TA-50

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

JUL 31 2002

JUL 2002

Carl Will, RCRA Permits Program
Hazardous & Radioactive Materials Bureau
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Subject: Transmittal of the U.S. Department of Energy (DOE)/University of California (UC) Revised Permit Application for TA-50 Revision 3.0; and Closure Plan for Three Container Storage Units (CSUs) at TA-50; TA-50-1-59, TA-50-114, and TA-50-37

Dear Mr. Will:

The purpose of this letter is to transmit to you the DOE/UC Revision 3.0 of the TA-50 permit application and the closure plan for CSUs TA-50-1-59, TA-50-114, and TA-50-37. The requirement for submittal of these documents is twofold. Initially, DOE/UC had agreed to submit the application revision upon the completion of the NOD/RSI process. It was also agreed to submit a closure plan for any units at TA-50 that would be closing prior to the publishing of the draft permit. This submittal fulfills that obligation.

Additionally, when your Bureau had issued a permit fee invoice for the TA-50 permit application it was appealed. Through the appeal process both the New Mexico Environment Department and DOE/UC entered into a settlement agreement. That agreement is dated July 5, 2002 and bears the number, HWB-01 04(P). The terms of the settlement agreement stipulate that DOE/UC must:

- Submit a revised application to the Department on or before August 1, 2002.
- Submit a nonrefundable permit fee for two container storage units for TA-50 in the amount of $72,000 at the time DOE/UC submit the revised TA-50 permit application.
- Submit a closure plan on or before July 31, 2002 for TA-50-1-59, TA-50-37, Rooms 112, 115, 117 and 118 and TA-50-114.

All three of these submittals are attached to this transmittal letter. A check for the review of the closure plan will be provided upon the receipt of an invoice to the DOE/UC by NMED at a later date as discussed in the settlement agreement.

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JUL 31 2002

If you have questions concerning this matter please feel free to contact either Gene Turner at (505) 667-5794 or Jack Ellvinger at (505) 667-0633.

Sincerely,

E. Dennis Martinez

for Ralph E. Erickson,
Director
Office of Los Alamos Site Operations

OFO:1GT-004

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August 2002

Los Alamos National Laboratory

Technical Area 50
Part B Permit Renewal Application

Revision 3.0

Prepared by:

Los Alamos National Laboratory
Solid Waste Regulatory Compliance (SWRC)
Los Alamos, New Mexico 87544

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Technical Area 50
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LIST OF ATTACHMENTS

ATTACHMENT	TITLE
A	Facility Description
B	Waste Analysis Plan
C	Inspection Plan
D	Personnel Training Plan
E	Contingency Plan
F	Closure Plan
G	Container Management
H	Authorized Waste

LIST OF SUPPLEMENTS

SUPPLEMENT	TITLE
2-1	Transportainers
4-1	"TA-50 Solid Waste Management Unit Report," Los Alamos National Laboratory, Los Alamos, New Mexico, April 2002.

LIST OF ABBREVIATIONS/ACRONYMS

20.4.1 NMAC	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
BWTU	Batch Waste Treatment Unit
CSU	container storage unit
CWA	Clean Water Act
D&D	decontamination and decommissioning
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
FRP	fiberglass-reinforced plywood
ft	foot/feet
gal.	gallon(s)
HRMB	Hazardous and Radioactive Materials Bureau
in.	inch(es)
LANL	Los Alamos National Laboratory
MDA	Material Disposal Area
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RLW	radioactive liquid waste
RLWTF	Radioactive Liquid Waste Treatment Facility
SWB	standard waste box
SWMU	solid waste management unit
TA	Technical Area
WAC	waste acceptance criteria

1.0 INTRODUCTION

This revised "Los Alamos National Laboratory Technical Area 50 Part B Permit Renewal Application" is submitted to address the requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), revised June 14, 2000 [6-14-00], specific to hazardous and mixed waste operations at Technical Area (TA) 50 at Los Alamos National Laboratory (LANL). Waste management units to be permitted include two container storage units located at TA-50, Building 69 (TA-50-69). This document serves as Revision 3.0 to the "Technical Area 50 Part B Permit Renewal Application," Revision 1.0, submitted to the New Mexico Environment Department (NMED) in January 1999 (LANL, 1999).

This document has been formatted to meet the permitting strategy outlined by the NMED Hazardous and Radioactive Materials Bureau (HRMB) in correspondence dated February 5, 1998 (NMED,1998). As presented in this correspondence, TA-specific permit applications, permit modification requests, and permit renewal documents will cover any details and/or requirements not addressed in the "Los Alamos National Laboratory General Part B Permit Application," Revision 1.0 (LANL, 1998a) or most recent version, hereinafter referred to as the LANL General Part B. The LANL General Part B will serve in the operating permit as an "umbrella" document, covering the requirements of the New Mexico Hazardous Waste Act and implementing regulations, specifically 20.4.1 NMAC [6-14-00], common to all TAs. Together, information provided in this permit application and in the LANL General Part B will meet the applicable requirements specified in 20.4.1 NMAC, Subparts V and IX [6-14-00].

This permit renewal document addresses revisions agreed upon in the "Response to Request for Supplemental Information: Technical Adequacy Review, Resource Conservation and Recovery Act Permit Application; TA-50 Part B, December 2000, Revision 2.0; Los Alamos National Laboratory, U.S. Environmental Protection Agency ID No. NM0890010515," submitted to the NMED in November 2001 (LANL, 2001), and the "Response to Notice of Deficiency; TA-50 Part B Permit Application, Revision 2.0, March 4, 2002," submitted to the NMED in April 2002 (LANL, 2002a).

In accordance with HRMB's permitting strategy, LANL submitted the "Los Alamos National Laboratory General Part A Permit Application," Revision 0.0 (LANL, 1998b) or most recent version, hereinafter referred to as the LANL General Part A. The LANL General Part A consolidated information from previous site-wide and TA-specific Part A submittals into one comprehensive document, identifying all hazardous and mixed waste treatment, storage, and disposal facilities subject to 20.4.1 NMAC, Subparts V, VI, and IX [6-14-00] at LANL as of April 30, 1998. The LANL General Part A serves as a

companion document to the LANL General Part B and TA-specific permit applications, permit modification requests, and permit renewal documents, including this revised permit renewal application.

In the LANL General Part A, the LANL General Part B, and the revised permit renewal application, a unit to be permitted or an area within LANL may sometimes be referred to as a facility. The term "facility," as it appears in this context, is used only to denote building or area names and does not imply the regulatory meaning of "facility" as defined in 20.4.1 NMAC, Subpart I, 260.1 [6-14-00]. However, pursuant to 20.4.1 NMAC, Subpart I, 260.1 [6-14-00], the "LANL facility" as a whole does meet the regulatory definition of a facility.

Table 1-1 provides a list of regulatory references and the corresponding location in this permit application, as appropriate. Where applicable, regulatory citations in this document reference 20.4.1 NMAC, which adopts, with a few exceptions, all of the Code of Federal Regulations, Title 40, Parts 260 to 266, Part 268, Part 270, and Part 273.

Table 1-1

Regulatory References and Corresponding Permit Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Permit Application
§270.14(b)(1)	General facility description	Attachment A
§270.14(b)(2)	Chemical and physical analyses of hazardous waste	Attachment B[a]
§270.14(b)(3)	Waste analysis plan	Attachments B[a]
§264.13(b)	Development and implementation of a written waste analysis plan	Attachments B[a]
§264.13(c)	Off-site waste analysis requirements	Attachments B[a]
§270.14(b)(4)	Security procedures and equipment	Attachment G
§270.14(b)(5)	General inspection schedule	Attachment C[a]
§264.174	Inspections/containers	Attachment C[a]
§264.193(i)	Tank system inspections pending provision of adequate secondary containment	NA
§264.195	Overfill control inspections	NA
§264.602	Miscellaneous units	NA
§264.1033	Process vent standards	NA
§264.1052	Equipment leak air emission standards	NA
§264.1053	Compressor standards	NA
§264.1058	Standards for pumps, valves, pressure relief devices, flanges, and connections	NA
264.1088	Subpart CC inspection air monitoring requirements	Attachment C, Attachment G
§270.14(b)(6)	Request for waiver from preparedness and prevention requirements of 264 Subpart C	NA
§270.14(b)(7)	Contingency Plan	Attachment E[a]
§270.14(b)(8)	Description of preparedness and prevention	Attachment G
§270.14(b)(8)(i)	Hazard prevention in unloading operations	Attachment G

See footnotes at end of table.

Table 1-1 (continued)

Regulatory References and Corresponding Permit Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Permit Application
§270.14(b)(8)(ii)	Runoff prevention	2.0, Attachment G
§270.14(b)(8)(iii)	Contamination prevention of water supplies	Attachment G
§270.14(b)(8)(iv)	Mitigation of equipment failure and power outages	Attachment G
§270.14(b)(8)(v)	Prevention of undue exposure of personnel to hazardous waste	Attachment G
§270.14(b)(8)(vi)	Prevention of releases to the atmosphere	Attachment G
§270.14(b)(9)	Prevention of accidental ignition or reaction of ignitable, reactive, or incompatible wastes	2.0, Attachment G
§264.17(c)	Documentation of compliance with 264.17 (general requirements for ignitable, reactive, or incompatible wastes)	2.0, Attachment G
§270.14(b)(10)	Traffic pattern, volume, and controls	Attachment A[a]
§270.14(b)(11)	Facility/unit location information	Attachment A
§270.14(b)(11)(i)	Seismic standard applicability [264.18(a)]	Attachment A
§270.14(b)(11)(ii)	Seismic standard requirements	Attachment A
§270.14(b)(11)(ii)(A)	No fault within 3,000 feet (ft) with displacement in Holocene time	Attachment A
§270.14(b)(11)(ii)(B)	If faults which have displacement in Holocene time are present within 3,000 ft, no faults pass within 200 ft of portions of the facility where treatment, storage, or disposal will be conducted	NA
§270.14(b)(11)(iii)	100-year floodplain standard	Attachment A[a]
§270.14(b)(11)(iv)	Facilities located within the 100-year floodplain	NA
§270.14(b)(11)(v)	Compliance schedule for 264.18(b)	NA
§270.14(b)(12)	Personnel training program	Attachment D[a]

See footnotes at end of table

Table 1-1 (continued)

Regulatory References and Corresponding Permit Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Permit Application
§270.14(b)(13)	Closure and post-closure plans	Attachment F
§264, Subpart G	Closure and post-closure	Attachments F
§264.178	Closure/containers	Attachment F
§264.197	Closure and post-closure care/tanks	Attachment F
§264.601	Closure/miscellaneous units	Attachment F
§264.603	Requirements by the Secretary	Attachments F
§270.14(b)(14)	Post-closure notices (264.119)	Attachments F
§270.14(b)(15)	Closure cost estimate (264.142)	Attachments F
§270.14(b)(16)	Post-closure cost estimate (264.144)	Attachments F
§270.14(b)(17)	Liability insurance (264.147)	Attachments F
§270.14(b)(18)	Proof of financial coverage (264.149-150)	Attachments F
§270.14(b)(19)	Topographic map requirements	Attachment A[b]
§270.14(b)(19)(i)	Map scale and date	Attachment A[b]
§270.14(b)(19)(ii)	100-year floodplain area	Attachment A[b]
§270.14(b)(19)(iii)	Surface waters	Attachment A
§270.14(b)(19)(iv)	Surrounding land uses	Attachment A
§270.14(b)(19)(v)	Wind rose	Attachment A
§270.14(b)(19)(vi)	Map orientation	Attachment A[b]

See footnotes at end of table.

Table 1-1 (continued)

Regulatory References and Corresponding Permit Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Permit Application
§270.14(b)(19)(vii)	Legal boundaries	Attachment A[b]
§270.14(b)(19)(viii)	Access control	Attachment A
§270.14(b)(19)(ix)	Wells	Attachment A
§270.14(b)(19)(x)	Buildings	Attachment A
§270.14(b)(19)(xi)	Drainage barriers or flood control	Attachment A
§270.14(b)(19)(xii)	Location of operational units	Attachment A
§270.14(b)(20)	Other federal laws	3.0[a]
§270.14(b)(20)(a)	Wild and Scenic Rivers Act	3.0[a]
§270.14(b)(20)(b)	National Historic Preservation Act	3.0[a]
§270.14(b)(20)(c)	Endangered Species Act	3.0[a]
§270.14(b)(20)(d)	Coastal Zone Management	3.0[a]
§270.14(b)(20)(e	Fish and Wildlife Coordination Act	3.0[a]
§270.14(b)(20)(f)	Executive Orders	3.0[a]
§270.14(b)(21)	Notice of extension approval for land disposal facilities	NA
§270.14(c)	Groundwater monitoring requirements	Attachment A[a]
§270.14(d)	Information requirements for solid waste management units (SWMU)	4.0
§270.14(d)(1)(i)	Location of SWMUs on topographic map	4.0
§270.14(d)(1)(ii)	Types of SWMUs	4.0
§270.14(d)(1)(iii)	Dimensions and descriptions of SWMUs	4.0
§270.14(d)(1)(iv)	Dates of SWMU operations	4.0

See footnotes at end of table.

Table 1-1 (continued)

Regulatory References and Corresponding Permit Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Permit Application
§270.14(d)(1)(v)	Waste types managed at SWMUs	4.0
§270.14(d)(2)	Information on releases from SWMUs	4.0
§270.14(d)(3)	RCRA Facility Assessment sampling and analysis results	NA
§270.15	Information requirements for containers	Attachment G
§270.16	Information requirements for tank systems	NA
§270.23	Information requirements for miscellaneous units	NA

[a] Requirement or information is also addressed in the "Los Alamos National Laboratory General Part B Permit Application," Revision 1.0, as appropriate, 1998a, Los Alamos National Laboratory, Los Alamos, New Mexico.

b Some of the topographic map requirements are addressed in the "Los Alamos National Laboratory General Part A Permit Application," Revision 0.0, 1998b, Los Alamos National Laboratory, Los Alamos, New Mexico.

NA = not applicable.

2.0 WASTE MANAGEMENT UNITS

The information provided in this section is submitted to address the applicable container storage requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, 20.4.1 NMAC, Subpart IX, 270.15, and 20.4.1 NMAC, Subpart V, Part 264, Subpart I, revised June 14, 2000 [6-14-00]. This section provides a general description of the Los Alamos National Laboratory (LANL) Technical Area (TA) 50 container storage units (CSU) and waste management practices. Detailed information on and figures of the TA-50 CSUs are provided in Attachment G of this permit renewal application. A summary of applicable regulatory references for container storage and the corresponding location where the requirement is addressed in this permit renewal application is located in Attachment G, Table G-1.

2.1 CONTAINER STORAGE

TA-50 is located at the northeast corner of the intersection of Pajarito Drive and Pecos Road, on the finger mesa bounded by Mortandad Canyon to the north and Two-Mile Canyon to the south. The CSUs at TA-50 include the TA-50-69, Indoor CSU and the TA-50-69, Outdoor CSU. The following provides descriptions of the locations and capacity, potential storage containers, and minimum aisle space requirements for the TA-50 CSUs.

2.1.1 Storage Capacity

The maximum storage capacity of the TA-50 CSUs is as follows:

- TA-50-69, Indoor CSU – 1,500 gallons (gal.)
- TA-50-69, Outdoor CSU – 30,000 gal.

General dimensions, containment features, and materials of construction for each CSU are provided in Attachment G of this permit renewal application to satisfy the requirements of 20.4.1 NMAC, Subpart IX, 270.15(a)(1) and (2) [6-14-00].

2.1.2 Storage Containers

Containers that will be used to store wastes at the TA-50 CSUs include, but are not limited to 5-, 30-, 55-, 83-, 85-, and 110-gal. steel and/or poly drums; standard fiberglass-reinforced plywood (FRP) boxes; steel standard waste boxes (SWBs); metal overpack boxes; steel B25 and B12 boxes; various small containers; and oversized, irregularly shaped FRP boxes. The following sections provide

descriptions of the storage containers considered acceptable for waste storage at the TA-50-69, Indoor and Outdoor CSUs.

2.1.2.1 55-Gallon Drums

The most common drum to be used for storage is the 55-gal. drum. The standard 55-gal. drum in use is constructed of 16-gauge steel, has an approximate 22-inch (in.) inner diameter, and a usable inside height of approximately 33 in. Standard 55-gal. drums meet the U.S. Department of Transportation (DOT) requirements.

2.1.2.2 Fiberglass-Reinforced Plywood Boxes

Standard-size FRP boxes used for storage measure 4 foot (ft) by 4 ft by 8 ft. The outer surface of the FRP boxes is coated with a 0.06- to 0.12-in.- (60- to 120-mil)- thick layer of epoxy-impregnated fiberglass. At times, nonstandard-size FRP boxes are designed and constructed to contain odd-shaped or oversized waste.

2.1.2.3 Standard Waste Boxes

Two different types of SWBs are used for storage at the TA-50 CSUs. One type is constructed of 14-gauge steel and has rounded ends. It measures 52 in. by 69 in. by 36 in., has continuous welds on all four sides and on the bottom, and has a lid with a closed-cell neoprene gasket that is secured in place with bolts. The second type of SWB is also constructed of 14-gauge steel, but is rectangular in shape. Its dimensions are 56 in. by 72 in. by 37 in. It has continuous welds on all four sides and on the bottom and a lid that is clamped and welded in place.

2.1.2.4 Overpacks

The metal overpack containers vary in size and have continuous welds both inside and outside on all four sides and on the bottom. The lid has a gasket made of closed-cell neoprene and can be strapped closed or clipped down. The metal overpacks are elevated by design with risers for ease of handling. B25 overpacks are constructed of 16-gauge welded carbon steel, are a standard size of 4 ft by 4 ft by 6 ft, and are elevated by design. All B25 overpacks have a rubber gasket with either a bolt-on, clipped-pinned, or hinged lid.

Overpacks are used when a container's integrity is suspect, or if cracks or leaks are observed. The 85-gal. drums are commonly used to overpack 55-gal. drums, and 110-gal. drums are used to overpack 85-gal. drums. The 85-gal. overpacks are constructed of 16-gauge steel, at a minimum. Universal sorbent is generally added to the interior of the overpack. The lid is secured to the overpack

with a 12-gauge bolt ring complete with a 5/8-in. closure bolt. Rounded-end SWBs are used to overpack drums of various sizes that contain mixed transuranic waste. Metal boxes are used as overpacks for FRP boxes.

2.1.3 Minimum Aisle Space and Storage Configuration

Waste containers at the TA-50 CSUs are arranged in rows with a minimum aisle space of 24 in. Storage configuration within a row depends upon the type of container, its size, and weight restrictions. Fifty-five gallon drums and SWBs are arranged in rows and may be stacked to a maximum of two high. The 85-gallon drums are not stacked. Large waste boxes are also stacked to a maximum of two high, unless size and width restrictions prohibit stacking due to safety concerns.

2.1.3.1 TA-50-69, Indoor CSU

Waste to be stored in the TA-50-69, Indoor CSU is positioned in an area away from any worker activity or traffic that is unrelated to the management of the waste itself. Adequate space is maintained around each storage pallet to allow for inspection of all containers. Due to volumes and placement of waste, aisle spacing is not an issue at this CSU. Solid waste stored in containers connected to the packaging/bagout module of the glovebox enclosure do not require aisle spacing. Incompatible wastes will not be stored inside the glovebox enclosure.

2.1.3.2 TA-50-69, Outdoor CSU

Drum containers at the TA-50-69, Outdoor CSU are stacked to a maximum of two high based upon size and weight. Adequate space is maintained between rows of containers. Container rows in the transportainers are typically oriented north/south and in one of two configurations. The first configuration stores containers on dollies in rows along both walls of the transportainer with a main aisle running down the center. Containers stored on dollies are rotated during routine inspections so that the entire drum can be inspected. The second configuration stores containers on pallets placed against one wall of the transportainer with a main aisle running along the opposite wall. Adequate space is maintained between each pallet and between the pallet and the transportainer wall to allow for visual inspection. To facilitate container movement, storage, and inspection, all drums and irregular containers holding wastes are stored on either pallets or dollies.

2.1.4 Authorized Waste Identification

The TA-50 CSUs will store containers of hazardous and mixed waste bearing the appropriate U.S. Environmental Protection Agency (EPA) Hazardous Waste Numbers presented in the LANL General Part A (LANL, 1998b). These wastes do not contain free liquids as defined by the Waste Isolation Pilot Plant Waste Acceptance Criteria, which include:

- Liquids that readily separate from the solid portion of a waste under ambient temperature and pressure; and
- Liquids that are not absorbed into a host material such that it could spill or drain from its container.

Additional information on the wastes to be stored at the TA-50 CSUs is provided in the waste analysis plan, Appendix B of the LANL General Part B (LANL, 1998a).

2.1.5 Condition of Containers [20.4.1 NMAC, Subpart V, 264.171, 264.173, and 264.174]

As required by 20.4.1 NMAC, Subpart V, 264.171 [6-14-00], any container that is not in good condition (e.g., severe rusting, apparent structural defects) will be overpacked, or the wastes will be transferred and repackaged in containers that are in good condition before being placed into storage. All containers will be kept closed during storage, in accordance with 20.4.1 NMAC, Subpart V, 264.173(a) [6-14-00], except when waste is added to or removed from the container or when a container's contents need to be repackaged. Containers will be handled and stored at all times in a manner that will not rupture a container nor cause it to leak, as required by 20.4.1 NMAC, Subpart V, 264.173(b) [6-14-00].

Any container of waste that shows signs of structural instability or leakage will be overpacked in a DOT-approved container, or the waste will be transferred into a container that is in good condition, as required by 20.4.1 NMAC, Subpart V, 264.171 [6-14-00]. When specified by DOT, liners will be used inside the waste container.

2.1.6 Compatibility of Waste with Containers

The container materials and liners will be selected to ensure that the ability of the container to contain the waste is not impaired as required by 20.4.1 NMAC, Subpart V, 264.172 [6-14-00]. Based on manufacturer's tolerance specifications, container material and liners used will not react with, and will be compatible with, the waste.

2.1.7 Management of Containers

Waste containers are kept closed during storage and staging, except when it is necessary to add or remove waste, as allowed by 20.4.1 NMAC, Subpart V, 264.173(a) [6-14-00]. Some mixed waste containers are vented and have carbon composite filters that allow gases (e.g., hydrogen), if any, to be released, but prevent the release of airborne particulates. Waste containers are closed or vented, handled, staged, and stored to prevent rupture, leakage, or spillage, as required by 20.4.1 NMAC, Subpart V, 264.173(b) [6-14-00]. Containers are managed at the TA-50 CSUs in accordance with written facility-specific procedures to minimize the potential for damage to or spillage from waste containers. All waste handlers at TA-50 are thoroughly trained in the safe use of waste container handling and transport equipment in accordance with Appendix C of the LANL General Part B. Because the TA-50 yard area is graded and paved, jarring of containers during transport is minimized. To protect the integrity of waste containers received at the TA-50 CSUs, only equipment designed for moving waste containers is used. Small waste containers may be handled manually or with dollies. Each TA-50 CSU is equipped with structures and equipment to facilitate safe loading, unloading, and movement of waste containers, as described in Attachment G of this permit renewal application.

2.1.7.1 Movement of Containers

All waste received at the TA-50 CSUs is manifested and transported from LANL waste generator or storage locations in accordance with applicable DOT regulations. LANL procedures establish vehicle and operator qualifications and provide specifications for loading and transporting waste. The loading and unloading of containers is also described in more detail in Section G.2.4.1. Waste received at TA-50 meets site-specific waste acceptance criteria (WAC) to ensure wastes and their containers are appropriate for storage in the various CSUs. The WAC is established to ensure wastes destined for TA-50 are identified as to form, packaged in DOT-approved containers appropriate for the waste, and markings and labels required by applicable EPA and DOT regulations are used. In addition, the WAC requires waste containers to be in good condition without signs of corrosion or structural defects.

2.1.7.2 Waste Container Labeling

All waste containers will be marked with a bar code identification number that corresponds to a number in LANLs waste management database. This database is composed of information supplied by the waste generator before storage by waste management personnel after the waste has been received. This information includes the name and location of the waste generator, waste characterization information, packaging, waste certification, receiving site, and storage location. All containers with hazardous or mixed waste will be labeled with a hazardous waste label that lists the appropriate EPA hazardous waste number(s). All containers are clearly marked to identify the contents and the date

each period of accumulation begins. In the event that a container is repackaged, repackaging personnel will ensure the new container is properly labeled. When waste containers are moved during storage, their waste package identification numbers (bar codes), origin and destination, and package changes (e.g., overpack volume, overpack dimensions) will be documented. The waste management database will then be updated to reflect any new information.

2.1.8 Containment Systems [20.4.1 NMAC, Subpart IX, 270.15(a)(1-5) and 270.15(b)(1-2)]

To demonstrate compliance with 20.4.1 NMAC, Subpart IX, 270.15(b)(1)[6-14-00], information documented in LANL waste management databases will be used to initially verify the absence of free liquids in containers. Containers that cannot be verified are characterized with real-time radiography (RTR) prior to being sent to the TA-50 CSUs. FRP boxes that hold glove boxes do not contain any free liquids. Free liquids discovered during past inspections and/or RTR are removed from the FRP boxes at TA-54, Area G, or elsewhere, before transport and storage at TA-50. FRP boxes that have poor structural integrity are overpacked in metal containers to facilitate safe transport and storage.

FRP boxes, SWBs, and steel B25 and B12 boxes are elevated by design. The pallets and/or devices used to elevate containers at the TA-50 CSUs are constructed of impervious, corrosion-resistant materials compatible with the wastes.

Elevated containers, pallets and/or devices (such as the glovebox in the TA-50-69 Indoor CSU) provide protection from potential contact with standing liquids that could be introduced through fire suppression activities. Together, these waste management practices and design features satisfy the requirements of 20.4.1 NMAC, Subpart IX, 270.15(b)(2) and 20.4.1 NMAC, Subpart V, 264.175(c) [6-14-00].

2.1.8.1 TA-50-69, Indoor CSU

This section describes containment systems specific to each room within the TA-50-69, Indoor CSU. Rooms 102 and 103 of TA-50-69 historically have been used to store contaminated glove boxes and other mixed wastes associated with the Waste Characterization, Reduction, and Repacking Facility operations. The total design capacity for these two rooms is 1,500 gal. and there is no physical barrier between them. A steel mezzanine added to the western third of the main process room is used for storage of materials and equipment. The mezzanine is not part of the CSU.

A large glove box enclosure is located inside the main process room for size reduction of radioactively contaminated metallic items. The glove box enclosure measures 15 ft wide, 30 ft long, and 10 ft high and is constructed of type 304 stainless steel with a high-polish finish. It was originally assembled in

four separate modules: Airlock, disassembly, cutting, and packaging/bagout. The modules are bolted together and seal welded. Although assembled as four modules, the structure is a single continuous volume, entirely self-contained, and meets all the requirements for containment of free liquids. The glove box enclosure was leak-tested before use. A floor drain is located near the glove box enclosure and is connected directly to the Radioactive Liquid Waste Treatment Facility (RLWTF). Waste containers are stored on pallets to prevent contact between the containers and any standing liquid. Collected liquids will be held in DOT-approved containers until they are sampled and analyzed in accordance with Appendix E of the LANL General Part B (LANL, 1998a). To facilitate container movement, storage, and inspection, all drums and irregular containers are stored on either wooden pallets or dollies.

The glove box enclosure is airtight and provides a containment system that meets the requirements of 20.4.1 NMAC, Subpart V, 264.175(b) [6-14-00]. Containers inside the glove box enclosure are elevated to prevent contact with potentially accumulated liquid. Any accumulated liquid in the glove box enclosure is removed as soon as possible after discovery to prevent overflow. Collected liquids are held in DOT-approved containers until they are sampled and analyzed in accordance with Appendix E of the LANL General Part B (LANL, 1998a). The design and operation of the pallets and glove box enclosure meet the requirements of 20.4.1 NMAC, Subpart V, 264.175(b) and 20.4.1 NMAC, Subpart IX, 270.15(a)(1) through (4) [6-14-00].

A floor drain is located in the eastern part of Room 103. The drain is plumbed directly to the RLWTF. Containers in Room 103 are stored on pallets that provide segregation of incompatible wastes in the event that a container is breached and prevent contact with potentially accumulated liquids. Any accumulated liquids in the room are removed as soon as possible after discovery. Collected liquids are held in DOT-approved containers until they are sampled and analyzed in accordance with Appendix E of the LANL General Part B (LANL, 1998a). Equipment that is located inside Room 103, but not associated with the CSU, includes a chemical decontamination fume hood, continuous feed welding system, and Heliarc welding system.

2.1.8.2 TA-50-69, Outdoor CSU

Capacity for the TA-50-69, Outdoor CSU is 30,000 gal. The waste to be stored in this CSU is expected to be solid waste; any liquids present would be residual liquids only. The TA-50-69, Outdoor CSU consists of transportainers and waste pallets stored on an asphalt pad. It does not have permanent secondary containment built into it.

Incompatible wastes stored at the Outdoor CSU are separated on pallets to keep the wastes segregated in the event that a container is breached.

2.1.9 Inspection Schedules and Procedures

The purpose of inspections is to identify leaking/breached containers, deterioration of containers, and/or loss of integrity of a containment system, as required by 20.4.1 NMAC, Subpart V, 264.174 [6-14-00]. The inspections will include checking the structural integrity of containers (e.g., for bulging or warping). Inspections will follow the Inspection Plan in Appendix C of the LANL General Part B (LANL, 1998a) and Attachment C of this permit renewal application.

2.1.10 Special Requirements for Ignitable, Reactive, and Incompatible Wastes [20.4.1 NMAC, Subpart V, 264.17 and 20.4.1 NMAC, Subpart IX, 270.15(c) and 270.15(d)]

To prevent accidental ignition or reaction of ignitable, reactive, or incompatible waste at the TA-50 CSUs, TA-50 personnel will manage hazardous and mixed waste using the precautions described in this section.

If containerized ignitable and/or reactive wastes (e.g., discarded materials contaminated with ignitable spent solvents, reactive metal debris) are stored at any of the CSUs, the containers will be located at least 50 ft from the facility property line at all times (refer to Map 2 of the General Part A (LANL 1998b). All ignitable and reactive wastes will be protected from sources of ignition or reaction, in accordance with 20.4.1 NMAC, Subpart V, 264.17(a) [6-14-00]. The following policies and controls are in place at TA-50, which minimize the possibility of accidental ignition:

- Most mechanical equipment operated within the areas is grounded to minimize the potential for sparking by dissipating static charges.
- Smoking is not allowed in or near the CSUs.
- "No Smoking" signs are conspicuously placed wherever there is a potential hazard from ignitable or reactive waste, as required by 20.4.1 NMAC, Subpart V, 264.17(a) [6-14-00].

Together, these measures meet the requirements of 20.4.1 NMAC, Subpart V, 264.17(a) and (b), and 264.176 [6-14-00].

Incompatible wastes, if any, will be segregated during storage. In addition, incompatible wastes will not be mixed and waste will not be placed in a container that previously held an incompatible waste as required by 20.4.1 NMAC, Subpart V, 264.177(a) and (b), and 20.4.1 NMAC, Subpart IX, 270.15(d) [6-14-00].

Pursuant to the requirements of 20.4.1 NMAC, Subpart V, 264.172 [6-14-00], only containers constructed of or lined with materials that will not react with and are otherwise compatible with the waste to be stored will be used for storage at the TA-50 CSUs.

Waste management database information and results of waste characterization activities provide documentation of compliance with the requirements for ignitable, reactive, or incompatible wastes, pursuant to 20.4.1 NMAC, Subpart V, 264.17(c) [6-14-00]. Wastes carrying the EPA Hazardous Waste Numbers F020, F021, F022, F023, F026, or F027 will not be stored in TA-50 CSUs; therefore, the requirements of 20.4.1 NMAC, Subpart V, 264.175(d) [6-14-00] are not applicable.

2.1.11 Closure

Closure will consist of partial closure of one or more of the CSUs at TA-50 while leaving the other hazardous and mixed waste units at LANL in service. Partial closure activities will, at a minimum, include removal of hazardous and/or mixed waste from the CSU to be closed and decontamination of any surfaces or equipment that has been contaminated by hazardous constituents. Closure will minimize the need for further maintenance, preclude the release of hazardous constituents to environmental media, and be protective of human health and the environment, in accordance with the closure performance standards specified in 20.4.1 NMAC, Subpart V, 264.111 [6-14-00]. Detailed closure procedures for the TA-50 CSUs are addressed in Attachment F of this permit renewal application. This information is provided to meet the requirements of 20.4.1 NMAC, Subpart V, 264.111 and 264.178 [6-14-00].

2.1.12 Control of Run-On and Runoff

Run-on into the TA-50-69, Indoor CSU from outdoors is not likely to occur. Positive surface drainage will direct potential run-on away from the building. Run-on into the TA-50-69, Outdoor CSU is prevented because the CSU is elevated by design. The Outdoor CSU is sloped sufficiently to prevent the accumulation of precipitation and drainage swales located in the vicinity divert storm water away from the CSU. One drainage swale is located just south of the CSU, between it and Material Disposal Area-C. A second drainage swale is located on the west side of the CSU between Pecos Drive and the TA-50 fence line. Figure A-11 in Attachment A of this permit renewal application shows the contours and surface drainage around the TA-50 CSUs. This information is provided to meet the requirements of 20.4.1 NMAC, Subpart IX, 270.14(b)(8)(ii) [6-14-00].

Supplement 2-1

TRANSPORTAINERS

TRANSPORTAINER INFORMATION

Maritime freight containers (transportainers) are routinely used at Los Alamos National Laboratory (LANL) to provide security and weather protection for temporary storage. LANL procures this type of equipment from a variety of vendors specializing in the reconditioning of used transportainers. Stringent federal transportation criteria govern the design and acceptance of transportainers for the specified intended use. Transportainers that no longer meet these specifications are commonly sold to suppliers who recondition them for resale. The following guidelines reflect specifications typical of reconditioned maritime freight containers designed to transport containerized, non-perishable cargo.

The exterior dimensions of the transportainers are typically 8 foot (ft) wide, 8.5 ft tall, and either 20 or 40 ft long. The sidewalls and roof of the transportainers are constructed of 14-gauge corrugated steel. The sidewalls are welded to 5 inch (in.)-channel beam supports. All joints and seams are continuously welded. The transportainers are equipped with four corner castings and lifting eyes to allow the transportainers to be stacked or hooked together. The corner posts and lifting eyes are 0.25-in. steel welded to corner castings. The floor has 0.125-in. steel-channel cross members. The joists are spaced 12 to 14 in. on center. Either a 1.125-in. or 1.25-in. hardwood decking is screwed into the joists. The decking is applied such that there are no visible gaps between planks. The transportainer door panels are of double-seam construction with double-sealing (two-flap) gaskets. For added security, the hinge pins are constructed of stainless steel and the locking handles are made of hardened steel. The door hardware bolts are welded so that they cannot be unbolted. Each transportainer is equipped with one-way side vents to equalize ambient pressure differentials inside the transportainer.

3.0 OTHER FEDERAL LAWS

A discussion of federal laws, as required by the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart IX, 270.3 and 270.14(b)(20) revised June 14, 2000, is provided in Section 3.0 of the LANL General Part B (LANL, 1998a).

4.0 CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

The information provided in this section is submitted to address the applicable solid waste management unit (SWMU) requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), Subpart IX, 270.14(d), revised June 14, 2000 [6-14-00]. This section provides descriptions of the SWMUs that have been identified at Technical Area (TA) 50. Information for these SWMUs was extracted from the "RFI Work Plan for Operable Unit 1147" (LANL, 1992) and the "TA-50 Solid Waste Management Unit Report", hereinafter referred to as the TA-50 SWMU Report (LANL, 2002b). The TA-50 SWMU Report is provided as Supplement 4-1.

Los Alamos National Laboratory (LANL) uses the definition of a SWMU as presented in the U.S. Environmental Protection Agency (EPA) "Module VIII: Special Conditions Pursuant to the 1984 Hazardous and Solid Waste Amendments to Resource Conservation and Recovery Act (RCRA) for LANL, EPA I.D. NM0890010515" (EPA, 1994), hereinafter referred to as Module VIII. This definition states that a SWMU is "any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at or around a facility at which solid wastes have been routinely and systematically released."

4.1 SWMU DESCRIPTIONS [20.4.1 NMAC, Subpart IX, 270.14(d)(1)]

Several types of SWMUs are present at TA-50. These SWMUs include those identified for corrective actions in Module VIII, as modified following a Class III permit modification effective May 19, 1994; SWMUs that are active RCRA units; and SWMUs identified in the TA-50 SWMU Report. Brief unit and waste descriptions are provided in Tables 4-1 and 4-2. Figure 4-1 shows the locations of the SWMUs in TA-50.

4.1.1 SWMUs Identified for Corrective Action In Module VIII

4.1.1.1 Radioactive Liquid Waste Treatment Facility

SWMU No. 50-001(a) is identified as the Radioactive Liquid Waste Treatment Facility (RLWTF) and is located at TA-50, Building 1. The RLWTF is used to treat radioactive liquid waste (RLW) received from various TA's at LANL. The facilities at TA-50-1 consist of approximately 37,000-square feet of treatment equipment designed to remove radionuclides from RLW using neutralization, flocculation, clarification, and membrane filtration. After treatment the effluent from the RLWTF is monitored and discharged to a National Pollutant Discharge Elimination System (NPDES)-permitted Outfall 051 in Mortandad Canyon. Treatment sludges are stabilized and managed at TA-54.

4.1.1.2 Waste Lines and Manholes

SWMU No. 50-001(b) consists of the active underground drain line system through which RLW is transferred from the various TA's to the RLWTF. A manhole (TA-50-72) serves as the central collection area for most of the incoming RLW. There are three lines that feed into this manhole. The primary waste line for LANL was replaced in 1982 with a double contained polyethylene pipe and enters the manhole from the north side of Pecos Drive. The second line transfers low-level RLW from TA-50-73, which receives waste from TA-50-69 and TA-50-37 operations. This line consists of a 6-inch (in.) by 10-in. double contained polyethylene pipe that has leak monitor and vacuum testing capabilities. The third line transports low-level RLW from TA-55 to TA-50-72 through manholes TA-50-016 and TA-50-78. This line consists of an inner stainless steel pipe encased in a polyvinyl chloride (PVC) pipe and has leak-monitor and vacuum test capabilities. This SWMU also consists of the drain lines from TA-50-72 to the RLWTF and from TA-55 to the underground storage tanks at TA-55-66.

4.1.1.3 Underground Tanks

SWMU No. 50-002(a) consists of an underground, reinforced-concrete tank vault at TA-50, Building 2 that houses six flow-through process tanks, an equipment room, and waste-transfer lines associated with a RLWTF. The floor of the vault is 17 feet (ft) below ground and includes two raw-waste tanks (25,000 gallon [gal.] and 75,000 gal.), one low-level sludge tank (25, 000 gal.), and two effluent tanks (25,000 gal. each) for treated waste. The waste transfer lines include:

- Six cast-iron lines connecting TA-50-1 to the equipment room.
- Four steel lines added in 1984 to connect Room 61 to the Equipment room.
- Five cast iron lines from drains in TA-50-1 to the decontamination and decommissioning (D&D) tank in TA-50-2.
- One cast iron line from a sink in the vehicle decontamination facility to the D&D effluent line connecting 50-90 to one of the influent tanks.

4.1.1.4 Vaulted Underground Tanks for TA-50 Waste

SWMU No. 50-002(b)-00 is a consolidated SWMU that consists of former SWMU's 50-002(b) and (c). This SWMU includes two active waste tanks (TA-50-67 and TA-50-68) and their associated inlet and outlet lines housed in an underground vault (TA-50-66). The concrete vault measures 18-ft long, 16-ft wide, by 14 ft deep and is located approximately 30-ft west of the southwest corner of TA-50-1. The inlet lines consist of four stainless steel pipes encased in PVC. One of these lines is capped and serves as a backup. The second pipe transfers acidic RLW and the third transfers caustic RLW. The waste is transferred from the storage tanks through two double contained stainless steel lines to Room 60 at TA-50-1 for treatment. The tanks, piping, and vault were constructed exclusively to transfer/store caustic and acidic RLW received from TA-55.

4.1.1.5 Aboveground Storage Tank

SWMU No. 50-002(d) consists of a decommissioned aboveground storage tank (TA-50-5) that is located adjacent to the north wall of Room 60D at TA-50-1. The tank has a capacity of 5,000-gal. and was used to store nitric acid intended to recharge ion-exchange columns at the RLWTF. It was used to store nitric acid product only and was never used to store waste.

4.1.1.6 Container Storage Units

SWMU No. 50-003(a) and 50-007 consist of two CSUs that were used for hazardous and mixed waste storage and are scheduled for closure. SWMU No. 50-003(a) is located at the northwest corner of TA-50-1, Room 59. This CSU is used to store containers of cemented mixed waste sludge and is approximately 10 ft wide by 19 ft long. SWMU No. 50-007 is located at TA-50-37 and contains a CSU that includes Rooms 115, 117, and 118. Room 115 is located on the first floor of TA-50-37 and measures 10-ft wide by 21-ft long. Room 117 is located on the first floor in the eastern portion of TA-50-37 and measures 21-ft wide and 40-ft long. Room 118 is located on the first floor in the eastern portion of TA-50-37 and measures 31-ft wide and 40-ft long.

SWMU No. 50-008 consists of an active Indoor CSU located at TA-50, Building 69. The CSU consist of Rooms 102 and 103 and is used for hazardous and mixed waste storage. Room 102 is referred to as the main process room and is approximately 45-ft wide by 52-ft long. Room 103 is referred to as the unloading area and is approximately 18 ft wide by 19 ft long.

4.1.1.7 Historical Waste Lines and Underground Vault, RLWTF

The consolidated SWMU No. 50-004(a)-00 consists of former SWMU's 50-004(a), 50-004(b), and 50-004(c) and includes all historical waste lines and former components of the RLWTF at TA-50-1. This includes:

- Locations through which underground RLW and industrial waste lines were routed to the RLWTF from the LANL technical areas located along Pajarito Road.
- A decommissioned underground vault (TA-50-3) that housed three-stainless-steel lined concrete storage tanks, ranging in volume from 1,000 to 4,500 gal. and used to collect and store wastewater from the Omega reactor.
- Waste lines and manholes to the collection tank structure (TA-50-3) including waste line 49 from TA-35 and waste line 50 from TA-50-1.
- Thirteen industrial waste lines (44, 45, 45a, 46, 47, 48, 48a, 49, 54, 55, 56, 65, and 67) and three associated manholes (TA-50-6, 55, and 56) that discharged to the decommissioned underground vault.

4.1.1.8 Operational Releases/Outfalls

SWMU Nos. 50-006 (a, c, and d) consist of operational releases and outfalls located at TA-50. A portion of Upper Ten Site Canyon received two accidental releases of RLW as a result of a sump overflow at TA-50-2. This site is identified as SWMU No. 50-006(a). Airborne releases via stack emissions from the RLWTF and other treatment facilities at TA-50 have contaminated some soil in the area and are identified as SWMU No. 50-006(c). SWMU No. 50-006(d) consists of the RLWTF treated liquid effluent discharged into Mortandad Canyon. This active effluent discharge is subject to regulation under the Clean Water Act (CWA) and is permitted as NPDES Outfall 051. Parameters prescribed by the NPDES permit are sampled in accordance with that permit's requirements.

4.1.1.9 Incinerator

An incinerator complex was housed in TA-50-37 and is identified as SWMU No. 50-007. The incinerator complex was comprised of the incinerator, various waste-feed components, and two waste-feed tanks located in Rooms 112 and 115. The unit was used to treat solid and liquid wastes containing chlorinated and fluorinated hydrocarbons, carcinogenic materials, and TRU wastes. The incinerator unit, storage tanks, and associated CSU have undergone closure (Benchmark, 1998).

4.1.1.10 Material Disposal Area

Material Disposal Area (MDA) C is identified as SWMU No. 50-009 and consists of an 11.8-acre disposal site that comprises approximately one-half of TA-50. MDA C includes six pits that were used for the disposal of radioactive and hazardous waste (Pits 1 through 6), one unnumbered pit for disposal of chemical wastes, 107 disposal shafts, and one unnumbered shaft that was used for a single disposal of strontium-90. Pits 1 through 4 measure approximately 610 ft long, 40 ft wide, and 25 ft deep. Pit 5 is approximately 705 ft long, 110 ft wide, and 18 ft deep. Pit 6 is approximately 505 ft long, 100 ft wide, and 25 ft deep. The chemical pit measures approximately 180 ft long, 25 ft wide, and 12 ft deep. The disposal shafts vary in depth and diameter. Table 4-1 lists the various types of waste that

were disposed of at MDA C. Waste disposal at MDA C ceased by 1969, and the MDA C was officially decommissioned in 1974.

4.1.1.11 Decontamination Facility

SWMU No. 50-010 consists of an inactive vehicle decontamination area at TA-50-1, Room 34B, that is used to clean vehicles and radioactively contaminated large objects. The area was operated from 1963 through Ocotber 1999 and was enclosed in 1983. Liquid wastes generated during decontamination activities were transferred to TA-50-2 via the floor drain and waste line.

4.1.1.12 Septic System and Lift Stations

SWMU No. 50-011(a) is the location of a decommissioned septic system that was installed in 1964 at the south end of the RLWTF at TA-50-1. This septic system was comprised of a septic tank (TA-50-10), a manhole (TA-50-9), a sanitary distribution box (TA-50-11), and a seepage pit. The septic system was removed in 1983 except for the perforated pipe, which made up the seepage pit. These areas are currently located beneath an asphalt pad and Building 83. The septic system managed sanitary waste only.

SWMU No. 50-011(b) is composed of two active sanitary wastewater lift stations (TA-50-91 and 92) and approximately 400 ft of piping that transports sanitary wastewater from the RLWTF to the main line that serves the Solid Waste Sanitary Control Plant. The lift stations are located on the north and south sides of TA-50-1 and were installed as part of a utility upgrade in 1983.

4.1.2 SWMUs Not Identified for Corrective Action in Module VIII

4.1.2.1 Container Storage Units

The TA-50-69, Outdoor CSU has not been formerly evaluated relative to its status as a SWMU nor is it assigned a SWMU number. This CSU is located in the southwest corner of TA-50 and consists of an asphalt pad that is not lined or coated. The CSU is used for hazardous and mixed waste storage and is approximately 24 ft wide by 90 ft long, with an additional strip that is 12 ft wide by 90 ft long added to the southeast end.

The TA-50-114 CSU is identified at SWMU No. 50-003(d) and consists of a storage locker located south of the eastern wing of TA-50-1 and east of TA-50-1 Room 34 B. This CSU was used to store waste generated at the RLWTF and consists of a metal prefabricated building approximately 9 ft by 23 ft by 9 ft high, has three doors, and is anchored to a concrete pad. The CSU is divided into two separate lockers by a metal wall, and has a grated floor above a recessed area on which the waste containers are placed.

4.1.2.2 Batch Waste Treatment Unit

SWMU No. 50-005 consists of the Batch Waste Treatment Unit (BWTU) located in the basement of TA-50-1. The BWTU included a 500-gal. pressure vessel, filtering system, condenser, vacuum transfer lines, transfer pump, and associated transfer lines. The unit was permitted for hazardous waste treatment and closed in accordance with an NMED-approved closure plan (IT, 1994).

4.2 RELEASES [20.4.1 NMAC, Subpart IX, 270.14(d)(2)]

Some of the SWMUs listed in Table 4-1 have released, or are suspected to have released, hazardous waste or hazardous constituents. In 1990, LANL initiated drilling activities to test the integrity of the waste tanks comprising SWMU Nos. 50-002(a) and (b)-00. Cuttings from the boreholes revealed that some of the soil appeared wet and, based on field screening, were found to be radioactively contaminated.

SWMU No. 50-004(a)-00, a waste line in the vicinity of TA-50-37, has leaked. Radioactively contaminated soil discovered during waste line decommissioning activities was cleaned up to levels as low as reasonably achievable. Potential chemical contaminants were not analyzed at the time of decommissioning.

Accidental releases from the RLWTF have contaminated sections of Upper Ten Site Canyon [SWMU No. 50-006(a)] with radioactive and chemical wastes. Airborne contaminants released through stack emissions from the RLWTF, and other treatment facilities at TA-50 have contaminated soil at various locations within TA-50 [SWMU No. 50-006(c)]. Liquid effluent from the treatment plant, released prior to the issuance of a NPDES permit, has contaminated sections of Mortandad Canyon with a variety of chemical, radiological, and heavy metal wastes [SWMU No. 50-006(d)]. This active effluent discharge is subject to regulation under the CWA. Parameters prescribed by the NPDES permit are sampled in accordance with that permit's requirements.

4.3 CHARACTERIZATION OF RELEASES

Information regarding releases from SWMUs is contained in the "RFI Work Plan for Operable Unit 1147" (LANL, 1992). These descriptions include the material released and the nature of the release. However, because of the nature of the releases, the exact volume released is not always known. The timing of the releases can only be estimated by the period of operation and sampling events. Additional information on the SWMUs at TA-50 and any associated releases is provided in the revised TA-50 SWMU Report (LANL, 2002b) that is included as Supplement 4-1 of this permit renewal document.

4.4 CORRECTIVE ACTIONS [20.4.1 NMAC, Subpart V, 264.101(a)]

Pursuant to 20.4.1 NMAC, Subpart V, 264.101(a) [6-14-00], corrective actions are required for releases of hazardous waste or hazardous constituents. SWMUs identified in Section 4.1.1 and that are known or believed to have releases will be investigated in accordance with a schedule approved by NMED through LANL Environmental Restoration Project correction action activities. Corrective action, if necessary, will follow the RCRA Facility Investigation/Corrective Measures Study process.

Table 4-1

Solid Waste Management Units (SWMU) Identified for Corrective Action in Module VIII [a]

SWMU No.	Unit Type	Unit Description	Waste Description
50-001(a)	Radioactive Liquid Waste Treatment Facility (RLWTF)	The RLWTF is located at TA-50, Building 1 and designed to treat 250 gallons/minute of radioactive liquid waste (RLW) using neutralization, flocculation, clarification, and membrane filtration.	RLW, sludge, and potentially hazardous constituents
50-001(b)	Waste Lines and Manholes	Liquid waste transfer system.	RLW and potentially hazardous constituents
50-002(a)	Tank farm	A reinforced concrete vault that houses six flow-through process tanks, an equipment room, and associated waste transfer lines.	RLW, sludge, and potentially hazardous constituents
50-002(b)-00 [b]	Underground Storage Tanks	Two active waste tanks (TA-50-67 and TA-50-68) and their associated inlet and outlet lines housed in an underground vault located approximately 30 ft west of the southwest corner of TA-50-1.	RLW and potentially hazardous waste
50-002(d)	Aboveground Storage Tank	Decommissioned aboveground, 5000-gallon, stainless steel tank used for nitric acid storage.	Unused product storage only
50-003(a)	Container Storage Unit	An approximately 10- by 19-foot area located in TA-50-1, Room 59 along the northwest wall.	Mixed waste
50-004(a)-00 [c]	Historical Waste Lines and Underground Vault, RLWTF	All former components of the RLWTF at TA-50-1. Includes: • Decommissioned RLW and industrial waste lines routed tot he RLWTF from LANL TAs located along Pajarito Road. • Decommissioned underground concrete vault (TA-50-3) that housed three stainless-steel-lined concrete storage tanks (1,000 – 4,500 gallons) used to collect and store wastewater from the Omega Reactor. • 13 industrial waste lines that discharged to the decommissioned underground vault TA-50-3.	RLW and potentially hazardous constituents

Table 4-1 (continued)

Solid Waste Management Units (SWMU) Identified for Corrective Action in Module VIII [a]

SWMU No.	Unit Type	Unit Description	Waste Description
50-006(a)	Operational Release	Outfall area at the head of Ten Site Canyon impacted by two accidental operational releases due to a sump overflow at the RLWTF pump house.	RLW and potentially hazardous constituents
50-006(c)	Operational Release	Surface Soil contamination from historical stack emissions from operations at TA-50.	Soil contaminated with radioactive and potentially hazardous constituents
50-006(d)	Effluent Discharge	Drainline and NPDES-permitted Outfall 051 in Mortandad for treated wastewater from the RLWTF.	Soil contaminated with a variety of chemicals, radionuclides, and heavy metals
50-007	Incinerator and Container Storage Unit	An incinerator, various waste feed components, two waste feed tanks Container Storage Unit located in Rooms 115, 117, and 118 at TA-50-37.	Hazardous and mixed waste
50-008	Container Storage Unit	Container storage Unit located inside Rooms 102 and 103 at TA-50, Building 69 (TA-50-69).	Mixed waste
50-009	Material Disposal Area (MDA) C	An inactive MDA that covers 11.8-acres and consists of 7 pits and 108 shafts located on the north side of Pajarito Road at TA-50	Radioactive, mixed, hazardous, and solid waste
50-010	Decontamination Facility	An inactive vehicle decontamination area located in Room 34 B of the RLWTF at TA-50-1.	Radioactive and potentially hazardous waste
50-011(a)	Septic system	Decommissioned septic system located at the south end of the RLWTF at TA-50-1. The systems consisted of an influent line from TA-50-1, septic tank, manhole, a sanitary distribution system, and a seepage pit.	Sanitary waste

Table 4-1 (continued)

Solid Waste Management Units (SWMU) Identified for Corrective Action in Module VIII [a]

SWMU No.	Unit Type	Unit Description	Waste Description
50-011(b)	Lift Stations	Two active sanitary wastewater lift stations (TA-50-91 and TA-50-92) and approximately 400 feet of piping that transport sanitary wastewater from the RLWTF to the main line that serves the SWSC Plant.	Sanitary waste

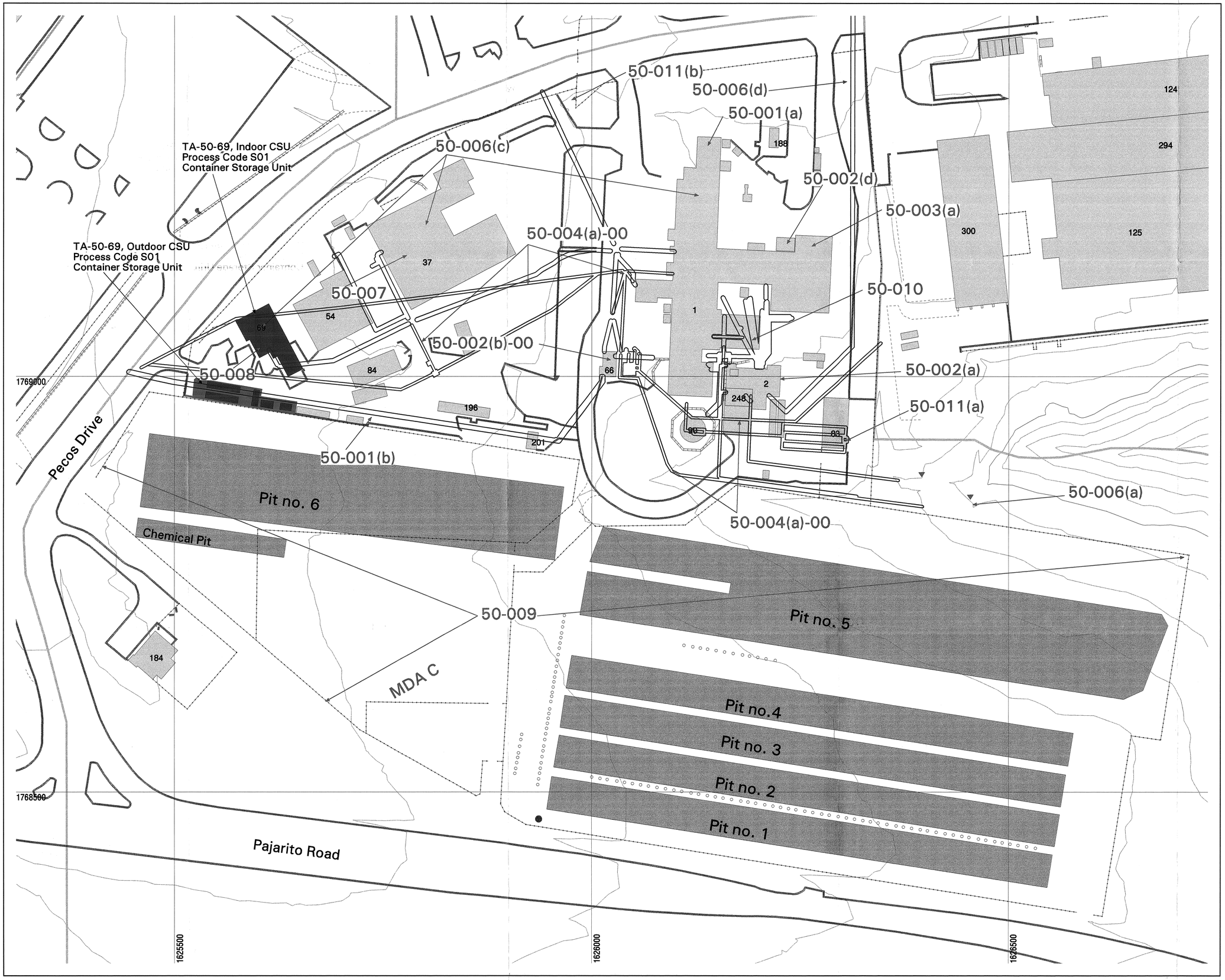
a Information compiled from the LANL, 2002b, “TA-50 SWMU Report,” Los Alamos National Laboratory, Los Alamos, New Mexico; and LANL, 1992, "RFI Work Plan for Operable Unit 1147," Los Alamos National Laboratory, Los Alamos, New Mexico.
b Consolidated SWMU that consists of former SWMUs 50-002(b) and 50-002(c).
c Consolidated SWMU that consists of form SWMUs 50-004(a), 50-004(b), and 50-004(c).
d TBD = SWMU Number to be determined.

Table 4-2

Solid Waste Management Units (SWMU) Not Identified for Corrective Action in Module VIII [a]

SWMU No.	Unit Type	Unit Description	Waste Description
50-003(d)	Container Storage Unit	An approximately 9 ft by 23 ft by a 9 ft high CSU located east of TA-50-1, Room 34B at TA-50, Building 114.	Hazardous and mixed waste
50-005	Batch Waste Treatment Unit	Closed 500-gallon pressure vessel and associated processing components located at TA-50-1.	Hazardous waste
TBD [b]	Container Storage Unit	An approximately 24 ft wide by 90 ft long asphalt and concrete pad with a 12 ft wide by 90 ft long strip located in the southwest corner of TA-50, located outside TA-50-69.	Mixed waste

a Information compiled from the LANL, 2002b, “TA-50 SWMU Report,” Los Alamos National Laboratory, Los Alamos, New Mexico; LANL, 1992, "RFI Work Plan for Operable Unit 1147," Los Alamos National Laboratory, Los Alamos, New Mexico.
b TBD = SWMU Number to be determined.



LEGEND

- Boundary, TA
- Contour, 2 foot
- Contour, 10 foot
- Fence, Industrial
- Fence, Security
- Retaining Wall
- Road, Paved
- Road, Dirt
- Stream, Intermittent
- Stream, Perennial

- Structure
- RCRA-Regulated Waste Management Unit
- Structure Associated with a RCRA-Regulated Waste Management Unit

- Disposal Pit (location approximate)

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

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

MAIN AQUIFER WELLS

- Water Supply Well
- Test Well

OTHER

- Abandoned/Plugged Well
- LAOR Well
- Other Monitoring Well

- Surface Water Sampling Station
- Spring

- Disposal Shaft (location approximate)
- Strontium-90 Disposal Shaft

8932

Figure 4-1. Solid Waste Management Units at Technical Area (TA) 50

N

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

Grid provides NM State Plane coordinates in feet.
Grid interval, in feet: 500
Feet per inch on map = 50

SCALE 1:600

METERS

FEET

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

Cartography by: Marcia Jones
Date: July 30, 2002
GISLab Plot ID: G200306

GISLab
Los Alamos National Laboratory

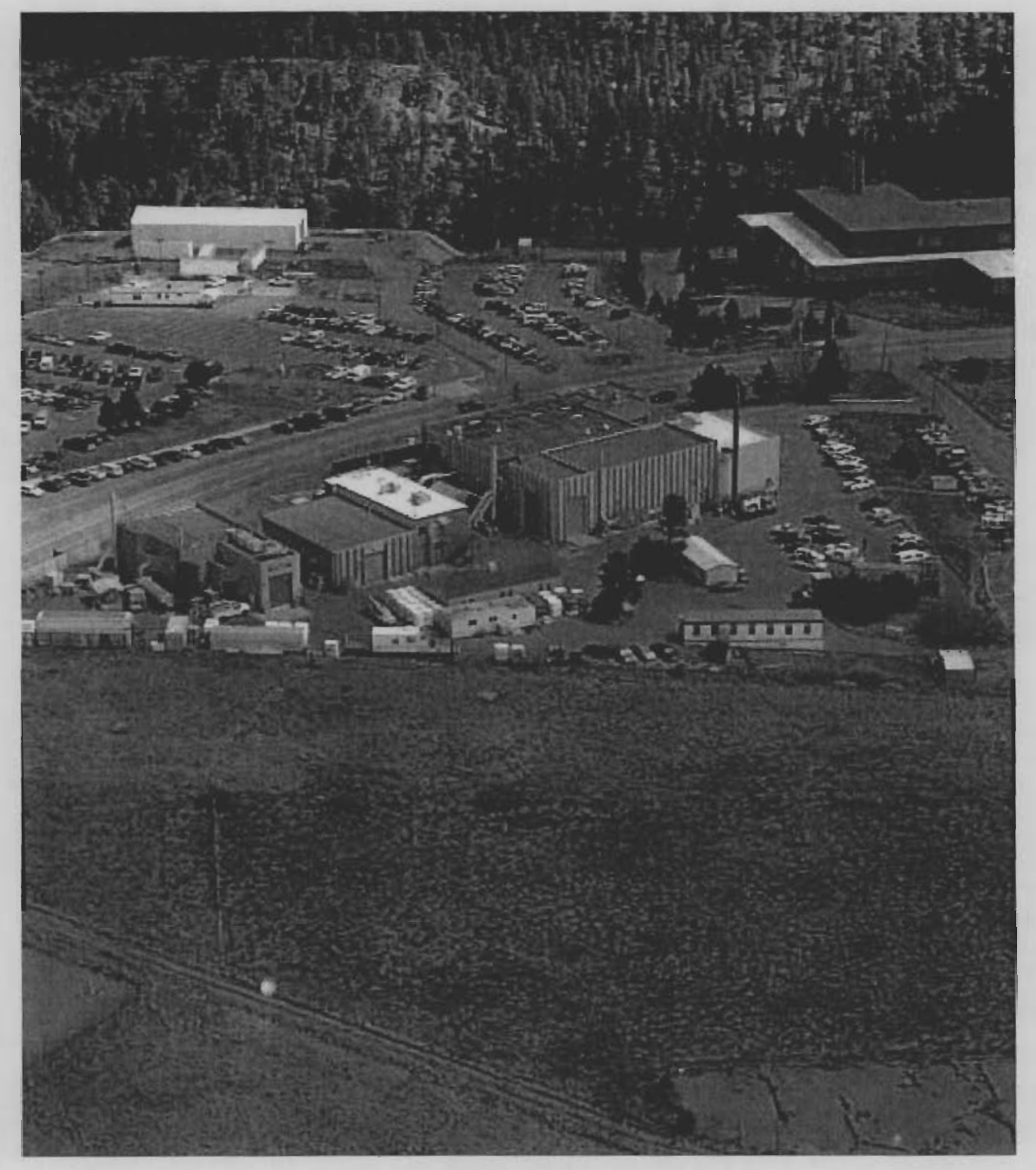
Supplement 4-1

"TA-50 Solid Waste Management Unit Report," Los Alamos National Laboratory, Los Alamos, New Mexico, April 2002.

TA-50, Waste Management Site

TA-50 is located near the center of the LANL complex. The site contains 33 waste management structures (including office trailers, tanks, storage sheds, and buildings). Waste management activities include treating radioactive liquid waste, reducing the size and volume of TRU wastes, and characterizing TRU wastes.

The facilities at TA-50 support LANL's waste management activities for several types of waste, including treatment and storage of solid and liquid, low-level radioactive waste, low-level mixed waste, TRU waste, and hazardous waste. The major facilities at TA-50 are the RLWTF; the WCRRF (50-69), formerly known as the Size Reduction Facility; and the RAMROD Facility.



TA-50 — Waste Management Site

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SWMU 50-001(a) — Waste treatment facility 50-1 — RCRA unit (active)

Administrative Authority	NMED	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1963-Present
Has ER Sampled the Site?	No	**ER Remedial Action Conducted?**	No
Structure Number	50-1	**Other Remedial Action Conducted?**	No

Unit Description

SWMU 50-001(a) is an active radioactive liquid waste treatment plant (Building 50-1) that has operated continuously since its construction in 1963. Building 50-1 is designed to treat 250 gal./min of wastewater, primarily to remove TRU elements through neutralization, flocculation and clarification, pH control, ion exchange, and filtration. Building 50-1 treats only low-level liquid wastes from many TAs to remove target contaminants and then monitors and discharges treated effluent to NPDES-permitted Outfall 051 in Mortandad Canyon [SWMU 50-006(d)]. Treatment sludges subsequently are managed at TA-54, MDA G. Building 50-1 housed a container storage area in Room 59 [AOC 50-003(a)], and a second container storage area is located in a storage locker [structure 50-114, which was former AOC 50-003(d)]. A system of drainlines [SWMU 50-001(b)] and tanks [SWMUs 50-002(a) and 50-002(b)-00] is used to transfer, treat, and temporarily store the liquid waste and treatment sludge associated with Building 50-1. In July 1990, core samples collected from boreholes drilled through the floor around the pH adjustment tank or "grit chamber" indicated that the inlet line or the chamber leaked. Influent wastes subsequently were rerouted to flow directly into the pH adjustment tank in Building 50-2.

ER Project Activities

Information presented in this section was derived from previously published documents. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

This SWMU was proposed for NFA in an August 2000 permit modification request based on its active status and because the hazardous waste container storage areas within Building 50-1 are listed in Module VIII of LANL's Hazardous Waste Facility Permit. No additional RFI activities have been conducted at this SWMU.

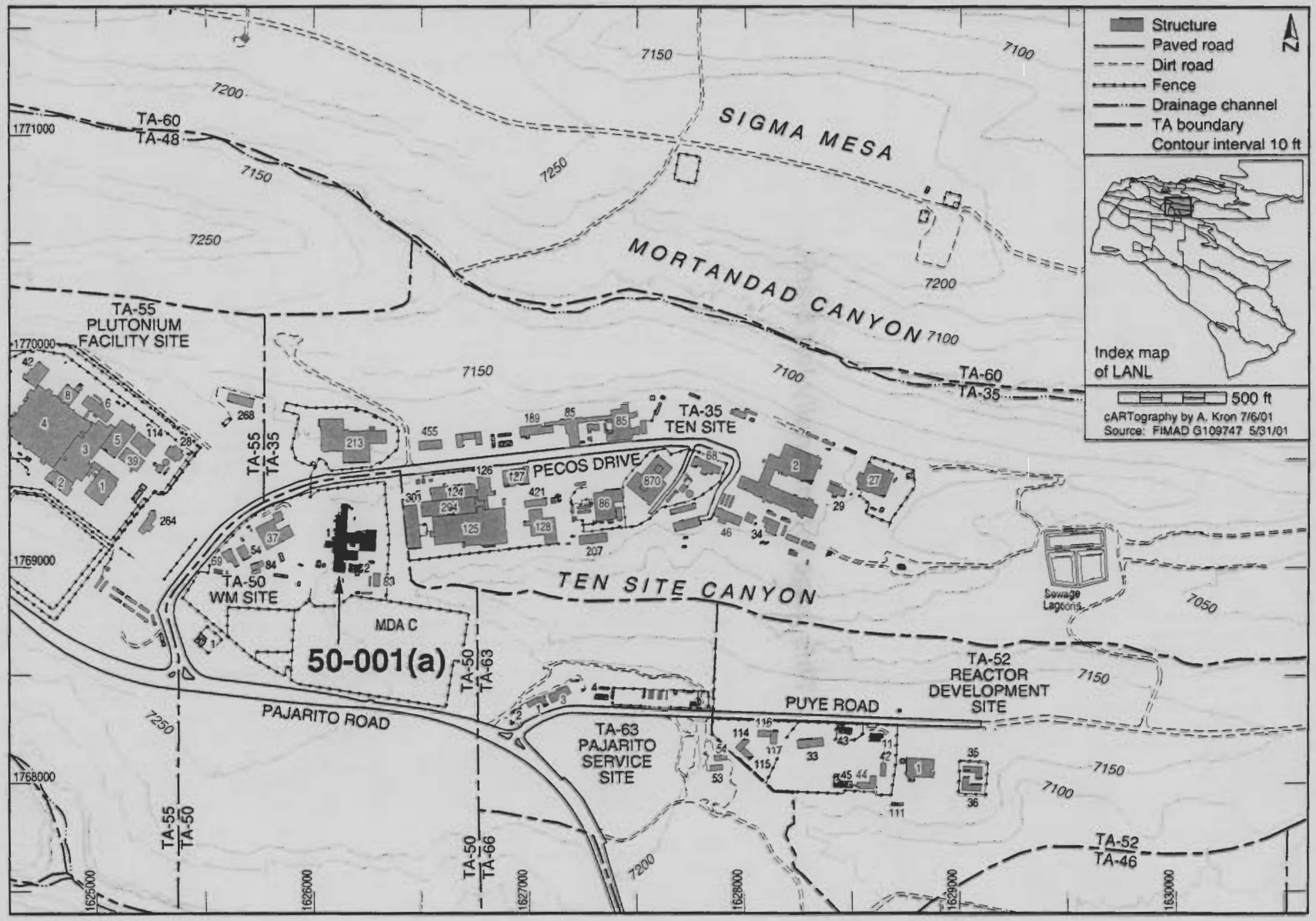
ER Project Sampling Summary

No analytical samples were collected at this site.

References

RFI Work Plan for Operable Unit 1147 — LA-UR Number: 92-0969

View of SWMU 50-001(a)


Structure
Paved road
Dirt road
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Drainage channel
TA boundary
Contour interval 10 ft
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Index map of LANL
500 ft
cARTography by A. Kron 7/6/01
Source: FIMAD G109747 5/31/01
SIGMA MESA
MORTANDAD CANYON
TEN SITE CANYON
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AOC 50-001(b) — Waste lines and manholes

Administrative Authority	DOE	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1963-Present
Has ER Sampled the Site?	No	**ER Remedial Action Conducted?**	No
Structure Number	Various	**Other Remedial Action Conducted?**	No

Unit Description

AOC 50-001(b) is the active underground drainline system through which liquid waste is transferred to a radioactive liquid waste treatment facility (Building 50-1). A manhole (structure 50-72) is the central collection area for most incoming liquid waste. Three lines feed into structure 50-72. A major line connecting several TAs to this manhole was constructed in 1982 to replace an old line [SWMU 50-004(a)-00]. The new line is a double polyethylene pipe that enters structure 50-72 from the north side of Pecos Drive. Another waste line into structure 50-72, completed in 1982, transports low-level radioactive liquids from structure 50-73, which receives wastes from Building 50-69 (a volume reduction facility, AOC 50-008) and Building 50-37 (the incinerator complex, AOC 50-007). This line is a 6-in. polyethylene line encased in a 10-in. polyethylene line that has leak monitor and vacuum test capabilities. A third line, also installed in 1982, transports low-level radioactive waste from TA-55 to structure 50-72 through manholes 50-016 and 50-78. The line consists of an inner stainless steel pipe encased in a PVC pipe and has leak-monitor and vacuum test capabilities. All manholes that transport wastewater to Building 50-1 are monitored continuously. A single drainline carried all influent from structure 50-72 into the grit tank at Building 50-1 until a leak around the grit tank was detected in 1990. The line now bypasses the grit chamber and passes through the neutralization chamber before it connects to the Building 50-2 tank farm [SWMU 50-002(a)]. The line consists of an inner 8-in. schedule 40 stainless steel pipe and an outer 10-in. schedule 10 stainless steel pipe. Structure 50-7, another component of the influent waste system, is connected to the waste line from the tank truck unloading station (structure 50-77). Structure 50-7 has been out of service since the early 1990s.

Four other waste lines run from TA-55 to Building 50-1 through structure 50-106 to tanks in an underground vault (structure 50-66). Three of the lines are 1.5-in. stainless steel lines, each encased in 3-in. PVC. Two of the three lines carry caustic and acid wastes with high radioactivity; the third line is a spare that has never been used. The fourth line, which is for industrial waste, is a 2-in.-diameter stainless steel line encased in 3-in. PVC. The lines operate by gravity flow, and the end of each is continuously monitored at TA-55, at structure 50-57, and at structure 50-66 by a drip-tray and conductivity-probe system wired to a computer for continuous readout. The three nonindustrial waste lines were replaced in 1994; however, the new lines have not yet been put into service. Soil sampling was scheduled to determine if contaminants had leaked from the pipes. According to the 1990 SWMU report, there was some concern about contamination from the waste lines carrying TA-55 effluent because the original vacuum seals had lost their integrity; however, the drip pans have never collected fluid that indicated the inner lines were leaking. The area where the lines run into Building 50-1 and the area west and north of the tank farm (Building 50-2) were sampled in August 1990. Sample results showed no radionuclides above BVs.

ER Project Activities

RFI activities conducted at this site are described in detail in the documents listed in the reference section below. No additional RFI activities have been conducted at this site.

