TA55

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TECHLAW INC.

July 8, 2002

Mr. Carl Will
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Hazardous Waste Bureau
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Building One
Santa Fe, New Mexico 87505-6303

Reference: Work Assignment No. Y515, 06082.350; State of New Mexico Environment Department, Santa Fe, New Mexico; General Permit Support Contract; Research and Permitting Support for the Los Alamos National Laboratory, Draft Closure Plan for LANL TA-55 Container Storage Areas, Tank System, Cementation Unit and Vitrification Unit; Task 14 Deliverable.

Dear Mr. Will:

Enclosed please find the deliverable for the above-referenced work assignment. The deliverable consists of a draft Closure Plan for the Los Alamos National Laboratory (LANL) Technical Area 55 (TA-55) Permit. This draft Closure Plan addresses the container storage areas, the storage tank system, the cementation unit and the vitrification unit at TA-55.

As noted in previous deliverables, the TA-55 Permit Application had numerous technical deficiencies. These deficiencies have been submitted to LANL in the form of Notice of Deficiencies (NODs) (NMED, April 16, 2002). LANL has also been asked to immediately address the major areas of concern/issues (TechLaw deliverable, June 20, 2002), which are a subset of the NODs. It is anticipated that once responses from LANL concerning these technical issues have been received, this draft Closure Plan will require revision. Placeholders for much of this missing information have been input into the draft Closure Plan. For example, most of the tables contained within the draft Closure Plan are missing specific information on the types of units, specific wastes to be managed, maximum amounts/volumes of wastes, etc. Decontamination and verification techniques have been addressed; however, some additional detailed information and specifics are still needed from LANL.

The document is formatted in Word and is formatted as a new, standalone document. We have tried to incorporate suggestions you made concerning the Draft Closure Plan for TA-54 into this

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Closure Plan. Examples include language and format.

The draft deliverable was emailed to you on Monday July 8, 2002 at Carl_Will@nmenv.state.nm.us. If you have any questions, please call me at (303) 763-7188.

Sincerely,

June K Dreith

June K. Dreith
Program Manager
Enclosure

cc: Mr. James Bearzi, NMED
Mr. David Cobrain, NMED
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TASK 14 DELIVERABLE

DRAFT CLOSURE PLAN FOR LANL TA-55 CONTAINER STORAGE AREAS, THE TANK SYSTEM AND THE CEMENTATION AND VITRIFICATION UNITS

NMED-HSW General Permit Support Contract

Submitted by:

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Submitted to:

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In response to:

Work Assignment No. Y513, 06082.350

July 8, 2002

DRAFT CLOSURE PLAN FOR THE CONTAINER STORAGE UNITS STORAGE TANK SYSTEM, CEMENTATION UNIT, AND VITRIFICATION UNIT AT TECHNICAL AREA 55

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LIST OF ABBREVIATIONS/ACRONYMS

ASME	American Society of Mechanical Engineers
bgs	below ground surface
BPVC	boiler and pressure vessel code
BV	background value
CMI	Corrective Measure Implementation
CMP	corrugated metal pipe
CMS	Corrective Measure Study
COCs	constituents of concern
COLIWASA	Composite Liquid Waste Sampler
COPCs	constituents of potential concern
CSUS	container storage area
CST-9	LANL Inorganic Trace Analysis Group
D&D	decontamination and decommissioning
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
ESH-1	LANL's Health Physics Operations Group
ESH-5	LANL's Industrial Hygiene and Safety Group
ESH-19	Hazardous and Solid Waste Group
FV	fallout value
HE	high explosive
HPT	high performing team
LANL	Los Alamos National Laboratory
MDA	material disposal area
MSDS	Material Safety Data Sheet
NFA	no further action
20 NMAC 4.1	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
NMED	New Mexico Environment Department
NMED-HWB	New Mexico Environment Department – Hazardous Waste Bureau
NMT	Nuclear Materials Technology
NRC	Nuclear Regulatory Commission
OLASO	Office of Los Alamos Site Operation
P&ID	piping and instrumentation diagram
PCB	polychlorinated biphenol

PCi	picoCurie
PPE	personal protective equipment
PRS	potential release site
QA	quality assurance
QAPP	quality assurance program plan
QA/QC	quality assurance/quality control
QC	quality control
RANT	Radioassay and Nondestructive Testing Facility
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SAL	screening action level
SAP	sampling and analysis plan
SOP	standard operating procedure
SVOC	semi-volatile organic compound
SW-846	EPA's "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods"
SWMU	Solid Waste Management Unit
TA	technical area
TAL	target analyte list (EPA)
TRU	transuranic
TSD	treatment, storage and disposal facility
VOC	volatile organic compound

F.1 INTRODUCTION

The information provided in this Closure Plan is submitted to address the applicable closure requirements specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart IX, 270.14(b)(13), and 20 NMAC 4.1, Subpart V, Part 264, Subparts G, and I, revised January 1, 1997 [1-1-97]. This Closure Plan describes the activities necessary to close the following hazardous waste management units located at Los Alamos National Laboratory (LANL) Technical Area (TA) 55:

- Container storage units (CSUs) B05, B40, B45, FL01, K13, the Vault at TA-55-4, the Container Storage Pad, and Building 185 (TA-55-185);
- The Storage Tank System; and
- The Cementation and Vitrification Treatment Units.

General closure information applicable to all hazardous waste management units at the Facility are presented in Attachment F of the LANL General Part B Permit Application, Revision 1.0 (LANL, 1998a), hereinafter referred to as the LANL General Part B. Specific sampling and analytical procedures to be used during closure activities will be included in closure sampling and analysis plans (SAPs), to be submitted at the time of closure of a unit. The general closure information referenced includes closure performance standards; amendment of the Closure Plan; and closure certification and report.

F.1.1 Applicability

This Closure Plan is prepared in accordance with the requirements of 20 NMAC 4.1, Subpart V. The TA-55 CSUs, the Storage Tank System, and both treatment units will be closed to meet the performance standards in 20 NMAC 4.1, Subpart V.

Following final waste emplacement or treatment in a unit, the unit will be closed. The Permittees will notify the New Mexico Environment Department (NMED) of the closure of each unit. For the purpose of this Closure Plan, partial closure is defined as the closing of an individual unit at TA-55. Final closure of TA-55 is defined as closure of all units at TA-55.

In the event the Permittees fail to obtain an extension of the hazardous waste permit in accordance with 20 NMAC 4.1, Part IX, §270.10(h), the Permittees will modify this Closure Plan to accommodate a contingency closure. Under contingency closure, storage units will undergo clean closure in accordance with 20 NMAC 4.1, Part V, §264.178. Units, associated systems, equipment, and structures, will be inspected for hazardous waste residues and decontaminated as necessary. Units that contain radioactive mixed wastes will be closed in accordance with the information provided in this Closure Plan. A copy of this Closure Plan will be maintained at TA-55 and at the LANL main office. The primary contact person is: _____.

F.1.2 Unit Descriptions

Container Storage Units

Table F.1.2-1 identifies the CSUs addressed in this closure plan; provides a brief description, including size measurements; and lists the maximum storage capacity and the types of waste stored.

Table F.1.2-1. Container Storage Units at Technical Area (TA) 55 [a]

Unit	Unit Description	Maximum Storage Capacity	Waste Description
B05	Southwest section of the basement of TA-55-4 26 ft long x 10 ft wide	3,000 gallons	Hazardous, Mixed, low-level, and mixed TRU solid wastes
B40	Southwest section of the basement of TA-55-4 L-shaped 61.5 ft long x 55 ft wide	21,500 gallons	Hazardous, Mixed, low-level, and mixed TRU waste; all of which may contain liquids
B45	Northeast section of the basement of TA-55-4 45 ft long x 17.5 ft wide	3,400 gallons	Hazardous, Mixed, low-level, and mixed TRU waste
FLO1, TA-55-4	Room 401 6 ft long x 5.5 ft wide	660 gallons	Hazardous, Mixed, low-level, and mixed TRU waste; some of which may contain liquids
K13	Northwest section of the basement of TA-55-4 16 ft long x 13 ft wide	3,400 gallons	Hazardous, Mixed, low-level, and mixed TRU waste; some of which may contain liquids
Vault	Eastern wall of the basement of TA-55-4 79.5 ft long x 50.5 ft wide	4,000 gallons	Mixed low-level and Mixed TRU waste; either of which may contain liquids
Container Storage Pad	Located outside and northwest of TA-55-4 Asphalt pad; 4 to 6 inches thick Trapezoid shaped with rectangular strip of 70 ft x 10 ft on the southeast side	135,000 gallons	Hazardous, Mixed low-level, and mixed TRU wastes; any of which may potentially contain liquids
TA-55-185	Steel frame building with concrete floor 60 ft long x 40 ft wide	55,000 gallons	Solid hazardous, Mixed low-level waste, and Mixed TRU waste

a Compiled from "Los Alamos National Laboratory Technical Area 55 Part B Permit Application," Revision 1.0, Attachment G, Container Storage (LANL, 2002).

Containers stored at B40, FLO1, K13, the Vault, and the Container Storage Pad may be used to store liquid and/or potentially liquid-bearing wastes, therefore, the requirements of 20.4.1 NMAC, Subpart V

(264.175(b)) are applicable. The basement floor of Building TA-55-4 contains sumps with pumps that are operated to facilitate the collection and removal of liquids.

Ignitable or reactive waste may be stored at K13 in Building TA-55-4 and on the Container Storage Pad. LANL ensures that containers storing hazardous or mixed waste are segregated according to the following compatibility group scheme:

- Flammable/ignitables;
- Oxidizers;
- Corrosive acids;
- Corrosive bases;
- Reactives (with water);
- Reactives (except those reactive with water); and
- Other wastes.

In management of ignitable and reactive wastes, LANL ensures compliance with 20.4.1 NMAC, Subpart V, 264.176 and 20.4.1 NMAC Subpart IX, 270.15(c); 20.4.1 NMAC, Subpart V, 264.17(a).

Likewise, incompatible wastes may be stored at K13 in Building TA-55-4 and on the Container Storage Pad. Management of incompatible wastes in conducted in accordance with 20.4.1 NMAC Subpart V, 264.177(c), 264.177(a) and (b), and 20.4.1 NMAC, Subpart IX, 270.15(d).

Storage Tank System

Table F.1.2-2 provides information on the Storage Tank System addressed in this Closure Plan. The TA-55 Storage Tank System encompasses four components (the Evaporator Glovebox Tanks, the Cementation Pencil Tanks, the Pencil Tanks, and the Vitrification Slab Tanks) and is located in Building TA-55-4, Rooms 401 and 434A. It has a maximum capacity of 336 gallons and is used to store evaporator bottoms solutions prior to stabilization in the Cementation Unit or the Vitrification Unit. Initially, the waste solutions are stored in the Evaporator Glovebox Tank. If analysis shows that the solution radionuclide content is below the discard limit, the solutions are transferred to the Cementation Unit Pencil Tanks or the Pencil Tanks. Based on the results of further analysis, the solutions are transferred to the Cementation Unit or to the Vitrification Unit Slab Tanks. If sampling results show radionuclide content above the discard limit, the solutions are recirculated. The design of each of the components is summarized below. A more detailed description is available in Section H.1 of Attachment H to the TA-55 Part B Permit Application.

