers while they are in storage. These inspections will be conducted in accordance with "Storage Area Inspections," NMT7-WI1S–HCP-TA-55-011 (LANL, 2001).

All containers are regularly inspected for evidence (e.g., corrosion, visible staining, bulges, rupture, dents, and leaks) that may indicate surface contamination. If any evidence of surface contamination is detected, the waste container is either overpacked in an appropriate container or the waste is repackaged in a new container as discussed in Section 2.1.4.

2.1.9 Special Requirements for Ignitable, Reactive, and Incompatible Wastes [20.4.1 NMAC §264.17 and 20.4.1 NMAC §§270.15(c) and 270.15(d)]

Ignitable or reactive waste is stored at the K13 and B40 CSUs and on the container storage pad. Pursuant to 20.4.1 NMAC §264.17 [6-14-00], LANL will adhere to the following specific waste management procedures for ignitable and reactive waste. Containers with ignitable or reactive wastes are located at least 50 ft from the facility property line (Figure A-5) at all times and are protected from sources of ignition or reaction. Waste management practices at the TA-55 CSUs minimize the possibility of accidental ignition. There are no sources of open flames allowed at the CSUs, and smoking is prohibited. Cutting and welding activities are never conducted in the vicinity of waste containers without proper controls and only non-sparking tools are used to handle waste containers, and lightning rods are located on all storage structures. "No Smoking" signs are conspicuously placed wherever there is a potential hazard from ignitable or reactive waste.

Precautions are taken to prevent reactions that may produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment or produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions. These precautions include keeping containers closed during storage and venting containers of mixed transuranic waste. Together, these measures meet the requirements of 20.4.1 NMAC §§264.17(a) and (b) and 264.176[6-14-00].

Incompatible wastes are separated and segregated from other wastes and materials by means of berm, dike, wall, or other specific means (e.g., secondary containment pallets, cabinets, distance). Incompatible waste is also stored at TA-55 in accordance with the following DOT compatibility groups:

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<#>Flammables (Class 3)¶
<#>Oxidizers (Class 5.1)¶
<#>Combustible/Noncombustible Miscellaneous Hazardous Material (Class 9)¶
<#>Corrosives (Class 8)¶
<#>Poisons (Class 6)¶
<#>Radioactive (Class 7)¶
<#>Acids (Class 8)¶
<#>Reactive (Class 4)¶
<#>Non-regulated materials.¶
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- Flammables (Class 3)
- Oxidizers (Class 5.1)
- Combustible/Noncombustible Miscellaneous Hazardous Material (Class 9)
- Corrosives (Class 8)
- Poisons (Class 6)
- Radioactive (Class 7)
- Acids (Class 8)
- Reactive (Class 4)
- Non-regulated materials.

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 20.4.1 NMAC §264.177(a) and (b), and 20.4.1 NMAC §270.15(d).

Ignitable, reactive, and incompatible wastes will not be stored at the B05, B45, Vault, and TA-55-185 CSUs; therefore, the requirements of 20.4.1 NMAC §264.17, and 20.4.1 NMAC §270.15(c) and (d) [6-14-00] do not apply.

2.1.10 Closure

Closure will consist of partial closure of one or more of the CSUs at TA-55 while leaving the other hazardous and mixed waste management units in service. Partial closure activities will be accomplished by removal of hazardous wastes and residues from the surfaces and/or equipment associated with the CSU to be closed and that may have come into contact with the waste. Detailed closure procedures for the TA-55 CSUs are addressed in Attachment F.1 of this permit application. This information is provided to meet the requirements of 20.4.1 NMAC §§264.111 and 264.178 [6-14-00].

2.1.11 Control of Run-On/Runoff

Run-on into the CSUs at TA-55-4 and TA-55-185 will not occur due to their location inside buildings. The slopes surrounding these buildings direct potential run-on away from each building. The container storage pad is located above grade, has positive surface drainage, and has a culvert beneath it that will direct potential run-on away from this storage location. In addition, containers stored on the pad are covered. Special order waste boxes, large waste boxes, and SWBs will not be covered. Figures A-5 and A-9 in Attachment A of this permit application show the contours and surface drainage around the storage pad, TA-55-4, and TA-55-185. This information is provided to meet the requirements of 20.4.1 NMAC §264.175(b)(4), and 20.4.1 NMAC §270.14(b)(8)(ii) [6-14-00].

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Runoff to the environment of liquids resulting from precipitation, fire-suppression activities, leaks, and/or spills is controlled at each of the TA-55 CSUs by secondary containment. Potential liquids that might accumulate are contained within secondary containment (e.g., self-containment pallets) until the liquid is removed using a portable pump, a high-efficiency particulate air (HEPA) vacuum, and/or sorbents, depending on the volume. In the event of a hazardous and/or mixed waste spill that results in the accumulation of free liquids in the secondary containment system, all free liquids will be removed within 24 hours of discovery, unless "as low as reasonably achievable" (ALARA) concerns prevent accessibility. This information is provided to meet the requirements of 20.4.1 NMAC §270.14(b)(8)(ii) [6-14-00].

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2.2 STORAGE TANK SYSTEM

The information provided in this section is submitted to address the applicable tank storage requirements of 20.4.1 NMAC §270.16, and 20.4.1 NMAC, Subpart V, Part 264, Subpart J [6-14-00]. There is one storage tank system at TA-55. This tank system is comprised of 3 tank components and consists of a total of 16 tanks with a maximum storage capacity of 1,020 L or approximately 266 gal. Table 2-5 identifies each tank component, its location, the number of tanks, and capacity of each tank.

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Table 2-5
Storage Tank System at Technical Area 55[a]

Tank Component	Location	Number of Tanks	Tank Capacity[b,c] (liters)	Tank Capacity[b,c] (gallons)
Evaporator Glovebox Tank	TA-55-4, Room 401	1	270	71
Cementation Unit Pencil Tanks	TA-55-4, Room 401	5	50	13
Pencil Tanks	TA-55-4, Room 401	10	50	13

a The storage tank system consists of 3 components that store the same type of waste and share a common piping network.
b The overall capacity of the unit is 1,020 liters [~266 gallons].
c The tank capacity listed is for each individual tank associated with that component.
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The following sections provide a brief description of the waste management practices associated with the TA-55 storage tank system. Detailed descriptions of each tank component are proved in Attachment H of this permit application.

2.2.1 Authorized Waste

The TA-55 storage tank system is used to store mixed waste solutions bearing one or more of the EPA Hazardous Waste Numbers presented in the most recent version of the LANL General Part A.

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2.2.2 Containment Systems [20.4.1 NMAC §270.16(g) and 20.4.1 NMAC §264.193 (a-d) and (e)(1)]

The storage tank system is located at TA-55-4 inside Room 401. This room has a floor and walls that completely surround the tank system (i.e., tanks, ancillary equipment, and piping) and serve as secondary containment, therefore, the secondary containment meets the requirements of 20.4.1 NMAC §264.193(e)(1) for an external liner system.

The walls and floor of Room 401 will prevent the migration of wastes or accumulated liquids to any soil, groundwater, or surface water and are capable of collecting releases and accumulated liquids until the material is removed. The concrete in Room 401 is sealed with an epoxy or similar coating to aid in decontamination should a spill occur. Secondary containment is primarily provided by the floor, which consists of 10 in. of concrete. In addition, tertiary containment is provided by the floor of the basement level of TA-55-4, which also consists of 10 in. of concrete. The construction joints in the floor slab and exterior walls of Room 401 are all constructed with chemical-resistant water stops in place. The conduit piping penetrating the floor of the room is secured with rubber boots, bushings, and flanges. All penetrations (e.g., holes for conduit) in the floor have been sealed to prevent liquids from entering the penetrations.

The secondary containment is sized to contain 100 percent of the volume of the largest tank, pursuant to the requirements of 20.4.1 NMAC §264.193(e)(1)(i) [6-14-00]. Table 2-6 identifies the secondary containment storage capacity as compared to the tank capacity for each component of the storage tank system.

Table 2-6
Secondary Containment Capacities for the Storage Tank System

Storage Tank System Component	No. of Tanks	Tank Capacity (gallons)[a]	Location	Secondary Containment	Secondary Containment Capacity (gallons)
Evaporator Glovebox Tank	1	71	TA-55-4, Room 401	TA-55-4, Room 401	10,773[b]
Cementation Unit Pencil Tanks	5	13			
Pencil Tanks	10	13			

a The tank capacity listed is for each individual tank associated with the component.
b Secondary containment capacity is based on Room 401 which is recessed 2.5 inches and has dimensions measuring 60 feet long by 75 feet wide.

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2.2.3 Inspection Schedules and Procedures

The purpose of inspections is to identify leaking, deteriorating, or corroding tanks, or components of the storage tank system and identify the loss of integrity of the containment system, as required by 20.4.1 NMAC §§264.15, and 264.195 [6-14-00]. Inspections of the storage tank system will follow the Inspection Plan in Attachment C of this permit application.

2.2.4 Special Requirements for Ignitable, Reactive, and Incompatible Wastes

No ignitable, reactive, or incompatible mixed wastes will be stored in the storage tank system.

2.2.5 Closure

Closure will consist of partial closure of the storage tank system at TA-55 while leaving the other waste management units in service. Partial closure will be accomplished by the removal of mixed wastes and residues from the surfaces and/or the equipment that may have come in contact with the wastes. Closure will include decontamination and disposal activities that will ensure removal of mixed wastes and residues to established cleanup levels. Detailed closure procedures for the storage tank system are addressed in Attachment F.2 of this permit application. This information is provided to meet the requirements of 20.4.1 NMAC §264.111 [6-14-00].

2.2.6 Control of Run-On/Runoff

The storage tank system is located inside a building that prevents it from exposure to precipitation and prevents contaminant mobility out of the containment system. The slope surrounding the building directs potential run-on away from the building and prevents flooding of the secondary containment area provided for the tanks.

Runoff to the environment of liquids resulting from fire-suppression activities, leaks, and/or spills is prevented by the secondary containment in Room 401, as described in Section 2.2.2. Potential liquids that might accumulate are contained within secondary containment (e.g., self-containment pallets) until the liquid is removed using a portable pump, a HEPA vacuum, and/or sorbents, depending on the volume. In the event of a hazardous and/or mixed waste spill that results in the accumulation of free liquids in the secondary containment system, all free liquids will be removed within 24 hours of discovery, unless ALARA concerns prevent accessibility. This information is provided to meet the requirements of 20.4.1 NMAC §270.14(b)(8)(ii) [6-14-00].