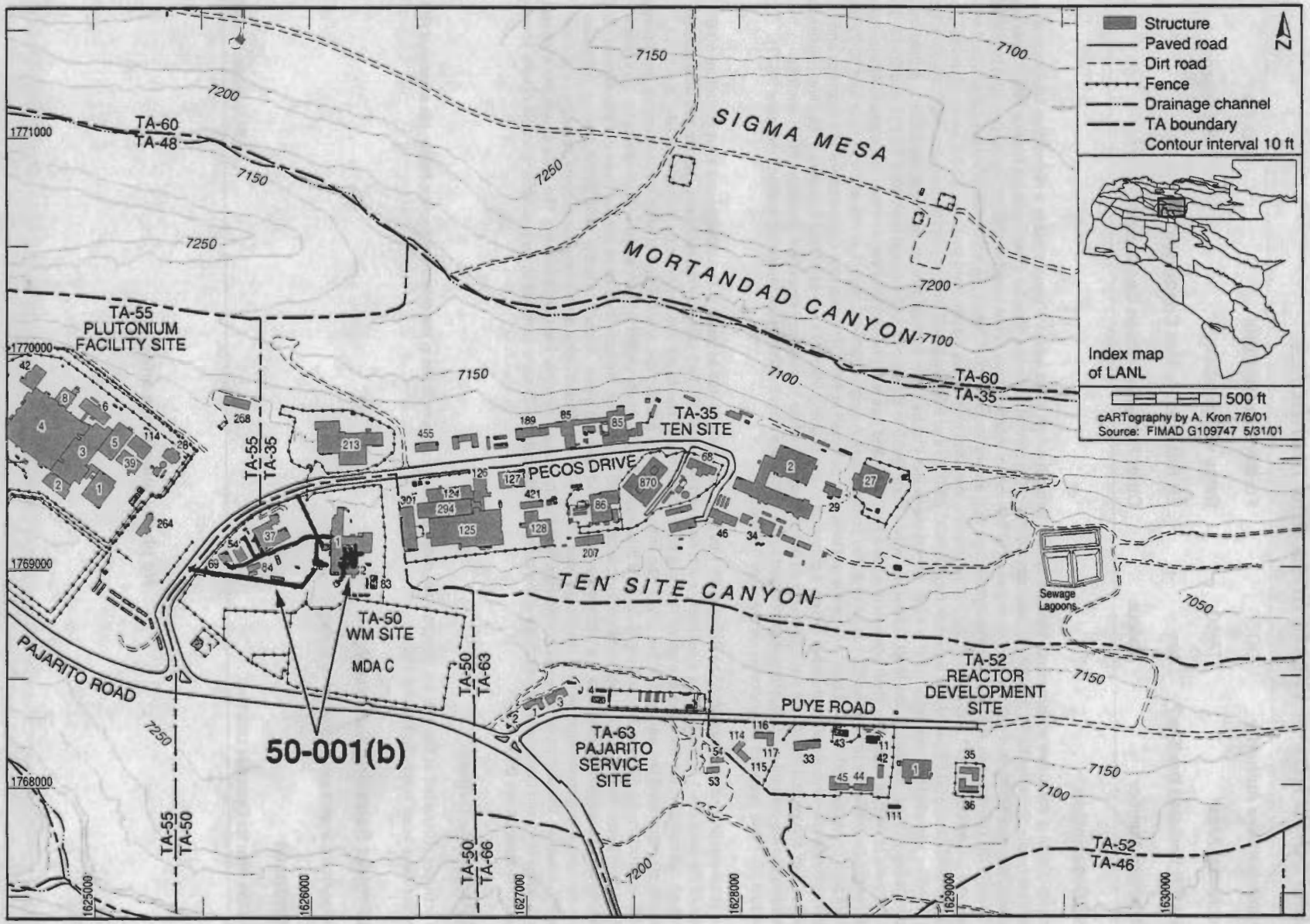
ER Project Sampling Summary

No analytical samples were collected at this site.

References

RFI Work Plan for Operable Unit 1147 — LA-UR Number: 92-0969

No photo; subsurface unit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Source: FIMAD G109747 5/31/01
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SWMU 50-002(a) — Underground tanks

Administrative Authority	NMED	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1963-Present
Has ER Sampled the Site?	Yes	**ER Remedial Action Conducted?**	No
Structure Number	50-2	**Other Remedial Action Conducted?**	No

Unit Description

SWMU 50-002(a) consists of an underground, reinforced-concrete tank vault (Building 50-2) housing six flow-through process tanks, an equipment room, and waste-transfer lines associated with a radioactive liquid waste treatment facility (Building 50-1). The floor of the vault is 17 ft below ground. Holding tanks located within the vault (Building 50-2) include two incoming raw-waste tanks (25,000 gal. and 75,000 gal.); one 25,000-gal. low-level sludge tank; and two 25,000-gal. tanks used to store treated waste before discharge to NPDES-permitted Outfall 051 [SWMU 50-006(d)], which discharges to Mortandad Canyon. One of these tanks is used to store waste during D&D activities. Wastes are transported to the vault (Building 50-2) through the system of transfer lines. Waste-transfer lines include six cast-iron lines (including waste lines 55 and 67) connecting Building 50-1 to the equipment room in Building 50-2; four steel lines added in 1984 to connect Room 61 in Building 50-1 to the equipment room in Building 50-2; five cast-iron lines from drains in Building 50-1 to the D&D tank in Building 50-2; a cast-iron line from a sink in the vehicle-decontamination facility to the D&D tank in Building 50-2; an influent line connecting Building 50-2 to a 100,000-gal. emergency holding tank (structure 50-90); and an effluent line connecting structure 50-90 to one of the 25,000-gal. influent tanks in Building 50-2. Two unintended operational releases occurred from the overflow of a sump in Building 50-2, causing untreated wastewater to be discharged to waste lines 55 and 67 (the waste lines for treated effluent) and into the outfall area at the head of Ten Site Canyon [see SWMU 50-006(a)]. The releases occurred in July and September 1974. In February 1975, waste line 67 was plugged at its outfall. The integrity of the tank farm and the pipelines tied to Building 50-1 were checked in 1990, and no leaks were found. The 75,000-gal. influent tank and 25,000-gal. sludge tank were taken offline in June 2001 and are scheduled for decontamination in FY2002.

ER Project Activities

Information presented in this section was derived from previously published documents. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

One sample was collected at this SWMU in 1995; no additional RFI activities have been conducted at this site.

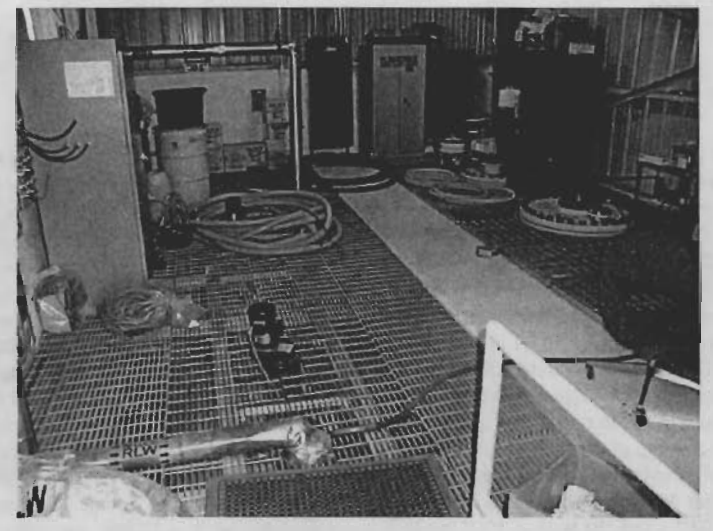
ER Project Sampling Summary

The following table shows the number of analytes that exceeded BVs, FVs, and SALs that were in use in calendar year 2002. These data reflect site conditions before any remedial activities that may have occurred, as discussed in the ER Project activities section above. BVs are naturally occurring concentrations of inorganic chemicals and radionuclides in soil, sediment, or tuff before any influence from LANL operations. FVs are concentrations of radionuclides in soil, sediment, or tuff that resulted from global atmospheric deposition unrelated to LANL releases. SALs are concentrations of chemicals or radionuclides based on a residential exposure, below which there is no potential unacceptable risk to human health.

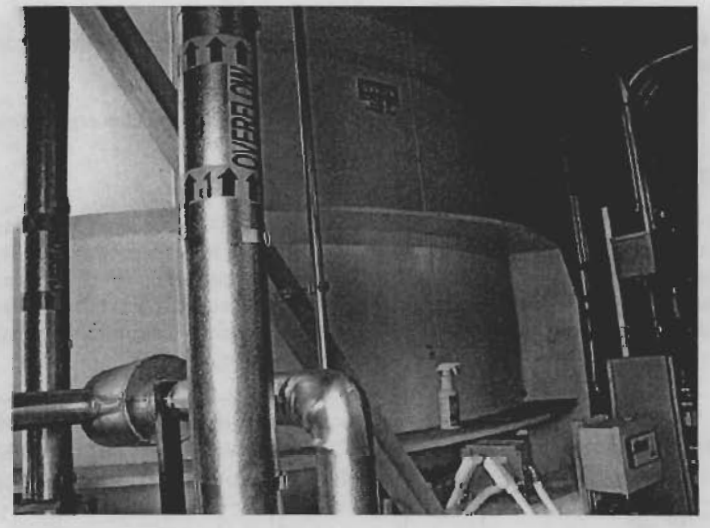
Analytical Suite Sampled	No. of Chemicals Detected	No. of Chemicals >CY2002 BV/FV (If Applicable)	No. of Chemicals >CY2002 SAL (Residential)
Inorganic chemicals	17	0	1
PCBs	0	N/A	0
Radionuclides	3	1	1
SVOCs	0	N/A	0
VOCs	0	N/A	0

The following table provides the maximum concentrations of analytes that exceeded CY2002 SALs.

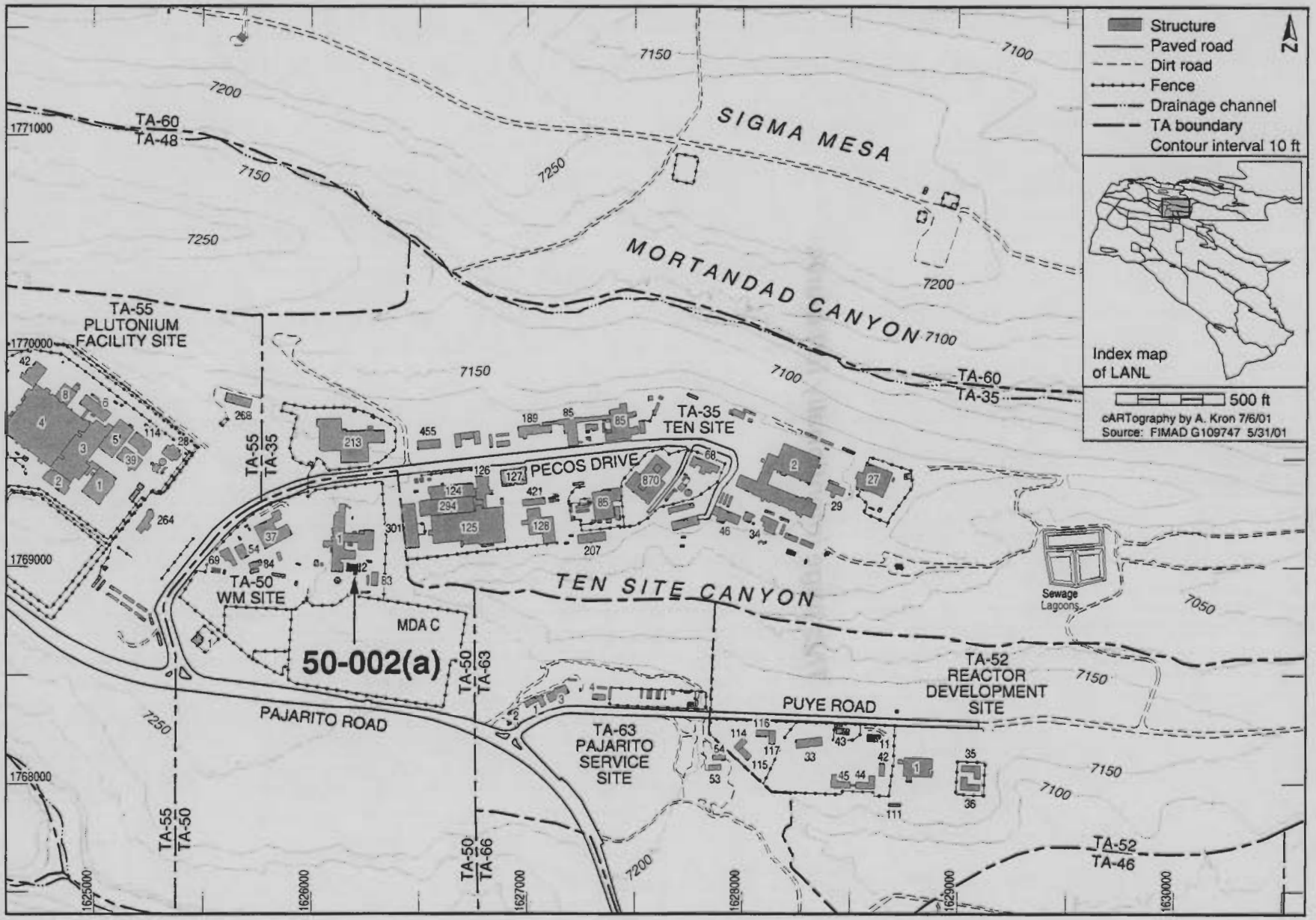
Analytical Suite	Analyte	Maximum Concentration	CY2002 SAL (Residential)
Inorganic chemicals	Arsenic	1.4 mg/kg	0.39 mg/kg
Radionuclides	Tritium	2620 pCi/g	880 pCi/g



View of SWMU 50-002(a)



View of SWMU 50-002(a)


Structure
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TEN SITE
PECOS DRIVE
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PAJARITO SERVICE SITE
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SWMU 50-002(b)-00 — Vaulted underground tanks for TA-55 wastes

Administrative Authority	NMED	**Former Operable Unit**	N/A
Technical Area	TA-50	**Dates of Operation**	Unknown
Has ER Sampled the Site?	No	**ER Remedial Action Conducted?**	No
Structure Number	50-67, 50-68	**Other Remedial Action Conducted?**	No

Unit Description

Consolidated SWMU 50-002(b)-00 consists of former SWMUs 50-002(b) and 50-002(c), two active waste tanks (structures 50-67 and 50-68) and their associated inlet and outlet lines housed in an underground, reinforced-concrete tank vault (structure 50-66) at the radioactive liquid waste treatment facility [Building 50-1, SWMU 50-001(a)]. The concrete vault measures 18 ft x 16 ft x 14 ft deep and is located about 30 ft from the southwest corner of Building 50-1. The tanks and vault were constructed exclusively to store radioactive caustic waste (structure 50-67) and acidic waste (structure 50-68) from TA-55, where TRU wastes are generated. TRU wastes are processed separately from other wastes. The inlet lines consist of four stainless steel pipes encased in PVC. One line is a capped backup. The second line carries radioactive acid waste to the acid waste tank. The third line carries radioactive caustic waste to the caustic tank. Wastes are transferred from the tanks through two double stainless steel lines to Room 60, Building 50-1. The operation is monitored for criticality hazards, and necessary adjustments are made before treatment; from 10 to 12 containers of treated TRU waste are generated annually. The fourth line carries radioactive liquid wastes to a manhole (structure 50-72) [see AOC 50-001(b)]. No documented releases are associated with SWMU 50-002(b)-00.

ER Project Activities

RFI activities conducted at this site are described in detail in the documents listed in the reference section below. No additional RFI activities have been conducted at this site.

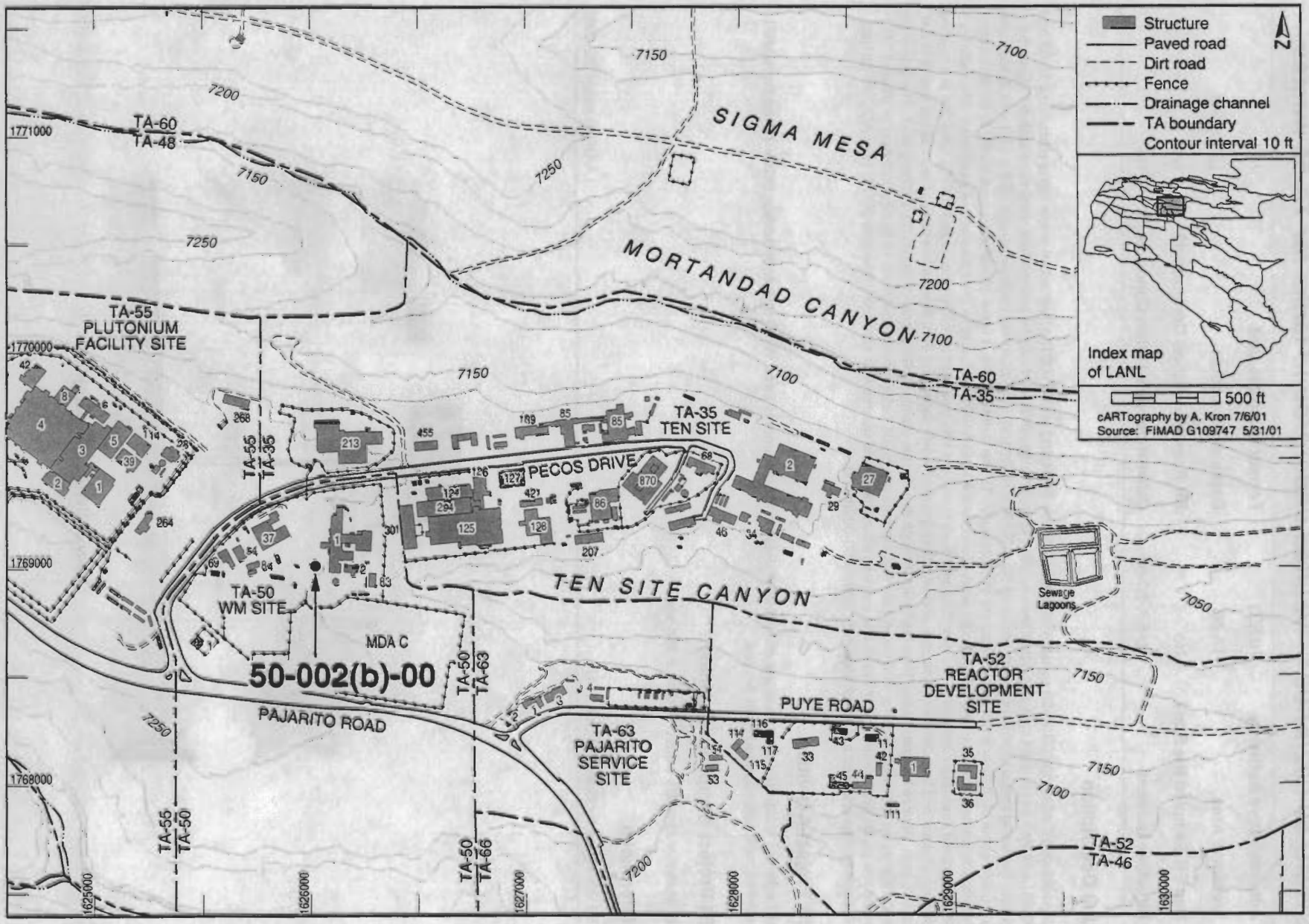
ER Project Sampling Summary

No analytical samples were collected at this site.

References

RFI Work Plan for Operable Unit 1147 — LA-UR Number: 92-0969

View of SWMU 50-002(b)-00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Dirt road
Fence
Drainage channel
TA boundary
Contour interval 10 ft
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PECOS DRIVE
TA-50
WM SITE
MDA C
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PAJARITO ROAD
TA-63
PAJARITO SERVICE SITE
PUYE ROAD
TA-52
REACTOR DEVELOPMENT SITE
TA-46
Sewage Lagoons
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AOC 50-002(d) — Aboveground storage tank

Administrative Authority	DOE	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1964-1996
Has ER Sampled the Site?	No	**ER Remedial Action Conducted?**	No
Structure Number	50-5	**Other Remedial Action Conducted?**	Yes

Unit Description

AOC 50-002(d) is a decommissioned aboveground 5000-gal. stainless steel tank (structure 50-5) previously used for the storage of unused product (nitric acid). The storage tank was part of the ion-exchange column system, which was designed to remove any radioisotopes not removed by the clariflocculator system at the radioactive liquid waste treatment facility (Building 50-1). Because the clariflocculator system was successful in removing radioisotopes from wastewater to levels consistently below DOE limits, the ion-exchange column was rarely used and the tank was never filled to capacity. The tank (structure 50-5) is located adjacent to the north wall of Room 60D at Building 50-1 and replaced the original nitric acid tank in late 1964 after the original rubber-lined carbon steel tank reportedly leaked. The new tank (structure 50-5) is supported on concrete saddles that extend 5 ft below ground surface. A concrete sump filled with limestone chips (structure 50-12) was installed beneath the new tank. The tank was vented to the sump to neutralize any nitric acid vapors emitted when the tank was filled. Retaining walls and a concrete slab were installed in 1988 to contain any spillage. The tank was decommissioned (emptied, triple rinsed, and all piping disconnected) in 1996.

ER Project Activities

Information presented in this section was derived from previously published documents. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

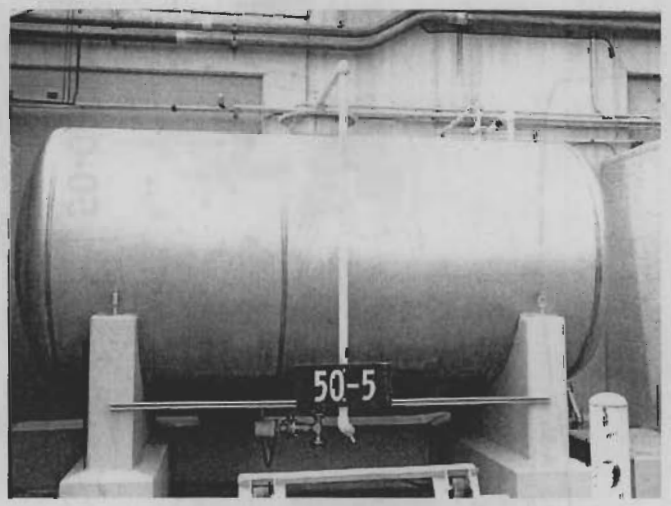
The original tank was replaced after a reported leak, and the new tank (structure 50-5) was managed in accordance with LANL's Spill Prevention Control and Countermeasures Plan. No documented releases have occurred from structure 50-5. AOC 50-002(d) was recommended for NFA in a 2000 RFI report.

ER Project Sampling Summary

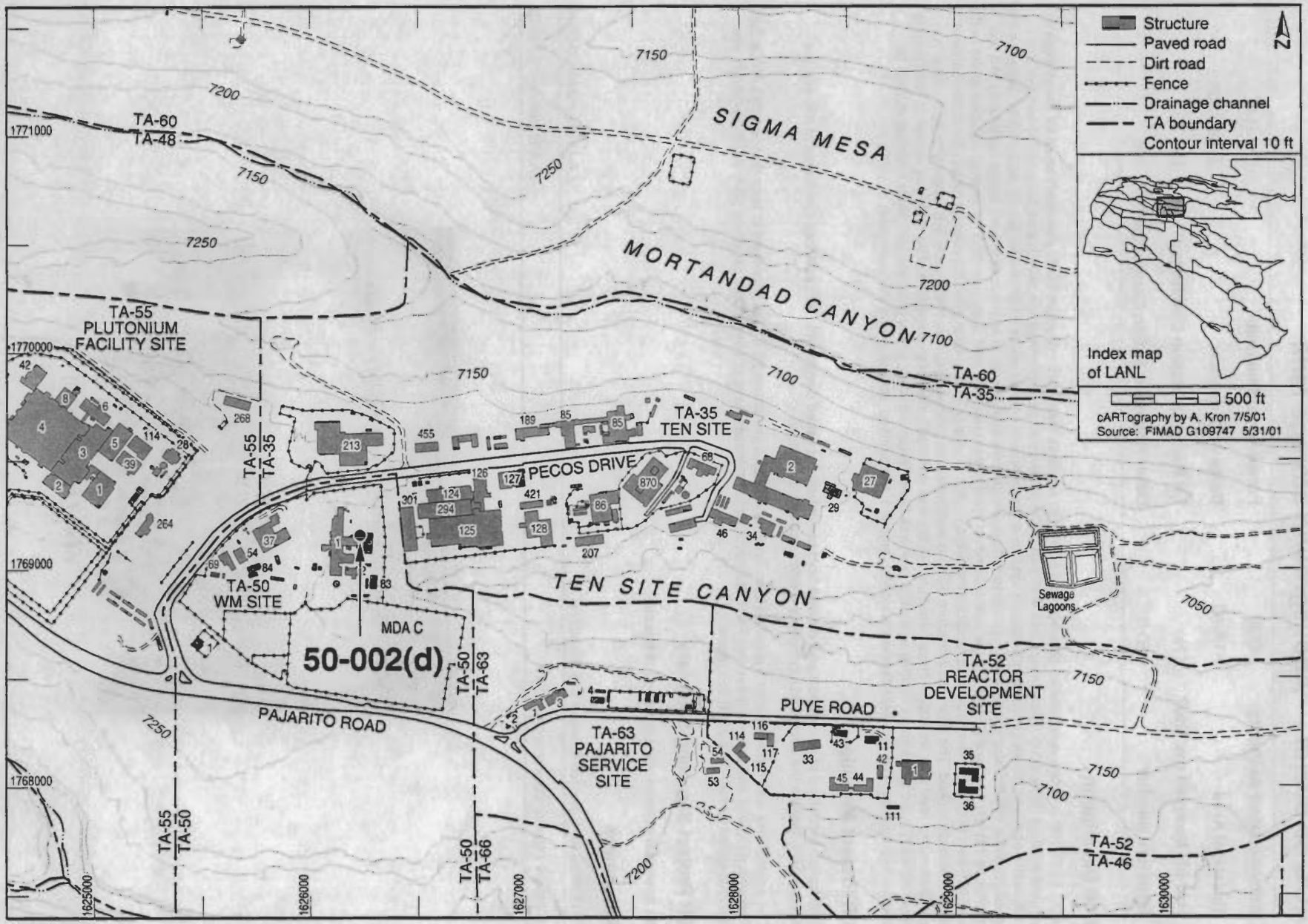
No analytical samples were collected at this site.

References

RFI Report for Potential Release Site 50-002(d)	LA-UR Number: 00-2514
RFI Work Plan for Operable Unit 1147	LA-UR Number: 92-0969



View of AOC 50-002(d)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AOC 50-003(a) — Container storage area

Administrative Authority	DOE	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	Unknown
Has ER Sampled the Site?	No	**ER Remedial Action Conducted?**	No
Structure Number	N/A	**Other Remedial Action Conducted?**	No

Unit Description

AOC 50-003(a) is a RCRA interim status mixed-waste container storage area located in Room 59 of the radioactive liquid waste treatment facility (Building 50-1). This unit will not be permitted, but will be closed. Room 59 was constructed with steel framing and insulated metal roofing and siding; the design capacity is the equivalent of twenty-seven 55-gal. containers of solid mixed low-level, mixed TRU, and hazardous waste. The area has been used to store containers of solid cemented mixed TRU sludge resulting from waste treatment activities in Room 60A; waste containing free liquids cannot be stored in Room 59. The cementation process is generator treatment being performed in a less-than-90-day storage area. Following cementation, containers of mixed TRU waste have been temporarily stored in Room 59 in accordance with the permit requirements. The waste containers are subsequently transported to other LANL RCRA-permitted mixed-waste management facilities for storage.

ER Project Activities

Information presented in this section was derived from previously published documents. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

AOC 50-003(a) is designed and operated in accordance with 20 NMAC 4.1 Subpart V and 40 CFR 264 Subpart B, C, and I requirements. Collectively, these requirements address the active management of the waste. AOC 50-003(a) was recommended for NFA in a 1999 RFI report.

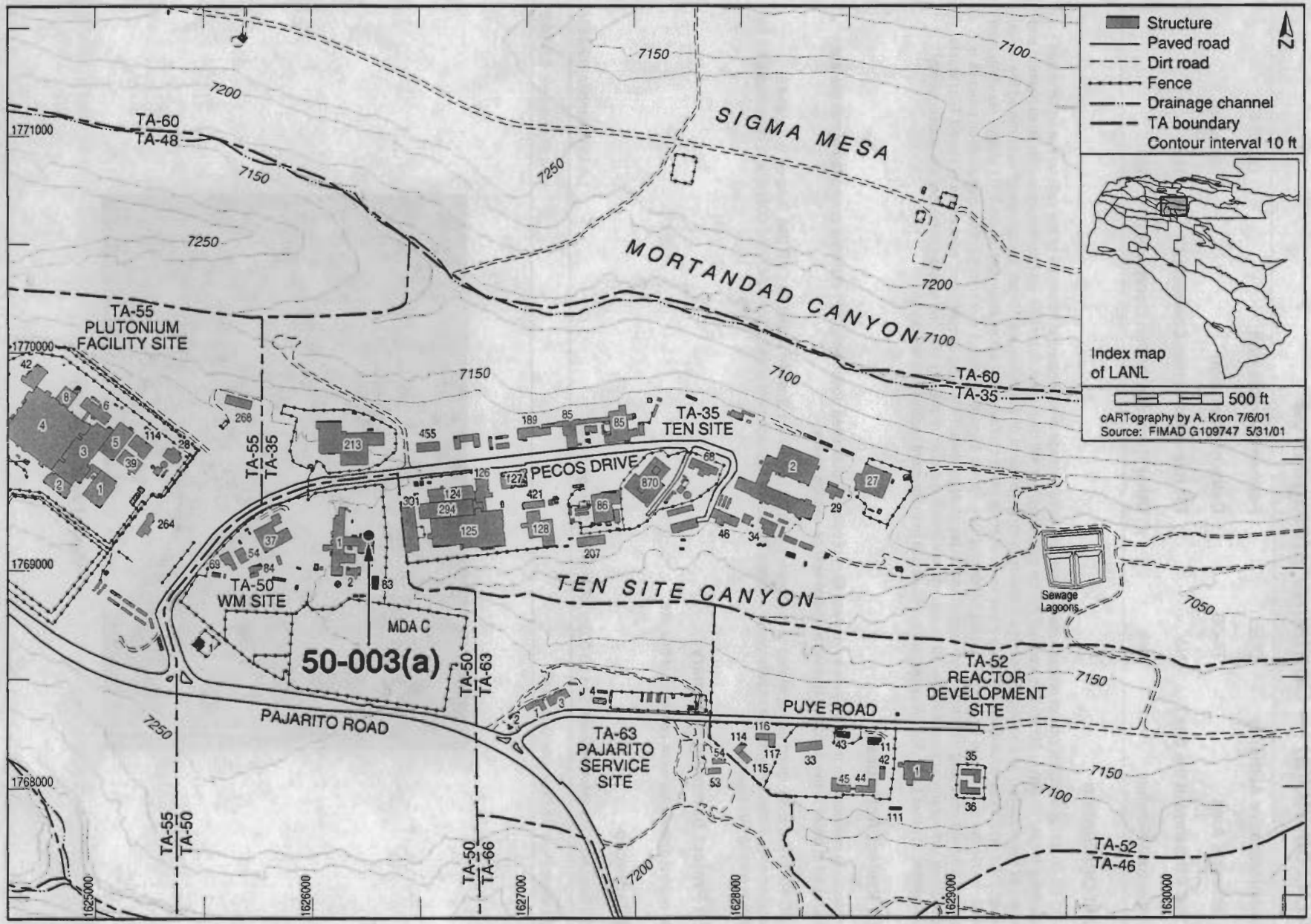
ER Project Sampling Summary

No analytical samples were collected at this site.

References

RFI Report for Potential Release Site 50-003(a) (Container Storage Area)	LA-UR Number: 99-4834
RFI Work Plan for Operable Unit 1147	LA-UR Number: 92-0969

View of AOC 50-003(a)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SWMU 50-004(a)-00 — Historical waste lines and underground vault, Radioactive Liquid Waste Treatment Facility

Administrative Authority	NMED	**Former Operable Unit**	N/A
Technical Area	TA-50	**Dates of Operation**	1963-1989
Has ER Sampled the Site?	Yes	**ER Remedial Action Conducted?**	No
Structure Number	Various	**Other Remedial Action Conducted?**	Yes

Unit Description

Consolidated SWMU 50-004(a)-00 consists of former SWMUs 50-004(a), 50-004(b), and 50-004(c), all former components of the radioactive liquid waste treatment facility, Building 50-1.

Former SWMU 50-004(a) includes locations through which underground radioactive liquid waste and industrial waste lines were routed to the TA-50 radioactive liquid waste treatment facility from LANL technical areas located along Pajarito Road. The majority of these waste lines were decommissioned and removed in 1975; excavated soils were characterized for radioactive constituents and remediated to meet ALARA levels.

Former SWMU 50-004(b) is the location of a decommissioned underground vault (structure 50-3) that housed three stainless steel-lined concrete storage tanks, ranging in volume from 1000 to 4500 gal., used to collect and store wastewater from the Omega Reactor. Waste lines and manholes to the collection tank structure included waste line 49 from TA-35 and waste line 50 from Building 50-1. Waste line 49, the vault, and the tanks were removed in 1989. Soil sampled during decommissioning was screened for radionuclides and chemical constituents. No elevated concentrations were detected.

Former SWMU 50-004(c) consists of 13 industrial waste lines (44, 45, 45a, 46, 47, 48, 48a, 49, 54, 55, 56, 65, and 67) and three associated manholes (structures 50-6, -55, and -56) that discharged to the decommissioned underground vault (structure 50-3). All of the waste lines and manholes associated with former SWMU 50-004(b) were removed between 1981 and 1989, with the exception of waste line 56, which remains in service. Radionulcide contamination discovered during decommissioning of the waste lines and manholes was remediated to ALARA levels through removal of pipe and affected soil to approximately 19 ft below grade. Field screening for radionuclides confirmed that ALARA levels had been met; however, no samples were analyzed for hazardous constituents.

ER Project Activities

Information presented in this section was derived from previously published documents. Any discussion of BVs, FVs, and SALs is taken from the referenced documents and reflects the values in use at the time the documents were written. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

In 1994, an RFI was conducted at former SWMUs 50-004(a) and 50-004(c), with the objective of filling data gaps identified in the RFI work plan and to determine the presence and/or absence of radionuclides and hazardous constituents from historical operational releases. The RFI at former SWMU 50-004(a) included the trench and manholes through which a 520-ft section of the original 6-in. VCP waste line passed. Part of the waste line was removed in 1975 to clear the area for construction of Building 50-37 (a new line, acid waste line 45, bypassed the Building 50-37 construction zone and replaced the decommissioned line until 1984, when the recently installed waste line also was removed). Five vertical boreholes located approximately 100 ft apart were advanced along the waste line trench to the contact between trench fill and trench bottom. Eleven samples, collected from the five locations, were field-screened for radionuclides and organic vapors. Radionuclide screening results were all at or near BVs and organic vapor results were below 1 ppm. The samples were subsequently submitted to an off-site laboratory for analysis for inorganic chemicals, organic chemicals, and radionuclides. Elevated levels of beryllium, plutonium-238, and plutonium-239 were detected at levels above BVs, but none of the detects exceeded SALs. At former SWMU 50-004(c), 67 samples were collected from depths up to approximately 14 ft in 29 locations. Samples were field-screened for radionuclides and organic vapors and submitted for off-site laboratory analysis for organic chemicals, inorganic chemicals, and radionuclides. Analytical results showed elevated levels of beryllium, copper, chromium, lead, mercury, calcium, potassium, nickel, zinc, plutonium-238, plutonium-239, and uranium-235. The human health risk assessment, documented in the RFI report, indicated that the contaminants identified above BVs were not considered COPCs when compared with risk-based SALs. An ecological screening assessment was not completed for either of the former SWMUs. Former SWMUs 50-004(a) and 50-004(c) were recommended for NFA in the RFI report, which is currently under review by the NMED. No additional RFI activities have been conducted at former SWMU 50-004(b).

Based on common operational history, waste streams, geographical proximity, contaminant transport mechanisms, and the investigation required to assess nature and extent of contamination, all three former SWMUs were consolidated during the FY2000 annual unit audit. Based on the current SAL screening, presented in table above, only arsenic exceeds SALs at a maximum detected value of 6.5 mg/kg.

ER Project Sampling Summary

The following table shows the number of analytes that exceeded BVs, FVs, and SALs that were in use in calendar year 2002. These data reflect site conditions before any remedial activities that may have occurred, as discussed in the ER Project activities section above. BVs are naturally occurring concentrations of inorganic chemicals and radionuclides in soil, sediment, or tuff before any influence from LANL operations. FVs are concentrations of radionuclides in soil, sediment, or tuff that resulted from global atmospheric deposition unrelated to LANL releases. SALs are concentrations of chemicals or radionuclides based on a residential exposure, below which there is no potential unacceptable risk to human health.

Analytical Suite Sampled	No. of Chemicals Detected	No. of Chemicals >CY2002 BV/FV (If Applicable)	No. of Chemicals >CY2002 SAL (Residential)
Inorganic chemicals	17	16	1
PCBs	0	N/A	0
Radionuclides	8	6	0
SVOCs	0	N/A	0
VOCs	3	N/A	0

The following table provides the maximum concentrations of analytes that exceeded CY2002 SALs.

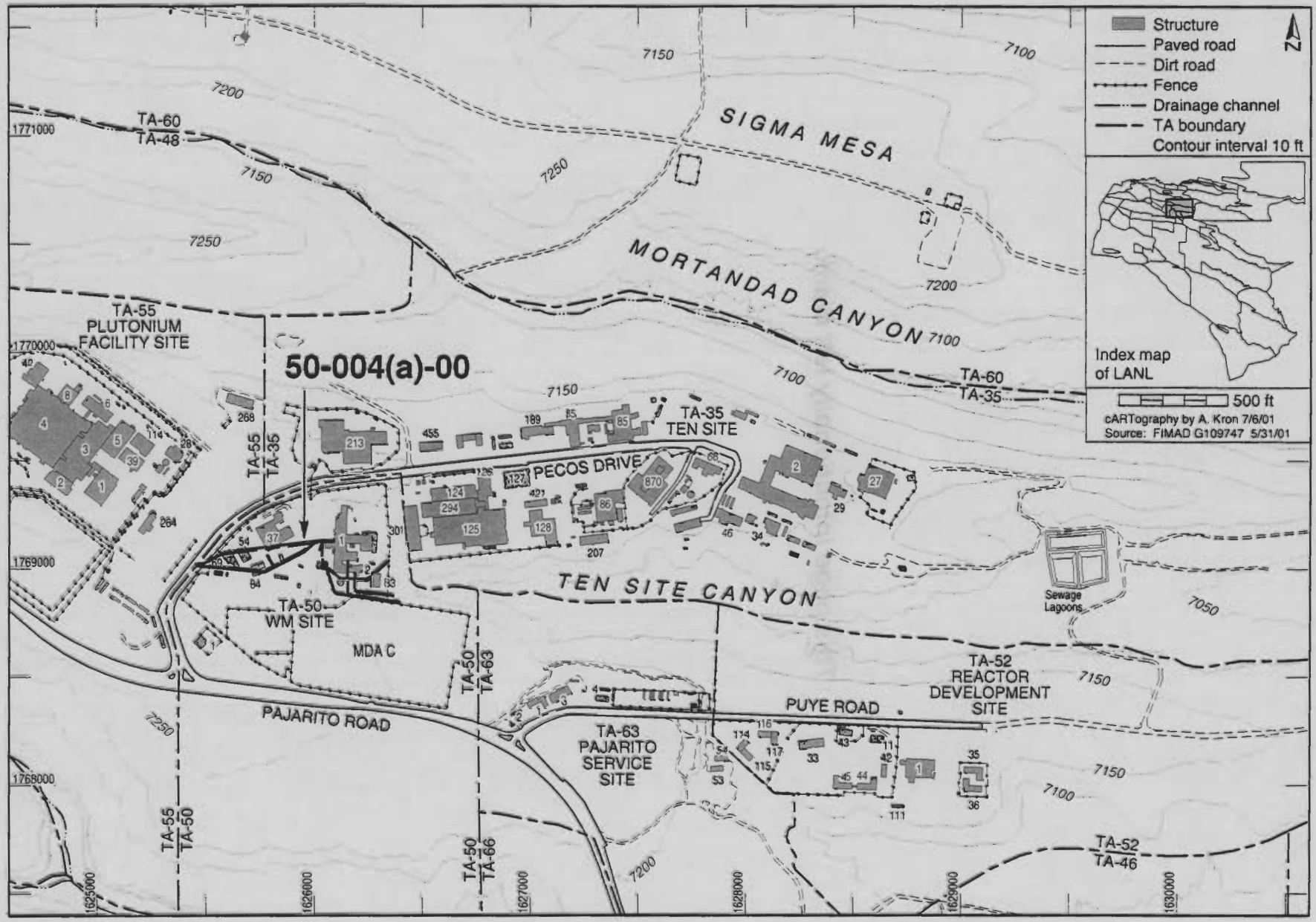
Analytical Suite	Analyte	Maximum Concentration	CY2002 SAL (Residential)
Inorganic chemicals	Arsenic	6.5 mg/kg	0.39 mg/kg

References

RFI Report for Potential Release Sites at TA-50: 50-004(a), 50-004(c), 50-011(a) (Located in Former Operable Unit 1147) — LA-UR Number: 96-148

RFI Work Plan for Operable Unit 1147 — LA-UR Number: 92-0969

No photo; subsurface unit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SWMU 50-006(a) — Operational release

Administrative Authority	NMED	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1963-Present
Has ER Sampled the Site?	Yes	**ER Remedial Action Conducted?**	Yes
Structure Number	N/A	**Other Remedial Action Conducted?**	No

Unit Description

SWMU 50-006(a) is the outfall area at the head of Ten Site Canyon impacted by two accidental operational releases when a sump in a pumping station (Building 50-2) overflowed, causing untreated wastewater to be discharged to waste lines 55 and 67 (the waste lines for treated effluent). The releases occurred in July and September 1974. In February 1975, waste line 67 was plugged at its outfall. A soil sample collected from the outfall area when waste line 67 was plugged showed elevated levels of gross-alpha radioactivity. Analysis of additional soil samples collected below the waste line 67 outfall in September 1976 showed elevated levels of gross-alpha radioactivity extending 984 ft downgradient from the outfall. In 1981, both waste lines were completely removed. During the waste line removal operation, elevated levels of radionuclides, including plutonium-239, ruthenium-106, cesium-137, strontium-89, and yttrium-90, were detected. As a result, the outfall area was partially decontaminated by the removal of 70 cubic meters of contaminated soil [see description for SWMU 50-004(a)-00)]. The contaminated outfall area in Ten Site Canyon was subsequently marked with signs and tape.

ER Project Activities

Information presented in this section was derived from previously published documents. Any discussion of BVs, FVs, and SALs is taken from the referenced documents and reflects the values in use at the time the documents were written. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

The ER Project conducted an RFI at SWMU 50-006(a) in 1993 to determine the nature and extent of radionuclide and hazardous chemical contamination in and around the Ten Site Canyon outfall area. Sample locations were sited below the former waste line outfalls, on both banks of the drainage channel, and in the canyon drainage channel at regular intervals over a distance of approximately 1300 ft downstream from the TA-50 boundary. Samples were field-screened for organic vapors and radioactivity. Elevated gross-alpha radiation was found at one screening sample location, resulting in the selection of additional sample locations upstream and downstream from the area with elevated gross-alpha radiation. A total of 134 samples were collected from 53 locations during the RFI. Samples were analyzed for inorganic chemicals, VOCs, SVOCs, PCBs/pesticides, and radionuclides. Analytical results showed concentrations of PAHs, lead, mercury, nickel, silver, thallium, PCBs, thorium-232, cesium-137, cobalt-60, plutonium-238, plutonium-239/240, and strontium-90 above their respective BVs and/or SALs. Samples collected from a hummock in the stream channel approximately 500 ft downgradient of the outfall area showed the highest levels of cesium-137, plutonium-238, plutonium-239/240, and strontium-90. Because the hummock could be dislodged in a rain event, the 1995 RFI report recommended an interim action to remove the contaminated sediment.

The ER Project implemented an interim action to remove the hummock in November 1996. Approximately 0.72 cubic yards of radioactively contaminated soil was excavated and removed from the location in the stream channel where the highest levels of radionuclides had been detected during the RFI. Ten confirmation samples were collected from the excavated area and analyzed for gross-alpha and -beta radioactivity. Results reported in the 1997 interim action report showed gross-alpha radiation levels ranging from 8.91 pCi/g to 23.5 pCi/g, and gross-beta levels ranging from 0.0 pCi/g to 23.8 pCi/g, indicating that the interim action cleanup levels had been met.

ER Project Sampling Summary

The following table shows the number of analytes that exceeded BVs, FVs, and SALs that were in use in calendar year 2002. These data reflect site conditions before any remedial activities that may have occurred, as discussed in the ER Project activities section above. BVs are naturally occurring concentrations of inorganic chemicals and radionuclides in soil, sediment, or tuff before any influence from LANL operations. FVs are concentrations of radionuclides in soil, sediment, or tuff that resulted from global atmospheric deposition unrelated to LANL releases. SALs are concentrations of chemicals or radionuclides based on a residential exposure, below which there is no potential unacceptable risk to human health.

Analytical Suite Sampled	No. of Chemicals Detected	No. of Chemicals >CY2002 BV/FV (If Applicable)	No. of Chemicals >CY2002 SAL (Residential)
Inorganic chemicals	12	11	1
PCBs	2	N/A	2
Radionuclides	10	10	6
SVOCs	16	N/A	4
VOCs	6	N/A	0

The following table provides the maximum concentrations of analytes that exceeded CY2002 SALs.

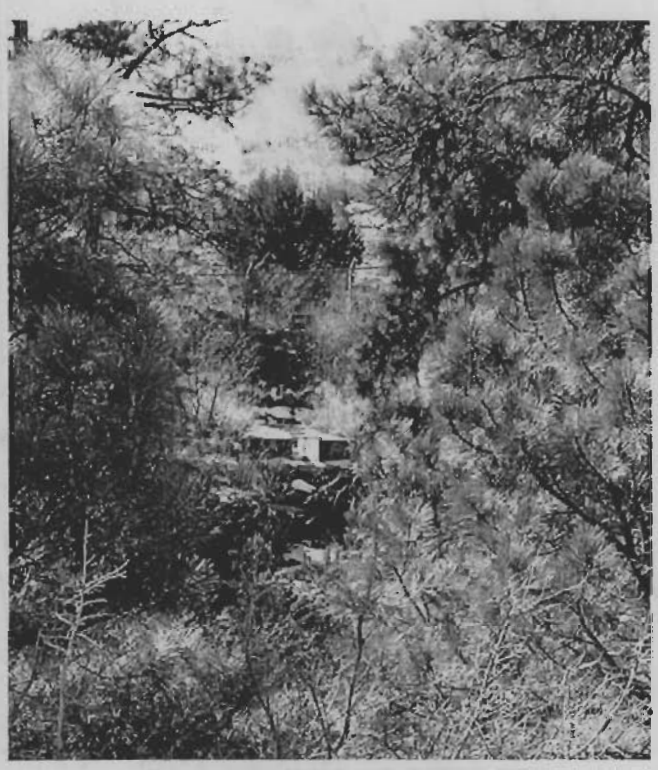
Analytical Suite	Analyte	Maximum Concentration	CY2002 SAL (Residential)
Inorganic chemicals	Arsenic	4.6 mg/kg	0.39 mg/kg
PCBs	Aroclor-1254	6 mg/kg	0.22 mg/kg
	Aroclor-1260	1.25 mg/kg	0.22 mg/kg
Radionuclides	Americium-241	170.9 pCi/g	39 pCi/g
	Cesium-137	72.83 pCi/g	5.3 pCi/g
	Cobalt-60	1.2991 pCi/g	1.2 pCi/g
	Plutonium-238	5190 pCi/g	49 pCi/g
	Plutonium-239	453 pCi/g	44 pCi/g
	Strontium-90	57.7 pCi/g	5.7 pCi/g
SVOCs	Benzo(a)anthracene	1.1 mg/kg	0.62 mg/kg
	Benzo(a)pyrene	1.2 mg/kg	0.062 mg/kg
	Benzo(b)fluoranthene	1.5 mg/kg	0.62 mg/kg
	Indeno(1,2,3-cd)pyrene	0.66 mg/kg	0.62 mg/kg

References

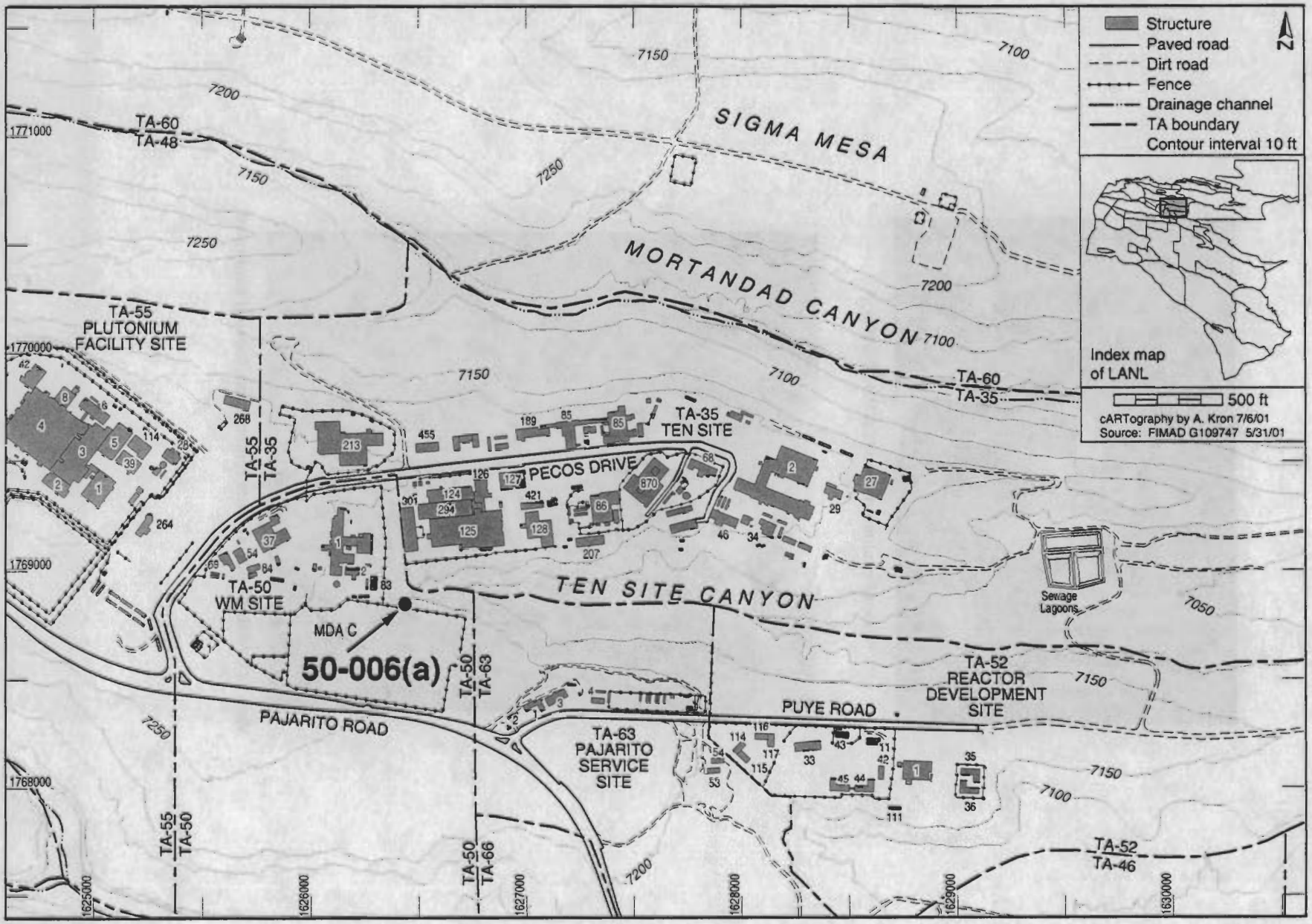
RFI Report for TA-50: PRSs 50-006(a), 50-006(c), 50-007, 50-008 — LA-UR Number: 95-2738

RFI Work Plan for Operable Unit 1147 — LA-UR Number: 92-0969

View of exclusion zone (SWMU 50-006(a))



View of SWMU 50-006(a), after remediation, looking southwest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SWMU 50-006(c) — Operational release

Administrative Authority	NMED	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1963-Present
Has ER Sampled the Site?	Yes	**ER Remedial Action Conducted?**	No
Structure Number	N/A	**Other Remedial Action Conducted?**	No

Unit Description

SWMU 50-006(c) refers to surface soil contamination from the deposition of radioactive contaminants (primarily plutonium and americium) from historical stack emissions from operations at TA-50. Emission sources included seven exhaust stacks that ventilated hoods for specific operations at the facility. A previous investigation showed slightly elevated plutonium levels in nearby soils. The only stack emission at TA-50 that has an Air Quality Permit is the Portable Flash Evaporation System. That permit is not held by LANL but by an independent firm called HydroChem Industrial Services; permit number: 2310-REV-1. Buildings 50-1, 50-37, and 50-69 are all monitored for radioactive emissions and resulting data are reported to EPA Region VI.

ER Project Activities

Information presented in this section was derived from previously published documents. Any discussion of BVs, FVs, and SALs is taken from the referenced documents and reflects the values in use at the time the documents were written. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

The ER Project conducted an RFI at SWMU 50-006(c) in the summer of 1993 to confirm results from previous surface soil samples and to determine the nature and extent of any radionuclides and RCRA-listed chemicals for which data were lacking when the OU 1147 work plan was written. The RFI included AOCs 50-007 and 50-008, surface soil contamination from airborne releases from the incinerator complex (Building 50-37) and the volume reduction facility (Building 50-69), respectively. The one SWMU and two AOCs were investigated as an aggregate because their boundaries were indistinguishable. Samples were collected from surface soils from five unpaved areas around Buildings 50-1, 50-37, and 50-69. Sample locations were biased toward natural drainage channels, and soil samples were collected from a total of 51 locations. The samples were analyzed for inorganic and organic chemicals, PCBs, and radionuclides. Analytical results showed elevated concentrations of beryllium, cadmium, chromium, nickel, and silver near a pipe rack. Because the pipe rack was still in use at the time of the RFI, the RFI report recommended that the area be recharacterized when the pipe rack was removed. In addition, cobalt-60, radium-226, several PAHs, and PCBs (Aroclor 1254) were detected above their respective BVs and/or SALs. The RFI report indicated that these contaminants were not considered COPCs when compared with risk-based SALs and/or PRGs. An ecological screening assessment was not completed for the SWMU. The RFI report recommended NFA for SWMU 50-006(c).

ER Project Sampling Summary

The following table shows the number of analytes that exceeded BVs, FVs, and SALs that were in use in calendar year 2002. These data reflect site conditions before any remedial activities that may have occurred, as discussed in the ER Project activities section above. BVs are naturally occurring concentrations of inorganic chemicals and radionuclides in soil, sediment, or tuff before any influence from LANL operations. FVs are concentrations of radionuclides in soil, sediment, or tuff that resulted from global atmospheric deposition unrelated to LANL releases. SALs are concentrations of chemicals or radionuclides based on a residential exposure, below which there is no potential unacceptable risk to human health.

Analytical Suite Sampled	No. of Chemicals Detected	No. of Chemicals >CY2002 BV/FV (If Applicable)	No. of Chemicals >CY2002 SAL (Residential)
Inorganic chemicals	12	8	4
PCBs	2	N/A	2
Radionuclides	7	4	1
SVOCs	14	N/A	5

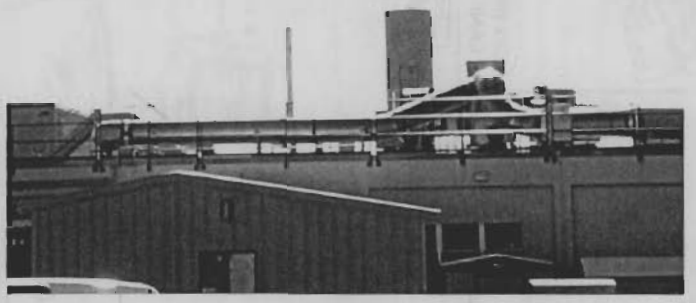
The following table provides the maximum concentrations of analytes that exceeded CY2002 SALs.

Analytical Suite	Analyte	Maximum Concentration	CY2002 SAL (Residential)
Inorganic chemicals	Arsenic	12.3 mg/kg	0.39 mg/kg
	Cadmium	170 mg/kg	70 mg/kg
	Chromium (total)	810 mg/kg	210 mg/kg
	Silver	410 mg/kg	380 mg/kg
PCBs	Aroclor-1254	1 mg/kg	0.22 mg/kg
	Aroclor-1260	0.52 mg/kg	0.22 mg/kg
Radionuclides	Cobalt-60	1.5192 pCi/g	1.2 pCi/g
SVOCs	Benzo(a)anthracene	1.8 mg/kg	0.62 mg/kg
	Benzo(a)pyrene	2.4 mg/kg	0.062 mg/kg
	Benzo(b)fluoranthene	2.2 mg/kg	0.62 mg/kg
	Dibenz(a,h)anthracene	0.69 mg/kg	0.062 mg/kg
	Indeno(1,2,3-cd)pyrene	1.6 mg/kg	0.62 mg/kg

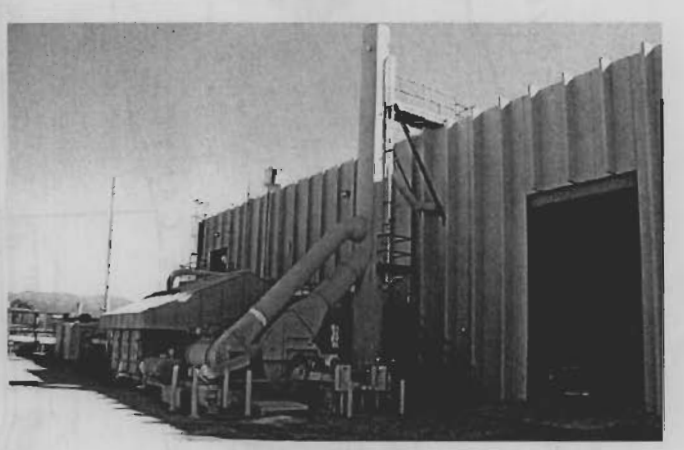
References

RFI Report for TA-50: PRSs 50-006(a), 50-006(c), 50-007, 50-008 — LA-UR Number: 95-2738

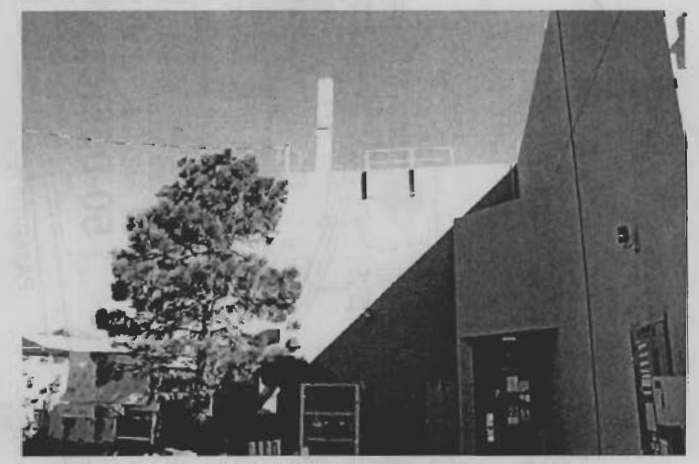
RFI Work Plan for Operable Unit 1147 — LA-UR Number: 92-0969



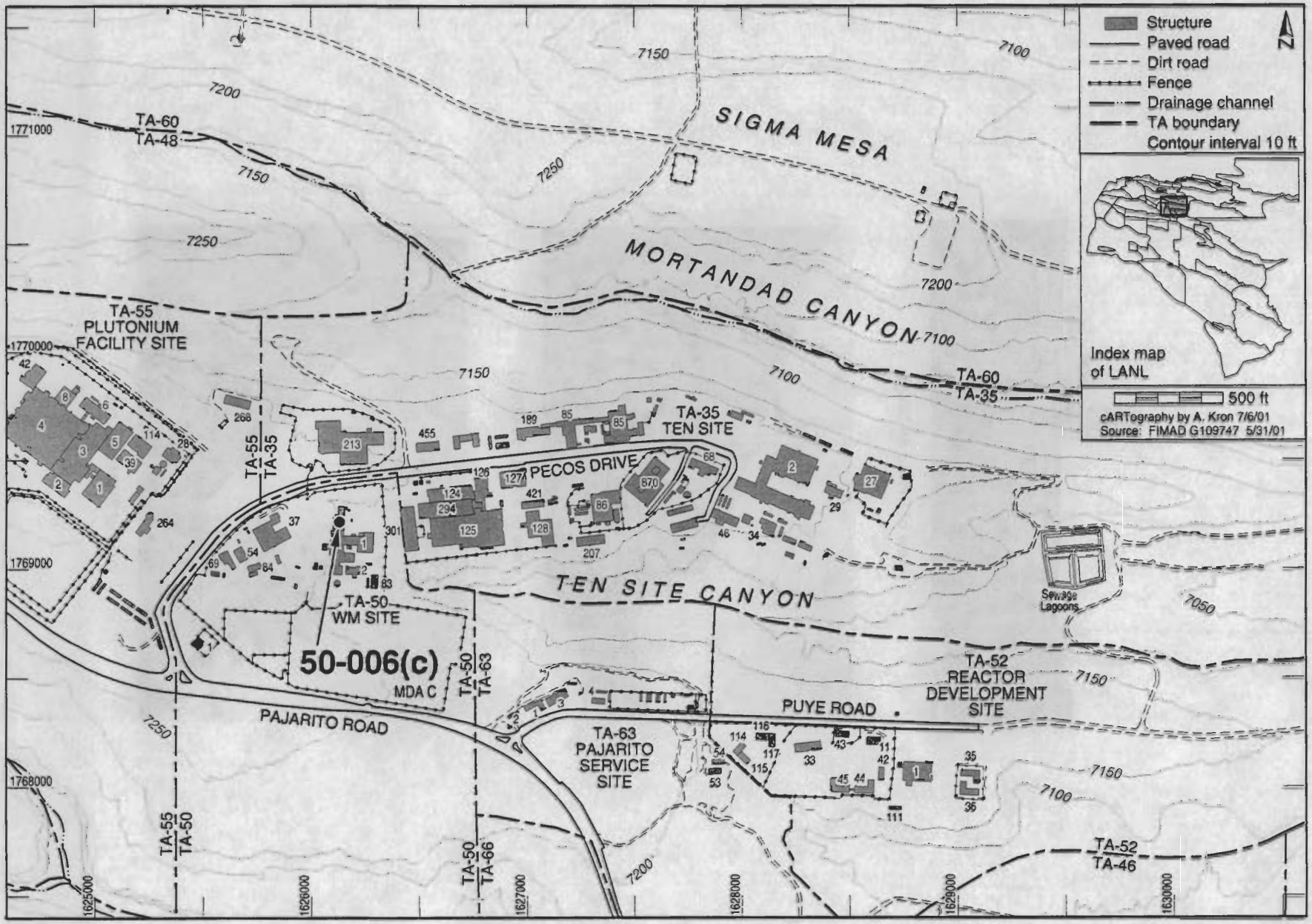
View of SWMU 50-006(c)



View of SWMU 50-006(c)



View of SWMU 50-006(c)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SWMU 50-006(d) — Effluent discharge

Administrative Authority	NMED	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1963-Present
Has ER Sampled the Site?	Yes	**ER Remedial Action Conducted?**	No
Structure Number	N/A	**Other Remedial Action Conducted?**	No

Unit Description

SWMU 50-006(d) consists of a drainline (structure 64) and NPDES-permitted Outfall 051 in Mortandad Canyon for treated wastewater from the radioactive liquid waste treatment facility (Building 50-1). Structure 64 is a 6-in.-diameter iron discharge pipe that was rerouted in 1983 to accommodate construction of the target fabrication facility (Building 35-213). In 1985, EPA Region VI issued an administrative order to DOE requiring modification of the outfall to mitigate ongoing stream bank erosion caused by the discharge pipe ending 25 ft short of the stream channel. DOE extended the pipe into the stream channel, and the order was subsequently closed by EPA in 1986.

ER Project Activities

Information presented in this section was derived from previously published documents. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

At the time the OU 1147 RFI work plan was prepared in 1992, 13 NPDES permit violations had been issued for Outfall 051 for exceedances of permit levels for iron and copper. The work plan stated that the nature and extent of contaminants in Mortandad Canyon would be addressed as part of the Canyons Focus Area investigations. No additional RFI activities have been conducted at SWMU 50-006(d).

ER Project Sampling Summary

The following table shows the number of analytes that exceeded BVs, FVs, and SALs that were in use in calendar year 2002. These data reflect site conditions before any remedial activities that may have occurred, as discussed in the ER Project activities section above. BVs are naturally occurring concentrations of inorganic chemicals and radionuclides in soil, sediment, or tuff before any influence from LANL operations. FVs are concentrations of radionuclides in soil, sediment, or tuff that resulted from global atmospheric deposition unrelated to LANL releases. SALs are concentrations of chemicals or radionuclides based on a residential exposure, below which there is no potential unacceptable risk to human health.

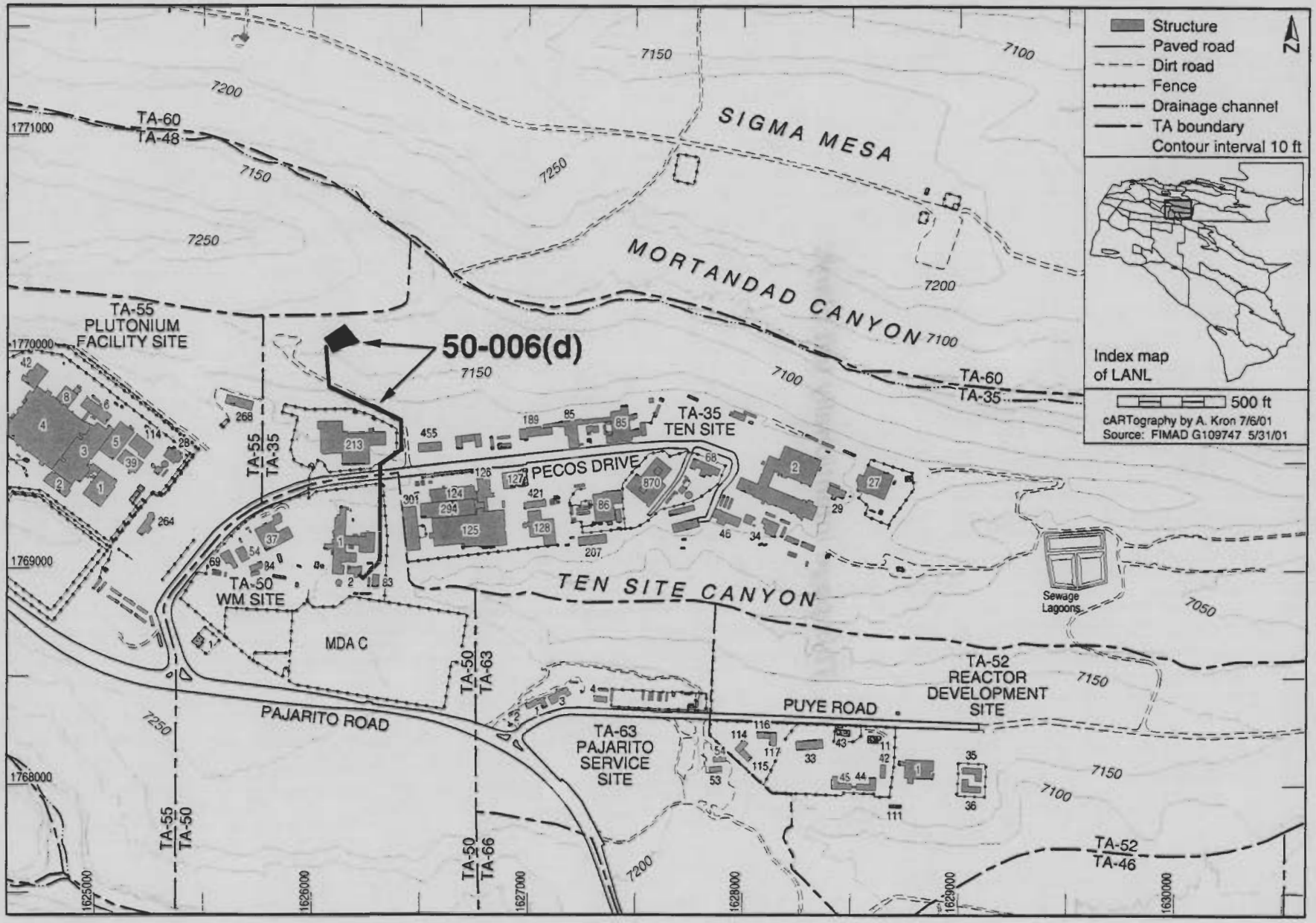
Analytical Suite Sampled	No. of Chemicals Detected	No. of Chemicals >CY2002 BV/FV (If Applicable)	No. of Chemicals >CY2002 SAL (Residential)
Inorganic chemicals	12	8	1
PCBs	1	N/A	0
Radionuclides	12	12	5
SVOCs	3	N/A	0
VOCs	5	N/A	0

The following table provides the maximum concentrations of analytes that exceeded CY2002 SALs.

Analytical Suite	Analyte	Maximum Concentration	CY2002 SAL (Residential)
Inorganic chemicals	Arsenic	5.18 mg/kg	0.39 mg/kg
Radionuclides	Americium-241	71.003 pCi/g	39 pCi/g
	Cesium-137	203.02 pCi/g	5.3 pCi/g
	Cobalt-60	2.4397 pCi/g	1.2 pCi/g
	Plutonium-239	47.816 pCi/g	44 pCi/g
	Strontium-90	18.3 pCi/g	5.7 pCi/g

View of SWMU 50-006(d)

View of SWMU 50-006(d)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Contour interval 10 ft
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AOC 50-007 — Incinerator

Administrative Authority	DOE	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1975-1987
Has ER Sampled the Site?	No	**ER Remedial Action Conducted?**	No
Structure Number	50-37	**Other Remedial Action Conducted?**	No

Unit Description

AOC 50-007 was an incinerator complex housed in Building 50-37. The complex was constructed in 1975 and consisted of the incinerator, various waste-feed components, and two waste-feed tanks. The incinerator was conceived as a research and development project to demonstrate the application of commercially available incineration technology for the safe treatment of TRU-containing wastes. The incinerator was located in Room 112, and the former solid and liquid waste-feed system was in Room 115. The liquid feed system preparation room was bermed and had no floor drains. The maximum waste inventory allowed in Room 115 was 600 gal. in two waste-feed tanks. The incinerator complex was equipped with an off-gas treatment unit, and the exhaust air system from the incinerator included two HEPA filters. Liquid effluent generated by the off-gas aqueous scrub system was filtered to remove solids before transfer to a double instrument-monitored pipeline to the radioactive liquid waste treatment facility (Building 50-1). Ash was stabilized in concrete. From 1978 to 1987, 23 test burns were successfully conducted for RCRA and TSCA wastes. EPA issued a permit for the incineration of PCBs in 1984, and NMED included the incinerator in LANL's 1989 Hazardous Waste Facility Permit. Actual waste streams incinerated at Building 50-37 after the permits were issued included radioactively contaminated PCBs and scintillation cocktails. Operation of the incinerator was discontinued in 1987 to allow for system upgrades. A previous investigation showed slightly elevated plutonium levels in nearby soils. The incinerator complex was removed and underwent RCRA closure in 1998. According to Part A of LANL's Hazardous Waste Facility Permit, Building 50-37 currently houses one container storage area consisting of rooms 112, 115, 117 and 118. This unit will not be permitted, but will be closed. It operated under RCRA interim status and staged waste undergoing characterization and verification.

ER Project Activities

Information presented in this section was derived from previously published documents. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

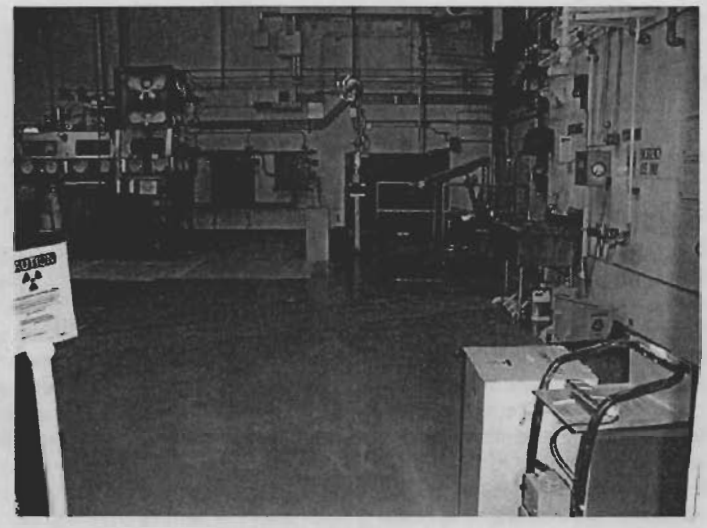
The ER Project conducted an RFI at AOC 50-007 in the summer of 1993 to confirm results from previous surface soil samples to determine the nature and extent of any radionuclides and RCRA-listed chemicals that were lacking data when the OU 1147 work plan was written. The RFI included SWMU 50-006(c) and AOC 50-008, surface soil contamination from airborne releases from Building 50-1 and the volume reduction facility (Building 50-69), respectively. The two AOCs and one SWMU were investigated as an aggregate because their boundaries were indistinguishable. Data collected during these activities are associated with SWMU 50-006(c). An ecological screening assessment was not completed for the AOC. The RFI report recommended NFA for AOC 50-007.

ER Project Sampling Summary

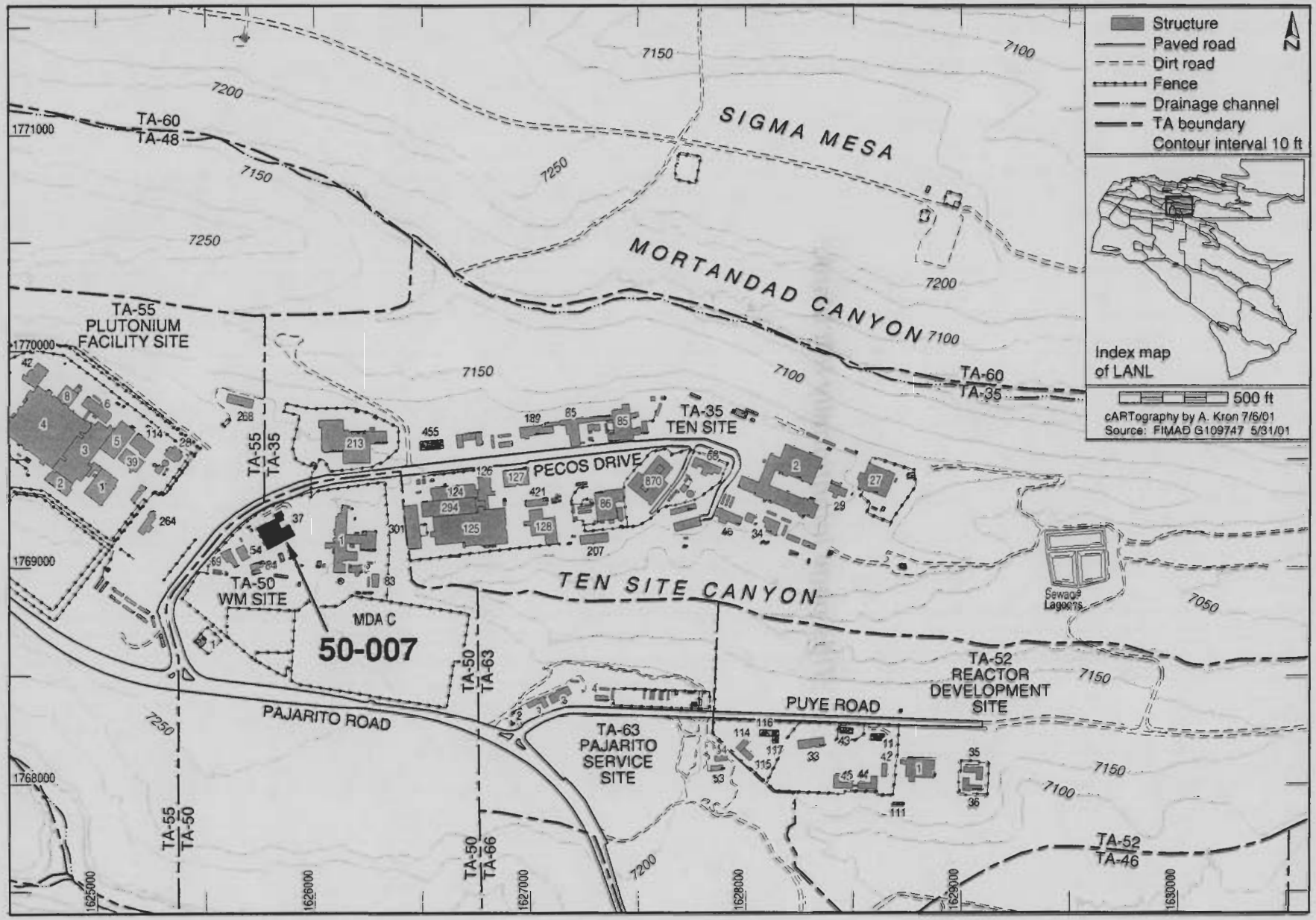
No analytical samples were collected at this site.