Table F.1.2-2. Components of the Storage Tank System at Technical Area (TA) 55 [a]

Tank	Description	Maximum Storage Capacity	Waste Description
Evaporator Glovebox Tank	Northwest corner of TA-55-4, Room 401 13 ft long x 4 ft wide x 8 ft high. 2 steel trays, 8 glass columns, ancillary equipment	71 gallons	Hazardous, Mixed, low-level, and mixed TRU solid wastes
Cementation Unit Pencil Tanks	5 Vertical Tanks on the West wall of TA-55-4, Room 401 OD = 6.625 inches Height = 10 feet Wall Thickness = 0.28 inches Conical Bottom	13 gallons per tank	Hazardous, Mixed, low-level, and mixed TRU waste; all of which may contain liquids
Pencil Tanks	10 Vertical Tanks perpendicular to the west wall of TA-55-4, Room 401 OD = 6.625 inches Height = 10 feet Wall Thickness = 0.28 inches Conical Bottom Not yet constructed	13 gallons per tank	Hazardous, Mixed, low-level, and mixed TRU waste
Vitrification Unit Slab Tanks	Two Unit Slab Tanks In TA-55-4, Room 434A 24 inches long x 4 inches wide by 82.5 inches high Not yet constructed	33 gallons per tank	Hazardous, Mixed, low-level, and mixed TRU waste; some of which may contain liquids

a Compiled from "Los Alamos National Laboratory Technical Area 55 Part B Permit Application," Revision 1.0, Attachment G, Container Storage (LANL, 2002).

The Evaporator Glovebox Tank component consists of two welded steel trays, eight glass columns, and associated ancillary equipment. It is fabricated from 0.1875 inch 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" (ASTM A240). The lower half of the tank features additional layers of 0.25 inch thick lead shielding and an outer layer of 0.0625 inch 316 stainless steel cladding. The unit is of welded construction with all welds blended, ground, and polished to blend with adjacent material. All joints are vacuum tight. Windows are provided for reviewing tank contents. The gloves of the Glovebox Tank are constructed of neoprene and Hypalon®. Figures H-4 and H-5 of the TA-55 Part B Permit Application provide a system legend and a piping and instrumentation diagram (P&ID), respectively.

All ancillary equipment is supported by a steel channel Uni-strut® support frame that is secured to the concrete ceiling.

The Evaporator Glovebox Tank component does not operate under pressure. All of the materials within the system are corrosion-resistant and are compatible with the evaporator bottoms stored in the tanks. No external portions of the system are in contact with soil or water.

The Cementation Unit Pencil Tanks component consists of five vertical tanks located perpendicular to the west wall of Building TA-55-4 in Room 401. Figure H-6 of the TA-55 Part B Permit Application illustrates a typical tank. The pencil tanks were constructed of corrosion-resistant, 316 stainless steel and were designed to meet applicable standards including the American Society of Mechanical Engineers (ASME) "Boiler and Pressure Vessel Code" (BPVC) (ASME, 1998).

Figures H-4 and H-7 of the TA-55 Part B Permit Application provide a legend and a P&ID for the Cementation Unit Pencil Tanks component, respectively. The entire Cementation Unit Pencil Tanks component and the associated ancillary equipment are supported by a steel channel Uni-strut® support frame that is secured to the concrete floor. The system does not operate under pressure.

The Pencil Tanks component will consist of 10 vertical tanks located perpendicular to the west wall of TA-55-4, Room 401. The tanks will be constructed of seamless Schedule 40, 316 stainless steel pipe. The primary containment welds for each tank will be vacuum tight. A typical tank is shown in Figure H-8 of the TA-55 Part B Permit Application. A P&ID of the system is included in the TA-55 Part B Permit Application as Figure H-9. The Pencil Tanks component and associated ancillary equipment will be integrated within a support stand assembly bolted to the floor. This assembly is illustrated in Figures H-10 and H-11 of the TA-55 part B Permit Application. The system will not operate under pressure.

The Vitrification Unit Slab Tanks component will consist of two slab tanks and associated ancillary equipment located in Room 434A of Building TA-55-4. The tanks will be used to store evaporator bottoms solutions (i.e., a mixed transuranic waste) prior to treatment in the Vitrification Unit. The tanks are illustrated in Figures H-12 and H-13 of the TA-55 Part B Permit Application. They will be constructed of 316L stainless steel plates and seal welded into a vacuum tight containment structure. The bottom of each tank will incorporate a 15-degree slope. The slab tanks will be reinforced internally with a steel tube. The primary containment welds will be vacuum tight. When installed, they will be oriented vertically. Figures H-14 and H-15 provide a legend and a P&ID, respectively for the system. The Vitrification Unit slab Tanks and the associated ancillary equipment will be bolted to the concrete floor and south wall of Room 434A. The system will not operate under pressure.

Currently, no ignitable, reactive, or incompatible wastes are stored in the Storage Tank System. The System will comply with the reporting requirements for equipment leaks as specified in 20.4.1 NMAC, Subpart V, 264.1064(k) [6-14-00]. Only mixed wastes are managed in the Storage Tank System, therefore, it is not subject to 20.4.1 NMAC, subpart V, Part 264, Subpart CC [6-14-00].

Cementation and Vitrification Units

Two treatment units are also addressed in this Closure Plan. They are the Cementation Unit and the Vitrification Unit. The Vitrification Unit has not yet been constructed. Below is a brief summary of the design and operation of the two units.

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 1991 and has a maximum capacity of approximately 150 gallons. The unit includes a pH adjustment column, a vacuum trap, two motor-driven mixers, four impellers, associated support structures, a glovebox, and piping. The Cementation Unit is illustrated in Figure I-2 of the TA-55 part B Permit Application.

The Glovebox is constructed of a section of 00.75 inch lead "sandwiched" between two sections of approximately 0.188 inch 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 in the drums attached beneath the Glovebox.

During operations, two 55-gallon steel drums are positioned 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. The liner is fastened at the bottom of the Glovebox with an elastic cord and clamped into place to prevent hazardous constituents from escaping the confinements of the equipment. 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.

Currently, no ignitable, reactive, or incompatible wastes are treated in the Cementation Unit. The unit is in compliance with the reporting requirements for equipment leaks as specified in 20.4.1 NMAC, Subpart V, 264.1064(k) [6-14-00]. Production process information documenting that no organic compounds are contained in or contacted by equipment associated with the Cementation Unit is recorded in the TA-55 facility operating record.

A more thorough description of the Cementation Unit is presented in Attachment I of the TA-55 Part B Permit Application.

The Vitrification Unit has not yet been constructed. The unit will be installed at LANL TA-55-4, room 434A, inside Room 401. The unit will be located in a glovebox in the center of Room 434A and will be approximately 8 feet wide by 8.5 feet long by 12 feet tall. The Vitrification Unit will consist of a single-batch in-can melter, glass frit feed system, glass/waste handling system, an off-gas system, associated

support structures, a glovebox, and associated piping. The unit is illustrated in Figures J-2 and J-3 in the TA-55 Part B Permit Application.

The Vitrification Unit will be used to treat evaporator bottoms solutions (a mixed transuranic (TRU) waste) by stabilization into a solid glass matrix. Glass frit and evaporator bottoms solutions waste will be added to a can located inside the melter and heated to invoke evaporation, calcinations, melting, and convective mixing to form a glass matrix. After melting, the can of glass will be lowered into a cooling jacket and mechanically moved away from the melter to cool. A new can will be inserted into the melter and the process repeated.

No ignitable, reactive, or incompatible wastes will be treated in the Vitrification Unit. The unit is in compliance with the reporting requirements for equipment leaks as specified in 20.4.1 NMAC, Subpart V, 264.1064(k) [6-14-00]. Production process information documenting that no organic compounds are contained in or contacted by equipment associated with the Cementation Unit will be recorded in the TA-55 facility operating record.

A more complete description of the Vitrification Unit is presented in Attachment J of the TA-55 Part B Permit Application.

F.2 SUMMARY OF REQUIREMENTS

This section is prepared in accordance with the requirements of 20 NMAC 4.1, Subpart IX, 270.14(b)(13), and 20 NMAC 4.1, Subpart V, Part 264, Subpart G [1-1-97], as applicable.

The Permittees will evaluate this closure plan and, if necessary, revise the plan to address conditions at the time of actual unit closure. In compliance with 20.4.1.500 NMAC (incorporating 40 C.F.R. §264.112(c)), a written notification of, or a request for, a permit modification to authorize a change in the approved closure plan will be submitted to NMED. When revised, the amended closure plan will be submitted to the NMED for review and approval before the beginning of closure activities at TA-55. The location and disposition of all wastes generated during closure will be documented in the final closure report.

F.2.1 Closure Performance Standard [20 NMAC 4.1, Subpart V, 264.111]

Performance standards to be met by all hazardous waste management units at the Facility are presented in Attachment F of the LANL General Part B Permit Application, Revision 1.0. In summary, the general performance standards require the Facility to minimize the need for further maintenance; control, minimize, or eliminate the post-closure escape of hazardous substances to environmental media; and comply with the applicable closure and post-closure requirements of 20 NMAC 4.1, Subpart V, Subparts G, I, N, and X [1-1-97].

The units 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; and

- Comply with the applicable closure requirements of 20.4.1 NMAC, Subpart V, Part 264, Subparts G and J [6-14-00].

This will be accomplished by removal of waste from the unit undergoing closure and decontamination, if necessary, of the areas that may have come into contact with wastes.

F.2.2 Unit Specific Standards

At the time of closure, all hazardous waste will be removed from the unit undergoing closure 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).

Within 90 days after receiving the final volume of hazardous waste at unit to be closed, the Permittees will remove all hazardous waste from the unit.

Within 180 days after receiving the final volume of hazardous waste at the unit to be closed, the Permitteees will remove or decontaminate all hazardous waste, hazardous waste residues, and hazardous constituents from the unit, including the floors, walls, and other unit surfaces; containment systems; piping and feed systems; equipment; ancillary equipment; structures; and all remaining containers, liners, bases, and soil containing or contaminated with hazardous waste, hazardous waste residues, or hazardous constituents.

Hazardous waste, hazardous waste residues, and hazardous constituents will be removed or decontaminated to meet the cleanup levels specified in Section F.3.4.

Hazardous waste, hazardous waste residues, and hazardous constituents will be removed or decontaminated, and removal or decontamination will be verified, in accordance with procedures and sampling and analysis methods specified in this closure plan and in the Closure Sampling and Analysis Plan (Closure SAP) described in Section F.2.4.

Closure of any unit will be deemed complete when decontamination has been verified; all equipment and structures associated with operation of the unit have been decontaminated, as necessary; and closure certification has been submitted to and approved by the NMED.

F.2.3 Closure Schedule [20 NMAC 4.1, Subpart V, 264.112(b)(6), 264.112(e), and 264.113]
The Permittees will provide written notification to NMED at least 60 days prior to receipt of the final volume of hazardous waste at the unit to be closed.

The Permittees will remove all hazardous waste from the unit within 90 days after receiving the final volume of hazardous waste at the unit.

The Permittees will remove or decontaminate all hazardous waste, hazardous waste residues, and hazardous constituents from the unit undergoing closure within 180 days after receiving the final volume of hazardous waste at the unit.

Within 90 days after the effective date of this Permit Chapter, The Permittees will remove from all land disposal units at the Facility all hazardous waste that is not intended to be left in place after closure of the unit, shall remove or decontaminate all contaminated equipment or structures at the unit, and shall control all known releases of hazardous waste, hazardous waste residues, and hazardous constituents that can be controlled by measures that can be immediately implemented, to comply with 20.4.1.500 NMAC (incorporating 40 CFR §264.111(b)).

Removal or decontamination of releases from the units at TA-55 shall be completed in compliance with the schedule specified in Section XII, Compliance Schedule Tables, of the New Mexico Hazardous Waste Act §§74-4-10.1 and 74-4-13 Order, issued by NMED to LANL effective _____.

The Permittees will submit to the Secretary of the NMED, via certified mail, a certification that the unit has been closed in accordance with the specifications of this Closure Plan and the General Closure Plan for the Facility, approved by NMED, within 60 days after completion of closure activities for a hazardous waste management unit.