2.3 MISCELLANEOUS UNIT – CEMENTATION UNIT

The information provided in this section is submitted to address the applicable miscellaneous unit requirements of 20.4.1 NMAC §270.23, and 20.4.1 NMAC, Subpart V, Part 264, Subpart X [6-14-00].

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<#>Partial closure of the storage tank system will consist of the removal of mixed waste from the component to be closed, the removal of a given tank component (e.g., the 5 cementation pencil tanks) and the ancillary equipment (i.e., piping valves) connected directly to it, and decommissioning or decontamination of any surfaces, and/or equipment that have been contaminated by hazardous constituents. What remains in place will consist of the portions of the piping system which all of the tank components share and the secondary containment. The secondary containment will be decontaminated in the vicinity of the tank component(s) being removed.¶
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<#>Final closure of the storage tank system will include removal of all of the tank components and ancillary equipment, including the shared portions of the piping system. The facility headers for ventilation, t ... [5]
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The cementation unit is located in glovebox GB-454 along the west wall of TA-55-4, Room 401. The unit has been in operation since 1987 and has a maximum capacity of 568 L (approximately 150 gal). It consists of a pH adjustment column, vacuum trap, two motor-driven mixers, four impellers, associated support structures, a glovebox, and piping.

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2.3.1 Authorized Waste

The TA-55 cementation unit is used to treat solid and liquid mixed wastes bearing one or more of the EPA Hazardous Waste Numbers presented in the most recent version of the LANL General Part A.

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2.3.2 Containment Systems

The cementation unit shares secondary containment with the storage tank system. Room 401 has a floor and walls that completely surrounds the unit and serve as secondary containment, therefore, the secondary containment requirements of 20.4.1 NMAC §264.193 (1)(iv) are met. A detailed description of the containment features for Room 401 is provided in Section 2.2.2.

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Table 2-7 identifies the secondary containment storage capacity for Room 401 as compared to the total capacity of the cementation unit and storage tank system.

Table 2-7
Containment System Capacity Compared to the Capacity of the Storage Tank System and Cementation Unit

Location	Containment System Capacity (gallons)	Waste Management Units	
		Unit	Total Capacity (gallons)
TA-55-4, Room 401	10,773[a]	Storage Tank System *(Evaporator Storage Tanks, Cementation Unit Pencil Tanks, Pencil Tanks)*	266
		Cementation Unit	150

a Containment capacity is based on Room 401, which is recessed 2.5 inches and has dimensions measuring 60 feet long by 75 feet wide.

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Secondary containment for the cementation unit will easily contain 100 percent of the volume of the cementation unit and the largest tank of the storage tank system (Section 2.2.2) pursuant to the requirements of 20.4.1 NMAC §246.193(1)(iv).

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2.3.3 Inspection Schedules and Procedures

The purpose of inspections is to identify leaking, deteriorating, or corroding components of the cementation unit and identify the loss of integrity of the containment system, as required by 20.4.1

NMAC §§264.15 and 264.602 [6-14-00]. Inspections of the cementation unit will follow the Inspection Plan in Attachment C of this permit application.

2.3.4 Special Requirements for Ignitable, Reactive, and Incompatible Wastes

No ignitable, reactive, or incompatible mixed wastes will be treated in the cementation unit.

2.3.5 Closure

Closure will consist of partial closure of the cementation unit while leaving the other regulated hazardous and mixed waste management units at TA-55 in service. Partial closure will be accomplished by the removal of mixed wastes and residues from the surfaces and/or the equipment associated with the cementation unit that may have come in contact with the wastes. Closure will include decontamination and disposal activities that will ensure removal of mixed wastes and residues to established cleanup levels. Detailed closure procedures for the cementation unit are addressed in Attachment F.3 of this permit application. This information is provided to meet the requirements of 20.4.1 NMAC §264.111 [6-14-00].

2.3.6 Control of Run-On/Runoff

The cementation unit is located inside a building that prevents them from exposure to precipitation and prevents contaminant mobility out of the containment system. The slope surrounding the building directs potential run-on away from the building and prevents flooding of the secondary containment area provided for the unit.

Runoff to the environment of liquids resulting from fire-suppression activities, leaks, and/or spills is prevented by the secondary containment in Room 401, as described in Section 2.3.2. Potential liquids that might accumulate are contained within secondary containment (e.g., self-containment pallets) until the liquid is removed using a portable pump, a HEPA vacuum, and/or sorbents, depending on the volume. In the event of a hazardous and/or mixed waste spill that results in the accumulation of free liquids in the secondary containment system, all free liquids will be removed within 24 hours of discovery, unless ALARA concerns prevent accessibility. This information is provided to meet the requirements of 20.4.1 NMAC §270.14(b)(8)(ii) [6-14-00].

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Deleted: Runoff from the cementation unit to other areas of the facility or to the environment will be prevented by the secondary containment in Room 401 as described in Section 2.3.2. Control of liquids resulting from fire-suppression activities and from leaks or spills will be accomplished by using a portable pump, a HEPA vacuum, and/or sorbents, depending on the volume of accumulated liquid. ¶

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Flatbed trucks, trailers, and/or forklifts may be used to transport waste containers to and from the waste management units at TA-55. Forklift operations may use a boom, if necessary, to improve handling capabilities. 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.

Page 6: [2] Deleted	Jennifer Griffin	8/21/2003 2:19:00 PM

If the primary container requires overpacking due to container failure, it will be overpacked into a container that will become the primary container. Waste repackaging will occur at the K13 and the B40 CSUs except for overpacking, which will occur at any TA-55 CSU.

The K13 and B40 CSUs are also used to package waste received from waste generators.

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"Certification and Disposal of Low-Level," NMT7-SOP-TA55-DP-01L (LANL, 2002f).

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2.1.6.3 TA-55 Storage Area Practices

The CSUs at TA-55 are used to store solid hazardous and mixed wastes. Containers with suspect or known free liquids are placed on self-containment pallets. If incompatible wastes are stored, they are kept segregated during storage.

2.1.6.4 General Container Management Practices

Inspections will be conducted and aisle space will be maintained in accordance with Attachment C of this permit application.

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

Electrical power is supplied to operate ventilation systems, the public address system, various instruments, and other electrical equipment at TA-55. In the event of a power failure, portable generators are available from the Nuclear Materials Technology Facilities Management Group support office at TA-55-3. These generators may be used as temporary power sources at any of the waste management units within TA-55. Evacuation alarms located throughout TA-55 are equipped with a battery back-up and will continue to operate for eight hours during a power failure. Operations at any of the units would be

discontinued temporarily if electrical power was not restored quickly or if container-handling equipment failed. Neither a power nor an equipment failure would affect containment at any of the waste management units at TA-55.

Personnel at the TA-55 CSUs are required to use appropriate personal protective equipment (PPE) to protect themselves from the hazards found in the work place under normal conditions. Use of PPE protects workers from direct contact with and inhalation or ingestion of hazardous materials. At TA-55, PPE is used as needed during waste-handling operations and when responding to unusual hazardous situations.

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Partial closure of the storage tank system will consist of the removal of mixed waste from the component to be closed, the removal of a given tank component (e.g., the 5 cementation pencil tanks) and the ancillary equipment (i.e., piping valves) connected directly to it, and decommissioning or decontamination of any surfaces, and/or equipment that have been contaminated by hazardous constituents. What remains in place will consist of the portions of the piping system which all of the tank components share and the secondary containment. The secondary containment will be decontaminated in the vicinity of the tank component(s) being removed.

Final closure of the storage tank system will include removal of all of the tank components and ancillary equipment, including the shared portions of the piping system. The facility headers for ventilation, the wet vacuum system, and the radioactive liquid waste collection system will be left in place for other uses.

Closure will minimize the need for further maintenance, preclude the release of hazardous constituents to environmental media, and be protective of human health and the environment, in accordance with the closure performance standards specified in 20.4.1 NMAC §264.111 [6-14-00]. Detailed closure procedures for the TA-55 CSUs are addressed in Attachment F.2 of this permit application. This information is provided to meet the requirements of 20.4.1 NMAC §264.111 and 264.197 [6-14-00].

Page 13: [6] Deleted **Jennifer Griffin** **8/21/2003 4:00:00 PM**

Runoff from the storage tank system to other areas of the facility or to the environment will be prevented by the secondary containment in Room 401 as described in Section 2.2.2. Control of liquids resulting from fire-suppression activities and from leaks or spills will be accomplished by using a portable pump, HEPA vacuum, and/or sorbents, depending on the volume of accumulated liquid.

3.0 OTHER FEDERAL LAWS

A discussion of federal laws, as required by the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, §§270.3 and 270.14(b)(20), revised June 14, 2000, is provided in Section 3.0 of the most recent version of the LANL General Part B.

4.0 CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

The information provided in this section is submitted to address the requirements for solid waste management units (SWMU) in accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 §270.14(d), revised June 14, 2000 [6-14-00]. This section provides the SWMUs identified for Technical Area (TA) 55 at the Los Alamos National Laboratory (LANL).

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, 1994), hereinafter 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."

Table 4-1 lists the SWMUs at TA-55. Supplement 4-1, which has been extracted from the 2003 “Solid Waste Management Unit Report” (LANL, 2003b) provides descriptions of the SWMUs listed in Table 4-1. These descriptions include, to the extent available, the unit type, general dimensions and structural descriptions, the dates of operation, and the waste managed at the unit. Supplement 4-1 also includes the most current information available pertaining to releases of hazardous wastes or hazardous constituents from the units and results of sampling analyses conducted to date. In addition, the location of each SWMU is presented on topographic maps included with Supplement 4-1.