References

RFI Report for TA-50: PRSs 50-006(a), 50-006(c), 50-007, 50-008	LA-UR Number: 95-2738
RFI Work Plan for Operable Unit 1147	LA-UR Number: 92-0969



View of AOC 50-007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AOC 50-008 — Reduction site

Administrative Authority	DOE	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1982-1991
Has ER Sampled the Site?	No	**ER Remedial Action Conducted?**	No
Structure Number	50-69	**Other Remedial Action Conducted?**	No

Unit Description

AOC 50-008 is the volume reduction facility (now called the waste characterization, reduction, and repackaging facility) located in Building 50-69. The facility was constructed in 1979 to size-reduce large TRU-contaminated metallic items (e.g., glove boxes, metal ducts, and plenums) and repackage them into standard-sized containers for ultimate disposal at WIPP. The facility was first used to size-reduce TRU waste in 1982. Previous swipe samples indicated that Building 50-69 may be moderately contaminated with radionuclides. No outfalls are associated with Building 50-69; all liquid wastes are processed at the radioactive liquid waste treatment facility (Building 50-1). Operations at Building 50-69 were stopped in 1991, while upgrades were made to allow for continued long-term operation. A previous investigation showed slightly elevated plutonium levels in nearby soils.

ER Project Activities

Information presented in this section was derived from previously published documents. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

The ER Project conducted an RFI at AOC 50-008 in the summer of 1993 to confirm results from previous surface soil samples and to determine the nature and extent of any radionuclides and RCRA-listed chemicals that were lacking data when the OU 1147 work plan was written. The RFI included SWMUs 50-006(c) and AOC 50-007, surface soil contamination from airborne releases from Building 50-1 and the incinerator complex (Building 50-37), respectively. The two AOCs and one SWMU were investigated as an aggregate because their boundaries were indistinguishable. Data collected during these activities are associated with SWMU 50-006(c). An ecological screening assessment was not completed for the AOC. The RFI report recommended NFA for AOC 50-008.

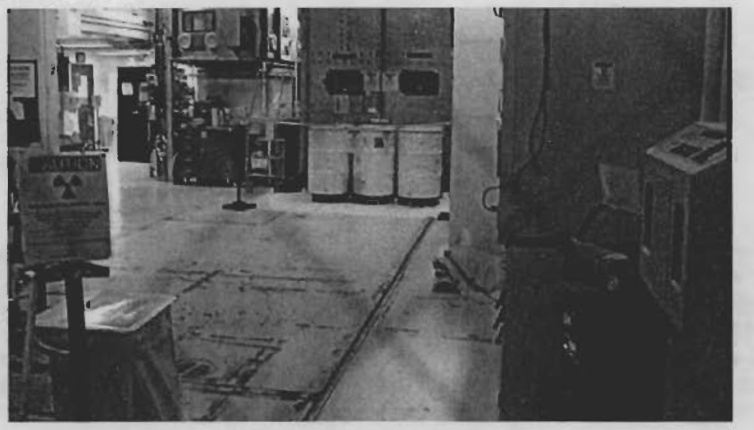
According to Part A of LANL's Hazardous Waste Facility Permit, the waste characterization, reduction, and repackaging facility (Building 50-69) currently houses one interim status mixed waste operation.

ER Project Sampling Summary

No analytical samples were collected at this site.

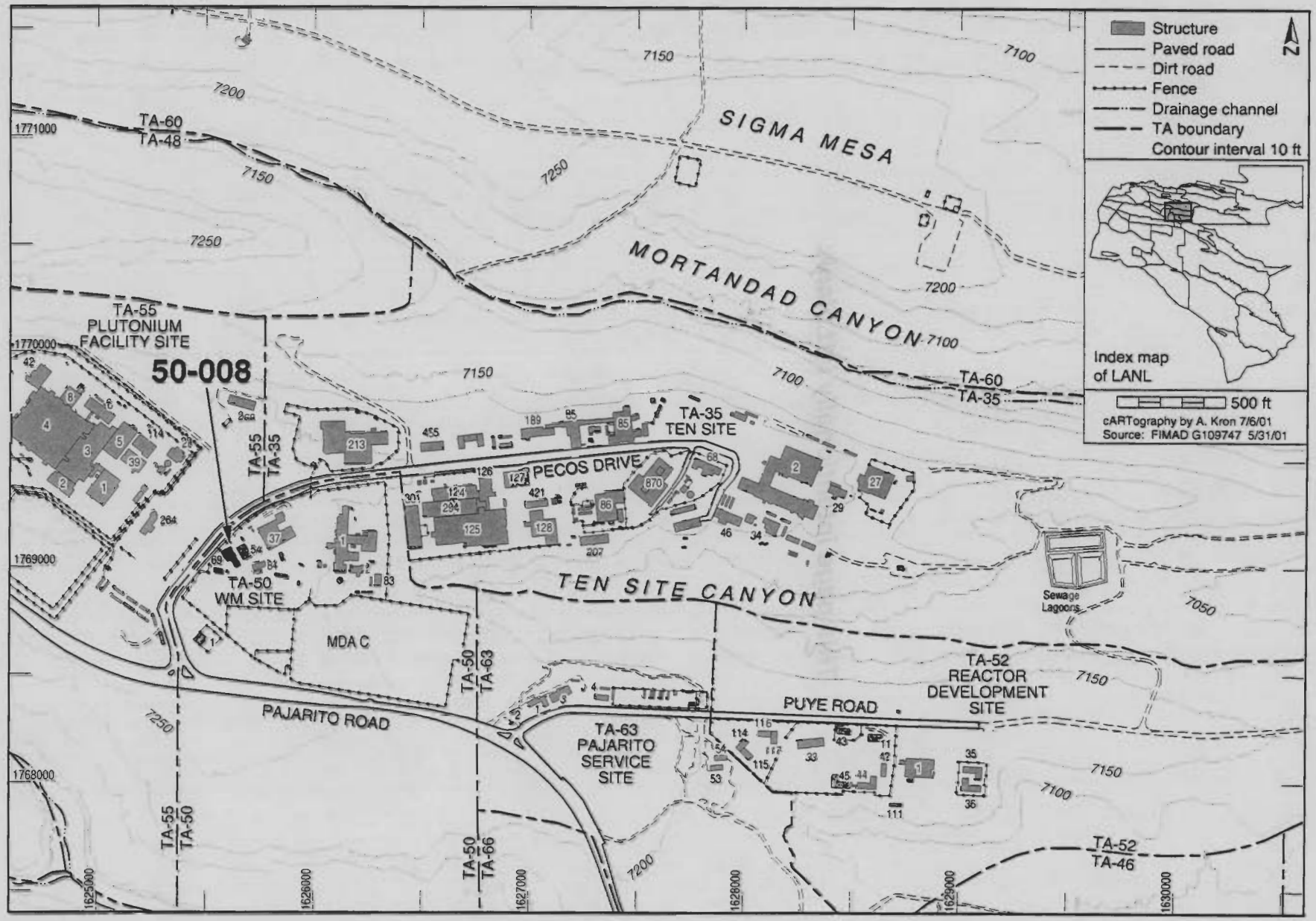
References

RFI Report for TA-50: PRSs 50-006(a), 50-006(c), 50-007, 50-008	LA-UR Number: 95-2738
RFI Work Plan for Operable Unit 1147	LA-UR Number: 92-0969



View of AOC 50-008

View of AOC 50-008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SWMU 50-009 — Material disposal area (MDA C)

Administrative Authority	NMED	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1948-1974
Has ER Sampled the Site?	Yes	**ER Remedial Action Conducted?**	No
Structure Number	N/A	**Other Remedial Action Conducted?**	Yes

Unit Description

SWMU 50-009 is inactive MDA C, established in May 1948 to replace MDA B (SWMU 21-015). MDA C covers 11.8 acres and consists of 7 pits, 107 shafts, and 1 unnumbered shaft that was used for a single strontium-90 disposal. Pits and shafts were used for burial of hazardous chemicals, uncontaminated classified materials, and radioactive materials. TRU waste also was buried in unknown quantities in the pits. The landfill was used until April 1974 but received waste only intermittently from 1968 to 1974. COPCs include inorganic chemicals, VOCs, SVOCs, and radionuclides. According to the OU 1147 work plan, most of the radioactivity at MDA C is associated with tritium.

Pits 1 through 5 are located in the eastern half of MDA C. Pits 1 through 4 are approximately 610 ft x 40 ft x 25 ft deep; pit 5 is 110 ft x 705 ft x 18 ft deep. Pit 1 operated from 1948 to 1951, pit 2 operated from 1950 to 1951, pit 3 operated from 1951 to 1953, pit 4 operated from 1951 to 1955, and pit 5 operated from 1953 to 1959. Pits 6 and 7 are located in the northwestern part of MDA C. Pit 6 is 100 ft x 505 ft x 25 ft deep and operated from 1956 to 1960. Pit 7, the chemical pit, is 25 ft x 180 ft x 12 ft deep and operated from 1960 to 1964. Pit 7's designation and use as a chemical disposal pit was spurred by several chemical fires, first at MDA B and later at MDA C. The pit was fenced off from the rest of MDA C and was used to bury chemicals, pyrophoric metals, natural uranium powders and hydrides, sealed vessels containing sodium-potassium alloy, compressed gases, and unspecified equipment. According to the OU 1147 work plan, some radioactively contaminated materials were disposed of in pit 7.

The shafts are grouped chronologically and were used to dispose of radioactively contaminated waste from TA-35 and elsewhere. Group 1 consisted of 12 shafts that were used from February through October 1959. Group 1 shafts are located between pits 4 and 5 and measure 2 ft in diameter x 10 ft deep. The shafts originally were numbered 1 through 12 and were renumbered 56 through 67 in 1962. Group 2 shafts, numbered 1 through 55, were used from November 1959 to May 1967. The shafts were located between pits 1 and 3 and are 2 ft in diameter x 15 ft deep. Group 3 shafts, numbered 68 through 107, are located along the western edge of pits 1 through 5 and were used from October 1962 to February 1966. Shafts 68 through 97 are unlined 2-ft-diameter shafts that vary in depth from 20 ft to 25 ft. Shafts 98 through 107 are lined with 12-in.-thick concrete and have an inner diameter of 1 ft. The strontium-90 shaft (no assigned number) was used in the 1950s or 1960s to bury a single strontium-90 source. This shaft is located a few feet from the south fence near the entrance gate at MDA C.

Water infiltration tests were performed at LANL, including MDA C, by the US Geological Survey from 1956 to 1961. In 1976, 1977, and 1980 to 1983, soil and vegetation sampling confirmed the presence of radionuclides in localized areas on the surface of MDA C. In 1984, as part of an interim action to cover the contaminated soil surface, a new soil cover was placed over most of MDA C. In 1985 and 1986, a field-instrument and soil-sampling effort took place at MDA C. Readings taken at 18 locations in 1985 were all near BVs. Tritium concentrations were at or below the average LANL BVs in about half the samples and above that level in the remaining samples. Samples from the north and east perimeter and the western third of the site exceeded BVs for tritium, whereas samples from the east-central portions of MDA C were consistently low in tritium. In many cases, tritium levels increased with sampling depth. In 1986, more samples were collected to confirm 1985 sample results.

ER Project Activities

Information presented in this section was derived from previously published documents. Any discussion of BVs, FVs, and SALs is taken from the referenced documents and reflects the values in use at the time the documents were written. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

RFI activities were conducted at MDA C from 1993 through 1996. Surface soil sampling was conducted during the summer of 1993; a subsurface investigation was performed during parts of 1994, 1995, and early 1996.

Only one contaminant was found in surface soil samples at concentrations exceeding SALs. PCBs exceeded SALs in 4 out of 183 surface soil samples analyzed for pesticides/PCBs. Several inorganic chemicals and radionuclides were found to exceed BVs in surface soil samples. Out of 69 surface soil samples analyzed for inorganic chemicals, lead concentrations exceeded BVs in 6 and silver concentrations exceeded background in 2. In the 69 surface soil samples analyzed for radionuclides, several had exceedances of BVs for americium-241, plutonium-238 and -239, and uranium-235 and -238.

In subsurface samples, several inorganic chemicals were detected at concentrations greater than BVs. Each of the following inorganic analytes exceeded BVs in at least 2 of the 81 subsurface soil samples analyzed for inorganic chemicals: aluminum, antimony, barium, cadmium, calcium, chromium, cobalt, copper, cyanide, lead, magnesium, selenium, silver, and vanadium. The

following seven organic chemicals, including acetone, bis(2-ethylhexylphthalate, 1,1-dichloroethene, hexachlorobutadiene, 2-methylphenol, methylene chloride, and toluene were detected in isolated core samples out of the 70 samples analyzed for organic chemicals. Americium-241, cesium-137, cobalt-60, plutonium-238 and -239, strontium-90, and tritium were all measured above the minimum detectable activity in at least 1 of the 81 subsurface samples analyzed for radionuclides. Only isotopic uranium has a subsurface BV, and uranium-234, -235, and -238 all exceeded their respective BVs in at least one subsurface sample.

A data gap was identified by the ER Project after conducting 1995 RFI fieldwork at MDA C. The ER Project learned from work at TA-54 that VOCs do not adsorb to the tuff but are present in the pore gas. To complete the RFI, data were needed to determine whether there is a VOC vapor phase plume from the chemical pit (pit 7) at MDA C. The first of two vapor-monitoring boreholes was installed in FY2000 to collect pore-gas samples. The ER Project field-screens 10 sampling ports quarterly from this monitoring borehole; the deepest is 315 ft below ground surface. Based on field-screening data, two samples are collected quarterly for analysis by a fixed analytical laboratory. The second borehole was installed in June 2001 to provide a second reference point to delineate the plume. The pore-gas monitoring project is being conducted in parallel with similar characterization activities at MDAs G and L at TA-54, and results are reported in ER Project quarterly reports. The data will be used to complete the MDA C RFI, and the RFI results will feed into the corrective measures study for MDA C to determine if remedial action is required.

A geophysical investigation was conducted in 2001 to confirm the locations of the disposal pits and shafts at MDA C, as well as estimate the thickness of cover materials at the site. To achieve this objective, an integrated geophysical survey was performed using terrain conductivity, high-sensitivity metal detector, and digital ground-penetrating radar techniques. The results of this investigation indicate that the actual locations of disposal pits 1 through 4 are offset approximately 40 ft to the east relative to the historically reported locations of the pits. The thickness of cover materials at MDA C ranges from 0.0 ft to 8.76 ft.

ER Project Sampling Summary

The following table shows the number of analytes that exceeded BVs, FVs, and SALs that were in use in calendar year 2002. These data reflect site conditions before any remedial activities that may have occurred, as discussed in the ER Project activities section above. BVs are naturally occurring concentrations of inorganic chemicals and radionuclides in soil, sediment, or tuff before any influence from LANL operations. FVs are concentrations of radionuclides in soil, sediment, or tuff that resulted from global atmospheric deposition unrelated to LANL releases. SALs are concentrations of chemicals or radionuclides based on a residential exposure, below which there is no potential unacceptable risk to human health.

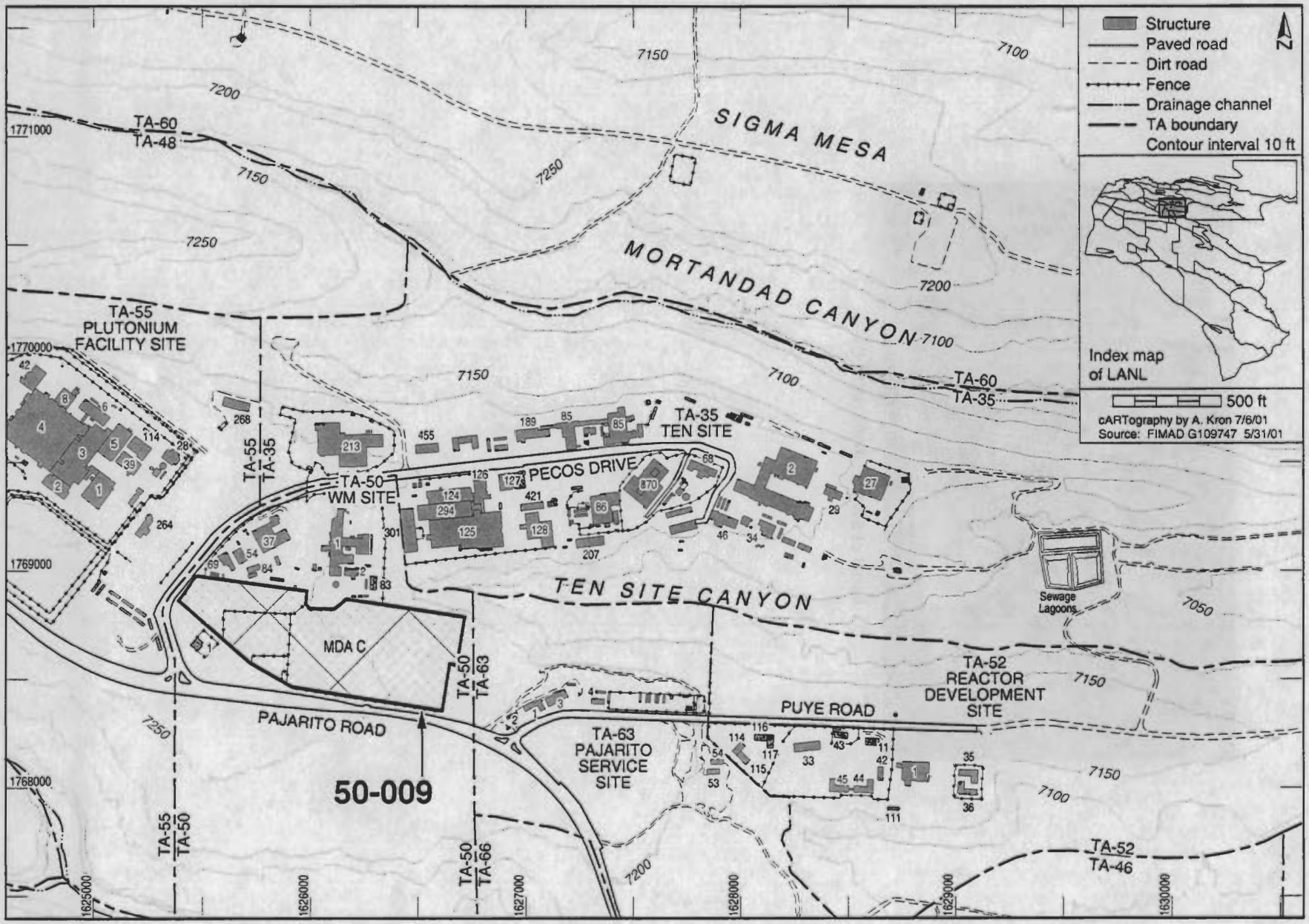
Analytical Suite Sampled	No. of Chemicals Detected	No. of Chemicals >CY2002 BV/FV (If Applicable)	No. of Chemicals >CY2002 SAL (Residential)
Inorganic chemicals	23	19	2
PCBs	2	N/A	1
Pesticide/PCBs	0	N/A	0
Radionuclides	16	13	1
SVOCs	4	N/A	0
VOCs	4	N/A	0

The following table provides the maximum concentrations of analytes that exceeded CY2002 SALs.

Analytical Suite	Analyte	Maximum Concentration	CY2002 SAL (Residential)
Inorganic chemicals	Arsenic	8 mg/kg	0.39 mg/kg
	Thallium	12 mg/kg	6.1 mg/kg
PCBs	Aroclor-1254	1 mg/kg	0.22 mg/kg
Radionuclides	Tritium	1,660,000 pCi/g	880 pCi/g

References

Aerial of SWMU 50-009 (MDA C)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AOC 50-010 — Decontamination facility

Administrative Authority	DOE	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1963-1999
Has ER Sampled the Site?	No	**ER Remedial Action Conducted?**	No
Structure Number	N/A	**Other Remedial Action Conducted?**	No

Unit Description

AOC 50-010 is an inactive vehicle decontamination area located in Room 34B of the radioactive liquid waste treatment facility (Building 50-1). The area was used to clean radioactive contamination from vehicles and large objects used to transport radioactive liquid waste to TA-50. Liquid wastes generated during decontamination activities were transferred to tanks at Building 50-2 through a floor drain and waste line. The decontamination bay was operated from 1963 through October 1999. It was enclosed in 1983. According to the OU 1147 work plan, there is no documented evidence of contaminant releases from this facility.

ER Project Activities

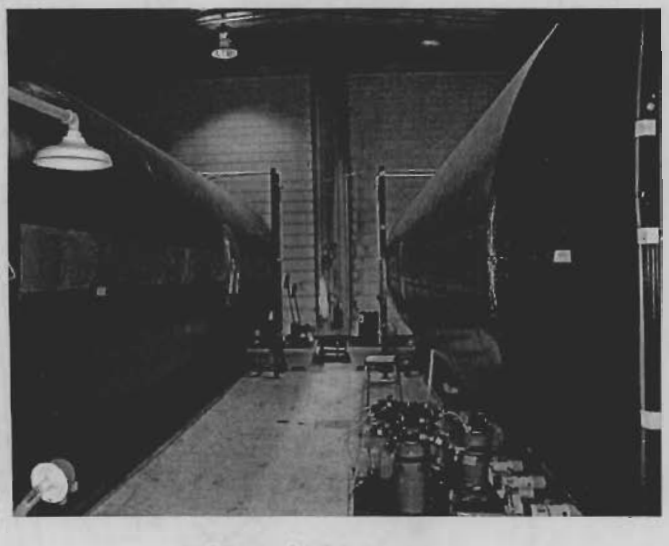
RFI activities conducted at this site are described in detail in the documents listed in the reference section below. No additional RFI activities have been conducted at this site.

ER Project Sampling Summary

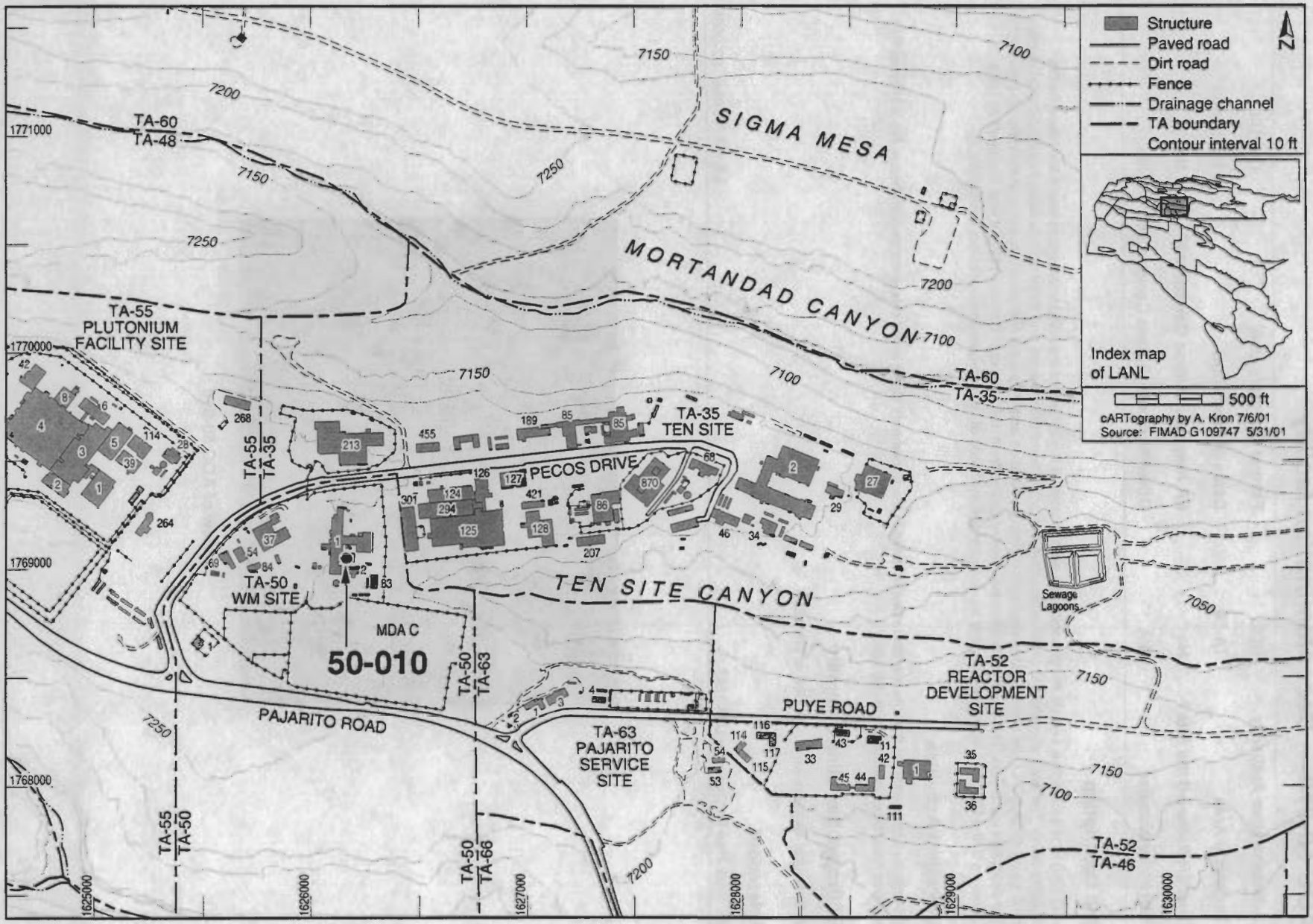
No analytical samples were collected at this site.

References

RFI Work Plan for Operable Unit 1147 — LA-UR Number: 92-0969



View of AOC 50-010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SWMU 50-011(a) — Septic system

Administrative Authority	NMED	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1964-1983
Has ER Sampled the Site?	Yes	**ER Remedial Action Conducted?**	No
Structure Number	50-9, 50-10, 50-11	**Other Remedial Action Conducted?**	Yes

Unit Description

SWMU 50-011(a) is the location of decommissioned septic system that was installed in 1964 at the south end of the radioactive liquid waste treatment facility (Building 50-1). The system consisted of an influent line from Building 50-1 that discharged to a manhole (structure 50-9) and then to a septic tank (structure 50-10). The effluent line from the tank tied to a distribution box (structure 50-11), which discharged to four parallel perforated pipes traversing a leach field. A 4-ft-diameter x 50-ft-deep shaft was drilled at the east end of the leach field in 1978 to address problems with standing water on the ground surface. A 4-in. perforated pipe was installed in the shaft, and the annulus was backfilled to within 4 ft of the ground surface (seepage pit). The outlets of the four parallel pipes were then tied into the 4-in. perforated pipe. The septic system, except for the perforated pipe (seepage pit), was removed in 1983. Currently, the former location of the leach field and the section of the effluent line between the former septic tank and the leach field are the only portions of the old system not covered by a storage building (Building 50-83). These areas are beneath an asphalt pad located between the pumping station (Building 50-2) and Building 50-83. The 50-ft-deep shaft is currently located beneath the southeast corner of Building 50-83. Previous investigations of the areas surrounding this SWMU were conducted in 1986, during decommissioning of the radioactive liquid waste line; excavated soils were characterized for radioactive constituents and remediated to meet ALARA levels.

ER Project Activities

Information presented in this section was derived from previously published documents. Any discussion of BVs, FVs, and SALs is taken from the referenced documents and reflects the values in use at the time the documents were written. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

The ER Project conducted an RFI at SWMU 50-011(a) in 1994 to determine the presence of and define the nature and extent of any contamination from previous operational releases. The investigation involved the collection of seven soil samples from four 10-ft-deep vertical boreholes. The samples were analyzed for inorganic and organic chemicals, PCBs, and radionuclides. No elevated chemical concentrations were detected, and the RFI report recommended NFA for SWMU 50-011(a). In a May 1997 RSI, NMED approved the drilling of an additional borehole adjacent to the seepage pit to a depth of 60 ft.

In December 2001, geotechnical and waste characterization samples were collected from eight boreholes, including one adjacent to the seepage pit, to determine the feasibility of constructing a new pump house and influent storage tank vault at TA-50.

ER Project Sampling Summary

The following table shows the number of analytes that exceeded BVs, FVs, and SALs that were in use in calendar year 2002. These data reflect site conditions before any remedial activities that may have occurred, as discussed in the ER Project activities section above. BVs are naturally occurring concentrations of inorganic chemicals and radionuclides in soil, sediment, or tuff before any influence from LANL operations. FVs are concentrations of radionuclides in soil, sediment, or tuff that resulted from global atmospheric deposition unrelated to LANL releases. SALs are concentrations of chemicals or radionuclides based on a residential exposure, below which there is no potential unacceptable risk to human health.

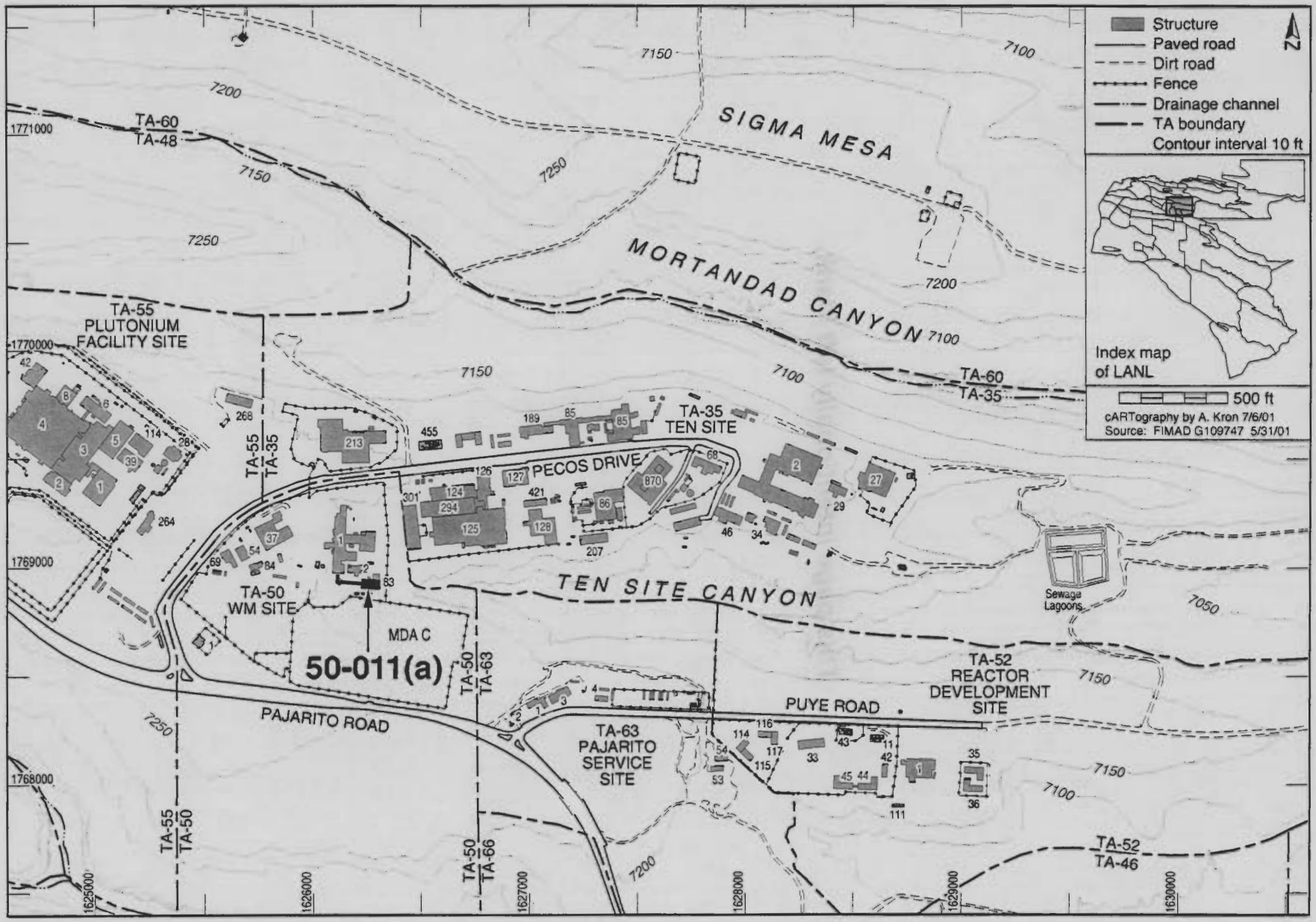
Analytical Suite Sampled	No. of Chemicals Detected	No. of Chemicals >CY2002 BV/FV (If Applicable)	No. of Chemicals >CY2002 SAL (Residential)
Inorganic chemicals	6	0	0
PCBs	0	N/A	0
Radionuclides	5	3	0
SVOCs	0	N/A	0
VOCs	2	N/A	0

Data collected at this site indicate that there have been no constituents detected above SALs at this SWMU.

References

RFI Report for Potential Release Sites at TA-50: 50-004(a), 50-004(c), 50-011(a) (Located in Former Operable Unit 1147)	LA-UR Number: 96-148
RFI Work Plan for Operable Unit 1147	LA-UR Number: 92-0969

No photo; subsurface unit


Structure
Paved road
Dirt road
Fence
Drainage channel
TA boundary
Contour interval 10 ft
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Index map of LANL
500 ft
cARTography by A. Kron 7/6/01
Source: FIMAD G109747 5/31/01
SIGMA MESA
MORTANDAD CANYON
TEN SITE CANYON
TA-60
TA-48
TA-55
PLUTONIUM
FACILITY SITE
TA-35
TEN SITE
PECOS DRIVE
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MDA C
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PAJARITO ROAD
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SERVICE
SITE
PUYE ROAD
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REACTOR
DEVELOPMENT
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Sewage Lagoons
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AOC 50-011(b) — Lift stations

Administrative Authority	DOE	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1983-Present
Has ER Sampled the Site?	No	**ER Remedial Action Conducted?**	No
Structure Number	50-90, 50-91	**Other Remedial Action Conducted?**	No

Unit Description

AOC 50-011(b) is composed of two active sanitary wastewater lift stations (structures 50-91 and 50-92) and approximately 400 ft of piping that transport sanitary wastewater from the radioactive liquid waste treatment facility (Building 50-1) to the main line that serves the SWSC Plant. The lift stations are located on the north and south sides of Building 50-1. This sanitary wastewater system, AOC 50-011(b), was installed as part of a utility upgrade in 1983. At that time, the septic tank and drainfield [SWMU 50-011(a)] that had served Building 50-1 since 1963 were removed. One lift station serves the north end of Building 50-1, and a second lift station serves the south end of the building. This sanitary wastewater system is still active and is approximately 16 years old. The 400 ft of piping that runs between the lift stations and out to Pecos Drive was also installed in 1983. Effluent lines exit near the southwest and the northwest corners of Building 50-1 and drain to the lift stations. The wastewater is pumped through 4-in. laterals at each lift station to a 6-in. main on the west side of the building. The 6-in. main runs across Pecos Drive to a sanitary sewer manhole; then it joins the 5-in. gravity main to the SWSC Plant at TA-46.

ER Project Activities

Information presented in this section was derived from previously published documents. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

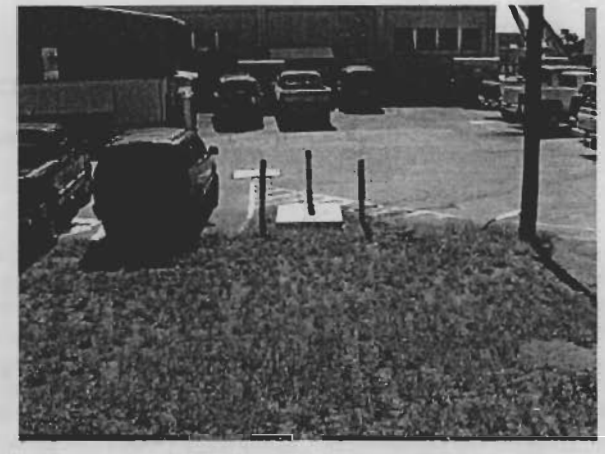
This AOC was recommended for NFA in a 1999 RFI report. The SWSC Plant, which is the ultimate repository for the sanitary waste handled by these lift stations, is operated in accordance with LANL's NPDES Permit, NM0028355, for Outfall 13S. To support the treatment and discharge standards specified by the NPDES Permit, the SWSC Plant requires detailed evaluation of all incoming waste streams, and all incoming wastes are required to meet the waste acceptance criteria specified for sanitary liquid waste (Chapter 19 of the LANL Waste Acceptance Criteria, Sanitary Liquid Waste, March 1999). Samples are collected from the SWSC Plant outfall on a regular basis to demonstrate the effectiveness of the program, as specified in the permit. The Water Quality and Hydrology Group at LANL (ESH-18) also periodically collects samples from this permitted outfall as a quality assurance and quality control measure. Collectively, these requirements comprise a program that addresses the active management and treatment of the sanitary wastewater generated at TA-50.

ER Project Sampling Summary

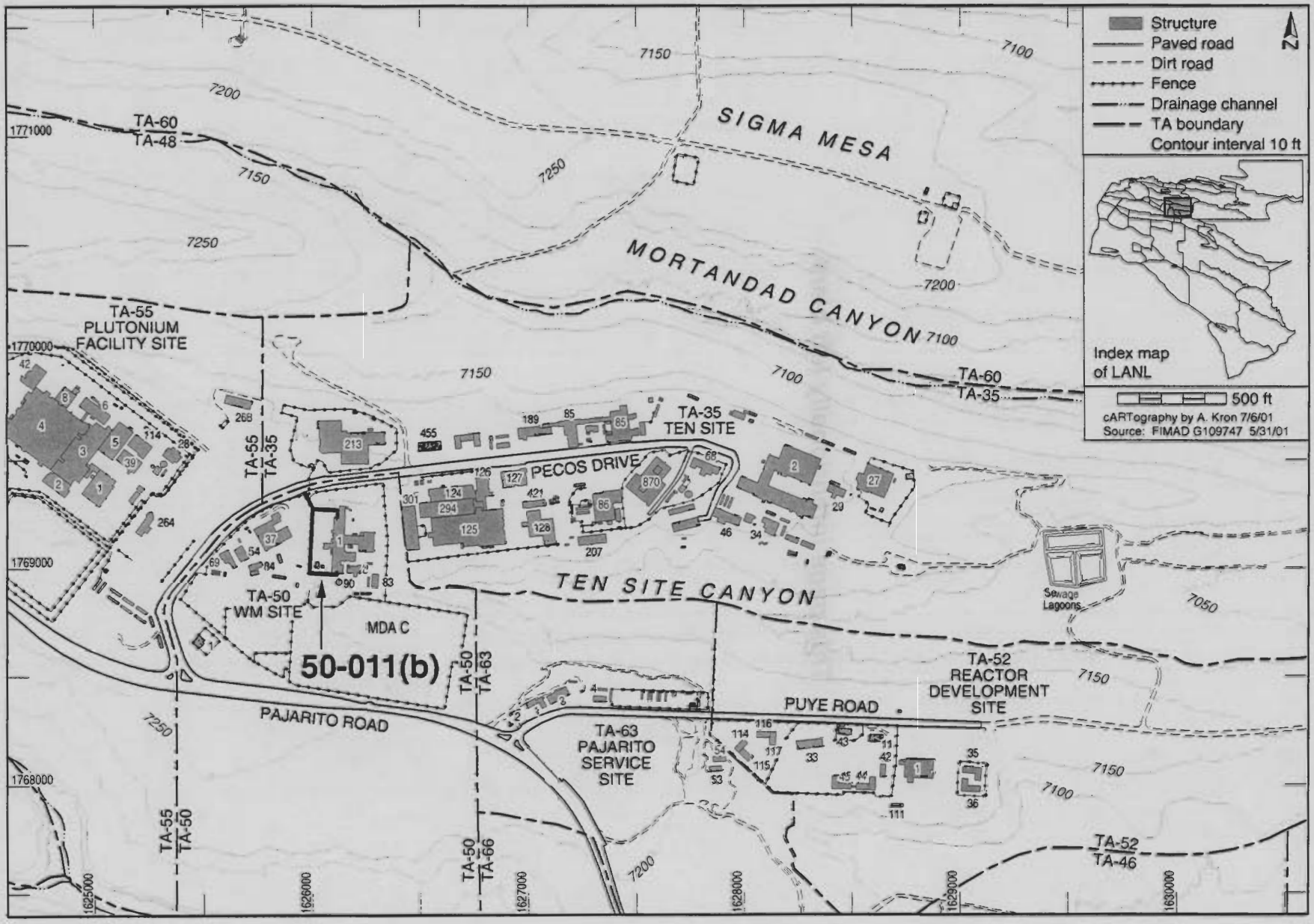
No analytical samples were collected at this site.

References

RFI Report for Potential Release Site 50-011(b) (Sanitary Sewage System)	LA-UR Number: 99-4968
RFI Work Plan for Operable Unit 1147	LA-UR Number: 92-0969



View of SWMU 50-011(b)


Structure
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TA boundary
Contour interval 10 ft
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Index map of LANL
500 ft
cARTography by A. Kron 7/6/01
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AOC C-50-001 — Transformer - PCB only site

Administrative Authority	DOE	**Former Operable Unit**	OU 1147
Technical Area	TA-50	**Dates of Operation**	1963-1994
Has ER Sampled the Site?	No	**ER Remedial Action Conducted?**	No
Structure Number	N/A	**Other Remedial Action Conducted?**	Yes

Unit Description

AOC C-50-001 is the former location of a PCB transformer that was installed when the radioactive liquid waste treatment facility (Building 50-1) was built in 1963. The site is a 20 ft x 10 ft concrete pad surrounded by asphalt and is located east of Building 50-1. According to the historical research conducted at this AOC, the concrete pad was expanded in recent years, and a containment system was installed along the inside edge of the pad. One documented release occurred from the transformer at AOC C-50-001. A minor seep from a valve was discovered in August 1989 during a routine daily inspection. The valve was cleaned, and metal epoxy was used to seal the valve. Oil staining was noted on the concrete pad after the PCB transformer was removed in 1994. A sample collected by ESH-19 confirmed the presence of PCBs. The staining remained within the perimeter boundary of the transformer pad. The pad subsequently was scraped clean and double washed/rinsed five times using an alkaline detergent, in accordance with EPA's PCB Spill Cleanup Policy (40 CFR 761). The cleaned area was encapsulated with polymeric paint/sealer before the replacement non-PCB transformer was positioned on the pad.

ER Project Activities

Information presented in this section was derived from previously published documents. RFI activities conducted at this site are described in detail in the documents listed in the reference section below.

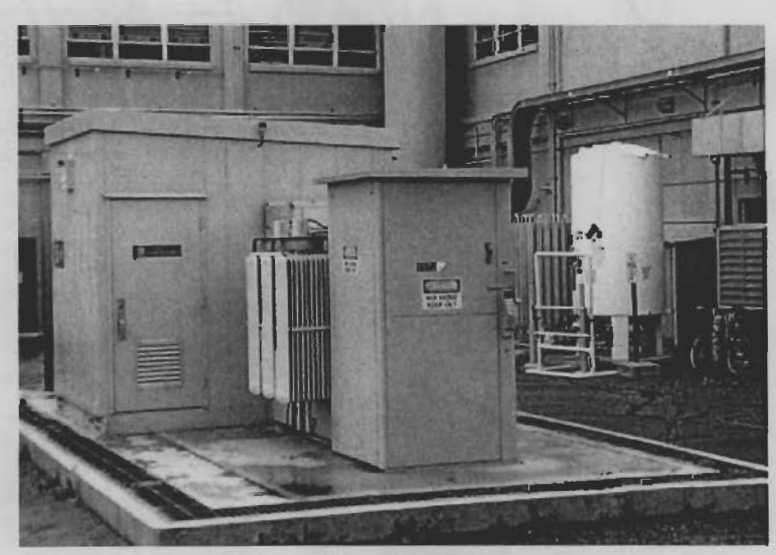
The June 2000 RFI report for AOC C-50-001 recommended NFA at this AOC because the site has been managed in accordance with 40 CFR 761 requirements and LANL's PCB management policy. Releases from AOC C-50-001 were cleaned up in accordance with regulatory requirements, and the PCB-containing transformer was replaced with a non-PCB transformer.

ER Project Sampling Summary

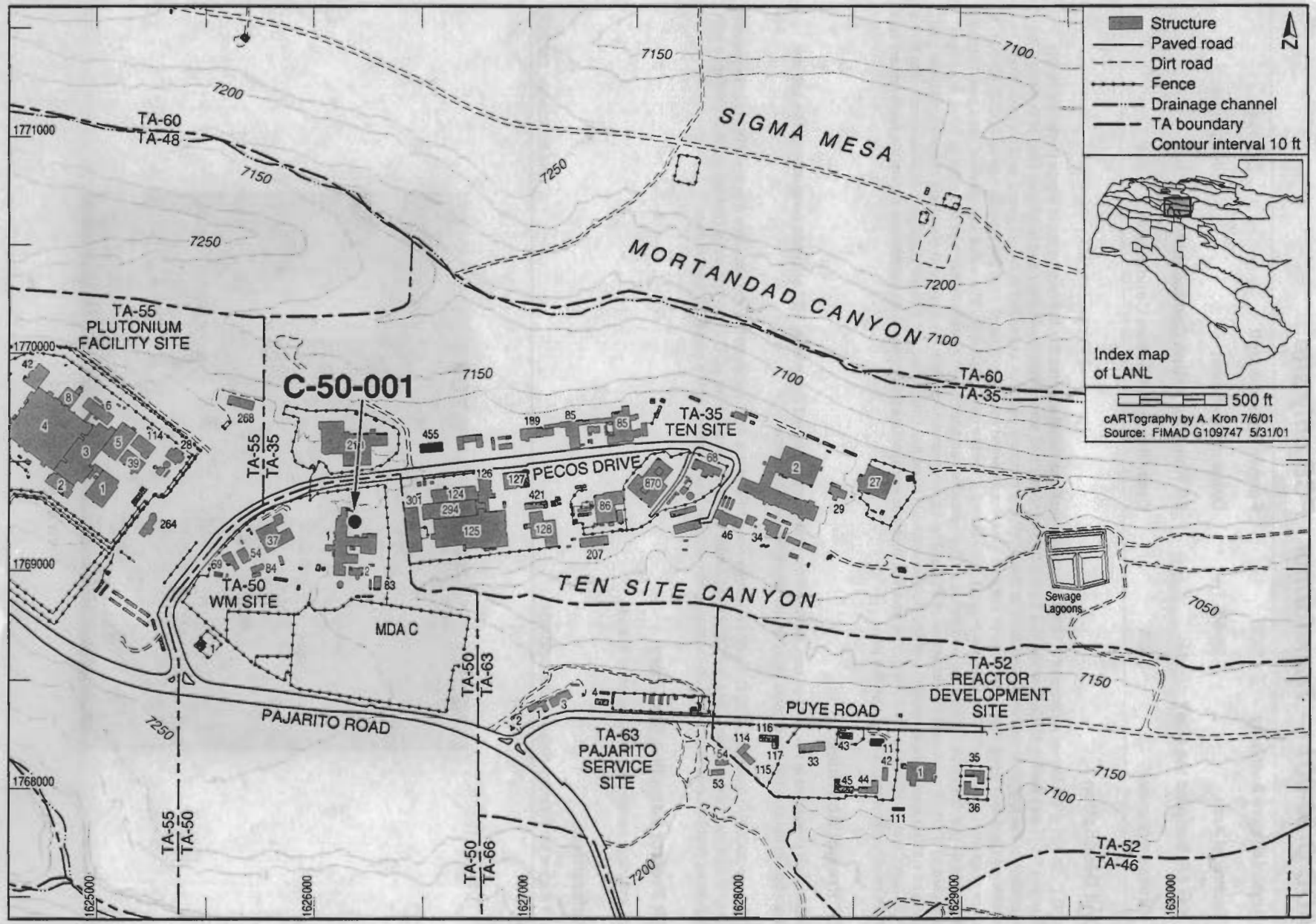
No analytical samples were collected at this site.

References

RFI Report for Potential Release Site C-50-001 LA-UR Number: 00-2515



View of AOC C-50-001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CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

7-30-02

James L. Holt
Associate Director, Operations
Los Alamos National Laboratory
Operator

Date Signed

for:

7/31/02

Ralph E. Erickson
Director, Office of Los Alamos Site Operation
U.S. Department of Energy
Albuquerque Operations
Owner/Operator

Date Signed

6.0 REFERENCES

IT, 1994, "Closure Certification Report TA-50 Batch Waste Treatment Unit," IT Corporation, Albuquerque, New Mexico.

Benchmark, 1998, "Los Alamos National Laboratory Controlled-Air Incinerator RCRA Closure Certification Report," Benchmark Environmental Corporation, Albuquerque, New Mexico.

EPA, 1994, "Module VIII: Special Conditions Pursuant to the 1984 Hazardous and Solid Waste Amendments to RCRA for Los Alamos National Laboratory, EPA I.D. NM0890010515." In Hazardous Waste Facility Permit. November 8, 1989. Permit No. NM 0890010515-1 issued to Los Alamos National Laboratory, Santa Fe, New Mexico, New Mexico Environmental Improvement Division.

LANL, 2002a, "Response to Notice of Deficiency; TA-50 Part B Permit Application, Revision 2.0, March 2002," LA-UR-02-2013, Los Alamos National Laboratory, Los Alamos, New Mexico, April 2002.

LANL, 2002b, "TA-50 Solid Waste Management Unit Report," Los Alamos National Laboratory, Los Alamos, New Mexico, April 2002.

LANL, 2001, "Response to Request for Supplemental Information: Technical Adequacy Review, Resource Conservation and Recovery Act Permit Application: TA-50 Part B, December 2000, Revision 2.0, Los Alamos National Laboratory, U.S. Environmental Protection Agency I.D. No. NM0890010515," LA-UR-01-6020, Los Alamos National Laboratory, Los Alamos, New Mexico, November 2001.

LANL, 1999, "Technical Area 50 Part B Permit Renewal Application," Revision 1.0, Los Alamos National Laboratory, Los Alamos, New Mexico, January 1999.

LANL, 1998a (or more recent version), "Los Alamos National Laboratory General Part B Permit Application," Revision 1.0, Los Alamos National Laboratory, Los Alamos, New Mexico.

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LANL, 1992, "RFI Work Plan for Operable Unit 1147," Los Alamos, New Mexico, Los Alamos National Laboratory.

NMED, 1998, Dinwiddie, Robert S. (Stu), New Mexico Environment Department, Letter to T. Taylor and J. Brown, February 1998.

ATTACHMENT A

FACILITY DESCRIPTION

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LIST OF ABBREVIATIONS/ACRONYMS

20.4.1 NMAC	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
cm	centimeters
cm/hr	centimeters per hour
CSU	container storage unit
DOE	U.S. Department of Energy
ft	feet/foot
in.	inch(es)
km	kilometer
LANL	Los Alamos National Laboratory
RCRA	Resource Conservation and Recovery Act
TA	Technical Area
WCRRF	Waste Characterization, Reduction, and Repackaging Facility (TA-50-69)

ATTACHMENT A
FACILITY DESCRIPTION

The information provided in this section is submitted in accordance with the applicable requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), revised June 14, 2000 [6-14-00]. The following subject areas are addressed:

- A general description of Technical Area (TA) 50 at Los Alamos National Laboratory (LANL) (20.4.1 NMAC, Subpart IX, 270.14(b)(1) [6-14-00])
- Site-specific traffic patterns, volume, and control (20.4.1 NMAC, Subpart IX, 270.14(b)(10) [6-14-00])
- Site-specific location information for compliance with seismic and floodplain standard requirements (20.4.1 NMAC, Subpart IX, 270.14(b)(11), and 20.4.1 NMAC, Subpart V, 264.18(a) and (b) [6-14-00])
- Site-specific topographic map requirements (20.4.1 NMAC, Subpart IX, 270.14(b)(19) [6-14-00])
- Site-specific groundwater monitoring and protection information (20.4.1 NMAC, Subpart IX, 270.14(c) and 20.4.1 NMAC, Subpart V, 264.90(a) [6-14-00])

A LANL-wide facility description addressing additional regulatory requirements is provided in Appendix A of the "Los Alamos National Laboratory General Part B Permit Application," (LANL 1998a), hereinafter referred to as the LANL General Part B.

A.1 TA-50 GENERAL DESCRIPTION [20.4.1 NMAC, Subpart IX, 270.14(b)(1)]

TA-50 is located at the northeast corner of the intersection of Pajarito Drive and Pecos Road, on the finger mesa bounded by Mortandad Canyon to the north and Two-Mile Canyon to the south. Mesa-top elevations at TA-50 range from approximately 7,250 to 7,280 feet (ft) above mean sea level. Figure A-1 depicts the TA-50 location within the LANL site boundary, and its location relative to other TAs. Figure A-2 depicts facilities, structures, and hazardous and mixed waste units within the TA-50 boundary. Nearby facilities are described in Section A.1.4 of this attachment. The nearest point of unrestricted public access to TA-50 outside the LANL site boundary is the Royal Crest Trailer Park 1,500 meters (3,770 ft) north of TA-50. The residential areas of Los Alamos and White Rock are within a 17-kilometer (km) (10-mile) radius of TA-50 and together have a population of approximately 18,200.

The waste management units addressed in this permit renewal application include two container storage units located at TA-50-69. Other waste management units have been identified in previous

Part A or Part B permit applications. These hazardous and/or mixed waste management units are identified in Table A-1.

Table A-1
Waste Management Unit Status at Technical Area 50

Waste Management Unit	Unit Type	Current Status
TA-50-1, Room 59	CSU	To Be Closed [a]
TA-50-37, Rooms 115, 117 and 118	CSU	To Be Closed [a]
TA-50-69, Indoor Area	CSU	Requesting Permit Renewal [b]
TA-50-69, Outdoor Area	CSU	Requesting Permit Renewal [b]
TA-50-114	CSU	To Be Closed [a]
TA-50-1, Rooms 35, 36, and 38/38A	CSU	Administratively Removed [c]
Solidification/Cementation Unit	Treatment	Administratively Removed [c]
Controlled Air Incinerator	Treatment	Closed [d]
Batch Waste Treatment Unit	Treatment	Closed [e]
TA-50-137	CSU	Administratively Removed [c]
TA-50-138	CSU	Administratively Removed [c]
TA-50-139/Storage Pads	CSU	Administratively Removed [c]
TA-50-140/Storage Pads	CSU	Administratively Removed [c]

[a] To be closed in accordance with New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart VI [6-14-00], requirements.
[b] Detailed descriptions provided in Attachment G of this permit renewal application.
[c] Waste management units that were proposed but never constructed and/or where waste was never stored, treated, or disposed.
[d] "Los Alamos National Laboratory controlled-Air Incinerator RCRA Closure Certification Report," Benchmark Environmental Corporation, Albuquerque, New Mexico, 1998.
[e] "Closure Certification Report TA-50 Batch Waste Treatment Unit," IT Corporation, Albuquerque, New Mexico, 1994.

CSU = container storage unit

Waste management units addresses in this permit renewal application include two container storage units (CSU) located in the southwest quadrant of TA-50 and identified as the TA-50-69, Indoor CSU and the TA-50-69, Outdoor CSU. Detailed descriptions of these CSUs are provided in Attachment G of this permit renewal application.

A.1.1 Meteorology and Hydrology

The climate and surface winds are described in the LANL General Part B.

A.1.2 Wells and Surface Waters [20.4.1 NMAC, Subpart IX, 270.14(b)(19)(iii) and (ix)]

The only hydrological characteristic specific to operations conducted at TA-50 is surface runoff in the small drainage off the mesa for brief periods during spring snowmelt and intense summer thunderstorms. Surface grading and other storm water controls prevent accumulation of storm water

and snowmelt (Appendix A, LANL General Part B). Summer storms on the Pajarito Plateau can generate high discharge rates and may reach a maximum discharge in less than two hours. High discharge rates can transport suspended and bed sediments down the canyons. Snow, however, melts slowly in the spring and runs off over a period of several weeks to several months at a low discharge rate. Stream flow is ephemeral in Cañada del Buey to the north and Pajarito Canyon to the south of Mesita del Buey, occurring primarily during snowmelt or thunderstorms. Situated on top of the mesa, TA-50 is not affected by stream flooding or runoff.

A.1.3 Surrounding Land Use [20.4.1 NMAC, Subpart IX, 270.14(b)(19)(iv)]

No industrial facilities, except for those within LANL, are near TA-50. The following buildings or facilities are located within the TA-50 boundary:

- Radioactive Liquid Waste Treatment Facility, TA-50-1
- TA-50-37
- Engineering Sciences and Applications Division, TA-50-54
- WCRRF, TA-50-69
- Portable office trailer, TA-50-84
- Portable office trailer, TA-50-196
- U.S. West relay facility, TA-50-184
- Material Disposal Area-C Landfill (inactive)

As depicted on Figure A-1, the TAs that border TA-50 include: TA-35, TA-40, TA-55, TA-63, and TA-66. TA-35, located northeast of TA-50, includes facilities that conduct nuclear safeguards research and development. TA-40, which is south and west of TA-50, is used in developing special detonators for the initiation of high-explosive systems. The facilities at TA-55, west of TA-50, conduct plutonium processing and metallurgy research. TA-66, southeast of TA-50, includes the Advanced Technology Assessment Center. The types of activities conducted, the separation distances, and administrative controls ensure that these nearby TAs do not affect the safety of operations conducted at TA-50.

A.2 TRAFFIC PATTERNS [20.4.1 NMAC, Subpart IX, 270.14(b)(10)]

General traffic pattern information, traffic volume, and traffic control signals for the LANL-wide facility are provided in Appendix A of the LANL General Part B (LANL, 1998a).

A.2.1 Routes of Travel

The primary traffic routes that may be used to transport hazardous and mixed waste to and from TA-50 include Pajarito Road, Pecos Drive, and Mesita del Buey Road as shown on Figure A-3. Lesser-used traffic routes include Diamond Drive and West Jemez Road (State Road 501). Containers received at TA-50, are also moved minimal distances on road surfaces within the TA.

A.2.2 Traffic Volumes and Control

The only local access road to TA-50 is Pajarito Road. Approximately 8,000 automobiles traverse Pajarito Road daily as stated in "Environmental Surveillance at Los Alamos During 1990" (LANL, 1992). The U.S. Department of Energy controls all of the area within the Laboratory site boundary and has the authority to completely restrict access. LANL routinely closes Pajarito Road for activities such as the transport of hazardous waste to and from TA-50.

During normal business hours, the traffic pattern consists of personal and government-owned passenger vehicles entering the area through the open western gate, going to a parking area, and parking. After normal business hours, access through this western gate is by badge-reader only. Throughout normal business hours, the eastern gate may remain open to receive deliveries. After normal business hours, this eastern gate is padlocked. Throughout the workday, the average flow of traffic is approximately 160 vehicles per day. Authorized government vehicles only are permitted on the road leading around the southern end of TA-50-1 and in the area to the southeast of TA-50-1. Figure A-4 depicts the gates and area discussed.

A.2.3 Traffic Control Signals

Traffic control signals within TA-50 include stop signs, posted speed limits, and other traffic and pedestrian control signs. The locations of existing signs at TA-50 are shown on Figure A-4

A.3 LOCATION INFORMATION [20.4.1 NMAC, Subpart IX, 270.14(b)(11)]

A.3.1 Geology

Geologic aspects (Longmire et. al., 1996) of interest at TA-50 include the following:

- Detailed stratigraphy of the upper units of the Bandelier Tuff, including contacts between units that may form barriers to migration or create paths to divert liquid or vapor movement.
- Joints in the Bandelier Tuff that may provide paths for liquid and vapor movement.
- Mineralogy of the geologic strata that may be important in the retardation of contaminant movement.
- Faulting that may provide zones of fracturing along which contaminant transport may be enhanced.
- Surface erosion that could potentially transport contaminants.

A.3.1.1 Seismology [20.4.1 NMAC, Subpart IX, 270.14(b)(11)(i) and (ii), and 20.4.1 NMAC, Subpart V, 264.18(a)]

TA-50 is located in Los Alamos, New Mexico; therefore, pursuant to 20.4.1 NMAC, Subpart IX, 270.14(b)(11)(i) [6-14-00], the seismic standard of 20.4.1 NMAC, Subpart V, 264.18(a) [6-14-00], is applicable.

A geologic field investigation, which consisted of exploratory trenching, was conducted within 3,000 ft of TA-50 during the fall of 1992 and summer of 1993. Based on trench stratigraphy, no evidence of Holocene faulting was observed (Woodward-Clyde Federal Services, 1995). Therefore, TA-50 is in compliance with the seismic standards of 20.4.1 NMAC, Subpart IX, 270.14(b)(11)(i) and (ii), and 20.4.1 NMAC, Subpart V, 264.18(a) [6-14-00]. Figure A-5 details regional surface faulting.

A.3.1.2 Stratigraphy

TA-50 is located in the central part of the Pajarito Plateau. A simplified stratigraphy of the TA-50 site, as well as estimated thickness of rock units, is shown on Figure A-6.

A.3.1.3 Soils

The soils on Mesita del Buey were derived from Bandelier Tuff bedrock and formed under a semiarid climate. Soils on the mesa top are mainly thin, well-drained, sandy loams. The subsoil is a reddish-brown clay, gravelly clay, or clay loam with depth to tuff bedrock about 20 to 50 centimeters (cm) (8 to 20 inches [in.]). These soils are classified in the Unified Soil Classification System as sandy loam, sandy loam-sandy clay, loam, clay loam-loam, and clay loam.

TA-50 is a Hackroy-Rock outcrop complex and Carjo loam. The Hackroy-Rock outcrop complex consists primarily of rock outcrop and Hackroy soils. The Hackroy soils typically range from a brown, sandy loam in the top 8 cm to a reddish-brown clay from 8 to 30 cm in depth. Permeability rates range from 5 to 15 centimeters per hour (cm/hr) in the top layers down to 0.15 to 0.50 cm/hr in the lower layers. The shrink-swell potential is low. Available water-holding capacity is 0.11 to 0.21 cm per cm (cm/cm), and the soil pH is 6.6 to 7.8. The Carjo soils typically range from a grayish-brown loam in the top 10 cm to a brown clay loam from 10 to 30 cm in depth. Permeability rates range from 1.5 to 5 cm/hr in the top layer, down to 0.15 to 5 cm/hr in the lower layers. The shrink-swell potential is low to moderate. Available water-holding capacity is 0.14 to 0.21 cm/cm, and the soil pH is 6.3 to 7.8 (Nyhan et al., 1978).

The slopes between TA-50 mesa top and canyon bottoms consists of steep rock outcrops and patches of shallow, undeveloped colluvial soils. The south-facing canyon walls of Pajarito Canyon are steep and have little or no soil material or vegetation, whereas the north-facing walls of Canada del Buey have areas of thin dark-colored soils. Native vegetation at TA-50 is mainly brome grass, false tarragon, blue grama, wormwood, Colorado piñon, and one-seed juniper.

A.3.1.4 Erosional Processes

Erosion of material on Mesita del Buey occurs primarily by shallow runoff on the relatively flat pans of the mesa, by deeper runoff in channels, and by rock fall and colluvial transport on the canyon walls. Wind erosion of disturbed soils also occurs. Mesita del Buey cliff-forming units are eroded primarily by lateral cliff retreat and not vertical erosion.

A.3.2 Floodplain Standard [20.4.1 NMAC, Subpart IX, 270.14(b)(11)(iii), 270.14(b)(19)(ii), and 20.4.1 NMAC, Subpart V, 264.18(b)]

The CSUs addressed in the TA-50 Part B are not located within the 100-year floodplain boundary. In accordance with 20.4.1 NMAC, Subpart IX, 270.14(b)(11)(iii) [6-14-00], additional floodplain information is provided in Appendix A of the LANL General Part B.

A.4 TOPOGRAPHIC MAPS [20.4.1 NMAC, Subpart IX, 270.14(b)(19)]

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

- LANL-wide 100-year floodplain maps are provided as Appendix C of the “Response to Request for Supplemental Information: Technical Adequacy Review, Resource Conservation and RCRA Permit Application; General Part A, April 1998, Revision 0.0; General Part B, October 1998, Revision 1.0; Los Alamos National Laboratory, EPA ID No. NM 0890010515,” (LANL, 2001).
- A map showing surface waters, including intermittent streams, near TA-50 is included as Figure A-7.
- Surrounding land uses are shown on Figure A-1.
- Wind roses for TA-6, the TA directly to the west of TA-50, are shown on Figures A-8 and A-9.
- A map showing the legal boundaries of LANL (including TA-50) is provided as Map 1 in the “Los Alamos National Laboratory General Part A Permit Application,” Revision 0.0 (LANL, 1998b), hereinafter referred to as the LANL General Part A.
- Access control features at TA-50 (e.g., fences, gates) are shown on Figure A-10.

- A map showing supply wells, monitoring wells, test wells, springs, and surface-water sampling stations near TA-50 is included as Figure A-7.
- The locations of buildings, hazardous and/or mixed waste management units, and loading and unloading areas at TA-50 are shown on Figure A-7.
- A map showing National Pollutant Discharge Elimination System discharge structure locations is included in the LANL General Part A (LANL, 1998b).
- Storm, sanitary, and process sewer systems at LANL are shown on Map A-1 of the LANL General Part B (LANL, 1998a).
- Drainage control features (e.g., run-on/runoff) are shown on Figure A-11.
- Natural surface drainages are shown on a topographic map included herein as Figure A-7.
- Fire stations serving LANL and the County of Los Alamos are shown on Figure E-2 of Appendix E in the LANL General Part B (LANL, 1998a).
- The equipment cleanup area for LANL is located at TA-50-1. The location of TA-50-1 is shown on a map in the LANL General Part A (LANL, 1998b).

Contour lines on the topographic map are in intervals sufficient to detail natural drainage at LANL and in the vicinity of the waste management units at TA-50. As provided in 20.4.1 NMAC, Subpart IX, 270.14(b)(19) [6-14-00], LANL has submitted the maps to the New Mexico Environment Department at these scales and contour intervals due to the size of the waste management units, the extent of the LANL facility, and the topographic relief in the area.

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

Groundwater monitoring and protection requirements specified in 20.4.1 NMAC, Subpart IX, 270.14(c) and 20.4.1 NMAC, Subpart V, 264.90(a) [6-14-00], apply only to owners and operators of surface impoundments, waste piles, land treatment units, and landfills. This document addresses CSUs, which are not regulated units subject to 20.4.1 NMAC, Subpart IX, 270.14(c) [6-14-00].

A.6 OTHER PERMIT ACTIVITIES

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

- Permits by Rule
- Emergency Permits
- Hazardous Waste Incinerator Permits
- Permits for Land Treatment Demonstrations Using Field Test of Laboratory Analyses

- Interim Permits for Underground Injection Control Program Wells
- Research, Development, and Demonstration Permits
- Permits for Boilers and Industrial Furnaces Burning Hazardous Waste

Currently, none of these permit types are relevant for operations at TA-50.

A.7 REFERENCES

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

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

LANL, 1998b, "Los Alamos National Laboratory General Part A Permit Application," Revision 0.0, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 1992, "Environmental Surveillance at Los Alamos During 1990," Los Alamos National Laboratory, Los Alamos, New Mexico.

Longmire et. al., 1996, "Natural Background Geochemistry, Geomorphology, and Pedogenesis of Selected Soil Profiles and Bandelier Tuff," LA-12913-MS, Los Alamos National Laboratory, Los Alamos, New Mexico.

Nyhan et al. (J. W. Nyhan, L. W. Hacker, T. E. Calhoun, and D. L. Young), 1978, "Soil Survey of Los Alamos County, New Mexico," LA-6779-MS, Los Alamos National Laboratory, Los Alamos, New Mexico.

Woodward-Clyde Federal Services, 1995, "Seismic Hazards Evaluation of the Los Alamos National Laboratory," Los Alamos, New Mexico.