For closure activities to exceed 90 days for treatment or removal of wastes or 180 days for completion of closure activities, the Secretary must approve a permit modification. Should an extension be needed, and in compliance with 20.4.1.500 NMAC (incorporating 40 CFR §264.113(a) and (b)), The Permittees will submit a revised schedule that justifies the need to extend the closure period. During the extended closure period, the Permittees will comply with all other aspects of 40 CFR §264.113 by demonstrating that the unit(s) being closed has the capacity to receive additional wastes, demonstrating compliance with all applicable permit requirements, and taking all steps necessary to prevent threats to human health and the

environment as a result of hazardous and/or mixed waste management at the site(s) during the extended closure period.

F.2.4 Sampling and Analytical Procedures [20 NMAC 4.1, Subpart V, 264.112(B)(4)]

The following sections describe procedures and methods for sampling, analysis, and documentation applicable to closure activities. Sampling and analysis will be conducted in accordance with procedures given in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (*SW-846)* (U.S. Environmental Protection Agency (EPA), 1986) or other approved procedures or methods approved by NMED.

F.2.4.1 Closure Sampling and Analysis Plans

Sixty (60) days prior to the final receipt of hazardous waste at a hazardous waste management unit, LANL will submit to NMED, for NMED approval, a detailed Closure SAP describing decontamination procedures and sampling methods to verify removal and decontamination of hazardous waste and hazardous waste residues. LANL will include the following information, at a minimum, in the Closure SAP:

a. Unit history and description, identifying, at a minimum, the following:

   i. Constituents of concern (COCs), determined by all hazardous and radioactive constituents stored or treated at the unit, by category of constituent subject to the same sampling methodology;

   ii. Spills or other releases of hazardous or radioactive constituents during operation of the unit; and

   iii. Visible staining, cracks, sumps, and other unit-specific conditions indicating potential release locations;

b. Proposed decontamination procedures;

c. Proposed sample locations, including indoor surfaces, outdoor surfaces, for example asphalt or concrete pads, and soil;

d. Sample methods and procedures;

e. Analytes; and

f. Detection limits.

F.2.4.2 Sampling Methods

LANL will conduct sampling in accordance with procedures given in *SW-846* (EPA, 1986) or other procedures or methods approved by NMED.

F.2.4.2.1 Surface Sampling

LANL will demonstrate decontamination verification of surfaces of closing units by sampling of washdown water as described in Section F.3.4.1.1 of this Closure Plan. Swipe sampling may be required in addition to or in lieu of washdown water sampling if NMED determines, based on unit-specific information contained in the Closure SAP submitted in compliance with Section F.2.2 above, that unit-specific conditions exist (e.g., past releases, visible staining of constituents detectable by swipe sampling) that indicate that swipe sampling alone or in combination with washdown water sampling will more accurately detect releases than washdown water sampling alone.

F.2.4.2.2 Soil and Sediment Sampling

When soil and/or sediment sampling is appropriate or required, the sampling procedures specified in the Closure SAP, submitted at the time of closure, will be used to obtain samples to determine the amount (if any) of hazardous constituents in soil and/or sediment in the vicinity of the unit(s) undergoing closure.

F.2.4.3 Liquid Sampling

In order to determine baseline parameters, a composite liquid waste sampler (COLIWASA) or similar device will be used to sample unused washwater solutions before decontamination begins. It will also be used to sample the washwater used in cleaning structures and equipment. As an alternative to the COLIWASA, glass tubes will be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of appropriately after each sample is collected, thus eliminating the potential for cross contamination. Specific sampling methods and procedures will be specified in the Closure SAP to be submitted at the time of closure of a unit.

F.2.4.4 Sample Handling and Documentation

Protocol for sample handling and documentation will be specified in the Closure SAP.

F.2.4.5 Analytical Procedures

Sample analyses, including those for quality assurance/quality control (QA/QC), will be conducted using methods prescribed in *SW-846* or other approved procedures or methods. Target detection limits, analytical methods, and instrumentation for metals and organics analyses are presented in Tables F-3 and F-4 of Attachment F to the General Part B Permit Application, respectively.

F.2.4.6 Field and Laboratory QA/QC

Field QC activities will include collection of the following QC samples: duplicate samples, trip blanks, field

blanks, and equipment rinsate blanks. Field QC samples are summarized in Table F-5 of Attachment F, Closure Plan, of the LANL General Part B Permit Application, Revision 1.0. All field and laboratory QA/QC activities will be specified in the Closure SAP.

F.2.5 Closure Report

Within 60 days after completion of closure activities for a hazardous waste management unit, the Permittees will submit a Closure report to NMED. The report shall document the closure and shall contain, at a minimum, the following information:

a. The certification described in Section F.2.6 of Attachment F, Closure Plan, to the LANL General Part B Permit Application and Section F.2.7 of this Closure Plan;

b. Any variance from the approved activities in this TA-specific Closure Plan and the reason for the variance;

c. A summary of all sampling results, showing:

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

d. A QA/QC statement on analytical data validation and decontamination verification;

e. The location of the file of supporting documentation, including:

- Field logbooks;
- Laboratory sample analysis reports;
- QA/QC documentation; and
- Chain-of-custody forms;

f. Storage or disposal location of hazardous waste resulting from closure activities; and

g. A certification of accuracy of the report.

F.2.6 Survey Plat and Post-Closure Requirements [20.4.1 NMAC, Subpart V, 264.116 and 264.117 through 264.120]

The Permittees intend to remove hazardous/mixed waste and associated constituents from all units addressed in this Closure Plan 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. The Permittees will amend this closure plan, as necessary, to address changes to closure procedures or post-closure care pursuant to 20.4.1 NMAC, Subpart V, 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 units undergoing closure at TA-55 because all wastes will be removed, system components will be disposed, and any surfaces and equipment will be decontaminated at closure, or clean-closure equivalency will be demonstrated. Therefore, these requirements are not applicable for clean-closed units.

F.2.7 Closure Certification [20 NMAC 4.1, Subpart V, 264.115]

Within 60 days after completion of closure activities for any hazardous waste management unit, the Permittees will submit to the Secretary of the NMED, via certified mail, a certification that the unit has been closed in accordance with the specifications of Appendix F, Closure Plan to the LANL General Part B Permit Application and this TA-55 Closure Plan, approved by NMED. The certification will be attested to by an independent, New Mexico-registered professional engineer and will be signed by the appropriate U.S. Department of Energy (DOE) and LANL officials in accordance with 20 NMAC 4.1, Subpart V, 264.115 [1-1-97]. Documentation supporting the independent, New Mexico-registered engineer's certification will be furnished to the Secretary of the NMED with the original certification. A copy of the certification and supporting documentation will be maintained by both the DOE/ Office of Los Alamos Site Operation (OLASO) and ESH-19.

F.2.8 Amendment of the Closure Plan [20 NMAC 4.1, Subpart V, 264.112(c)]

In accordance with 20 NMAC 4.1, Subpart IX, 264.112(c) [1-1-97], LANL will submit a written notification of or request for a permit modification to authorize a change in the approved Closure Plan, in accordance with the applicable procedures in 4.1.900 NMAC (incorporating 40 CFR §270.42) and 20.4.1.901, whenever:

a. There are changes in operating plans or facility design that affect the Closure Plan;

b. There is a change in the expected year of closure; and/or

c. Unexpected events occur during closure that require modification of the approved Closure Plan.

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

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

F.2.9 Security

Because of the ongoing nature of waste management operations at LANL, the sites of the hazardous waste management units will be under the permanent care of the DOE or another authorized federal agency. Fences and site security will be maintained for as long as necessary to prohibit public access and to meet DOE requirements.

F.2.10 Inspection

Inspections will include checking the structural integrity of all aspects of the unit(s) undergoing closure including storage vessels, all storage pads, all berms, all sumps and trenches, all feed systems, and other associated equipment. Proper functioning of all equipment related to the units will be confirmed. Inspections will follow the Inspection Plan contained in Attachment C of the TA-55 Part B Permit Application.

F.3 UNIT SPECIFIC CLOSURE PROCEDURES

F.3.1 Partial and Final Closure

Partial closure at TA-55 will consist of closing one or more of the units while leaving the other units in service. Closure of all storage units at TA-55 constitutes final closure and all releases must have been investigated and remediated at that time, as directed under the Corrective Action Order (Order).

For partial closure, the procedures described in Section F.3.2 must be implemented at the structure(s) or location(s) being closed. Further, this closure plan presents unit-specific procedures for the TA-55 CSUs, the Storage Tank System, the Cementation Unit, and the Vitrification Unit in Sections F.4, F.5, and F.6, respectively. As appropriate, these additional unit-specific procedures must be implemented to effect closure of the unit.

Partial closure may consist of closing one or more CSUs, one or more components of the Storage Tank System, the Cementation Unit, or the Vitrification Unit while leaving the other hazardous waste units at TA-55 in service. Closure of a portion of a CSU, a portion of a tank system component, or a portion of a treatment unit is not allowed under this Closure Plan. Partial closure will be deemed complete when clean closure has been verified; all surfaces and/or equipment have been decontaminated or decommissioned, if necessary; and closure certification has been submitted to and approved by the NMED. Final closure will occur when the remaining hazardous waste management units at TA-55 are closed. Final closure will consist of assembling documentation on the closure status of each unit, including all previous partial clean closures as well as land-based units that have been or are being addressed via alternative closure requirements. Final closure of TA-55 will be deemed complete when the closure certification has been submitted to the NMED and the NMED has approved the final closure.

F.3.2 Unit Specific Closure Schedules [20.4.1 NMAC, Subpart V, 264.112(b)(6), 264.112(e), and 264.113]

Written notification will be provided to the NMED 45 days before the start of closure activities for any unit at TA-55. However, pursuant to 20.4.1 NMAC, Subpart V, 264.112(e) [6-14-00], removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Closure activities will begin according to the requirements of 20.4.1 NMAC, Subpart V, 264.112(d)(2) [6-14-00]. Treatment, removal, or disposal of hazardous wastes will begin in accordance with the approved closure plan, as required by 20.4.1 NMAC, Subpart V, 264.113(a) [6-14-00], within 90 days after final receipt of waste at the unit undergoing closure. 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, Subpart V, 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 unit undergoing closure.

Closure of the TA-55 CSUs, the Storage Tank System, the Cementation Unit, and the Vitrification Unit will be conducted in accordance with the general schedule presented in Table F.3.2-1. 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, Subpart V, 264.113(b) [6-14-00]. In addition, the demonstrations in 20.4.1 NMAC, Subpart V, 264.113(a)(1) and (b)(1) [6-14-00], will be made in accordance with 20.4.1 NMAC, Subpart V, 264.113(c) [6-14-00].

Table F.3.2-1 General Schedule for Closure Activities at Technical Area 55 Units

Activity	Maximum Time Required [a]
Let contract request for proposals	-90 Days
Notify the New Mexico Environment Department (NMED)	-45 Days
Receive proposals	-30 Days
Select contractor and award contract	-10 Days
Collect background samples (as appropriate)	-5 Days
Receipt of final waste volume	Day 0
Removal and/or treatment of final waste volume	Day 5
Perform washdown of unit, collect samples from wash water, submit samples for analyses	Day 15
Receive analyses on samples from the unit	Day 45
Perform sampling of surrounding soils (if necessary)	
Perform additional washdown (if necessary)	Day 50
Perform additional sampling and submit for analyses (if necessary)	Day 50
Receive analyses on samples from additional sampling	Day 80
Equipment disassembly	Day 100
Perform final cleanup (i.e., removal of decontaminated equipment and decontamination wastes)	Day 110
Remove contaminated soil (if necessary)	
Verify decontamination	Day 125
Submit final report to the NMED	Day 180

[a] The schedule above indicates calendar days from the beginning by which activities will be completed. Some activities may be conducted simultaneously.