Table 4-1
Technical Area (TA) 55 Solid Waste Management Units

SWMU No./Former SWMU No.	Consolidated SWMU No.	Location	Description	Status
42-001(a)	42-001(a)-99	Site of former TA-42-1 within TA-55	Incinerator	Inactive; to undergo corrective action.
42-001(b-c)			Holding Tanks	
42-002(b)			Decontamination Area	
42-003			Septic System	
55-008	55-008	TA-55-4, Basement	Sumps, Pumps and Tanks	Active; recommended for no further action (NFA). To be permitted.
55-009	55-009	TA-55-263	Concrete Enclosure	Inactive; recommended for NFA

SWMU = Solid Waste Management Unit
TA = technical area

Supplement 4.1

Solid Waste Management Units at Technical Area 55
[Information Extracted from the 2003 "Solid Waste Management Unit Report"]

The 2003 “Solid Waste Management Unit Report” has been reviewed by an ADC and S-7 to be assigned its own unique LA-UR number.

It will not be provided for security review with this permit application.

5.0 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.

_____ _____

James L. Holt Date Signed
Associate Director, Operations
Los Alamos National Laboratory
University of California Operator

_____ _____

Ralph E. Erickson Date Signed
Manager, Los Alamos Site Office
National Nuclear Security Administration
U.S. Department of Energy
Owner/Operator

CERTIFICATION
Los Alamos National Laboratory
Technical Area 55 General Part B Permit Application

CERTIFICATION BY TECHNICAL AREA 55 REPRESENTATIVE

I certify under penalty of law that this document and attachments were reviewed and approved for consistency with the waste management operations of the Nuclear Materials Technology (NMT) Division 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 reviewing, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete as it applies to NMT operations at Technical Area 55. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____ _____

Steve L. Yarbro Date Signed
Division Director
Nuclear Materials Technology Division
Los Alamos National Laboratory

_____ _____

Ronald E. Wieneke Date Signed
Group Leader
Waste Management/Environmental Compliance
Nuclear Materials Technology Division
Los Alamos National Laboratory

CERTIFICATION
Los Alamos National Laboratory
Technical Area 55 General Part B Permit Application

CERTIFICATION BY ENVIRONMENT, SAFETY, AND HEALTH DIVISION REPRESENTATIVE

I certify under penalty of law that this document and 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 reviewing, 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.

_____ _____

Anthony R. Grieggs Date Signed
Group Leader
Solid Waste Regulatory Compliance
Risk Reduction and Environmental Stewardship Division -
Los Alamos National Laboratory

_____ _____

Beverly A. Ramsey Date Signed
Division Director
Risk Reduction and Environmental Stewardship Division
Los Alamos National Laboratory

6.0 REFERENCES

EPA, 1994, "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, U.S. Environmental Protection Agency, Region 6, Hazardous Waste Management Division, Dallas, Texas.

LANL, 2003a and all recent revisions, "Los Alamos National Laboratory Waste Acceptance Criteria," PLAN-WASTEMGMT-002, Revision 3.8, Los Alamos National Laboratory, Los Alamos, New México, February 5, 2003.

LANL, 2003b and all recent revisions, "Solid Waste Management Unit Report," LA-UR-03-6000, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 2002a, "Response to Notice of Deficiency; TA-55 Part B RCRA Permit Application January 2002, Revision 1.0, May 16, 2002," LA-UR-02-5041, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 2002b and all recent revisions, "Packing TRU Waste Containers," NMT7-WI3-SOP-TA55-013, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 2002c and all recent revisions, "Managing Solid Low-Level Waste at TA-55," NMT7-HCP-TA55-DP-02L, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 2001 and all recent revisions, "Storage Area Inspections," NMT 7-WI1S-HCP-TA-55-011 Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 1999 and all recent revisions, "Certification and Disposal of Low-Level, Oversize Waste," NMT7-WI3-TA55-HCP-DP-02L, Los Alamos National Laboratory, Los Alamos, New Mexico.

NMED, 1998a, Dinwiddie, Robert S. (Stu), New Mexico Environment Department, Letter to T. Taylor and J. Browne, February 5, 1998.

TA-42, Operations and Environmental Setting

Former TA-42 was designed and built in 1951 as an incinerator site for radionuclide-contaminated waste. It was never fully operational, and all buildings were removed in 1978. In the interim, the area was used for storage and decontamination work. The former site of TA-42 lies within the current boundaries of TA-55, on the narrow mesa formed between Mortandad Canyon on the north and Twomile Canyon, a branch of Pajarito Canyon, on the south. The former site is near the north edge of the mesa.

SWMU 42-001(a)-99 — Aboveground storage tanks - facility/equipment - incinerators/thermal treatment units - outfall/effluent discharge

Administrative Authority	NMED	**Former Operable Unit**	N/A
Technical Area	TA-42	**Dates of Operation**	1951-1970
Has ER Sampled the Site?	Yes	**ER Remedial Action Conducted?**	No
Structure Number	42-1, 42-2, 42-3, 42-4	**Other Remedial Action Conducted?**	Yes

Unit Description

Consolidated SWMU 42-001(a)-99 consists of former SWMUs 42-001(a), 42-001(b), 42-001(c), 42-002(b), and 42-003 and former AOC 42-002(a). TA-42 was the site of a radioactive waste incinerator that operated in 1951 and 1952. The incinerator facility was used to store and decontaminate radioactively contaminated equipment from 1957 to 1969. In 1969, an unsuccessful attempt was made to reactivate the incinerator so it could burn uncontaminated classified wastes. By 1970, all operations were discontinued, and all combustibles were removed from the building. The facilities were decommissioned in 1977, and the site was decontaminated in 1978. Contamination remaining after the 1978 D&D of this consolidated SWMU is believed to be associated with radionuclide decontamination operations from 1957 to 1969. Former TA-42 is located within the boundaries of TA-55.

Former SWMU 42-001(a) is the historical location of the incinerator and control building (Building 42-1). The complex was built to reduce the amount of radionuclide-contaminated waste produced at LANL. The incinerator, which was never fully operational and was shut down about a year after it was built, was a steel-frame structure covered with corrugated metal. The facility consisted of a 2000-sq-ft floor area control building, incinerator, cyclone dust collector, spray cooler, Venturi scrubber, filter bank, and ash separator. Combustion products passed through an off-gas cleanup system before discharge through an exhaust stack. The off-gas system consisted of a Venturi scrubber, a filter bank, and an ash separator. Ash trapped in the off-gas system and incinerator was transported by underground drainlines to two holding tanks [former SWMUs 42-001(b) and 42-001(c)] located immediately north of the incinerator.

Former SWMUs 42-001(b) and 42-001(c) are the locations of two former ash holding tanks (structures 42-2 and 42-3) at the incinerator complex. They were each 22 ft in diameter and approximately 13 ft high, with a volume of 37,000 gal. The tanks were built in 1951 and removed in 1978. Some ash from the incinerator reportedly was discharged to Mortandad Canyon in 1952; the contaminant was thought to be lanthanum-140. Samples taken in the canyon downstream from TA-42 after the discharge showed radioactive contamination. When the tanks were decommissioned in 1978, the contents were assayed and measured for plutonium. Contaminated sludge was removed, mixed with cement, and taken to MDA G for storage. The tanks were excavated and taken to TA-54 for disposal. The drainlines were filled with hot asphalt to contain radioactive contamination. It is not known if the drainlines were removed.

Former AOC 42-002(a) is the historical location of an indoor storage and decontamination area, and SWMU 42-002(b) is the location of a historical outdoor decontamination area. Between 1956 and 1969, the main floor of Building 42-1 was used to store and decontaminate equipment. During decontamination, a “vacublaster” removed radionuclides and other contaminants from various pieces of equipment. The process generated wastes that are believed to have been discharged to the building’s septic system (former SWMU 42-003). It is believed that fine solid residues were bagged and disposed of at an MDA. Objects that were too large to take inside the building (such as vehicles) were cleaned at the end of the asphalt driveway located west and north of Building 42-1. Wash water flowed down an embankment on the northwest side of the parking lot. Contaminated soils in that area were not sampled or removed during the 1978 D&D activities.

Former SWMU 42-003 is the historical location of a septic system that served the incinerator complex. The system was composed of a 565-gal. septic tank (structure 42-4), a drainline from Building 42-1 to the tank, a filter trench, a tile leach field, and an outfall to Mortandad Canyon. The septic tank received radioactive liquid wastes from Building 42-1. According to the OU 1129 work plan, the system probably also received solvents, acids, and grease. Radioactively contaminated liquids periodically were removed from the septic tank and disposed of at pit 4 at MDA L. Samples taken downstream from TA-42 in Mortandad Canyon in 1952 showed radioactive contamination in the canyon. The septic tank was observed to contain water and possibly to have overflowed in 1973. At that time, the tank slurry was sampled and was found to be radioactively contaminated. The system was installed in 1951 and the system and associated contaminated soils were removed as part of the 1978 D&D activities. When it was decommissioned, liquid in the tank was pumped and treated at Building 50-1, the radioactive liquid waste treatment facility [SWMU 50-001(a)]. The tank sludge was solidified by adding cement, and the tank and sludge were taken to MDA G. Contaminated soils around the tank also were taken to MDA G, and the excavated area was backfilled. Contaminated soils in the drainfield were excavated.

In 1978, following D&D, the Environmental Surveillance Group collected soil samples and analyzed them for radionuclides. Low levels of contamination were found but were considered to meet ALARA standards. After concurrence from DOE-LAAO, the area was contoured and revegetated to minimize erosion. In 1991, LANL's Environmental Protection Group performed a reconnaissance

survey. Soil samples were collected and analyzed for radionuclides, PCBs, organic chemicals, and inorganic chemicals. Results from the analyses, which showed elevated concentrations of plutonium and lead, were used by the ER Project to design its SAP for the 1992 RFI.

ER Project Activities

Information presented in this section was derived from previously published documents. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

In 1992, the ER Project conducted an RFI at the former sites that make up consolidated SWMU 42-001(a)-99. The purpose of the RFI was to determine whether potential contamination at the site would be exposed during construction of a new facility. Sampling was conducted to detect and to quantify contaminants and to estimate the extent of contamination at former TA-42. The DOE-Albuquerque Operations Office used the RFI results for construction validation of the NSTL that was to be constructed at the site of former TA-42. Sample locations were selected to bound the extent of contaminants detected during the 1991 reconnaissance study and to include locations where construction activities might adversely affect residual contamination around the NSTL structures or utility lines. Fifty-one surface and subsurface soil samples were collected from 19 locations around the location of the former incinerator complex. Samples were field-screened for organic chemicals and radionuclides. No elevated chemical concentrations were detected during field-screening. Samples were analyzed for radionuclides and lead because the analytical suite was based on the results of the 1991 reconnaissance study. Elevated levels of plutonium-238, plutonium-239/-240, and uranium-235 were found. Data indicated that the levels of radionuclides did not pose an unacceptable risk to human health. The RFI report recommended NFA at the former sites in this consolidated unit. NMED determined the report to be insufficient in the characterization of the site, and LANL formally withdrew the RFI report in 1997.