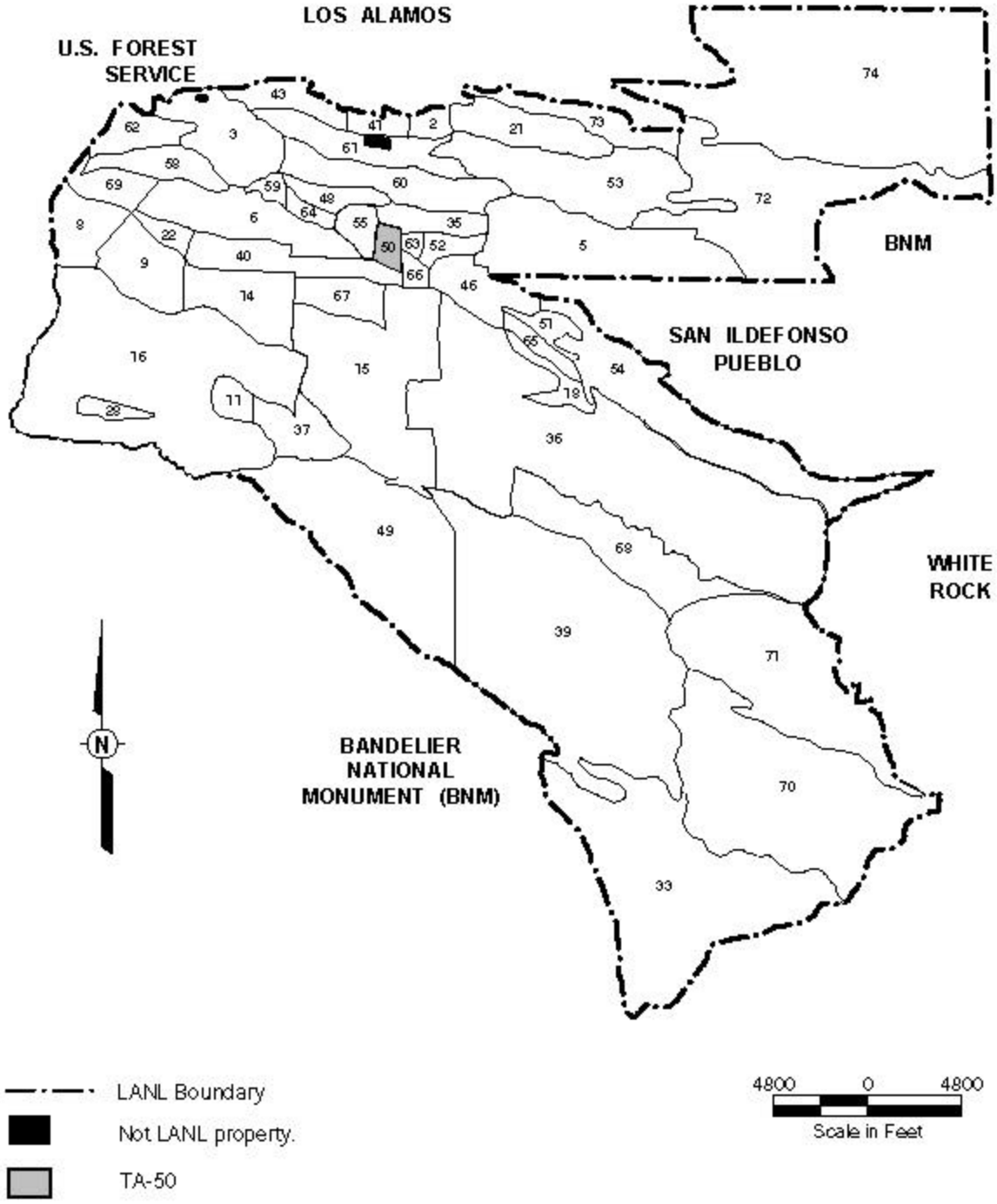


Figure A-1

Location Map of Technical Area (TA) 50 at Los Alamos National Laboratory (LANL)

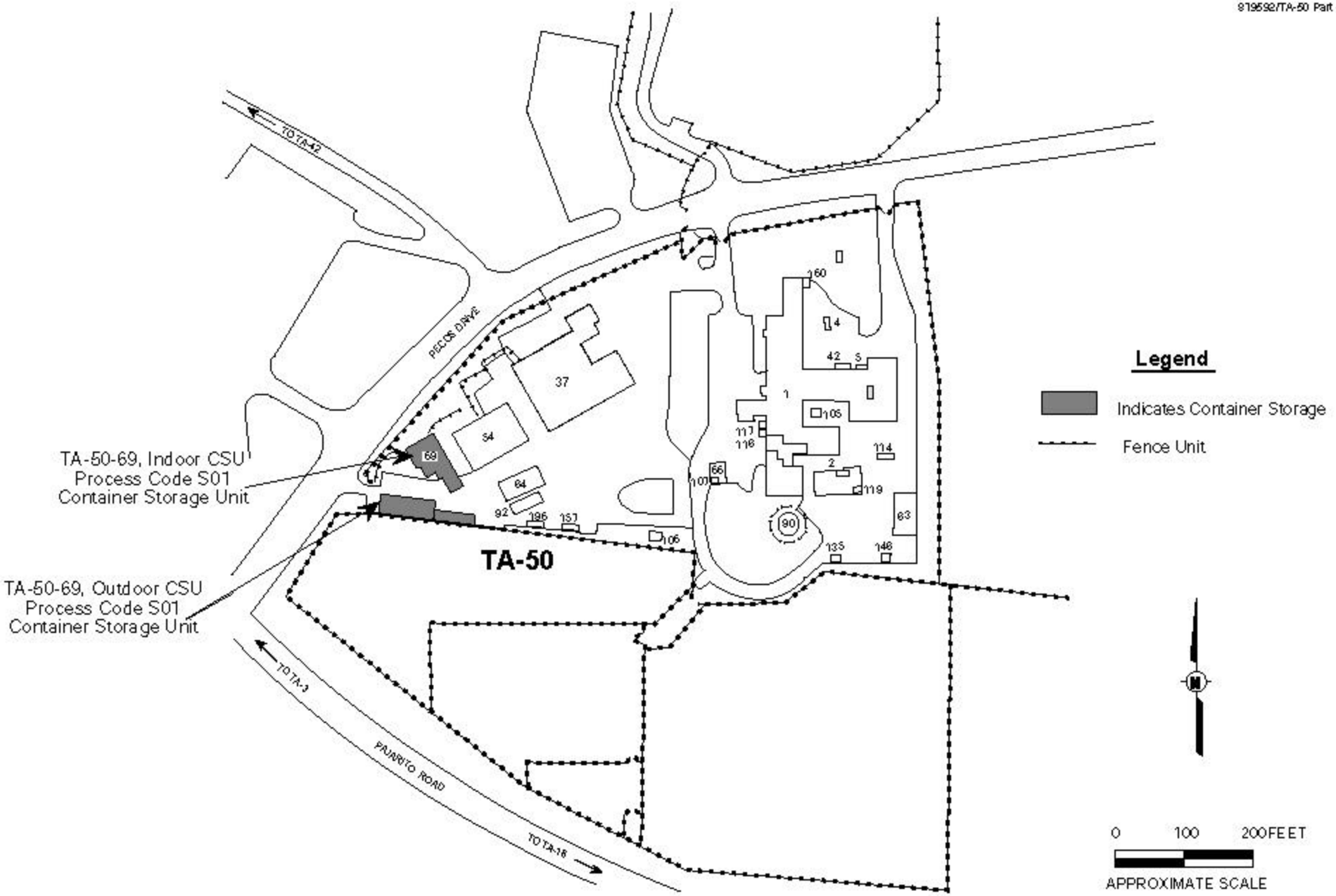


Figure A-2
Location of Container Storage Units (CSU) at Technical Area (TA) 50

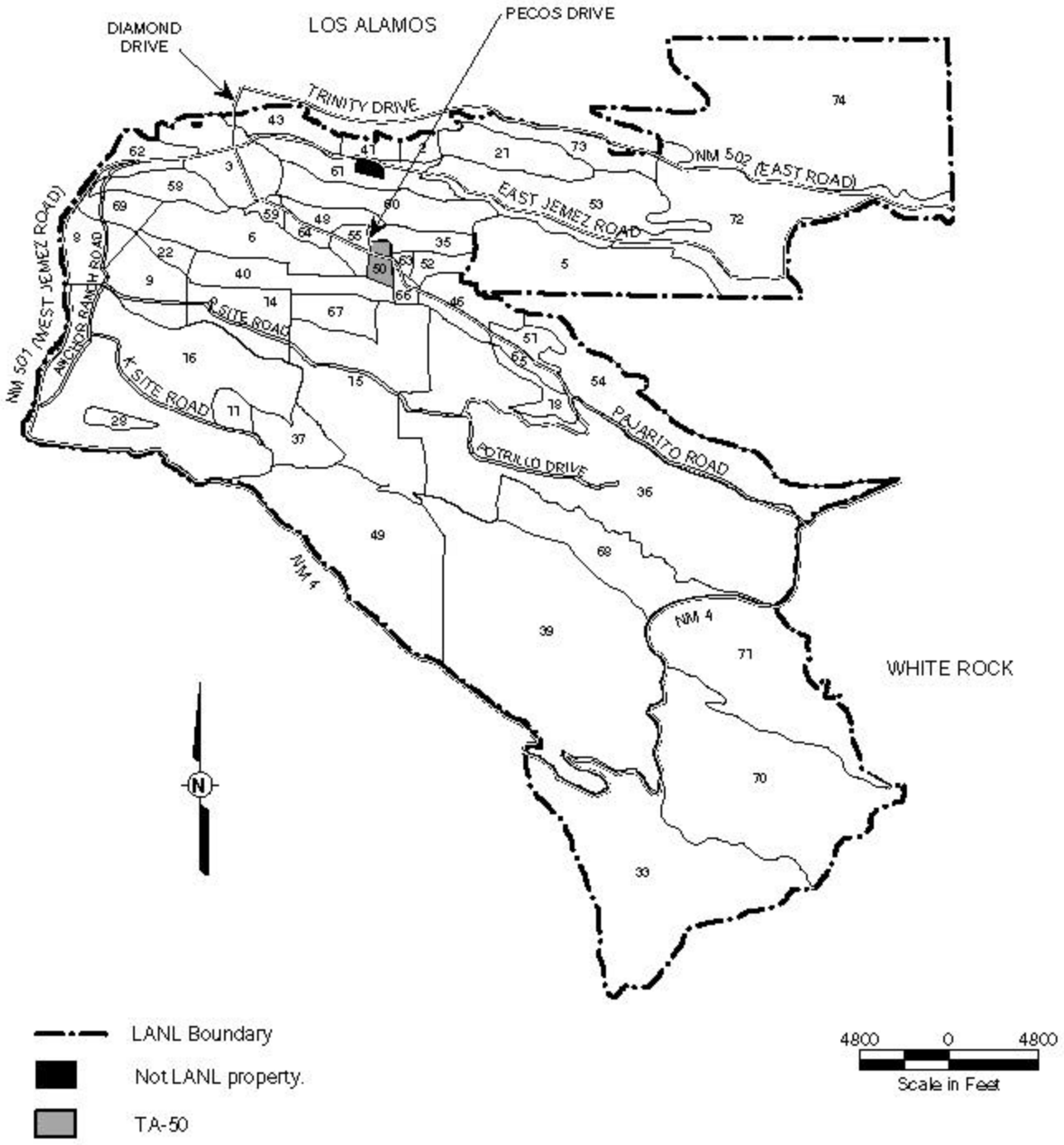


Figure A-3

Major Roads and Primary Traffic Routes at Los Alamos National Laboratory (LANL)

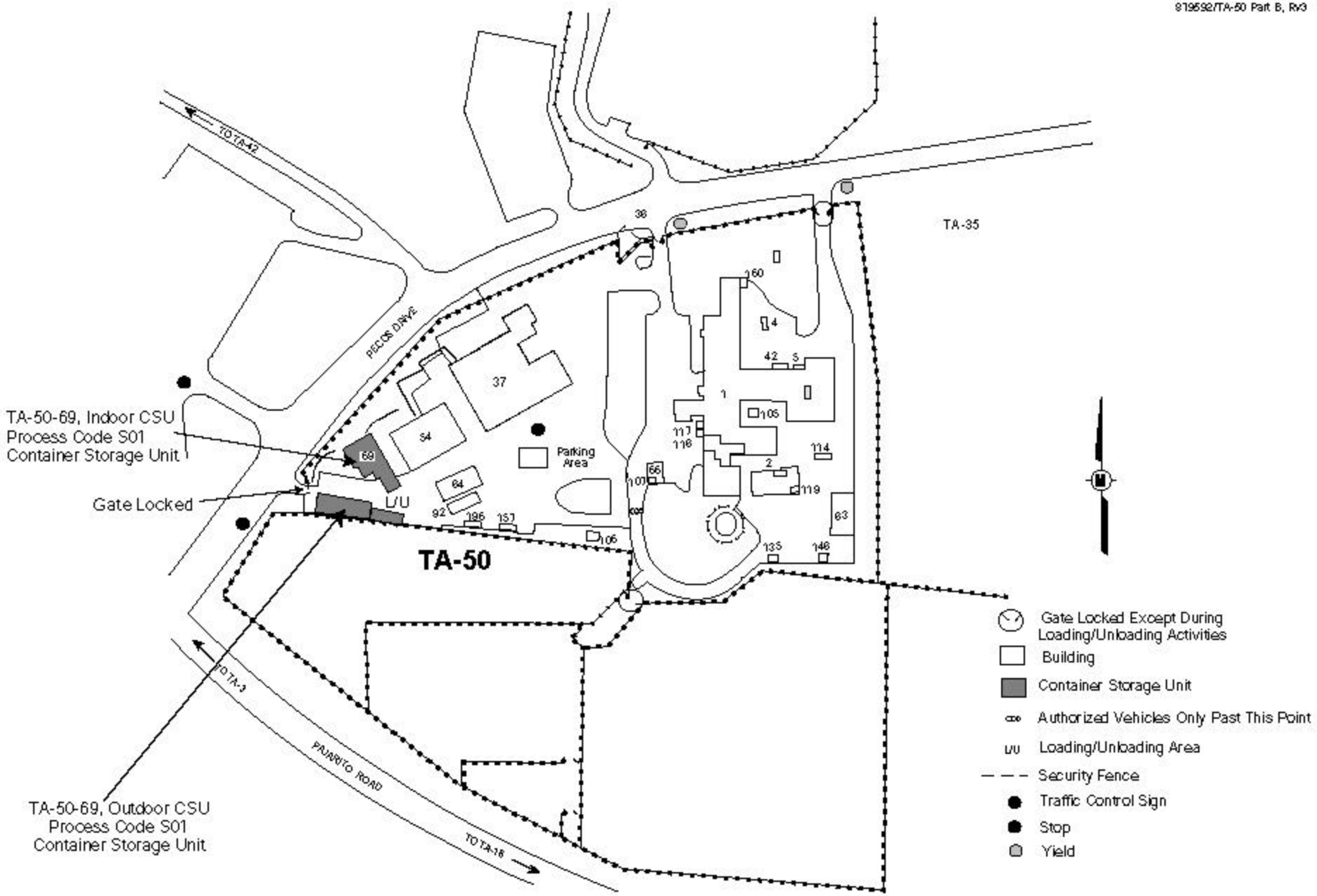


Figure A-4
Location Map of Access Roads and Traffic Control Signs
in the Vacinity of Technical Area (TA) 50

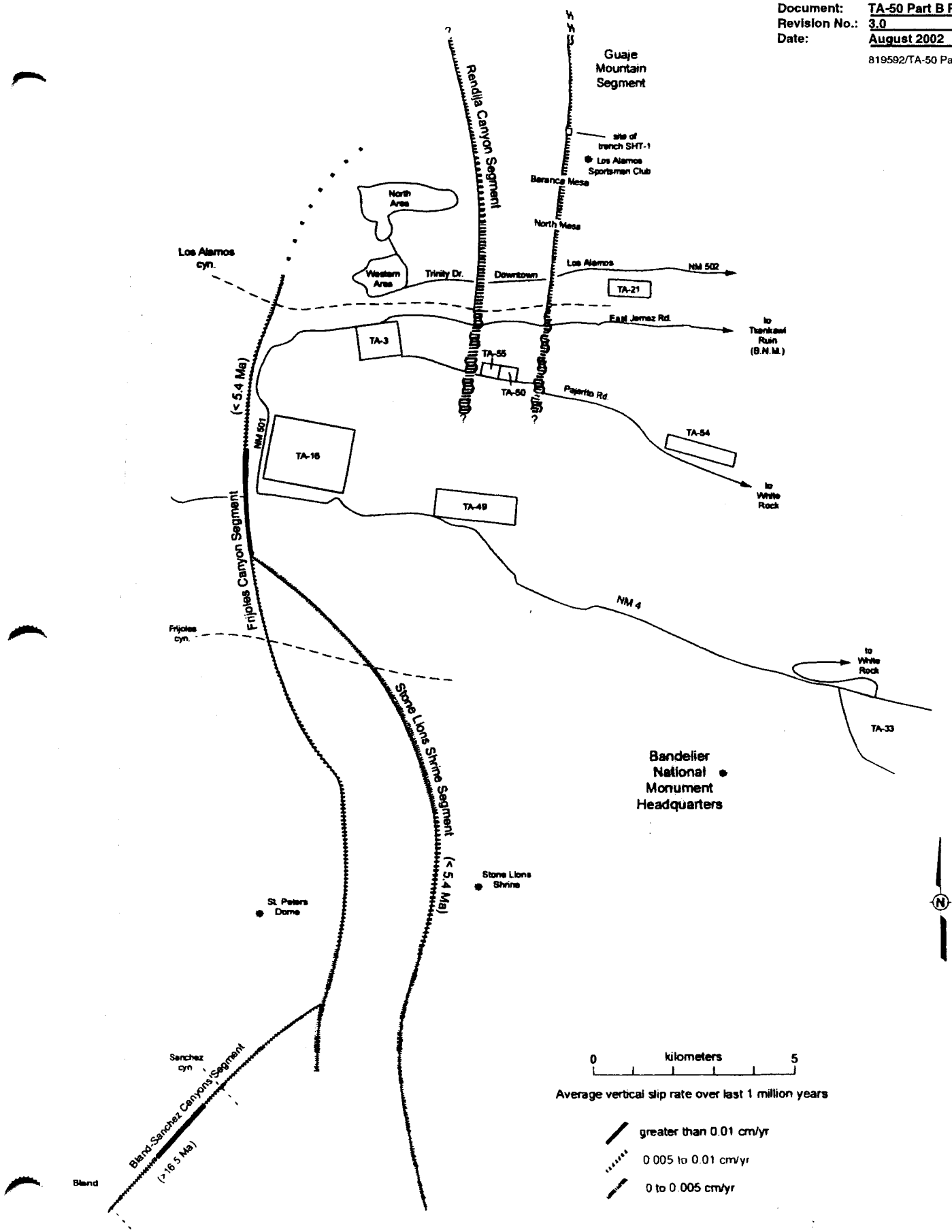


Figure A-5
Regional Surface Faulting

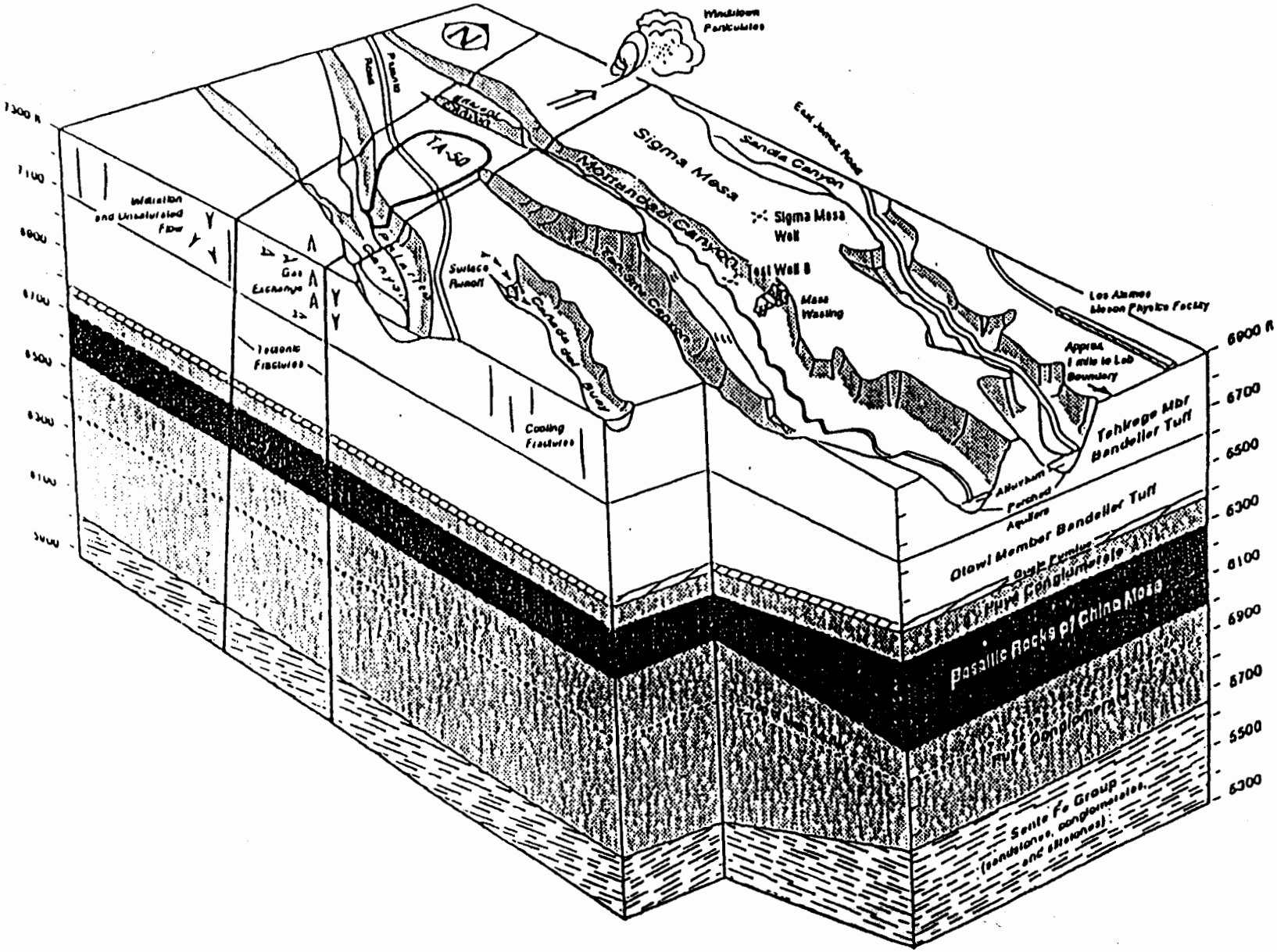
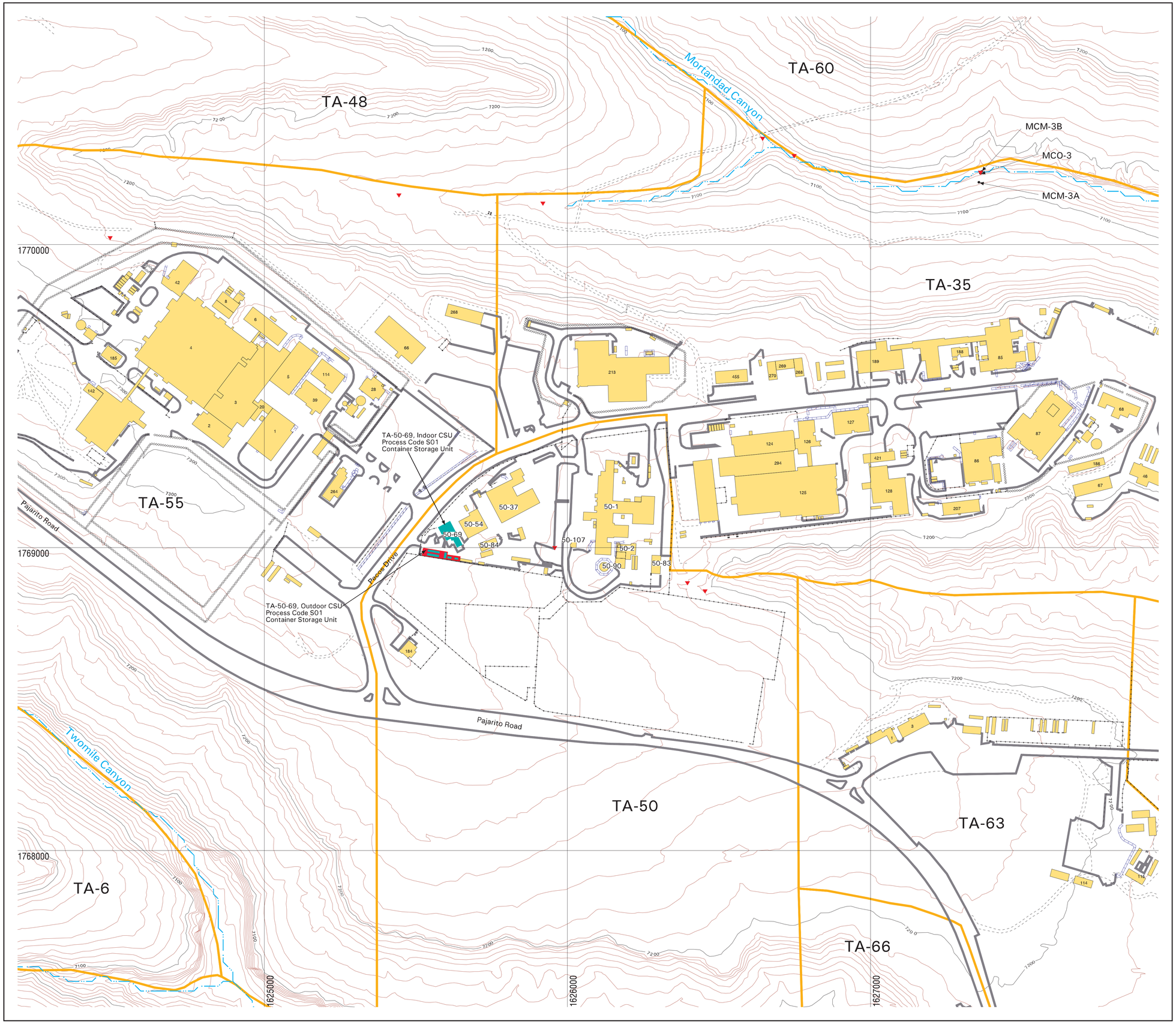


Figure A-6
Conceptual Block Diagram of the [illegible]igraphy of the TA-50 Site



LEGEND

- Boundary, TA
- Contour, 10 foot
- Contour, 100 foot
- Fence, Industrial
- Fence, Security
- Retaining Wall
- Road, Paved
- Road, Dirt
- Stream, Intermittent
- Stream, Perennial

- Structure
- RCRA-Regulated Waste Management Unit
- Structure Associated with a RCRA-Regulated Waste Management Unit

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

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

MAIN AQUIFER WELLS

- Water Supply Well
- Test Well

OTHER

- Abandoned/Plugged Well
- LAOR Well
- Other Monitoring Well

- Surface Water Sampling Station
- Spring

Figure A-7. Contour Map Showing the Locations of the RCRA-Regulated Waste Management Units at Technical Area (TA) 50

N

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

Grid provides NM State Plane coordinates in feet.
Grid interval, in feet: 1000
Feet per inch on map = 150

SCALE 1:1800

0 46 92 138 184
METERS

0 150 300 450 600
FEET

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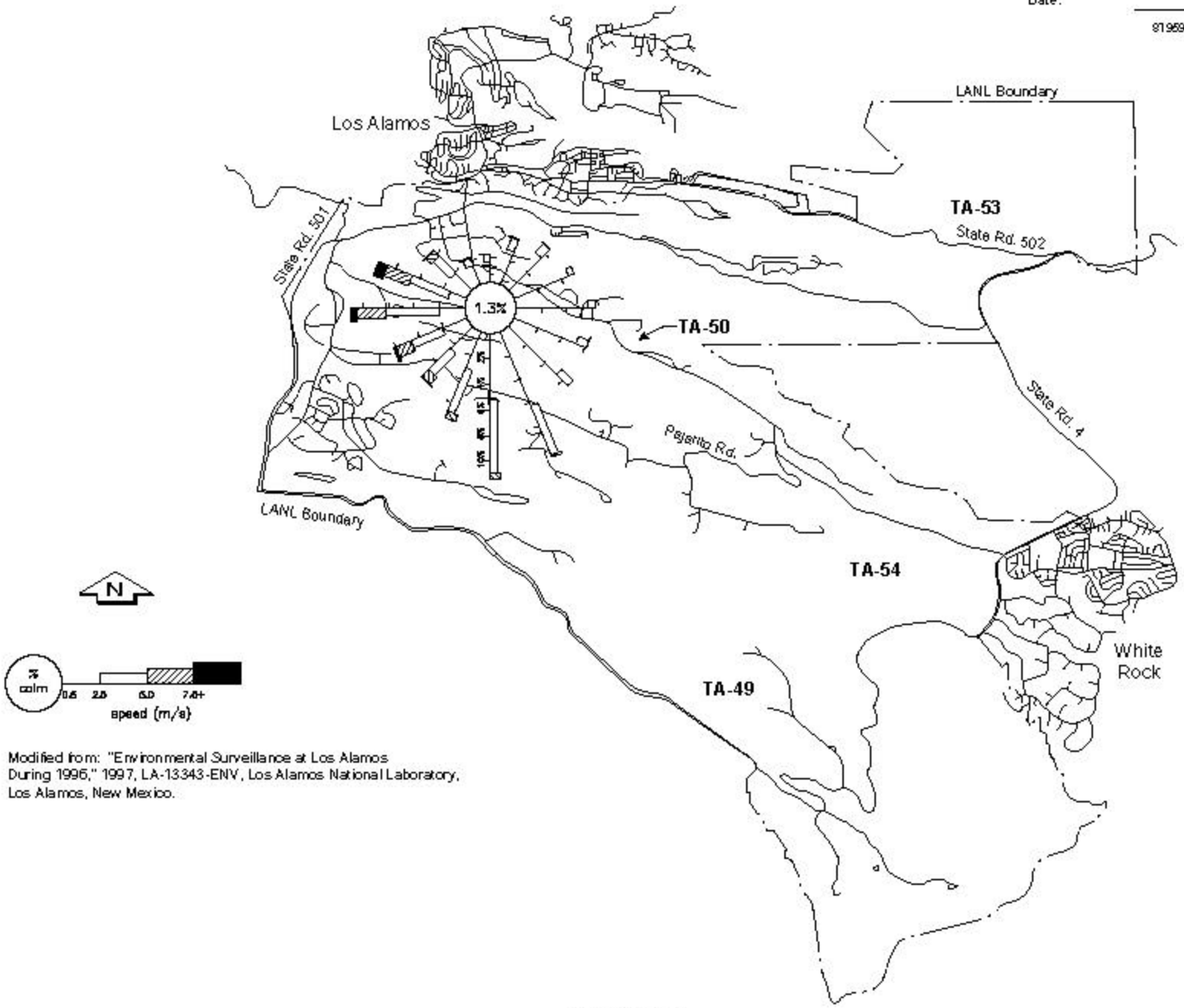
University of California
Los Alamos National Laboratory
Earth and Environmental Sciences Division

Cartography by: Marcia Jones
Date: July 24, 2002
GISLab Plot ID: G200314

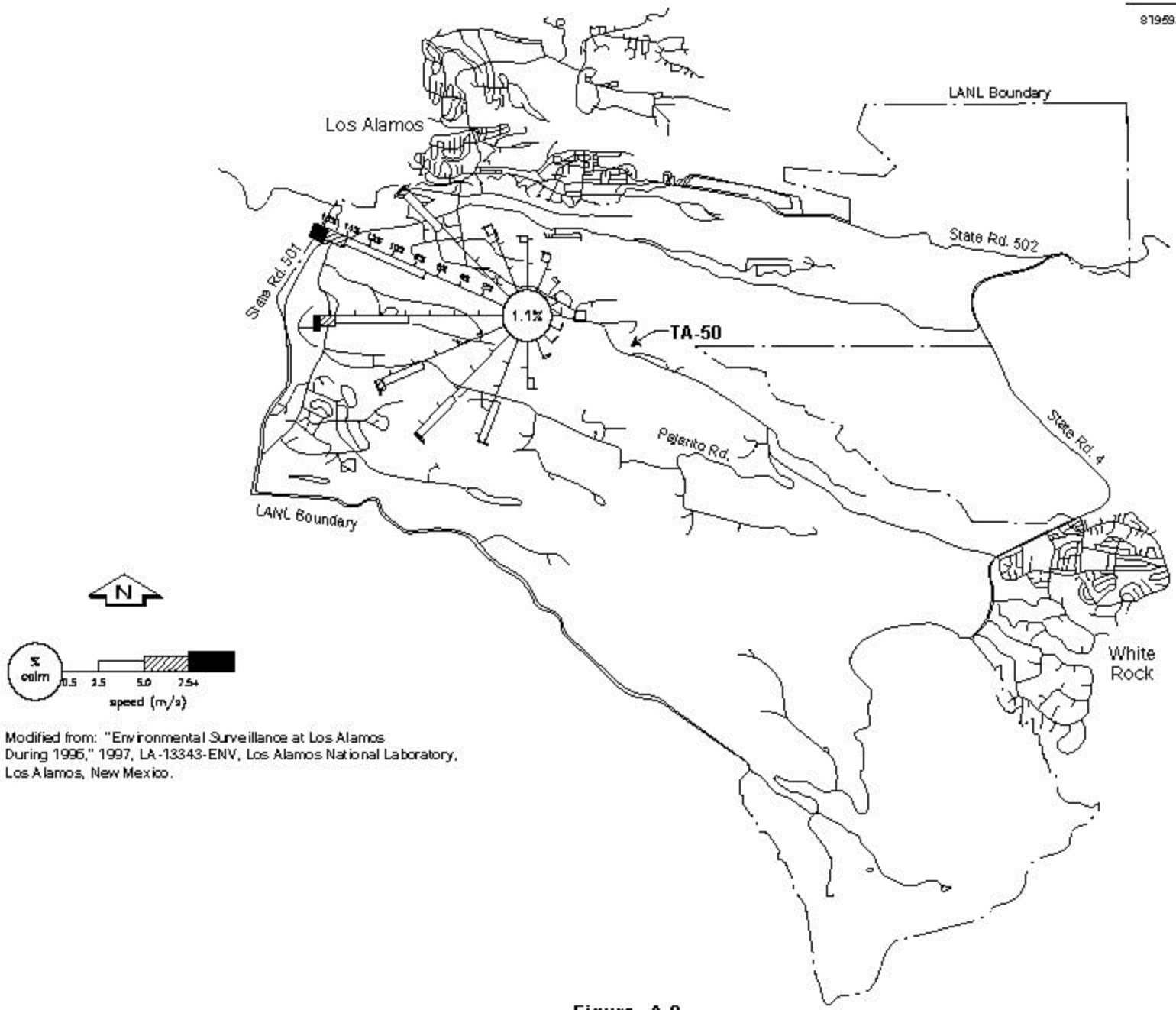
GISLab
Los Alamos National Laboratory



Modified from: "Environmental Surveillance at Los Alamos During 1996," 1997, LA-13343-ENV, Los Alamos National Laboratory, Los Alamos, New Mexico.

Figure A-8

Annual Wind Roses for Technical Area (TA) 6 at Los Alamos National Laboratory (LANL)—Day



Modified from: "Environmental Surveillance at Los Alamos During 1996," 1997, LA-13343-ENV, Los Alamos National Laboratory, Los Alamos, New Mexico.

Figure A-9

Annual Wind Roses for Technical Area (TA) 6 at Los Alamos National Laboratory (LANL)—Night

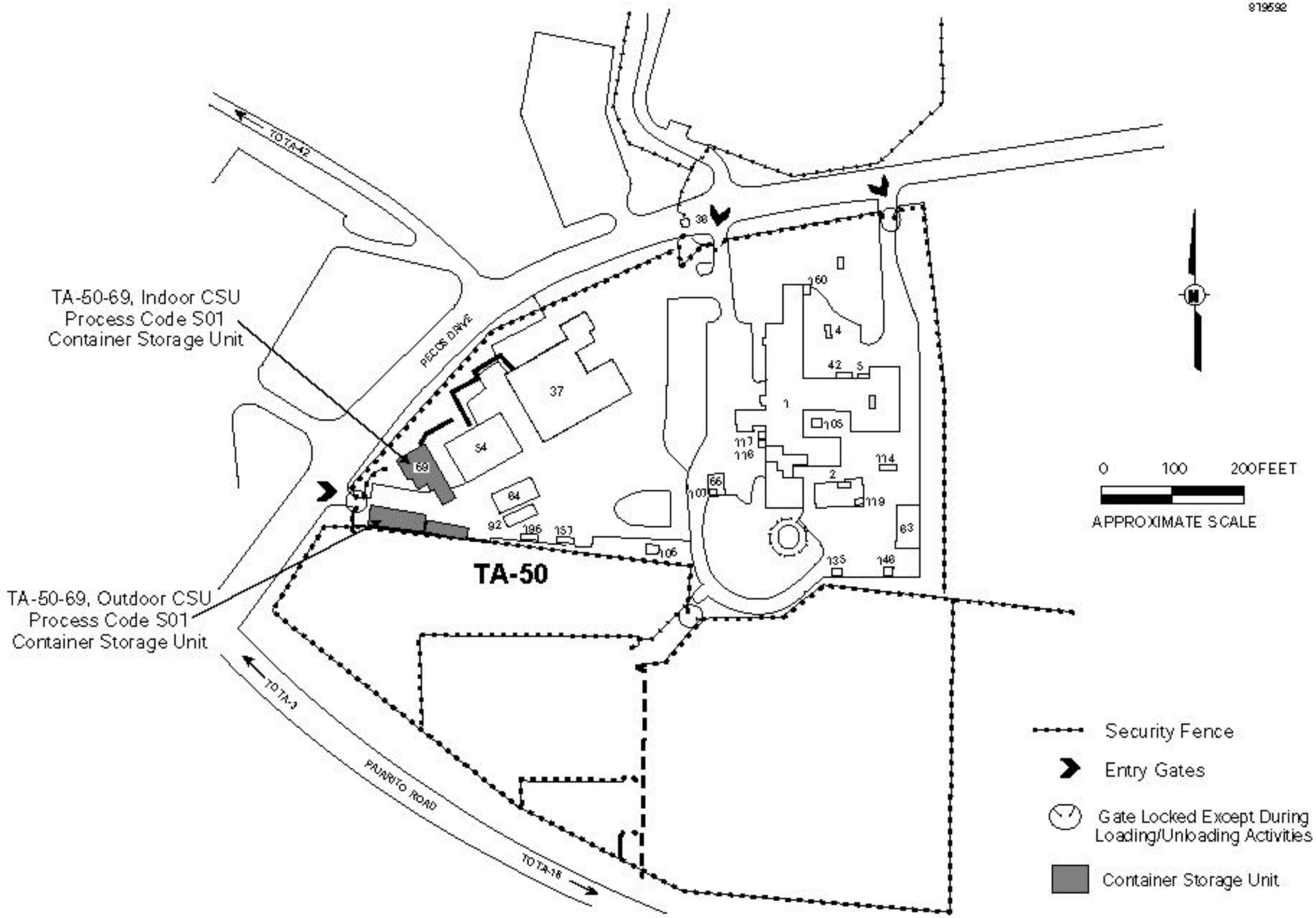
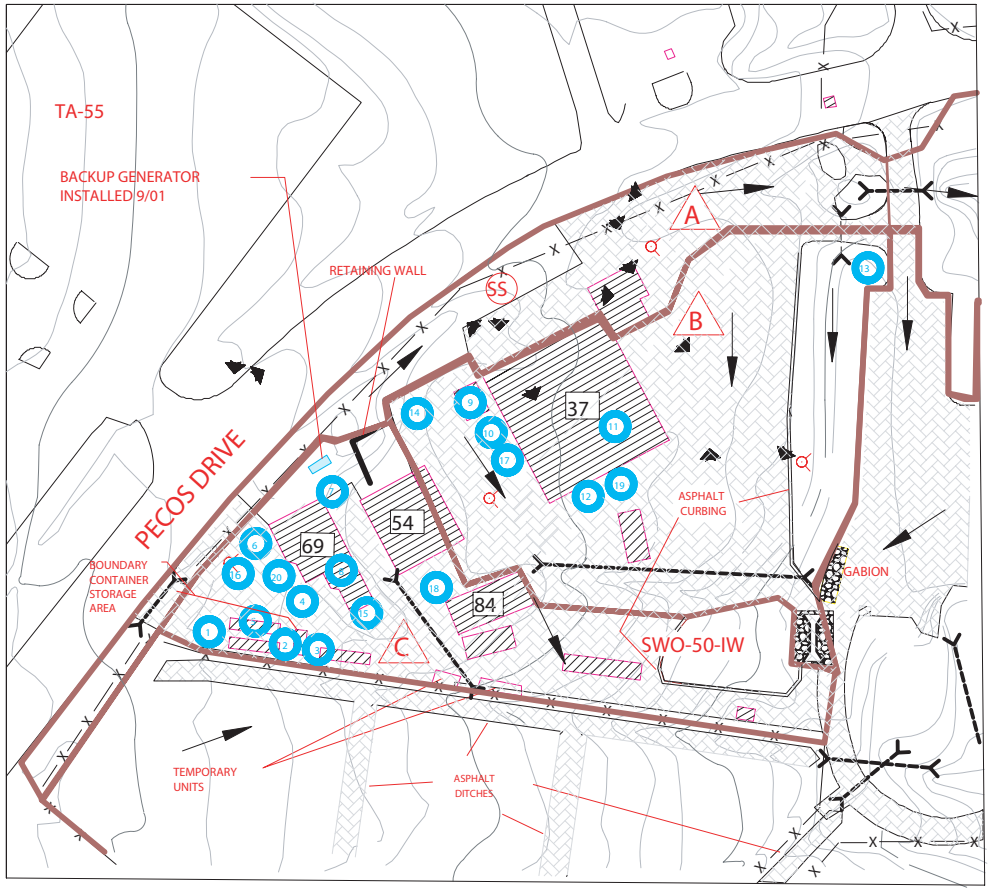


Figure A-10

Location Map Showing Security Fences, Entry Gates, and Entry Station at Technical Area (TA) 50



SYMBOLS LEGEND	
	DRAINAGE BOUNDARY
	DIRECTION OF STORM WATER FLOW
	DIRT ROAD
	ASPHALT COVERED SURFACE
	SOILS COVERED
	EXISTING BUILDING
	CULVERT
SS	SANITARY SEWER MANHOLE
	STORM WATER CATCH BASIN
	EXISTING FLUME
— x — x — x —	FENCE
	FIRE HYDRANT

Figure A-11

Drainage Control Features
at Technical Area (TA) 50

NO.	DATE		
2	12/01	Added Backup Generator	LA
	10/00	Added temporary units	LA

TA-50 RAMROD/ WCRCF
SWPP PLAN

SITE MAP

JCF

3/25/99

NO.	DATE	CLASS REV.	REVISIONS	DWN	DES	CHKD	SUB	APP

MERRICK
Engineers & Architects

600 Sixth Street, Los Alamos, New Mexico, 87544, USA
(505) 662-0606, Fax (505) 662-3851

0

DRAWN
DESIGN
CHECKED
DATE

SUBMITTED

APPROVED FOR RELEASE

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

SHEET

OF

CLASSIFICATION

REVIEWER

DATE

PROJECT ID

DRAWING NO.

REV.

V1.1 DRAWING: TA-50 TA-51 TA-55 SWPP.DWG

ATTACHMENT B

WASTE ANALYSIS PLAN

ATTACHMENT B
WASTE ANALYSIS PLAN

Waste analysis requirements are specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), Subpart IX, 270.14(b)(2) revised June 14, 2000 [6-14-00], and 20.4.1 NMAC, Subpart V, 264.13, and 268.7 [6-14-00]. The only waste management operation at TA-50 addressed in this permit renewal application is container storage. Waste analysis requirements for all container storage units at Los Alamos National Laboratory are described in the facility-wide Waste Analysis Plan in Appendix B of the “Los Alamos National Laboratory General Part B Permit Application”, (LANL, 1998).

ATTACHMENT C

INSPECTION PLAN

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C.1 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART CC REQUIREMENTS C-1
C.2 REFERENCES C-2

LIST OF ABBREVIATIONS/ACRONYMS

20.4.1 NMAC	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
CSU	container storage unit
gal.	gallon(s)
LANL	Los Alamos National Laboratory
m^3	Cubic meter(s)
TA	Technical Area

ATTACHMENT C
INSPECTION PLAN

In accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), Subpart IX, 270.14(b)(5), and 20.4.1 NMAC, Subpart V, 264.15, "General Inspection Requirements," revised June 14, 2000 [6-14-00], inspection requirements for all hazardous and/or mixed waste management units at Los Alamos National Laboratory (LANL) are addressed in Appendix C of the "Los Alamos National Laboratory General Part B Permit Application," Revision 1.0, (LANL, 1998), hereinafter referred to as the LANL General Part B. This attachment presents additional inspection requirements applicable to the container storage units (CSU) at Technical Area (TA) 50, Building 69 (TA-50-69). Inspections will be conducted often enough to identify problems in time to correct them before they harm human health or the environment.

C.1 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART CC REQUIREMENTS [20.4.1 NMAC, Subpart V, Part 264, Subpart CC]

The hazardous wastes stored in containers at the TA-50 CSUs are subject to 20.4.1 NMAC, Subpart V, 264, Subpart CC [6-14-00], "Air Emission Standards for Tanks, Surface Impoundment and Containers." Subpart CC standards for containers require that containers be covered so that there are no detectable emissions. The standards are met by placement of waste in DOT-compliant containers and are not applicable to containers of radioactive mixed waste. These standards are also not applicable to containers of waste with less than 500 parts per million by weight average volatile organics concentration, containers of less than a 0.1 cubic meters (m^3) (approximately 26 gallons [gal.]) capacity, and containers that have received waste before December 6, 1996.

Containers of hazardous waste that are less than or equal to 0.46 m^3 (approximately 119-gal.) capacity and meet U.S. Department of Transportation specifications under 49 Code of Federal Regulations, Part 178 will be closed while they are in storage so that there are no detectable emissions. All other containers subject to 20.4.1 NMAC, Subpart 264, Subpart CC [6-14-00] requirements will be inspected and monitored, as required at 20.4.1 NMAC, Subpart V, 264.1088(b) [6-14-00].

C.2 REFERENCES

LANL, 1998, ”Los Alamos National Laboratory General Part B Permit Application”, Los Alamos, New Mexico, Los Alamos National Laboratory.

ATTACHMENT D

PERSONNEL TRAINING PLAN

ATTACHMENT D
PERSONNEL TRAINING PLAN

In accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), Subpart IX, 270.14(b)(12), and 20.4.1 NMAC, Subpart V, 264.16, “Personnel Training,” revised June 14, 2002 [6-14-00], training requirements for treatment, storage, and disposal facility workers who work at Technical Area 50 are addressed in Appendix D of the “Los Alamos National Laboratory General Part B Permit Application,” Revision 1.0 (LANL, 1998).

ATTACHMENT E

CONTINGENCY PLAN

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CONTINGENCY PLAN E-1

LIST OF TABLES

TABLE NO.	TITLE
E-1	Emergency Equipment

LIST OF FIGURES

FIGURE NO.	TITLE
E-1	Evacuation Routes and Muster Areas at Technical Area (TA) 50
E-2	TA-50-69, Indoor Container Storage Unit Emergency Equipment

LIST OF ABBREVIATIONS/ACRONYMS

20.4.1 NMAC	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
CSU	container storage unit
LANL	Los Alamos National Laboratory
TA	Technical Area

ATTACHMENT E
CONTINGENCY PLAN

In accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), Subpart V, Part 264, Subpart D, "Contingency Plan and Emergency Procedures," and 20.4.1 NMAC, Subpart IX, 270.14(b)(7), revised June 14, 2000, contingency measures applicable to the hazardous and mixed waste container storage units (CSU) at Technical Area (TA) 50 are provided in Appendix E of the "Los Alamos National Laboratory General Part B," hereinafter referred to as the General Part B (LANL, 1998).

Figure E-1 shows evacuation routes and muster areas that may be used in the event of an emergency. In addition, lists of emergency equipment currently available for use at TA-50 CSUs are included as Table E-1. A list of emergency equipment (including spill equipment) available from the Hazardous Materials Response Group is presented in Table E-2 of Appendix E in the LANL General Part B (LANL, 1998). Evacuation routes, muster area locations, and emergency equipment are subject to change.

Hazardous and mixed waste spills are managed by type and severity of the incident. If a hazardous/mixed waste spill occurs, the Incident Command evaluates the type and severity of the spill and determines if assistance from LANL's Emergency Management Response Group is required. If not, the spill is managed internally by TA-50 personnel.

Table E-1

Emergency Equipment

FIRE CONTROL EQUIPMENT:

- **FIRE EXTINGUISHERS**

  Description of General Capabilities

  The fire extinguishers are portable, manually operated units and may be used by any employee in case of fire. They consist of Class A, B, and C units of approximately 9 to 15 pounds capacity used in wet chemical laboratory applications.

  Locations

  2 fire extinguishers are located in TA-50-69, Indoor Container Storage Unit (CSU) (Room—102)

  1 fire extinguisher is located within 20 feet (ft) of the TA-50-69, Outdoor CSU

- **FIRE ALARM PULL BOXES CONNECTED TO THE CENTRAL ALARM STATION**

  Description of General Capabilities

  Fire alarms may be activated by any employee in the event of fire to notify the Central Alarm Station. Upon activation, fire alarm horns and strobes provide audible and visual signals for personnel notification. The fire alarm is a pulsing sound. The evacuation alarm is a wailing sound that can be heard throughout TA-50-69, Indoor CSU and at the TA-50-69, Outdoor CSU.

  Locations

  Two fire alarm pull stations are located in the TA-50-69, Indoor CSU. One is just inside the south door of Room 102 and the other is inside the east door of TA-50-69. Personnel working at the TA-50-69, Outdoor CSU may use the pull stations at TA-50-69 in the event of a fire.

- **AUTOMATIC FIRE SUPPRESSION SYSTEM**

  Description of General Capabilities

  A wet-pipe automatic sprinkler system that is hydraulically designed for ordinary hazard Group II coverage is in place throughout TA-50-69. This system is activated at 100°C (212°F). The glovebox cutting and disassembly modules are equipped with an automatic water deluge sprinkler system. One sprinkler head is mounted on the west wall of the cutting module and one sprinkler head is mounted on the east wall of the disassembly module. Additionally, a manually operated carbon dioxide (CO_2) system is in place inside the cutting enclosure which allows an operator to apply CO_2 to minor flare-ups that can originate on the waste item being cut up with the plasma-torch. The CO_2 system cannot over pressurize the enclosure.

Table E-1 (continued)

Emergency Equipment
Technical Area (TA) 50, Building 69 (TA-50-69) Indoor and Outdoor Container Storage Units

FIRE CONTROL EQUIPMENT (continued):

Locations
Throughout TA-50-69, as described above.

- **FIRE HYDRANT**

  Description of General Capabilities
  Fire hydrants provide water for fire fighting. All fire hydrants are supplied by an 8-inch (in.) water line connected to the 12-in. water main on Pecos Drive.

  Location
  A fire hydrant is located approximately 55 ft west of TA-50-69.

SPILL CONTROL EQIUPMENT:

- **CURBING AND DRAINS**

  The main process room (Room 102) and unloading area (Room 103) at TA-50-69 provide secondary containment by use of curbs or floor drains. The storage capacity plus curbed area storage would be adequate to contain water generated during fire fighting.

- **SPILL CENTERS**

  Description of General Capabilities
  The spill centers contain at a minimum personnel protective equipment (i.e., gloves), and sorbents (i.e., pillows and pigs). The Emergency Management and Response Group provides additional spill control and clean up equipment as needed.

  Spill Center Location
  2 - TA-50-69, Indoor CSU (Room 102)
  2 - TA-50-69, Outdoor CSU

COMMUNICATION EQUIPMENT:

Description of General Capabilities
Telephones with public address (PA) capabilities for internal and external communication are available for use by any employee. Fire and evacuation alarms are activated in the event of a fire or in case an evacuation is required. The fire alarm is a double slow whoop sound. The evacuation alarm is a high-pitched wailing sound. The PA system can be heard at the TA-50-69, Outdoor CSU. When working at the CSUs, personnel will have immediate access to emergency communication equipment either directly or through visual or voice contact with another employee.

Table E-1 (continued)

Emergency Equipment
Technical Area (TA) 50, Building 69 (TA-50-69) Indoor and Outdoor Container Storage Units

COMMUNICATION EQUIPMENT (continued):

Location of Communication Equipment
Four telephones, three with PA capabilities, are located in TA-50-69. One is located outside Room 104 near the door. Personnel working at the TA-50-69, Outdoor CSU have access to the phone outside Room 104, will carry cellular phones, or will have immediate access to communication equipment through visual or voice contact with another employee.

DECONTAMINATION EQUIPMENT:

- **SAFETY SHOWERS**

  Description of General Capabilities
  Safety showers are available to personnel who receive a chemical splash to the skin.

  Location of Safety Showers
  Safety showers are located in TA-50-69, Room 102 and Room 103. One standard shower is located adjacent to the change room in TA-50-69.

- **EYEWASHES**

  Description of General Capabilities
  Eyewashes are available to personnel who receive a chemical splash to the eye(s). Specific MSDSs for the chemicals being managed are available to personnel working with hazardous or mixed waste to determine if the application of water is indicated for decontamination.

  Location of Eyewashes and Material Safety Data Sheets
  An eyewash is located in the TA-50-69, Indoor CSU (Room 102). The safety shower and eyewash in TA-50-69 are available to personnel working at the TA-50-69, Outdoor CSU.

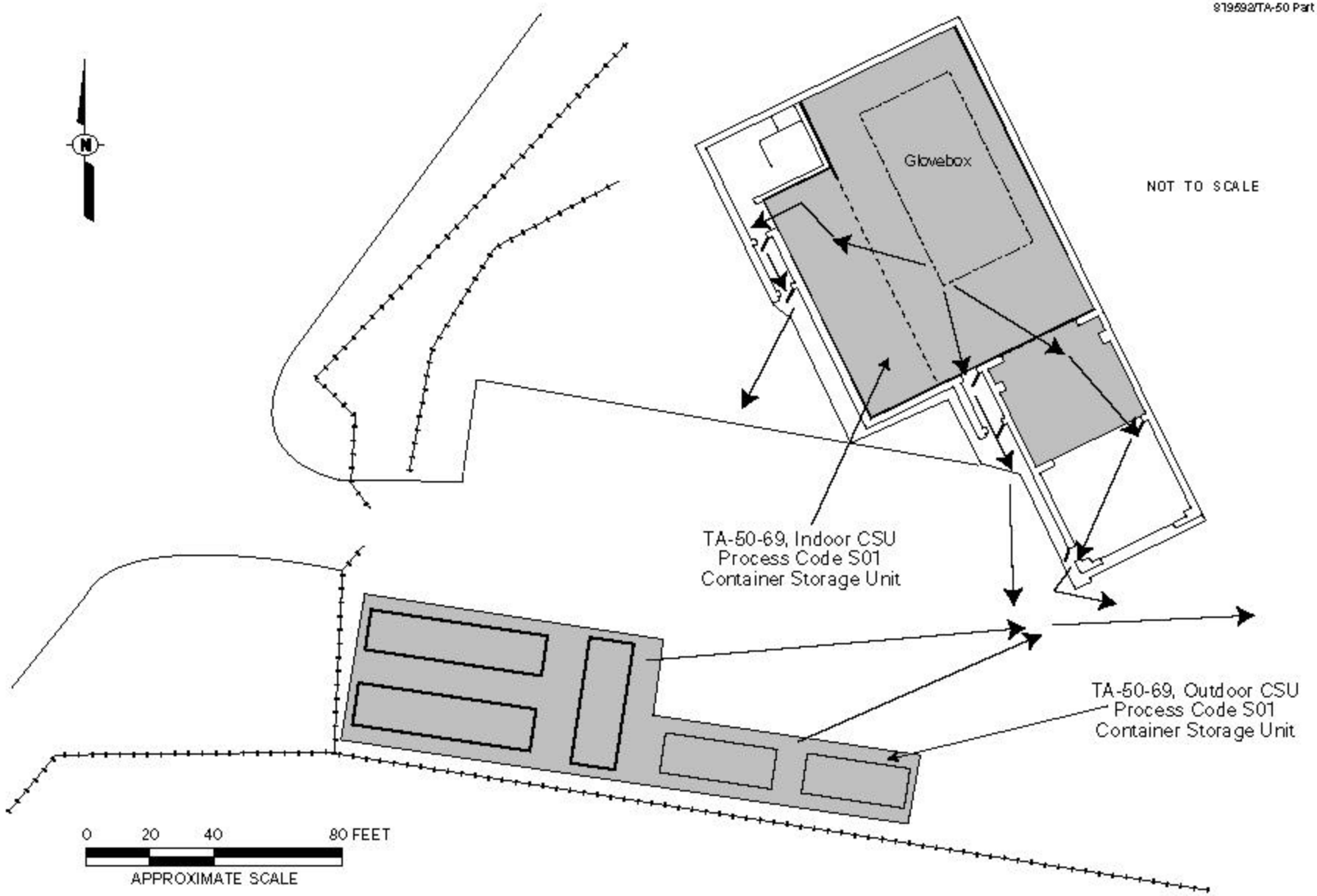

Figure E-1
Evacuation Routes and Muster Areas at Technical Area (TA) 50

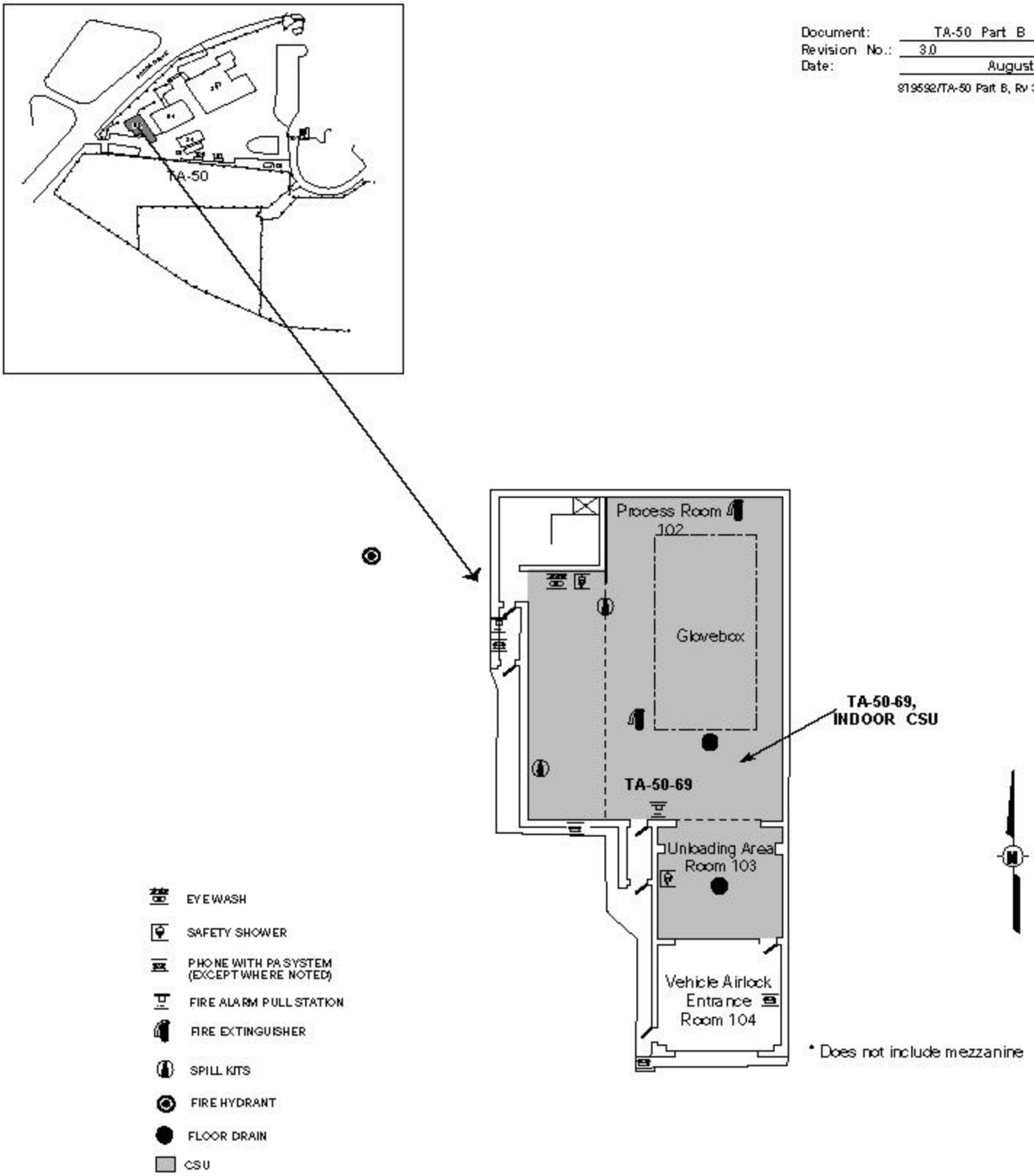

Figure E-2
TA-50-69, Indoor Container Storage Unit (CSU) Emergency Equipment

ATTACHMENT F

CLOSURE PLAN

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LIST OF ABBREVIATIONS/ACRONYMS

20.4.1 NMAC	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
COPC	contaminants of potential concern
CSU	container storage unit
D&D	Decontamination and Development
DOE	U.S. Department of Energy
ft	feet/foot
HSR-1	Health Physics Operations Group
HAR-5	Industrial Hygiene and Safety Group
LANL	Los Alamos National Laboratory
NMED	New Mexico Environment Department
OLASO	Office of Los Alamos Site Operation
PPE	Personal Protective Equipment
QA/QC	quality assurance/quality control
R&D	research and development
RCRA	Resource Conservation and Recovery Act
SAP	sampling and analysis plan
SW-846	Test Methods for Evaluating Solid Waste, Physical/Chemical Methods
SWRC	Solid Waste Regulatory Compliance
TA	technical area

ATTACHMENT F
CLOSURE PLAN

The information provided in this closure plan is submitted to address the applicable closure requirements specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), Subpart IX, 270.14(b)(13), and 20.4.1 NMAC, Subpart V, Part 264, Subpart G [6-14-00], which is inclusive of 264.178. This closure plan describes the activities necessary to clean close the container storage units (CSU) located at Los Alamos National Laboratory (LANL) Technical Area (TA) 50. 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 264.111 [6-14-00].

The CSUs addressed in this closure plan include the TA-50, Building 69 (TA-50-69), Indoor CSU and the TA-50-69, Outdoor CSU. The CSUs provide storage for hazardous and mixed wastes and are shown on Figure F-1.

Until closure is complete and has been certified in accordance with 20.4.1 NMAC, Subpart V, 264.115 [6-14-00], as discussed in Section F.1.6, a copy of the approved closure plan and any approved revisions will be on file at LANL's Solid Waste Regulatory Compliance (SWRC) and at the U. S. Department of Energy (DOE) Office of Los Alamos Site Operation (OLASO).

F.1 GENERAL CLOSURE INFORMATION

This section is prepared in accordance with the requirements of 20.4.1 NMAC, Subpart IX, 270.14(b)(13), and 20.4.1 NMAC, Subpart V, Part 264, Subpart G, which is inclusive of 20.4.1 NMAC, Subpart 264.178.

F.1.1 Closure Performance Standard [20.4.1 NMAC, Subpart V, 264.111]

The CSUs addressed in this closure plan will be closed in a manner that:

- Minimizes the need for further maintenance,
- Controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, or surface waters, or to the atmosphere, and
- Complies with the closure requirements of 20.4.1 NMAC, Subpart V, Part 264, Subpart G [6-14-00], including, but not limited to the requirements of 20.4.1 NMAC, Subpart V,

264.178, 264.197, 264.228, 264.258, 264.280, 264.310, 264.351, 264.601 through 264.603, and 264.1102.

This will be accomplished by removal of waste from each TA-50 CSU and decontamination, if necessary, of all surfaces and equipment that may have come into contact with wastes. The surfaces and equipment will either be sampled and determined to be below applicable standards or will be removed or decontaminated to meet the applicable standards which are inclusive of the closure performance standard; 20.4.1 NMAC, Subpart V, Part 264, Subpart G; and 20.4.1 NMAC, Subpart V, 264.178. All waste may be either subsequently reclaimed, recycled, or disposed of as appropriate after closure activities are completed. Decontamination activities will ensure the removal of hazardous waste residues from the TA-50 CSUs to establish cleanup levels.

F.1.2 Partial and Final Closure Activities [20.1.4 NMAC, Subpart V, 264.112 (b) and (d)]

This closure plan has been written for partial closure rather than final closure of the entire LANL facility. Partial closure will consist of closing one or more of the CSUs at TA-50 while leaving the other regulated hazardous/mixed waste units at LANL in service. Partial closure (hereinafter referred to as closure) will be deemed complete when clean closure of a unit has been verified; all surfaces and/or equipment have been decontaminated, if necessary; and closure certification has been submitted to and approved by the New Mexico Environment Department (NMED). Final closure will occur when LANL's remaining regulated hazardous/mixed waste management units 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 will be deemed complete when the closure certification has been submitted to the NMED and the NMED has approved the final closure.

F.1.3 General Closure Schedule [20.1.4 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 at any TA-50 CSU. 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 any hazardous waste will begin prior to the initiation of removal and/or decontamination of equipment and facilities 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 TA-50 CSU to be closed. This timeframe will be met as long as facilities are available for storage, 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 CSU to be closed. Closure will be conducted in accordance with the schedule presented in Table F-1 of this closure plan. In the event that closure is prevented from proceeding according to schedule, LANL will notify the Secretary of the NMED in accordance with extension request requirements in 20.4.1 NMAC, 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].

F.1.4 Amendment of the Closure Plan [20.4.1 NMAC, Subpart V, 264.112(c)]

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

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

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

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

F.1.5 Closure Cost Estimate, Financial Assurance, and Liability Requirements [20.1.4 NMAC, Subpart V, 264.140(c)]

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

F.1.6 Closure Certification [20.1.4 NMAC, Subpart V, 264.115]

Within 60 days after completion of closure activities at any TA-50 CSU or final closure of the facility, LANL will submit to the Secretary of the NMED, via certified mail, a certification that the unit has been closed in accordance with the approved closure plan. The certification will be signed by the appropriate DOE and LANL officials and by an independent, registered professional engineer, in accordance with 20.4.1 NMAC, Subpart V, 264.115 [6-14-00]. Documentation supporting the independent, registered engineer's certification will be furnished to the Secretary of the NMED upon request, as specified in 20.4.1 NMAC, Subpart V, 264.115 [6-14-00]. A copy of the certification and supporting documentation will be maintained by both DOE/OLASO and SWRC.

F.1.7 Security

Because of the ongoing nature of operations at LANL, site security at the TA-50 CSUs will be maintained by the DOE or another authorized federal agency for as long as necessary to prohibit public access. The security fence at TA-50 will be maintained to ensure that public access is prevented.

F.1.8 Closure Reports

Upon completion of the closure activities at a TA-50 CSU, a closure report will be prepared and, upon request, provided to the Secretary of the NMED. The report will document the closure and contain, for example, the following:

- A copy of the certification described in Section F.1.6 of this closure plan
- Any significant variance from the approved activities and the reason for the variance
- A summary of all sampling results, showing:
    - Sample identification
    - Sampling location
    - Datum reported
    - Detection limit for each datum
    - A measure of analytical precision (e.g., uncertainty, range, variance)
    - Identification of analytical procedure
    - Identification of analytical laboratory
- A quality assurance (QA)/quality control (QC) statement on analytical data validation and decontamination verification
- The location of the file of supporting documentation, including:
    - Field logbooks
    - Laboratory sample analysis reports

- QA/QC documentation
- Chain-of-custody forms

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

F.2 DESCRIPTION OF THE TA-50 CSUs

F.2.1 TA-50-69, Indoor CSU

The TA-50-69, Indoor CSU consists of Rooms 102 and 103. Room 102, the main process room, measures approximately 45 feet (ft) wide and 52-ft long. The long dimension is oriented northwest-southwest. Room 103, the unloading area, measures approximately 18-ft wide and 19-ft long and is located adjacent to and southeast of Room 102. A 12-ft by 20-ft roll-up vehicle access door is located at the southernmost end of Room 103, separating the unloading area (Room 103) from the vehicle airlock entrance (Room 104).

F.2.2 TA-50-69, Outdoor CSU

The TA-50-69, Outdoor CSU is located in the southwest corner of TA-50 and consists of an asphalt and concrete pad that is not lined or coated, and measures 24-ft wide and 90-ft long, with an additional strip 12-ft wide and 90-ft long added to the southwest end. The asphalt and concrete pad is approximately 4-in. thick. The long dimension of this CSU is oriented east-southeast. The pad slopes gently (approximately 1 to 5 percent) from west to east and up to 2.5 percent toward the centerline. Transportainers and other weather protective structures within the TA-50-69, Outdoor CSU provide optional weather protection for containers of various sizes. Painted lines are used to visually delineate the CSU boundary.

F.2.3 Estimate of Maximum Waste In Storage

The maximum total inventory of waste that may be in storage at any time in the TA-50 CSUs is estimated as follows:

- TA-50-69, Indoor CSU – 1,500 gallons
- TA-50-69, Outdoor CSU – 30,000 gallons

F.2.4 Description of Waste in Storage

The TA-50 CSUs are used to store containers of solid hazardous and mixed waste. The hazardous waste is generated during research and development (R&D) activities, processing and recovery

operations, decontamination and decommissioning (D&D) projects, and environmental remediation/restoration activities conducted at various TAs throughout LANL. A waste is considered hazardous if it meets the definition of a solid waste described in 20.34.1 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 wastes currently stored at TA-50 are generated during R&D activities, processing and recovery operations, D&D projects, and general facility operations. The mixed wastes are classified as such because Resource Conservation and Recovery Act (RCRA)-characteristic or -listed wastes are or may be present, along with radioactive components. Information on the hazardous components of all waste stored at the TA-50 CSUs is provided in the "Los Alamos National Laboratory General Part A Permit Application, " Revision 0.0 (LANL, 1998a) and Attachment H of this permit renewal application.

F.2.5 Removal of Waste

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

F.3 CLOSURE PROCEDURES [20.4.1 NMAC, Subpart V, 264.112]

To the extent possible, all contaminated surfaces and equipment (if present) at the TA-50 CSUs will be removed and decontaminated to meet applicable standards determined at the time of closure. Surfaces and equipment that cannot be decontaminated will be containerized and managed in compliance with applicable regulations. All waste may be subsequently reclaimed, recycled, or disposed of as appropriate after closure activities are completed. Decontamination of the CSU surfaces and/or equipment will undergo verification via sampling and analysis. All sampling conducted during closure activities will be done as generally discussed in this closure plan and as outlined in the CSU-specific sampling and analysis plan (SAP) (see Section F.4) to be provided at the time of closure. Sampling and analysis will be done in accordance with appropriate QA/QC procedures as required by the individual analytical technique or the authority for the relevant standard methods. Closure will be conducted in accordance with the general schedule presented in Table F-1, as amended by the TA-50 CSU-specific SAP to be submitted prior to the actual closure.

F.3.1 Preliminary Closure Activities

F.3.1.1 Safety Precautions

Job hazards associated with closure activities will be identified, controls developed, and workers briefed before closure activities are conducted, in accordance with LANL safety procedures. Personnel involved in closure activities will wear appropriate personal protective equipment (PPE), specified by the Health Physics Operations Group (HSR-1) and Industrial Hygiene and Safety Group (HSR-5), and will follow good hygiene practices to protect themselves from exposure to hazardous and/or mixed waste. The level of PPE that will be required will depend upon the levels of radiological and/or chemical contamination that are detected, if any. If HSR-1 and HSR-5 surveys do not indicate detectable contamination levels, minimum PPE requirements will consist of coveralls, steel-toed shoes, 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 Appendix D of the "Los Alamos National Laboratory General Part B Permit Application" hereinafter referred to as the LANL General Part B (LANL, 1998b). Contaminated PPE will either be decontaminated or managed in compliance with appropriate waste management regulations.

F.3.2. Background Determination

Before any decontamination activity begins, background levels for potential hazardous waste constituents will be determined. Decontamination and verification sampling procedures may involve wash water sampling, swipe sampling, soil sampling, or other methods developed by the time of closure. A minimum of two background samples will be obtained from clean water, cleaning equipment, and detergent solutions, as they are applicable to the closure. Background samples will be obtained for the material to be decontaminated and/or for any sampling materials used in swipe sampling analysis used to verify closure. Appropriate background soil sample concentrations derived from soil studies developed under the LANL corrective action or other programs will be used to determine soil hazardous constituent background levels, if applicable. Details of appropriate background levels and/or necessary samples and collection techniques will be included in the TA-50 CSU-specific SAP as discussed in Section F.4 of this closure plan.

F.3.2.1 Structural Assessment

Before decontamination activities begin, the base or secondary containment of each CSU will be inspected for any cracks or conditions that could potentially lead to loss of wash water containment. Preventive maintenance inspections are conducted routinely (i.e., weekly) at each CSU. If any defects, deterioration, damage, or hazards affecting containment have developed after the most recent preventive maintenance inspection was conducted, appropriate remedial actions (including sampling, repairs, maintenance, or replacement) will be completed before decontamination activities begin. The

base surface will be evaluated for cracks/gaps that could potentially lead to a loss of decontamination wash water. If a crack or gap is present, a swipe sample or a representative sample of the media will be taken (e.g., asphalt or concrete) to determine the presence of contamination. The sample will be analyzed for hazardous contaminants of potential concern (COPC) determined through review of the chemical properties of the waste stored during the operating history of the CSU. If contamination is detected, the surface flaw will be decontaminated prior to repairing the crack/gap. Complete or partial removal (e.g., scabbling) of the material may be performed until contamination is no longer detected. If partial removal is successful in eliminating the contamination, it will be assumed that the remaining material, including underlying soil, is clean.

F.3.3 TA-50-69, Indoor CSU

Prior to decontamination of the main surfaces at the TA-50-69, Indoor CSU, any portable equipment (if present) to be removed from the area will be wiped down with a wash water solution for decontamination. The equipment may include items such as pallets and miscellaneous waste management equipment (i.e., drum dolly, glovebox). The CSU walls and floors will then be wiped down with mops, cloths, and/or other absorbent materials to remove hazardous constituents. This will minimize the amount of liquid waste generated as a result of decontamination activities. A portable berm will be used to collect excess wash water and provide containment, as necessary during the decontamination process. The used wash water will be allowed to accumulate within the portable berm area and will then be transferred to a container where it will be sampled to determine an appropriate location for disposal.

There are no recessed areas (i.e., sumps) located at the TA-50-69, Indoor CSU. There are, however, two drains connected directly to the piping that feeds to the Radioactive Liquid Waste Treatment Facility. These drains are located in Rooms 102 and 103 and will be covered prior to the commencement of decontamination activities.

When decontamination of the CSU is complete, verification will be conducted as indicated in Section F.4. If analysis from the verification indicate that hazardous constituents are present, the decontamination and verification will be repeated until the surface or equipment (if present) has been decontaminated or the decision is made to manage it as contaminated waste. Upon determination that it is contaminated waste, the surface, or equipment may be removed, transported, and stored at other hazardous waste CSUs to facilitate the closure process.

F.3.4 Decontamination of the TA-50-69, Outdoor CSU

Closure activities at the TA-50-69, Outdoor CSU will include:

- Decontamination, recycling, and/or disposal of transportainers and/or portable equipment.
- Decontamination or removal of portions of the storage pad underlying this CSU (as indicated by the operating record).
- Sampling of surrounding soils to determine presence and/or extent of contamination (as indicated in the operating record).
- Disposal of soils and/or waste materials generated during decontamination.

F.3.4.1 Pallet Decontamination

Pallets and other portable equipment used at the TA-50-69, Outdoor CSU will be removed or decontaminated to meet applicable standards at the time of closure. Pallets and equipment that cannot be decontaminated will be containerized and managed in compliance with applicable regulations. All waste may be subsequently reclaimed, recycled, or disposed of as appropriate after closure activities are completed. If decontaminated, the pallets and other portable equipment will be wiped down with a wash water solution. This will minimize the amount of liquid waste generated as a result of decontamination activities. A portable berm will be used to collect excess wash water and provide containment, as necessary during the decontamination process. The used wash water will be allowed to accumulate within the portable berm area and will then be transferred to a container where it will be sampled to determine an appropriate location for disposal.

After the decontamination is completed, several discrete verification samples will be taken as discussed in Section F.4. If this verification sampling and analysis indicates that hazardous constituents are present, the decontamination and verification will be repeated until the pallet or equipment (if present) has been decontaminated or the decision is made to manage it as contaminated waste. Upon determination that it is contaminated waste, the pallet or equipment may be removed, transported, and stored at other hazardous waste CSUs to facilitate the closure process.

F.3.4.2 Transportainer Decontamination

Normal operations at the TA-50-69, Outdoor CSU will not expose outer surfaces of transportainers to waste contamination. Therefore, unless there is evidence of accidental outer surface contamination by spillage of regulated wastes either on the outside, or leakage from interior spills, the outer surfaces will not be sampled for contamination. If outer surfaces of a transportainer(s) are found to be contaminated with hazardous constituents, those surfaces will be decontaminated following the procedures described for transportainer interior surfaces.

If necessary, the inside of the transportainers will be pressure washed or wiped down and rinsed with wash water. A portable berm will be used to collect excess wash water and provide containment, as necessary during the decontamination process. The used wash water will be allowed to accumulate within the portable berm area and will then be transferred to a container where it will be sampled to determine an appropriate disposal path.

After the decontamination is completed, several discrete verification samples will be taken as discussed in Section F.4. If this verification sampling and analysis indicates that hazardous constituents are present, the decontamination and verification will be repeated until the transportainer has been decontaminated or the decision is made to manage it as contaminated waste. Upon determination that it is contaminated waste, the transportainer may be removed, transported, and stored at other hazardous waste CSUs to facilitate the closure process.

F.3.4.3 Storage Pad Decontamination

Operational records (e.g., inspection findings, occurrence reports), visual inspection, and analytical data (if necessary) will be used to determine if the asphaltic concrete pad at the TA-50-69, Outdoor CSU is contaminated by hazardous constituents from waste management operations at the unit. Those areas suspected of being contaminated will either be removed from the pad, or washed with a wash water solution. Removal, containerization, and disposal of contaminated asphalt is likely to be the option of choice.

A portable berm will be used to collect excess wash water and provide containment, as necessary during the decontamination process. The used wash water will be allowed to accumulate within the portable berm area and will then be transferred to a container where it will be sampled to determine an appropriate location for disposal.

After the decontamination is completed, several discrete verification samples will be taken as discussed in Section F.4. If this verification sampling and analysis indicates that hazardous constituents are present, the decontamination and verification will be repeated until the pad has been decontaminated or the decision is made to manage it appropriately as contaminated waste.

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, Material Safety Data Sheets) 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 this additional evaluation confirms the asphalt as the source of contamination, baseline concentrations

for clean washwater will be adjusted accordingly. If decontamination verification cannot be demonstrated, the container storage pad may be evaluated using an alternative demonstration of decontamination. If all alternative demonstrations fail, the container storage pad will be removed.

Record reviews and visual inspection of soils along the margins of the TA-50-69, Outdoor CSU will be used to identify areas where soil contamination from waste management activities could have occurred. Soil sampling will be conducted in any suspected contaminated areas and in those areas where the asphalted concrete pad has been removed due to contamination with hazardous constituents. Before closure activities begin, soil samples will be collected from appropriate areas and analyzed to serve as background samples. A statistically representative number of soil samples will be collected from contaminated area(s) to a 6-inch (in.) depth. Samples will be equally spaced to ensure representative sampling of the contaminated area(s). If contamination resulting from container storage activities is discovered, the contaminated soils will be either remediated in place, or removed for proper disposal.