F.3.3 Decontamination

To the extent possible, all contaminated structures and equipment at TA-55 will be decontaminated. Structures and equipment that cannot be decontaminated will be containerized and managed in compliance with appropriate regulations. All sampling conducted during closure and decontamination will be done in accordance with QA/QC procedures. These procedures are outlined in Attachment ____ of the TA-55 Part

B Permit Application. ***This is an NOD issue; once addressed by LANL more information may be inserted.***

Before proceeding with any closure activities, the units(s) being closed will be surveyed for radiological contamination. PPE and monitoring requirements will be determined by LANL's Health Physics Operations (ESH-1) and Industrial Hygiene and Safety (ESH-5) Groups following a field inspection. Radiation and chemical monitoring will occur throughout closure activities, as necessary. If contamination is found, the contaminated equipment and/or structures will be decontaminated (if possible) or containerized and taken to an approved storage location at the Facility appropriate for the waste type.

Personnel involved in closure activities will wear appropriate personal protective equipment (PPE), specified by ESH-1 and ESH-5, and will follow good hygiene practices to protect employees from exposure to hazardous and/or mixed waste. The level of PPE that will be required will depend upon the levels of radiological and/or chemical contamination that are detected, if any. Minimum PPE requirements will consist of coveralls, steel-toed boots, and safety glasses or face shields. If an overhead danger is present, a hard hat will be worn. All workers involved in closure activities will be required to have appropriate training as described in Section __ of the LANL TA-55 Part B Permit Application. Closure workers will also receive appropriate medical monitoring. Contaminated PPE will either be decontaminated or managed in compliance with appropriate regulations.

Before any decontamination activities begin, two samples of the clean water and detergent (washwater) solution (squeezed from mops and/or sponges prior to use) will be collected. The samples will be analyzed for the appropriate parameters listed in Table E-3 of Appendix E, the Contingency Plan, in the LANL General Part B (LANL, 1998a). The analytical results from these samples will be used to provide a baseline for decontamination verification.

Each unit undergoing closure will be inspected for any cracks or conditions that would potentially lead to loss of decontamination-liquid containment. If any defects, deterioration, damage, or hazards affecting containment are discovered during inspection, appropriate remedial actions (including repairs, maintenance, or replacement) will be completed before decontamination activities begin. If contamination is found on or in any defective, deteriorated, or damaged area, the contamination will be removed and its removal verified before repairs or replacement takes place.

After any decontamination washdown process, the used washwater will be collected, transferred to containers, sampled, and analyzed for the appropriate parameters in Table E-3 of Appendix E of the LANL General Part B (LANL, 1998a). If the used washwater is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise, the used washwater will be managed at an appropriate on-site facility, depending on the regulated constituents present.

F.3.3.1 Decontamination of Structures

Prior to decontamination of a structure, any portable equipment with an impervious surface that is to be removed from the area will be wiped down with washwater solution consisting of warm water, mild detergent and polyvinyl alcohol. This solution is intended to remove loose contamination from surfaces. At each unit being closed, all walls, floors, and equipment that could potentially be contaminated will be wiped down with washwater solution. Portable berms will be used to collect and provide containment for the used washwater. Collected washwater will be sampled and analyzed as specified in the Closure SAP. If sampling and analysis indicate that hazardous constituents are present, the wash cycles and analyses will continue until the walls, floors, and/or equipment have been decontaminated or the decision is made to segregate contaminated materials for subsequent management as contaminated waste. ***This is an NOD issue. LANL needs to specify a specific ratio for volume of wash water to surface area, in order to have some consistency and account for potential dilution. This may need to be revised based upon LANL's responses.***

Used washwater samples may exhibit anomalously high levels of organic compounds due to leaching of storage structure walls or floors during washdown. If this is the case, record reviews (e.g., manufacturer's specifications, Material Safety Data Sheets (MSDSs)), and/or additional analyses will be employed to determine if leaching of organics from the walls or floors contributed to the organic compound concentration in used washwater. Additional sampling and analysis will be performed according to the methods specified in the Closure SAP. If this additional evaluation confirms the storage structure walls or floors as the source of contamination, baseline concentrations of clean washwater will be adjusted accordingly. If sampling and analysis indicate that hazardous constituents are present and are not attributed to leaching of organics from storage structure walls or floors, the wash cycles and analyses will continue until the structure or equipment has been decontaminated or the decision is made to manage it appropriately as contaminated waste. This material may be transported to and stored at other hazardous waste management locations to facilitate the closure process.

After the walls and floors have been decontaminated, any recessed areas present (e.g., sumps) will be wiped down with washwater. The used washwater will collect in the recessed area, where it will be sampled. After sampling, the used washwater will be removed from the recessed area and transferred to and stored in appropriate containers, pending analysis. Should the analysis show that the washwater is contaminated, the recessed areas will be decontaminated with a clean washwater solution and the washwater solution resampled. This will continue until the recessed area has been decontaminated or the decision is made to manage it as contaminated material.

Drain lines and sumps connected to sumps and recessed areas will be sampled and analyzed for chemical and radiological contamination, as appropriate. If contamination is found, it will be removed and its removal verified by sampling and analysis. All sampling and analysis will be performed according to the

methods specified in the Closure SAP.

F.3.3.2 Decontamination of Soils Surrounding Units Being Closed

In accordance with 20.4.1.500 NMAC (incorporating 40 C.F. R. 264.112(b)(4)), at partial or final closure, all surrounding soils will be sampled and tested for potential contamination if NMED determines soils sampling is necessary based upon site history and conditions described in the Closure SAP. Soils will be sampled and analyzed as specified in the Closure SAP. Unit specific procedures are detailed in Sections F.4.4.4, F.5.5.4, and F.6.5.4 of this Closure Plan.

F.3.3.3 Decontamination Equipment

Prior to use, all reusable decontamination equipment will be rinsed with distilled water. Decontamination equipment rinsate blanks will be collected and analyzed in accordance with QA/QC procedures as outlined in the Closure SAP. ***(Note this is an NOD issue)*** Reusable protective clothing, tools, and equipment used during closure activities will be cleaned with a washwater solution consisting of warm water, mild detergent, and polyvinyl alcohol and scraped as necessary to remove any residue. Verification of decontamination for reusable items will be determined by the procedures specified in the Closure SAP. Residue, disposable equipment, and reusable equipment that cannot be decontaminated will be containerized and managed appropriately at an approved on-site facility, depending on the regulated constituents present.

F.3.3.4 Decontamination Verification

Sufficient sampling and analysis will be required to demonstrate that hazardous waste, hazardous waste residue and/or hazardous constituents are not present at the storage structure or location after closure. The number and location of samples and types of analytes required will be determined at the time of unit closure according to the Closure SAP.

Two samples of clean washwater solution (i.e., water, mild detergent cleanser, and polyvinyl alcohol) squeezed from mops and/or sponges prior to use will be collected before initial washdown of any storage structure or location within the CSUs, the Storage Tank System, the Cementation Unit, and the Vitrification Unit. The samples taken from the CSUs, the Storage Tank System, and the two treatment units will be analyzed for the appropriate parameters as discussed in Sections F.4.6, F.5.5.6, and F.6.5.6, respectively, to provide baseline data for decontamination verification. Analytical procedures will conform to methods found in the most current version of *SW-846* (EPA, 1986) at the time of closure. The specific methods used for each type or group of constituents in each type of media found at the unit or location will be selected according to the Closure SAP. Used washwater solutions will be analyzed for the same parameters. Washwater solutions will be considered contaminated if the used washwater solution shows an increase (determined by the statistical method specified in *SW-846* as appropriate for the analytical method used) in the analytical parameters over the clean washwater solution. If subsequent wash downs are deemed

necessary, an additional sample of clean washwater solution squeezed from mops and/or sponges prior to use will be taken for each additional wash down event.

Swipe samples may be taken and analyzed for hazardous waste residues to verify decontamination. Details such as the number of swipes taken, the percentage of surface sampled for each swiped item, and the method of analysis, will be specified in the Closure SAP.

In accordance with Nuclear Regulatory Commission (NRC) Regulatory Guide 1.86, decontamination verification for radionuclides will include swipe analyses of all structures and equipment that will be left on site. Details such as the number of swipes taken, the percentage of surface sampled for each swiped item, and the method of analysis, will be specified in the Closure SAP.

Surveying using appropriate radiation instruments will also be conducted in areas where radiological contamination is present. This technique will be used to identify areas of fixed contamination.

As required by 20.4.1.500 NMAC (incorporating 40 CFR §264.112(b)(4)), soils surrounding and under structures and locations that were impacted by stored wastes will be sampled to verify that contamination has been removed to the appropriate clean up level. In addition, soils surrounding decontaminated areas will be sampled to verify that cross-contamination resulting from decontamination procedures has not occurred. The sampling and analytical methods to be used will be specified in the Closure SAP.

Additional analyses will be performed as necessary, according to the Closure SAP.

Successful decontamination meets one of the following criteria:

- No detectable hazardous waste or hazardous constituents from container storage activities are found in the final sample;

- Analytical results of samples collected during closure activities identify no statistically significant concentrations of RCRA-regulated constituents above baseline data;

- Detectable hazardous waste or hazardous constituents from container storage activities in the final sample are removed to statistically significant levels based on baseline concentrations in the clean washwater;

- Detectable hazardous waste or hazardous constituents from container storage activities in the final sample are at or below levels agreed upon with NMED; and/or

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

F.3.4 Cleanup Levels

Will need to insert the NMED-specific cleanup levels that will be enforced. Will need to have NMED provide this information.

F.3.4.1 Surfaces

F.3.4.1.1 Washdown Water

When the Permittees verify decontamination by sampling washwater, NMED will approve the decontamination as complete when the washwater is non-detect for constituents of concern (COCs) identified in the Closure SAP submitted under Section F.2.2 and described in Section F.2.4.1 of this Closure Plan.

F.3.4.1.2 Surfaces

The Permittees may be requested by NMED to conduct swipe sampling and analysis to verify decontamination of surfaces. NMED will approve the decontamination as complete when the following cleanup levels are attained: ***Insert cleanup levels.***

F.3.4.1.3 Soils

If NMED determines that soil sampling must be conducted in order to verify decontamination, the New Mexico Hazardous Waste Bureau Soil Screening Levels shall be used for comparison and determination of decontamination.

F.4 REQUIREMENTS FOR SPECIFIC UNITS AT TECHNICAL AREA 55

F.4.1 Container Storage Units

The locations of the CSUs at TA-55 are shown on Figure F.4.1-1.