ER Project Sampling Summary

The following table shows the number of analytes that exceeded BVs, FVs, and SALs that were in use in calendar year 2002. These data reflect site conditions before any remedial activities may have occurred, as discussed in the ER Project activities section above. BVs are naturally occurring concentrations of inorganic chemicals and radionuclides in soil, sediment, or tuff before any influence from LANL operations. FVs are concentrations of radionuclides in soil, sediment, or tuff that resulted from global atmospheric deposition unrelated to LANL releases. SALs are concentrations of chemicals or radionuclides based on a residential exposure, below which there is no potential unacceptable risk to human health.

Analytical Suite Sampled	No. of Chemicals Detected	No. of Chemicals >CY2002 BV/FV (If Applicable)	No. of Chemicals >CY2002 SAL (Residential)
Inorganic chemicals	1	1	0
Radionuclides	6	4	1

The following table provides the maximum concentrations of analytes that exceeded CY2002 SALs.

Analytical Suite	Analyte	Maximum Concentration	CY2002 SAL (Residential)
Radionuclides	Thorium-228	2.59 pCi/g	2 pCi/g

References

RFI Report for TA-42: PRSs 42-001(a,b,c), 42-002(a,b), 42-003 — LA-UR Number: 95-2881

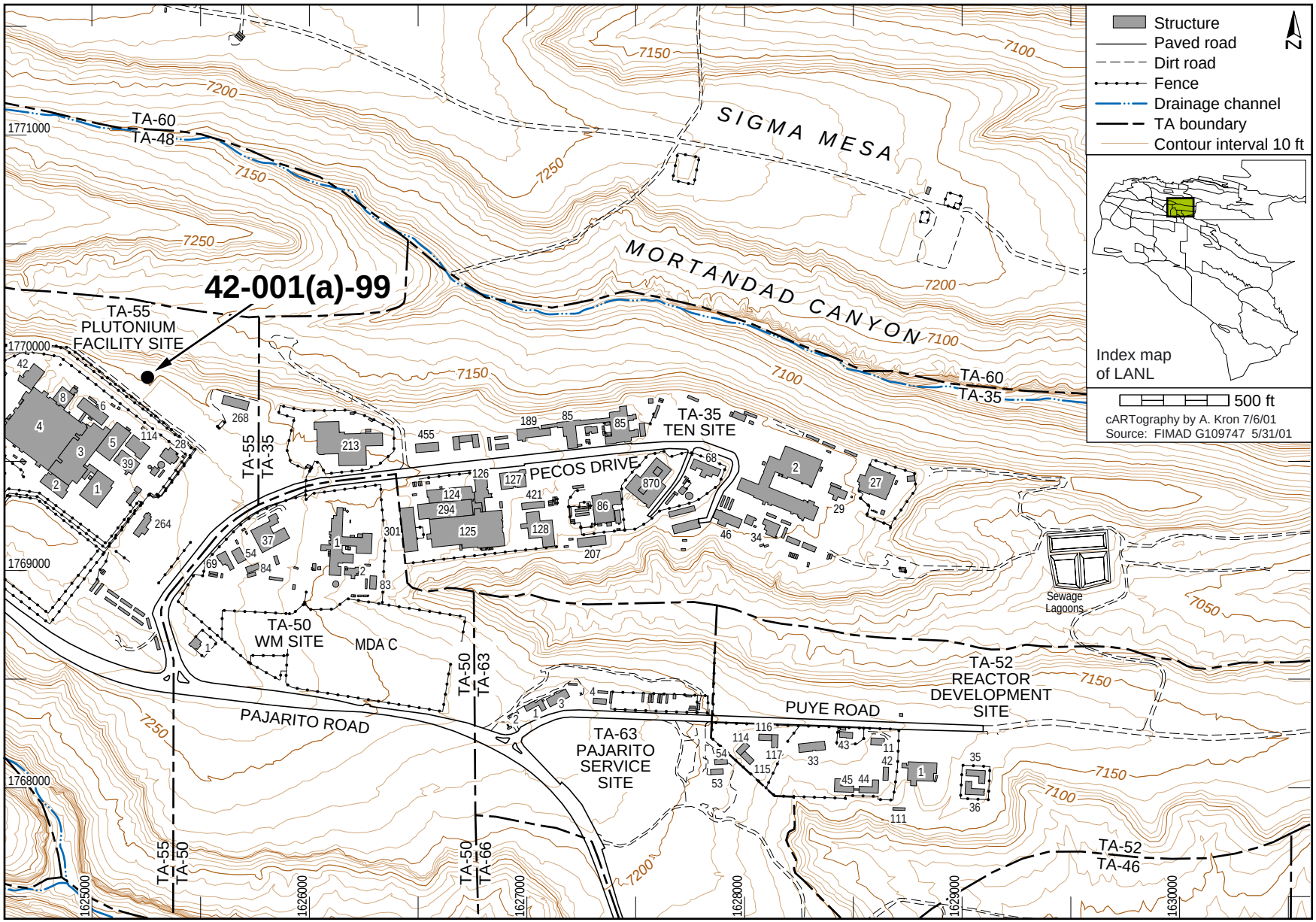
Preliminary Draft of OU 1129 Accelerated Characterization at Former TA-42 in Support of Construction Validation Project at Los Alamos National Laboratory (LANL) — LA-UR Number: N/A

Revised Sampling and Analysis Plan for OU 1129 Aggregate J — LA-UR Number: 92-2120

RFI Work Plan for Operable Unit 1129 — LA-UR Number: 92-0800

View of SWMU 42-001(a)-99

View of SWMU 42-001(a)-99


42-001(a)-99
TA-55
PLUTONIUM
FACILITY SITE
TA-60
TA-48
SIGMA MESA
MORTANDAD CANYON
TA-60
TA-35
TA-35
TEN SITE
PECOS DRIVE
TA-55
TA-35
TA-50
WM SITE
MDA C
TA-50
TA-63
PAJARITO ROAD
TA-63
PAJARITO
SERVICE
SITE
PUYE ROAD
TA-52
REACTOR
DEVELOPMENT
SITE
Sewage
Lagoons
TA-55
TA-50
TA-50
TA-66
TA-52
TA-46
1771000
1770000
1769000
1768000
1625000
1626000
1627000
1628000
1629000
1630000
7200
7150
7250
7100
7050
Structure
Paved road
Dirt road
Fence
Drainage channel
TA boundary
Contour interval 10 ft
N
Index map
of LANL
500 ft
cARTography by A. Kron 7/6/01
Source: FIMAD G109747 5/31/01

AOC 42-004 — Surface disposal

Administrative Authority	DOE	**Former Operable Unit**	OU 1129
Technical Area	TA-42	**Dates of Operation**	1950s
Has ER Sampled the Site?	No	**ER Remedial Action Conducted?**	No
Structure Number	N/A	**Other Remedial Action Conducted?**	No

Unit Description

AOC 42-004 is the location where building debris was discarded over the canyon edge north of former TA-42, which is located within the boundaries of TA-55. It is not known if the debris contained hazardous or radioactive constituents. Sampling conducted in 1991 during a reconnaissance study indicated background radioactivity levels and no organic or inorganic chemicals or PCBs.

ER Project Activities

RFI activities conducted at this site are described in detail in the documents listed in the reference section below. No additional RFI activities have been conducted at this site.

The results of the 1991 sampling were used to propose AOC 42-004 for NFA, because contaminants were not present in concentrations that would pose a threat to human health or the environment.

ER Project Sampling Summary

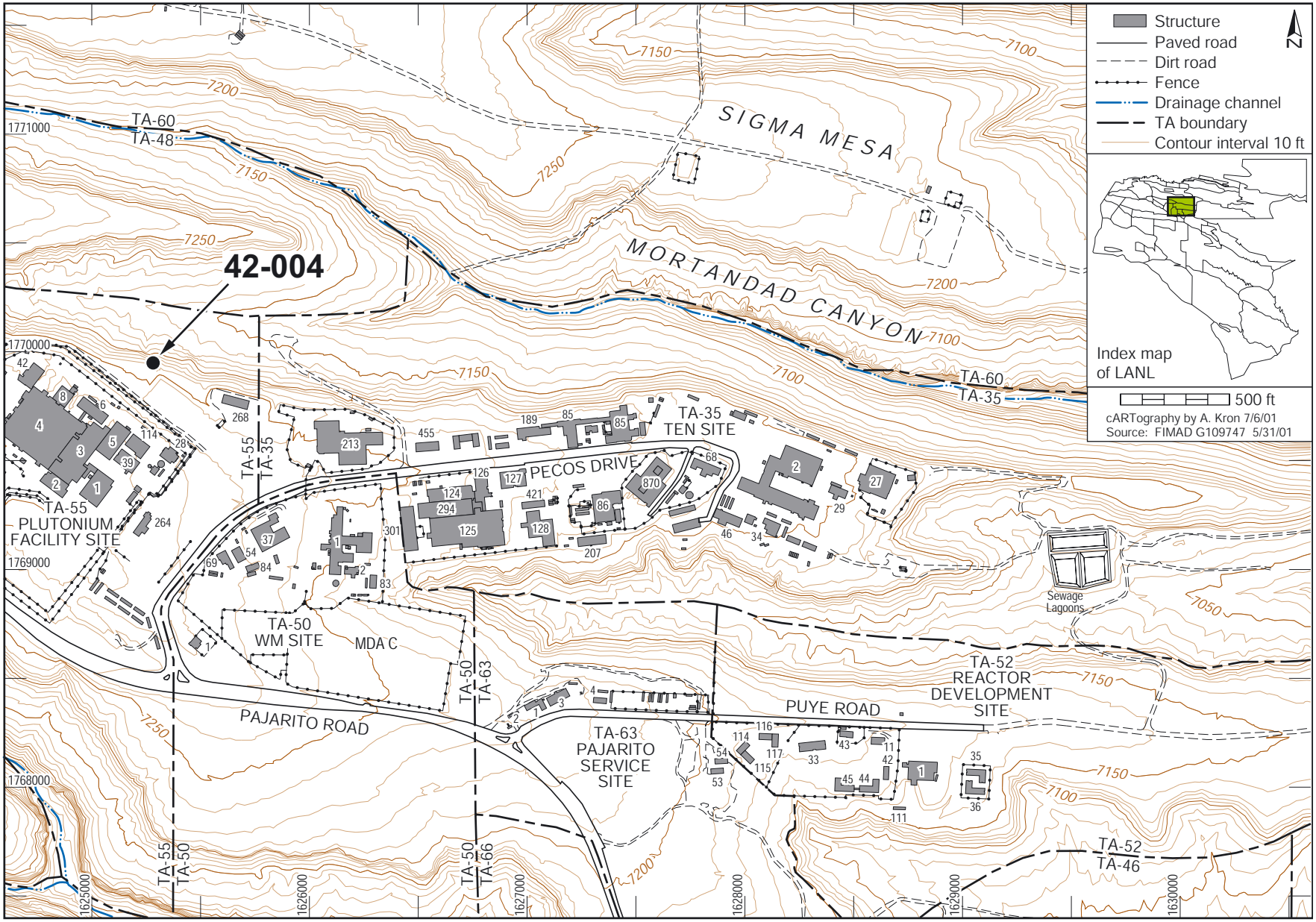
No analytical samples were collected at this site.