F.3.4.4 Soil Sampling and Decontamination

Soil removal at the TA-50-69, Outdoor CSU may be conducted to meet the closure performance standards. Examples include the detection of contamination that has migrated beyond the asphalt pads to the surrounding soil, and cases in which operating records indicate that a release of hazardous waste from storage structures to the surrounding soil has occurred. If records indicate that no release of hazardous waste to soils has occurred, soil sampling will not be conducted.

If collection of soil samples is necessary to demonstrate decontamination, background soil samples will be collected and analyzed for the COPCs identified in the operating record to provide a baseline for decontamination verification. Sampling locations to determine the extent of contamination will be based upon a biased random sampling approach, including historical evidence of releases, or visual staining, and any other information that indicates a potential contamination pathway. The number of samples, locations, depths, and sampling methods will be determined before closure and included in the TA-50 CSU-specific closure SAP, as discussed in Section F.4. Results from sampling will be compared to the background samples and/or baseline concentration levels included in the closure SAP. If analysis shows that the soil at the storage area is contaminated, soil sampling results that are above the background/baseline levels will be used to identify the extent of soil contamination. Contaminated soils will be removed in layers and sampling conducted following removal of each layer. This procedure will be used to minimize the amount of soil removed.

F.3.5 Decontamination Equipment

Prior to use, all reusable sampling equipment used during decontamination in closure activities will be

cleaned and rinsed, as described in the closure SAP. Sampling equipment rinsate blanks will be collected and analyzed in accordance with the QA/QC procedures described in the closure SAP. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove any residue and cleaned with a wash water solution (the closure SAP will include a discussion of wash water solutions). Residue and disposable decontamination equipment as well as reusable decontamination 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 DECONTAMINATION VERIFICATION

Sufficient sampling and analysis will be conducted to demonstrate that hazardous waste residue is not present at the CSU after closure. Wash water sampling, swipe sampling, or other appropriate sampling and analysis methodologies may be used to verify decontamination. The verification sampling method will be determined at the time of development of the TA-50 CSU-specific closure SAP and will be based on factors such as COPCs and materials of construction for the storage structure. The SAP will establish the minimum number of verification samples based on the total surface area of the CSU. Using a biased random sampling approach, items, structures, and/or surfaces will be sampled for verification of decontamination. Sample bias will include known or likely areas of contamination, low areas, sumps, and known spill locations, as determined to be appropriate on a case-by-case basis.

For wash water-based decontamination verifications, samples of clean wash water solution squeezed from mops, sponges, and/or other absorbent materials prior to use will be collected for a baseline comparison. The samples will be analyzed for the COPCs, as presented in the TA-50 CSU specific SAP. Analytical procedures will conform to methods found in the most current version of “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods” (*SW-846*) (U.S. Environmental Protection Agency, 1986).

Used wash down solutions will be analyzed for the same parameters. Wash down solutions will be considered contaminated if the used wash water solution shows a significant increase (i.e., determined using statistical methods defined in *SW-846*) in the analytical parameters over the clean wash water solution. If additional decontamination is deemed necessary, the verification procedure will be repeated.

Swipe sampling may be used on a case-by-case basis to determine verification of decontamination at the TA-50 CSUs. Background for swipe samples will be determined by submitting an unused swipe and

solvent sample for analysis of the CSU COPCs. Swipe samples will be analyzed using approved methods, which will be included in the closure SAP.

If other sampling methodologies have been developed at the time of closure for the TA-50 CSU, their use to determine decontamination will be addressed in the closure SAP.

For any sampling methodology, decontamination will be verified if the collected samples meet any of the decontamination criteria listed in Section F.3.6 of this closure plan. If the verification sampling indicates contamination higher than the approved values, additional sampling will be performed to establish the boundaries of contamination for large structures. After establishing the boundaries of contamination, the decontamination process will be repeated within those boundaries, using portable berms or other appropriate material to limit the potential for run-off from the affected area. An additional round of verification sampling will be performed for all of the areas previously determined to be contaminated. After each decontamination event and verification iteration, a decision will be made to repeat the process or remove contaminated materials and dispose of them properly.

F.5 DECONTAMINATION VERIFICATION CRITERIA

Successful decontamination is defined as one of the following criteria:

- No detectable hazardous waste or hazardous constituents from container storage activities are found in the final sample.
- 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 wash water.
- Detectable hazardous waste or hazardous constituents from container storage activities in the final sample are at or below levels agreed upon with the NMED.
- Detectable hazardous waste or hazardous constituent concentrations from container storage activities do not significantly decrease after several wash downs. In such an event, hazardous constituents that pose an acceptable risk will be allowed to remain, as mutually agreed upon with the NMED.

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

F.6 SAMPLING AND ANALYSIS PLAN [20.4.1 NMAC 264.112(b)(4)]

Sampling and analytical procedures will be performed during the decontamination and verification activities associated with the partial closure of the TA-50 CSUs covered by this plan. These

procedures will use standard approved methods (e.g., SW-846), as appropriate, for making closure decontamination verification determinations. However, the TA-50 CSUs are not anticipated to undergo closure for a relatively long time, and it is probable that sampling and analytical methods will be revised and improved before closure. In order to alleviate the need for future closure plan and permit modifications until actual closure activities are scheduled, LANL will submit TA-50 CSU-specific closure SAPs to the NMED at the time of closure notification for review and approval.

The TA-50 CSU-specific closure SAPs will contain a detailed discussion of the available CSU information and proposed clean closure methodology to assure the closure performance standards are met. These closure SAPs for the TA-50 CSUs will, at a minimum, include:

- A detailed discussion of site characteristics.
- The CSU operational history, to include descriptions of known spills, releases, and/or evidence of potential problems (e.g., visual stains).
- Chemical properties of the waste stored at the CSU.
- Determination of applicable COPCs.
- A detailed hazard control plan, including a review of chemical hazards present at the site, control and monitoring methods and procedures, and required PPE.
- Determination of wash water solution composition, if necessary.
- Detailed procedures for decontamination methods for equipment, structures, and media.
- Discussion of background levels determined through sampling or use of published data and their relevance to the specific CSU.
- Methods for sampling and analysis of contaminated media.
- Removal procedures for contaminated media, if necessary.
- Sampling methods for decontamination media and hazardous waste determination. The discussion will include the rationale for using wash water samples, swipe samples, soil samples, and/or other sampling methodology.
- Sampling methods for decontamination verification procedures. The discussion will include the statistical or judgmental basis for determining the number of verification samples needed and the constituents to be analyzed for.
- Sampling equipment decontamination and disposition procedures.
- Sample handling and documentation procedures.
- Analytical methods and the rationale for their determination.

- Disposition of removed waste, decontamination media, or contaminated soils. This discussion will identify on- or off-site hazardous waste management facilities used for final disposition and the types of wastes shipped.

- Decontamination criteria.

- Statistical basis for verification of decontamination, if applicable. The discussion will include information on determination of statistical increases in analytical parameters and numerical values for significant increases.

- Risk assessment procedures to be used, if necessary.

- Field and laboratory QA/QC procedures.

- Schedule of closure activities, including decontamination, sampling, analysis, potential removal of soils, and final report submittal.

- Identification of contact person or office.

F.7 REFERENCES

EPA, 1986 (and all approved updates), "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.

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

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

Table F-1
Schedule for TA-50 Closure Activities

Activity	Maximum Time Required [a]
Submit CSU-specific Closure/Sampling and Analysis Plan	-90 Days
Notify the New Mexico Environment Department (NMED)	-45 Days
Collect background samples (if applicable)	-5 Days
Final receipt of waste	Day 0
Begin closure activities (i.e., removal of wastes)	Day 5
Decontaminate surfaces and/or equipment	Day 10
Perform verification sampling of the surfaces and/or equipment	Day 20
Evaluate analytical data	Day 50
Perform additional decontamination (if necessary)	Day 55
Perform additional verification sampling (if necessary)	Day 60
Evaluate analytical data	Day 75
Perform asphalt decontamination and verification sampling	Day 80
Evaluate analytical data	Day 95
Perform soil sampling (if necessary)	Day 100
Evaluate analytical data	Day 120
Perform final clean up (i.e., removal of decontaminated equipment and decontamination waste)	Day 140
Verify decontamination	Day 150
Submit final report to NMED	Day 180

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

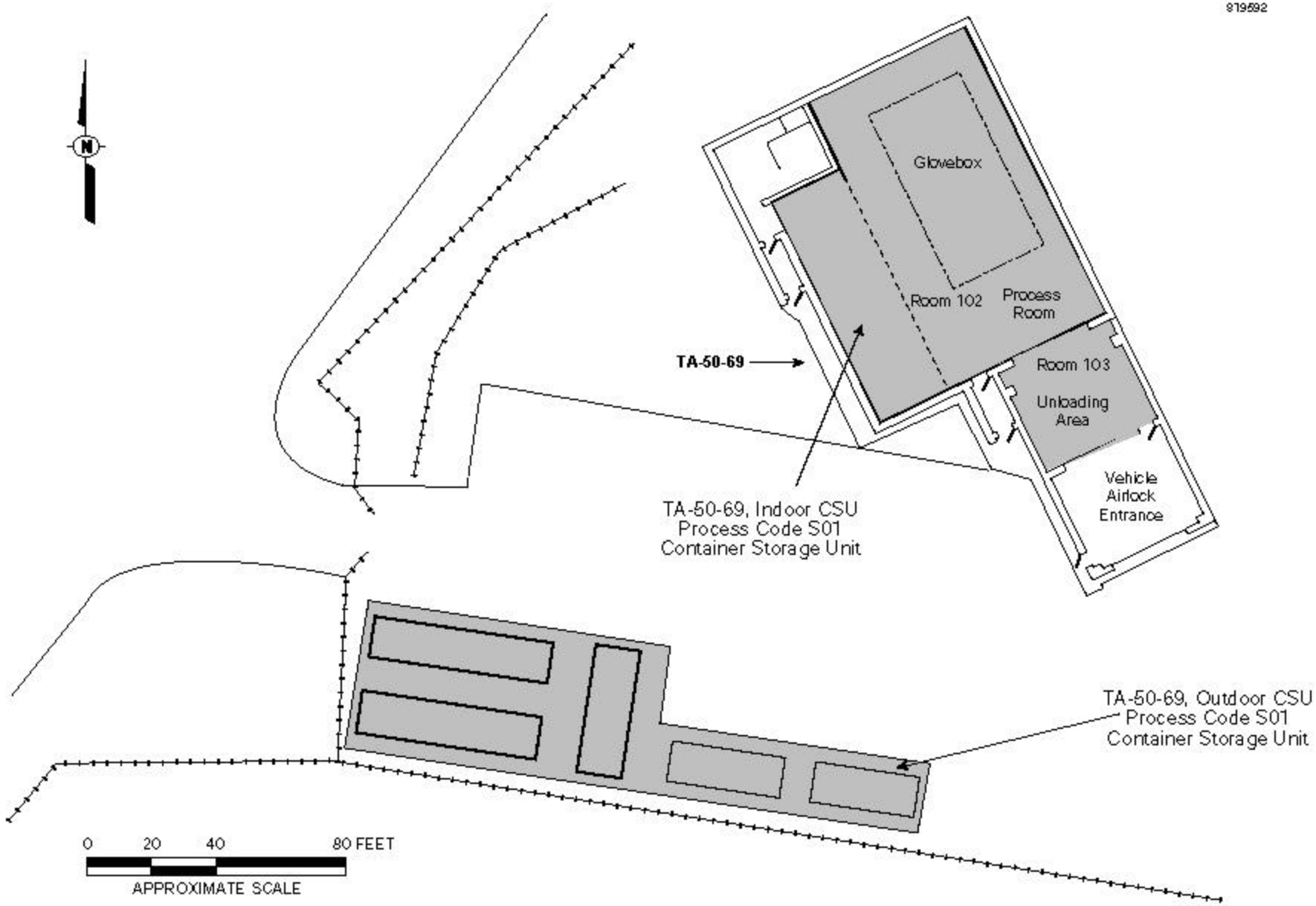

Figure F-1
Location Map Technical Area (TA) 50, Building 69, Container Storage Units

ATTACHMENT G

CONTAINER MANAGEMENT

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FIGURE NO.	TITLE
G-1	Technical Area (TA) 50, Building 69, Container Storage Units

LIST OF ABBREVIATIONS/ACRONYMS

20.4.1 NMAC	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
CAM	continuous air monitor
CSU	container storage unit
FRP	fiberglass-reinforced plywood
ft	feet/foot
LANL	Los Alamos National Laboratory
m^3	cubic meters
MDA	Material Disposal Area
ppmw	parts per million by weight
TA	Technical Area
TRU	transuranic
WCRRF	Waste Characterization, Reduction, and Repackaging Facility

ATTACHMENT G
CONTAINER MANAGEMENT

The information provided in this attachment is submitted to address the applicable container storage requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), Subpart IX, 270.15, and 20.4.1 NMAC, Subpart V, Part 264, Subpart I , revised June 14, 2000 [6-14-00]. This attachment provides an overview of current facility operations and waste management practices for the Technical Area (TA) 50 container storage units at Los Alamos National Laboratory (LANL) and complements the information provided in Section 2.0 of this permit renewal application. It includes detailed descriptions of the TA-50 container storage units (CSUs) and the waste management practices associated with them. Table G-1 summarizes applicable regulatory references for container storage and the corresponding location where the requirements are addressed in this permit renewal application.

G.1 CONTAINER STORAGE

TA-50 is located at the northeast corner of the intersection of Pajarito Drive and Pecos Road, on the finger mesa bounded by Mortandad Canyon to the north and Two-Mile Canyon to the south. TA-50-69 is located in the southwest quadrant of TA-50 and was constructed in 1979 to house the Waste Characterization, Reduction, and Repackaging Facility (WCRRF) (formerly the Size Reduction Facility). The primary purpose of WCRRF was to size reduce large metallic items (e.g., glove boxes and other process equipment) that were transuric (TRU)-contaminated and repackage them into standard-sized containers capable for transportation and disposal at the Waste Isolation Pilot Plant. The facility was first used to size reduce mixed TRU waste in 1982. The original function of the WCRRF has since been expanded to include other activities related to hazardous and mixed waste management including waste characterization and experimental process demonstration support.

TA-50-69 is a single-story building constructed in two phases. The original structure (45 feet (ft) by 52 ft) was built in 1979, to house the main process room (Room 102) and personnel change rooms. An unloading area (Room 103) and a vehicle airlock entrance (Room 104) were added to the building in 1986. The dimensions of the 1986 addition are 20 ft by 36 ft. The longest dimension of the building is now 88 ft, and the building is oriented northwest-southeast. A mezzanine was also added in 1986 over the western third of the main process room. The exterior walls of TA-50-69 are load-bearing and constructed of structural steel framing with a plastic veneer finish on polystyrene insulation and gypsum wallboard. The interior walls are similarly constructed. The epoxy-painted floor of the building is a reinforced concrete slab on compacted fill. The CSUs at TA-50 include the TA-50-69, Indoor CSU

and the TA-50-69, Outdoor CSU.

G.1.1 TA-50-69, Indoor CSU

The TA-50-69, Indoor CSU consists of Rooms 102 and 103 as shown in Figure G-1. Room 102, the main process room, measures approximately 45 ft wide and 52 ft long. The long dimension is oriented northwest-southeast. Room 103, the unloading area, measures approximately 18 ft wide and 19 ft long and is located adjacent to and southeast of Room 102. A 12-ft by 20-ft roll-up vehicle access door is located at the southernmost end of Room 103, separating the unloading area (Room 103) from the vehicle airlock entrance (Room 104). This design allows for unobstructed transport of oversized fiberglass-reinforced plywood (FRP) boxes from outside the facility, through the vehicle airlock entrance, into the unloading area, and into the glove box cutting enclosure.

G.1.2 TA-50-69, Outdoor CSU

The TA-50-69, Outdoor CSU was constructed before 1980, and was first used to store mixed waste in 1982. It is located in the southwest corner of TA-50. The TA-50-69, Outdoor CSU (Figure G-1) asphalt pad is not lined or coated, and measures 24 ft wide and 90 ft long, with an additional strip 12 ft wide and 90 ft long added to the southeast end. The asphalt pad is approximately 4 in. thick. The long dimension of this CSU is oriented east-southeast. The pad slopes gently (approximately 1 to 5 percent) from west to east and up to 2.5 percent toward the centerline. Transportainers and other weather protective structures (i.e., containers covered with tarps, containers inside SWBs) within the TA-50-69, Outdoor CSU provide weather protection for containers of various sizes. Supplement 2-1 of this permit renewal application provides detailed information regarding standard transportainers. Painted lines are used to visually delineate the TA-50-69, Outdoor CSU boundary.

G.2 GENERAL FACILITY OPERATIONS AND WASTE MANAGEMENT PRACTICES

The following provides an overview of current facility operations and waste management practices that are applicable to the TA-50 CSUs. This overview includes a discussion of container handling and inspection; security and access control; preparedness and prevention; hazards prevention; special requirements for ignitable, reactive, or incompatible waste; and air emission standards for containers. This information is submitted to fulfill the requirements of 20.4.1 NMAC, Subpart V, Part 264, Subpart I [6-14-00]. Specific waste management practices and procedures detailed herein may be subject to change as a result of LANL safety and waste management policy changes.

G.2.1 Container Handling and Inspection

Handling and inspection requirements for containers stored within the TA-50 CSU are presented in Sections 2.1.5 and 2.1.7, respectively, of this permit renewal application. This information is provided to meet the requirements of 20.4.1 NMAC, Subpart V, 264.171, 264.173, and 264.174 [6-14-00].

G.2.2 Security and Access

Security at TA-50 is predominantly maintained with artificial barriers. These barriers prevent the unknowing entry and minimize the possibility for unauthorized entry of persons or livestock into the area and, thus, satisfy the requirements of 20.4.1 NMAC, Subpart V, 264.14(a) and (b)(2) [6-14-00]. An 8-ft high chain-link security fence surrounds the entire perimeter of TA-50. Bilingual (i.e., English and Spanish) warning signs are posted on the fences at approximately 50- to 75-ft intervals. In accordance with the requirements of 20.4.1 NMAC, Subpart V, 264.14(c) [6-14-00], warning signs are also posted at the entrances to each area that will manage hazardous and mixed waste and are visible from any approach to these areas. The legends on the posted signs indicate “Danger?Hazardous Waste Storage Area” and “Unauthorized Persons Keep Out.” The signs are legible from a distance of 25 ft. Additionally, signs will be posted at the entrance to each hazardous and mixed waste management area to address requirements associated with entering and working in the area.

There are four entry gates into TA-50. Two entry gates are located north of TA-50-1. During normal business hours, the easternmost of these two gates may remain open to receive deliveries. After normal business hours, this gate is padlocked. The westernmost of these two gates is the main access gate and remains open during normal business hours for personal and government-owned passenger vehicles. After normal business hours, access through this gate is by badge-reader only. A fire access and shipping gate is located west of TA-50-69 and is routinely kept closed and locked. When this gate is opened for shipments of materials or waste, facility personnel are present in the yard west of TA-50-69 to limit egress by unauthorized persons. A fourth gate to the south of TA-50-1 is locked except when authorized access is necessary. TA-50 is patrolled by Protection Technology Los Alamos security personnel during non-operational hours to ensure that unauthorized entry has not occurred. In accordance with 20.4.1 NMAC, Subpart IX, 270.14(b)(19)(viii) [6-14-00], the locations of the security fences and entry gates at TA-50 are shown on Figure A-10.

TA-50-69 is always locked and access is gained by a badge reader. Doors to the building and transportainers are locked. Keys to these doors are distributed to designated personnel only. Building access also limits access to the Indoor CSU. Access to the TA-50-69, Outdoor CSU is controlled by a chain around the CSU and a posted sign that indicates “Authorized Personnel Only.”

G.2.3 Preparedness and Prevention

The following sections present how waste management operations at TA-50 comply with the preparedness and prevention requirements of 20.4.1 NMAC, Subpart V, Part 264, Subpart C [6-14-00]. Additional information on the communication and alarm equipment available at LANL is presented in Appendix E of the "Los Alamos National Laboratory General Part B Permit Application," Revision 1.0 (LANL, 1998), hereinafter referred to as the LANL General Part B. A list of the emergency equipment available for use at the TA-50 CSUs is provided as Table E-1 of Attachment E of this document and in Table E-2 of the LANL General Part B.

G.2.3.1 Required Equipment [20.4.1 NMAC, Subpart V, 264.32]

All personnel involved in waste management activities at the TA-50 CSUs have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another individual in accordance with 20.4.1 NMAC, Subpart V, 264.34 [6-14-00]. In the event of an emergency, this communication equipment will allow personnel to contact the operating group management, the Emergency Management and Response Office, and/or the Central Alarm Station operator.

TA-50-69 is equipped with an audible alarm system to alert personnel to evacuate the area. The alarm system may be activated by one of the fire alarm pull stations located throughout the building. TA-50-69 also has a public address system for announcing fires or evacuations and telephones with paging capabilities. Paging telephones are used to page on-site personnel and may be used in the event of an emergency to communicate the location and nature of hazardous conditions to personnel in the area. The alarm system is interrupted when the paging telephone system is activated to allow personnel to hear the announcement. Personnel can also use these phones to summon assistance from local emergency response teams in case of emergency. Personnel may carry pagers, two-way radios, and/or cellular telephones so they can contact or be contacted by on-site and LANL emergency support personnel at all times.

TA-50-69 is equipped with fire extinguishers and fire suppression systems. Depending on the size of a fire and the fuel source, fire extinguishers may be used by on-site personnel. However, LANL policy encourages immediate evacuation of the area and notification of appropriate emergency personnel. The fire alarm control panel continuously monitors all fire suppression and detection systems and transmits signals to the Los Alamos County Fire Department through LANL central alarm system.

A fire hydrant installed according to National Fire Protection Association standards is located approximately 55 ft west of TA-50-69. Water is supplied to the fire hydrant by a municipal water system

through 8 inch pipes at an adequate volume and pressure (i.e., 200 gallons per minute and 90 pounds per square inch static pressure) to supply a water hose in the event of a fire.

TA-50-69 has an automatic wet-pipe sprinkler system in the main building and in the large glove box enclosure. The sprinkler system is heat-activated at 100°C (212°F). The TA-50-69, Outdoor CSU transportainers and weather protective structures are not equipped with automatic sprinkler systems, but are provided with a fire extinguisher located within 20-ft of the CSU. Personnel may use the fire alarm pull station at TA-50-69 in the event of a fire at both the Indoor and Outdoor CSUs.

Two spill centers are located in TA-50-69 in Room 102. They contain spill control equipment, personal protective equipment, and sorbents. Trained personnel may use this equipment to mitigate small containable spills when they are certain their actions will not put themselves or others at risk. EM&R provides additional spill control equipment and assistance upon request and depending on the size and severity of the spill. Personnel decontamination equipment available includes safety showers and eye wash stations located at TA-50-69. Material safety data sheets located at all operations areas provide useful exposure information.

G.2.3.2 Testing and Maintenance of Equipment [20.4.1 NMAC, Subpart V, 264.33]

The communication, alarm systems, fire protection, spill control, and decontamination equipment described above are tested and/or maintained according to the inspection schedule provided in Appendix C of the LANL General Part B (LANL, 1998). The frequency of inspection is adequate to ensure proper operation in the event of an emergency. Repair and replacement of emergency equipment is performed as required.

G.2.3.3 Access to Communications or Alarm System

Whenever waste is being handled at the TA-50 CSUs, all personnel involved have immediate access to internal alarms or telephones either directly or through visual or voice contact with another individual. In the event of an emergency, communication equipment allows personnel to contact the operating group management, the Emergency Management and Response Office, and/or the Central Alarm Station operator. In addition to the communications and alarm systems described in Section G.2.3.1, on-site personnel may carry pagers so that they can be contacted on-site and LANL emergency support personnel at all times.

G.2.3.4 Aisle Space and Storage Configuration

Information on aisle space and storage configurations for the TA-50 CSUs is presented in Section 2.1.3 of this permit renewal application. This information is provided to meet the requirements of 20.4.1 NMAC, Subpart V, 264.35 [6-14-00].

G.2.3.5 Support Agreements with Outside Agencies

LANL maintains support agreements and contracts with outside agencies for emergency response assistance. Information regarding these contracts and support agreements is provided in Section 2.1.2.4 of the LANL General Part B (LANL, 1998).

G.2.4 Hazards Prevention [20.4.1 NMAC, Subpart IX, 270.14(b)(8) and 20.4.1 NMAC, Subpart V, Part 264 Subpart C]

In accordance with 20.4.1 NMAC, Subpart V, Part 264, Subpart C and 20.4.1 NMAC, Subpart IX, 270.14(b)(8) [6-14-00], the TA-50 CSUs addressed in this TA-50 Part B are designed and operated to minimize the possibility of fire, explosion, or unplanned releases of hazardous constituents to any environmental medium. The following sections describe the general preventive procedures, structures, and equipment at the TA-50 CSUs to meet these requirements. Adherence to the procedures and proper use of the structures and equipment will help to prevent hazards and exposure to personnel and releases to the environment.

G.2.4.1 Preventing Hazards in Unloading

TA-50 personnel will use proper handling equipment, appropriate to a container's size and weight, to help prevent hazards while moving containers within the CSUs. Flatbed trucks or trailers will be used to transport containers to TA-50-69 for storage and processing. A forklift will be used to move containers at the TA-50-69, Outdoor CSU, from outside the building into the TA-50-69 airlock, and then within the TA-50-69, Indoor CSU. FRP boxes and palletized drums will be handled with a forklift equipped with tines. Individual drums of waste will be manipulated with a drum-grapple attachment on the forklift. Small containers may be handled manually or with a dolly. Inside TA-50-69, two cranes are available to move heavy objects. Load limits are restricted to the rated capacity of these cranes for safe operation. All damaged containers (e.g., severely corroded drums) will be repaired or overpacked, or the wastes repackaged in new containers before being staged at the CSUs.

Waste management personnel at TA-50 do not perform loading/unloading operations during precipitation events. The waste stored in the TA-50 CSUs is Waste Isolation Pilot Plant-certifiable and does not contain free liquids; therefore, if a drum is opened and the contents spilled, it is easily contained. In the case of spills, on-site personnel follow site procedures, emergency response plans,

and implement the LANL Contingency Plan, if necessary. Because the waste does not contain free liquids, secondary containment and temporary berms are not necessary during loading/unloading operations.

G.2.4.2 Runoff and Runon Controls [20.4.1 NMAC, Subpart V, 264.31 and 264.175(b); and 20.4.1 NMAC, Subpart IX, 270.15(a)(4) and (5)]

Runoff from the TA-50 CSUs to other areas or to the environment will be prevented. Engineered surfaces/structures or secondary containment pallets/devices are provided for potential liquid-bearing containers. All secondary containment systems are sufficient to contain at least 10 percent of the volume of potential liquid-bearing containers or the volume of the largest container, whichever is greater, in accordance with the requirements of 20.4.1 NMAC, Subpart V, 264.175(b)(3) [6-14-00].

As a practice at TA-50, runoff and erosion controls are designed to guide surface water away from waste management activities and into the natural drainages. Storm water feeds into Mortandad Canyon and is managed according to the Clean Water Act. Liquids that may accumulate in the self-containment pallets as a result of leaks or spills will be collected into a container using a portable pump and/or sorbents, depending on the volume of accumulated liquid. Accumulated liquids will be removed as soon as possible and sampled in accordance with Appendix E of the LANL General Part B (LANL, 1998).

G.2.4.2.1 TA-50-69, Indoor CSU

Run-on into the TA-50-69, Indoor CSU from outdoors is not likely to occur due to positive surface drainage that directs potential run-on away from the building. Figure A-11 (Attachment A) provides the contours and surface drainage around TA-50. The northern and eastern portions of TA-50 drain mainly to an unlined channel on the boundary between TA-50 and TA-35 (east of TA-50), although some flow diverges into a shallow channel running southward between TA-50-37 and TA-50-1.

To meet the requirements of 20.4.1 NMAC, Subpart IX, 270.15(a)(5) [6-14-00], any liquids that may accumulate within the self-containment pallets or devices, trenches and pits, or glove box enclosure will be removed as soon as possible to prevent overflow. The accumulated liquid will be sampled and analyzed. Depending upon the volume of the accumulated liquid, a high-efficiency particulate air vacuum, portable pump, universal sorbents, and/or other methods suitable for retrieval will be used to remove the liquid. Accumulated liquids are removed as soon as possible. The collected liquids and/or sorbents will be transferred to compatible containers, which will be stored temporarily at the respective CSU pending sample analysis, which will dictate how the wastes will be managed. Should a spill occur during waste handling activities, the spill and/or residual material will be sampled and managed in accordance with Appendix E of the LANL General Part B (LANL, 1998).

G.2.4.2.2 TA-50-69, Outdoor CSU

Run-on into the TA-50-69, Outdoor CSU is prevented because the CSU is elevated by design. The TA-50-69, Outdoor CSU is sloped sufficiently to prevent the accumulation of precipitation. In addition, drainage swales located in the vicinity, divert storm water away from the pad. One drainage swale is located just south of the CSU, between it and the material disposal area (MDA)-C. A second drainage swale is located on the west side of the CSU between Pecos Drive and the TA-50 fence line. Inspections of TA-50 waste management facilities, areas that may be prone to soil erosion, and drainage control structures are conducted as described in the "Storm Water Pollution Prevention Plan for Technical Area 50 Waste Treatment Facilities" (LANL, 1993). Together, the containment design and operations meet the requirements of 20.4.1 NMAC, Subpart V, 264.175(b), and 20.4.1 NMAC, Subpart IX, 270.15(a)(4) [6-14-00].

G.2.4.3 Preventing Water Supply Contamination [20.4.1 NMAC, Subpart V, 264.31]

It is not anticipated that there will be any impact to groundwater or other water supplies as a result of waste-handling operations at TA-50 CSUs. The TA-50-69, Indoor CSU is located inside a building. Any material spilled during waste management activities are immediately remediated pursuant to Appendix E of the LANL General Part B (LANL, 1998). All water supply lines at TA-50 are under pressure and are equipped with backflow prevention devices to prevent contamination of these lines during emergencies. Therefore, no impact to water supplies is expected. The depth to groundwater at TA-50 is approximately 1,000 ft (Purtymun and Johansen, 1974). Geologic units underlying TA-54 (located 4 miles east of TA-50) include layers of unsaturated volcanic tuff and ash, the moisture content of which ranges from 0.2 to 2.0 percent by weight (IT Corporation, 1987).

G.2.4.4 Mitigating Effects of Power Outages [20.4.1 NMAC, Subpart IX, 270.14(b)(8)]

Electrical power is supplied to TA-50-69 by a 13.4-kilovolt overhead distribution line through an underground conduit to an on-site substation that provides distribution to the building. Supplied power is used to operate continuous air monitors (CAMs) and other electrical equipment in the buildings. Additionally, an uninterruptible power source has been installed to operate the CAMs in the event of a power outage. In the event of a power failure, operations would cease and personnel would exit the affected building. Operations at the CSUs will be discontinued temporarily if electrical power is not restored quickly. A power failure or equipment failure would not affect containment within the TA-50 CSUs.

G.2.4.5 Preventing Undue Exposure [20.4.1 NMAC, Subpart V, 264.32]

To prevent undue exposure of personnel to hazardous or mixed waste, personal protective equipment appropriate for the waste being handled is worn by all on-site personnel at TA-50 involved in waste management activities at any of the waste management units. Workers involved in waste handling at TA-50 are required to wear protective work uniforms and steel-toed /composite-toed shoes, as appropriate. Hard hats and gloves may also be worn while equipment is being operated and when containers are being loaded or unloaded.

G.2.4.6 Air Emission Standards [20.4.1 NMAC, Subpart V, 264.31 and 264.179]

Releases to the atmosphere are not anticipated from any of the TA-50 CSUs. Containers are kept closed during handling and storage except when, upon inspection, it is determined that containers need to be overpacked or the contents repackaged in new containers or when it is necessary to add or remove waste. Inspections are conducted to ensure the integrity of all stored containers. In the event of an unexpected release, all personnel working within or near the area would be notified immediately to evacuate.

G.2.5 Ignitable, Reactive, or Incompatible Waste [20.4.1 NMAC, Subpart IX, 270.14(b)(9) and 270.15(c) and (d); and 20.4.1 NMAC, Subpart V, 264.17, 264.176, and 264.177]

Special requirements for ignitable, reactive, or incompatible waste at the TA-50 CSUs is presented in Section 2.1.8 of this permit renewal application. This information is provided to meet the requirements of 20.4.1 NMAC, Subpart V, 264.17(a), 264.176, and 264.177(a)(b)(c); and 20.4.1 NMAC, Subpart IX, 270.14(b)(9) and 270.15(d) [6-14-00].

G.2.6 Air Emission Standards for Containers [20.4.1 NMAC, Subpart V, Part 264, Subpart CC]

This section addresses potential applicability of 20.4.1 NMAC, Subpart V, Part 264, Subpart CC [6-14-00], "Air Emission Standards for Tanks, Surface Impoundments, and Containers" to containers at TA-50, based on applicability criteria specified in 20.4.1 NMAC, Subpart V, 264.1080 [6-14-00]. Subpart CC standards require that the containers be covered or controlled so that there are no detectable emissions. The standards are met by placement of waste in DOT-compliant containers and are not applicable to containers of radioactive mixed waste. The standards are also not applicable to containers of hazardous waste with less than 500 parts per million by weight (ppmw) volatile organics, containers that have received waste prior to the effective date of regulation (December 6, 1996), or containers of less than 0.1 cubic meters (m^3) (approximately 26 gallon) capacity.

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

G.3 REFERENCES

IT Corporation, 1987, "Hydrogeologic Assessment of Technical Area 54, Areas G and L," Los Alamos National Laboratory, Docket No. NMHWA 001007, IT Corporation, Albuquerque, New Mexico.

LANL, 1993, "Storm Water Pollution Prevention Plan for Technical Area 50 Waste Treatment Facilities," Los Alamos, New Mexico, Los Alamos National Laboratory.

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

Purtymun and Johansen, 1974, "General Geohydrology of the Pajarito Plateau," New Mexico Geological Society Guidebook, 25th Field Conference, Central Northern New Mexico.

Table G-1

Use and Management of Containers
Regulatory References and Corresponding Permit Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Permit Application
§270.15	Specific information requirements for containers:	G.0
§270.15(a)	A description of the containment system to demonstrate compliance with §264.175 including at a minimum:	G.2
§270.15(a)(1)	Basic design parameters, dimensions, and materials of construction	G.1
§270.15(a)(2)	How the design promotes drainage or how containers are kept from contact with standing liquids in the containment system	G.2
§270.15(a)(3)	Capacity of the containment system relative to the number and volume of containers to be stored	G.2
§270.15(a)(4)	Provisions for preventing or managing run-on	G.2
§270.15(a)(5)	How accumulated liquids can be analyzed and removed to prevent overflow	G.2
§270.15(b)	For storage areas that store containers holding wastes that do not contain free liquids, a demonstration of compliance with §264.175(c) including:	G.2
§270.15(b)(1)	Test procedures and results or other documentation or information to show that the wastes do not contain free liquids	G.2
§270.15(b)(2)	A description of how the storage area is designed or operated to drain and remove liquids or how containers are kept from contact with standing liquids	G.2
§270.15(c)	Sketches, drawings, or data demonstrating compliance with §264.176 (location of buffer zone and containers holding ignitable or reactive wastes) and §264.177(c) (location of incompatible wastes), where applicable	1.0
§270.15(d)	Where incompatible wastes are stored or otherwise managed in containers, a description of the procedures used to ensure compliance with §264.177(a) and (b) and §264.17(b) and (c)	G.3
§270.15(e)	Information on air emission control equipment as required in §270.27	G.4
§270.27(a)	Specific information requirements for air emission controls	G.4
§270.27(a)(2)	Identification of each container area subject to the requirements of §264, Subpart CC and certification by the owner or operator that the requirements are met	G.4

Table G-1 (Continued)

Use and Management of Containers
Regulatory References and Corresponding Permit Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Permit Application
§270.27(a)(3)	Documentation that each enclosure used to control air emissions from containers are in accordance with the requirements of §264.1086(b)(2)(I) includes information prepared by the owner or operator or manufacturer or vendor describing the enclosure design and certification that the enclosure meets the specifications listed in §265.1087(b)(2)(ii)	NA[a]
§270.27(a)(5)	Documentation for each closed-vent system and control device installed in accordance with the requirements of §264.1087 that includes design and performance information as specified in §270.24 (c) and (d)	NA
§270.27(a)(6)	An emission monitoring plan for both Method 21 and control device monitoring methods. The plan must include:	NA
§270.27(a)(7)	Implementation schedule	NA

[a] NA= not applicable

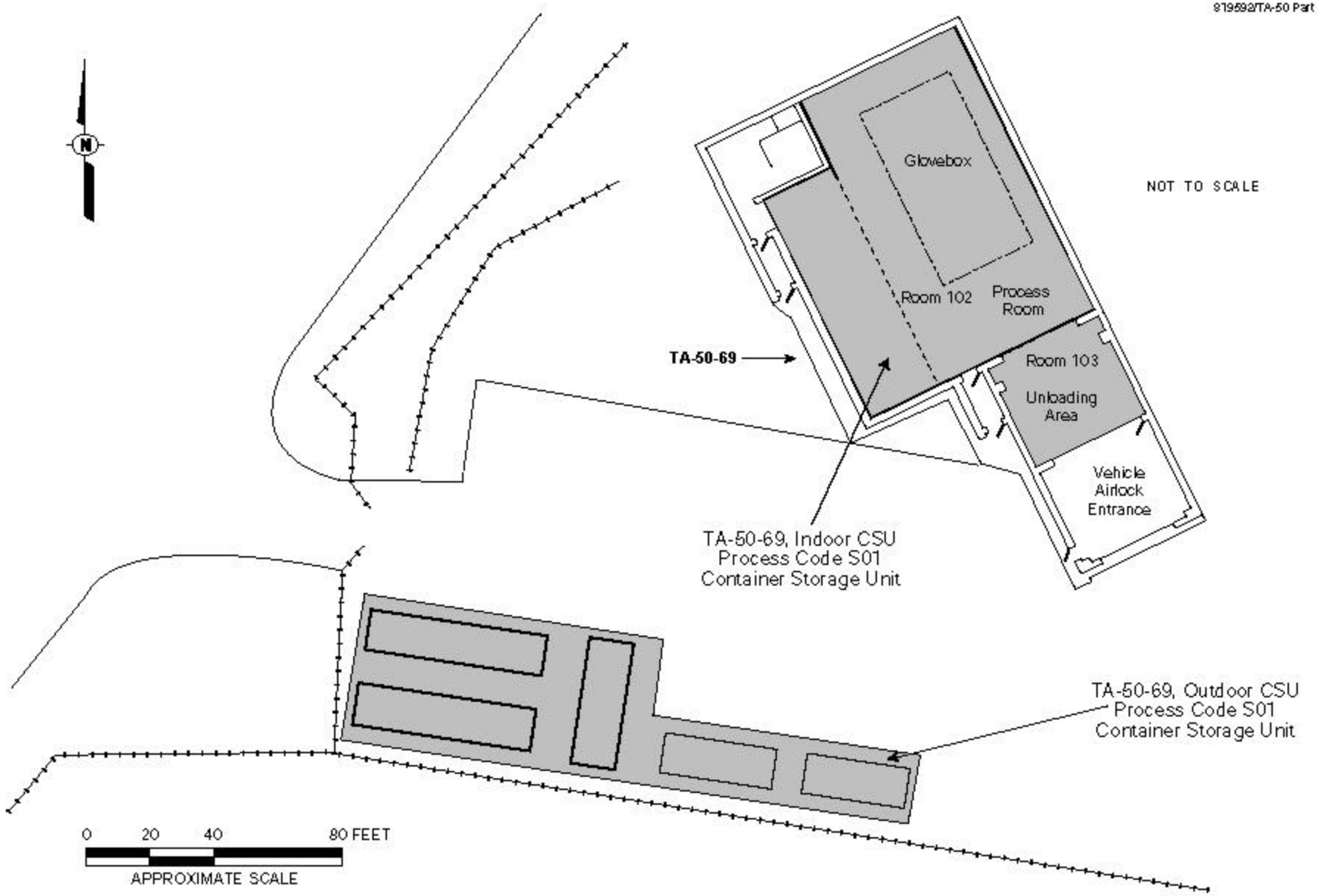

Figure G-1
Technical Area (TA) 50, Building 69, Container Storage Units

ATTACHMENT H

AUTHORIZED WASTE

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

XIV. Description of Hazardous Wastes *(Continued; use additional sheets as necessary)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter code)	D. PROCESSES			
				(1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
			Technical Area 50				
1	D001	69,696	P	S01			
2	D002	52,734	P	S01			
3	D003	3,444	P	S01			
4	D004	7,531	P	S01			
5	D005	7,740	P	S01			
6	D006	535,451	P	S01			
7	D007	567,226	P	S01			
8	D008	1,405,439	P	S01			
9	D009	75,666	P	S01			
10	D010	8,922	P	S01			
11	D011	31,255	P	S01			
12	D016	44	P	S01			
13	D017	66	P	S01			
14	D018	5,535	P	S01			
15	D019	4261	P	S01			
16	D020	100	P	S01			
17	D021	1,918	P	S01			
18	D022	4,354	P	S01			
19	D023	100	P	S01			
20	D024	100	P	S01			
21	D025	100	P	S01			
22	D026	518	P	S01			
23	D027	972	P	S01			
24	D028	216,183	P	S01			
25	D029	215,184	P	S01			
26	D030	5,491	P	S01			
27	D031	293	P	S01			
28	D032	3135	P	S01			
29	D033	2,222	P	S01			
30	D034	1,228	P	S01			

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

XIV. Description of Hazardous Wastes *(Continued; use additional sheets as necessary)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50 (Continued)							
31	D035	1,792	P	S01			
32	D036	549	P	S01			
33	D037	761	P	S01			
34	D038	1,594	P	S01			
35	D039	1,675	P	S01			
36	D040	3,942	P	S01			
37	D041	293	P	S01			
38	D042	1182	P	S01			
39	D043	655	P	S01			
40	F001	442,263	P	S01			
41	F002	147,347	P	S01			
42	F003	50,980	P	S01			
43	F004	2,817	P	S01			
44	F005	334,821	P	S01			
45	F006	100	P	S01			
46	F007	100	P	S01			
47	F008	100	P	S01			
48	F009	165	P	S01			
49	F027	165	P	S01			
50	F028	100	P	S01			
51	K044	100	P	S01			
52	K045	100	P	S01			
53	K047	100	P	S01			
54	P001	100	P	S01			
55	P002	100	P	S01			
56	P003	293	P	S01			
57	P004	100	P	S01			
58	P005	100	P	S01			
59	P006	143	P	S01			
60	P007	100	P	S01			

EPA I.D. Number *(Enter from Page 1)*	Secondary ID Number *(Enter from Page 1)*
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XIV. Description of Hazardous Wastes *(Continued; use additional sheets as necessary)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter code)	D. PROCESSES			
				(1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50 (Continued)							
61	P008	100	P	S01			
62	P009	100	P	S01			
63	P010	100	P	S01			
64	P011	143	P	S01			
65	P012	293	P	S01			
66	P013	100	P	S01			
67	P014	100	P	S01			
68	P015	293	P	S01			
69	P016	100	P	S01			
70	P017	100	P	S01			
71	P018	100	P	S01			
72	P020	100	P	S01			
73	P021	100	P	S01			
74	P022	100	P	S01			
75	P023	100	P	S01			
76	P024	100	P	S01			
77	P026	100	P	S01			
78	P027	100	P	S01			
79	P028	100	P	S01			
80	P029	293	P	S01			
81	P030	485	P	S01			
82	P031	485	P	S01			
83	P033	143	P	S01			
84	P034	100	P	S01			
85	P036	100	P	S01			
86	P037	100	P	S01			
87	P038	227	P	S01			
88	P039	100	P	S01			
89	P040	100	P	S01			
90	P041	100	P	S01			

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

XIV. Description of Hazardous Wastes *(Continued; use additional sheets as necessary)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50 (Continued)							
91	P042	100	P	S01			
92	P043	143	P	S01			
93	P044	100	P	S01			
94	P045	100	P	S01			
95	P046	100	P	S01			
96	P047	100	P	S01			
97	P048	143	P	S01			
98	P049	100	P	S01			
99	P050	100	P	S01			
100	P051	100	P	S01			
101	P054	100	P	S01			
102	P056	2,674	P	S01			
103	P057	100	P	S01			
104	P058	100	P	S01			
105	P059	100	P	S01			
106	P060	100	P	S01			
107	P062	100	P	S01			
108	P063	293	P	S01			
109	P064	100	P	S01			
110	P065	100	P	S01			
111	P066	100	P	S01			
112	P067	100	P	S01			
113	P068	293	P	S01			
114	P069	100	P	S01			
115	P070	100	P	S01			
116	P071	100	P	S01			
117	P072	100	P	S01			
118	P073	293	P	S01			
119	P074	100	P	S01			
120	P075	100	P	S01			

EPA I.D. Number *(Enter from Page 1)* N M 0 8 9 0 0 1 0 5 1 5

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes ***(Continued; use additional sheets as necessary)***

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50 (Continued)							
121	P076	403	P	S01			
122	P077	100	P	S01			
123	P078	425	P	S01			
124	P081	100	P	S01			
125	P082	100	P	S01			
126	P084	100	P	S01			
127	P085	100	P	S01			
128	P087	100	P	S01			
129	P088	100	P	S01			
130	P089	100	P	S01			
131	P092	143	P	S01			
132	P093	100	P	S01			
133	P094	100	P	S01			
134	P095	293	P	S01			
135	P096	293	P	S01			
136	P097	100	P	S01			
137	P098	293	P	S01			
138	P099	100	P	S01			
139	P101	100	P	S01			
140	P102	100	P	S01			
141	P103	100	P	S01			
142	P104	143	P	S01			
143	P105	143	P	S01			
144	P106	293	P	S01			
145	P107	100	P	S01			
146	P108	100	P	S01			
147	P109	100	P	S01			
148	P110	100	P	S01			
149	P111	100	P	S01			
150	P112	143	P	S01			

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

XIV. Description of Hazardous Wastes *(Continued; use additional sheets as necessary)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter code)	D. PROCESSES			
				(1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50 (Continued)							
151	P113	293	P	S01			
152	P114	100	P	S01			
153	P115	100	P	S01			
154	P116	100	P	S01			
155	P118	100	P	S01			
156	P119	143	P	S01			
157	P120	293	P	S01			
158	P121	100	P	S01			
159	P122	100	P	S01			
160	P123	100	P	S01			
161	U001	293	P	S01			
162	U002	954	P	S01			
163	U003	485	P	S01			
164	U004	100	P	S01			
165	U005	100	P	S01			
166	U006	100	P	S01			
167	U007	143	P	S01			
168	U008	143	P	S01			
169	U009	143	P	S01			
170	U010	100	P	S01			
171	U011	100	P	S01			
172	U012	293	P	S01			
173	U014	100	P	S01			
174	U015	100	P	S01			
175	U016	100	P	S01			
176	U017	100	P	S01			
177	U018	143	P	S01			
178	U019	470	P	S01			
179	U020	100	P	S01			
180	U021	100	P	S01			

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

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

XIV. Description of Hazardous Wastes ***(Continued; use additional sheets as necessary)***

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter code)	D. PROCESSES			
				(1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50 (Continued)							
181	U022	293	P	S01			
182	U023	100	P	S01			
183	U024	100	P	S01			
184	U025	100	P	S01			
185	U026	100	P	S01			
186	U027	100	P	S01			
187	U028	100	P	S01			
188	U029	293	P	S01			
189	U030	100	P	S01			
190	U031	293	P	S01			
191	U032	100	P	S01			
192	U033	143	P	S01			
193	U034	100	P	S01			
194	U035	100	P	S01			
195	U036	100	P	S01			
196	U037	143	P	S01			
197	U038	100	P	S01			
198	U039	100	P	S01			
199	U041	143	P	S01			
200	U042	100	P	S01			
201	U043	100	P	S01			
202	U044	293	P	S01			
203	U045	293	P	S01			
204	U046	100	P	S01			
205	U047	100	P	S01			
206	U048	100	P	S01			
207	U049	100	P	S01			
208	U050	100	P	S01			
209	U051	100	P	S01			
210	U052	293	P	S01			

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

XIV. Description of Hazardous Wastes *(Continued; use additional sheets as necessary)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter code)	D. PROCESSES			
				(1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50 (Continued)							
211	U053	100	P	S01			
212	U055	143	P	S01			
213	U056	293	P	S01			
214	U057	293	P	S01			
215	U058	100	P	S01			
216	U059	100	P	S01			
217	U060	100	P	S01			
218	U061	100	P	S01			
219	U062	100	P	S01			
220	U063	100	P	S01			
221	U064	100	P	S01			
222	U066	100	P	S01			
223	U067	143	P	S01			
224	U068	143	P	S01			
225	U069	100	P	S01			
226	U070	165	P	S01			
227	U071	100	P	S01			
228	U072	100	P	S01			
229	U073	100	P	S01			
230	U074	100	P	S01			
231	U075	381	P	S01			
232	U076	100	P	S01			
233	U077	293	P	S01			
234	U078	100	P	S01			
235	U079	100	P	S01			
236	U080	4,129	P	S01			
237	U081	100	P	S01			
238	U082	100	P	S01			
239	U083	100	P	S01			
240	U084	100	P	S01			

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

XIV. Description of Hazardous Wastes *(Continued; use additional sheets as necessary)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter code)	D. PROCESSES			
				(1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50 (Continued)							
241	U085	143	P	S01			
242	U086	100	P	S01			
243	U087	100	P	S01			
244	U088	100	P	S01			
245	U089	100	P	S01			
246	U090	100	P	S01			
247	U091	518	P	S01			
248	U092	143	P	S01			
249	U093	100	P	S01			
250	U094	100	P	S01			
251	U095	100	P	S01			
252	U096	100	P	S01			
253	U097	100	P	S01			
254	U098	100	P	S01			
255	U099	100	P	S01			
256	U101	100	P	S01			
257	U102	100	P	S01			
258	U103	143	P	S01			
259	U105	100	P	S01			
260	U106	100	P	S01			
261	U107	100	P	S01			
262	U108	293	P	S01			
263	U109	143	P	S01			
264	U110	100	P	S01			
265	U111	100	P	S01			
266	U112	293	P	S01			
267	U113	100	P	S01			
268	U114	100	P	S01			
269	U115	293	P	S01			
270	U116	100	P	S01			

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

XIV. Description of Hazardous Wastes *(Continued; use additional sheets as necessary)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter code)	D. PROCESSES			
				(1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50 (Continued)							
271	U117	293	P	S01			
272	U118	100	P	S01			
273	U119	100	P	S01			
274	U120	100	P	S01			
275	U121	293	P	S01			
276	U122	778	P	S01			
277	U123	293	P	S01			
278	U124	143	P	S01			
279	U125	100	P	S01			
280	U126	100	P	S01			
281	U127	100	P	S01			
282	U128	100	P	S01			
283	U129	100	P	S01			
284	U130	100	P	S01			
285	U131	293	P	S01			
286	U132	100	P	S01			
287	U133	293	P	S01			
288	U134	667	P	S01			
289	U135	447	P	S01			
290	U136	143	P	S01			
291	U137	100	P	S01			
292	U138	100	P	S01			
293	U139	100	P	S01			
294	U140	293	P	S01			
295	U141	100	P	S01			
296	U142	100	P	S01			
297	U143	100	P	S01			
298	U144	293	P	S01			
299	U145	293	P	S01			
300	U146	100	P	S01			

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

XIV. Description of Hazardous Wastes *(Continued; use additional sheets as necessary)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter code)	D. PROCESSES			
				(1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50 (Continued)							
301	U147	100	P	S01			
302	U148	100	P	S01			
303	U149	100	P	S01			
304	U150	100	P	S01			
305	U151	884	P	S01			
306	U152	100	P	S01			
307	U153	143	P	S01			
308	U154	359	P	S01			
309	U155	100	P	S01			
310	U156	100	P	S01			
311	U157	100	P	S01			
312	U158	100	P	S01			
313	U159	315	P	S01			
314	U160	293	P	S01			
315	U161	470	P	S01			
316	U162	143	P	S01			
317	U163	143	P	S01			
318	U164	100	P	S01			
319	U165	293	P	S01			
320	U166	100	P	S01			
321	U167	143	P	S01			
322	U168	143	P	S01			
323	U169	293	P	S01			
324	U170	143	P	S01			
325	U171	100	P	S01			
326	U172	100	P	S01			
327	U173	100	P	S01			
328	U174	100	P	S01			
329	U176	100	P	S01			
330	U177	100	P	S01			

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

XIV. Description of Hazardous Wastes *(Continued; use additional sheets as necessary)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50 (Continued)							
331	U178	100	P	S01			
332	U179	100	P	S01			
333	U180	100	P	S01			
334	U181	100	P	S01			
335	U182	100	P	S01			
336	U183	100	P	S01			
337	U184	100	P	S01			
338	U185	100	P	S01			
339	U186	100	P	S01			
340	U187	100	P	S01			
341	U188	293	P	S01			
342	U189	100	P	S01			
343	U190	293	P	S01			
344	U191	100	P	S01			
345	U192	100	P	S01			
346	U193	100	P	S01			
347	U194	100	P	S01			
348	U196	293	P	S01			
349	U197	100	P	S01			
350	U200	100	P	S01			
351	U201	100	P	S01			
352	U202	100	P	S01			
353	U203	100	P	S01			
354	U204	293	P	S01			
355	U205	100	P	S01			
356	U206	100	P	S01			
357	U207	100	P	S01			
358	U208	100	P	S01			
359	U209	100	P	S01			
360	U210	513	P	S01			

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

XIV. Description of Hazardous Wastes *(Continued; use additional sheets as necessary)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter code)	D. PROCESSES			
				(1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50 (Continued)							
361	U211	359	P	S01			
362	U212	100	P	S01			
363	U213	293	P	S01			
364	U214	100	P	S01			
365	U215	100	P	S01			
366	U216	293	P	S01			
367	U217	100	P	S01			
368	U218	293	P	S01			
369	U219	293	P	S01			
370	U220	491	P	S01			
371	U221	100	P	S01			
372	U222	100	P	S01			
373	U223	143	P	S01			
374	U225	293	P	S01			
375	U226	6,594	P	S01			
376	U227	293	P	S01			
377	U228	1,219	P	S01			
378	U230	100	P	S01			
379	U231	100	P	S01			
380	U232	100	P	S01			
381	U233	100	P	S01			
382	U234	100	P	S01			
383	U235	100	P	S01			
384	U236	100	P	S01			
385	U237	100	P	S01			
386	U238	100	P	S01			
387	U239	646	P	S01			
388	U240	143	P	S01			
389	U242	100	P	S01			
390	U243	100	P	S01			

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

XIV. Description of Hazardous Wastes *(Continued; use additional sheets as necessary)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter code)	D. PROCESSES			
				(1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50 (Continued)							
391	U244	100	P	S01			
392	U246	231	P	S01			
393	U247	100	P	S01			
394	U248	100	P	S01			
395	U249	100	P	S01			
396	U326	100	P	S01			
397	U353	100	P	S01			
398	U359	100	P	S01			

LA-UR-02-4729
July 2002

Los Alamos National Laboratory
Technical Area 50

Closure Plan for Container Storage Units
TA-50-1, Room 59
TA-50-37, and
TA-50-114

Prepared by:

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

Los Alamos National Laboratory
Technical Area 50

Closure Plan for Container Storage Units
TA-50-1, Room 59; TA-50-37; and TA-50-114

July 2002

LA-UR-02-4729

Prepared by:

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

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LIST OF ABBREVIATIONS/ACRONYMS

20.4.1 NMAC	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
BUS-4	Business Operations Division, Materials Management Group
CAI	Controlled Air Incinerator
CFR	Code of Federal Regulations
CSU	container storage unit
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration Group
ft	feet/foot
HEPA	high efficiency particulate air
HSR-1	Health Physics Operations Group
HSR-5	Industrial Hygiene and Safety Group
LANL	Los Alamos National Laboratory
LIR	Laboratory Implementation Requirement
nCi/g	nanocuries per gram
NMED	New Mexico Environment Department
OLASO	Office of Los Alamos Site Operation
PPE	personal protective equipment
QA	quality assurance
QC	quality control
RAMROD	Radioactive Material Research Operations and Demonstration Facility
RCRA	Resource Conservation and Recovery Act

LIST OF ABBREVIATIONS/ACRONYMS (continued)

RLWTF	Radioactive Liquid Waste Treatment Facility
SOP	standard operating procedure
SW-846	EPA, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.
SWRC	Solid Waste Regulatory Compliance Group
TA	technical area
WCRRF	Waste Characterization, Reduction, and Repackaging Facility

CLOSURE PLAN FOR CONTAINER STORAGE UNITS TA-50-1, ROOM 59; TA-50-37; AND TA-50-114

The information provided in this closure plan is submitted to address the applicable closure requirements specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), Subpart VI, Part 265, Subparts G and I, revised June 14, 2000 [6-14-00]. This closure plan describes the activities necessary to clean close the Technical Area 50, Building 1 (TA-50-1), Room 59; TA-50-37; and TA-50-114 container storage units (CSU) at the Los Alamos National Laboratory (LANL) Technical Area (TA) 50. 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, 265.111 [6-14-00].

Until closure is complete and has been certified in accordance with 20.4.1 NMAC, Subpart VI, 265.115 [6-14-00], as discussed in Section 1.6, a copy of the approved closure plan and any approved revisions will be on file at LANL's Solid Waste Regulatory Compliance Group (SWRC) and at the U.S. Department of Energy (DOE) Office of Los Alamos Site Operations (OLASO).

1.0 GENERAL CLOSURE INFORMATION

1.1 Closure Performance Standard [20.4.1 NMAC, Subpart VI, 265.111]

The CSUs addressed in this closure plan will be closed to meet the following performance standards:

- Minimizes the need for further maintenance,
- Controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground,or surface waters, or to the atmosphere, and
- Complies with the closure requirements of 20.4.1 NMAC, Subpart V, Part 265, Subpart G [6-14-00], including, but not limited to the requirements of 20.4.1 NMAC, Subpart V, 265.178, 265.197, 265.228, 265.258, 265.280, 265.310, 265.351, 265.601 through 265.603, and 265.1102.

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

1.2 Partial and Final Closure Activities [20.4.1 NMAC, Subpart VI, 265.112(d)]

This closure plan has been written for partial closure rather than final closure of the entire LANL facility. Partial closure will consist of clean closing the CSUs located at TA-50-1, Room 59; TA-50-37; and TA-50-114, while leaving the other regulated hazardous/mixed waste units at LANL in service. Partial closure (hereinafter referred to as closure) will be deemed complete when clean closure has been verified; all surfaces and equipment have been decontaminated, or otherwise properly disposed, if necessary; and closure certification has been submitted to and approved by the New Mexico Environment Department (NMED). Final closure will occur when the remaining hazardous/mixed waste management units at LANL 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. Final closure will be deemed complete when the closure certification has been submitted to the NMED and the NMED has approved the final closure.

1.3 Closure Schedule [20.4.1 NMAC, Subpart VI, 265.112(b)(6), 265.112(e), and 265.113]

Written notification will be provided to the NMED 45 days before the start of closure activities for the CSUs addressed in this closure plan. However, pursuant to 20.4.1 NMAC, Subpart VI, 265.112(e) [614-00], 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 VI, 265.112(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 VI, 265.113(a) [6-14-00], within 90 days after final receipt of waste at each CSU. This timeframe will be met as long as facilities are available for treatment, storage, 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 VI, 265.113(a) [6-14-00]. Closure activities and reporting requirements will be completed within 180 days of the receipt of the

final volume of waste at each CSU. Closure will be conducted in accordance with the schedule presented in Table 1 of this closure plan.

Table 1
Closure Schedule for the
TA-50-1, Room 59; TA-50-37; and TA-50-114 Container Storage Units

Activity	Maximum Time Required[a]
Submit Closure Plan.	-90 Days
Notify the NMED of intent to close.	-45 Days
Final receipt of waste at TA-50-1, Room 59 and TA-50-114.	Day 0
Removal of waste from TA-50-1, Room 59 and TA-50-114.	Day 5
Perform swipe sampling at TA-50-37.	Day 10
Evaluate analytical data from swipe sampling.	Day 20
Decontaminate surfaces and equipment at TA-50-1, Room 59 and TA-50-114. If applicable, also perform decontamination of the TA-50-37CSU.	Day 20
Sample excess used decontamination water for disposal.	Day 20
Perform verification sampling at TA-50-1, Room 59 and TA-50-114. If applicable, also perform verification at the TA-50-37 CSU.	Day 30
Evaluate analytical data from verification sampling.	Day 50
Perform additional decontamination, if necessary.	Day 55
Perform additional verification sampling, if necessary.	Day 60
Evaluate additional analytical data.	Day 75
Perform final clean up and disposal (i.e., removal of decontaminated equipment and decontamination waste).	Day 140
Prepare closure report.	Day 150
Certify closure.	Day 175
Submit final report to NMED.	Day 180

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

CSU = container storage unit
NMED = New Mexico Environment Department
TA = technical area

In the event that closure cannot proceed according to schedule, LANL will notify the Secretary of the NMED in accordance with extension request requirements in 20.4.1 NMAC, Subpart VI, 265.113(b) [6-14-00]. In addition, the demonstrations in 20.4.1 NMAC, Subpart VI, 265.113(a)(1) and (b)(1) [6-14-00], will be made in accordance with 20.4.1 NMAC, Subpart VI, 265.113(c) [6-14-00].

1.4 Amendment of the Closure Plan [20.4.1 NMAC, Subpart VI, 265.112(c)]

In accordance with 20.4.1 NMAC, Subpart VI, 265.112(c) [6-14-00], LANL will submit a written change in the approved closure plan whenever:

- There are changes in operating plans or facility design that affect the closure plan.
- There is a change in the expected date of closure.
- Unexpected events occur during closure that requires 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. The Secretary of the NMED may request a modification of the closure plan under the conditions presented in the bulleted items above. LANL will submit the modified plan in accordance with the request within 60 days of notification or within 30 days of notification if a change in facility condition occurs during the closure process.

1.5 Closure Cost Estimate, Financial Assurance, and Liability Requirements [20.4.1 NMAC, Subpart VI, 265.140(c)]

In accordance with 20.4.1 NMAC, Subpart VI, 265.140(c) [6-14-00], LANL, as a federal facility, is exempt from the requirements of 20.4.1 NMAC, Subpart V, Subpart H [6-14-00], to provide a cost estimate, financial assurance mechanisms, and liability insurance for closure actions.

1.6 Closure Certification [20.4.1 NMAC, Subpart VI, 265.115]

Within 60 days after completion of closure activities at any TA-50 CSU or final closure of the facility, LANL will submit to the Secretary of the NMED, via certified mail, a certification that the CSUs have been closed in accordance with the approved closure plan. The certification will be signed by the appropriate DOE and LANL officials and by an independent, registered professional engineer in accordance with 20.4.1 NMAC, Subpart V, 265.115 [6-14-00]. Documentation supporting the independent, registered engineer's certification will be furnished to the Secretary of the NMED upon

request, as specified in 20.4.1 NMAC, Subpart V, 265.115 [6-14-00]. Both DOE/OLASO and SWRC will maintain a copy of the certification and supporting documentation.

1.7 Security

Because of the ongoing nature of operations at TA-50, site security will be maintained by the DOE or another authorized federal agency for as long as necessary to prohibit public access. The security fence at TA-50 will be maintained to ensure that public access is prevented.

1.8 Closure Report

Upon completion of the closure activities, a closure report will be prepared and submitted to the Secretary of the NMED. The report will document the closure and contain the following:

- A copy of the certification described in Section 1.6 of this closure plan.
- Any significant variance from the approved activities and the reason for the variance.
- A summary of all sampling results, showing:
  - Sample identification
  - Sampling location
  - Datum reported
  - Detection limit for each datum
  - A measure of analytical precision (e.g., uncertainty, range, variance)
  - Identification of analytical procedure
  - Identification of analytical laboratory
- A quality assurance (QA)/ quality control (QC) statement on analytical data validation and decontamination verification.
- The location of the file of supporting documentation, including:
  - Field logbooks
  - Laboratory sample analysis reports
  - QA/QC documentation
  - Chain-of-custody forms
- Storage or disposal location of regulated hazardous/mixed waste resulting from closure activities.
- A certification of accuracy of the report.

2.0 DESCRIPTION OF UNITS TO BE CLOSED

TA-50 is located at the northeast corner of the intersection of Pajarito Drive and Pecos Road, on the finger mesa bounded by Mortandad Canyon to the north and Two-Mile Canyon to the south. Figure 1 shows the location of TA-50 at LANL. Figure 2 provides the location of each CSU to be closed.

2.1 TA-50-1, Room 59 CSU

The TA-50-1, Room 59 CSU is located at the northeast end of the Radioactive Liquid Waste Treatment Facility (RLWTF). The room is constructed of pre-engineered steel framing and insulated metal roofing and siding. The CSU was used for hazardous and mixed waste storage of 55-gallon drums in support of cementation operations in Room 60 at the RLWTF. The CSU consists of a 10-ft wide by 19-ft long area in the northwest corner of the room as indicated on Figure 3. A photograph of the CSU is provided as Figure 4.

2.2 TA-50-37 CSU

The TA-50-37 CSU is located in a two-story building that contains offices, laboratories, two process bays, an egress bay, and a mechanical equipment area. The CSU consists of storage locations in Rooms 115, 117, and 118 on the first floor of the building and encompasses areas in the west-central and eastern portions of the building as indicated on Figure 5. Room 115 is in the west central portion of the building and measures 10-ft wide by 21-ft long. Rooms 117 and 118 are located in the eastern portion of the building and measure 21-ft wide by 40-ft long and 31-ft wide by 40-ft long, respectively. Photographs of the CSU Rooms 115, 117, and 118 are provided as Figures 6, 7, and 8, respectively. The TA-50-37 CSU was intended for hazardous and mixed waste storage of 5-, 30-, 55-, 83-, 85-, and 110-gallon drums/containers and standard waste boxes in support of the Waste Characterization, Reduction and Repackaging Facility (WCRRF) at TA-50-69 and the Radioactive Material Research Operations and Demonstration Facility (RAMROD) at TA-50-37.

TA-50-37 previously housed the Controlled Air Incinerator (CAI) associated with the Treatment Development Facility at LANL. This incinerator received a Toxic Substances Control Act incineration permit in 1984 and a Resource Conservation and Recovery Act (RCRA) operating permit for hazardous waste in 1989. In 1995, it was determined that waste incineration would not be performed at the CAI. In 1996, closure of the CAI was initiated in accordance with an approved NMED closure plan. The CAI closure was approved by NMED in 1998, however, the exhaust stack, ducts, high efficiency particulate air (HEPA) filter bank, plenum, and fans were left in place for

continued use by other projects (i.e., WCCRF and RAMROD). These items are included in the closure of the TA-50-37 CSU.

2.3 TA-50-114 CSU

The TA-50-114 CSU consists of a storage locker located south of the eastern wing of TA-50-1 as indicated on Figure 2. The locker is a prefabricated metal building approximately 9-ft wide, 23-ft long, and 9-ft high (Figure 9). It has three doors and is anchored to a concrete pad with the long dimension oriented east/west. The CSU is divided into two separate lockers by a metal wall and has a grated floor above a recessed area. Waste containers were placed on the grated floor for storage. The CSU was used for hazardous and mixed waste storage of 5-, 30-, 55-, 83-, and 85-gallon drums/containers; fiber/cardboard boxes; and equipment packaged in plastic bags in support of operations at the RLWTF. A photograph of the CSU is provided as Figure 10.

3.0 ESTIMATE OF MAXIMUM WASTE IN INVENTORY

The maximum total inventory of waste in storage at any time in the TA-50 CSUs is estimated as follows:

- TA-50-1, Room 59 –1,485 gallons
- TA-50-37 – 9,350 gallons
- TA-50-114 –1,210 gallons

4.0 DESCRIPTION OF WASTE

The TA-50 CSUs were used to store waste generated from various research activities, material processing and recovery operations, and decontaminating and decommissioning operations conducted at various TAs throughout LANL. The following sections provide information regarding the waste types stored at the TA-50 CSUs, as determined by the operating record and historical knowledge.

4.1 TA-50-1, Room 59 CSU

The TA-50-1, Room 59 CSU stored containers of solid hazardous and mixed waste with potential residual free liquids. The majority of the waste stored in the CSU consisted of solid mixed waste generated by cementation operations in Room 60 of the RLWTF. Additional types of waste included items associated with decontamination and process operations at the TA-50-1 RLWTF.

Table 2

provides a list of applicable compounds and associated EPA Hazardous Waste Numbers based on the operating record of the unit. Waste profile forms for the cemented sludge are provided in Attachment A.

Table 2
Hazardous Waste Constituents Associated with the TA-50-1, Room 59 Container Storage Unit [a]

Category	EPA Hazardous Waste Numbers	Specific Constituents
Toxic Metals	D004, D005, D006, D007, D008, D009, D010, and D011	Arsenic, Barium Hydroxide, Cadmium, Chromium, Lead, Mercury, Selenium, Silver
Volatile Organic Compounds	F003	Acetone
Semi-Volatile Organic Compounds	Not Applicable	N-Nitrosodimethylamine, Diethylphthalate, Di-n-Butylphthalate, Bis-2-Ethylhexlphthalate

a Based on the TRUCON Code (LA111/211) assigned to the cement drums generated in Room 60 of the RLWTF and the waste profile forms found in Attachment A.

LANL will remove all of the waste currently in storage at the TA-50-1, Room 59 CSU and verify that the constituents listed in Table 2 are not present on the surfaces of the unit for a clean closure certification.

4.2 TA-50-37 CSU

The TA-50-37 CSU stored containers of solid hazardous and mixed waste with potential residual free liquids. The CSU was used as a staging area for waste in support of waste characterization, segregation, and decontamination activities associated with operations of the WCRRF and RAMROD prior to long term storage at TA-54 and/or shipment to WIPP for disposal. Due to the proximity of the CSU to the former CAI and the inclusion of the exhaust stack, ducts, HEPA filter bank, plenum, and fans in this closure plan, LANL will close the unit conservatively and verify that constituents associated with the operations of the CAI did not contaminate the surfaces of the CSU. Table 3 provides a list of hazardous waste constituents and applicable EPA Hazardous Waste Numbers found during closure of the CAI as discussed in “Los Alamos National Laboratory Controlled-Air Incinerator Resource Conservation and Recovery Act Closure Report and Certification“ (Benchmark, 1998).

Table 3
Hazardous Waste Constituents Associated with the Controlled Air Incinerator at TA-50-37 [a]

Category	EPA Hazardous Waste Numbers	Constituents/Comments
Toxic Metals	D004, D005, D006, D007, D008, and D009	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury
Volatile Organic Compounds	F002, F003, U165	Acetone, Methylene Chloride, Naphthalene, Trans-1,2-Dichloroethen,
Semi-Volatile Organic Compounds	Not Applicable	Bis (2-ethyl hexyl phthalate)
PCB [b]	Not Applicable	The CAI treated a small amount of PCBs and organic compounds (Benchmark, 1998). Swipe sampling results conducted during closure of the CAI indicated the presence of PCBs (see Attachment C).

a Based on swipe sampling results conducted during closure of the CAI (Benchmark, 1998). Summary tables provided in Attachment C.
b PCBs contamination, if any, will be removed in accordance with applicable TSCA regulations.

CAI = Controlled Air Incinerator
PCB = Polychlorinated Biphenyls

LANL will verify that the constituents listed in Table 3 are not present on the surfaces of the unit for a clean closure certification.

4.3 TA-50-114 CSU

The TA-50-114 CSU stored containers of solid hazardous and mixed waste with potential residual free liquids. These wastes included items associated with decontamination and process operations at TA-50-1. Table 4 lists applicable compounds and associated EPA Hazardous Waste Numbers based on the operating record of the unit.

Table 4
Hazardous Waste Constituents Stored at the TA-50-114 Container Storage Unit[a]

Category	EPA Hazardous Waste Numbers	Specific Constituents
Toxic Metals	D004, D005, D006, D007, D008, D009, D010, and D011	Arsenic, Barium Hydroxide, Cadmium, Chromium, Lead, Mercury, Selenium, Silver
Volatile Organic Compounds	D022, F001, F002, F003	Chloroform, 1,1-Dichloroethene, 1,1,1-Trichloroethane,
Semi-Volatile Organic Compounds	Not Applicable	Bromodichloromethane, Trichloroethene

[a] Based on the operating record of the unit

LANL will verify that the constituents listed in Table 4 are not present on the surfaces of the unit for a clean closure certification.

5.0 REMOVAL OF WASTE

Prior to initiation of closure activities, all waste will be removed from the TA-50-1, Room 59; TA-50-37; and TA-50-114 CSUs (as applicable) and transported for storage/disposal. The containers will be removed from the CSUs using forklifts and/or manually handled with dollies depending on the size and weight of the container. Each container will be placed onto a flatbed truck or trailer for transport and will be accompanied by the appropriate shipping papers during transport. Containers will be transported to an approved LANL on-site CSU or permitted off-site treatment, storage, or disposal facility.

6.0 PRELIMINARY CLOSURE PROCEDURES

6.1 Safety Precautions

Job hazards associated with closure activities will be identified, controls developed, and workers briefed before closure activities are conducted, in accordance with LANL safety procedures. Personnel involved in closure activities will wear appropriate personal protective equipment (PPE), specified by Health Physics Operations Group (HSR-1) and Industrial Hygiene and Safety Group (HSR-5), and will follow good hygiene practices to protect themselves from exposure to hazardous and/or mixed waste. The level of PPE that will be required will depend upon the levels of radiological and/or chemical contamination detected, if any. If HSR-1 and HSR-5 surveys indicate no detectable contamination levels, minimum PPE requirements will consist of coveralls, steel-toed shoes, and safety glasses or face shields. If an overhead danger is present, hard hats will be worn. All workers involved in closure activities will be required to have appropriate training including Hazardous Waste Operations and Emergency Response Training for general site workers (24 hours and refresher) and TA-50 site-specific training for the RLWTF and TA-50-37, as appropriate. Personnel may also be required to have Radiation Worker, Level II training based on the radiological survey conducted at TA-50-1, Room 59 and TA-50-114 prior to the commencement of closure. Contaminated PPE will either be decontaminated or managed in compliance with appropriate waste management regulations.