B05

The B05 CSU (referred to as Area 3 in previous permitting documents) is used to store containers of hazardous, mixed low-level, and mixed TRU solid waste. B05 is located in the southwest section of the basement of TA-55-4 (Figure G-1, TA-55 Part B Permit Application) and measures about 26 feet (ft) long by 10 ft wide. Maximum storage capacity is 3,000 gallons (gal), the equivalent of fifty-five 55-gal

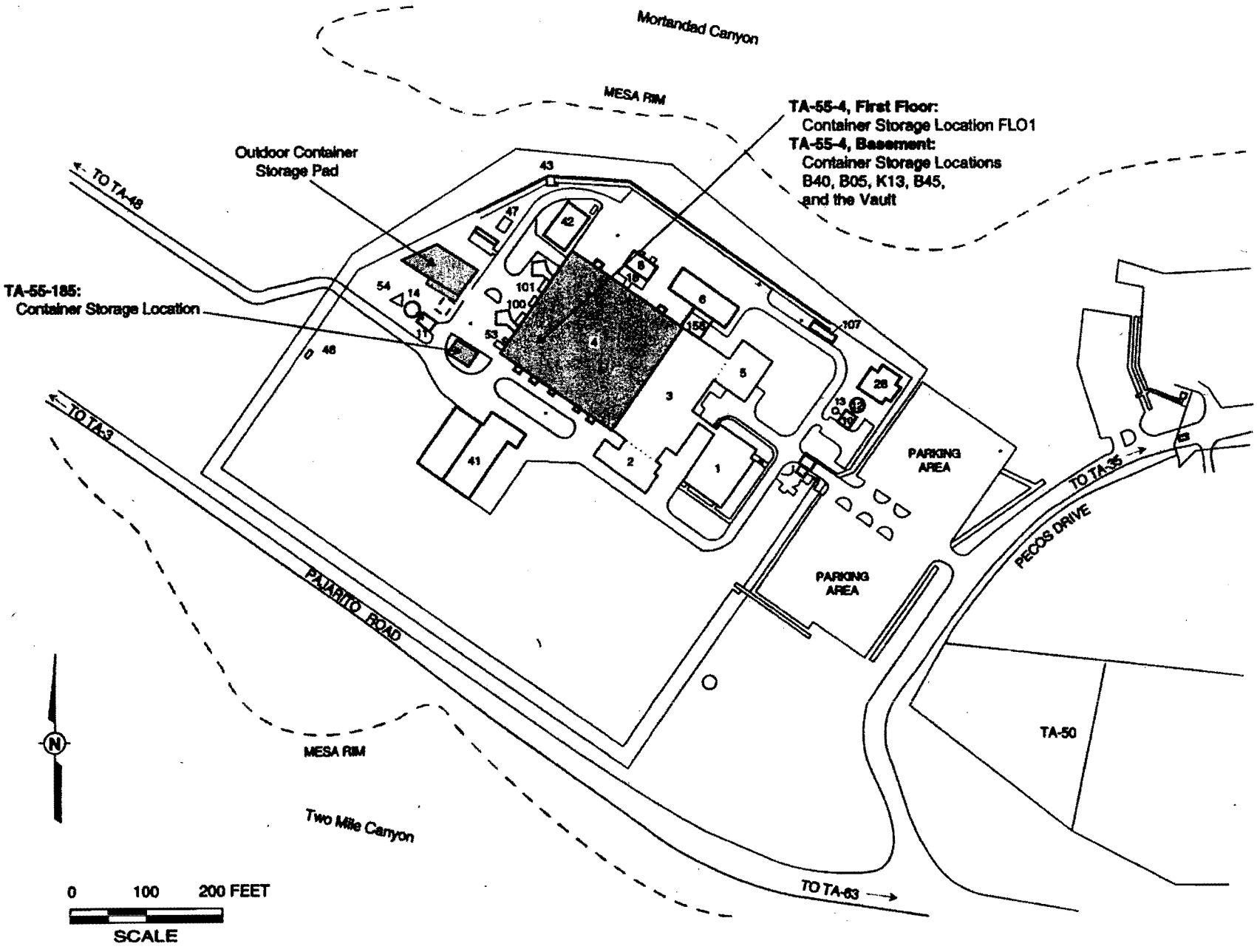

Figure 4.1-1
Technical Area (TA) 55, Container Storage Units

drums. The types of waste containers holding hazardous or mixed waste that may be stored in B05 include, but are not limited to: 30-, 55-, and 85-gal drums; large waste boxes, and standard waste boxes (SWBs).

B40

The B40 CSU (referred to as Area 1 in previous permitting documents) is used to store containers of hazardous, mixed low-level, and mixed TRU waste, any of which may contain liquids. B40 is located in the southwest section of the basement, and is L-shaped as illustrated in Figure G-1 of the TA-55 Part B Permit Application. B40 is approximately 61.5 ft long by 55 ft wide. The maximum storage capacity of this unit is 21,500 gal or the equivalent of 391 55-gal drums. The types of waste containers holding hazardous or mixed waste that may be stored in B40 include, but are not limited to, 15-, 30-, 55-, and 85-gal drums; large waste boxes; and SWBs.

B45

B45 CSU (referred to as Area 5 in previous permitting documents) is used to store solid hazardous, mixed low-level, and mixed TRU waste. B45 is located in the northeast section of the basement at TA-55-4 as shown in Figure G-1. It measures approximately 45 ft long by 17.5 ft wide. The maximum storage capacity of this unit is 3,400 gal or the equivalent of approximately sixty-two 55-gal drums. The types of waste containers holding hazardous or mixed waste that may be stored in B45 include, but are not limited to, steel cans, 55- and 85-gal drums, and SWBs.

FLO1, TA-55-4

The FLO1 CSU is used to store containers of hazardous, mixed low-level, and mixed TRU waste, some of which may potentially contain liquids. FLO1 is located in TA-55-4, Room 401 as shown in Figure G-2 of the TA-55 Part B Permit Application and measures 6 ft long by 5.5 ft wide. The maximum storage capacity of this unit is 660 gal or the equivalent of twelve 55-gal drums. The types of waste containers holding hazardous or mixed waste that may be stored in FLO1 include, but are not limited to, 30-, 55-, and 85-gal steel drums.

K13

The K13 CSU (referred to as Area 4 in previous permitting documents) is used to store containers of hazardous, mixed low-level, and mixed TRU waste, some of which may contain liquids. K13 is located in the northwest section of the basement of TA-55-4 as shown on Figure G-1. It measures 16 ft long by 13 ft wide. The maximum storage capacity of this unit is 3,400 gal or the equivalent of approximately sixty-two 55-gal drums. The types of waste containers holding hazardous or mixed waste that may be stored in K13 include, but are not limited to, steel cans; 30-, 55-, and 85- gal drums; and large waste boxes.

Vault

The Vault CSU (referred to as Area 6 in previous permitting documents) is used to store containers of mixed low-level and mixed TRU waste, either of which may contain liquids. The Vault is located along the eastern wall of the basement of TA-55-4. As shown in Figure G-1, it measures approximately 79.5 ft long by 50.5 ft wide. The maximum storage capacity of this unit is 4,000 gal or the equivalent of approximately seventy-three 55-gal drums. The types of waste containers holding mixed waste that may be stored in the Vault include, but are not limited to: glass or plastic bottles; steel cans; and 30- and 55-gal drums.

Container Storage Pad

The container storage pad is located outside and northwest of TA-55-4. It is used to store containers of hazardous, mixed low-level, and mixed TRU waste, any of which may potentially contain liquids. The pad, laid in the mid-1980s, is constructed of asphalt with thickness ranging from 4 to 6 inches. The container storage pad, shown in Figure G-3 of the TA-55 Part B Permit Application, consists of a trapezoid with sides of 102 ft, 876 ft, 156, ft and 105 ft and a rectangular strip measuring 60 ft by 10 ft on the southeast side. The pad is sloped, is elevated 2 to 4 inches above ground level, and has a culvert beneath the pad running from the northwest side of the southeast corner to minimize run-on of precipitation. The storage capacity is 135,000 gal or the equivalent of approximately 2,455 55-gal drums. The types of waste containers holding hazardous or mixed waste that may be stored on the container storage pad include, but are not limited to, 30-, 55-, and 85-gal drums; SWBs; large waste boxes; and various small containers.

TA-55-185

The TA-55-185 CSU is used to store solid hazardous, mixed low-level, and mixed TRU waste. TA-55-185 is located west of TA-55-4 as shown in Figure G-4 of the TA-55 Part B Permit Application. The building was constructed in 1991 and consists of a steel frame with fiberglass insulation, walls, and a concrete floor. The TA-55-185 CSU is approximately 60 ft long by 40 ft wide and has a maximum storage capacity of 55,000 gal or the equivalent of 1000 55-gal drums. The types of waste containers holding hazardous or mixed waste that may be stored at TA-55-185 include, but are not limited to, 30-, 55-, and 85-gal steel drums; large waste boxes; and SWBs.

Table F.4.1-1 provides information on the wastes stored at the CSUs in TA-55. The table lists the waste types, the maximum waste inventory by waste type, the type of container used for storage, and the maximum number of containers used at each CSU in TA-55. The expected volume of decontamination solution generated in the closure of each unit is reflected in the "Wastes for Disposal" value.

Table F.4.1-1 Maximum Waste Inventories, Types of Wastes, and Number of Containers Used in the CSUs at TA-55

B05

Waste Type	Maximum Inventory	Waste	Waste to be Disposed	30 GAL	55 GAL	85 GAL	Other	Number of Containers
Hazardous								
Mixed, Low-level								
Mixed TRU								

B40

Waste Type	Maximum Inventory	Waste	Waste to be Disposed	30 GAL	55 GAL	85 GAL	Other	Number of Containers
Hazardous/ Liquids								
Mixed, Low-level/Liquids								
Mixed TRU/Liquids								

B45

Waste Type	Maximum Inventory	Waste	Waste to be Disposed	30 GAL	55 GAL	85 GAL	Other	Number of Containers
Hazardous								
Mixed, Low-level								
Mixed TRU								

FLO1

Waste Type	Maximum Inventory	Waste	Waste to be Disposed	30 GAL	55 GAL	85 GAL	Other	Number of Containers
Hazardous/ Liquids								
Mixed, Low-level/Liquids								
Mixed TRU/Liquids								

K13

Waste Type	Maximum Inventory	Waste	Waste to be Disposed	30 GAL	55 GAL	85 GAL	Other	Number of Containers
Hazardous/ Liquids								
Mixed, Low-level/Liquids								
Mixed TRU/Liquids								

Vault

Waste Type	Maximum Inventory	Waste	Waste to be Disposed	30 GAL	55 GAL	85 GAL	Other	Number of Containers
Mixed, Low-level/Liquids								
Mixed TRU/Liquids								

Container Storage Pad

Waste Type	Maximum Inventory	Waste	Waste to be Disposed	30 GAL	55 GAL	85 GAL	Other	Number of Containers
Hazardous/ Liquids								
Mixed, Low-level/Liquids								
Mixed TRU/Liquids								

Building TA-55-185

Waste Type	Maximum Inventory	Waste	Waste to be Disposed	30 GAL	55 GAL	85 GAL	Other	Number of Containers
Hazardous								
Mixed, Low-level								
Mixed TRU								

F.4.1.1 Estimate of Maximum Waste in Storage

The maximum total inventory of waste that may be in storage at any time in the TA-55 CSUs is estimated as follows:

- B40 – 21,500 gallons
- B05 – 3,000 gallons
- K13 – 3, 400 gallons
- B45 – 3,400 gallons
- FLO1 – 660 gallons
- Vault – 4,000 gallons
- Container Storage Pad – 135,000 gallons
- TA-55-185 – 55,000 gallons

Estimates of the total amount of waste stored in these CSUs over their active lives are:

- B40 – _____ gallons
- B05 – _____ gallons
- K13 – _____ gallons
- B45 – _____ gallons
- FLO1 – ___ gallons
- Vault – _____ gallons
- Container Storage Pad – _____ gallons
- TA-55-185 – _____ gallons

F.4.1.2 Description of Waste

The hazardous waste 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, Subpart II, 261.2 [6-14-00]; is not exempt from regulation as a hazardous waste under 20.4.1 NMAC, Subpart II, 261.2 [6-14-00]; and exhibits any of the characteristics of hazardous waste identified in 20.4.1 NMAC, Subpart II, Subpart C, or is listed in 20.4.1 NMAC, Subpart II, Subpart D [6-14-00]. Mixed low-level and mixed TRU wastes currently stored at TA-55 are generated during R&D activities, processing and recovery operations, D&D projects, and general facility operations. The mixed low-level and mixed TRU wastes are classified as such because RCRA-characteristic or -listed wastes are or may be present, along with radioactive components.