References

Request for Permit Modification, Units Proposed for NFA, March 1995	LA-UR Number: 95-0767
Addendum to RFI Work Plan for Operable Unit 1129	LA-UR Number: 92-0800
Preliminary Draft of OU 1129 Accelerated Characterization at Former TA-42 in Support of Construction Validation Project at Los Alamos National Laboratory (LANL)	LA-UR Number: N/A
Revised Sampling and Analysis Plan for OU 1129 Aggregate J	LA-UR Number: 92-2120
RFI Work Plan for Operable Unit 1129	LA-UR Number: 92-0800

View of AOC 42-004

View of AOC 42-004


42-004
SIGMA MESA
MORTANDAD CANYON
TA-60
TA-48
TA-60
TA-35
TA-35
TEN SITE
PECOS DRIVE
TA-55
PLUTONIUM
FACILITY SITE
TA-55
TA-35
TA-50
WM SITE
MDA C
TA-50
TA-63
PAJARITO ROAD
TA-63
PAJARITO
SERVICE
SITE
PUYE ROAD
TA-52
REACTOR
DEVELOPMENT
SITE
Sewage
Lagoons
TA-52
TA-46
TA-55
TA-50
TA-50
TA-66
1771000
1770000
1769000
1768000
1625000
1626000
1627000
1628000
1629000
1630000
7250
7200
7150
7100
7050
Structure
Paved road
Dirt road
Fence
Drainage channel
TA boundary
Contour interval 10 ft
N
Index map
of LANL
500 ft
cARTography by A. Kron 7/6/01
Source: FIMAD G109747 5/31/01

TA-55, Plutonium Facility Site

The Plutonium Facility at TA-55 occupies about 40 acres of the total 90 acres at TA-55 approximately 1 mi southeast of the central technical area (TA-03). The Plutonium Facility is situated inside a restricted zone surrounded by a double security fence. The main complex has five connected buildings: the Administration Building (Building 1), the Support Office Building (Building 2), the Support Building (Building 3), the Plutonium Building (Building 4), and the Warehouse (Building 5). The Nuclear Materials Storage Facility (Building 41) is separate from the main complex but shares an underground transfer tunnel with Building 4. Various support, storage, security, and training structures are located throughout the main complex.

To meet the varied needs of research and development and plutonium-processing programs at the Laboratory, TA-55 provides chemical and metallurgical processes for recovering, purifying, and converting plutonium and other actinides into many compounds and forms. Additional capabilities include the means to safely and securely ship, receive, handle, and store nuclear materials, as well as manage the wastes and residues produced by TA-55 operations. A core capability is basic and applied research in plutonium and actinide chemistry.

Core competencies are maintained in the Plutonium Facility for each type of plutonium processing activity. Extensive plutonium recovery processes are maintained, as well as the ability to convert the recovered material into plutonium metal. A separate portion of the facility is dedicated to fabricating ceramic-based reactor fuels and to processing plutonium-238 used to produce radioisotope heat sources. In addition, analytical capabilities, materials control and accountability techniques, and a substantial research and development base are available to support these core capabilities.

A sophisticated nuclear materials measurement and accountability system is used at TA-55. The system includes nuclear materials accounting, nuclear materials management and modeling, a measurement support operation, operation of a nondestructive assay laboratory, nuclear materials packaging and transfer, and nuclear materials storage. All nuclear materials that are in process or are stored on-site are monitored to ensure that material balances are properly maintained and inventoried on a real-time basis. The nuclear materials packaging and transfer operation receives nuclear material into the facility and transfers shipments out of the facility. The nuclear materials storage operation provides a safe storage location for the actinide materials at the Plutonium Facility.

The Plutonium Facility has extensive capabilities for treating, packaging, storing, and transporting the radioactive waste produced by TA-55 operations. Liquid wastes are converted to solids or are piped to the RLWTF at TA-50. Some solid transuranic wastes are immobilized in cement in 55-gal. drums. Other transuranic waste is consolidated in 15-gal. or 30-gal. drums or is packaged in waste boxes. Low-level wastes are also packaged at this facility. Solid wastes of all types are stored at TA-55 until they are shipped to Laboratory waste storage or disposal locations, primarily at TA-54.

TA-55 — Plutonium Facility Site

SWMU 55-008 — Aboveground storage tanks

Administrative Authority	NMED	**Former Operable Unit**	OU 1129
Technical Area	TA-55	**Dates of Operation**	1973-Present
Has ER Sampled the Site?	No	**ER Remedial Action Conducted?**	No
Structure Number	N/A	**Other Remedial Action Conducted?**	No

Unit Description

SWMU 55-008 consists of sumps, tanks, and pumps in the basement of the plutonium building (Building 55-4), which is the primary site for plutonium processing, fabrication, and research at LANL. Six sumps/pumps collect spills and mop-water generated in the building; the sump/pump capacity of each is 3 cubic feet. Four 8-in.-diameter x 4-ft-long condensate tank pumps receive condensate from cooling coils. Eight 8-in.-diameter x 4-ft-long blowdown tanks receive condensate from cooling coils. The liquids discharged to these units may have contained small amounts of hazardous and/or radioactive constituents. All liquids collected and contained within these units are transferred via direct pipeline to the radioactive liquid waste treatment facility at TA-50, and none of these units release liquids to the environment.

ER Project Activities

RFI activities conducted at this site are described in detail in the documents listed in the reference section below. No additional RFI activities have been conducted at this site.

SWMU 55-008 was recommended for NFA in the RFI work plan. The site design of Building 55-4 precludes contaminant migration. Any contamination that may exist beneath the building is considered to be under institutional control and will be addressed when Building 55-4 undergoes decontamination and decommissioning.

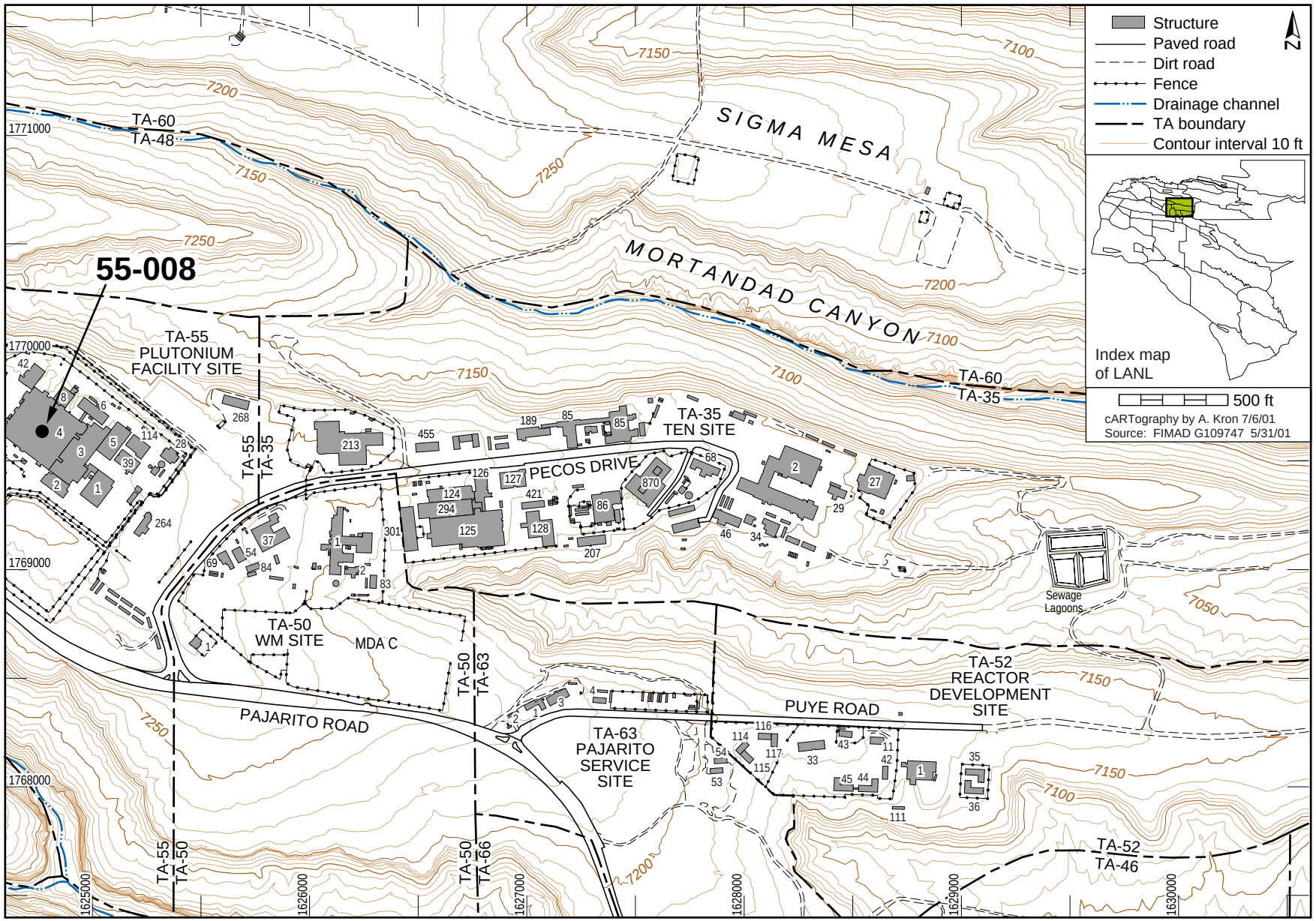
ER Project Sampling Summary

No analytical samples were collected at this site.