6.2 Structural Assessment

Preventive maintenance inspections are conducted weekly at each of the TA-50 CSUs while waste is in storage. If any defects, deterioration, damage, or hazards affecting containment have developed, appropriate remedial actions (including sampling, repairs, maintenance, or replacement) are completed immediately. Prior to beginning any decontamination activities at the TA-50 CSUs, the base or secondary containment of each CSU will be inspected for any cracks or conditions that could potentially lead to loss of decontamination water and/or verification wash water during closure. If a crack or gap is present, a swipe sample or a representative sample of the media (i.e., concrete, metal) will be taken to determine the presence of contamination. The sample will be analyzed for the hazardous contaminates identified in Tables 2, 3, and 4 of this closure plan. If contamination is present, the surface flaw will be decontaminated prior to repairing the crack/gap. Complete or partial removal (e.g., scabbling) of the material may be performed until contamination is no longer detected. If partial removal is successful in eliminating the contamination, it will be assumed that the remaining material, including underlying soil, is clean.

6.3 Waste Management

After each decontamination wash down process, the used wash water will be collected, transferred to containers, sampled, and analyzed for the hazardous constituents listed in Tables 2, 3, and 4 as appropriate. The results of this analysis will be used to determine if the used wash water can be managed as hazardous or non-hazardous wastewater. The wastewater, PPE, and any other waste generated as a result of closure will be managed as discussed in Section 12.0.

7.0 DECONTAMINATION PROCEDURES

To the extent possible, all contaminated surfaces and equipment (if present) will be decontaminated. Surfaces and equipment that cannot be decontaminated will be containerized and managed in compliance with applicable regulations. All sampling conducted during closure and decontamination will be done in accordance with QA/QC procedures defined by “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods” (*SW-846)* (EPA, 1986). Closure will be conducted in accordance with the schedule presented in Table 1. Monitoring for contamination will occur throughout closure activities, as appropriate.

7.1 Equipment Located in the CSUs

The TA-50 CSUs have a variety of equipment that must be removed, decontaminated, and/or disposed of prior to decontamination of the main surfaces associated with each unit. Table 5 provides a list of equipment located in the TA-50 CSUs.

Table 5
List of Equipment at the
TA-50-1, Room 59; TA-50-37; and TA-50-114 Container Storage Units

Container Storage Unit	Equipment
TA-50-1, Room 59	Not Applicable
TA-50-37	Exhaust stack, ducting, HEPA filter bank, plenum, fans, grating
TA-50-114	Grating

All portable equipment (i.e., pallets, drum dollies, carts) will be wiped down with the Alconox wash water solution for decontamination. A portable berm will be used to collect excess wash water and provide containment during the decontamination process. The collected used wash water will be transferred to a container where it will be sampled to determine an appropriate location for disposal. The samples will be analyzed for the constituents identified in Tables 2, 3 and 4, as appropriate.

The equipment associated with the CAI will be decommissioned and removed from TA-50-37. Attachment C provides swipe-sampling results from the equipment that was obtained during the CAI closure. This data will be used to determine the appropriate method of disposal as discussed in Section 12.0.

7.2 TA-50-1, Room 59 CSU

Decontamination of the TA-50-1, Room 59 CSU will be conducted using mops, cloths, and/or other absorbent materials to remove any potential hazardous constituents. These materials will be rinsed in a wash water solution consisting of Alconox and water and used to wipe down the walls and floor. Containers in the TA-50-1, Room 59 CSU were not stacked beyond the height of a 55-gallon drum. The containers were not opened or closure within the unit and there is no record of any spills. For these reasons, decontamination will begin with the wash down of the walls to a height of 4-ft (i.e., the height of a 55-gallon drum). The CSU does not have recess areas (i.e., sumps) so excess used wash water will collect within temporary berms located on the floor of the unit. After the walls have been decontaminated, the floor and the secondary containment berms located in the room will be

wiped down and excess used wash water removed from the area and transferred to an appropriate container for analysis and waste disposal.

When decontamination of the CSU is complete, verification will be conducted as indicated in Section 8.0. If the analysis from the verification indicate that hazardous constituents are present, wash cycles and analyses will continue as described above until the walls and floor have been decontaminated or the decision is made to proceed with an alternate demonstration of decontamination as described in Section 9.0.

7.3 TA-50-37 CSU

Prior to the commencement of decontamination, random swipe samples will be taken from each of the storage locations associated with the CSU as indicated in Table 6.

Table 6
Random Swipe Sampling Locations and Quantities for the TA-50-37 Container Storage Unit

Location	Total Number of Samples
Room 115	
North/South Walls (21-ft x 4-ft)	4
East/West Walls (10-ft x 4-ft)	2
Floor (10-ft x 21-ft)	2
Room 117	
North/South Walls (40-ft x 4-ft)	8
East/West Walls (21-ft x 4-ft)	4
Floor (21-ft x 40-ft)	2
Grating (21-ft x 40-ft)	NA [a]
Sump	1
Sump	1
Room 118	
North/South Walls (40-ft x 4-ft)	8
East/West Walls (31-ft x 4-ft)	4
Floor (31-ft x 40-ft)	4
Sump	1
Grating	NA [a]

a Swipe sampling results from the floor will be used to determine the presence of contamination on the grating, if any.

The samples will be analyzed for the constituents identified in Table 3 of this closure plan. If the results of this analysis indicate the presence of hazardous constituents, decontamination and verification will proceed for the entire room where swipe sample results indicated potential contamination.

Decontamination, if required, will be conducted using mops, cloths, and/or other absorbent materials to remove any potential hazardous constituents. These materials will be rinsed in a wash water solution consisting of Alconox and water and used to wipe down the walls and floor. Decontamination for each storage location associated with the CSU, if necessary, is described in the following sections.

7.3.1 Room 115

Decontamination of Room 115, if required, will begin with the wash down of all four walls to a height of approximately 4-ft. Room 115 does not have any recessed areas (i.e. sumps) so excess used wash water will be allowed to collect within temporary berms located on the floor of the unit in the vicinity of the wall being decontaminated. After the walls have been decontaminated, the floor and secondary containment berms located in the room will be wiped down and any excess used wash water removed from the area and transferred to an appropriate container for analysis and waste disposal.

When decontamination of Room 115 is complete, verification will be conducted as indicated in Section 8.0. If the analysis from the verification indicate that hazardous constituents are present, wash cycles and analyses will continue as described above until the walls and floor have been decontaminated or the decision is made to proceed with an alternate demonstration of decontamination as described in Section 9.0.

7.3.2 Room 117

Room 117 has a recessed floor located approximately 3-ft below a steel grate. The recessed floor is divided into two areas, which slope to independent sumps. Each of the sumps has a pump and piping that connects the sump to its own standpipe for removal of liquids.

Decontamination of Room 117, if required, will begin with the grating located approximately 3-ft above the floor. The grating will be randomly swipe sampled to determine the presence of hazardous constituents. Depending on the results of the analysis, the grate will be reused, recycled, or disposed of in accordance with LANL waste management procedures. When the grating has been removed, all four walls will be wiped down to a height of approximately 4-ft. Due to the presence of the recessed area and sumps, precautions will be included that limit the amount

of wash water and how it will be collected during decontamination. Temporary berms will be located on the floor of the recessed area in the vicinity of the wall being decontaminated. These berms will be used to collect used wash water and to prevent contamination of the sumps located in the room. The recessed area and floor of the CSU will then be wiped down and any excess used wash water removed from the area and transferred to an appropriate container for analysis and waste disposal.

The sumps will be bermed during the decontamination process to prevent wash water from collecting in the sump. The pipe, pump, and standpipe associated with each sump will also be covered prior to the commencement of decontamination activities. When the walls and floor of the CSU have been decontaminated the sump will be wiped down and the used wash water removed from the area as discussed above.

When decontamination of Room 117 is complete, verification will be conducted as indicated in Section 8.0. If the analysis from the verification indicate that hazardous constituents are present, wash cycles and analyses will continue as described above until the walls and floor have been decontaminated or the decision is made to proceed with an alternate demonstration of decontamination as described in Section 9.0.

7.3.3 Room 118

Decontamination of Room 118, if required, will begin with the wash down of all four walls to a height of approximately 4-ft. Room 118 is provided with a sump located underneath a steel plate welded to a grate that is located in the center of the room. The sump has a pump and piping connected to a standpipe for removal of liquids. The steel plate is located over the sump and will be randomly swipe sampled to determine the presence of hazardous constituents. Depending on the results of the analysis, the steel plate will be reused, recycled, or disposed of in accordance with LANL waste management procedures. Temporary berms located at the base of each wall will collect used wash water for sampling. The floor of the CSU will then be wiped down and any excess used wash water removed from the area and transferred to an appropriate container for analysis and disposal.

When decontamination of the unit is complete, verification will be conducted as indicated in Section 8.0. If the analysis from the verification indicate that hazardous constituents are present, wash cycles and analyses will continue as described above until the walls and floor have been

decontaminated or the decision is made to proceed with an alternate demonstration of decontamination as described in Section 9.0.

7.4 TA-50-114 CSU

Decontamination of the TA-50-114 CSU will be conducted using mops, cloths, and/or other absorbent materials to remove any potential hazardous constituents. These materials will be rinsed in a wash water solution consisting of Alconox and water and used to wipe down the walls and floor.

The decontamination will begin with removal and disposal of the grate that provides flooring for each of the lockers and on which the waste was stored. When the grate has been removed, all four walls of the CSU will be wiped down to a height of 4-ft from the top of the grate in each locker. Excess used wash water will collect within the secondary containment area located beneath the grate (approximately 6 inches deep). After the walls have been decontaminated any excess used wash water will be removed from the secondary containment of the CSU and transferred to an appropriate container for analysis and waste disposal and the secondary containment will be wiped down.

When decontamination of the unit is complete, verification will be conducted as indicated in Section 8.0. If the analysis from the verification indicates that hazardous constituents are present, wash cycles and analyses will continue as described above until the walls and floor have been decontaminated or the decision is made to proceed with an alternate demonstration of decontamination as described in Section 9.0.

7.5 Equipment Used During Closure

Reusable protective clothing, tools, and equipment used during decontamination activities at the TA-50 CSUs will be cleaned with a wash water solution. Residue, disposable equipment and reusable equipment that cannot be decontaminated will be containerized and managed as waste in accordance with LANL waste management procedures, depending on the regulated constituents present.

8.0 VERIFICATION OF DECONTAMINATION

LANL proposes analysis of wash water samples for decontamination verification at the TA-50 CSUs utilizing the following methodology:

1. Minimize dilution of potential hazardous constituents by limiting the verfication solution to an amount that is sufficient to wipe down the surface to be verified and collect the required number of samples.

2. Limit the sampling area to a specific discrete location (e.g., a wall or portion thereof depending on the size of the unit).

3. Verify decontamination by comparing the discrete sample results to a baseline result obtained from the verification solution prior to its use for the verification wipe down.

4. If the result is at or below that of the blank, the decontamination is verified for the discrete area sampled.

5. If the result is above the, repeat the decontamination and verification of the discrete location in accordance with Sections 7.0 and 8.0 of this closure plan.

This proposed method minimizes dilution and establishes criteria by which successful decontamination is verified. Analytical procedures will conform to methods found in the most current version *SW-846* (EPA, 1986).

Successful decontamination of the TA-50 CSUs will meet a minimum of one of the following criteria:

- No detectable RCRA-regulated constituent residues from the management of authorized RCRA-regulated wastes are identified in samples collected during closure activities.

- Analytical results of samples collected during decontamination verification activities identify no statistically significant concentrations of RCRA-regulated constituents above baseline data.

- Detectable concentrations of RCRA-regulated constituents in samples collected during verification activities are at or below levels agreed upon with the NMED to be protective of human health and the environment based on the results of risk assessment methods.

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

The following sections provide a detailed description of how decontamination verification will be conducted at each of the TA-50 CSUs to be closed.

8.1 TA-50-1, Room 59 Decontamination Verification

Verification sampling at theTA-50-1, Room 59 CSU will be conducted at 5 discrete locations as

described below:

1. Wipe down the north wall of the CSU (10-ft long, 4-ft high) with sufficient wash water solution to collect one set of verification samples. Collect the wash water solution in a bermed area at the base of the wall. Sample and remove the excess water.

2. Wipe down thewest wall (19-ft long, 4-ft high) of the CSU with sufficient wash water solution to collect one set of verification samples. Collect the wash water solution in a bermed area at the base of each section of the wall. Sample and remove the excess water.

3. Wipe down the south wall of the CSU (10-ft long, 4-ft high) with sufficient wash water solution to collect one set of verification samples. Collect the wash water solution in a bermed area at the base of the wall. Sample and remove the excess water.

4. Divide the floor (10-ft long, 19-ft long) of the CSU into two equal sections. Wipe each down with sufficient wash water solution to collect one set of verification samples per section. Collect the wash water solution in a bermed area. Sample and remove the excess water.

8.2 TA-50-37 Decontamination Verification

Verification sampling at theTA-50-37 CSU will only be conducted if preliminary swipe sampling, discussed in Section 7.3, indicates the presence of hazardous contaminates and decontamination of the CSU surfaces is required. The following sections provide detailed instructions regarding the collection of verification samples for Rooms 115, 117 and 118, if necessary.

8.2.1 Room 115

Room 115 will be sampled to verify decontamination as follows:

1. Wipe down the west wall of the CSU (10-ft long, 4-ft high) with sufficient wash water solution to collect one set of verification samples. Collect the wash water solution in a bermed area at the base of the wall. Sample and remove the excess water.

2. Divide the north wall (21-ft long, 4-ft high) of the CSU into four equal sections. Wipe each down with sufficient wash water solution to collect one set of verification samples per section. Collect the wash water solution in a bermed area at the base of each section of the wall. Sample and remove the excess water.

3. Wipe down the east wall of the CSU (10-ft long, 4-ft high) with sufficient wash water solution to collect one set of verification samples. Collect the wash water solution in a bermed area at the base of the wall. Sample and remove the excess water.

4. Divide the south wall (21-ft long, 4-ft high) of the CSU into four equal sections. Wipe each down with sufficient wash water solution to collect one set of verification samples per section. Collect the wash water solution in a bermed area of each section of the floor. Sample and remove the excess water.

5. Divide the floor (10-ft wide, 21-ft long) of the CSU into four equal sections. Wipe each down with sufficient wash water solution to collect one set of verification samples per section. Collect the wash water solution in a bermed area in each section of the floor. Sample and remove the excess water.

8.2.2 Room 117

Room 117 will be sampled to verify decontamination as follows:

1. Divide the west wall (21-ft long, 4-ft high) of the CSU into two equal sections. Wipe each down with sufficient wash water solution to collect one set of verification samples per section. Collect the wash water solution in a bermed area at the base of each section of the wall. Sample and remove the excess water.

2. Divide the south wall (40-ft long, 4-ft high) of the CSU into four equal sections. Wipe each down with sufficient wash water solution to collect one set of verification samples per section. Collect the wash water solution in a bermed area at the base of each section of the wall. Sample and remove the excess water.

3. Divide the east wall (21-ft long, 4-ft high) of the CSU into two equal sections. Wipe each down with sufficient wash water solution to collect one set of verification samples per section. Collect the wash water solution in a bermed area at the base of each section of the wall. Sample and remove the excess water.

4. Divide the north wall (40-ft long, 4-ft high) of the CSU into four equal sections. Wipe each down with sufficient wash water solution to collect one set of verification samples per section. Collect the wash water solution in a bermed area at the base of each section of the wall. Sample and remove the excess water.

5. Divide the floor (21-ft wide, 40-ft long) of the CSU into four equal sections. Wipe each down with sufficient wash water solution to collect one set of verification samples per section. Collect the wash water solution in a bermed area in each section of the floor. Sample and remove the excess water.

6. Cover the pump and pipe associated with the first sump prior to conducting verification sampling. Wipe the sump down with sufficient wash water solution to collect one set of verification samples. Collect the wash water solution in the sump or a bermed area. Sample and remove the excess water.

7. Cover the pump and pipe associated with second sump prior to conducting verification sampling. Wipe each down with sufficient wash water solution to collect one set of verification samples. Collect the wash water solution in the sump or a bermed area. Sample and remove the excess water.

8.2.3 Room 118

Room 118 will be sampled to verify decontamination as follows:

1. Divide the west wall (31-ft long, 4-ft high) of the CSU into three equal sections. Wipe each down with sufficient wash water solution to collect one set of verification samples per

section. Collect the wash water solution in a bermed area at the base of each section of the wall. Sample and remove the excess water.

2. Divide the south wall (40-ft long, 4-ft high) of the CSU into four equal sections. Wipe each down with sufficient wash water solution to collect one set of verification samples per section. Collect the wash water solution in a bermed area at the base of each section of the wall. Sample and remove the excess water.

3. Divide the east wall (31-ft long, 4-ft high) of the CSU into three equal sections. Wipe each down with sufficient wash water solution to collect one set of verification samples per section. Collect the wash water solution in a bermed area at the base of each section of the wall. Sample and remove the excess water.

4. Divide the north wall (40-ft long, 4-ft high) of the CSU into four equal sections. Wipe each down with sufficient wash water solution to collect one set of verification samples per section. Collect the wash water solution in a bermed area at the base of each section of the wall. Sample and remove the excess water.

5. Divide the floor (31-ft wide, 40-ft long) of the CSU into four equal sections. Wipe each down with sufficient wash water solution to collect one set of verification samples per section. Collect the wash water solution in a bermed area in each section of thefloor. Sample and remove the excess water.

6. Cover the pump and pipe associated with the sump prior to conducting verification sampling. Wipe each down with sufficient wash water solution to collect one set of verification samples. Collect the wash water solution in the sump or a bermed area. Sample and remove the excess water.

8.3 TA-50-114 Decontamination Verification

Verification of the TA-50-114 CSU will consist of six discrete sampling locations identified as described below:

1. Wipe down the north wall of the CSU (23-ft long, 4-ft high) wash water solution to collect one set of verification samples. Collect the wash water solution in a bermed area at the base of the wall. Sample and remove the excess water.

2. Wipe down the west wall (9-ft long, 4-ft high) with sufficient wash water solution to one set of verification samples per section. Collect the wash water solution in a bermed area at the base of the wall. Sample and remove the excess water.

3. Wipe down the south wall of the CSU (23-ft long, 4-ft high) wash water solution to collect one set of verification samples. Collect the wash water solution in a bermed area at the base of the wall. Sample and remove the excess water.

4. Wipe down the east wall (9-ft long, 4-ft high) with sufficient wash water solution to one set of verification samples per section. Collect the wash water solution in a bermed area at the base of the wall. Sample and remove the excess water.

5. Divide the floor (9-ft wide, 23-ft long) of the CSU into two sections. Wipe each down with sufficient wash water solution to one set of verification samples per section. Collect the wash water solution in a bermed area. Sample and remove the excess water.

9.0 ALTERNATE DEMONSTRATION OF CLOSURE

An alternate demonstration of decontamination may be justified at the TA-50 CSUs if decontamination methods described in Section 7.0 are not feasible. LANL proposes the following alternate demonstrations for the TA-50 CSUs:

- Comparison of the verification analytical results to the EPA Region 9 Human Health Risk Based levels for drinking water. If the result is below the human health risk based level, decontamination at the CSU will be considered complete.
- Decommissioning and disposal of the prefabricated metal building associated with the TA-50-114 CSU.

10.0 SAMPLING ACTIVITIES [20.4.1 NMAC, Subpart VI, 265.112(b)(4)]

The following sections describe procedures and methods for sampling, analysis, and documentation applicable to closure activities. Sampling will be conducted in accordance with procedures given in *SW-846* (EPA, 1986) or other approved procedures or methods.

10.1 Sampling Strategy/Approach

Sampling activities during the TA-50 CSU closures will be conducted to verify that the decontamination efforts described in Section 7.0 were effective at removing hazardous constituents, if any, from the surfaces of the CSUs. Samples will be collected according to the methods and procedures provided in this section from discrete locations and analyzed for the appropriate hazardous constituents identified in Tables 2, 3, and 4 of this closure plan.

10.1.1 TA-50-1, Room 59 CSU

Table 7 identifies the sample locations, types, and quantities applicable to the closure of the TA-50-1, Room 59 CSU at the RLWTF. Each discrete location will be wiped down with a clean Alconox and de-ionized water solution that will be allowed to collect in a bermed area. To minimize dilution of the samples, the solution used for the wipe down will be limited to a quantity sufficient to collect the appropriate number of samples. Verification sampling for this CSU will be conducted for each of the walls and finally for the floor to prevent cross contamination of the samples and allow for the identification of hot spots.

Table 7
Sample Types and Quantities for the
TA-50-1, Room 59 Container Storage Unit Closure

Discrete Sample Location	Verification Samples for Metals[a]	Blank Comparison Samples
North Wall (10-ft x 4-ft)	1	1
West Wall (19-ft x 4-ft)	1	1
South Wall (10-ft x 4-ft)	1	1
Floor (10-ft x 19-ft)	2	2

[a] Analysis for metals as indicated in Table 2.

10.1.2 TA-50-37 CSU

Table 8 identifies the sample locations, types, and quantities applicable to the closure of the TA-50-37 CSU. Each discrete location will be wiped down with a clean Alconox and water solution that will be allowed to collect in a bermed area. To minimize dilution of the samples, the solution used for the wipe down will be limited to a quantity sufficient to collect the appropriate number of samples. Verification sampling for this CSU will be conducted for each of the walls, the floors, and finally for the sumps to prevent cross contamination of the samples and allow for the identification of hot spots. Swipe sampling will be used to determine if the grating in Rooms 117 and 118 has been contaminated with hazardous constituents. These samples will be used only to determine the presence of hazardous contamination not the extent of the contamination.

Table 8
Sample Types and Quantities for the
TA-50-37 Container Storage Unit Closure

Discrete Sample Location	Swipe Samples[b]	Verification Sample Sets[b] (if applicable)	Blank Comparison Samples
Room 115			
North/South Walls (21-ft x 4-ft)	4	8	8
East/West Walls (10-ft x 4-ft)	2	2	2
Floor (10-ft x 21-ft)	2	4	4
Room 117			
North/South Walls (40-ft x 4-ft)	8	8	8
East/West Walls (21-ft x 4-ft)	4	4	4
Floor (21-ft x 40-ft)	2	4	4
Grating	NA[a]	NA[a]	NA[a]
Sump	1	1	1
Sump	1	1	1

Table 8 (continued)
Sample Types and Quantities for the
TA-50-37 Container Storage Unit Closure

Discrete Sample Location	Swipe Samples[b]	Verification Sample Sets[b] (if applicable)	Blank Comparison Samples
Room 118			
North/South Walls (40-ft x 4-ft)	8	8	8
East/West Walls (31-ft x 4-ft)	4	6	6
Floor (31-ft x 40-ft)	4	4	4
Sump	1	1	1
Grating	NA[a]	NA[a]	NA[a]

[a] Swipe sampling results from the floor will be used to determine the presence of contamination on the grating, if any.
[b] Analysis for Metals, VOCs, SVOC, and PCBs as identified in Table 3.

10.1.3 TA-50-114 CSU

Table 9 identifies the sample locations, types, and quantities applicable to the closure of the TA-50-114 CSU. Each discrete location will be wiped down with a clean Alconox and water solution that will be allowed to collect in a bermed area. To minimize dilution of the samples, the solution used for the wipe down will be limited to a quantity sufficient to collect the appropriate number of samples. Verification sampling for this CSU will be conducted for each of the walls and then the secondary containment area and floor to prevent cross contamination of the samples and allow for the identification of hot spots.

Table 9
Sample Types and Quantities for the
TA-50-114 Container Storage Unit Closure

Discrete Sample Location	Verification Samples[a]	Blank Comparison Samples
North Wall (23-ft x 4-ft)	1	1
South Wall (23-ft x 4-ft)	1	1
East Wall (9-ft x 4-ft)	1	1
West Wall (9-ft x 4-ft)	1	1
Floor (23-ft x 9-ft)	2	2

[a] Analysis for metals as indicated in Table 4.

The grating located in the TA-50-114 lockers will only be sampled for disposal characterization. The Grating will be characterized based on results from sampling decontamination wash water. If the analysis of the decontamination wash water requires that it be managed as a hazardous waste, the grating will also be managed as hazardous waste. Otherwise, the grating will be managed as non-hazardous waste.

10.2 Sample Collection Procedure

10.2.1 Soil and Sediment Sampling

The TA-50 CSUs identified in this closure plan are all located inside buildings or structures provided with secondary containment and run-on protection. These features were effective at preventing the migration of waste to the environment. In addition, the operating records indicate that there are no recorded spills of liquids at any of the CSUs to be closed. For these reasons, soil sampling is not applicable for the TA-50 CSU closures and will not be conducted.

10.2.2 Liquid Sampling

Sampling of the clean/used wash water solution will be performed in accordance with Environmental Restoration Group (ER) standard operating procedures (SOP) ER-SOP-6.13, “Surface Water Sampling” (LANL, 2001a).

10.2.3 Cleaning of Samplers

Disposable sampling equipment will be used for each of the TA-50 CSU closures. This equipment may be presumed clean if still in a factory-sealed wrapper.

10.3 Sample Management Procedures

Samples will be collected and transported using documented chain-of-custody and sample management procedures to ensure the integrity of the sample and provide an accurate and defensible written record of the possession and handling of a sample from the time of collection, through laboratory analysis. An EPA approved laboratory will provide coolers, containers, preservative, labels, chain-of-custody forms, analysis request forms, and custody seals prior to sampling. The following s provides a description of chain-of-custody; sample documentation; sample handling, preservation, and storage; and sample transportation requirements that will be followed during the sampling activities associated with the closure.

10.3.1 Chain-of-Custody

Sample chain-of-custody form will be maintained by sampling personnel until the samples are relinquished to the analytical laboratory. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

- In a person's physical possession,
- In view of the person in possession, or
- Secured by that person in restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request/chain-of-custody form. A chain-of-custody form shall accompany the sample containers or coolers, including transport to the analytical laboratory.

10.3.2 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include, at a minimum, sample identification numbers, sample container labels and custody seals, chain-of-custody forms, analysis request forms, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

10.3.2.1 Sample Labels and Custody Seals

A sample label, completed in blue or black ink, will be affixed to each sample container. The sample label will include, at a minimum the following information:

- A unique sample identification number.
- Name of the sample collector.
- Date and time of collection.
- Type of preservatives used, if any.
- Location from which the sample was collected.

A custody seal will be placed on each sample container to ensure detection of unauthorized tampering with the samples. These labels must be initialed, dated, and affixed, by the sample collector, to the container in such a manner that it is necessary to break the seal to open the container.

10.3.2.2 Chain-of-Custody Form

A chain-of-custody form must accompany all samples from collection through laboratory analysis. The completed original chain-of-custody form will be returned by the laboratory and will become a part of the permanent record documenting the sampling effort. One chain-of-custody form may be used to document all of the samples collected from a single sampling event.

10.3.2.3 Analysis Request Form

An analysis request form must accompany all samples to the analytical laboratory. The completed original analysis request form will be returned by the laboratory and will become a part of the permanent record documenting the sampling effort. A separate analysis request form must be completed for each sample from a given sampling event.

10.3.2.4 Sample Logbook

All pertinent information on the sampling effort must be recorded in a logbook. The sample logbook will include, at a minimum, the following information:

- The sample location.
- Suspected waste composition.
- Sample identification number.
- Volume/mass of waste taken.
- Purpose of sampling.
- Description of sample point and sampling methodology.
- Date and time of collection.
- Name of the sample collector.
- Sample destination and how it will be transported.
- Observations.
- Signatures of personnel responsible for the observations.

10.3.3 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table 10 presents the requirements specified in *SW-846* (EPA, 1986), for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius (°C) will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

Table 10
Recommended Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP Metals: Arsenic Barium Cadmium Chromium Lead	500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Cool to 4°C	180 Days
TCLP/Total Mercury	500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Cool to 4 °C	28 Days
Volatile Organic Compounds			
Target Compound VOCs	Two 40 mL Amber Glass Vials with Teflon-Lined Septa	HCl to pH<2 Cool to 4 °C	14 days
Semi-Volatile Organic Compounds			
Target Compound SVOCs	Four 1 L Amber Glass with Teflon-Lined Lid	Cool to 4 °C	Seven days from field collection to preparative extraction. 40 days from preparative extraction to determinative analysis.

[a] Smaller sample containers may be required due to health and safety concerns associated with potential radiation exposure, transportation requirements, and waste management considerations.
[b] Information obtained from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, U.S. Environmental Protection Agency, 1986 and all approved updates.

°C = degrees Celsius
HCl = hydrochloric acid
L = Liter
mL = milliter
SVOC = semi-volatile organic compounds
TCLP = Toxicity Characteristic Leaching Procedure
VOC = volatile organic compounds

10.3.4 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws, (including 10 Code of Federal Regulation [CFR] and 49 CFR). The LANL document Laboratory Implementation Requirement (LIR) 405-10-01.1, "Packaging and Transportation" (LANL, 1999) establishes requirements that will be implemented for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities,

hazardous materials, substances, wastes, and defense programs materials. Samples that require cooling to 4 °C will be transported in a cooler with ice or ice gel.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through Materials Management Group (BUS-4) shipping office (667-4174) unless the shipper is specifically authorized through formal documentation by BUS-4 to independently tender shipments to common motor or air carriers.

11.0 ANALYTICAL REQUIREMENTS

11.1 Proposed Analytical Methods

Analytical methods to be used for the verification and swipe samples taken during the TA-50 CSU closure are summarized in Table 11.

Table 11
Summary of Proposed Analytical Methods

Parameter	Method Numbers	Test Methods	Rationale
Metals			
TCLP Metals: Arsenic Barium Cadmium Chromium Lead Mercury	 (7060A[c], 7061A)[a] (7080A[d], 7081[c])[a] (7130[d], 7131A[c])[a] (7190[d], 7191[c])[a] (7420[d], 7421[c])[a] (7471A[e], 7470A)[a] or equivalent methods [b]	Inductively-coupled plasma atomic emission spectroscopy Atomic absorption Furnace technique Gaseous hydride Direct aspiration Borohydride reduction Manual cold vapor technique	Determine the TC concentration
Volatile Organic Compounds (VOCs)			
VOCs	8260B[a] or equivalent methods	Gas chromatography (GC)/mass spectometry (MS)	Determine the VOCs in the samples.
Semi-Volatile Organic Compounds (SVOCs)			
SVOCs	8270C[f a]	GC/MS	Determine the SVOCs in the samples.

[a] U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846.
[b] Equivalent methods subject to EPA approval may be substituted.
[c] Method being integrated into Method 7010, per the May 1998 SW-846 Draft Update IVA.
[d] Method being integrated into Method 7000B, per the May 1998 SW-846 Draft Update IVA.
e Method being revised to 7471B per the May 1998 SW-846 Draft Update IVA.
f Method being revised per the May 1998 SW-846 Draft Update IVA.

Each sample will be analyzed for the constituents identified in Tables 2, 3 and 4 as appropriate. Target detection Limits and instrumentation for metals and organic analyses are presented in Tables 12 and 13, respectively.

Table 12
Target Detection Limits, Analytical Methods, and Instrumentation for Metals Analysis

Analyte	Target Detection [a] Limit (ug/L)	EPA SW-846 [b] Analytical Method	Instrumentation
Arsenic	10	7060A [c], 7061A	ICP, GFAA
Barium	200	7080A [d], 7081 [c]	ICP, FLAA, GFAA
Cadmium	2	7130 [d], 7131A [c]	ICP, FLAA, GFAA
Chromium	10	7190 [d], 7191 [c]	ICP, FLAA, GFAA
Lead	5	7420 [d], 7421 [c]	ICP, FLAA, GFAA
Mercury	0.2	7470A, 7471A [e]	CVAA
Selenium	5	7740[e], 7741A	ICP, FLAA, GFAA
Silver	10	7760A[d], 7761 [c]	ICP, FLAA, GFAA

a Detection limits listed are for clean water. Actual detection limits may be higher depending on sample composition and matrix type.
b U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846.
c Method being integrated into Method 7010, per the May 1998 SW-846 Draft Update IVA.
d Method being integrated into Method 7000B, per the May 1998 SW-846 Draft Update IVA.
e Method being revised to 7471B per the May 1998 SW-846 Draft Update IVA.

CVAA = Cold-vapor atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
GFAA = Graphite furnace atomic absorption spectroscopy
GHAA = Gaseous hydride atomic absorption spectroscopy
ICP = Inductively coupled plasma emission spectroscopy
ug/L = micrograms per liter.

Table 13
Target Detection Limits, Analytical Methods, and Instrumentation for Organic Analysis

Analyte	Target Detection Limit [a]	EPA SW-846 [c] Analytical Method	Instrumentation
Target compound list VOCs plus ten tentatively identified compounds (TIC)	10 mg/L[d] water	8260B	GC/MS [c]
Target compound list SVOCs plus 20 TICs	10 mg/L water	8270C [c]	GC/MS

a Detection limits expressed as practical quantitation limits.
b U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846.
c Method being revised per the May 1998 SW-846 Draft Update IVA.

GC/MS = Gas chromatography/mass spectrometry
mg/L = milligrams per liter

SVOC = semi volatile organic compounds
VOC = volatile organic compounds

11.2 Analytical Laboratory Requirements

Assaigai Analytical Laboratories will perform the detailed qualitative and quantitative chemical analyses specified in Table 11. Assaigai has:

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

The selection of the analytical testing methods identified in Table 11 was based on the following considerations:

- The physical form of the waste
- Constituents of interest
- Required detection limits (e.g., regulatory thresholds)
- Information requirements (e.g., waste classification)

11.3 Quality Assurance/Quality Control

Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples are used to evaluate precision, accuracy, and potential sample contamination associated with the sampling/analysis process are described in the following sections for field and laboratory activities. The recommended frequency of collection or analysis and acceptance criteria also are presented, along with information on calculations necessary to evaluate the QC results.

11.3.1 Field Quality Control

The types of field QC samples that will be collected include trip blanks, field blanks, and field duplicates, as appropriate. For each CSU sampled during decontamination verification, at least one field duplicate will be collected. Table 14 presents a summary of QC sample types, analysis, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

Table 14
Recommended Quality Control Samples, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis[a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC/SVOC, metals,	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	1 for each sampling sequence	Relative percent difference less than or equal to 20 percent

a For VOC and SVOC analysis, if blank shows detectable levels of any common laboratory contaminant (e.g., methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

VOC = volatile organic compound
SVOC = semi-volatile organic compound

11.3.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA is undertaken to ensure that analytical methods generate data that are technically sound, statistically valid, and can be documented. Individual QC procedures are the tools employed to measure the degree to which these QA objectives are met.

11.4 Data Reduction, Verification, Validation, and Reporting

Analytical data generated as a result of the activities described in this closure plan will be verified and validated. Data reduction will involve the conversion of raw data to reportable units; transfer of data between recording media; and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

11.5 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. At a minimum, analytical reports will include:

- A summary of analytical results for each sample
- Results from QC samples such as blanks, spikes, calibrations
- Reference to standard methods or a detailed description of analytical procedures
- Raw data printouts for comparison with summaries

The laboratory will describe the sample preparation procedure used in the analysis in sufficient

detail so that the data user can understand how the sample was manipulated during analysis.

12.0 WASTE MANAGEMENT FROM SAMPLING AND ANALYSIS ACTIVITIES

All sample collection activities will be conducted with waste minimization goals in mind. All waste material generated will be controlled, handled, characterized, and disposed in accordance with LANL waste management procedures. The operational record for each of the units discussed in this plan indicates that there have not been any spills, which would cause contamination of the surfaces and equipment with hazardous constituents. For this reason it is anticipated that the waste generated during decontamination and verification of each CSU closure will be non-regulated waste with respect to both hazardous and radiological constituents. However, should contamination be present the closure has the potential to generate several different types of waste materials. Table 15 provides a list of the full spectrum of waste materials that could be generated during closure and potential disposal options.

Table 15
Potential Waste Materials, Waste Types, and Disposal Options

Container Storage Unit	Potential Waste Materials	Waste Type (s)	Disposal Options
TA-50-1, Room 59	PPE Decontamination wash water Verification wash water	Non-regulated liquid and solid waste Low-level liquid and solid	RLWTF – radioactive liquid waste (RLW) SWSC – non-regulated waste TA-54 – solid low-level waste (LLW)
TA-50-37	PPE Decontamination wash water Verification wash water Ducting HEPA filters Fans Plenum Grating	Non-regulated liquid and solid waste Low-level liquid and solid	RLWTF – RLW SWSC – non-regulated waste TA-54 – solid LLW
TA-50-114	Grating PPE Decontamination wash water Verification wash water	Non-regulated liquid and solid waste Low-level liquid and solid	RLWTF – RLW SWSC – non-regulated waste TA-54 – solid LLW

13.0 REFERENCES

Benchmark, 1998, “Los Alamos National Laboratory Controlled Air Incinerator Resource Conservation and Recovery Act Closure Report and Certification,” Benchmark, Albuquerque,

New Mexico.

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

LANL 1999, “Packaging and Transportation,” LIR 405-10-01.1, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 2001a, “Surface Water Sampling,” ER-SOP-6.13, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 2001b, “Field Decontamination of Drilling and Sampling Equipment,” ER-SOP-1.08, Los Alamos National Laboratory, Los Alamos, New Mexico.

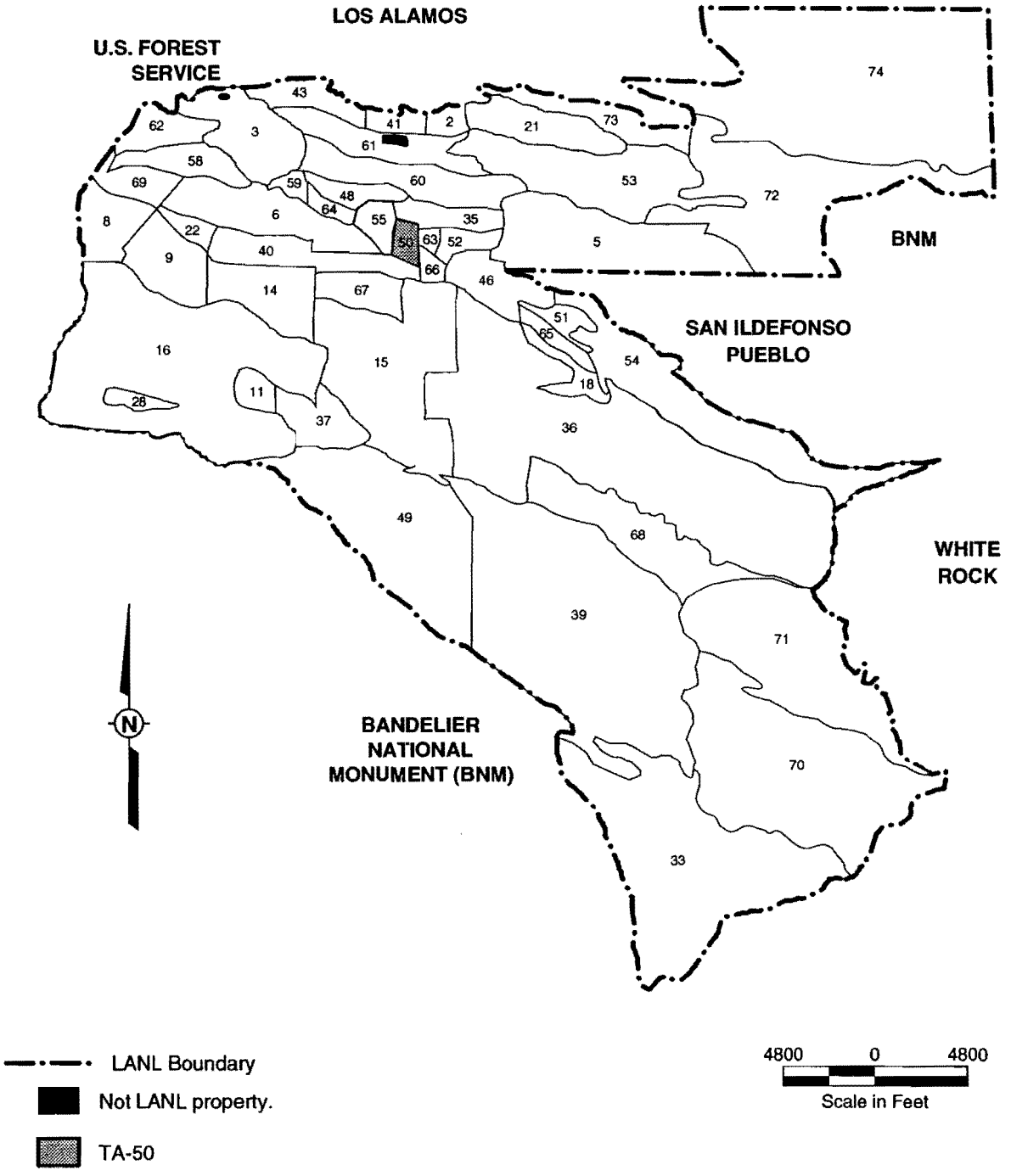


Figure 1
Location Map of Technical Area (TA) 50 at Los Alamos National Laboratory (LANL)

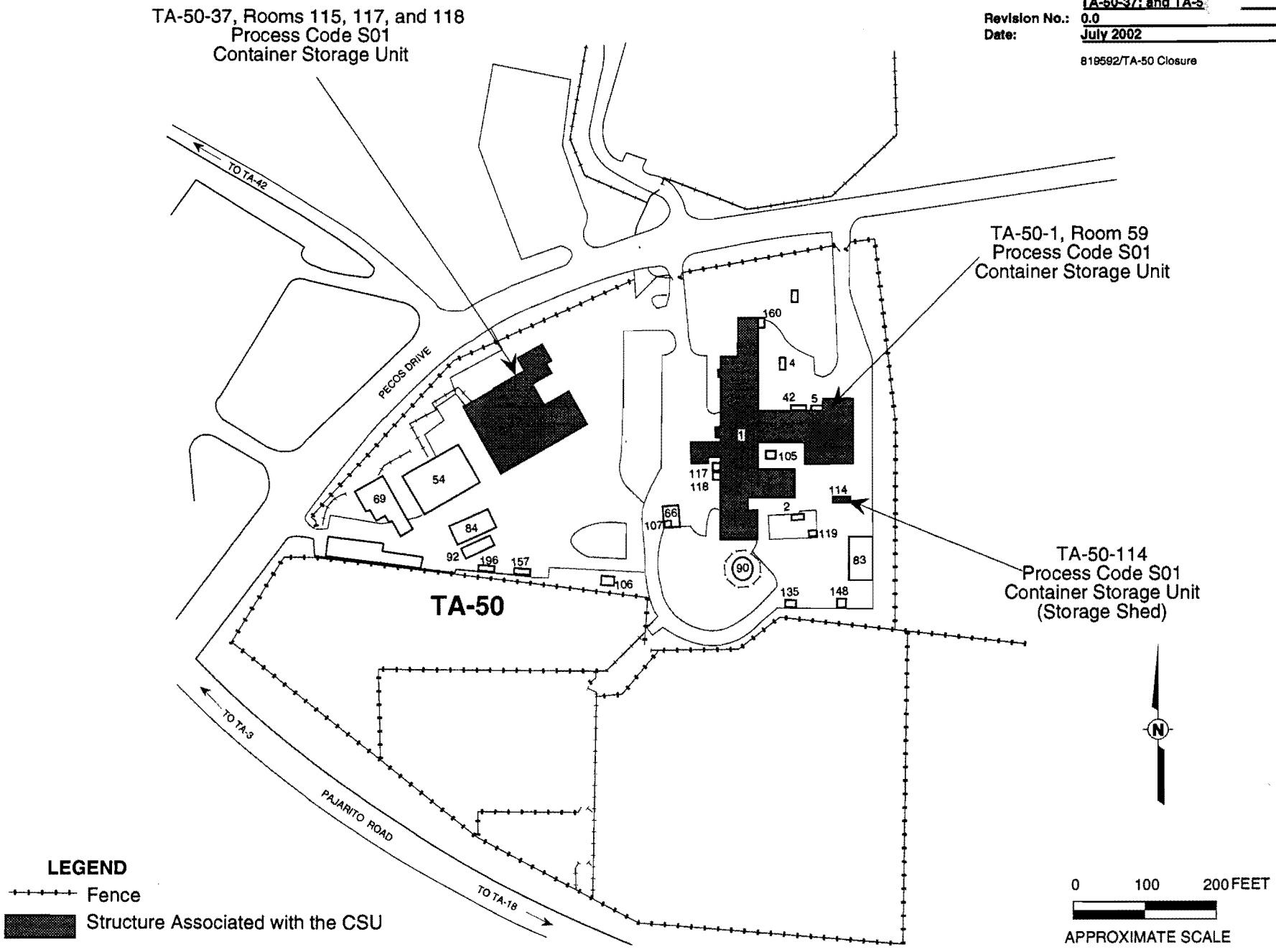
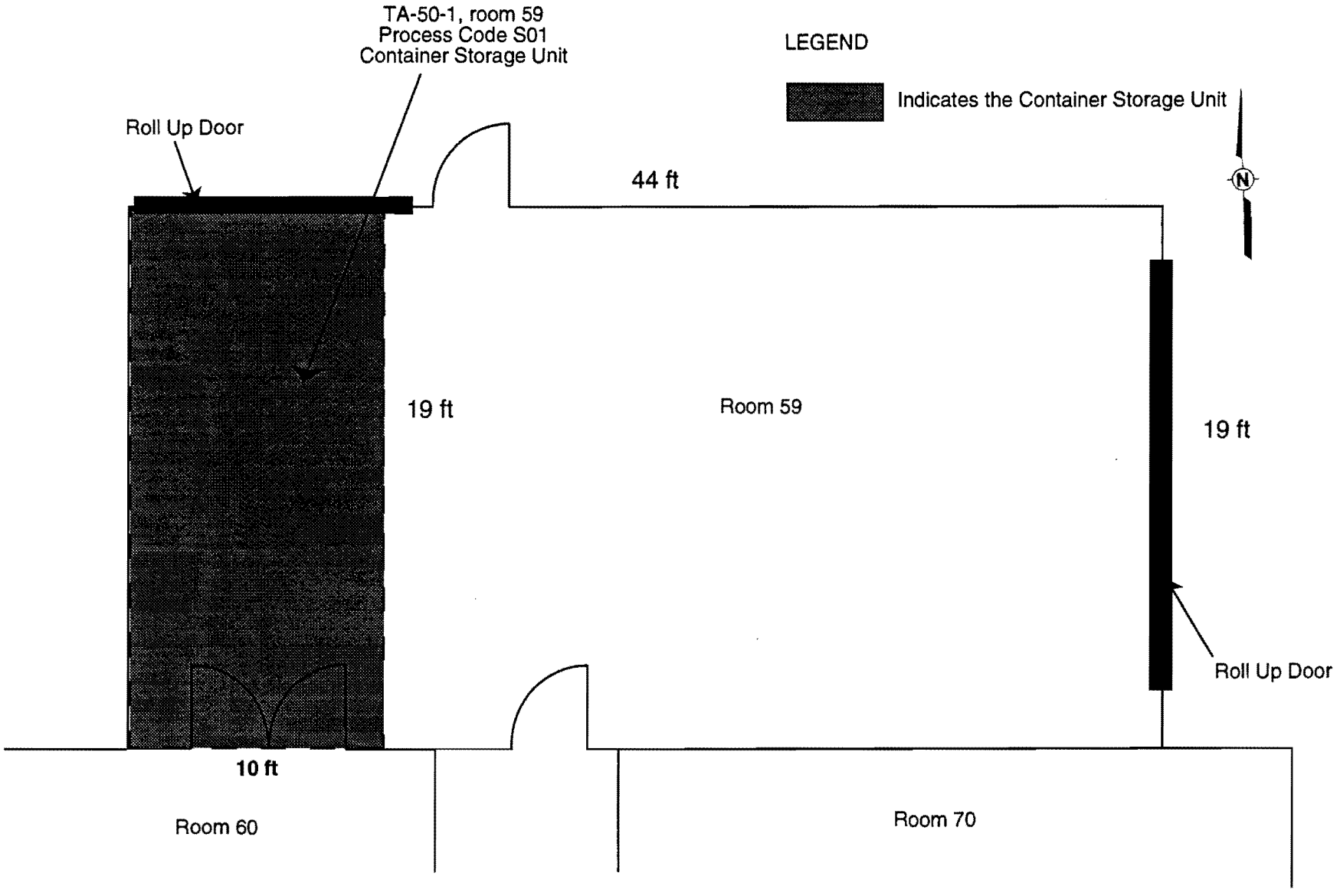


Figure 2
Location Map for Technical Area (TA) 50, Container Storage Units To be Closed



NOT TO SCALE

Figure 3
Technical Area (TA) 50, Building 1, Room 59 Container Storage Unit

Figure 4
Photograph – Technical Area 50, Building 1, Room 59, Container Storage Unit
(Photograph taken 10/30/01)

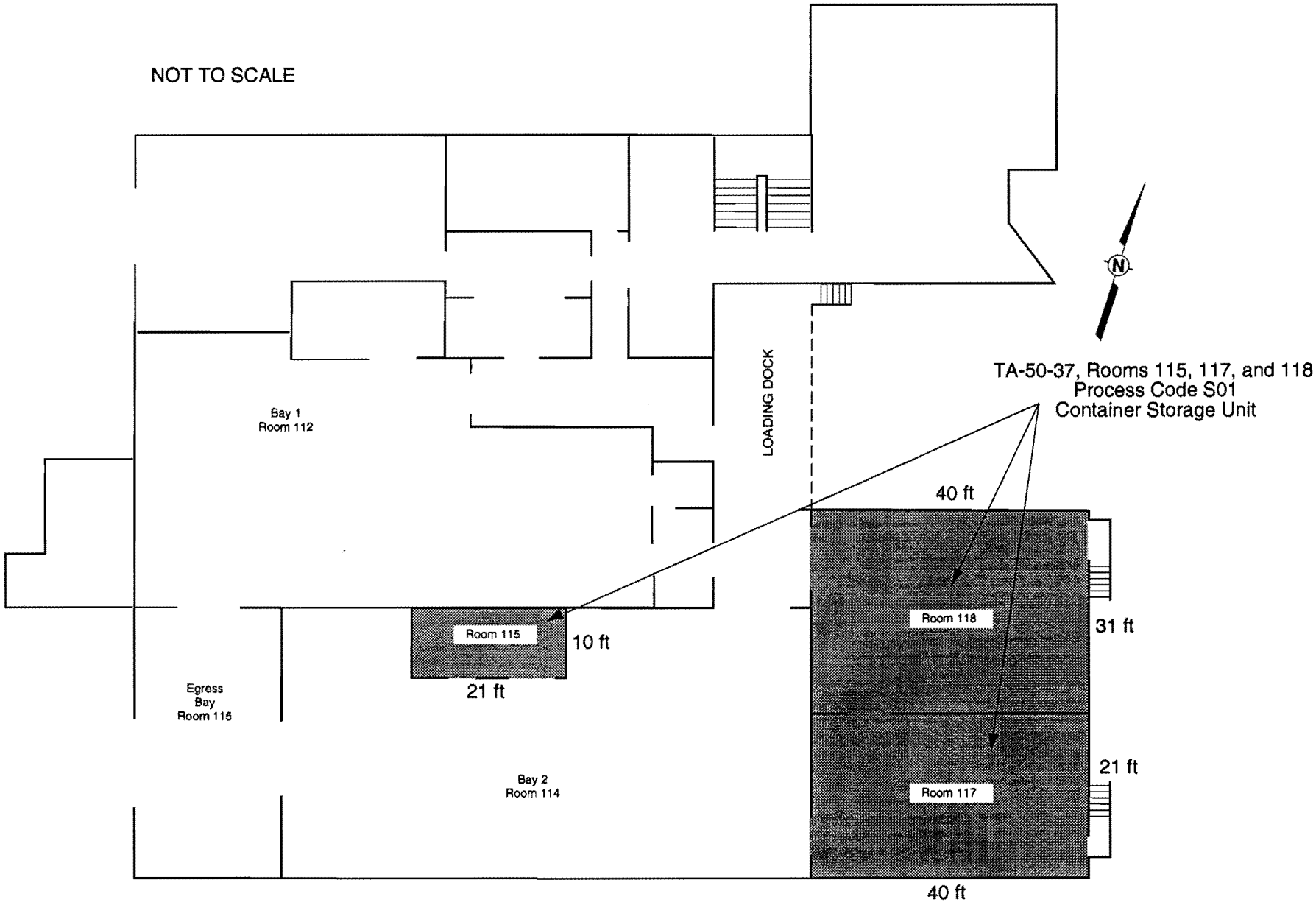


Figure 5
Technical Area (TA) 50, Building 37, Container Storage Unit

Figure 6
Photograph – Technical Area 50, Building 37, Container Storage Unit, Room 115
(Photograph taken 10/30/01)

Figure 7
Photograph – Technical Area 50, Building 37, Container Storage Unit, Room 117
(Photograph taken 3/19/98)

Figure 8
Photograph – Technical Area 50, Building 37, Container Storage Unit, Room 118
(Photograph taken 10/30/01)

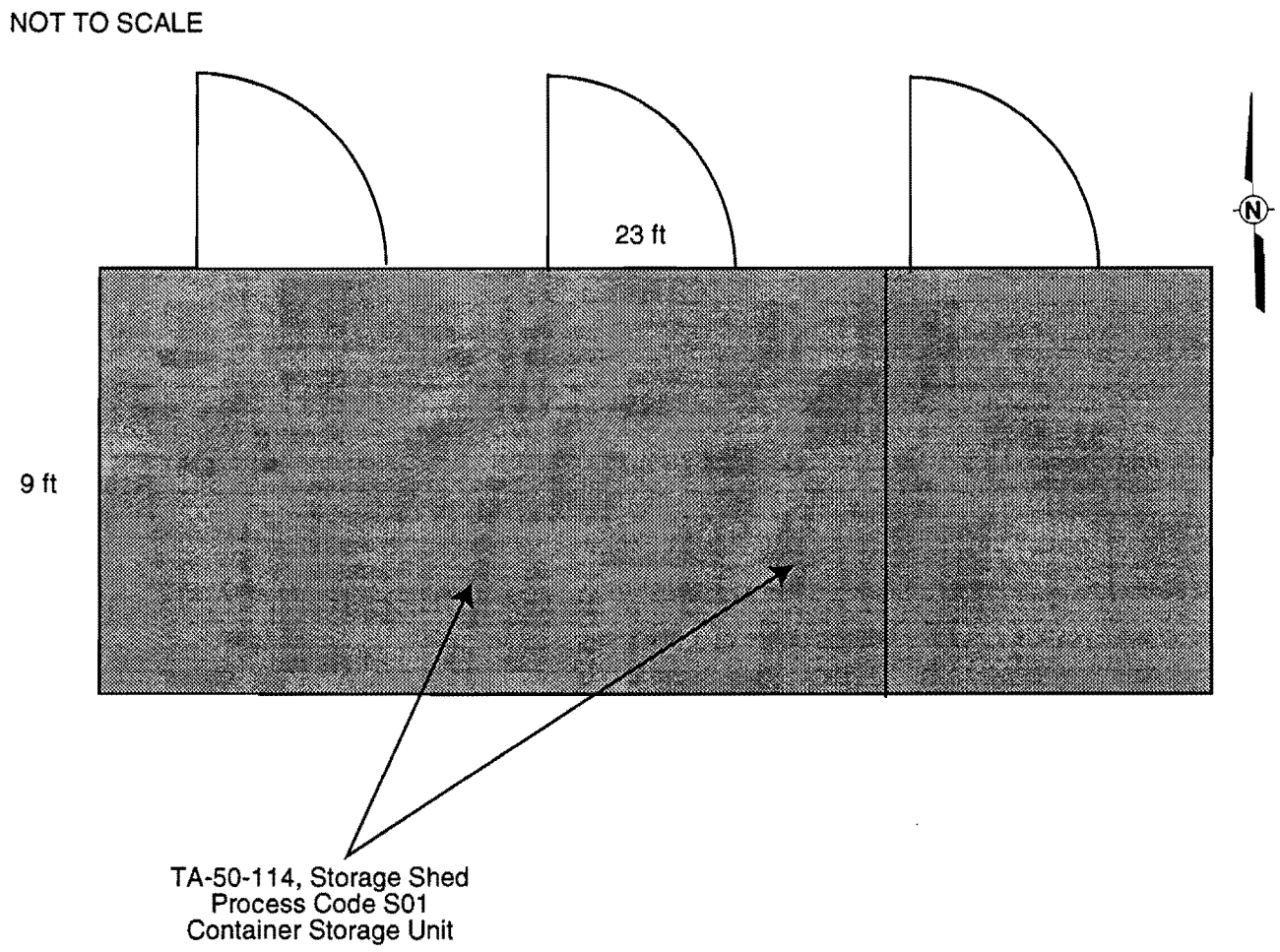


Figure 9
Technical Area (TA) 50, Building 114, Container Storage Unit

Figure 10
Photograph – Technical Area 50, Building 114, Container Storage Unit
(Photograph taken 3/16/98)

APPENDIX A

Waste Profile Forms for Waste Stored in TA-50-1, Room 59

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COPY

WASTE PROFILE FORM

RECEIVED FEB 0 7 2001

ORIGINAL

Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: EM-SWO at MS J595. For assistance with completing this form, call EM-SWO at 5-4000.	Reference Number 33439. (For EM-SWO use only.)

Generator's Z Number	Waste Generator's Name (print)	WMC's Z Number	WMC's Name (print)
091973	David Moss	120261	Stephen Kosler

Generator's Telephone	Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room
7-4301	E518	FWO-WFIN	50	1	60A

Waste Accumulation (Check only one.)

- ☐ Satellite Accumulation Area — Site no: _____
- ☐ Less-than-90-days Storage Area — Site no: _____
- ☒ TSDF — Site no: 460
- ☐ Universal Waste Storage Area — Site no: _____
- ☐ None of the Above

ER Use Only ☐ ER Site PRS #: _____

Method of Characterization (Check as many as apply.)

- ☒ Analysis/Documents Attached
- ☒ Chemical/Physical Analysis — Sample #: _____
- ☒ Radiological Analysis — Sample #: _____
- ☐ PCB Analysis — Sample #: _____
- ☒ Acceptable Knowledge Documentation — Documentation #: _____
- ☐ MSDS

Section 1 - Chemical and Physical Information

Waste Type (Check only one.)

- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☒ Process Waste/Spent Chemical/ other (Complete all sections.)
- ☐ Green is Clean Waste (Complete all sections as appropriate.)

Waste Classes

Radiological Information

Was Waste Generated in a RCA? ☒ Yes ☐ No

- ☐ Non-radioactive
- ☒ Radioactive
  - ☐ Low-Level
  - ☒ Transuranic

Wastewater Information

- ☐ Wastewater for SWSC (TA-46) (Complete Attachment 1)
- ☐ Wastewater for RLWTF (TA-50/TA-21) (Complete Attachment 2)
- ☐ Wastewater for TA-16 (HE)

Classification Information

- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check as many as apply.)

- ☒ Inorganic
- ☐ Organic
- Volatile Organics ☐ < 500 ppm ☐ ≥ 500 ppm
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste residue
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)
- Asbestos ☐ friable ☐ non-friable
- PCB Source Concentration
  - ☐ PCB < 50 ppm
  - ☐ PCB ≥ 50 - < 500 ppm
  - ☐ PCB ≥ 500 ppm
- ☐ Other (Describe below)

* Concentrations 10% or greater before use.

Waste Source (Check only one.)

Routine Waste

- ☐ Decon
- ☒ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup - Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Non-routine Waste

- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping - Non-routine
- ☐ Spill Cleanup - Non-routine
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix (Check only one.)

Gas

- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid

- ☐ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid

- ☐ Powder/Ash
- ☒ Solid
- ☐ Sludge
- ☐ Absorbed liquid

Matrix Type (Check only one.)

- ☒ Homogeneous
- ☐ Heterogeneous (Describe below)

Waste/Process Description (Chemical formulas may be used in this field.)

Process Acid and Caustic waste from TA-55 operations. This liquid waste is neutralized and then concentrated by precipitation using Calcium hydroxide. The concentrate is then solidified with Portland cement in a 55 gallon drum.

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WASTE PROFILE FORM

Section 2 - Characteristics

Ignitability (Check only one.) (°F)	(°C)	Corrosivity (Check only one.) (pH)	Reactivity (Check as many as apply.)	Boiling Point (Check only one.) (°F)	(°C)
☐ < 73	< 22.8	☐ ≤ 2.0	☐ RCRA Unstable	☐ ≤ 95	≤ 35
☐ 73 - 99	22.8 - 37.2	☐ 2.1 - 4.0	☐ Water Reactive	☐ > 95	> 35
☐ 100 - 139	37.8 - 59.4	☐ 4.1 - 6.0	☐ Cyanide Bearing (> 250 ppm)		
☐ 140 -200	60.0 - 99.3	☐ 6.1 - 9.0	☐ Sulfide Bearing (> 500 ppm)		
☐ > 200	> 99.3	☐ 9.1 - 12.4	☐ Pyrophoric		
☐ EPA Ignitable - Non-liquid		☐ ≥ 12.5	☐ Shock Sensitive		
☐ DOT Flammable Gas		☐ Liquid corrosive to steel	☐ Explosive - DOT Div. _____		
☐ DOT Oxidizer					
☒ Not ignitable		☒ Non-aqueous	☒ Non-reactive	☒ Not applicable	

Identify for all contaminants listed.	Characterization Method: AK	TCLP	Total	None or Non-detect	Present Below Regulatory Limit	Concentration of Contaminants: Above Regulatory Limit Minimum	Maximum
						(Concentration in ppm only.)	
Toxicity Characteristic Metals							
Arsenic	☐	☐	☐	☐	☐ < 5.0 ppm	800	4800 ppm
Barium	☐	☐	☐	☐	☒ < 100.0 ppm		ppm
Cadmium	☐	☐	☐	☐	☐ < 1.0 ppm	234	246 ppm
Chromium (Total)	☐	☐	☐	☐	☐ < 5.0 ppm	2960 ~~1800~~ SK	3040 ppm
Lead	☐	☐	☐	☐	☐ < 5.0 ppm	1700	1860 ppm
Mercury	☐	☐	☐	☐	SK ☒ < 0.2 ppm	0	4.32 ppm
Selenium	☐	☐	☐	☐	☐ < 1.0 ppm	0	1999 ppm
Silver	☐	☐	☐	☐	☐ < 5.0 ppm	0	9 ~~10~~ SK ppm
Toxicity Characteristic Organics							
Benzene	☐	☐	☐	☐	☐ < 0.5 ppm		ppm
Carbon tetrachloride	☐	☐	☐	☐	☐ < 0.5 ppm		ppm
Chlorodane	☐	☐	☐	☐	☐ < 0.03 ppm		ppm
Chlorobenzene	☐	☐	☐	☐	☐ < 100.0 ppm		ppm
Chloroform	☐	☐	☐	☐	☐ < 6.0 ppm		ppm
o - cresol	☐	☐	☐	☐	☐ < 200.0 ppm		ppm
m - cresol	☐	☐	☐	☐	☐ < 200.0 ppm		ppm
p - cresol	☐	☐	☐	☐	☐ < 200.0 ppm		ppm
Cresol - mixed	☐	☐	☐	☐	☐ < 200.0 ppm		ppm
2,4-D	☐	☐	☐	☐	☐ < 10.0 ppm		ppm
1,4-Dichlorobenzene	☐	☐	☐	☐	☐ < 7.5 ppm		ppm
1,2-Dichloroethane	☐	☐	☐	☐	☐ < 0.5 ppm		ppm
1,1-Dichloroethylene	☐	☐	☐	☐	☐ < 0.7 ppm		ppm
2,4-Dinitrotoluene	☐	☐	☐	☐	☐ < 0.13 ppm		ppm
Endrin	☐	☐	☐	☐	☐ < 0.02 ppm		ppm
Heptachlor (& its epoxide)	☐	☐	☐	☐	☐ < 0.008 ppm		ppm
Hexchlorobenzene	☐	☐	☐	☐	☐ < 0.13 ppm		ppm
Hexchlorobutadiene	☐	☐	☐	☐	☐ < 0.5 ppm		ppm
Hexchloroethane	☐	☐	☐	☐	☐ < 3.0 ppm		ppm
Lindane	☐	☐	☐	☐	☐ < 0.4 ppm		ppm
Methoxychlor	☐	☐	☐	☐	☐ < 10.0 ppm		ppm
Methyl ethyl ketone	☐	☐	☐	☐	☐ < 200.0 ppm		ppm
Nitrobenzene	☐	☐	☐	☐	☐ < 2.0 ppm		ppm
Pentachlorophenol	☐	☐	☐	☐	☐ < 100.0 ppm		ppm
Pyridine	☐	☐	☐	☐	☐ < 5.0 ppm		ppm
Tetrachloroethylene	☐	☐	☐	☐	☐ < 0.7 ppm		ppm
Toxaphene	☐	☐	☐	☐	☐ < 0.5 ppm		ppm
Trichloroethylene	☐	☐	☐	☐	☐ < 0.5 ppm		ppm
2,4,5-Trichlorophenol	☐	☐	☐	☐	☐ < 400.0 ppm		ppm
2,4,6-Trichlorophenol	☐	☐	☐	☐	☐ < 2.0 ppm		ppm
2,4,5-TP (Silvex)	☐	☐	☐	☐	☐ < 1.0 ppm		ppm
Vinyl chloride	☐	☐	☐	☐	☐ < 0.2 ppm		ppm

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WASTE PROFILE FORM

Section 3 - Additional Constituents

Additional Constituents and Contaminates. Please account for 100% of waste. Ranges should be given within guidelines of LIG 404-00-03 of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum		Maximum	
	Calcium hydroxide	3	to	5	%
	portland cement	60	to	75	%
	water	20	to	35	%
	sodium silicate	.5	to	1	%
	vermiculite	.5	to	1	%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
	Total of max. ranges of this section	117			in %
	Total of max. ranges from page 2.	12,386			in ppm

Additional Information (Use additional sheet if necessary.)

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

Additional Constituents:

Acetone = 1ppm

2 Butanone = .2ppm

N-Nitrosodimethylamine = 3ppm (Max)

Diethyl Phthalate = .25 ppm

Di-N-butylphthalate = 4ppm

B.s-2-ethylheryl phthalate = 4.5ppm

WASTE GENERATOR: [redacted] knowledge of the waste and/or chemical/physical analysis [redacted] the information given this form is correct. I understand that [redacted] regulatory agencies and that there are significant penalties for [redacted] including the [redacted] for knowing violations.

Signature	Date
William David Allen	2-2-01

WASTE MANAGEMENT COORDINATOR: I have reviewed this form and to the best of my knowledge, the information is complete and accurate.

Signature	Date
Stephen Kola	2/02/01

Associated WPF Reference Number _____

LDR and Underlying Hazardous Constituents Information - Identify presence of any constituents listed below.

Non-Wastewater / Wastewater Category - Check only one.

☒ Non Wastewater ☐ Wastewater [as defined by 40 CFR 268.2(f)]

Notification of California List Applicability - Check all that apply.

☐ Liquid hazardous waste containing PCBs at a concentration of 50 ppm or greater.

☐ A D001 thru D043 liquid waste containing 134 mg/L or greater of Nickel and/or 130 mg/L or greater of thallium.

☐ A D001 thru D043 waste containing Halogenated Organic Compounds (HOCs) listed in 40 CFR 268, Appendix III, at 1000 ppm or greater.

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001, D002, D003, and D012 - D043 characteristic wastes only)

☐ *No Underlying Hazardous Constituents in this waste stream.*

Organic Constituents

☐ A2213	☐ Butyl benzyl phthalate	☐ p,p'-DDE
☐ Acenaphthylene	☐ 2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	☐ o,p'-DDT
☐ Acenaphthene	☐ Carbaryl	☐ p,p'-DDT
☐ Acetone	☐ Carbenzadim	☐ Dibenz(a,h)anthracene
☐ Acetonitrile	☐ Carbofuran	☐ Dibenz(a,e)pyrene
☐ Acetophenone	☐ Carbofuran phenol	☐ 1,2-Dibromo-3-chloropropane
☐ 2-Acetyaminofluorene	☐ Carbon disufide	☐ 1,2-Dibromoethane (Ethylene dibromide)
☐ Acrolein	☐ Carbon tertachloride	☐ Dibromomethane
☐ Acrylamide	☐ Carbosulfan	☐ m-Dichlorobenzene
☐ Acrylonitrile	☐ Chlordane (alpha & gamma isomers)	☐ o-Dichlorobenzene
☐ Aldicarb sulfone	☐ p-Chloroaniline	☐ p-Dichlorobenzene
☐ Aldrin	☐ Chlorobenzene	☐ Dichlorodifluoromethane
☐ 4-Aminobiphenyl	☐ Chlorobenzilate	☐ 1,1-Dichloroethane
☐ Aniline	☐ 2-Chlor-1,3-butadiene	☐ 1,2-Dichloroethane
☐ Anthracene	☐ Chlorodibromomethane	☐ 1,1-Dichloroethylene
☐ Aramite	☐ Chloroethane	☐ trans-1,2-Dichloroethylene
☐ alpha-BHC	☐ bis(2-chloroethoxy) methane	☐ 2,4-Dichlorophenol
☐ beta-BHC	☐ bis(2-chloroethyl) ether	☐ 2,6-Dichlorophenol
☐ delta-BHC	☐ Chloroform	☐ 2,4-Dichlorophenoxyacetic (2,4-D)
☐ gamma-BHC	☐ bis(2-chloroisopropyl) ether	☐ 1,2-Dichloropropane
☐ Barban	☐ p-Chloro-m-cresol	☐ cis-1,3-Dichloropylene
☐ Bendiocarb	☐ 2-Chloroethyl vinyl ether	☐ trans-1,3-Dichloropylene
☐ Bendiocarb phenol	☐ Chloromethane (Methyl chloride)	☐ Dieldrin
☐ Benomyl	☐ 2-Chloronaphthalene	☐ Diethylene glycol, dicarbamate
☐ Benzene	☐ 2-Chlorophenol	☐ Diethyl phthalate
☐ Benz(a)anthracene	☐ 2-Chloropropylene	☐ p-Dimethylaminoazobenzene
☐ Benzal chloride	☐ Chrysene	☐ 2-4-Dimethyl phenol
☐ Benzo(b)fluoranthene	☐ o-Cresol	☐ Dimethyl phthalate
☐ Benzo(k)fluoranthene	☐ m-Cresol	☐ Dimetilan
☐ Benzo(g,h,i)perylene	☐ p-Cresol	☐ Di-n-butyl phthalate
☐ Benzo(a)pyrene	☐ m-Cumenyl methylcarbamate	☐ 1,4-Dinitrobenzene
☐ Bromodichloromethane	☐ Cycloate	☐ 4,6-Dinitro-o-cresol
☐ Bromomethane (Methyl bromide)	☐ Cyclohexanone	☐ 2,4-Dinitrophenol
☐ 4-Bromophenyl phenyl ether	☐ o,p'-DDD	☐ 2,4-Dinitrotoluene
☐ n-Butyl alcohol	☐ p,p'-DDD	☐ 2,6-Dinitrotoluene
☐ Butylate	☐ o,p'-DDE	☐ Di-n-octyl phthalate

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001, D002, D003, and D012 - D043 characteristic wastes only)

Organic Constituents - continued

- ☐ Di-n-propylnitrosamine
- ☐ 1,4-Dioxane
- ☐ Diphenylamine
- ☐ Diphenylnitrosamine
- ☐ 1,2-Diphenyl hydrazine
- ☐ Disulfoton
- ☐ Dithiocarbamates (total)
- ☐ Endosulfan I
- ☐ Endosulfan II
- ☐ Endosulfan sulfate
- ☐ Endrin
- ☐ Endrin aldehyde
- ☐ EPTC
- ☐ Ethyl acetate
- ☐ Ethyl benzene
- ☐ Ethyl cyanide (Propanenitrile)
- ☐ Ethyl ether
- ☐ bis(2-ethylhexyl) phthalate
- ☐ Ethyl methacrylate
- ☐ Ethylene oxide
- ☐ Famphur
- ☐ Fluoranthene
- ☐ Fluorene
- ☐ Formetanate hydrochloride
- ☐ Formparanate
- ☐ Heptachlor
- ☐ Heptachlor epoxide
- ☐ Hexachlorobenzene
- ☐ Hexachlorobutadiene
- ☐ Hexachlorocyclopentadiene
- ☐ Hexachlorodibenzo-p-dioxins (HxCDDs)
- ☐ Hexachlorodibenzo-furans (HxCDFs)
- ☐ Hexachloroethane
- ☐ Hexachloropropylene
- ☐ Indeno (1,2,3-c,d) pyrene
- ☐ Iodomethane
- ☐ 3-Iodo-2-propynyl n-butylcarbamate
- ☐ Isobutyl alcohol
- ☐ Isodrin
- ☐ Isolan
- ☐ Isosafrole
- ☐ Kepone
- ☐ Methacrylonitrile
- ☐ Methanol
- ☐ Methapyrilene
- ☐ Methiocarb
- ☐ Methomyl
- ☐ Methoxychlor
- ☐ 3-Methylchlolanthrene
- ☐ 4,4-Methyliene bis(2-chloroanline)
- ☐ Methylene chloride
- ☐ Methyl ethyl ketone
- ☐ Methyl isobutyl ketone
- ☐ Methyl methacrylate
- ☐ Methyl methansulfonate
- ☐ Methyl parathion
- ☐ Metolcarb
- ☐ Mexacarbate
- ☐ Molinate
- ☐ Naphthalene
- ☐ 2-Naphthylamine
- ☐ o-Nitroaniline
- ☐ p-Nitroaniline
- ☐ Nitrobenzene
- ☐ 5-Nitro-o-toluidine
- ☐ o-Nitrophenol
- ☐ p-Nitrophenol
- ☐ N-Nitrosodiethylamine
- ☐ N-Nitrosodimethylamine
- ☐ N-Nitroso-di-n-butylamine
- ☐ N-Nitrosomethylethylamine
- ☐ N-Nitrosomorpholine
- ☐ N- Nitrosopiperidine
- ☐ N-Nitrosopyrrolidine
- ☐ Oxamyl
- ☐ Parathion
- ☐ PCBs (total)
- ☐ Pebulate
- ☐ Pentachlorobenzene
- ☐ Pentachlorodibenzo-p-dioxins (PeCDDs)
- ☐ Pentachlorodibenzo-furans (PeCDFs)
- ☐ Pentachloroethane
- ☐ Pentachloronitrobenzene
- ☐ Pentachlorophenol
- ☐ Phenacetin
- ☐ Phenanthrene
- ☐ Phenol
- ☐ o-Phenylenediamine
- ☐ Phorate
- ☐ Phthalic acid
- ☐ Phthalic anhydride
- ☐ Physostigmine
- ☐ Physostigmine salicylate
- ☐ Promecarb
- ☐ Pronamide
- ☐ Propham
- ☐ Propoxur
- ☐ Prosulfocarb
- ☐ Pyrene
- ☐ Pyridine
- ☐ Safrole
- ☐ Silvex (2,4,5-TP)
- ☐ 1,2,4,5-Tetrachlorobenzene
- ☐ Tetrachlorodibenzo-p-dioxins (TCDDs)
- ☐ Tetrachlorodibenzofurans (TCDFs)
- ☐ 1,1,1,2-Tetrachloroethane
- ☐ 1,1,2,2-Tetrachloroethane
- ☐ Tetrachloroethylene
- ☐ 2,3,4,6-Tertachlorophenol
- ☐ Thiodicarb
- ☐ Thiophanate-methyl
- ☐ Tirpate
- ☐ Toluene
- ☐ Toxaphene
- ☐ Triallate
- ☐ Tribromomethane (Bromoform)
- ☐ 1,2,4-Trichlorobenzene
- ☐ 1,1,1-Trichloroethane
- ☐ 1,1,2-Trichloroethane
- ☐ Trichloroethylene
- ☐ Trichloromonofluoromethane
- ☐ 2,4,5-Trichlorophenol
- ☐ 2,4,6-Trichlorophenol
- ☐ 2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)
- ☐ 1,2,3-Trichloropropane
- ☐ 1,1,2-Trichlor-1,2,2-trifluoroethane
- ☐ Triethylamine
- ☐ tris-(2,3-Dibromopropyl) phosphate
- ☐ Vernolate
- ☐ Vinyl chloride
- ☐ Xylenes (total)

Land Disposal Restriction (LDR) and Underlying Hazardous Constituents Information Form

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001, D002, D003, and D012 - D043 characteristic wastes only)

Metal/Inorganic Constituents

☐ Antimony	☐ Cyanides (Amenable)	☒ Selenium
☒ Arsenic	☐ Fluoride	☒ Silver
☐ Barium	☒ Lead	☐ Sulfide
☐ Beryllium	☐ Mercury (Retort residues)	☐ Thallium
☒ Cadmium	☒ Mercury - All others	☐ Vanadium
☒ Chromium (Total)	☐ Nickel	☐ Zinc
☐ Cyanides (Total)		

VACUUM FILTER SOLIDS LABORATORY ANALYSES

SAMPLE SUBMITTED BY: Fito	DATE SUBMITTED: 8/18/00
ORIGIN OF SAMPLE: TA-50 / DP-257	DATE SAMPLED: 3/18/00
DESCRIPTION: Sludge / Vacuum Filter filtercake. TA-50 (50S) / DP-257 (21-257S) / TA-50 (60S)	Results due within 30 days of submittal date
EM-RLW I.D. NUMBER: 00.73906	CST-9 I.D. NUMBER:

RAD AND MISC. ANALYSES

TEST/ ANALYSIS	RESULT/ CONCENTRATION	DATE BEGUN	METHOD	ANAL. BY	DATE
Gross ALPHA			PC		
^{234}U			RAS		
^{235}U			RAS		
^{238}Pu			RAS		
^{239}Pu			RAS		
^{241}Am			NaI		
% Solids			Grav.		
Spec. Grav.			Grav.		
Approved By:				Date:	

TRACE METAL ANALYSES **Prep Method: TCLP / Total**

	TEST/ ANALYSIS	RESULT/ CONCENTRATION	DATE BEGUN	METHOD	ANAL. BY	DATE
	As		Marc Kozi	7060		
	Se			7740		
	Hg		Jim Yeatts	7470/7471		
METALS	Ag	< 0.01 mg/g		6010		
	Ba	< 0.008 mg/g		6010		
	Cd	0.24 ± 0.006 mg/g		6010		
	Cr	3 ± .04 mg/g		6010		
	Ni			6010		
	Pb	1.78 ± 0.08 mg/g		6010		
	Zn	6.37 ± .01 mg/g		6010		
	Sb			6020		
	Tl			6020		
Approved By:					Date:	

ROUTING	INITIALS	DATE
Radiochemistry		
CST-9 Team Leader		
Trace Metals Sample Preparation		
Analysts		
Data Reviewer		
Plant Operation File		

Matt $\frac{0.5g}{100ml}$

assuming no other dilutions

As $< 10 \mu g/L \times \frac{0.1L}{0.5g} = < 2 \mu g/g$

Se $14 \pm 10 \mu g/L \times \frac{0.1L}{0.5g} = 2.8 \mu g/g \pm 2 \mu g/g$

Hg $21.6 \mu g/L \times \frac{0.1L}{0.5g} = 4.32 \mu g/g \pm 0.4 \mu g/g$

LABORATORY ANALYSES

AMPLE SUBMITTED BY	J. Narum	DATE: 9/18/00	
RI..N OF SAMPLE (S)	605 9/18		
ENERAL DESCRIPTION RANGE OF ACTIVITY			
ATE SAMPLE COLLECTED			

st/Analysis	Result/Conc	By (Initials)	Test/Analysis	Result/Conc	By (Initials)
As	2.8 ± 2.0 mg/g				
Se	< 2.0 mg/g				
Hg	4.32 µg/g				

ARKS:

APPROVED: [illegible] Chief Chemist DATE: 10/31/00

Lab Copy

H7-LAB-35

WASTE FORM 0002
ROOM 60 SLUDGE
LABORATORY ANALYSES

SAMPLE SUBMITTED BY: [redacted]/[redacted]/[redacted] FJB DATE: 8-18-00

ORIGIN OF SAMPLE: TA-50-1 Room 60

DESCRIPTION: Radiochemical Analyses of Room 60 Sludge for Drum Tumbling

Drum # Sample for Drum Tumbleing

LABORATORY I.D. NUMBER: 00.73906

TEST/ ANALYSIS	RESULT/CONCENTRATION	DATE BEGUN	METHOD	ANAL. BY
Gross ALPHA	68 ± 7 μCi/g	8/22/00	ALPHA	MCT
^{234}U	83 ± 10 nCi/g	9/5/00	RAS	MCT
^{235}U	10 ± 2 nCi/g	9/5/00	RAS	MCT
^{238}Pu	12 ± 1 μCi/g	8/22/00	RAS	MCT
^{239}Pu	12 ± 1 μCi/g	8/22/00	RAS	MCT
^{241}Am	43 ± 4 μCi/g	8/22/00	GELI	MCT
~~pH~~ MCT			GE	
~~C.O.D.~~ MCT			Color	
% Solids	18.7 ± 2%	8/21/00	Grav	MCT
Sp.Gr.	1.17 ± .05 g/mL	8/21/00	Grav	MCT

Remarks:

APPROVED BY: MCT DATE: 9/6/00

CST-12 SEMIVOLATILE ORGANIC ANALYSIS
SUMMARY OF ANALYTICAL RESULTS

Table 1. Summary of results of sample analyses for semivolatiles.