4.2 Storage Tank System

In compliance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), Subpart IX, 270.14(b)(13), and 20.4.1 NMAC, Subpart V, Part 264, Subparts G and J, revised June 14,

2000 [6-14-00], Section F.4 of this closure plan describes the activities necessary to remove or decontaminate all hazardous wastes and hazardous waste residues at the storage tank system located at LANL TA-55. Closure activities will minimize the need for further maintenance, preclude the release of hazardous constituents to environmental media, and be protective of human health, in accordance with the closure performance standards specified in 20.4.1 NMAC, Subpart V, 264.111 [6-14-00].

The storage tank system is located at TA-55 in Building 4, Rooms 401 and 434A. It is used to store evaporator bottoms solutions, a mixed transuranic (TRU) waste, prior to treatment in the Cementation Unit or the Vitrification Unit. The storage tank system consists of the following components: the evaporator glovebox tank, the Cementation Unit pencil tanks, the pencil tanks, and the Vitrification Unit slab tanks. The location of the storage tank system is shown on Figure F.4.2-1.

Until closure is complete and has been certified in accordance with 20.4.1 NMAC, Subpart V, 264.115 [6-14-00], a copy of the approved closure plan and any approved revisions will be on file at LANL's Hazardous and Solid Waste Group (ESH-19) and at the DOE OLASO.

Table F.4.2-1 lists the waste types, the maximum waste inventory by waste type, the type of tank used for storage, and the maximum number of tanks used at each unit of the Storage Tank System.

Table F.4.2-1. Maximum Waste Inventories, Types of Wastes, and Number of Tanks Used in the TA-55 Storage Tank System

Evaporator Glovebox Tanks

Waste Type	Maximum Inventory	Wastes	Wastes to be Disposed	Type of Tank	Number of Tanks

Cementation Unit Pencil Tanks

Waste Type	Maximum Inventory	Waste	Waste to be Disposed	Type of Tank	Number of Tanks

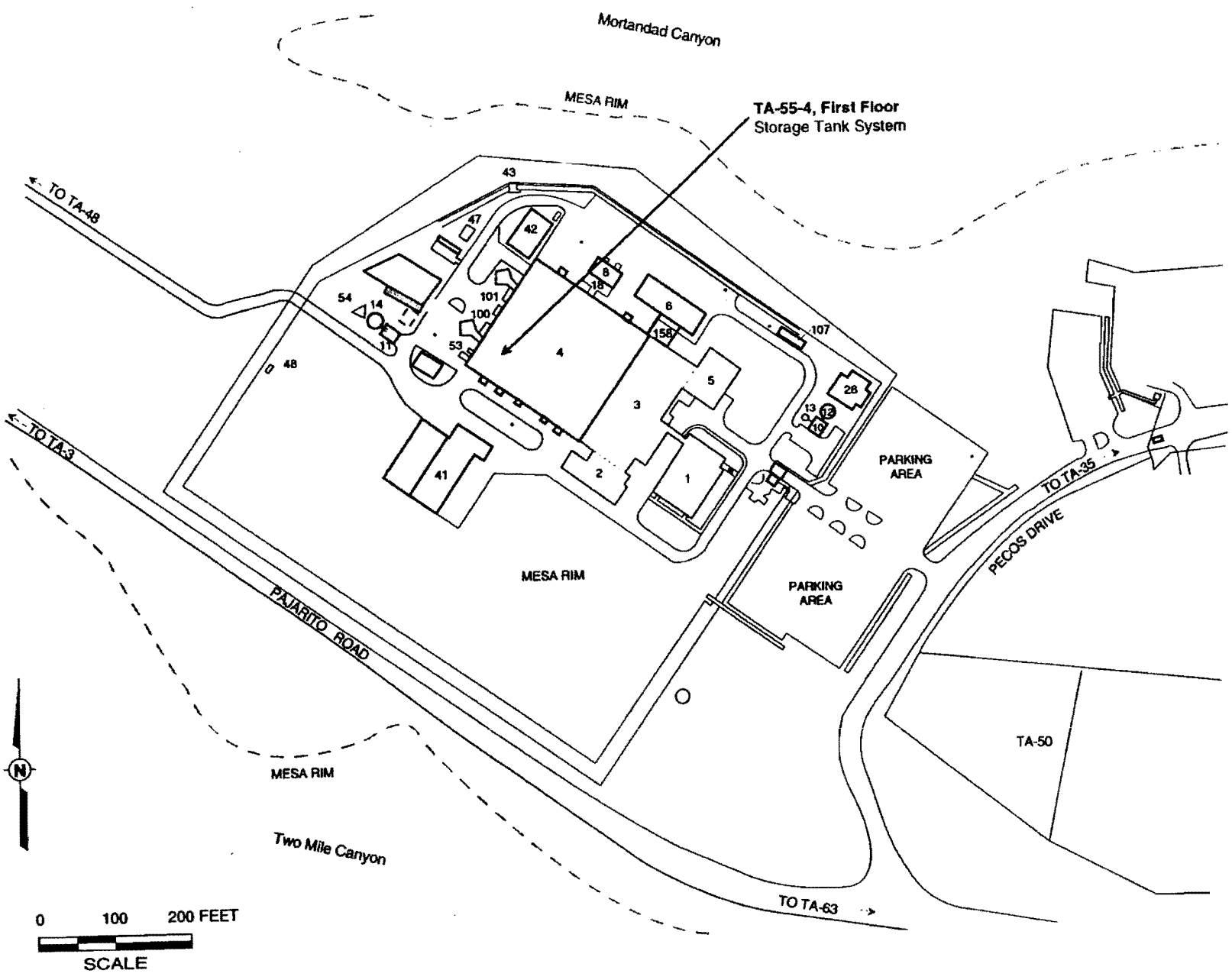

Figure 4.2-1
Technical Area (TA) 55, Storage Tank System Location

Pencil Tanks

Waste Type	Maximum Inventory	Waste	Waste to be Disposed	Type of Tank	Number of Tanks

Vitrification Unit Slab Tanks

Waste Type	Maximum Inventory	Waste	Waste to be Disposed	Type of Tank	Number of Tanks

F.4.2.1 Estimate of Maximum Waste in Storage

The maximum inventory of waste that may be stored in the storage tank system at any time is 1,270 liters, or approximately 336 gallons. The maximum inventory for the Evaporator Glovebox Tank is ___ gallons, _____ gallons for the Cementation Unit Pencil Tanks, _____ gallons for the Pencil Tanks, and the Vitrification Unit Slab Tanks, _____ gallons. Over the active life of the Evaporator Glovebox Tank, the Cementation Unit Pencil Tanks, the Pencil Tanks, and the Vitrification Unit Slab Tanks, it is estimated that they will handle ____ gallons, _____ gallons, _____ gallons, and ____ gallons, respectively.

F.4.2.2 Description of Waste

The Storage Tank System is used to store evaporator bottoms solutions, a mixed TRU waste, generated primarily from R&D 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 TRU waste because RCRA-characteristic or -listed wastes are or may be present, along with radioactive components. This waste typically exhibits the hazardous characteristics of toxicity (for metals) and corrosivity.

F.4.3 Cementation and Vitrification Units

In compliance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), Subpart IX, 270.14(b)(13), and 20.4.1 NMAC, Subpart V, Part 264, Subparts G and X, revised June 14, 2000, Section F.4 of this closure plan describes the activities necessary to clean close the Cementation Unit and the Vitrification Unit at LANL TA-55. Closure activities 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, Subpart V, 264.111 [6-14-00].

The Cementation Unit is located at TA-55, Building 4 (TA-55-4), Room 401 and is used to stabilize mixed waste solutions into a cement matrix. The Cementation Unit consists of a pH column, vacuum trap, two motor-driven mixers, four impellers, and associated structures, glovebox, and piping. The location of the Cementation Unit is shown on Figure F.4.3-1.

The Vitrification Unit will be located at TA-55, Building 4, Room 434A, inside Room 401. It will be used to convert evaporator bottoms solutions, a mixed waste, into a stabilized glass matrix. The Vitrification Unit will consist of a single batch in-can melter, a glass frit feed system, a glass/waste handling system, an off-gas system, associated structures, a glovebox, and piping. The proposed location of the Vitrification Unit is shown in Figure F.4.3-2.

Until closure is complete and has been certified in accordance with 20.4.1 NMAC, Subpart V, 264.115 [6-14-00], a copy of the approved closure plan and any approved revisions will be on file at LANL's Hazardous and Solid Waste Group (ESH-19) and at the DOE OLASO.

Table F.4.3-1 lists the waste types, the maximum waste inventory by waste type, the type of container used for storage, and the maximum number of containers used at the Cementation Unit.

Table F.4.3-1. Maximum Waste Inventories, Types of Wastes, and Number of Vessels Used in the Cementation Unit

Cementation Unit

Waste Type	Maximum Inventory	Waste	Waste to be Disposed	Type of Containers	Number of Vessels

Table F.4.3-2 lists the waste types, the maximum waste inventory by waste type, the type of container used for storage, and the maximum number of containers used at the Vitrification Unit.