References

Withdrawal of [51] Solid Waste Management Units (SWMUs) from the March 1995, September 1995, and September 1996 Requests for Permit Modification (LA-UR-95-767, LA-UR-95-3319, and LA-UR-96-3357, respectively)	LA-UR Number: N/A
Request for Permit Modification, Units Proposed for NFA, March 1995	LA-UR Number: 95-0767
Class III Permit Modification for Removal of 90 Solid Waste Management Units (SWMUs)	LA-UR Number: N/A
Addendum to RFI Work Plan for Operable Unit 1129	LA-UR Number: 92-0800
RFI Work Plan for Operable Unit 1129	LA-UR Number: 92-0800

View of SWMU 55-008


55-008
TA-55
PLUTONIUM
FACILITY SITE
TA-60
TA-48
SIGMA MESA
MORTANDAD CANYON
TA-60
TA-35
TA-35
TEN SITE
PECOS DRIVE
TA-55
TA-35
TA-50
WM SITE
MDA C
TA-50
TA-63
PAJARITO ROAD
TA-63
PAJARITO
SERVICE
SITE
PUYE ROAD
TA-52
REACTOR
DEVELOPMENT
SITE
Sewage
Lagoons
TA-55
TA-50
TA-50
TA-66
TA-52
TA-46
1771000
1770000
1769000
1768000
1625000
1626000
1627000
1628000
1629000
1630000
7200
7150
7250
7100
7050
Structure
Paved road
Dirt road
Fence
Drainage channel
TA boundary
Contour interval 10 ft
N
Index map
of LANL
500 ft
cARTography by A. Kron 7/6/01
Source: FIMAD G109747 5/31/01

SWMU 55-009 — Wastewater treatment plant/waste lines

Administrative Authority	NMED	**Former Operable Unit**	OU 1129
Technical Area	TA-55	**Dates of Operation**	1973-Unknown
Has ER Sampled the Site?	Yes	**ER Remedial Action Conducted?**	No
Structure Number	55-263	**Other Remedial Action Conducted?**	No

Unit Description

SWMU 55-009 is an inactive sanitary sewer monitoring station (structure 55-263) consisting of a concrete-lined pit (9 ft x 9 ft x 6 ft deep) located in the LANL high-security, highly access-controlled TA-55 plutonium complex. The walls and floor of the monitoring station consist of 6-in.-thick reinforced concrete. The TA-55 sanitary waste line runs through this structure and carries sanitary wastewater from Buildings 55-3 and 55-4 to the LANL sanitary wastewater treatment facility located at TA-46. The TA-55 Operations Center (Building 55-3) functions as a general support facility and contains a chemical laboratory. Building 55-4 is the main plutonium-processing facility at TA-55. The 1990 SWMU report identified SWMU 55-009 as an inactive monitoring "sump." The term "sump" denotes an engineered, below-ground-level containment reservoir that receives liquid before it is pumped (or drained) to another location. However, this unit not only has never contained a drain, it has never served as a reservoir to manage liquids of any type; therefore, the SWMU report's identification of this unit as a sump is incorrect. In actuality, this unit was designed and installed solely as a station to house radiological monitoring equipment and to shield the equipment from adverse weather conditions. The monitoring equipment and surrounding concrete structure were installed in approximately 1975, when the TA-55 complex was originally constructed. The monitoring equipment was installed at this portion of the sanitary waste line solely as a security measure to prevent the theft of valuable radioactive materials (such as plutonium) from the TA-55 complex. This equipment was intended to detect any stolen radioactive materials covertly targeted to leave the TA-55 complex by flushing them down sanitary drains such as sinks or toilets. Should any stolen radiological materials be detected in the sewer pipe, the monitoring device was designed to activate a compressor (housed within the concrete structure) that controlled a cut-off valve within the pipe. The activated valve was intended to immediately block passage of the stolen materials further through the pipe, thus thwarting the attempted theft. However, the monitoring equipment never functioned as originally intended. It failed because of high humidity caused by moisture condensation in the concrete structure in which it was housed. After several failed attempts to make the detection equipment perform properly, in May 1983, DOE and TA-55 personnel agreed to discontinue further attempts to monitor the waste line. The monitoring equipment was removed later that year, but the concrete-lined pit was left in place. The structure was used solely for security monitoring purposes and it is not known or thought to have received contaminants or released contaminants to the environment.

ER Project Activities

Information presented in this section was derived from previously published documents. Any discussion of BVs, FVs, and SALs is taken from the referenced documents and reflects the values in use at the time the documents were written. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

In 1997, 13 soil samples were collected from six locations in the vicinity of PRS 55-009 and submitted to an off-site laboratory for analysis for inorganic chemicals, organic chemicals, and radionuclides. Analytical results were used to provide supplemental information to support FSS-6 construction activities.

After a site visit by the NMED in 2001 and review of the radiological screening data collected at this site, this SWMU was recommended for NFA. Hazardous wastes were not generated, treated, stored, or disposed at the site, and radioactivity was never detected in the waste stream. In 2002, NMED concurred with NFA determination.

ER Project Sampling Summary

The following table shows the number of analytes that exceeded BVs, FVs, and SALs that were in use in calendar year 2002. These data reflect site conditions before any remedial activities may have occurred, as discussed in the ER Project activities section above. BVs are naturally occurring concentrations of inorganic chemicals and radionuclides in soil, sediment, or tuff before any influence from LANL operations. FVs are concentrations of radionuclides in soil, sediment, or tuff that resulted from global atmospheric deposition unrelated to LANL releases. SALs are concentrations of chemicals or radionuclides based on a residential exposure, below which there is no potential unacceptable risk to human health.

Analytical Suite Sampled	No. of Chemicals Detected	No. of Chemicals >CY2002 BV/FV (If Applicable)	No. of Chemicals >CY2002 SAL (Residential)
Inorganic chemicals	19	0	1
Radionuclides	4	1	0
SVOCs	0	N/A	0
VOCs	2	N/A	0

The following table provides the maximum concentrations of analytes that exceeded CY2002 SALs.

Analytical Suite	Analyte	Maximum Concentration	CY2002 SAL (Residential)
Inorganic chemicals	Arsenic	4.1 mg/kg	0.39 mg/kg

References

Withdrawal of [51] Solid Waste Management Units (SWMUs) from the March 1995, September 1995, and September 1996 Requests for Permit Modification (LA-UR-95-767, LA-UR-95-3319, and LA-UR-96-3357, respectively) — LA-UR Number: N/A

Request for Permit Modification, Units Proposed for NFA, March 1995 — LA-UR Number: 95-0767

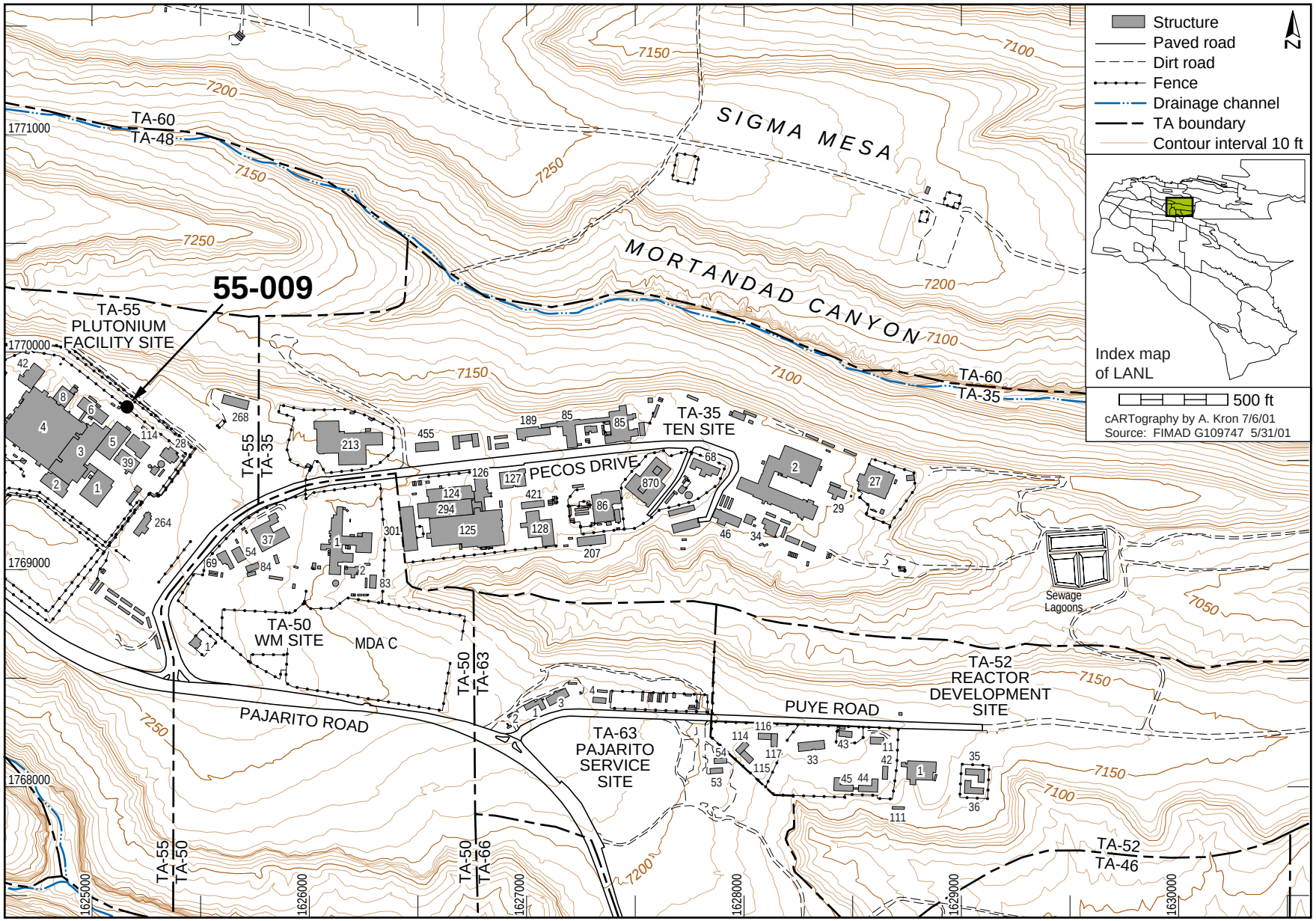
Class III Permit Modification for Removal of 90 Solid Waste Management Units (SWMUs) — LA-UR Number: N/A