REQUEST NUMBER: 24401

SAMPLE ID	TARGET COMPOUNDS FOUND	AMOUNT (ug/Kg)	LOQ (ug/Kg)	TICs
B97.00889	Di-n-butylphthalate	650 J	1000	Y
S97.00883 RMCeo TK-7	N-Nitrosodimethylamine	2400	1000	Y
	Diethylphthalate	180 J	1000	
	Di-n-butylphthalate	3200 B	1000	
	bis-2-Ethylhexylphthalate	3900	1000	
S97.00925 Drum 1-3	Fluoranthene	4800 JD	19000	Y
	Pyrene	4000 JD	19000	
	bis-2-Ethylhexylphthalate	63000 D	19000	
	Di-n-octylphthalate	3700 JD	19000	
	Benzo(b)fluoranthene	4400 JD	19000	
SAMPLE ID	**FOUND**	**(ug/L)**	**(ug/L)**	**TICs**
S97.00886 WM-66 Flume	Phenol	49000	19000	Y
	bis-2-Ethylhexylphthalate	6000 JD	19000	
	Di-n-octylphthalate	3300 JD	19000	

TV 3/4/97

Sample ID beginning with a B is a blank. Sample ID beginning with a S is a sample.

LOQ: Limit of quantitation. LOQs normally range between 10 and 50ug/L depending on the compound, unless otherwise noted.
TICs: Tentatively identified compounds. Y = TICs were found. N = TICs were not found.

J: Compound is present in the sample, but at a concentration that is less than LOQ. This concentration should be considered an estimate.
B: This compound was seen in the method blank as well as the sample. Concentration is considered significant at ten times the blank amount for phthalate esters and five times blank amount for the remaining compounds.
D: Sample was diluted.

CST-12 ORGANIC ANALYSIS GROUP
SUMMARY OF ANALYTICAL RESULTS FOR VOLATILES

Table 1. Summary of results of sample analyses for volatiles.

REQUEST NUMBER: 24401

SAMPLE ID	TARGET COMPOUNDS FOUND	AMOUNT (ug/Kg)	LOQ (ug/Kg)	TICs
B97.00887	Acetone	21	20	Y
	2-Butanone	14 J	20	
B97.00888	Acetone	8 J	20	N
	2-Butanone	7 J	20	
B97.02857	Acetone	10 J	20	Y
60-TK7 S97.00882	Acetone	550 B	52	Y
	Methylene Chloride	7 J	13	
	2-Butanone	130 B	52	
	2-Hexanone	10 J	52	
766 F/ume S97.00885	Acetone	290000 B	16000	Y
	cis-1,2-Dichloroethene	36000	1100	
	2-Butanone	320000	16000	
	4-Methyl-2-Pentanone	2100	1840	
	Tetrachloroethene	350 J	460	
	2-Hexanone	11000	1840	

Sample IDs beginning with the letter S are samples; those beginning with the letter B are blanks.

LOQ: Limit of quantitation. LOQs normally range between 5 and 20ug/Kg depending on the compound, unless otherwise noted.

TICs: Tentatively identified compounds. Y = TICs were found. N = TICs were not found.

J: This data qualifier indicates that the compound was detected, but the reported result is less than the LOQ and is an estimated value.

B: This data qualifier indicates that the reported compound was found in the associated method blank as well as in the sample.

CMcl 3/31/97

MG/L

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 33439
(Version: 1.4)

29-Jan-2002 07:47 AM

Generator :	MOSS, WILLIAM DAVID EMRLW	MS :	E518
WMC :	KOSLER, STEVE FWOWFM	MS :	E518
FROM :	FWO-SWO	MS :	J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 33439 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to FWO-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 33439
YES ✓ NO ____
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
YES ____ NO ____
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
YES ____ NO ____
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 33439

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

Extension-> Signed William D. Moss Date 02/01/02

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 33439

Void-> Signed _____ Date _____

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: FWO-SWO ***MS: J595*** ***PHONE: 5-4000***

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LOS ALAMOS
National Laboratory

WASTE PROFILE FORM

RECEIVED APR 0 4 2001

Contact (if other than given below)

For rapid processing, complete all sections in black or blue ink and mail to: EM-SWO at **MS J595**.
For assistance with completing this form, call EM-SWO at **5-4000**.

Reference Number 33630.
(For EM-SWO use only.)

Generator's Z Number	Waste Generator's Name (print)	WMC's Z Number	WMC's Name (print)
091973	David Moss	120261	Stephen Kosler

Generator's Telephone	Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room
7-4301	E518	FWO-WFM	50	1	60A

Waste Accumulation (Check only one.)
- ☐ Satellite Accumulation Area — Site no: ____
- ☐ Less-than-90-days Storage Area — Site no: ____
- ☒ TSDF — Site no: 460
- ☐ Universal Waste Storage Area — Site no: ____
- ☐ None of the Above

ER Use Only ☐ ER Site PRS #: ____

Method of Characterization (Check as many as apply.)
- ☒ Analysis/Documents Attached
- ☒ Chemical/Physical Analysis — Sample #: ____
- ☒ Radiological Analysis — Sample #: ____
- ☐ PCB Analysis — Sample #: ____
- ☒ Acceptable Knowledge Documentation — Documentation #: ____
- ☐ MSDS

Section 1 - Chemical and Physical Information

Waste Type (Check only one.)
- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☒ Process Waste/Spent Chemical/ other (Complete all sections.)
- ☐ Green is Clean Waste (Complete all sections as appropriate.)

Waste Classes

Radiological Information
Was Waste Generated in a RCA? ☒ Yes ☐ No
- ☐ Non-radioactive
- ☒ Radioactive
  - ☐ Low-Level
  - ☒ Transuranic

Wastewater Information
- ☐ Wastewater for SWSC (TA-46) (Complete Attachment 1)
- ☐ Wastewater for RLWTF (TA-50/TA-21) (Complete Attachment 2)
- ☐ Wastewater for TA-16 (HE)

Classification Information
- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check as many as apply.)
- ☒ Inorganic
- ☐ Organic
- Volatile Organics ☐ < 500 ppm ☐ ≥ 500 ppm
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste residue
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)
- Asbestos ☐ friable ☐ non-friable
- PCB Source Concentration
  - ☐ PCB < 50 ppm
  - ☐ PCB ≥ 50 - < 500 ppm
  - ☐ PCB ≥ 500 ppm
- ☐ Other (Describe below)

* Concentrations 10% or greater before use.

Waste Source (Check only one.)

Routine Waste
- ☐ Decon
- ☒ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup - Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Non-routine Waste
- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping - Non-routine
- ☐ Spill Cleanup - Non-routine
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix (Check only one.)

Gas
- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid
- ☐ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid
- ☐ Powder/Ash
- ☒ Solid
- ☐ Sludge
- ☐ Absorbed liquid

Matrix Type (Check only one.)
- ☒ Homogeneous
- ☐ Heterogeneous (Describe below)

Waste/Process Description (Chemical formulas may be used in this field.)

Process Acid and Caustic Waste from TA-55 operations. This liquid waste is neutralized and then concentrated by precipitation using calcium hydroxide. The concentrate is then solidified with Portland Cement in a 55 gallon drum.

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WASTE PROFILE FORM

Section 2 - Characteristics

Ignitability (Check only one.) (°F)	(°C)	Corrosivity (Check only one.) (pH)	Reactivity (Check as many as apply.)	Boiling Point (Check only one.) (°F)	(°C)
☐ < 73	< 22.8	☐ ≤ 2.0	☐ RCRA Unstable	☐ ≤ 95	≤ 35
☐ 73 - 99	22.8 - 37.2	☐ 2.1 - 4.0	☐ Water Reactive	☐ > 95	> 35
☐ 100 - 139	37.8 - 59.4	☐ 4.1 - 6.0	☐ Cyanide Bearing (> 250 ppm)		
☐ 140 -200	60.0 - 99.3	☐ 6.1 - 9.0	☐ Sulfide Bearing (> 500 ppm)		
☐ > 200	> 99.3	☐ 9.1 - 12.4	☐ Pyrophoric		
☐ EPA Ignitable - Non-liquid		☐ ≥ 12.5	☐ Shock Sensitive		
☐ DOT Flammable Gas		☐ Liquid corrosive to steel	☐ Explosive - DOT Div. _____		
☐ DOT Oxidizer					
☒ Not ignitable		☒ Non-aqueous	☒ Non-reactive	☒ Not applicable	

Identify for all contaminants listed.	Characterization Method: AK	TCLP	Total	Concentration of Contaminants: None or Non-detect	Present Below Regulatory Limit	Above Regulatory Limit Minimum	Maximum
Toxicity Characteristic Metals						(Concentration in ppm only.)	
Arsenic	☐	☐	☒	☐	☒ < 5.0 ppm		
Barium	☐	☐	☒	☐	☒ < 100.0 ppm		
Cadmium	☐	☐	☒	☐	☐ < 1.0 ppm	300	327
Chromium (Total)	☐	☐	☒	☐	☐ < 5.0 ppm	500	547
Lead	☐	☐	☒	☐	☐ < 5.0 ppm	35	45
Mercury	☐	☐	☒	☐	☐ < 0.2 ppm	3.92 @ 3X	4.92
Selenium	☐	☐	☒	☐	☒ < 1.0 ppm		
Silver	☐	☐	☒	☐	☐ < 5.0 ppm	4	6.25
Toxicity Characteristic Organics							
Benzene	☐	☐	☐	☐	☐ < 0.5 ppm		
Carbon tetrachloride	☐	☐	☐	☐	☐ < 0.5 ppm		
Chlorodane	☐	☐	☐	☐	☐ < 0.03 ppm		
Chlorobenzene	☐	☐	☐	☐	☐ < 100.0 ppm		
Chloroform	☐	☐	☐	☐	☐ < 6.0 ppm		
o - cresol	☐	☐	☐	☐	☐ < 200.0 ppm		
m - cresol	☐	☐	☐	☐	☐ < 200.0 ppm		
p - cresol	☐	☐	☐	☐	☐ < 200.0 ppm		
Cresol - mixed	☐	☐	☐	☐	☐ < 200.0 ppm		
2,4-D	☐	☐	☐	☐	☐ < 10.0 ppm		
1,4-Dichlorobenzene	☐	☐	☐	☐	☐ < 7.5 ppm		
1,2-Dichloroethane	☐	☐	☐	☐	☐ < 0.5 ppm		
1,1-Dichloroethylene	☐	☐	☐	☐	☐ < 0.7 ppm		
2,4-Dinitrotoluene	☐	☐	☐	☐	☐ < 0.13 ppm		
Endrin	☐	☐	☐	☐	☐ < 0.02 ppm		
Heptachlor (& its epoxide)	☐	☐	☐	☐	☐ < 0.008 ppm		
Hexchlorobenzene	☐	☐	☐	☐	☐ < 0.13 ppm		
Hexchlorobutadiene	☐	☐	☐	☐	☐ < 0.5 ppm		
Hexchloroethane	☐	☐	☐	☐	☐ < 3.0 ppm		
Lindane	☐	☐	☐	☐	☐ < 0.4 ppm		
Methoxychlor	☐	☐	☐	☐	☐ < 10.0 ppm		
Methyl ethyl ketone	☐	☐	☐	☐	☑ < 200.0 ppm		
Nitrobenzene	☐	☐	☐	☐	☐ < 2.0 ppm		
Pentachlorophenol	☐	☐	☐	☐	☐ < 100.0 ppm		
Pyridine	☐	☐	☐	☐	☐ < 5.0 ppm		
Tetrachloroethylene	☐	☐	☐	☐	☐ < 0.7 ppm		
Toxaphene	☐	☐	☐	☐	☐ < 0.5 ppm		
Trichloroethylene	☐	☐	☐	☐	☐ < 0.5 ppm		
2,4,5-Trichlorophenol	☐	☐	☐	☐	☐ < 400.0 ppm		
2,4,6-Trichlorophenol	☐	☐	☐	☐	☐ < 2.0 ppm		
2,4,5-TP (Silvex)	☐	☐	☐	☐	☐ < 1.0 ppm		
Vinyl chloride	☐	☐	☐	☐	☐ < 0.2 ppm		

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WASTE PROFILE FORM

Section 3 - Additional Constituents

Additional Constituents and Contaminates. Please account for 100% of waste. Ranges should be given within guidelines of LIG 404-00-03 of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum		Maximum	
	Calcium hydroxide	3	to	5	%
	Portland Cement	60	to	75	%
	water	20	to	35	%
	sodium silicate	.5	to	1	%
	vermiculite	.5	to	1	%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
	Total of max. ranges of this section	117			in %
	Total of max. ranges from page 2.	929.97 SK 929.97			in ppm

Additional Information (Use additional sheet if necessary.)

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

Additional Constituents:

Acetone = 1 ppm

2 Butanone = .2 ppm

N- Nitrosodimethylamine = 3 ppm

Diethyl Phthalate = .25 ppm

Di- N- butylphthalate = 4 ppm

Bis-2- ethylhexyl phthalate = 4.5 ppm

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

Signature [signature] Date 3/29/01

WASTE MANAGEMENT COORDINATOR: I have reviewed this form and to the best of my knowledge, the information is complete and accurate.

Signature Stephen Hoover Date 3/29/01

Land Disposal Restriction (LDR) and Underlying Hazardous Constituents Information Form

Associated WPF Reference Number 33630 4/5/01 [illegible]

LDR and Underlying Hazardous Constituents Information - Identify presence of any constituents listed below.

Non-Wastewater / Wastewater Category - Check only one.

☒ Non Wastewater ☐ Wastewater [as defined by 40 CFR 268.2(f)]

Notification of California List Applicability - Check all that apply.

☐ Liquid hazardous waste containing PCBs at a concentration of 50 ppm or greater.

☐ A D001 thru D043 liquid waste containing 134 mg/L or greater of Nickel and/or 130 mg/L or greater of thallium.

☐ A D001 thru D043 waste containing Halogenated Organic Compounds (HOCs) listed in 40 CFR 268, Appendix III, at 1000 ppm or greater.

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001, D002, D003, and D012 - D043 characteristic wastes only)

☐ *No Underlying Hazardous Constituents in this waste stream.*

Organic Constituents

☐ A2213	☐ Butyl benzyl phthalate	☐ p,p'-DDE
☐ Acenaphthylene	☐ 2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	☐ o,p'-DDT
☐ Acenaphthene	☐ Carbaryl	☐ p,p'-DDT
☐ Acetone	☐ Carbenzadim	☐ Dibenz(a,h)anthracene
☐ Acetonitrile	☐ Carbofuran	☐ Dibenz(a,e)pyrene
☐ Acetophenone	☐ Carbofuran phenol	☐ 1,2-Dibromo-3-chloropropane
☐ 2-Acetyaminofluorene	☐ Carbon disufide	☐ 1,2-Dibromoethane (Ethylene dibromide)
☐ Acrolein	☐ Carbon tertachloride	☐ Dibromomethane
☐ Acrylamide	☐ Carbosulfan	☐ m-Dichlorobenzene
☐ Acrylonitrile	☐ Chlordane (alpha & gamma isomers)	☐ o-Dichlorobenzene
☐ Aldicarb sulfone	☐ p-Chloroaniline	☐ p-Dichlorobenzene
☐ Aldrin	☐ Chlorobenzene	☐ Dichlorodifluoromethane
☐ 4-Aminobiphenyl	☐ Chlorobenzilate	☐ 1,1-Dichloroethane
☐ Aniline	☐ 2-Chlor-1,3-butadiene	☐ 1,2-Dichloroethane
☐ Anthracene	☐ Chlorodibromomethane	☐ 1,1-Dichloroethylene
☐ Aramite	☐ Chloroethane	☐ trans-1,2-Dichloroethylene
☐ alpha-BHC	☐ bis(2-chloroethoxy) methane	☐ 2,4-Dichlorophenol
☐ beta-BHC	☐ bis(2-chloroethyl) ether	☐ 2,6-Dichlorophenol
☐ delta-BHC	☐ Chloroform	☐ 2,4-Dichlorophenoxyacetic (2,4-D)
☐ gamma-BHC	☐ bis(2-chloroisopropyl) ether	☐ 1,2-Dichloropropane
☐ Barban	☐ p-Chloro-m-cresol	☐ cis-1,3-Dichloropylene
☐ Bendiocarb	☐ 2-Chloroethyl vinyl ether	☐ trans-1,3-Dichloropylene
☐ Bendiocarb phenol	☐ Chloromethane (Methyl chloride)	☐ Dieldrin
☐ Benomyl	☐ 2-Chloronaphthalene	☐ Diethylene glycol, dicarbamate
☐ Benzene	☐ 2-Chlorophenol	☐ Diethyl phthalate
☐ Benz(a)anthracene	☐ 2-Chloropropylene	☐ p-Dimethylaminoazobenzene
☐ Benzal chloride	☐ Chrysene	☐ 2-4-Dimethyl phenol
☐ Benzo(b)fluoranthene	☐ o-Cresol	☐ Dimethyl phthalate
☐ Benzo(k)fluoranthene	☐ m-Cresol	☐ Dimetilan
☐ Benzo(g,h,i)perylene	☐ p-Cresol	☐ Di-n-butyl phthalate
☐ Benzo(a)pyrene	☐ m-Cumenyl methylcarbamate	☐ 1,4-Dinitrobenzene
☐ Bromodichloromethane	☐ Cycloate	☐ 4,6-Dinitro-o-cresol
☐ Bromomethane (Methyl bromide)	☐ Cyclohexanone	☐ 2,4-Dinitrophenol
☐ 4-Bromophenyl phenyl ether	☐ o,p'-DDD	☐ 2,4-Dinitrotoluene
☐ n-Butyl alcohol	☐ p,p'-DDD	☐ 2,6-Dinitrotoluene
☐ Butylate	☐ o,p'-DDE	☐ Di-n-octyl phthalate

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001, D002, D003, and D012 - D043 characteristic wastes only)

Organic Constituents - continued

- ☐ Di-n-propylnitrosamine
- ☐ 1,4-Dioxane
- ☐ Diphenylamine
- ☐ Diphenylnitrosamine
- ☐ 1,2-Diphenyl hydrazine
- ☐ Disulfoton
- ☐ Dithiocarbamates (total)
- ☐ Endosulfan I
- ☐ Endosulfan II
- ☐ Endosulfan sulfate
- ☐ Endrin
- ☐ Endrin aldehyde
- ☐ EPTC
- ☐ Ethyl acetate
- ☐ Ethyl benzene
- ☐ Ethyl cyanide (Propanenitrile)
- ☐ Ethyl ether
- ☐ bis(2-ethylhexyl) phthalate
- ☐ Ethyl methacrylate
- ☐ Ethylene oxide
- ☐ Famphur
- ☐ Fluoranthene
- ☐ Fluorene
- ☐ Formetanate hydrochloride
- ☐ Formparanate
- ☐ Heptachlor
- ☐ Heptachlor epoxide
- ☐ Hexachlorobenzene
- ☐ Hexachlorobutadiene
- ☐ Hexachlorocyclopentadiene
- ☐ Hexachlorodibenzo-p-dioxins (HxCDDs)
- ☐ Hexachlorodibenzo-furans (HxCDFs)
- ☐ Hexachloroethane
- ☐ Hexachloropropylene
- ☐ Indeno (1,2,3-c,d) pyrene
- ☐ Iodomethane
- ☐ 3-Iodo-2-propynyl n-butylcarbamate
- ☐ Isobutyl alcohol
- ☐ Isodrin
- ☐ Isolan
- ☐ Isosafrole
- ☐ Kepone
- ☐ Methacrylonitrile
- ☐ Methanol
- ☐ Methapyrilene
- ☐ Methiocarb
- ☐ Methomyl
- ☐ Methoxychlor
- ☐ 3-Methylchlolanthrene
- ☐ 4,4-Methyliene bis(2-chloroanline)
- ☐ Methylene chloride
- ☐ Methyl ethyl ketone
- ☐ Methyl isobutyl ketone
- ☐ Methyl methacrylate
- ☐ Methyl methansulfonate
- ☐ Methyl parathion
- ☐ Metolcarb
- ☐ Mexacarbate
- ☐ Molinate
- ☐ Naphthalene
- ☐ 2-Naphthylamine
- ☐ o-Nitroaniline
- ☐ p-Nitroaniline
- ☐ Nitrobenzene
- ☐ 5-Nitro-o-toluidine
- ☐ o-Nitrophenol
- ☐ p-Nitrophenol
- ☐ N-Nitrosodiethylamine
- ☑ N-Nitrosodimethylamine
- ☐ N-Nitroso-di-n-butylamine
- ☐ N-Nitrosomethylethylamine
- ☐ N-Nitrosomorpholine
- ☐ N- Nitrosopiperidine
- ☐ N-Nitrosopyrrolidine
- ☐ Oxamyl
- ☐ Parathion
- ☐ PCBs (total)
- ☐ Pebulate
- ☐ Pentachlorobenzene
- ☐ Pentachlorodibenzo-p-dioxins (PeCDDs)
- ☐ Pentachlorodibenzo-furans (PeCDFs)
- ☐ Pentachloroethane
- ☐ Pentachloronitrobenzene
- ☐ Pentachlorophenol
- ☐ Phenacetin
- ☐ Phenanthrene
- ☐ Phenol
- ☐ o-Phenylenediamine
- ☐ Phorate
- ☐ Phthalic acid
- ☐ Phthalic anhydride
- ☐ Physostigmine
- ☐ Physostigmine salicylate
- ☐ Promecarb
- ☐ Pronamide
- ☐ Propham
- ☐ Propoxur
- ☐ Prosulfocarb
- ☐ Pyrene
- ☐ Pyridine
- ☐ Safrole
- ☐ Silvex (2,4,5-TP)
- ☐ 1,2,4,5-Tetrachlorobenzene
- ☐ Tetrachlorodibenzo-p-dioxins (TCDDs)
- ☐ Tetrachlorodibenzofurans (TCDFs)
- ☐ 1,1,1,2-Tetrachloroethane
- ☐ 1,1,2,2-Tetrachloroethane
- ☐ Tetrachloroethylene
- ☐ 2,3,4,6-Tertachlorophenol
- ☐ Thiodicarb
- ☐ Thiophanate-methyl
- ☐ Tirpate
- ☐ Toluene
- ☐ Toxaphene
- ☐ Triallate
- ☐ Tribromomethane (Bromoform)
- ☐ 1,2,4-Trichlorobenzene
- ☐ 1,1,1-Trichloroethane
- ☐ 1,1,2-Trichloroethane
- ☐ Trichloroethylene
- ☐ Trichloromonofluoromethane
- ☐ 2,4,5-Trichlorophenol
- ☐ 2,4,6-Trichlorophenol
- ☐ 2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)
- ☐ 1,2,3-Trichloropropane
- ☐ 1,1,2-Trichlor-1,2,2-trifluoroethane
- ☐ Triethylamine
- ☐ tris-(2,3-Dibromopropyl) phosphate
- ☐ Vernolate
- ☐ Vinyl chloride
- ☐ Xylenes (total)

per [illegible] 4/15/01

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001, D002, D003, and D012 - D043 characteristic wastes only)

Metal/Inorganic Constituents

☐ Antimony	☐ Cyanides (Amenable)	☐ Selenium
☐ Arsenic	☐ Fluoride	☒ Silver
☐ Barium	☒ Lead	☐ Sulfide
☐ Beryllium	☐ Mercury (Retort residues)	☐ Thallium
☒ Cadmium	☒ Mercury - All others	☐ Vanadium
☒ Chromium (Total)	☒ Nickel	☒ Zinc
☐ Cyanides (Total)		

measured

$$Ag = 0.25 \frac{mg}{L} \times \frac{.025 L}{g} \times \frac{1000 g}{kg} = 6.25 \ mg/kg$$

$$Ba = 0.396 \frac{mg}{L} \times \frac{.025 L}{g} \times \frac{1000 g}{kg} = 9.9 \ mg/kg$$

$$Cd = 13.1 \frac{mg}{L} \times \frac{.025 L}{g} \times \frac{1000 g}{kg} = 327 \ mg/kg$$

$$Cr = 21.9 \frac{mg}{L} \times \frac{.025 L}{g} \times \frac{1000 g}{kg} = 547 \ mg/kg$$

$$= 13 \frac{mg}{L} \times \frac{.025}{g} \times \frac{1000 g}{kg} = 325 \ mg/kg$$

$$Pb = 1.83 \frac{mg}{L} \times \frac{.025}{g} \times \frac{1000 g}{kg} = 45 \ mg/kg$$

$$Zn = 76.6 \frac{mg}{L} \times \frac{.025 L}{g} \times \frac{1000 g}{kg} = \cancel{1900} \ 1900 \ mg/kg$$

$$As = .062 \frac{mg}{L} \times \frac{.025 L}{g} \times \frac{1000 g}{kg} = 1.5 \ mg/kg$$

$$Se = < .015 \frac{mg}{L} \times \frac{.025}{g} \times \frac{1000}{kg} = < 0.37 \ mg/kg$$

Matt $\frac{0.5g}{100ml}$

assuming no other dilutions

~~As $<10\ \mu g/L \times \frac{0.1L}{0.5g} = <2\ \mu g/g$~~

~~Se $11 \pm 10\ \mu g/L \times \frac{0.1L}{0.5g} = 2.8\ \mu g/g \pm 2\ \mu g/g$~~

Hg $21.6\ \mu g/L \times \frac{0.1L}{0.5g} = 4.32\ \mu g/g \pm 0.4\ \mu g$

LABORATORY ANALYSES

SAMPLE SUBMITTED BY	J. Narum	DATE: 9/18/00	
ORIGIN OF SAMPLE (S)	605 9/18		
GENERAL DESCRIPTION RANGE OF ACTIVITY			
DATE SAMPLE COLLECTED			

Test/Analysis	Result/Conc	By (Initials)	Test/Analysis	Result/Conc	By (Initials)
~~As~~	~~2.8 ± 2.0 mg/g~~				
~~Se~~	~~<2.0 mg/g~~				
Hg	4.32 µg/g				

REMARKS:

APPROVED: [illegible] Chief Chemist DATE: 10/31/00

Lab Copy

H7-LAB-35

WASTE FORM 0002
ROOM 60 SLUDGE
LABORATORY ANALYSES

SAMPLE SUBMITTED BY: [redacted]/[redacted]/[redacted] FJB DATE: 8-18-00

ORIGIN OF SAMPLE: TA-50-1 Room 60

DESCRIPTION: Radiochemical Analyses of Room 60 Sludge for Drum Tumbling

Drum # Sample for Drum Tumbling

LABORATORY I.D. NUMBER: 00.73906

TEST/ ANALYSIS	RESULT/CONCENTRATION	DATE BEGUN	METHOD	ANAL. BY
Gross ALPHA	68 ± 7 μCi/g	8/22/00	ALPHA	MCT
^{234}U	83 ± 10 nCi/g	9/5/00	RAS	MCT
^{235}U	10 ± 2 nCi/g	9/5/00	RAS	MCT
^{238}Pu	12 ± 1 μCi/g	8/22/00	RAS	MCT
^{239}Pu	12 ± 1 μCi/g	8/22/00	RAS	MCT
^{241}Am	43 ± 4 μCi/g	8/22/00	GELI	MCT
~~pH~~ MCT			GE	
~~C.O.D.~~ MCT			Color	
% Solids	18.7 ± 2%	8/21/00	Grav	MCT
Sp.Gr.	1.17 ± .05 g/mL	8/21/00	Grav	MCT

Remarks:

APPROVED BY: MCT DATE: 9/6/00

CST-12 SEMIVOLATILE ORGANIC ANALYSIS
SUMMARY OF ANALYTICAL RESULTS

Table 1. Summary of results of sample analyses for semivolatiles.

REQUEST NUMBER: 24401

SAMPLE ID	TARGET COMPOUNDS FOUND	AMOUNT (ug/Kg)	LOQ (ug/Kg)	TICs
B97.00889	Di-n-butylphthalate	650 J	1000	Y
S97.00883 RMGeo TK-7	N-Nitrosodimethylamine	2400	1000	Y
	Diethylphthalate	180 J	1000	
	Di-n-butylphthalate	3200 B	1000	
	bis-2-Ethylhexylphthalate	3900	1000	
S97.00925 Drum 1-3	Fluoranthene	4800 JD	19000	Y
	Pyrene	4000 JD	19000	
	bis-2-Ethylhexylphthalate	63000 D	19000	
	Di-n-octylphthalate	3700 JD	19000	
	Benzo(b)fluoranthene	4400 JD	19000	

SAMPLE ID	FOUND	(ug/L)	(ug/L)	TICs
S97.00886 WM-66 Flume	Phenol	49000	19000	Y
	bis-2-Ethylhexylphthalate	6000 JD	19000	
	Di-n-octylphthalate	3300 JD	19000	

3/4/97

Sample ID beginning with a B is a blank. Sample ID beginning with a S is a sample.

LOQ: Limit of quantitation. LOQs normally range between 10 and 50ug/L depending on the compound, unless otherwise noted.
TICs: Tentatively identified compounds. Y = TICs were found. N = TICs were not found.

J: Compound is present in the sample, but at a concentration that is less than LOQ. This concentration should be considered an estimate.
B: This compound was seen in the method blank as well as the sample. Concentration is considered significant at ten times the blank amount for phthalate esters and five times blank amount for the remaining compounds.
D: Sample was diluted.

CST-12 ORGANIC ANALYSIS GROUP
SUMMARY OF ANALYTICAL RESULTS FOR VOLATILES

Table 1. Summary of results of sample analyses for volatiles.

REQUEST NUMBER: 24401

SAMPLE ID	TARGET COMPOUNDS FOUND	AMOUNT (ug/Kg)	LOQ (ug/Kg)	TICs
B97.00887	Acetone	21	20	Y
	2-Butanone	14 J	20	
B97.00888	Acetone	8 J	20	N
	2-Butanone	7 J	20	
B97.02857	Acetone	10 J	20	Y
60-TK7 S97.00882	Acetone	550 B	52	Y
	Methylene Chloride	7 J	13	
	2-Butanone	130 B	52	
	2-Hexanone	10 J	52	
n66 F1 wne S97.00885	Acetone	290000 B	16000	Y
	cis-1,2-Dichloroethene	36000	1100	
	2-Butanone	320000	16000	
	4-Methyl-2-Pentanone	2100	1840	
	Tetrachloroethene	350 J	460	
	2-Hexanone	11000	1840	

Sample IDs beginning with the letter S are samples; those beginning with the letter B are blanks.

LOQ: Limit of quantitation. LOQs normally range between 5 and 20ug/Kg depending on the compound, unless otherwise noted.

TICs: Tentatively identified compounds. Y = TICs were found. N = TICs were not found.

J: This data qualifier indicates that the compound was detected, but the reported result is less than the LOQ and is an estimated value.

B: This data qualifier indicates that the reported compound was found in the associated method blank as well as in the sample.

CMcl 3/31/97

mg/L

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 33630
(Version: 1.2)

29-Mar-2002 10:16 AM

Generator:	MOSS, WILLIAM DAVID FWOWFM	MS :	E518
WMC :	TORREZ, STEVE FWOWFM	MS :	E518
FROM :	FWO-SWO	MS :	J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 33630 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to FWO-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 33630
YES _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
YES _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
YES _____ **NO** _____
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 33630

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

Extension-> Signed Wm David Moss Date 04/04/02

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 33630

Void-> Signed _____ Date _____

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: FWO-SWO ***MS: J595*** ***PHONE: 5-4000***

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National Laboratory

WASTE PROFILE FORM

RECEIVED JUN 2 8 1999

Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: EM-SWO at MS J595. For assistance with completing this form, call EM-SWO at 5-4000.	Reference Number 31015 (For EM-SWO use only.)

Generator's Z Number	Waste Generator's Name (print)	WMC's Z Number	WMC's Name (print)
091973	William David Moss	114605	Julie Meadows

Generator's Telephone	Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room
667-4301	E518	FWO-RLW	50	1	60A

Waste Accumulation (Check only one.)
- ☐ Satellite Accumulation Area — Site no: ____
- ☐ Less-than-90-days Storage Area — Site no: ____
- ☒ TSDF — Site no: 460
- ☐ Universal Waste Storage Area — Site no: ____
- ☐ None of the Above

ER Use Only ☐ ER Site PRS #:

Method of Characterization (Check as many as apply.)
- ☒ Analysis/Documents Attached
- ☒ Chemical/Physical Analysis
- ☒ Radiological Analysis
- ☐ PCB Analysis
- ☒ Acceptable Knowledge Documentation
- ☐ MSDS

MJR 6/28/99

Sample #: See Attached
Sample #: " "
Sample #: ____
Documentation #: " "

Section 1 - Chemical and Physical Information

Waste Type (Check only one.)
- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☒ Process Waste/Spent Chemical/ other (Complete all sections.)
- ☐ Green is Clean Waste (Complete all sections as appropriate.)

Waste Classes

Radiological Information
Was Waste Generated in a RCA? ☒ Yes ☐ No
- ☐ Non-radioactive
- ☒ Radioactive
  - ☐ Low-Level
  - ☒ Transuranic

Wastewater Information
- ☐ Wastewater for SWSC (TA-46) (Complete Attachment 1)
- ☐ Wastewater for RLWTF (TA-50/TA-21) (Complete Attachment 2)
- ☐ Wastewater for TA-16 (HE)

Classification Information
- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check as many as apply.)
- ☒ Inorganic
- ☐ Organic
- Volatile Organics ☐ < 500 ppm ☐ ≥ 500 ppm
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste residue
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)
- Asbestos ☐ friable ☐ non-friable
- PCB Source Concentration
  - ☐ PCB < 50 ppm
  - ☐ PCB ≥ 50 - < 500 ppm
  - ☐ PCB ≥ 500 ppm
- ☐ Other (Describe below)

* Concentrations 10% or greater before use.

Waste Source (Check only one.)

Routine Waste
- ☐ Decon
- ☒ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup - Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Non-routine Waste
- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping - Non-routine
- ☐ Spill Cleanup - Non-routine
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix (Check only one.)

Gas
- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid
- ☐ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid
- ☐ Powder/Ash
- ☒ Solid
- ☐ Sludge
- ☐ Absorbed liquid

Matrix Type (Check only one.)
- ☒ Homogeneous
- ☐ Heterogeneous (Describe below)

Waste/Process Description (Chemical formulas may be used in this field.)

Process acid and caustic waste from TA-55 operations. This liquid waste is neutralized and then concentrated by precipitation using calcium hydroxide. The concentrate is then solidified with portland cement in a 55 gallon drum.

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National Laboratory

WASTE PROFILE FORM

Section 2 - Characteristics

Ignitability (Check only one.) (°F)	(°C)	Corrosivity (Check only one.) (pH)	Reactivity (Check as many as apply.)	Boiling Point (Check only one.) (°F)	(°C)
☐ < 73	< 22.8	☐ ≤ 2.0	☐ RCRA Unstable	☐ ≤ 95	≤ 35
☐ 73 - 99	22.8 - 37.2	☐ 2.1 - 4.0	☐ Water Reactive	☐ > 95	> 35
☐ 100 - 139	37.8 - 59.4	☐ 4.1 - 6.0	☐ Cyanide Bearing (> 250 ppm)		
☐ 140 -200	60.0 - 99.3	☐ 6.1 - 9.0	☐ Sulfide Bearing (> 500 ppm)		
☐ > 200	> 99.3	☐ 9.1 - 12.4	☐ Pyrophoric		
☐ EPA Ignitable - Non-liquid		☐ ≥ 12.5	☐ Shock Sensitive		
☐ DOT Flammable Gas		☐ Liquid corrosive to steel	☐ Explosive - DOT Div. _____		
☐ DOT Oxidizer					
☒ Not ignitable		☒ Non-aqueous	☒ Non-reactive	☒ Not applicable	

Identify for all contaminants listed.	Characterization Method: AK	TCLP	Total	Concentration of Contaminants: None or Non-detect	Present Below Regulatory Limit	Above Regulatory Limit Minimum	Maximum
Toxicity Characteristic Metals						(Concentration in ppm only.)	
Arsenic	☐	☐	☒	☐	☒ < 5.0 ppm	_____ to	_____ ppm
Barium	☐	☐	☒	☐	☒ < 100.0 ppm	_____ to	_____ ppm
Cadmium	☐	☐	☒	☐	☐ < 1.0 ppm	2.0 to	2.5 ppm
Chromium (Total)	☐	☐	☒	☐	☐ < 5.0 ppm	128 to	156 ppm
Lead	☐	☐	☒	☐	☐ < 5.0 ppm	7.4 to	9.0 ppm
Mercury	☐	☐	☒	☐	☒ < 0.2 ppm	_____ to	_____ ppm
Selenium	☐	☐	☒	☐	☒ < 1.0 ppm	_____ to	_____ ppm
Silver	☐	☐	☒	☐	☒ < 5.0 ppm	_____ to	_____ ppm
Toxicity Characteristic Organics							
Benzene	☒	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
Carbon tetrachloride	☒	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
Chlordane	☒	☐	☐	☐	☐ < 0.03 ppm	_____ to	_____ ppm
Chlorobenzene	☒	☐	☐	☐	☐ < 100.0 ppm	_____ to	_____ ppm
Chloroform	☒	☐	☐	☐	☐ < 6.0 ppm	_____ to	_____ ppm
o - cresol	☒	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
m - cresol	☒	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
p - cresol	☒	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
Cresol - mixed	☒	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
2,4-D	☒	☐	☐	☐	☐ < 10.0 ppm	_____ to	_____ ppm
1,4-Dichlorobenzene	☒	☐	☐	☐	☐ < 7.5 ppm	_____ to	_____ ppm
1,2-Dichloroethane	☒	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
1,1-Dichloroethylene	☒	☐	☐	☐	☐ < 0.7 ppm	_____ to	_____ ppm
2,4-Dinitrotoluene	☒	☐	☐	☐	☐ < 0.13 ppm	_____ to	_____ ppm
Endrin	☒	☐	☐	☐	☐ < 0.02 ppm	_____ to	_____ ppm
Heptachlor (& its epoxide)	☒	☐	☐	☐	☐ < 0.008 ppm	_____ to	_____ ppm
Hexachlorobenzene	☒	☐	☐	☐	☐ < 0.13 ppm	_____ to	_____ ppm
Hexachlorobutadiene	☒	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
Hexachloroethane	☒	☐	☐	☐	☐ < 3.0 ppm	_____ to	_____ ppm
Lindane	☒	☐	☐	☐	☐ < 0.4 ppm	_____ to	_____ ppm
Methoxychlor	☒	☐	☐	☐	☐ < 10.0 ppm	_____ to	_____ ppm
Methyl ethyl ketone	☒	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
Nitrobenzene	☒	☐	☐	☐	☐ < 2.0 ppm	_____ to	_____ ppm
Pentachlorophenol	☒	☐	☐	☐	☐ < 100.0 ppm	_____ to	_____ ppm
Pyridine	☒	☐	☐	☐	☐ < 5.0 ppm	_____ to	_____ ppm
Tetrachloroethylene	☒	☐	☐	☐	☐ < 0.7 ppm	_____ to	_____ ppm
Toxaphene	☒	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
Trichloroethylene	☒	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
2,4,5-Trichlorophenol	☒	☐	☐	☐	☐ < 400.0 ppm	_____ to	_____ ppm
2,4,6-Trichlorophenol	☒	☐	☐	☐	☐ < 2.0 ppm	_____ to	_____ ppm
2,4,5-TP (Silvex)	☒	☐	☐	☐	☐ < 1.0 ppm	_____ to	_____ ppm
Vinyl chloride	☒	☐	☐	☐	☑ < 0.2 ppm	_____ to	_____ ppm

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WASTE PROFILE FORM

Section 3 - Additional Constituents

Additional Constituents and Contaminates. Please account for 100% of waste. Ranges should be given within guidelines of LIG 404-00-03 of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum		Maximum	
	Calcium hydroxide	3	to	5	%
	portland cement	60	to	75	%
	water	20	to	35	%
	sodium silicate	0.5	to	1	%
	vermiculite	0.5	to	1	%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
	Total of max. ranges of this section	~~115~~ 117			in %
	Total of max. ranges from page 2.	167.5			in ppm

Additional Information (Use additional sheet if necessary.)

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

Additional Constituents:

Acetone = 1 ppm
2 Butanone = .2 ppm
N-Nitrosodimethylamine = 3 ppm
Diethyl Phthalate = .25 ppm
Di-N-Butyl phthalate = 4 ppm
Bis-2-ethylhexyl phthalate = 4.5 ppm

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

Signature: William D. Nunn — Date: 06/28/99

WASTE MANAGEMENT COORDINATOR: I have reviewed this form and to the best of my knowledge the information is complete and accurate.

Signature: Julie Meadows — Date: 06/28/99

Km 60 sludge analysis (EM-RIW ID # 99.73903) Specific grav = 1.12 g/ml

Arsenic (As) (RCRA limit = 5.0ppm)

$<.2\ \mu g/g \left(1.12\ \frac{g}{ml}\right)\left(\frac{1\ mg}{10^3\ \mu g}\right)\left(\frac{10^3\ ml}{l}\right) = <.23\ mg/l$

Selenium (Se) (RCRA limit = 1ppm)

$.4\ \mu g/g = .448\ mg/l$

Mercury (Hg) (RCRA limit = .2ppm)

$<0.01\ \frac{\mu g}{g} = <0.0112\ mg/l$

Silver (Ag) (RCRA limit = 5ppm)

$.5\ \frac{\mu g}{g} = .56\ mg/l$

Barium (Ba) (RCRA limit = 100ppm)

$3.4\ \frac{\mu g}{g} = 3.8\ mg/l$

D006 Cadmium (Cd) (RCRA limit = 1.0ppm)

$3\ \frac{\mu g}{g} = 3.36\ mg/l \pm .34$

*see calculation next page

D007 Chromium (Cr) (RCRA limit = 5ppm) *

$190\ \frac{\mu g}{g} = 212.8\ mg/l \pm 21.3$

Nickel (Ni)

$150\ \frac{\mu g}{g} = 168\ mg/l$

D008 Lead (Pb) (RCRA limit = 5.0 ppm) *

$11\ \mu g/g = 12.3\ mg/l \pm 1.2$

Zinc (Zn)

$1{,}400\ \mu g/g = 1568\ mg/l = 1.568\ g/l$

TOPS 33ECO

Cadmium

$$\frac{3.36\ mg}{l} \Big| \frac{22\ gal}{} \Big| \frac{3.785\ l}{gal} = 279.8\ mg$$ in 22 gal of sludge

* the 22 gal of sludge is mixed with 5 gal vermiculite and 3 bags of cement.

This fills a 55 gal drum 60%.

$$\frac{279.8\ mg}{55 \times .6\ gal} \Big| \frac{1\ gal}{3.785\ l} = 2.24\ mg/l \pm .23$$

Chromium

$$\frac{212.8\ mg}{l} \Big| \frac{22\ gal}{} \Big| \frac{\quad}{55 \times .6} = 141.9\ \frac{mg}{l} \pm 14.2$$

Lead

$$\frac{12.3\ mg}{l} \Big| \frac{22\ gal}{} \Big| \frac{\quad}{55 \times .6} = 8.2\ mg/l \pm .8$$

TOPS 35500

CST-12 SEMIVOLATILE ORGANIC ANALYSIS
SUMMARY OF ANALYTICAL RESULTS

Table 1. Summary of results of sample analyses for semivolatiles.

REQUEST NUMBER: 24401

SAMPLE ID	TARGET COMPOUNDS FOUND	AMOUNT (ug/Kg)	LOQ (ug/Kg)	TICs
B97.00889	Di-n-butylphthalate	650 J	1000	Y
S97.00883 RMGeo TK-7	N-Nitrosodimethylamine	2400	1000	Y
	Diethylphthalate	180 J	1000	
	Di-n-butylphthalate	3200 B	1000	
	bis-2-Ethylhexylphthalate	3900	1000	
S97.00925 Drum 1-3	Fluoranthene	4800 JD	19000	Y
	Pyrene	4000 JD	19000	
	bis-2-Ethylhexylphthalate	63000 D	19000	
	Di-n-octylphthalate	3700 JD	19000	
	Benzo(b)fluoranthene	4400 JD	19000	

SAMPLE ID	FOUND	(ug/L)	(ug/L)	TICs
S97.00886 WM-66 Flume	Phenol	49000	19000	Y
	bis-2-Ethylhexylphthalate	6000 JD	19000	
	Di-n-octylphthalate	3300 JD	19000	

TV 3/4/97

Sample ID beginning with a B is a blank. Sample ID beginning with a S is a sample.

LOQ: Limit of quantitation. LOQs normally range between 10 and 50ug/L depending on the compound, unless otherwise noted.

TICs: Tentatively identified compounds. Y = TICs were found. N = TICs were not found.

J: Compound is present in the sample, but at a concentration that is less than LOQ. This concentration should be considered an estimate.

B: This compound was seen in the method blank as well as the sample. Concentration is considered significant at ten times the blank amount for phthalate esters and five times blank amount for the remaining compounds.

D: Sample was diluted.

CST-12 ORGANIC ANALYSIS GROUP
SUMMARY OF ANALYTICAL RESULTS FOR VOLATILES

Table 1. Summary of results of sample analyses for volatiles.

REQUEST NUMBER: 24401

SAMPLE ID	TARGET COMPOUNDS FOUND	AMOUNT (ug/Kg)	LOQ (ug/Kg)	TICs
B97.00887	Acetone	21	20	Y
	2-Butanone	14 J	20	
B97.00888	Acetone	8 J	20	N
	2-Butanone	7 J	20	
B97.02857	Acetone	10 J	20	Y
S97.00882	Acetone	550 B	52	Y
	Methylene Chloride	7 J	13	
	2-Butanone	130 B	52	
	2-Hexanone	10 J	52	
S97.00885	Acetone	290000 B	16000	Y
	cis-1,2-Dichloroethene	36000	1100	
	2-Butanone	320000	16000	
	4-Methyl-2-Pentanone	2100	1840	
	Tetrachloroethene	350 J	460	
	2-Hexanone	11000	1840	

Sample IDs beginning with the letter S are samples; those beginning with the letter B are blanks.

LOQ: Limit of quantitation. LOQs normally range between 5 and 20ug/Kg depending on the compound, unless otherwise noted.

TICs: Tentatively identified compounds. Y = TICs were found. N = TICs were not found.

J: This data qualifier indicates that the compound was detected, but the reported result is less than the LOQ and is an estimated value.

B: This data qualifier indicates that the reported compound was found in the associated method blank as well as in the sample.

mg/L

3/31/97

Associated WPF Reference Number: ~~3895-3~~ 31015

LDR and Underlying Hazardous Constituents Information - Identify presence of any constituents listed below.

Non-Wastewater / Wastewater Category - Check only one.

☒ Non Wastewater ☐ Wastewater [as defined by 40 CFR 268.2(f)]

Notification of California List Applicability - Check all that apply.

☐ **Liquid** hazardous waste containing PCBs at a concentration of 50 ppm or greater.

☐ A D001 thru D043 **liquid** waste containing 134 mg/L or greater of Nickel and/or 130 mg/L or greater of thallium.

☐ A D001 thru D043 waste containing Halogenated Organic Compounds (HOCs) listed in 40 CFR 268, Appendix III, at 1000 ppm or greater.

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

☐ ***No Underlying Hazardous Constituents in this waste stream.***

Organic Constituents

☐ A2213	☐ Butyl benzyl phthalate	☐ p,p'-DDE
☐ Acenaphthylene	☐ 2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	☐ o,p'-DDT
☐ Acenaphthene	☐ Carbaryl	☐ p,p'-DDT
☐ Acetone	☐ Carbenzadim	☐ Dibenz(a,h)anthracene
☐ Acetonitrile	☐ Carbofuran	☐ Dibenz(a,e)pyrene
☐ Acetophenone	☐ Carbofuran phenol	☐ 1,2-Dibromo-3-chloropropane
☐ 2-Acetyaminofluorene	☐ Carbon disufide	☐ 1,2-Dibromoethane (Ethylene dibromide)
☐ Acrolein	☐ Carbon tetrachloride	☐ Dibromomethane
☐ crylamide	☐ Carbosulfan	☐ m-Dichlorobenzene
☐ Acrylonitrile	☐ Chlordane (alpha & gamma isomers)	☐ o-Dichlorobenzene
☐ Aldicarb sulfone	☐ p-Chloroaniline	☐ p-Dichlorobenzene
☐ Aldrin	☐ Chlorobenzene	☐ Dichlorodifluoromethane
☐ 4-Aminobiphenyl	☐ Chlorobenzilate	☐ 1,1-Dichloroethane
☐ Aniline	☐ 2-Chloro-1,3-butadiene	☐ 1,2-Dichloroethane
☐ Anthracene	☐ Chlorodibromomethane	☐ 1,1-Dichloroethylene
☐ Aramite	☐ Chloroethane	☐ trans-1,2-Dichloroethylene
☐ alpha-BHC	☐ bis(2-Chloroethoxy) methane	☐ 2,4-Dichlorophenol
☐ beta-BHC	☐ bis(2-Chloroethyl) ether	☐ 2,6-Dichlorophenol
☐ delta-BHC	☐ Chloroform	☐ 2,4-Dichlorophenoxyacetic acid (2,4-D)
☐ gamma-BHC	☐ bis(2-Chloroisopropyl) ether	☐ 1,2-Dichloropropane
☐ Barban	☐ p-Chloro-m-cresol	☐ cis-1,3-Dichloropropylene
☐ Bendiocarb	☐ 2-Chloroethyl vinyl ether	☐ trans-1,3-Dichloropropylene
☐ Bendiocarb phenol	☐ Chloromethane (Methyl chloride)	☐ Dieldrin
☐ Benomyl	☐ 2-Chloronaphthalene	☐ Diethylene glycol, dicarbamate
☐ Benzene	☐ 2-Chlorophenol	☐ Diethyl phthalate
☐ Benz(a)anthracene	☐ 1-Chloropropylene	☐ p-Dimethylaminoazobenzene
☐ Benzal chloride	☐ Chrysene	☐ 2-4-Dimethyl phenol
☐ Benzo(b)fluoranthene	☐ o-Cresol	☐ Dimethyl phthalate
☐ Benzo(k)fluoranthene	☐ m-Cresol	☐ Dimetilan
☐ Benzo(g,h,i)perylene	☐ p-Cresol	☐ Di-n-butyl phthalate
☐ Benzo(a)pyrene	☐ m-Cumenyl methylcarbamate	☐ 1,4-Dinitrobenzene
☐ Bromodichloromethane	☐ Cycloate	☐ 4,6-Dinitro-o-cresol
☐ Bromomethane (Methyl bromide)	☐ Cyclohexanone	☐ 2,4-Dinitrophenol
☐ 4-Bromophenyl phenyl ether	☐ o,p'-DDD	☐ 2,4-Dinitrotoluene
☐ n-Butyl alcohol	☐ p,p'-DDD	☐ 2,6-Dinitrotoluene
☐ Butylate	☐ o,p'-DDE	☐ Di-n-octyl phthalate

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 31015
(Version: 2)

23-May-2001 07:13 AM

Generator:	MOSS, WILLIAM DAVID EMRLW	MS :	E518
WMC:	KOSLER, STEVE EMSWO	MS :	E518
FROM:	FWO-SWO	MS :	J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 31015 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to FWO-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 31015
YES _____ NO _____
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
YES _____ NO _____
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
YES _____ NO _____
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 31015

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

Extension-> Signed William D. Moss Date 5/25/01

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 31015

Void-> Signed _____ Date _____

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: FWO-SWO ***MS: J595*** ***PHONE: 5-4000***

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 31015
(Version: 1.2)

-Jan-2001 10:43 AM

Generator:	MOSS, WILLIAM DAVID EMRLW	MS :	E518
WMC :	MEADOWS, JULIE EMLRW	MS :	E518
FROM :	FWO-SWO	MS :	J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 31015 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to FWO-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 31015
YES _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
YES _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
YES _____ **NO** _____
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification
I am producing or will produce the same type of waste as indicated in WPF# 31015
Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Extension-> Signed William David Moss Date 01/31/01

Void Approval
I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 31015

Void-> Signed _____ Date _____

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: FWO-SWO ***MS: J595*** ***PHONE: 5-4000***

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 31015
(Version: 3)

01-Jul-2002 09:12 AM

Generator :	MOSS, WILLIAM DAVID EMRLW	MS :	E518
WMC :	TORREZ, STEVE FWOWFM	MS :	E518
FROM :	FWO-SWO	MS :	J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 31015 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to FWO-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 31015
YES ✓ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
YES _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
YES _____ **NO** _____
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 31015

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

Extension-> Signed Wm David Moss Date 07/01/02

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 31015

Void-> Signed _____ Date _____

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: FWO-SWO ***MS: J595*** ***PHONE: 5-4000***

APPENDIX B

Waste Profile Forms for Waste Stored in TA-50-114

LOS ALAMOS
National Laboratory

WASTE PROFILE FORM

COPY

RECEIVED SEP 2 2000

ORIGINAL

Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: EM-SWO at MS J595. For assistance with completing this form, call EM-SWO at 5-4000.	Reference Number 36995 (For EM-SWO use only.)

Generator's Z Number	Waste Generator's Name (print)	WMC's Z Number	WMC's Name (print)
089829	Myrna Romero	114605	Julie Meadows

Generator's Telephone	Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room
665-2069	E528	E-ET	50	1	114

Waste Accumulation (Check only one.)
- ☐ Satellite Accumulation Area — Site no: _____
- ☐ Less-than-90-days Storage Area — Site no: _____
- ☒ TSDF — Site no: _____
- ☐ Universal Waste Storage Area — Site no: _____
- ☐ None of the Above

ER Use Only ☐ ER Site PRS #: _____

Method of Characterization (Check as many as apply.)
- ☒ Analysis/Documents Attached
- ☒ Chemical/Physical Analysis — Sample #: _____
- ☒ Radiological Analysis — Sample #: _____
- ☐ PCB Analysis — Sample #: _____
- ☐ Acceptable Knowledge Documentation — Documentation #: _____
- ☐ MSDS

Section 1 - Chemical and Physical Information

Waste Type (Check only one.)
- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☒ Process Waste/Spent Chemical/ other (Complete all sections.)
- ☐ Green is Clean Waste (Complete all sections as appropriate.)

Waste Classes

Radiological Information
Was Waste Generated in a RCA? ☒ Yes ☐ No
- ☐ Non-radioactive
- ☒ Radioactive
  - ☒ Low-Level
  - ☐ Transuranic

Wastewater Information
- ☐ Wastewater for SWSC (TA-46) (Complete Attachment 1)
- ☐ Wastewater for RLWTF (TA-50/TA-21) (Complete Attachment 2)
- ☐ Wastewater for TA-16 (HE)

Classification Information
- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check as many as apply.)
- ☒ Inorganic
- ☐ Organic
- Volatile Organics ☐ < 500 ppm ☐ ≥ 500 ppm
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste residue
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)
- Asbestos ☐ friable ☐ non-friable
- PCB Source Concentration
  - ☐ PCB < 50 ppm
  - ☐ PCB ≥ 50 - < 500 ppm
  - ☐ PCB ≥ 500 ppm
- ☐ Other (Describe below)

* Concentrations 10% or greater before use.

Waste Source (Check only one.)

Routine Waste
- ☐ Decon
- ☐ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup - Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Non-routine Waste
- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☒ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping - Non-routine
- ☐ Spill Cleanup - Non-routine
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix (Check only one.)

Gas
- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid
- ☐ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid
- ☐ Powder/Ash
- ☐ Solid
- ☐ Sludge
- ☒ Absorbed liquid

Matrix Type (Check only one.)
- ☐ Homogeneous
- ☒ Heterogeneous (Describe below)

Waste/Process Description (Chemical formulas may be used in this field.)

Decontamination rags and absorbed liquid from glove box size reduction project. (STTP)

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WASTE PROFILE FORM

Section 2 - Characteristics

Ignitability (Check only one.) (°F)	(°C)	Corrosivity (Check only one.) (pH)	Reactivity (Check as many as apply.)	Boiling Point (Check only one.) (°F)	(°C)
☐ < 73	< 22.8	☐ ≤ 2.0	☐ RCRA Unstable	☐ ≤ 95	≤ 35
☐ 73 - 99	22.8 - 37.2	☐ 2.1 - 4.0	☐ Water Reactive	☐ > 95	> 35
☐ 100 - 139	37.8 - 59.4	☐ 4.1 - 6.0	☐ Cyanide Bearing (> 250 ppm)		
☐ 140 -200	60.0 - 99.3	☐ 6.1 - 9.0	☐ Sulfide Bearing (> 500 ppm)		
☐ > 200	> 99.3	☐ 9.1 - 12.4	☐ Pyrophoric		
☐ EPA Ignitable - Non-liquid		☐ ≥ 12.5	☐ Shock Sensitive		
☐ DOT Flammable Gas		☐ Liquid corrosive to steel	☐ Explosive - DOT Div. _____		
☐ DOT Oxidizer					
☒ Not ignitable		☒ Non-aqueous	☒ Non-reactive	☒ Not applicable	

Identify for all contaminants listed.	Characterization Method: AK	TCLP	Total	Concentration of Contaminants: None or Non-detect	Present Below Regulatory Limit	Above Regulatory Limit: Minimum	Maximum
Toxicity Characteristic Metals						(Concentration in ppm only.)	
Arsenic	☐	☒	☐	☐	☒ < 5.0 ppm	~~0.008~~	~~to 0.05~~ 0.010 ppm
Barium	☐	☒	☐	☐	☒ < 100.0 ppm	~~0.13~~	to ~~0.15~~ ppm
Cadmium	☐	☒	☐	☐	☒ < 1.0 ppm	~~0.11~~	to ~~0.12~~ ppm
Chromium (Total)	☐	☒	☐	☐	☒ < 5.0 ppm	~~0.9~~	to ~~1.1~~ ppm
Lead	☐	☒	☐	☐	☐ < 5.0 ppm	8	to 10 ppm
Mercury	☐	☒	☐	☐	☒ < 0.2 ppm	~~0.005~~	to ~~0.007~~ ppm
Selenium	☐	☒	☐	☐	☒ < 1.0 ppm	~~0.011~~	to ~~0.012~~ ppm
Silver	☐	☒	☐	☐	☒ < 5.0 ppm	~~0~~	to ~~0.05~~ ppm
Toxicity Characteristic Organics							
Benzene	☐	☐	☐	☐	☐ < 0.5 ppm		to ppm
Carbon tetrachloride	☐	☐	☐	☐	☐ < 0.5 ppm		to ppm
Chlordane	☐	☐	☐	☐	☐ < 0.03 ppm		to ppm
Chlorobenzene	☐	☐	☐	☐	☐ < 100.0 ppm		to ppm
Chloroform	☐	☐	☐	☐	☐ < 6.0 ppm		to ppm
o - cresol	☐	☐	☐	☐	☐ < 200.0 ppm		to ppm
m - cresol	☐	☐	☐	☐	☐ < 200.0 ppm		to ppm
p - cresol	☐	☐	☐	☐	☐ < 200.0 ppm		to ppm
Cresol - mixed	☐	☐	☐	☐	☐ < 200.0 ppm		to ppm
2,4-D	☐	☐	☐	☐	☐ < 10.0 ppm		to ppm
1,4-Dichlorobenzene	☐	☐	☐	☐	☐ < 7.5 ppm		to ppm
1,2-Dichloroethane	☐	☐	☐	☐	☐ < 0.5 ppm		to ppm
1,1-Dichloroethylene	☐	☐	☐	☐	☐ < 0.7 ppm		to ppm
2,4-Dinitrotoluene	☐	☐	☐	☐	☐ < 0.13 ppm		to ppm
Endrin	☐	☐	☐	☐	☐ < 0.02 ppm		to ppm
Heptachlor (& its epoxide)	☐	☐	☐	☐	☐ < 0.008 ppm		to ppm
Hexachlorobenzene	☐	☐	☐	☐	☐ < 0.13 ppm		to ppm
Hexachlorobutadiene	☐	☐	☐	☐	☐ < 0.5 ppm		to ppm
Hexachloroethane	☐	☐	☐	☐	☐ < 3.0 ppm		to ppm
Lindane	☐	☐	☐	☐	☐ < 0.4 ppm		to ppm
Methoxychlor	☐	☐	☐	☐	☐ < 10.0 ppm		to ppm
Methyl ethyl ketone	☐	☐	☐	☐	☐ < 200.0 ppm		to ppm
Nitrobenzene	☐	☐	☐	☐	☐ < 2.0 ppm		to ppm
Pentachlorophenol	☐	☐	☐	☐	☐ < 100.0 ppm		to ppm
Pyridine	☐	☐	☐	☐	☐ < 5.0 ppm		to ppm
Tetrachloroethylene	☐	☐	☐	☐	☐ < 0.7 ppm		to ppm
Toxaphene	☐	☐	☐	☐	☐ < 0.5 ppm		to ppm
Trichloroethylene	☐	☐	☐	☐	☐ < 0.5 ppm		to ppm
2,4,5-Trichlorophenol	☐	☐	☐	☐	☐ < 400.0 ppm		to ppm
2,4,6-Trichlorophenol	☐	☐	☐	☐	☐ < 2.0 ppm		to ppm
2,4,5-TP (Silvex)	☐	☐	☐	☐	☐ < 1.0 ppm		to ppm
Vinyl chloride	☐	☐	☐	☐	☐ < 0.2 ppm		to ppm

Per Sir 10/4

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National Laboratory

WASTE PROFILE FORM

Section 3 - Additional Constituents

Additional Constituents and Contaminants. Please account for 100% of waste. Ranges should be given within guidelines of LIG 404-00-03 of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum		Maximum	
	dirt / solids	15	to	1025	%
	cheese cloth	15	to	1025	%
	plastic gloves / bags / buckets / bottles	15	to	1025	%
	absorbed water	15	to	25	%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
	Total of max. ranges of this section	100			**in %**
	Total of max. ranges from page 2.	11,449			**in ppm**

per pick list

Additional Information (Use additional sheet if necessary.)

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

The waste water associated with this project was disposed of under WPF 20754.

See attached pictures for pictures of waste.

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

Signature Myra Romero | Date 9-21-00

SITE MANAGEMENT COORDINATOR: I have reviewed this form and to the best of my knowledge the information is complete and accurate.

Signature Julie Meadows | Date 9-27-00

Associated WPF Reference Number 32995 10/25/00 dl

LDR and Underlying Hazardous Constituents Information - Identify presence of any constituents listed below.

Non-Wastewater / Wastewater Category - Check only one.

☒ Non Wastewater ☐ Wastewater [as defined by 40 CFR 268.2(f)]

Notification of California List Applicability - Check all that apply.

☐ Liquid hazardous waste containing PCBs at a concentration of 50 ppm or greater.

☐ A D001 thru D043 liquid waste containing 134 mg/L or greater of Nickel and/or 130 mg/L or greater of thallium.

☐ A D001 thru D043 waste containing Halogenated Organic Compounds (HOCs) listed in 40 CFR 268. Appendix III. at 1000 ppm or greater.