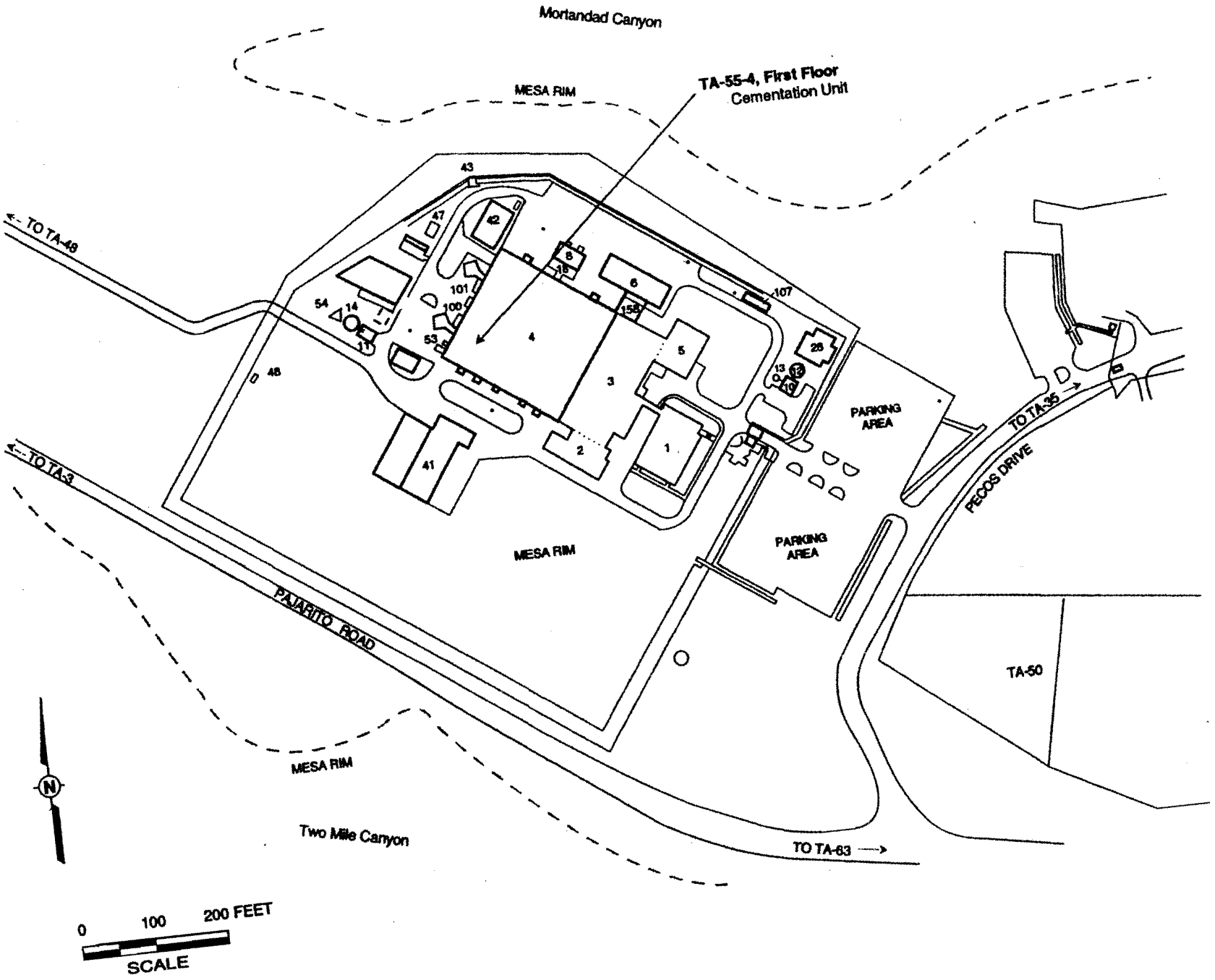

Figure 4.3-1
Technical Area (TA) 55. Cementation Unit Location

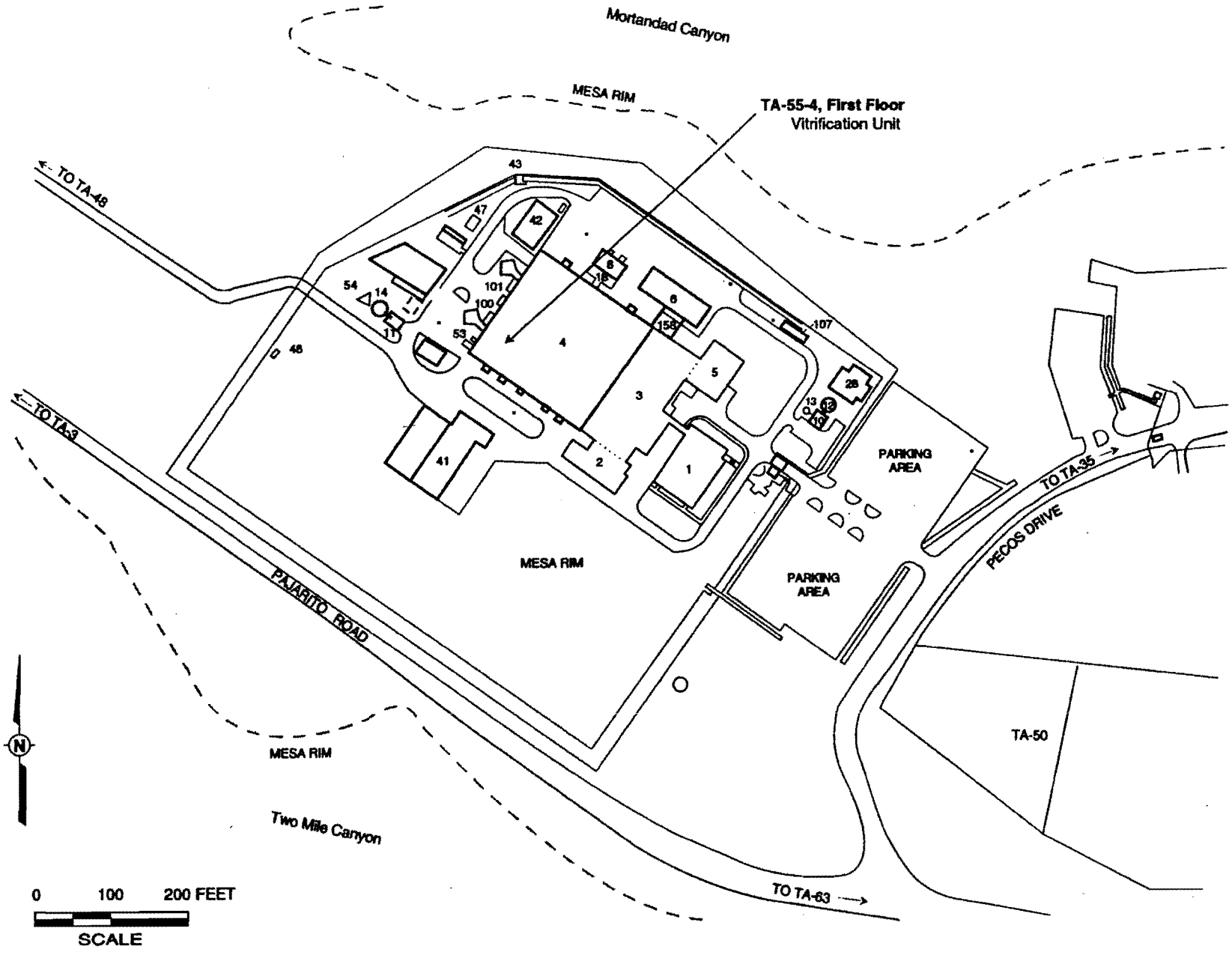

Figure 4.3-2
Technical Area (TA) 55, Vitrification Unit Location

Table F.4.3-2. Maximum Waste Inventories, Types of Wastes, and Number of Vessels Used in the Vitrification Unit

Vitrification Unit

Waste Type	Maximum Inventory	Waste	Waste to be Disposed	Type of Containers	Number of Vessels

F.4.3.1 Estimate of Maximum Waste in Inventory

The maximum total volume of mixed waste that may be in inventory in the Cementation Unit at any time is estimated at 150 gallons. It is estimated that the Cementation Unit will handle _____ gallons of mixed waste over its active life.

The maximum volume of mixed waste that may be inventoried in the Vitrification Unit at any time is estimated at 27 gallons. It is estimated that the Vitrification Unit will handle _____ gallons of mixed waste over its active life.

F.4.3.2 Description of Waste

The Cementation Unit is used to treat liquid and solid mixed waste generated primarily from R&D activities and processing and recovery operations at TA-55 and at the Chemistry and Metallurgy Research Building at TA-3. The liquid wastes generally consist of evaporator bottoms solutions and laboratory solutions that may exhibit the hazardous characteristics of corrosivity and toxicity (for metals) as defined in 20.4.1 NMAC, Subpart II, 261.22 and 261.24 [6-14-00], respectively. The solid process wastes generally consist of process residue from the evaporator, process leached solids, and filter cake. These waste streams typically exhibit the hazardous characteristics of toxicity (for metals) and corrosivity. These waste streams are classified as mixed waste because RCRA-characteristic or listed wastes are or may be present, along with radioactive components.

The Vitrification Unit will be used to treat evaporator bottoms solutions, a mixed waste, generated primarily from R&D activities and processing and recovery operations at TA-55. These waste solutions are generated as evaporator bottoms and generally consist of concentrated nitric acid saturated with salts and metals. Evaporator bottoms solutions waste is classified as mixed waste because RCRA-characteristic or listed- wastes are or may be present, along with radioactive components. This waste stream typically exhibits the hazardous characteristics of toxicity (for metals) and corrosivity.

F.4.4 Removal of Waste

Prior to initiation of closure activities, all wastes will be removed from the units scheduled to be closed. Containers will 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 for transport. Appropriate shipping papers will accompany the wastes during transport. Any waste remaining in the storage tank system, or portion thereof, will be discharged for treatment in the Cementation or Vitrification Unit. All wastes, including drums of solidified wastes and melter cans of vitrified waste, will be removed upon final treatment using the Cementation and Vitrification Unit. As appropriate, hazardous or mixed wastes will be moved to an approved on-site storage unit or permitted off-site treatment, storage, or disposal facility. In accordance with 20.4.1.500 NMAC (incorporating 40 CFR §264.112(b)(3)), the off-site permitted Treatment, Storage and Disposal (TSD) facilities include: _____ and _____.

F.4.5 Closure Procedures and Decontamination

Before any decontamination activity begins, two samples of clean water and detergent (washwater) solution squeezed from mops, cloths, and/or other absorbent materials prior to use will be collected. The samples will be analyzed for the parameters specified in the Closure SAP. The analytical results from these samples will be used to provide a baseline for decontamination verification.

After any decontamination washdown process, the used washwater will be collected, transferred to containers, sampled, and analyzed for the hazardous constituents to be expected according to the operating record. Parameters for analysis will be specified in the Closure SAP. Depending upon the results of the analysis, the used washwater will be managed appropriately.

Before proceeding with any closure activities, the TA-55 unit undergoing closure will be surveyed for radiological contamination. Radiation and chemical monitoring will occur throughout closure activities, as necessary. If contamination is found, the contaminated equipment and/or structures will be decontaminated (if possible) or containerized and taken to an approved storage location at LANL appropriate for the waste type. For detection of radiation, alpha, beta and/or gamma detectors will be used, as specified in the Closure SAP. Radiation detection will include surface scanning to determine the presence of contamination and hot spots. Radiation monitoring will be used only in areas where airborne contamination is suspected. Chemical monitoring will be performed with the _____.

Specific PPE and monitoring requirements will be determined after a field inspection by LANL's ESH-1 and ESH-5 Groups. Minimum PPE requirements will include coveralls, steel-toed boots, and safety glasses or face shields. Where an overhead danger is present, hard hats will be worn. In addition to the field inspection, ESH-1 and ESH-5 will consider the levels of radiological and/or chemical contamination that

are detected in determining the specific PPE requirements. Contaminated PPE will either be decontaminated or managed in compliance with appropriate regulations.

If inhalation of radiation is a potential concern, appropriate respiratory protection will be worn by decontamination personnel.

All workers involved in closure activities will be properly trained and have appropriate medical monitoring.

F.4.5.1 Indoor Storage Locations

Decontamination of the indoor storage locations will follow the general procedures presented in Section F.3.3.1. All portable equipment will be wiped down with a washwater solution followed by a washing of all potential contaminated structural surfaces. Washwater will be collected and sampled as outlined in the Closure SAP. Additional wash cycles and analyses will be implemented until all contaminated is eliminated. Any structural materials that cannot be decontaminated will be segregated for handling as contaminated waste.

Building TA-55-185 will be decontaminated following the general procedures presented in Section F.3.3.1:

- Portable equipment will be wiped down with a washwater solution;
- Floors, walls, and permanent equipment will be wiped down with a washwater solution;
- Washwater will be sampled and analyzed by the methods specified in the Closure SAP;
- Wash cycles and subsequent analysis will be repeated until contamination is eliminated; and
- Materials that cannot be decontaminated will be segregated for management as contaminated waste.

After decontamination of the equipment and structural surfaces, all recessed areas including sumps will be washed down. Again, the washwater will be collected for sampling and analysis according to the Closure SAP. Wash cycles followed by analysis of collected washwater will continue until the recessed areas are decontaminated.

All drain lines connected to sumps and recessed areas will be sampled and analyzed as specified in the Closure SAP. All identified contamination will be removed as verified by the methods presented in the Closure SAP. Drains that cannot be contaminated will be segregated for management as contaminated waste.

F.4.5.2 Vault

It is anticipated that the Vault will remain an active mixed waste management unit until facility closure and that the area will be decontaminated in the manner described in Section F.3.3.1. 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.4.5.3 Outdoor Storage Pad

The Container Storage Pad will be closed in accordance with the requirements of 20.4.1.500 NMAC (incorporating 40 CFR §264, Subpart G), including schedule and performance standard requirements for assessment and remediation of releases.