Addendum to RFI Work Plan for Operable Unit 1129 — LA-UR Number: 92-0800

RFI Work Plan for Operable Unit 1129 — LA-UR Number: 92-0800

Monitoring station with cover removed (SWMU 55-009)

Valve (SWMU 55-009)


55-009
TA-55
PLUTONIUM
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TA-35
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TA-63
PAJARITO ROAD
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TA-55
TA-50
TA-50
TA-66
TA-52
TA-46
1771000
1770000
1769000
1768000
1625000
1626000
1627000
1628000
1629000
1630000
7200
7150
7250
7100
7050
Structure
Paved road
Dirt road
Fence
Drainage channel
TA boundary
Contour interval 10 ft
N
Index map
of LANL
500 ft
cARTography by A. Kron 7/6/01
Source: FIMAD G109747 5/31/01

Supplement H.1

Written Engineering Assessment/Certification for the Evaporator Glovebox Tank Component

ADDENDUM TO THE REGISTERED PROFESSIONAL ENGINEER WRITTEN ASSESSMENT/CERTIFICATION

EVAPORATOR GLOVEBOX STORAGE TANK SYSTEM TECHNICAL AREA 55 LOS ALAMOS NATIONAL LABORATORY

The purpose of this addendum is to provide updated information for the "Los Alamos National Laboratory Technical Area 55 Part B Permit Application," Revision 2.0. The changes are not related to the design or construction of the tank system for which the assessment was written. They are a result of reformatting and nomenclature revisions and, therefore, recertification is not required.

The evaporator glovebox storage tank system has been renamed "the evaporator glovebox tank component." It is now considered a tank component affiliated with the storage tank system located at Technical Area 55, Building 4.

The certification page of this engineering assessment (page 4 of 9) references the location of the assessment as Attachment 4-2 of the "Los Alamos National Laboratory Technical Area 55 Part B Permit Application," Revision 0.0 submitted to the New Mexico Environment Department in June 1996. This information has changed to Supplement H.1 of this permit application.

Supplement H.2A

Written Engineering Assessment/Certification for the Cementation Unit Pencil Tanks Component

ADDENDUM TO THE REGISTERED PROFESSIONAL ENGINEER WRITTEN ASSESSMENT/CERTIFICATION

CEMENTATION UNIT STORAGE TANK SYSTEM TECHNICAL AREA 55 LOS ALAMOS NATIONAL LABORATORY

The purpose of this addendum is to provide updated information for the "Los Alamos National Laboratory Technical Area 55 Part B Permit Application," Revision 2.0. The changes are not related to the design or construction of the tank system for which the assessment was written. They are a result of reformatting, clarification, and nomenclature revisions and, therefore, recertification is not required.

The cementation unit storage tank system has been renamed "the cementation unit pencil tanks component." It is now considered a tank component affiliated with the storage tank system located at Technical Area 55, Building 4.

The discussion of the Uni-strut support system for the cementation pencil tanks includes the following statement:

> " The entire tank system, including ancillary equipment, is elevated and supported by a steel channel, Uni-strut support system. The Uni-strut support system is secured to the concrete floor and ceiling with anchor bolts and provides the system's ancillary equipment with support and protection against physical damage and excessive stress due to settlement and vibration."

To clarify, the Uni-strut support system to which the tanks are attached is bolted only to the floor. The ancillary equipment (i.e., piping) is also attached to a Uni-strut support system, which is bolted to the ceiling.

The certification page of this engineering assessment (page 4 of 4) references the location of the assessment as Attachment 4-3 of the "Los Alamos National Laboratory Technical Area 55 Part B Permit Application," Revision 0.0, submitted to the New Mexico Environment Department in June 1996. This information has changed to Supplement H.1 of this permit application. The location of this information has changed to Supplement H.2A of this permit application.

Supplement H.2B

Tightness Testing Certification
for the
Cementation Unit Pencil Tanks Component

ADDENDUM TO THE TIGHTNESS TESTING CERTIFICATION

CEMENTATION UNIT STORAGE TANK SYSTEM TECHNICAL AREA 55 LOS ALAMOS NATIONAL LABORATORY

The purpose of this addendum is to provide updated information for the "Los Alamos National Laboratory Technical Area 55 Part B Permit Application," Revision 2.0. The changes are not related to the design or construction of the tank system for which the tightness testing certification was written. They are a result of reformatting and nomenclature revisions and, therefore, recertification is not required.

The cementation storage tank system has been renamed "the cementation unit pencil tanks component." It is now considered a tank component affiliated with the storage tank system located at Technical Area 55, Building 4.

The certification page of this tightness testing certification (page 2 of 6) references the location of the assessment as Attachment 4-4, of the "Los Alamos National Laboratory Technical Area 55 Part B Permit Application," Revision 0.0 submitted to the New Mexico Environment Department in June 1996. This information has changed to Supplement H.1 of this permit application. This information has changed to Supplement H.2B of this permit application.

Supplement H.2C

Installation Inspection Certification for the Cementation Unit Pencil Tanks Component

ADDENDUM TO THE INSTALLATION INSPECTION CERTIFICATION

CEMENTATION UNIT STORAGE TANK SYSTEM TECHNICAL AREA 55 LOS ALAMOS NATIONAL LABORATORY

The purpose of this addendum is to provide updated information for the "Los Alamos National Laboratory Technical Area 55 Part B Permit Application", Revision 2.0. The changes are not related to the design or construction of the tank system for which the installation inspection certification was written. They are a result of reformatting and nomenclature revisions and, therefore, recertification is not required.

The cementation storage tank system has been renamed "the cementation unit pencil tanks component." It is now considered a tank component affiliated with the storage tank system located at Technical Area 55, Building 4.

Supplement H.3

Written Engineering Assessment/Certification for the Pencil Tanks Component

WRITTEN ENGINEERING ASSESSMENT/CERTIFICATION
FOR THE PENCIL TANKS

TECHNICAL AREA 55
LOS ALAMOS NATIONAL LABORATORY

ASSESSMENT CERTIFICATION

I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed 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 for penalties submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____ _____
Date

Tyson Lansford
IT Corporation
New Mexico Registered Professional Engineer No.: 9755
Expires: December 31, 2003

WRITTEN ENGINEERING ASSESSMENT/CERTIFICATION
FOR THE PENCIL TANKS

TECHNICAL AREA 55
LOS ALAMOS NATIONAL LABORATORY

The information in this engineering assessment is provided to meet the requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), Subpart V, 264.192(a) revised June 14, 2000 [6-14-00], attesting that the pencil tanks of the Technical Area (TA) 55 storage tank system is adequately designed and has sufficient structural integrity and compatibility with the waste to be stored to ensure that it will not collapse, rupture, or fail.

This written assessment and certification addresses the following requirements as they pertain to the pencil tanks, and includes the standards which must be complied with by the tank fabricator. These requirements include design standards to which the pencil tanks will be constructed, hazardous characteristics of the waste to be stored, corrosion protection provided, excessive load protection provided to underground tank components, and adequacy of the foundation and support design.

The information for this assessment is based upon a completed drawing package prepared by Johnson Controls of Northern New Mexico and dated July 2001. The drawings provide detailed information regarding the design and construction of the pencil tanks to be installed at TA-55, Building 4 (TA-55-4), Room 401, as a part of the storage tank system. It includes the physical dimensions of the pencil tanks, the materials of construction, the location of ancillary equipment, and definition of the support system.

Pencil Tanks Design Standards

The pencil tanks will consist of ten vertical tanks located on a Uni-strut rack, perpendicular to the west wall of Room 401 at TA-55-4. Each pencil tank will have a capacity of 50 liters, a 6.625-inch (in) outer diameter (O.D.), a straight-side height of 10 feet (ft), a wall thickness of 0.28 in, and a conical bottom. The tanks will be constructed of seamless Schedule 40, 316 stainless steel piping that will meet the chemical and physical characteristics given in American Society for Testing and Materials (ASTM) “A312-Standard Specification for Seamless and Welded Austenitic Stainless Steel Pipes,” hereinafter referred to as ASTM A312 (ASTM, 1995). Each tank will be equipped with three sight glasses for local level indication and will have a high-level switch for spill and overfill protection. The primary containment welds for each tank will be vacuum tight in accordance with

the American Society of Mechanical Engineers (ASME) “Boiler and Pressure Vessel Code” (ASME, 1998), hereinafter referred to as ASME BPVC, Section VIII, Division 1, Subsection B, UW . All penetrations into the shells of the tanks will be designed and fabricated to ensure vacuum tightness and will comply with ASME BPVC Section VIII, Division 1 (ASME, 1998). An ASME stamp will not be required for the pencil tanks. Each pencil tanks will be installed such that, if necessary, they can be replaced.

Piping and Ancillary Equipment Design Standards

The pencil tanks will be connected to system headers (for feed, ventilation, and vacuum) by a manifold constructed of seamless stainless steel and that meets the chemical and physical characteristics given in ASTM A312. This piping will match the existing tank system intertank and transfer piping of 0.75-in, Schedule 40 pipe. It will meet the requirements of ASME “B31.3-Process Piping” (ASME, 1996a) for Normal Fluid Service for a maximum design pressure of 15 pounds per square inch and design temperature of 10 degrees Fahrenheit. All piping connections will be via flanged and gasketed connections and will be provided in accordance with ASME “B16.5-Pipe Flanges and Flanged Fittings” (ASME, 1996b). The flanges will be forged from stainless steel and will meet the requirements of ASTM “A182-Standard Specification for Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings and Valves, and Parts for High-Temperature Service” (ASTM, 1997) for Grade F316L.

The pencil tanks will be equipped with a vacuum trap that will be designed to collect any mists or carryover liquid that might accumulate in the vacuum or vent lines. The vacuum trap will be constructed of 6.25-in O.D., Schedule 40, 316L seamless stainless steel pipe. The vacuum trap will be equipped with a sight glass for local level indication; will have a high-level switch for prevention of spills or overflowing; and will normally be empty.

Hazardous Characteristics of the Waste

The pencil tanks will be used to store mixed waste solutions while awaiting analytical results for waste characterization. The solutions are generated as evaporator bottoms and typically consist of concentrated nitric acid saturated with salts and metals. These solutions typically exhibit the hazardous characteristics of toxicity (for metals) and corrosivity.

Corrosion Protection Measures

The pencil tanks and its associated ancillary equipment will not be subject to the requirements of 20.4.1 NMAC, Subpart V, 264.192(a)(3) [6-14-00], for new tank components for which the external metal shell will be in contact with soil or water. The pencil tanks and associated ancillary equipment will be located inside TA-55-4 and will not be in contact with soil or water. The pencil tanks and its associated ancillary equipment will be constructed of 316 stainless steel and will meet the chemical and physical characteristics given in ASTM A312 (ASTM, 1995). The tanks will be corrosion-resistant and compatible with the liquid waste to be stored in them.

Underground Storage Tank Requirements

The pencil tanks will not be subject to the requirements of 20.4.1 NMAC, Subpart V, 264.192(a)(4) [6-14-00], which require a determination of the design or operational measures that will protect underground storage tanks from potential damage by vehicular traffic. The pencil tanks and ancillary equipment will be aboveground and located inside TA-55-4 mounted to the concrete floor.

Foundation and Tank Support Design Standards

The pencil tanks and associated ancillary equipment will be integrated within a support stand assembly. The support stand assembly will be approximately 3 ft, 10 in wide by 7 ft, 8 in long and will be bolted to the 10-in-thick concrete floor of TA-55-4, Room 401. The floor provides a foundation that will maintain the load of the pencil tanks when full. The concrete floor and ceiling were constructed to conform to the building code requirements of American Concrete Institute (ACI) “318-71-Building Code Requirements for Structural Concrete and Commentary” (ACI,1995) for reinforced concrete. The reinforcing steel was detailed and fabricated in accordance with the ACI “315-Details and Detailing of Concrete Reinforcement” (ACI, 1992). The design construction and tolerance of the framework around the concrete is in accordance with ACI “347-Guide to Formwork for Concrete” (ACI, 1994).

The support stand assembly superstructure will consist of braced frames that extend approximately 9 ft, 11 in from the floor. The superstructure will be fabricated entirely from carbon steel. Connections will be welded except where bolting is required for erection of subassemblies within Room 401. All carbon steel used for the superstructure will be painted, in accordance with Steel Structures Painting Council, with a high build-up epoxy primer and finish coat.

The pencil tanks will not operate under pressure; therefore, excessive stress due to expansion and contraction is not anticipated. The pencil tanks will not be located within a saturated zone or seismic fault zone; therefore, flotation or dislodgment is unlikely. The pencil tanks will be within a building, so frost heave effects are not expected.

References

ACI, 1995 and all approved updates, “318-Building Code Requirements for Structural Concrete and Commentary,” American Concrete Institute, Detroit, Michigan.

ACI, 1994 and all approved updates, “347-Guide to Formwork for Concrete,” American Concrete Institute, Detroit, Michigan.

ACI, 1992 and all approved updates, “315-Details and Detailing of Concrete Reinforcement,” American Concrete Institute, Detroit, Michigan.

ASME, 1998 and all approved updates, " Boiler and Pressure Vessel Code, Section VIII," American Society of Mechanical Engineers, New York, New York

ASME, 1996a and all approved updates, “B31.3-Process Piping,” American Society of Mechanical Engineers, New York, New York.

ASME, 1996b and all approved updates, “B16.5-Pipe Flanges and Flanged Fittings,” American Society of Mechanical Engineers, New York, New York.

ASTM, 1997 and all approved updates, “A182-Standard Specification for Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings and Valves, and Parts for High-Temperature Service,” American Society for Testing and Materials, Philadelphia, Pennsylvania.

ASTM, 1995 and all approved updates, “A312-Standard Specification for Seamless and Welded Austenitic Stainless Steel Pipes,” American Society for Testing and Materials, Philadelphia, Pennsylvania.

WRITTEN ENGINEERING ASSESSMENT/CERTIFICATION
FOR THE PENCIL TANKS

TECHNICAL AREA 55
LOS ALAMOS NATIONAL LABORATORY

TANK DESIGN CERTIFICATION

STATEMENT OF TANK DESIGN ADEQUACY:

I reviewed the design for the pencil tanks to be constructed at TA-55, Building 4, Room 401, and found the design to be adequate and to have sufficient structural integrity and compatibility with the waste to be stored to ensure that the pencil tanks will not collapse, rupture, or fail.

CERTIFICATION:

I certify under penalty of law that I examined and am familiar with the information submitted in the sections entitled “Pencil Tanks Design Standards” and “Piping and Ancillary Equipment Design Standards” of the Written Engineering Assessment/Certification for the Pencil Tanks. 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.

_____ _____

Name: Date
Occupation:
Company:
New Mexico Registered Professional Engineer No.:
Expires:

WRITTEN ENGINEERING ASSESSMENT/CERTIFICATION
FOR THE PENCIL TANKS

TECHNICAL AREA 55
LOS ALAMOS NATIONAL LABORATORY

FOUNDATION SUPPORT DESIGN CERTIFICATION

STATEMENT OF TANK SUPPORT DESIGN ADEQUACY:

I reviewed the design of the tank supports for the pencil tanks to be constructed at TA-55, Building 4, Room 401, and found the design to be adequate and to have sufficient structural integrity to ensure that the tanks supports will not collapse or fail.

CERTIFICATION:

I certify under penalty of law that I examined and am familiar with the information submitted in the section entitled "Foundation and Tank Support Design Standards" of the Written Engineering Assessment/Certification for the Pencil Tanks. 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.

_____ _____

Ken Feller Date
Structural Engineer
Paragon Structural Engineering
New Mexico Registered Professional Engineer No.: 12415
Expires: December 31, 2002

Document:	TA-55 Information Provided Under Separate Cover
Revision No.:	2.0
Date:	September 2003

LA-CP-03-0680

Los Alamos National Laboratory
Technical Area 55 Part B Permit Application
Information Provided Under Separate Cover

Revision 2.0

September 2003

Prepared by:

Los Alamos National Laboratory
Solid Waste Regulatory Compliance
Los Alamos, New Mexico 87545

LIST OF FIGURES

FIGURE NO.	TITLE
G - 1	Technical Area 55, Building 4, Basement Container Storage Units
H - 1	Technical Area 55, Building 4, Storage Tank System General Arrangement Diagram
I - 1	Technical Area 55, Building 4, Cementation Unit General Arrangement Diagram

LA-CP-03-0608

UCNI

LOS ALAMOS NATIONAL LABORATORY

ATTACHED DOCUMENT OR MATERIAL CONTAINS OR MAY CONTAIN UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION (UCNI) AS DEFINED BY SECTION 148 OF THE ATOMIC ENERGY ACT

You have been granted routine access by an Authorized Individual to the attached document or material. Official procedures for access to, protection and transmission of, and routine handling of UCNI are contained in DOE Order-471.1. All holders of the attached document or material are required to be familiar with and to follow these procedures. Minimum requirements are listed on this cover sheet for reference. Refer to the above DOE Order for further details.

ACCESS: **Any Authorized Individual (a person who has a need to know the information in connection with the performance of official DOE-authorized activities) may have routine access to UCNI.**

PROTECTION: **An Authorized Individual must:**

- **Maintain physical control of the documents at all times when they are in use.**
- **Reproduce the documents only to the extent required for official DOE-approved purposes.**
- **Ensure that next-level users are Authorized Individuals and are notified of the appropriate procedures.**
- **Prevent unauthorized access of dissemination.**
- **Store in a secure manner when not in use. A locked desk drawer, file cabinet, or room is adequate when not in a secured area or facility.**
- **Destroy by ¼ inch strip shredding or as classified waste.**

TRANSMISSION: **UCNI may be transmitted by:**

- **U.S. First Class or higher mail, or any means approved for classified. Outer containers must not carry UCNI markings.**
- **Handcarrying, if adequate physical control is maintained.**
- **Open telecommunication means (phone or fax) if required; use of secure means preferred.**

PENALTIES: **Persons who violate DOE Order 471.1 are subject to:**

- **Administrative penalty, up to and including termination of employment.**
- **Civil penalty of up to $100,000. Criminal penalties may also apply under section 223 of the Atomic Energy Act.**

TA-55 Container Storage Units

CSU	Maximum Volume (gallons)	Approximate Turn Over Rate/year	Years of Operation (1980 basis)	Years of Operation (1990 Basis)	Total Volume (1980 basis) (gallons)	Total Volume (1990 basis) (gallons)
B40	21,500	2	70	60	3010000	2580000
B05	3,600	2	70	60	504000	432000
K13	2,500	2	70	60	350000	300000
B45	11,000	2	70	60	1540000	1320000
Vaut	4,000	2	70	60	560000	480000
Storage Pad	135,000	2	70	60	18900000	16200000
TA-55-185 (1)	30,000	2		45	0	2700000

(1) Assumed that 2005 would be the date that storage would begin at this unit.

TA-55 Storage Tank System & Cementation Unit

Component	Maximum Volume (gallons)	Approximate Turn Over Rate/Year	Years of Operation (1987 basis)	Total Volume (gallons)
Evaporator Glovebox Tank	71	24	63	107352
Cementation Unit Pencil Tanks	65	24	63	98280
Pencil Tanks (a)	130	24	45	140400
Cementation Unit	150	24	63	226800

(1) Assumed that 2005 would be the date that storage would begin at this unit.