Potential closure activities for container storage pad asphalt include decontamination, removal, or *future remediation under RCRA corrective actions* (again, talk to Carl Will) with the final assessment and remediation of the container storage pad and the soil at this CSU location integrated and coordinated under a corrective action program at LANL.

To decontaminate the surface of the asphalt-covered storage locations, the procedures described in Section F.3.3.1 will be used. If the decision is made to decontaminate, portable berms will be used to collect and provide containment for the used washwater. After the washdown process, the used washwater will be collected, sampled for analysis, and stored in containers at the site. Each asphalt-covered storage location may undergo up to two wash cycles. If decontamination verification cannot be demonstrated after two wash cycles, the asphalt will be removed from the site and managed as appropriate for the waste type.

If the asphalt is removed as part of unit closure, the underlying soils will be sampled and analyzed in accordance with 20.4.1.500 NMAC (incorporating 40 CFR §264.112(b)(4)). These soils will be sampled and analyzed by the methods contained in the Closure SAP.

Used washwater samples may exhibit anomalously high levels of organic compounds due to leaching of the asphalt during washdown. If this is the case, record reviews (e.g. manufacturer's specifications, MSDSs) and additional analyses may be performed to determine if leaching of organics from the asphalt contributed to the organic compound concentration in the used washwater. If additional sampling and analysis is required, it will be performed in accordance with the methods specified in the Closure SAP. If additional evaluation confirms the asphalt as the source of contamination, baseline concentrations for clean washwater will be adjusted accordingly. Decontamination verification is discussed further in Section F.3.3.4.

Removal of asphalt and appropriate disposal may be conducted in lieu of decontamination activities. All removal activities will comply with all requirements of 20.4.1.500 NMAC (incorporating 40 CFR §264,

Subpart G), including schedule and performance standard requirements for assessment and remediation of releases.

F.4.5.4 Storage Tank System Ancillary Equipment

The Storage Tank System ancillary equipment (e.g., piping, pumps) will be decontaminated, decommissioned, or dismantled, depending on the extent of contamination and anticipated disposition or use after closure. 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.

The interior surfaces of the ancillary equipment will be flushed with washwater. Following the washdown, the washwater will be collected and analyzed for the parameters specified in the Closure SAP. All exterior surfaces will be wiped down with a washwater solution using cloths and/or other absorbent materials to minimize the amount of liquid waste generated as a result of decontamination activities. The used washwater will be squeezed from the cloths and/or other absorbent materials and collected and analyzed for the parameters specified in the Closure SAP. Used washwater will be managed in accordance with LANL policy. The wash cycles will continue until the equipment has been cleaned to established levels or the decision is made to manage it as contaminated waste. Equipment to be managed as contaminated waste will be containerized, sent to an appropriate on-site facility, and managed in compliance with governing regulations.

F.4.5.5 Areas Adjacent to the Storage Tank System

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 parameters specified in the Closure SAP. If decontamination measures are deemed necessary based on the analytical results, the procedures presented in Section F.3.3.1 of this Closure Plan will be followed:

- Portable equipment will be wiped down with a washwater solution;
- Floors, walls, and permanent equipment will be wiped down with a washwater solution;
- Washwater will be sampled and analyzed by the methods specified in the Closure SAP;
- Wash cycles and subsequent analysis will be repeated until contamination is eliminated; and
- Materials that cannot be decontaminated will be segregated for management as contaminated waste.

After decontamination of the equipment and structural surfaces, all recessed areas including sumps will be washed down. Again, the washwater will be collected for sampling and analysis according to the Closure SAP. Wash cycles followed by analysis of collected washwater will continue until the recessed areas are decontaminated.

All drain lines connected to sumps and recessed areas will be sampled and analyzed as specified in the Closure SAP. All identified contamination will be removed as verified by the methods presented in the Closure SAP. Drains that cannot be contaminated will be segregated for management as contaminated waste.

F.4.5.6 Treatment Unit Equipment and Gloveboxes

The equipment associated with the Cementation Unit (e.g., pH column, vacuum trap, motor-driven mixers, impellers), the Vitrification Unit (e.g., melter, cooling jackets, glass/waste handling system) and the Cementation Unit and Vitrification Unit gloveboxes will be decontaminated, decommissioned, or dismantled, depending on the extent of contamination and anticipated disposition or use after closure. If any of the Cementation Unit equipment and/or the glovebox is to be decommissioned or dismantled, the resulting components will be containerized, sent to an appropriate, approved on-site facility, and managed according to governing regulations. If any of the equipment and gloveboxes require decontamination, Nuclear Materials Technology (NMT) personnel will use the following procedures.

Prior to decontamination of any of the equipment, any visible material located inside the glovebox undergoing closure (e.g., glass frit, scraps for the Vitrification Unit glovebox) will be removed to the extent possible and managed in compliance with governing regulations. The equipment, while located inside the glovebox, will be rinsed or flushed with washwater or wiped down with cloths and/or other absorbent materials, as appropriate, to minimize the amount of liquid waste generated. The used washwater will be collected, transferred to containers, sampled, and analyzed as specified in the Closure SAP. The used washwater will be managed in accordance with LANL policy. The wash cycles will continue until the equipment to be decontaminated has been cleaned to the levels specified in Section F.3.4 of this Closure Plan 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 governing regulations.

The interior surfaces of the glovebox undergoing closure will be wiped down with cloths and/or other absorbent materials to minimize the amount of liquid waste generated as a result of decontamination activities. The used washwater will be squeezed from the cloths and/or other absorbent materials, collected, transferred to containers, sampled, and analyzed as specified in the Closure SAP. The used washwater will be managed in accordance with LANL policy. Wash cycles will continue until the inside

of the glovebox undergoing closure has been cleaned to the levels specified in Section F.3.4 of this Closure Plan 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 governing regulations as determined by the regulated constituents present.

F.4.5.7 Ancillary Equipment for Treatment Units

The Cementation Unit ancillary equipment located inside Room 401 (outside the glovebox) will be decontaminated, decommissioned, or dismantled. Similarly, the Vitrification Unit ancillary equipment (e.g., glass frit feed system, off-gas system, associated structures, piping, drum-handling equipment) located inside Room 434A (outside the glovebox) will either be decontaminated, decommissioned, or dismantled. The decision regarding each piece of ancillary equipment will depend on the extent of contamination and the anticipated disposition or use of the equipment after closure. For ancillary equipment that will be decommissioned or dismantled, the identified 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 ancillary equipment.

Random swipe samples from the ancillary equipment will be collected and analyzed as specified in the Closure SAP. If these analytical results indicate that decontamination for RCRA constituents is required or if any inside surfaces of the ancillary equipment are known to have contacted regulated constituents during the active life of the treatment unit, the piece of equipment under consideration will be rinsed or flushed with washwater or wiped down with sponges, as appropriate. The washwater will be collected (squeezed from cloths and/or other absorbent materials, if necessary), transferred to containers, sampled, and analyzed as specified in the Closure SAP. Wash cycles will continue until the ancillary equipment has been cleaned to the levels specified in Section F.3.4 of this Closure Plan or the decision is made to manage it as contaminated waste. One additional sample of clean washwater solution squeezed from mops, cloths, and/or other absorbent materials prior to use will be collected for each additional wash cycle. Used washwater will be managed in accordance with LANL policy and, as appropriate, in compliance with governing regulations. Equipment to be managed as contaminated waste will be containerized and managed in compliance with governing regulations as determined by the regulated constituents present.

F.4.5.8 Areas Adjacent to the Treatment Unit Gloveboxes

For the treatment unit undergoing closure, random swipe samples from the adjacent walls and floors will be collected and analyzed as specified in the Closure SAP. If decontamination measures are deemed necessary based on the analytical results, NMT personnel will use the following procedures to accomplish surface decontamination of the walls and floors.

The adjacent floor area and walls will be washed down using mops, cloths, and/or other absorbent materials to minimize the amount of liquid waste generated as a result of decontamination activities. The used washwater will be squeezed from the mops, cloths, and/or other absorbent materials, collected, transferred to appropriate containers, sampled, and analyzed as specified in the Closure SAP. Wash cycles will continue until the floor area and walls have been cleaned to the levels specified in Section F.3.4 of this Closure Plan or the decision is made to manage them as contaminated waste. One additional sample of clean washwater solution squeezed from mops, cloths, and/or other absorbent materials prior to use will be collected for each additional wash cycle. Used washwater will be managed in accordance with LANL policy and, if necessary, according to the regulations governing any identified regulated constituents. Sections of walls or flooring that must be managed as contaminated waste will be containerized and managed in compliance with governing regulations as determined by the regulated constituents present.

After decontamination of the adjacent walls and floor, any recessed areas including sumps will be washed down. Again, the washwater will be collected for sampling and analysis according to the Closure SAP. Wash cycles followed by analysis of collected washwater will continue until the recessed areas meet the cleanup levels specified in Section F.3.4 of this Closure Plan or the decision is made to manage it as contaminated waste. All drain lines connected to sumps and recessed areas will be sampled and analyzed as specified in the Closure SAP. All identified contamination will be removed as verified by the methods presented in the Closure SAP. Drains that cannot be decontaminated will be segregated for management as contaminated waste. Sections of recessed areas, sumps, or drainage equipment that must be managed as contaminated waste will be containerized and handled in compliance with governing regulations as determined by the regulated constituents present.

F.4.6 Decontamination of Soil

If the Container Storage Pad or any other asphalt or concrete pad is removed as a result of contamination, the underlying soils will be sampled and analyzed. A grid will be sited over the area to be sampled and soil samples will be collected and analyzed to determine the horizontal and vertical extent of contamination. Sampling and analysis will conform to the methods contained in the Closure SAP. Sampling results will be compared to values in *Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory* (LANL, 1998c) to determine if soils surrounding and/or underneath the unit(s) undergoing closure is contaminated.

Contaminated soils will be removed by excavation. Verification sampling and analysis will be performed according to the procedures presented in the Closure SAP. Removal and verification will continue until the analytical results show that contaminant levels are below those presented in *Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory.*

F.4.7 Decontamination Equipment

Prior to use, all reusable decontamination equipment will be rinsed with distilled water. Decontamination equipment rinsate blanks will be collected and analyzed in accordance with QA/QC procedures specified in the Closure SAP. Reusable protective clothing, tools, and equipment used during closure activities will be cleaned with a washwater solution consisting of warm water, mild detergent, and polyvinyl alcohol and scraped as necessary to remove any residue. Verification of decontamination for reusable items will be determined by the procedures specified in the Closure SAP.

Residue, disposable equipment, and reusable equipment that cannot be decontaminated will be containerized and managed appropriately at an approved on-site facility, depending on the regulated constituents present.

F.4.8 Decontamination Verification

Decontamination of all washed items at the units within TA-55 will be verified using the methods specified in the Closure SAP and the cleanup levels presented in Section F.3.4 of the Closure Plan.

F. 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, 2001c, "Field Decontamination of Drilling and Sampling Equipment," ER-SOP-1.08, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 1998a, "Los Alamos National Laboratory General Part B Permit Application," Revision 1.0, Los Alamos National Laboratory, Los Alamos, New Mexico.

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NMED, 2002, "Closure and Post-Closure Plan Requirements, Technical Area 55, MDA H," NMED-HWB letter (HWB-Facility-99-050), March 20, 2002.

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RFI Report for Material Disposal Areas G, H, and L at Technical Area -54 LA-UR Number: 00-1140

Modification to RFI Work Plan for Operable Unit (OU) 1148, Field Unit 5 LA-UR Number: No LA-UR

RFI Report for Channel Sediment Pathways from MDAs G, H, J and L, at TA-55 (located in former Operable Unit 1148) LA-UR Number: 96-0110

RFI Work Plan for Operable Unit 1148 LA-UR Number: 92-0855