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001, D002, D003, and D012 - D043 characteristic wastes only)

☐ *No Underlying Hazardous Constituents in this waste stream.*

Organic Constituents

☐ A2213	☐ Butyl benzyl phthalate	☐ p,p'-DDE
☐ Acenaphthylene	☐ 2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	☐ o,p'-DDT
☐ Acenaphthene	☐ Carbaryl	☐ p,p'-DDT
☐ Acetone	☐ Carbenzadim	☐ Dibenz(a,h)anthracene
☐ Acetonitrile	☐ Carbofuran	☐ Dibenz(a,e)pyrene
☐ Acetophenone	☐ Carbofuran phenol	☐ 1,2-Dibromo-3-chloropropane
☐ 2-Acetyaminofluorene	☐ Carbon disufide	☐ 1,2-Dibromoethane (Ethylene dibromide)
☐ Acrolein	☐ Carbon tertachloride	☐ Dibromomethane
☐ Acrylamide	☐ Carbosulfan	☐ m-Dichlorobenzene
☐ Acrylonitrile	☐ Chlordane (alpha & gamma isomers)	☐ o-Dichlorobenzene
☐ Aldicarb sulfone	☐ p-Chloroaniline	☐ p-Dichlorobenzene
☐ Aldrin	☐ Chlorobenzene	☐ Dichlorodifluoromethane
☐ 4-Aminobiphenyl	☐ Chlorobenzilate	☐ 1,1-Dichloroethane
☐ Aniline	☐ 2-Chlor-1,3-butadiene	☐ 1,2-Dichloroethane
☐ Anthracene	☐ Chlorodibromomethane	☐ 1,1-Dichloroethylene
☐ Aramite	☐ Chloroethane	☐ trans-1,2-Dichloroethylene
☐ alpha-BHC	☐ bis(2-chloroethoxy) methane	☐ 2,4-Dichlorophenol
☐ beta-BHC	☐ bis(2-chloroethyl) ether	☐ 2,6-Dichlorophenol
☐ delta-BHC	☐ Chloroform	☐ 2,4-Dichlorophenoxyacetic (2,4-D)
☐ gamma-BHC	☐ bis(2-chloroisopropyl) ether	☐ 1,2-Dichloropropane
☐ Barban	☐ p-Chloro-m-cresol	☐ cis-1,3-Dichloropylene
☐ Bendiocarb	☐ 2-Chloroethyl vinyl ether	☐ trans-1,3-Dichloropylene
☐ Bendiocarb phenol	☐ Chloromethane (Methyl chloride)	☐ Dieldrin
☐ Benomyl	☐ 2-Chloronaphthalene	☐ Diethylene glycol, dicarbamate
☐ Benzene	☐ 2-Chlorophenol	☐ Diethyl phthalate
☐ Benz(a)anthracene	☐ 2-Chloropropylene	☐ p-Dimethylaminoazobenzene
☐ Benzal chloride	☐ Chrysene	☐ 2-4-Dimethyl phenol
☐ Benzo(b)fluoranthene	☐ o-Cresol	☐ Dimethyl phthalate
☐ Benzo(k)fluoranthene	☐ m-Cresol	☐ Dimetilan
☐ Benzo(g,h,i)perylene	☐ p-Cresol	☐ Di-n-butyl phthalate
☐ Benzo(a)pyrene	☐ m-Cumenyl methylcarbamate	☐ 1,4-Dinitrobenzene
☐ Bromodichloromethane	☐ Cycloate	☐ 4,6-Dinitro-o-cresol
☐ Bromomethane (Methyl bromide)	☐ Cyclohexanone	☐ 2,4-Dinitrophenol
☐ 4-Bromophenyl phenyl ether	☐ o,p'-DDD	☐ 2,4-Dinitrotoluene
☐ n-Butyl alcohol	☐ p,p'-DDD	☐ 2,6-Dinitrotoluene
☐ Butylate	☐ o,p'-DDE	☐ Di-n-octyl phthalate

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001, D002, D003, and D012 - D043 characteristic wastes only)

Organic Constituents - continued

- ☐ Di-n-propylnitrosamine
- ☐ 1,4-Dioxane
- ☐ Diphenylamine
- ☐ Diphenylnitrosamine
- ☐ 1,2-Diphenyl hydrazine
- ☐ Disulfoton
- ☐ Dithiocarbamates (total)
- ☐ Endosulfan I
- ☐ Endosulfan II
- ☐ Endosulfan sulfate
- ☐ Endrin
- ☐ Endrin aldehyde
- ☐ EPTC
- ☐ Ethyl acetate
- ☐ Ethyl benzene
- ☐ Ethyl cyanide (Propanenitrile)
- ☐ Ethyl ether
- ☐ bis(2-ethylhexyl) phthalate
- ☐ Ethyl methacrylate
- ☐ Ethylene oxide
- ☐ Famphur
- ☐ Fluoranthene
- ☐ Fluorene
- ☐ Formetanate hydrochloride
- ☐ Formparanate
- ☐ Heptachlor
- ☐ Heptachlor epoxide
- ☐ Hexachlorobenzene
- ☐ Hexachlorobutadiene
- ☐ Hexachlorocyclopentadiene
- ☐ Hexachlorodibenzo-p-dioxins (HxCDDs)
- ☐ Hexachlorodibenzo-furans (HxCDFs)
- ☐ Hexachloroethane
- ☐ Hexachloropropylene
- ☐ Indeno (1,2,3-c,d) pyrene
- ☐ Iodomethane
- ☐ 3-Iodo-2-propynyl n-butylcarbamate
- ☐ Isobutyl alcohol
- ☐ Isodrin
- ☐ Isolan
- ☐ Isosafrole
- ☐ Kepone
- ☐ Methacrylonitrile
- ☐ Methanol
- ☐ Methapyrilene
- ☐ Methiocarb
- ☐ Methomyl
- ☐ Methoxychlor
- ☐ 3-Methylchlolanthrene
- ☐ 4,4-Methyliene bis(2-chloroaniline)
- ☐ Methylene chloride
- ☐ Methyl ethyl ketone
- ☐ Methyl isobutyl ketone
- ☐ Methyl methacrylate
- ☐ Methyl methansulfonate
- ☐ Methyl parathion
- ☐ Metolcarb
- ☐ Mexacarbate
- ☐ Molinate
- ☐ Naphthalene
- ☐ 2-Naphthylamine
- ☐ o-Nitroaniline
- ☐ p-Nitroaniline
- ☐ Nitrobenzene
- ☐ 5-Nitro-o-toluidine
- ☐ o-Nitrophenol
- ☐ p-Nitrophenol
- ☐ N-Nitrosodiethylamine
- ☐ N-Nitrosodimethylamine
- ☐ N-Nitroso-di-n-butylamine
- ☐ N-Nitrosomethylethylamine
- ☐ N-Nitrosomorpholine
- ☐ N- Nitrosopiperidine
- ☐ N-Nitrosopyrrolidine
- ☐ Oxamyl
- ☐ Parathion
- ☐ PCBs (total)
- ☐ Pebulate
- ☐ Pentachlorobenzene
- ☐ Pentachlorodibenzo-p-dioxins (PeCDDs)
- ☐ Pentachlorodibenzo-furans (PeCDFs)
- ☐ Pentachloroethane
- ☐ Pentachloronitrobenzene
- ☐ Pentachlorophenol
- ☐ Phenacetin
- ☐ Phenanthrene
- ☐ Phenol
- ☐ o-Phenylenediamine
- ☐ Phorate
- ☐ Phthalic acid
- ☐ Phthalic anhydride
- ☐ Physostigmine
- ☐ Physostigmine salicylate
- ☐ Promecarb
- ☐ Pronamide
- ☐ Propham
- ☐ Propoxur
- ☐ Prosulfocarb
- ☐ Pyrene
- ☐ Pyridine
- ☐ Safrole
- ☐ Silvex (2,4,5-TP)
- ☐ 1,2,4,5-Tetrachlorobenzene
- ☐ Tetrachlorodibenzo-p-dioxins (TCDDs)
- ☐ Tetrachlorodibenzofurans (TCDFs)
- ☐ 1,1,1,2-Tetrachloroethane
- ☐ 1,1,2,2-Tetrachloroethane
- ☐ Tetrachloroethylene
- ☐ 2,3,4,6-Tertachlorophenol
- ☐ Thiodicarb
- ☐ Thiophanate-methyl
- ☐ Tirpate
- ☐ Toluene
- ☐ Toxaphene
- ☐ Triallate
- ☐ Tribromomethane (Bromoform)
- ☐ 1,2,4-Trichlorobenzene
- ☐ 1,1,1-Trichloroethane
- ☐ 1,1,2-Trichloroethane
- ☐ Trichloroethylene
- ☐ Trichloromonofluoromethane
- ☐ 2,4,5-Trichlorophenol
- ☐ 2,4,6-Trichlorophenol
- ☐ 2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)
- ☐ 1,2,3-Trichloropropane
- ☐ 1,1,2-Trichlor-1,2,2-trifluoroethane
- ☐ Triethylamine
- ☐ tris-(2,3-Dibromopropyl) phosphate
- ☐ Vernolate
- ☐ Vinyl chloride
- ☐ Xylenes (total)

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001, D002, D003, and D012 - D043 characteristic wastes only)

Metal/Inorganic Constituents

☐ Antimony	☐ Cyanides (Amenable)	☐ Selenium
☐ Arsenic	☐ Fluoride	☐ Silver
☐ Barium	☒ Lead	☐ Sulfide
☐ Beryllium	☐ Mercury (Retort residues)	☐ Thallium
☐ Cadmium	☐ Mercury - All others	☐ Vanadium
☒ Chromium (Total)	☒ Nickel	☐ Zinc
☐ Cyanides (Total)	per wmc 10/25/00 tel	

REPORT NUMBER: 30735

********** CST ANALYTICAL REPORT **********

Prepared by: MKOBY on 9-Jan-1995

REQUEST NUMBER: 20766 MATRIX: ML ANALYST: IMS PROGRAM CODE: M348

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792

NOTEBOOK: PAGE:

CUSTOMER SAMPLES:

CUSTOMER NUM	SAMPLE NUM	ANALYSIS	ANALYTICAL TECHNIQUE	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
94DS154	94.33088	AG	ICPMS	< 50.		UG/L	1/09/95	
94DS154	94.33088	BA	ICPMS	133.	24.	UG/L	1/09/95	
94DS154	94.33088	CD	ICPMS	113.	16.	UG/L	1/09/95	
94DS154	94.33088	CR	ICPMS	990.	160.	UG/L	1/09/95	
94DS154	94.33088	NI	ICPMS	17100.	2400.	UG/L	1/09/95	
94DS154	94.33088	PB	ICPMS	8100.	700.	UG/L	1/09/95	
94DS154	94.33088	TL	ICPMS	< 50.		UG/L	1/09/95	

CUSTOMER SAMPLE DUPLICATES:

CUSTOMER NUM	SAMPLE NUM	ANALYSIS	ANALYTICAL TECHNIQUE	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
94DS154	94.33088	AG	ICPMS	< 50.		UG/L	1/09/95	
94DS154	94.33088	BA	ICPMS	150.	20.	UG/L	1/09/95	
94DS154	94.33088	CD	ICPMS	120.	10.	UG/L	1/09/95	
94DS154	94.33088	CR	ICPMS	1060.	160.	UG/L	1/09/95	
94DS154	94.33088	NI	ICPMS	19200.	2400.	UG/L	1/09/95	
94DS154	94.33088	PB	ICPMS	9100.	700.	UG/L	1/09/95	
94DS154	94.33088	TL	ICPMS	< 50.		UG/L	1/09/95	

MATRIX SPIKES:

CUSTOMER NUM	SAMPLE NUM	ANALYSIS	ANALYTICAL TECHNIQUE	AMOUNT SPIKED	AMOUNT RECOVERED	UNITS	COMPLETION DATE	COMMENT
94DS154	94.33088	AG	ICPMS	< 50.	50.	UG/L	1/09/95	NO SPIKE
94DS154	94.33088	BA	ICPMS	500.	530.	UG/L	1/09/95	
94DS154	94.33088	CD	ICPMS	500.	530.	UG/L	1/09/95	
94DS154	94.33088	CR	ICPMS	500.	500.	UG/L	1/09/95	
94DS154	94.33088	NI	ICPMS	2500.	2100.	UG/L	1/09/95	
94DS154	94.33088	PB	ICPMS	2500.	1400.	UG/L	1/09/95	
94DS154	94.33088	TL	ICPMS	10.	17.	UG/L	1/09/95	< QUANT LIMIT

REPORT NUMBER: 30894

********** CST ANALYTICAL REPORT **********

Prepared by: TONEY on 12-Jan-1995

REQUEST NUMBER: 20766 MATRIX: ML ANALYST: AAS PROGRAM CODE: M348

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792

NOTEBOOK: PAGE:

CUSTOMER SAMPLES:

CUSTOMER NUM	SAMPLE NUM	ANALYSIS	ANALYTICAL TECHNIQUE	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
94DS154	94.33088	AS	ETVAA	9.	2.	UG/L	1/11/95	12203020L
94DS154	94.33088	HG	CVAA	6.	0.6	UG/L	1/06/95	
94DS154	94.33088	SE	ETVAA	11.	2.	UG/L	1/12/95	12203020L

CUSTOMER SAMPLE DUPLICATES:

CUSTOMER NUM	SAMPLE NUM	ANALYSIS	ANALYTICAL TECHNIQUE	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
94DS154	94.33088	AS	ETVAA	9.	2.	UG/L	1/11/95	12203020L
94DS154	94.33088	SE	ETVAA	12.	2.	UG/L	1/12/95	12203020L

MATRIX SPIKES:

CUSTOMER NUM	SAMPLE NUM	ANALYSIS	ANALYTICAL TECHNIQUE	AMOUNT SPIKED	AMOUNT RECOVERED	UNITS	COMPLETION DATE	COMMENT
94DS154	94.33088	AS	ETVAA	25.	25.	UG/L	1/11/95	12203020L
94DS154	94.33088	SE	ETVAA	10.	6.	UG/L	1/12/95	12203020L

****

glove Box - water SRF
TANK

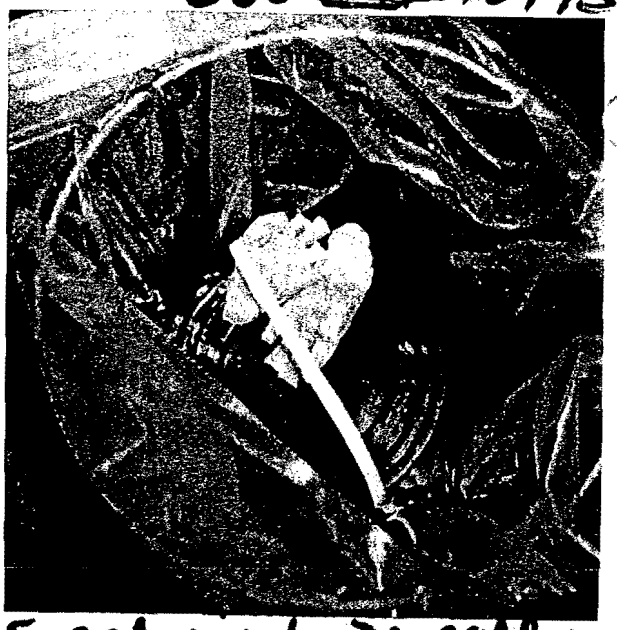
```
DTR) Exit
DTR) PRINT
No record selected, printing whole collection.

REPORT   SAMPLE                                  REQUEST                 REQUEST     DUE
NUMBER    NUM     OWNER MATRIX  ANALYSIS          NUM        BATCH        DATE       DATE

26436  94.76426   BG     WW     ALPHA            09999                   7/11/94
 M348     TDF      PC                          2.7000  ±  0.3000  UCI/L            7/12/94
  R     TDF RAD SMPL     26693     130   WR150                                   1
MISC                  7/29/94
26436  94.76426   BG     WW     BETA             09999                   7/11/94
 M348     TDF      PC                         11.0000  ±  1.0000  UCI/L            7/12/94
  R     TDF RAD SMPL     26693     130   WR150                                   1
MISC                  7/29/94
26436  94.76426   BG     WW     GAMMA            09999                   7/11/94
 M348     TDF      SC                          8.7000  ±  0.2000  UCI/L            7/12/94
  R     TDF RAD SMPL     26693     130   WR150                                   1
MISC                  7/29/94
26436  94.76426   BG     WW     AM-241           09999                   7/11/94
 M348     TDF      GELI                        1.1000  ±  0.1000  UCI/L            7/12/94
  R     TDF RAD SAMPLE   EM90019   94   WR100                                   1
MISC                  7/29/94
26436  94.76426   BG     WW     CS-137           09999                   7/11/94
 M348     TDF      GELI                       11.0000  ±  1.0000  UCI/L            7/12/94
  R     TDF RAD SAMPLE   EM90019   94   WR120                                   1
MISC                  7/29/94
26436  94.76426   BG     WW     PU-239           09999                   7/11/94
 M348     TDF      RAS                       720.0000  ± 90.0000  NCI/L            7/14/94
  R     TDF RAD SAMPLE   EM90045   17   WR180                                   1
MISC                  7/29/94
26436  94.76426   BG     WW     PU-239           09999                   7/11/94
 M348     TDF      RAS                       760.0000  ± 90.0000  NCI/L            7/14/94
  R     TDF RAD SAMPLE   EM90045   18   WR180                                   1
MISC          R       7/29/94
26436  94.76426   BG     WW     PU-238           09999                   7/11/94
 M348     TDF      RAS                        1.4000  ±  0.2000  UCI/L            7/14/94
  R     TDF RAD SAMPLE   EM90045   18   WR180                                   1
MISC          R       7/29/94
26436  94.76426   BG     WW     PU-238           09999                   7/11/94
 M348     TDF      RAS                        1.0000  ±  0.1000  UCI/L            7/14/94
  R     TDF RAD SAMPLE   EM90045   18   WR180                                   1
MISC          R       7/29/94
```

TDF 1/24/

500 [redacted] 2475

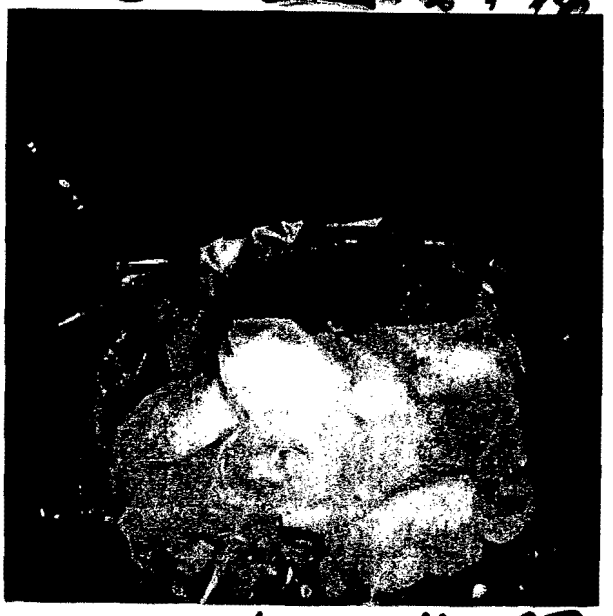
5-gal inside 30 gal.
Water from 1k gal.
tank 1-16-97

500 [redacted] 2475



5-gal inside 30 gall on
water from 1k gal.
tank 1-16-97

500 [redacted] 2476



5-gal w/dirt rags 1-16-97
1000 gal TANK

COPY

ORIGINAL

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WASTE PROFILE FORM

RECEIVED SEP 07 2001

Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to EM-SWO at MS J595. For assistance with completing this form, call EM-SWO at 5-4000.	Reference Number 34191 (For EM-SWO use only.)

Generator s Z Number	Waste Generator s Name (print)	WMC s Z Number	WMC s Name (print)
089829	Myrna Romero	120261	Stephen Kosler

Generator s Telephone	Generator s Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room
7-7800	E520	E-ET	50	1	114

Waste Accumulation (Check only one.)

- ☐ Satellite Accumulation Area — Site no: _____
- ☐ Less-than-90-days Storage Area — Site no: _____
- ☐ TSDF — Site no: _____
- ☐ Universal Waste Storage Area — Site no: _____
- ■ None of the Above

ER Use Only ☐ ER Site PRS #: _____

Method of Characterization (Check as many as apply.)

- SK ☒ Analysis/Documents Attached
- ☐ Chemical/Physical Analysis — Sample #: _____
- ☐ Radiological Analysis — Sample #: _____
- ☐ PCB Analysis — Sample #: _____
- ☒ Acceptable Knowledge Documentation — Documentation #: _____
- ☐ MSDS

Per S.K. 9/10/01 L.P.

Section 1 - Chemical and Physical Information

Waste Type (Check only one.)

- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☒ Process Waste/Spent Chemical/ other (Complete all sections.)
- ☐ Green is Clean Waste (Complete all sections as appropriate.)

Waste Classes

Radiological Information

Was Waste Generated in a RCA? ☒ Yes ☐ No

- ☐ Non-radioactive
- ☒ Radioactive
  - ☒ Low-Level
  - ☐ Transuranic

Wastewater Information

- ☐ Wastewater for SWSC (TA-46) (Complete Attachment 1)
- ☐ Wastewater for RLWTF (TA-50/TA-21) (Complete Attachment 2)
- ☐ Wastewater for TA-16 (HE)

Classification Information

- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check as many as apply.)

- ☒ Inorganic
- ☐ Organic
- Volatile Organics ☐ < 500 ppm ☐ ≥ 500 ppm
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste residue
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)
- Asbestos ☐ friable ☐ non-friable
- PCB Source Concentration
  - ☐ PCB < 50 ppm
  - ☐ PCB ≥ 50 - < 500 ppm
  - ☐ PCB ≥ 500 ppm
- ☐ Other (Describe below)

* Concentrations 10% or greater before use.

Waste Source (Check only one.)

Routine Waste

- ☒ Decon
- ☐ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup - Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Non-routine Waste

- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping - Non-routine
- ☐ Spill Cleanup - Non-routine
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix (Check only one.)

Gas

- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid

- ☐ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid

- ☐ Powder/Ash
- ☒ Solid
- ☐ Sludge
- ☐ Absorbed liquid

Matrix Type (Check only one.)

- ☐ Homogeneous
- ☒ Heterogeneous (Describe below)

Waste/Process Description (Chemical formulas may be used in this field.)

Dismantled filters used for water filtration in the decontamination of lead bricks.

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WASTE PROFILE FORM

Section 2 - Characteristics

Ignitability (Check only one.) (°F)	(°C)	Corrosivity (Check only one.) (pH)	Reactivity (Check as many as apply.)	Boiling Point (Check only one.) (°F)	(°C)
☐ < 73	< 22.8	☐ ≤ 2.0	☐ RCRA Unstable	☐ ≤ 95	≤ 35
☐ 73 - 99	22.8 - 37.2	☐ 2.1 - 4.0	☐ Water Reactive	☐ > 95	> 35
☐ 100 - 139	37.8 - 59.4	☐ 4.1 - 6.0	☐ Cyanide Bearing (> 250 ppm)		
☐ 140 -200	60.0 - 99.3	☐ 6.1 - 9.0	☐ Sulfide Bearing (> 500 ppm)		
☐ > 200	> 99.3	☐ 9.1 - 12.4	☐ Pyrophoric		
☐ EPA Ignitable - Non-liquid		☐ ≥ 12.5	☐ Shock Sensitive		
☐ DOT Flammable Gas		☐ Liquid corrosive to steel	☐ Explosive - DOT Div. _____		
☐ DOT Oxidizer					
☒ Not ignitable		☒ Non-aqueous	☒ Non-reactive	☒ Not applicable	

Identify for all contaminants listed.	Characterization Method: AK	TCLP	Total	Concentration of Contaminants: None or Non-detect	Present Below Regulatory Limit	Above Regulatory Limit Minimum	Maximum
Toxicity Characteristic Metals						(Concentration in ppm only.)	
Arsenic	☐	☐	☐	☐	☐ < 5.0 ppm	_____ to	_____ ppm
Barium	☐	☐	☐	☐	☐ < 100.0 ppm	_____ to	_____ ppm
Cadmium	☐	☐	☐	☐	☐ < 1.0 ppm	_____ to	_____ ppm
Chromium (Total)	☐	☐	☐	☐	☐ < 5.0 ppm	_____ to	_____ ppm
Lead	☐	☐	☐	☐	☐ < 5.0 ppm	300,000 to	400,000 ppm
Mercury	☐	☐	☐	☐	☐ < 0.2 ppm	_____ to	_____ ppm
Selenium	☐	☐	☐	☐	☐ < 1.0 ppm	_____ to	_____ ppm
Silver	☐	☐	☐	☐	☐ < 5.0 ppm	_____ to	_____ ppm
Toxicity Characteristic Organics							
Benzene	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
Carbon tetrachloride	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
Chlorodane	☐	☐	☐	☐	☐ < 0.03 ppm	_____ to	_____ ppm
Chlorobenzene	☐	☐	☐	☐	☐ < 100.0 ppm	_____ to	_____ ppm
Chloroform	☐	☐	☐	☐	☐ < 6.0 ppm	_____ to	_____ ppm
o - cresol	☐	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
m - cresol	☐	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
p - cresol	☐	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
Cresol - mixed	☐	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
2,4-D	☐	☐	☐	☐	☐ < 10.0 ppm	_____ to	_____ ppm
1,4-Dichlorobenzene	☐	☐	☐	☐	☐ < 7.5 ppm	_____ to	_____ ppm
1,2-Dichloroethane	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
1,1-Dichloroethylene	☐	☐	☐	☐	☐ < 0.7 ppm	_____ to	_____ ppm
2,4-Dinitrotoluene	☐	☐	☐	☐	☐ < 0.13 ppm	_____ to	_____ ppm
Endrin	☐	☐	☐	☐	☐ < 0.02 ppm	_____ to	_____ ppm
Heptachlor (& its epoxide)	☐	☐	☐	☐	☐ < 0.008 ppm	_____ to	_____ ppm
Hexchlorobenzene	☐	☐	☐	☐	☐ < 0.13 ppm	_____ to	_____ ppm
Hexchlorobutadiene	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
Hexchloroethane	☐	☐	☐	☐	☐ < 3.0 ppm	_____ to	_____ ppm
Lindane	☐	☐	☐	☐	☐ < 0.4 ppm	_____ to	_____ ppm
Methoxychlor	☐	☐	☐	☐	☐ < 10.0 ppm	_____ to	_____ ppm
Methyl ethyl ketone	☐	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
Nitrobenzene	☐	☐	☐	☐	☐ < 2.0 ppm	_____ to	_____ ppm
Pentachlorophenol	☐	☐	☐	☐	☐ < 100.0 ppm	_____ to	_____ ppm
Pyridine	☐	☐	☐	☐	☐ < 5.0 ppm	_____ to	_____ ppm
Tetrachloroethylene	☐	☐	☐	☐	☐ < 0.7 ppm	_____ to	_____ ppm
Toxaphene	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
Trichloroethylene	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
2,4,5-Trichlorophenol	☐	☐	☐	☐	☐ < 400.0 ppm	_____ to	_____ ppm
2,4,6-Trichlorophenol	☐	☐	☐	☐	☐ < 2.0 ppm	_____ to	_____ ppm
2,4,5-TP (Silvex)	☐	☐	☐	☐	☐ < 1.0 ppm	_____ to	_____ ppm
Vinyl chloride	☐	☐	☐	☐	☐ < 0.2 ppm	_____ to	_____ ppm

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WASTE PROFILE FORM

Section 3 - Additional Constituents

Additional Constituents and Contaminates. Please account for 100% of waste. Ranges should be given within guidelines of LIG 404-00-03 of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum		Maximum	
	Cement	15	to	20	%
	Papes	15	to	20	%
	Wood	10	to	15	%
	Plastic	15	to	20	%
	Metal	5	to	10	%
	Polyvinyl Alcohol	10	to	15	%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
	Total of max. ranges of this section	100			in %
	Total of max. ranges from page 2.	400,000			in ppm

Additional Information (Use additional sheet if necessary.)

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

For the purposes of finding out the lead content in the filters, a new filter was weighed and a filter that was used to filter water from the lead decon project was weighed. The two weights were compared. From that comparison we concluded that there is approximately 15.6 lbs of lead in the drum that contains the filters.

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

Signature Myrna Romero | Date 8/28/01

WASTE MANAGEMENT COORDINATOR I have reviewed this form and to the best of my knowledge the information is complete and accurate.

Signature Stephen Kohler | Date 8/28/01

Associated WPF Reference Number: 24191 9/24/01 tl

LDR and Underlying Hazardous Constituents Information - Identify presence of any constituents listed below.

Non-Wastewater / Wastewater Category - Check only one.

☒ Non Wastewater ☐ Wastewater [as defined by 40 CFR 268.2(f)]

Notification of California List Applicability - Check all that apply.

☐ **Liquid** hazardous waste containing PCBs at a concentration of 50 ppm or greater.

☐ A D001 thru D043 **liquid** waste containing 134 mg/L or greater of Nickel and/or 130 mg/L or greater of thallium.

☐ A D001 thru D043 waste containing Halogenated Organic Compounds (HOCs) listed in 40 CFR 268, Appendix III, at 1000 ppm or greater.

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

☐ ***No Underlying Hazardous Constituents in this waste stream.*** ☐ ***HAZCAT Meeting 40 CFR 268.42(c)***

Organic Constituents

☐ A2213	☐ Butyl benzyl phthalate	☐ p,p'-DDE
☐ Acenaphthylene	☐ 2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	☐ o,p'-DDT
☐ Acenaphthene	☐ Carbaryl	☐ p,p'-DDT
☐ Acetone	☐ Carbenzadim	☐ Dibenz(a,h)anthracene
☐ Acetonitrile	☐ Carbofuran	☐ Dibenz(a,e)pyrene
☐ Acetophenone	☐ Carbofuran phenol	☐ 1,2-Dibromo-3-chloropropane
☐ 2-Acetyaminofluorene	☐ Carbon disufide	☐ 1,2-Dibromoethane (Ethylene dibromide)
☐ Acrolein	☐ Carbon tetrachloride	☐ Dibromomethane
☐ Acrylamide	☐ Carbosulfan	☐ m-Dichlorobenzene
☐ Acrylonitrile	☐ Chlordane (alpha & gamma isomers)	☐ o-Dichlorobenzene
☐ Aldicarb sulfone	☐ p-Chloroaniline	☐ p-Dichlorobenzene
☐ Aldrin	☐ Chlorobenzene	☐ Dichlorodifluoromethane
☐ 4-Aminobiphenyl	☐ Chlorobenzilate	☐ 1,1-Dichloroethane
☐ Aniline	☐ 2-Chloro-1,3-butadiene	☐ 1,2-Dichloroethane
☐ Anthracene	☐ Chlorodibromomethane	☐ 1,1-Dichloroethylene
☐ Aramite	☐ Chloroethane	☐ trans-1,2-Dichloroethylene
☐ alpha-BHC	☐ bis(2-Chloroethoxy) methane	☐ 2,4-Dichlorophenol
☐ beta-BHC	☐ bis(2-Chloroethyl) ether	☐ 2,6-Dichlorophenol
☐ delta-BHC	☐ Chloroform	☐ 2,4-Dichlorophenoxyacetic acid (2,4-D)
☐ gamma-BHC	☐ bis(2-Chloroisopropyl) ether	☐ 1,2-Dichloropropane
☐ Barban	☐ p-Chloro-m-cresol	☐ cis-1,3-Dichloropropylene
☐ Bendiocarb	☐ 2-Chloroethyl vinyl ether	☐ trans-1,3-Dichloropropylene
☐ Bendiocarb phenol	☐ Chloromethane (Methyl chloride)	☐ Dieldrin
☐ Benomyl	☐ 2-Chloronaphthalene	☐ Diethylene glycol, dicarbamate
☐ Benzene	☐ 2-Chlorophenol	☐ Diethyl phthalate
☐ Benz(a)anthracene	☐ 1-Chloropropylene	☐ p-Dimethylaminoazobenzene
☐ Benzal chloride	☐ Chrysene	☐ 2-4-Dimethyl phenol
☐ Benzo(b)fluoranthene	☐ o-Cresol	☐ Dimethyl phthalate
☐ Benzo(k)fluoranthene	☐ m-Cresol	☐ Dimetilan
☐ Benzo(g,h,i)perylene	☐ p-Cresol	☐ Di-n-butyl phthalate
☐ Benzo(a)pyrene	☐ m-Cumenyl methylcarbamate	☐ 1,4-Dinitrobenzene
☐ Bromodichloromethane	☐ Cycloate	☐ 4,6-Dinitro-o-cresol
☐ Bromomethane (Methyl bromide)	☐ Cyclohexanone	☐ 2,4-Dinitrophenol
☐ 4-Bromophenyl phenyl ether	☐ o,p'-DDD	☐ 2,4-Dinitrotoluene
☐ n-Butyl alcohol	☐ p,p'-DDD	☐ 2,6-Dinitrotoluene

☐ Butylate	☐ o,p'-DDE	☐ Di-n-octyl phthalate

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

Organic Constituents - continued

- ☐ Di-n-propylnitrosamine
- ☐ 1,4-Dioxane
- ☐ Diphenylamine
- ☐ Diphenylnitrosamine
- ☐ 1,2-Diphenylhydrazine
- ☐ Disulfoton
- ☐ Dithiocarbamates (total)
- ☐ Endosulfan I
- ☐ Endosulfan II
- ☐ Endosulfan sulfate
- ☐ Endrin
- ☐ Endrin aldehyde
- ☐ EPTC
- ☐ Ethyl acetate
- ☐ Ethyl benzene
- ☐ Ethyl cyanide (Propanenitrile)
- ☐ Ethyl ether
- ☐ bis(2-Ethylhexyl) phthalate
- ☐ Ethyl methacrylate
- ☐ Ethylene oxide
- ☐ Famphur
- ☐ Fluoranthene
- ☐ Fluorene
- ☐ Formetanate hydrochloride
- ☐ Formparanate
- ☐ Heptachlor
- ☐ Heptachlor epoxide
- ☐ Hexachlorobenzene
- ☐ Hexachlorobutadiene
- ☐ Hexachlorocyclopentadiene
- ☐ Hexachlorodibenzo-p-dioxins (HxCDDs)
- ☐ Hexachlorodibenzo-furans (HxCDFs)
- ☐ Hexachloroethane
- ☐ Hexachloropropylene
- ☐ Indeno (1,2,3-c,d) pyrene
- ☐ Iodomethane
- ☐ 3-Iodo-2-propynyl n-butylcarbamate
- ☐ Isobutyl alcohol
- ☐ Isodrin
- ☐ Isolan
- ☐ Isosafrole
- ☐ Kepone
- Methacrylonitrile
- ☐ Methanol
- ☐ Methapyrilene
- ☐ Methiocarb
- ☐ Methomyl
- ☐ Methoxychlor
- ☐ 3-Methylcholanthrene
- ☐ 4,4-Methylene bis(2-chloroaniline)
- ☐ Methylene chloride
- ☐ Methyl ethyl ketone
- ☐ Methyl isobutyl ketone
- ☐ Methyl methacrylate
- ☐ Methyl methansulfonate
- ☐ Methyl parathion
- ☐ Metolcarb
- ☐ Mexacarbate
- ☐ Molinate
- ☐ Naphthalene
- ☐ 2-Naphthylamine
- ☐ o-Nitroaniline
- ☐ p-Nitroaniline
- ☐ Nitrobenzene
- ☐ 5-Nitro-o-toluidine
- ☐ o-Nitrophenol
- ☐ p-Nitrophenol
- ☐ N-Nitrosodiethylamine
- ☐ N-Nitrosodimethylamine
- ☐ N-Nitroso-di-n-butylamine
- ☐ N-Nitrosomethylethylamine
- ☐ N-Nitrosomorpholine
- ☐ N- Nitrosopiperidine
- ☐ N-Nitrosopyrrolidine
- ☐ Oxamyl
- ☐ Parathion
- ☐ PCBs (total)
- ☐ Pebulate
- ☐ Pentachlorobenzene
- ☐ Pentachlorodibenzo-p-dioxins (PeCDDs)
- ☐ Pentachlorodibenzo-furans (PeCDFs)
- ☐ Pentachloroethane
- ☐ Pentachloronitrobenzene
- ☐ Pentachlorophenol
- ☐ Phenacetin
- ☐ Phenanthrene
- ☐ Phenol
- ☐ o-Phenylenediamine
- ☐ Phorate
- ☐ Phthalic acid
- ☐ Phthalic anhydride
- ☐ Physostigmine
- ☐ Physostigmine salicylate
- ☐ Promecarb
- ☐ Pronamide
- ☐ Propham
- ☐ Propoxur
- ☐ Prosulfocarb
- ☐ Pyrene
- ☐ Pyridine
- ☐ Safrole
- ☐ Silvex (2,4,5-TP)
- ☐ 1,2,4,5-Tetrachlorobenzene
- ☐ Tetrachlorodibenzo-p-dioxins (TCDDs)
- ☐ Tetrachlorodibenzofurans (TCDFs)
- ☐ 1,1,1,2-Tetrachloroethane
- ☐ 1,1,2,2-Tetrachloroethane
- ☐ Tetrachloroethylene
- ☐ 2,3,4,6-Tertachlorophenol
- ☐ Thiodicarb
- ☐ Thiophanate-methyl
- ☐ Tirpate
- ☐ Toluene
- ☐ Toxaphene
- ☐ Triallate
- ☐ Tribromomethane (Bromoform)
- ☐ 1,2,4-Trichlorobenzene
- ☐ 1,1,1-Trichloroethane
- ☐ 1,1,2-Trichloroethane
- ☐ Trichloroethylene
- ☐ Trichloromonofluoromethane
- ☐ 2,4,5-Trichlorophenol
- ☐ 2,4,6-Trichlorophenol
- ☐ 2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)
- ☐ 1,2,3-Trichloropropane
- ☐ 1,1,2-Trichloro-1,2,2-trifluoroethane
- ☐ Triethylamine
- ☐ tris-(2,3-Dibromopropyl) phosphate
- ☐ Vernolate
- ☐ Vinyl chloride
- ☐ Xylenes (total)

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

Metal/Inorganic Constituents

☐ Antimony	☐ Cyanides (Amenable)	☐ Selenium
☐ Arsenic	☐ Fluoride	☐ Silver
☐ Barium	☒ Lead	☐ Sulfide
☐ Beryllium	☐ Mercury (Retort residues)	☐ Thallium
☐ Cadmium	☐ Mercury - All others	☐ Vanadium
☐ Chromium (Total)	☐ Nickel	☐ Zinc
☐ Cyanides (Total)		

Los Alamos
National Laboratory

RECEIVED

WASTE PROFILE FORM

COPY

ORIGINAL

Account Information: 8B13 M859 2200

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

Reference Number: 24849

Waste Generator's Name (Print)	Znumber	Waste Management Coordinator's Name (Print)	Znumber
Rick Alexander	114624	Rick Alexander	114624

Generator's Group	Generator's Telephone	Generator's Mail Stop	Waste Stream Technical Area	Building	Room
CST-13	7-4301	E518	50	1	114

Waste Accumulation
Check as many as apply.

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

Method of Characterization
Check as many as apply.

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

Section 1- Chemical and Physical Characteristics

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

Waste Type
Check only one.

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

Waste Classes
Check as many as apply.

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

Associated Documentation
Check as many as apply.

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

Waste Category
Check as many as apply.

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

Waste Sources
Check as many as apply.

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

Waste Matrix
Check only one.

Gas
- ☐ ≤ 1.5 Atmospheres
- ☐ > 1.5 Atmospheres

Liquid
- ☐ Aqueous
- ☒ Organic
- ☐ Inorganic

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

Matrix Type
Check only one.

- ☒ Homogeneous
- ☐ Heterogeneous --> describe below

Waste/Process Description

Orphaned waste. Analysis attached. Sample numbers 96DS151, 96DS152, 96DS153. 8-30-96 DS

1 gallon container of liquid.

Section 1- Chemical and Physical Characteristics (continued)

Ignitability (degrees F.)
Check only one.

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

Corrosivity (pH)
Check only one.

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

Reactivity
Check as many as apply.

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

Boiling Point (degrees F.)
Check only one.

- ☐ ≤ 95
- ☒ > 95
- ☐ Not applicable

Identify presence of contaminants.			Minimum		Maximum	Unit (ppm or % only)	Analytical method	
Toxicity Characteristic Metals								
Arsenic	☒ None	☐ < 5.0 ppm		to			☐ TCLP	☐ Total
Barium	☒ None	☐ < 100.0 ppm		to			☐ TCLP	☐ Total
Cadmium	☒ None	☐ < 1.0 ppm		to			☐ TCLP	☐ Total
Chromium	☒ None	☐ < 5.0 ppm		to			☐ TCLP	☐ Total
Lead	☒ None	☐ < 5.0 ppm		to			☐ TCLP	☐ Total
Mercury	☒ None	☐ < 0.2 ppm		to			☐ TCLP	☐ Total
Selenium	☒ None	☐ < 1.0 ppm		to			☐ TCLP	☐ Total
Silver	☒ None	☐ < 5.0 ppm		to			☐ TCLP	☐ Total
Toxicity Characteristic Organic Compounds								
Benzene	☒ None	☐ < 0.5 ppm		to			☐ TCLP	☐ Total
Carbon tetrachloride	☒ None	☐ < 0.5 ppm		to			☐ TCLP	☐ Total
Chlorobenzene	☒ None	☐ < 100.0 ppm		to			☐ TCLP	☐ Total
Chloroform	☐ None	☐ < 6.0 ppm	1540	to	2860	ppm	☐ TCLP	☒ Total
Cresol	☒ None	☐ < 200.0 ppm		to			☐ TCLP	☐ Total
1,4-dichlorobenzene	☒ None	☐ < 7.5 ppm		to			☐ TCLP	☐ Total
1,2-Dichloroethane	☒ None	☐ < 0.5 ppm		to			☐ TCLP	☐ Total
1,1-Dichloroethylene	☒ None	☐ < 0.7 ppm		to			☐ TCLP	☐ Total
2,4-Dinitrotoluene	☒ None	☐ < 0.13 ppm		to			☐ TCLP	☐ Total
Hexachlorobenzene	☒ None	☐ < 0.13 ppm		to			☐ TCLP	☐ Total
Hexachlorobutadiene	☒ None	☐ < 0.5 ppm		to			☐ TCLP	☐ Total
Hexachloroethane	☒ None	☐ < 3.0 ppm		to			☐ TCLP	☐ Total
Methyl ethyl ketone	☒ None	☐ < 200.0 ppm		to			☐ TCLP	☐ Total
Nitrobenzene	☒ None	☐ < 2.0 ppm		to			☐ TCLP	☐ Total
Pentachlorophenol	☒ None	☐ < 100.0 ppm		to			☐ TCLP	☐ Total
Pyridine	☒ None	☐ < 5.0 ppm		to			☐ TCLP	☐ Total
Perchloroethylene or tetrachloroethylene	☒ None	☐ < 0.7 ppm		to			☐ TCLP	☐ Total
Trichloroethylene	☒ None	☐ < 0.5 ppm		to			☐ TCLP	☐ Total
2,4,5-Trichlorophenol	☒ None	☐ < 400.0 ppm		to			☐ TCLP	☐ Total
2,4,6-Trichlorophenol	☒ None	☐ < 2.0 ppm		to			☐ TCLP	☐ Total
Vinyl chloride	☒ None	☐ < 0.2 ppm		to			☐ TCLP	☐ Total

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

Name of constituent	Cas no.(optional)	Minimum		Maximum	Unit (ppm or % only)
Bromodichloromethane		357	to	663	ppm
1,1-Dichloroethene		3150	to	5850	ppm
1,1,1-Trichloroethane		25900	to	48100	ppm
Trichloroethene		17600	to		ppm
Calcium		.013	to		%
Iron		.006	to		%
Potassium		.034	to		%
>Water		95	to	100	%
			to		

Section 2- Radiological Characteristics

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

	Range minimum		Range maximum	Unit (Ci/g or Ci/l)
General				
[X] Alpha	3.9	to	4.7	nCi/L
[X] Beta	140	to	280	pCi/L
[ ] Gamma		to		
TRU radionuclides				
[ ] None present				
[ ] Am-241		to		
[ ] Am-243		to		
[ ] Cf-249		to		
[ ] Cf-251		to		
[ ] Cm-243		to		
[ ] Cm-245		to		
[ ] Cm-247		to		
[ ] Pu-238		to		
[ ] Pu-239		to		
[ ] Pu-240		to		
[ ] Pu-242		to		
Fission products				
[ ] None present				
[ ] Ba-140		to		
[ ] Ce-144		to		
[ ] Cs-134		to		
[ ] Cs-137		to		
[ ] I-129		to		
[ ] I-133		to		
[ ] Kr-85		to		
[ ] Nb-95		to		
[ ] Ru-106		to		
[ ] Sb-125		to		
[ ] Sr-90		to		
[ ] Tc-99		to		
[ ] Zr-93		to		
[ ] Zr-95		to		
Activation products				
[ ] None present				
[ ] As -74		to		
[ ] Be-7		to		
[ ] C-14		to		
[ ] Co-56		to		
[ ] Co-57		to		
[ ] Co-58		to		
[ ] Co-60		to		
[ ] Cr-51		to		
[ ] Eu-152		to		
[ ] Mn-52		to		
[ ] Mn-54		to		
[ ] Nb-94		to		
[ ] Ni-59		to		
[ ] Ni-63		to		
[ ] Rb-83		to		
[ ] Rb-84		to		
[ ] Se-75		to		
[ ] Sr-82		to		
[ ] Sr-85		to		
[ ] V-48		to		
[ ] Y-88		to		
[ ] Zn-65		to		
[ ] Zr-88		to		

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

Contamination Type: *Check as many as apply.*

[X] Volume Contamination

[ ] Surface Contamination

for WMC DGS 9/11/96

Section 3 - Wastewater Characteristics

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

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

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

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

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

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

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

☐ Acid line ☐ Caustic line ☐ Industrial waste line

Section 4 - Additional Information

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

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

Signature	Date
Rick Alexander	9-6-94

CST-12 PCB ANALYSIS LABORATORY

Results Summary

To: Dustie Stephens

From: Eric Christensen ECC

Thru: Kelly Hakonson Kelly

Date: 13 August 1996

Subject: Summary of Analytical Results

Request : 23583

Matrix: Oil

☑ No PCBs were found in the sample(s) submitted.

☑ No PCBs were found in the blank submitted with these samples.

☐ PCBs were found in the following sample(s) at the noted concentrations:

Sample Number	Aroclor Detected	Amount (ug/g)	Level of Quantitation

CST-12 PCB ANALYSIS LABORATORY

Results Summary

Sample Information:

Samples **96.05545 and 96.05546** were received and analyzed.

Collection Date: **10 July 1996**

Extraction Date: **6 August 1996**

Analysis Date: **6, 8 and 9 August 1996**

Additional samples associated with this request were analyzed:

1 **Blank**

1 **Blind QC**

1 **MS/MSD**

HOLDING TIMES:

Extraction holding times were not met for these samples.

Analytical holding times were met for these samples.

Surrogate Recoveries:

See attached; surrogate recoveries were within CST-12 first quarter 1996 control limits. Sample 96.05546 required dilution to quantitate, so surrogates could not be calculated.

Matrix Spike Recoveries:

Recoveries for the matrix spike and matrix spike duplicate were calculated to be 145% and 98% respectively, with a relative standard deviation of 38%. Control limits have not yet been established.

Method Summary:

The method used to analyze these samples was CST-12 Analytical Method EO-400. A 0.2 g aliquot of oil was diluted to 1.0 ml with hexane. A Varian Gas Chromatograph with an Electron Capture Detector and a J & W Scientific DB-5 (30M X 0.25 MICRON FILM X 0.32 ID) column was used to obtain the data.

Additional Comments:

Sample 96.05546 required a dilution to quantitate, which raised the limit of quantitation. This may bias the results.

All of the samples associated with this Service Agreement were subject to florisil cleanup, which resulted in a 1:5 dilution.

If you have questions or concerns about these samples or their analysis, please feel free to call me @ 665-2214.

D96.05545
&k0G

LOS ALAMOS NATIONAL LABORATORY
Chemical Science and Technology Division
Organic Analysis Group CST-12
SURROGATE RECOVERIES FOR PCBs

REQUEST #: 23583
SET LETTER: A < ---------IF THERE IS MORE THAN
NUMBER OF SAMPLES: 6 ONE SET OF SAMPLES
MATRIX M IN THIS REQUEST THEN INCREMENT THIS LETTER.
ANALYST: KMH
Date: 08/13/96

SURROGATE RECOVERIES

SURROGATE
RECOVERIES IN PERCENT (%)

	SAMPLE NUMBERS	TYPE		
1	B96.05572	BLANK	132	
2	S96.05571	SAMPLE	0	*
3	S96.05545	SAMPLE	112	
4	M96.05545	MATRIX SPIK	120	
5	D96.05545	MATRIX SP-D	97	
6	S96.05546	SAMPLE	0	*
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				

ECC DMC
8-13-96 8/14/96

Average % Surrogate Recovery... 77
Defined Lower QC Limits (%).... 17
Defined Upper QC Limits (%).... 147

********** CST ANALYTICAL REPORT **********

Prepared by: KMH on 14-Aug-1996

POLYCHLORINATED BIPHENYLS

REQUEST NUMBER: 23583 MATRIX: MOL ANALYST: KELLY HAKONSON PROGRAM CODE: M381 NOTEBOOK: 0 PAGE:

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792 TECHNIQUE: GCEC ANALYTICAL PROCEDURE: EO-400

SUMMARY of TOTAL PCB's for customer samples on this report

CUSTOMER NUM	SAMPLE NUM	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
960S295	96.05545	1336363	< 1.0068		UG/G	8/14/96		Aroclor (Mixed)
960S296	96.05546	1336363	< 9.5969		UG/G	8/14/96		Aroclor (Mixed)

DETAILED PCB DATA for customer samples on this report

CUSTOMER NUM	SAMPLE NUM	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
960S295	96.05545	1336363	< 1.0068		UG/G	8/14/96		Aroclor (Mixed)
960S295	96.05545	53469219	< 1.0068		UG/G	8/14/96		Aroclor 1242
960S295	96.05545	11097691	< 1.0068		UG/G	8/14/96		Aroclor 1254
960S295	96.05545	11096825	< 1.0068		UG/G	8/14/96		Aroclor 1260
960S296	96.05546	1336363	< 9.5969		UG/G	8/14/96		Aroclor (Mixed)
960S296	96.05546	53469219	< 9.5969		UG/G	8/14/96		Aroclor 1242
960S296	96.05546	11097691	< 9.5969		UG/G	8/14/96		Aroclor 1254
960S296	96.05546	11096825	< 9.5969		UG/G	8/14/96		Aroclor 1260

********** EM-9 QUALITY ASSURANCE REPORT **********

POLYCHLORINATED BIPHENYLS Prepared by: KMH on 14-Aug-1996

REQUEST NUMBER: 23583 MATRIX: MOL ANALYST: KELLY HAKONSON PROGRAM CODE: M381 NOTEBOOK: 0 PAGE:

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792 TECHNIQUE: GCEC ANALYTICAL PROCEDURE: EO-400

SUMMARY OF CONTROL STATUS OF OPEN (NON-BLIND) QA SAMPLES RUN WITH THIS BATCH

There were no open (non-blind) Quality Control materials run with the samples reported above for one of the following reasons:

____ Only qualitative data requested

____ Only Blind QC samples run with this batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within CST

********** EM-9 QUALITY ASSURANCE REPORT **********

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLIND QA SAMPLES RUN WITH THIS BATCH

SAMPLE NUM	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND-NAME
96.05571	1336363	512.	102.4	UG/G	448.8	6.7	8/14/96	UNDER CONTROL	Aroclor (Mixed)
96.05571	53469219	512.	153.6	UG/G	448.8	6.7	8/14/96	UNDER CONTROL	Aroclor 1242
96.05571	11097691	< 113.0199		UG/G	0.0		8/14/96	UNDER CONTROL	Aroclor 1254
96.05571	11096825	< 113.0199		UG/G	0.0		8/14/96	UNDER CONTROL	Aroclor 1260

REPORT NUMBER: 41279

Analyst	Reviewer	Team Leader	QA Officer
KHakonson	KHakonson for Doris Quintana		mag
8/14/96	8/14/96		8/15/96
Date	Date	Date	Date

No Sample Discrepancies Noted by Sample Management Section

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in 'Quality Assurance for Health and Environmental Chemistry: 1992,' LA-12790-MS, Vol. I, pp. 19-20

****

RICK ALEXANDER

CST-12 PCB ANALYSIS LABORATORY

Results Summary

To: Dustie Stephens

From: Kelly Hakonson

Date: 16 May 1996

Subject: Summary of Analytical Results

Request : 23253

Matrix: Miscellaneous Liquid

☑ No PCBs were found in the sample(s) submitted.

☑ No PCBs were found in the blank submitted with these samples.

☐ PCBs were found in the following sample(s) at the noted concentrations:

Sample Number	Aroclor Detected	Amount (ug/g)	Level of Quantitation

CST-12 PCB ANALYSIS LABORATORY

Results Summary

Sample Information:

Sample **96.02882** was received and analyzed.

Collection Date: **10 April 1996**

Extraction Date: **26 April 1996**

Analysis Date: **1,2, and 6 May 1996**

Additional samples associated with this request were analyzed:

1 Blank

---- Blind QC

---- MS/MSD

HOLDING TIMES:

Extraction holding times were not met for this sample.

Analytical holding times were met for these samples.

Surrogate Recoveries:

See attached; surrogate recoveries were within CST-12 first quarter 1996 control limits.

Matrix Spike Recoveries:

A matrix spike and matrix spike duplicate were not analyzed with this request.

Method Summary:

The method used to analyze these samples was CST-12 Analytical Method EO-400. A 10ml aliquot of oil was evaporated to dryness and exchanged to hexane to a final volume of 1.0 ml. A Varian Gas Chromatograph with an Electron Capture Detector and a J & W Scientific DB-5 (30M X 0.25 MICRON FILM X 0.32 ID) column was used to obtain the data.

Additional Comments:

Please note the revised procedure due to the 1-1-1 Tricloroethylene content of the sample. Because a 10.0 ml aliquot was used, results are reported in ug/l.

All of the samples associated with this Service Agreement were subject to florisil cleanup, which resulted in a 1:5 dilution.

If you have questions or concerns about these samples or their analysis, please feel free to call me @ 665-2214.

S96.02882

LOS ALAMOS NATIONAL LABORATORY
Chemical Science and Technology Division
Organic Analysis Group CST-12
SURROGATE RECOVERIES FOR PCBs

REQUEST #:	23253	
SET LETTER:	A	< ---------IF THERE IS MORE THAN
NUMBER OF SAMPLES:	1	ONE SET OF SAMPLES
MATRIX	M	IN THIS REQUEST THEN INCREMENT THIS LETTER.
ANALYST:	KMH	
Date:	05/16/96	

SURROGATE RECOVERIES

SURROGATE
RECOVERIES IN PERCENT (%)

	SAMPLE NUMBERS	TYPE	
1	S96.02882	SAMPLE	0 *
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			

DMO 5/17/96

5/16/96

Average % Surrogate Recovery...	0
Defined Lower QC Limits (%)....	17
Defined Upper QC Limits (%)....	147

********** CST ANALYTICAL REPORT **********

Prepared by: KMH on 17-May-1996

POLYCHLORINATED BIPHENYLS

REQUEST NUMBER: 23253 MATRIX: ML ANALYST: KELLY HAKONSON PROGRAM CODE: M359 NOTEBOOK: 0 PAGE:

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792 TECHNIQUE: GCEC ANALYTICAL PROCEDURE: EO-400

SUMMARY of TOTAL PCB's for customer samples on this report

CUSTOMER NUM	SAMPLE NUM	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
960S153	96.02882	1336363	< 250.		UG/L	5/17/96		Aroclor (Mixed)

DETAILED PCB DATA for customer samples on this report

CUSTOMER NUM	SAMPLE NUM	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
960S153	96.02882	1336363	< 250.		UG/L	5/17/96		Aroclor (Mixed)
960S153	96.02882	53469219	< 250.		UG/L	5/17/96		Aroclor 1242
960S153	96.02882	11097691	< 250.		UG/L	5/17/96		Aroclor 1254
960S153	96.02882	11096825	< 250.		UG/L	5/17/96		Aroclor 1260

********** EM-9 QUALITY ASSURANCE REPORT **********

POLYCHLORINATED BIPHENYLS Prepared by: KMH on 17-May-1996

REQUEST NUMBER: 23253 MATRIX: ML ANALYST: KELLY HAKONSON PROGRAM CODE: M359 NOTEBOOK: 0 PAGE:

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792 TECHNIQUE: GCEC ANALYTICAL PROCEDURE: EO-400

SUMMARY OF CONTROL STATUS OF OPEN (NON-BLIND) QA SAMPLES RUN WITH THIS BATCH

There were no open (non-blind) Quality Control materials run with the samples reported above for one of the following reasons:

____ Only qualitative data requested

____ Only Blind QC samples run with this batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within CST

********** EM-9 QUALITY ASSURANCE REPORT **********

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLIND QA SAMPLES RUN WITH THIS BATCH

SAMPLE NUM	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND-NAME
96.03501	1336363	8.1	1.62	UG/G	9.9	0.1	5/17/96	UNDER CONTROL	Aroclor (Mixed)
96.03501	53469219	< 1.0684		UG/G	0.0		5/17/96	UNDER CONTROL	Aroclor 1242
96.03501	11097691	< 1.0684		UG/G	0.0		5/17/96	UNDER CONTROL	Aroclor 1254
96.03501	11096825	8.1	2.43	UG/G	9.9	0.1	5/17/96	UNDER CONTROL	Aroclor 1260

REPORT NUMBER: 40556

Analyst	Reviewer	Team Leader	QA Officer
KHakonson	KHakonson for Doris Quintana		mag
5/17/96	5/17/96		5/16/96
Date	Date	Date	Date

No Sample Discrepancies Noted by Sample Management Section

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in 'Quality Assurance for Health and Environmental Chemistry: 1992,' LA-12790-MS, Vol. I, pp. 19-20

****

Los Alamos
NATIONAL LABORATORY

memorandum

Chemical Science and Technology
Responsible Chemistry for America

CST-12, Organic Analytical
Los Alamos, New Mexico 87545

To/Group: Dustie Stephens
From/Group: Leah Bustos, CST-12 Organic Analytical Analysis
Re: Summary of Analytical Results for Volatiles

Request#: 23253

Matrix: Misc. liquid

Date: 2 August 1996

Results Summary
Attached is a tabulation of samples submitted for volatile analysis and a summary of their analytical results (target compounds found and their concentrations; see Table 1). The sample was collected on 10 April 1996 and analyzed on 5 July, 7 July, 10 July, 11 July and 12 July 1996.

Method Summary
Samples were analyzed using EPA Method 8260. In summary, a measured volume of sample, was analyzed using the purge and trap method combined with capillary column GC/MS. Tekmar 3000 Purge and Trap Concentrator were interfaced to a Hewlett-Packard 5890 Gas Chromatograph / 5971 Mass Selective Detector to perform the analyses. The analytical column used was a J&W Scientific 75 m by 0.53 mm ID, 3 micron film, DB624 capillary column.

Anomalies And Analysis Notes
Below is a summary of required QA/QC parameters as outlined in EPA SW-846 and LANL SOPs and a summary of any anomalies which occurred during the analyses.

Bromoform average response was out of QC limits for initial calibration. Therefore, reflected as Bromoform (SPCC) out of QC limits, on all daily calibrations run off this initial calibration. No Bromoform was detected in the samples.

Internal standard responses were within criteria for all analyses.

Matrix spike and matrix spike duplicate were analyzed as part of the analytical batch which included the samples from this work request. All spike recoveries and relative percent differences were within criteria The matrix spike and matrix spike duplicate were analyzed using sample 96.02334 from request 23193 and the % RPD were in criteria. A copy of the MS/MSD recovery form is included with this report.

Holding times were met not for sample analysis. Sample was collected on 10 April 1996 and analyzed on 12 July 1996 approximately 3 months out of hold. Currently, the volatile organic analysis group has been experiencing instrument problems. These problems have resulted in a huge backlog of samples. The customer was notified of backlog problems and CST-12 was instructed to continue with VOA analysis If you have any questions regarding this data, please call Leah Bustos at 667-2772.

CST-12 VOLATILE ORGANIC ANALYSIS
SUMMARY OF ANALYTICAL RESULTS

TABLE 1. Summary of results of sample analyses for volatiles, dates collected and dates analyzed.

REQUEST NUMBER: 23253

SAMPLE ID	TARGET COMPOUNDS FOUND	AMOUNT (ug/L)	LOQ (ug/L)	TICS
B96.02884	Chloroform	22	20	N
	Bromodichloromethane	5	5	

SAMPLE ID	TARGET COMPOUNDS FOUND	AMOUNT *(mg/L)	LOQ *(mg/L)	TICS
S9602880	Bromomethane	460J	1000	N
	1,1-Dichloroethene	4500	500	
	2-Butanone	500J	2000	
	Chloroform	2200B	500	
	1,1,1-Trichloroethane	37000D	1300	
	Trichloroethane	88000D	1300	
	Bromodichloromethane	510B	500	

Sample IDs beginning with the letter S are samples; those beginning with the letter B are blanks.

LOQ: Limit of Quantitation. LOQs normally range between 5 and 20ug/L, depending on the compound, unless otherwise noted.

NA: Not Applicable

TICs (tentatively identified compounds) were found in the samples reported here.

J: This data qualifier indicates that the compound was detected, but the reported result is less than the LOQ and is an estimated value.

B: This data qualifier indicates that the reported compound was found in the associated method blank as well as in the sample.

E: Analyte exceeds the calibration curve. Result should be considered an estimate.

***PLEASE NOTE UNIT CHANGE!**

LOS ALAMOS NATIONAL LABORATORY
CST-12 ORGANIC ANALYSIS GROUP
VOLATILE ANALYSIS ANOMALY REPORTING FORM

Reported By: Leah D. Bustos Date Reported: 30 July 1996

Requested Number: 23253

Type of Anomaly (circle appropriate choices or describe):

Surrogate recovery	Retention time shift	Missed holding time
Internal standard response	Calibration QC*	Sample matrix effect
Other (describe)		

Description: Include sample numbers, dates, etc., as appropriate.
Samples affected : 96.02880
Dates samples were analyzed: 12 July 1996.

Reporting concentration for Trichloroethene was over initial calibration limit of 200 µg/ml. Due to the high concentration of Trichloroethene in the sample, the original sample was diluted for analysis. Sample was analyzed at 0.02 µl. This particular sample was analyzed on five different days. Quantitation of the last run should have been re-run at a lower concentration. Because of analyst oversight, the non-conformance was not caught and consequently not re-run. Final concentration of Trichloroethene is reported as an estimated concentration.

Corrective actions taken and disposition of affected data:

In the future analyst will ensure that all analyte concentrations fall with the initial calibration limits..

Corrective actions taken by: _____ Date: _____

LOS ALAMOS NATIONAL LABORATORY
CST-12 ORGANIC ANALYSIS GROUP
VOLATILE ANALYSIS ANOMALY REPORTING FORM

Reported By: Leah D. Bustos Date Reported: 02 August 1996

Requested Number: 23253

Type of Anomaly (circle appropriate choices or describe):

Surrogate recovery Retention time shift Missed holding time

Internal standard response Calibration QC* Sample matrix effect

Other (describe)

Description: Include sample numbers, dates, etc., as appropriate.
Samples affected : 96.02880

Date sample was analyzed: 12 July 1996.

*Bromoform average response on initial calibration was 0.2 where QC limits for Bromoform average response is 0.25. Bromoform average response on initial calibration done 11 July 1996 does not meet QC criteria .

Corrective actions taken and disposition of affected data: Include dates taken or a schedule. If problem is ongoing, address actions taken/ to be taken to prevent recurrence.

Instrument "V" has a history of having a low average Bromoform response. This is an ongoing instrument related problem. Customer has been notified of the problem. Customer acknowledged problem and affirmed for analysis to continue.
Please note: This non-conformance will reflect in a flag of Bromoform (SPCC) out of QC limits on all daily calibration runs using this initial calibration curve.

Corrective actions taken by: _____ Date: 5 Aug 96

LOS ALAMOS NATIONAL LABORATORY
CST-12 ORGANIC ANALYSIS GROUP
VOLATILE ANALYSIS ANOMALY REPORTING FORM

Reported By: Leah D. Bustos Date Reported: 30 July 1996

Requested Number: 23253

Type of Anomaly (circle appropriate choices or describe):

Surrogate recovery Retention time shift Missed holding time

Internal standard response Calibration QC* Sample matrix effect

Other (describe)

Description: Include sample numbers, dates, etc., as appropriate.

Samples affected : 96.02880

Dates samples were analyzed: 12 July 1996.

Chloroform did not meet QC criteria in the initial calibration. %RSD on Chloroform was greater than 30% in initial calibration. Chloroform was detected in the blank as well as the sample. Chloroform is a contamination problem that we are running into with our water system.

Corrective actions taken and disposition of affected data:

We are currently trying to resolve this contamination problem by locating another source for our analysis water.

Corrective actions taken by: _____ Date: 5 Aug 96

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: LANL Contract: _____

Project No. 23193 Site: _____ Location: _____ Group: CST-12

Matrix Spike - Sample No.: S9602334

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	10000	0	11000	110	(61-145)
Benzene	10000	0	10000	100	(76-127)
Trichloroethene	10000	0	11000	110	(71-120)
Toluene	10000	17000	25000	80	(76-125)
Chlorobenzene	10000	0	11000	110	(75-130)

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	10000	11000	110	0	14	(61-145)
Benzene	10000	10000	100	0	11	(76-127)
Trichloroethene	10000	11000	110	0	14	(71-120)
Toluene	10000	25000	80	0	13	(76-125)
Chlorobenzene	10000	11000	110	0	13	(75-130)

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: ~~1~~ 0 out of ~~15~~ 0 outside limits

Spike Recovery: 1 out of 10 outside limits

MCD 7/11/96

Comments: _____

MCD 7/11/96

LOS ALAMOS NATIONAL LABORATORY
CST-12 ORGANIC ANALYSIS GROUP

DATA REVIEW CERTIFICATION

Request Number: 23253 Analysis: VOLATILES BY EPA 8260

The data contained in the enclosed report has been reviewed and approved by the people listed below:

Leah D. Bustos		
Analyst Name (print)	Analyst Signature	Date
LAURA C. ORTEGA		8/8/96
Data Reviewer Name (print)	Data Reviewer Signature	Date

********** CST ANALYTICAL REPORT **********

EPA VOLATILES Prepared by: JA on 13-Aug-1996

REQUEST NUMBER: 23253 MATRIX: ML ANALYST: MICHAEL GUTTMAN PROGRAM CODE: M359 NOTEBOOK: B032707 PAGE:

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 96.02880 Date Collected: 4/10/96 Date Received: 4/10/96 Date Extracted: 7/12/96 Date Analyzed: 7/12/96

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
960S151	96.02880	67641	< 2000.		MG/L	8/13/96		Acetone
960S151	96.02880	71432	< 500.		MG/L	8/13/96		Benzene
960S151	96.02880	108861	< 500.		MG/L	8/13/96		Bromobenzene
960S151	96.02880	74975	< 500.		MG/L	8/13/96		Bromochloromethane
960S151	96.02880	75274	510.	153.	MG/L	8/13/96		Bromodichloromethane
960S151	96.02880	75252	< 500.		MG/L	8/13/96		Bromoform
960S151	96.02880	74839	< 1000.		MG/L	8/13/96		Bromomethane
960S151	96.02880	78933	< 2000.		MG/L	8/13/96		2-Butanone
960S151	96.02880	104518	< 500.		MG/L	8/13/96		n-Butylbenzene
960S151	96.02880	135988	< 500.		MG/L	8/13/96		sec-Butylbenzene
960S151	96.02880	98066	< 500.		MG/L	8/13/96		tert-Butylbenzene
960S151	96.02880	75150	< 500.		MG/L	8/13/96		Carbon disulfide
960S151	96.02880	56235	< 500.		MG/L	8/13/96		Carbon tetrachloride
960S151	96.02880	108907	< 500.		MG/L	8/13/96		Chlorobenzene
960S151	96.02880	124481	< 500.		MG/L	8/13/96		Chlorodibromomethane
960S151	96.02880	75003	< 1000.		MG/L	8/13/96		Chloroethane
960S151	96.02880	67663	2200.	660.	MG/L	8/13/96		Chloroform
960S151	96.02880	74873	< 1000.		MG/L	8/13/96		Chloromethane
960S151	96.02880	95498	< 500.		MG/L	8/13/96		o-Chlorotoluene
960S151	96.02880	106434	< 500.		MG/L	8/13/96		p-Chlorotoluene
960S151	96.02880	96128	< 1000.		MG/L	8/13/96		1,2-Dibromo-3-chloropropane
960S151	96.02880	74953	< 500.		MG/L	8/13/96		Dibromomethane
960S151	96.02880	95501	< 500.		MG/L	8/13/96		o-Dichlorobenzene (1,2)
960S151	96.02880	541731	< 500.		MG/L	8/13/96		m-Dichlorobenzene (1,3)
960S151	96.02880	106467	< 500.		MG/L	8/13/96		p-Dichlorobenzene (1,4)
960S151	96.02880	75718	< 1000.		MG/L	8/13/96		Dichlorodifluoromethane

********** CST ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
96DS151	96.02880	75343	< 500.		MG/L	8/13/96		1,1-Dichloroethane
96DS151	96.02880	107062	< 500.		MG/L	8/13/96		1,2-Dichloroethane
96DS151	96.02880	75354	4500.	1350.	MG/L	8/13/96		1,1-Dichloroethene
96DS151	96.02880	156605	< 500.		MG/L	8/13/96		trans-1,2-Dichloroethene
96DS151	96.02880	156592	< 500.		MG/L	8/13/96		cis-1,2-Dichloroethylene
96DS151	96.02880	78875	< 500.		MG/L	8/13/96		1,2-Dichloropropane
96DS151	96.02880	142289	< 500.		MG/L	8/13/96		1,3-Dichloropropane
96DS151	96.02880	594207	< 500.		MG/L	8/13/96		2,2-Dichloropropane
96DS151	96.02880	563586	< 500.		MG/L	8/13/96		1,1-Dichloropropene
96DS151	96.02880	10061015	< 500.		MG/L	8/13/96		cis-1,3-Dichloropropene
96DS151	96.02880	10061026	< 500.		MG/L	8/13/96		trans-1,3-Dichloropropene
96DS151	96.02880	100414	< 500.		MG/L	8/13/96		Ethylbenzene
96DS151	96.02880	106934	< 500.		MG/L	8/13/96		Ethylene dibromide
96DS151	96.02880	591786	< 2000.		MG/L	8/13/96		2-Hexanone
96DS151	96.02880	98828	< 500.		MG/L	8/13/96		Isopropylbenzene
96DS151	96.02880	99876	< 500.		MG/L	8/13/96		4-Isopropyltoluene
96DS151	96.02880	74884	< 500.		MG/L	8/13/96		Methyl iodide
96DS151	96.02880	108101	< 2000.		MG/L	8/13/96		4-Methyl-2-pentanone
96DS151	96.02880	75092	< 500.		MG/L	8/13/96		Methylene chloride
96DS151	96.02880	103651	< 500.		MG/L	8/13/96		Propylbenzene
96DS151	96.02880	100425	< 500.		MG/L	8/13/96		Styrene
96DS151	96.02880	630206	< 500.		MG/L	8/13/96		1,1,1,2-Tetrachloroethane
96DS151	96.02880	79345	< 500.		MG/L	8/13/96		1,1,2,2-Tetrachloroethane
96DS151	96.02880	127184	< 500.		MG/L	8/13/96		Tetrachloroethylene
96DS151	96.02880	108883	< 500.		MG/L	8/13/96		Toluene
96DS151	96.02880	76131	< 500.		MG/L	8/13/96		1,1,2-Trichloro-1,2,2-trifluoroethane
96DS151	96.02880	71556	37000.	11100.	MG/L	8/13/96		1,1,1-Trichloroethane
96DS151	96.02880	79005	< 500.		MG/L	8/13/96		1,1,2-Trichloroethane
96DS151	96.02880	79016	88000.	26400.	MG/L	8/13/96		Trichloroethene
96DS151	96.02880	75694	< 500.		MG/L	8/13/96		Trichlorofluoromethane
96DS151	96.02880	96184	< 500.		MG/L	8/13/96		1,2,3-Trichloropropane
96DS151	96.02880	95636	< 500.		MG/L	8/13/96		1,2,4-Trimethylbenzene
96DS151	96.02880	108678	< 500.		MG/L	8/13/96		1,3,5-Trimethylbenzene
96DS151	96.02880	75014	< 1000.		MG/L	8/13/96		Vinyl chloride
96DS151	96.02880	1330207	< 500.		MG/L	8/13/96		Mixed-Xylenes (o ± m ± p)

Tentatively Identified Compounds in Customer Sample # 96.02880

none

REPORT NUMBER: 41257

********** EM-9 QUALITY ASSURANCE REPORT **********

EPA VOLATILES Prepared by: JA on 13-Aug-1996

REQUEST NUMBER: 23253 MATRIX: ML ANALYST: MICHAEL GUTTMAN PROGRAM CODE: M359 NOTEBOOK: B032707 PAGE:

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

SUMMARY OF CONTROL STATUS OF OPEN (NON-BLIND) QA SAMPLES RUN WITH THIS BATCH

There were no open (non-blind) Quality Control materials run with the samples reported above for one of the following reasons:

____ Only qualitative data requested

____ Only Blind QC samples run with this batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within CST

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLANK QC SAMPLES RUN WITH THIS BATCH

Blank Results, Sample # 96.02884 Date Collected: 4/10/96 Date Received: 4/10/96 Date Extracted: 7/12/96 Date Analyzed: 7/12/96

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30367	96.02884	67641	< 20.		UG/L	0.0		8/13/96	UNDER CONTROL	Acetone
00.30367	96.02884	71432	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	Benzene
00.30367	96.02884	108861	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	Bromobenzene
00.30367	96.02884	74975	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	Bromochloromethane
00.30367	96.02884	75274	5.	1.5	UG/L	0.0		8/13/96	UNDER CONTROL	Bromodichloromethane
00.30367	96.02884	75252	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	Bromoform
00.30367	96.02884	74839	< 10.		UG/L	0.0		8/13/96	UNDER CONTROL	Bromomethane
00.30367	96.02884	78933	< 20.		UG/L	0.0		8/13/96	UNDER CONTROL	2-Butanone
00.30367	96.02884	104518	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	n-Butylbenzene
00.30367	96.02884	135988	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	sec-Butylbenzene
00.30367	96.02884	98066	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	tert-Butylbenzene
00.30367	96.02884	75150	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	Carbon disulfide
00.30367	96.02884	56235	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	Carbon tetrachloride
00.30367	96.02884	108907	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	Chlorobenzene
00.30367	96.02884	124481	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	Chlorodibromomethane
00.30367	96.02884	75003	< 10.		UG/L	0.0		8/13/96	UNDER CONTROL	Chloroethane
00.30367	96.02884	67663	22.	6.6	UG/L	0.0		8/13/96	OUT OF CONTROL	Chloroform
00.30367	96.02884	74873	< 10.		UG/L	0.0		8/13/96	UNDER CONTROL	Chloromethane
00.30367	96.02884	95498	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	o-Chlorotoluene
00.30367	96.02884	106434	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	p-Chlorotoluene
00.30367	96.02884	96128	< 10.		UG/L	0.0		8/13/96	UNDER CONTROL	1,2-Dibromo-3-chloropropane

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30367	96.02884	74953	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	Dibromomethane
00.30367	96.02884	95501	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	o-Dichlorobenzene (1,2)
00.30367	96.02884	541731	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	m-Dichlorobenzene (1,3)
00.30367	96.02884	106467	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	p-Dichlorobenzene (1,4)
00.30367	96.02884	75718	< 10.		UG/L	0.0		8/13/96	UNDER CONTROL	Dichlorodifluoromethane
00.30367	96.02884	75343	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	1,1-Dichloroethane
00.30367	96.02884	107062	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	1,2-Dichloroethane
00.30367	96.02884	75354	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	1,1-Dichloroethene
00.30367	96.02884	156605	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	trans-1,2-Dichloroethene
00.30367	96.02884	156592	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	cis-1,2-Dichloroethylene
00.30367	96.02884	78875	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	1,2-Dichloropropane
00.30367	96.02884	142289	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	1,3-Dichloropropane
00.30367	96.02884	594207	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	2,2-Dichloropropane
00.30367	96.02884	563586	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	1,1-Dichloropropene
00.30367	96.02884	10061015	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	cis-1,3-Dichloropropene
00.30367	96.02884	10061026	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	trans-1,3-Dichloropropene
00.30367	96.02884	100414	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	Ethylbenzene
00.30367	96.02884	106934	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	Ethylene dibromide
00.30367	96.02884	591786	< 20.		UG/L	0.0		8/13/96	UNDER CONTROL	2-Hexanone
00.30367	96.02884	98828	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	Isopropylbenzene
00.30367	96.02884	99876	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	4-Isopropyltoluene
00.30367	96.02884	74884	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	Methyl iodide
00.30367	96.02884	108101	< 20.		UG/L	0.0		8/13/96	UNDER CONTROL	4-Methyl-2-pentanone
00.30367	96.02884	75092	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	Methylene chloride
00.30367	96.02884	103651	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	Propylbenzene
00.30367	96.02884	100425	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	Styrene
00.30367	96.02884	630206	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	1,1,1,2-Tetrachloroethane
00.30367	96.02884	79345	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	1,1,2,2-Tetrachloroethane
00.30367	96.02884	127184	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	Tetrachloroethylene
00.30367	96.02884	108883	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	Toluene
00.30367	96.02884	76131	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	1,1,2-Trichloro-1,2,2-trifluoroetha
00.30367	96.02884	71556	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	1,1,1-Trichloroethane
00.30367	96.02884	79005	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	1,1,2-Trichloroethane
00.30367	96.02884	79016	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	Trichloroethene
00.30367	96.02884	75694	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	Trichlorofluoromethane
00.30367	96.02884	96184	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	1,2,3-Trichloropropane

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30367	96.02884	95636	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	1,2,4-Trimethylbenzene
00.30367	96.02884	108678	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	1,3,5-Trimethylbenzene
00.30367	96.02884	75014	< 10.		UG/L	0.0		8/13/96	UNDER CONTROL	Vinyl chloride
00.30367	96.02884	1330207	< 5.		UG/L	0.0		8/13/96	UNDER CONTROL	Mixed-Xylenes (o ± m ± p)

Blank Spike Results: none

Blank Spike Duplicate Results: none

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLIND QA SAMPLES RUN WITH THIS BATCH

Blind QC Results, Sample # 96.02335 Date Collected: 4/10/96 Date Received: 4/10/96 Date Extracted: 7/12/96 Date Analyzed: 7/12/96

SAMPLE NUM	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND-NAME
96.02335	67641	22.	6.6	UG/L	0.0		4/11/96	OUT OF CONTROL	Acetone
96.02335	71432	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	Benzene
96.02335	108861	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	Bromobenzene
96.02335	74975	69.	20.7	UG/L	74.	3.9	4/11/96	UNDER CONTROL	Bromochloromethane
96.02335	75274	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	Bromodichloromethane
96.02335	75252	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	Bromoform
96.02335	74839	< 10.		UG/L	0.0		4/11/96	UNDER CONTROL	Bromomethane
96.02335	78933	< 20.		UG/L	0.0		4/11/96	UNDER CONTROL	2-Butanone
96.02335	104518	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	n-Butylbenzene
96.02335	135988	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	sec-Butylbenzene
96.02335	98066	25.	7.5	UG/L	41.	2.2	4/11/96	WARNING 2-3 SIG	tert-Butylbenzene
96.02335	75150	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	Carbon disulfide
96.02335	56235	58.	17.4	UG/L	88.	4.7	4/11/96	UNDER CONTROL	Carbon tetrachloride
96.02335	108907	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	Chlorobenzene
96.02335	124481	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	Chlorodibromomethane
96.02335	75003	< 10.		UG/L	0.0		4/11/96	UNDER CONTROL	Chloroethane
96.02335	67663	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	Chloroform
96.02335	74873	< 10.		UG/L	0.0		4/11/96	UNDER CONTROL	Chloromethane
96.02335	95498	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	o-Chlorotoluene
96.02335	106434	66.	19.8	UG/L	88.	4.7	4/11/96	UNDER CONTROL	p-Chlorotoluene
96.02335	96128	< 10.		UG/L	0.0		4/11/96	UNDER CONTROL	1,2-Dibromo-3-chloropropane
96.02335	74953	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	Dibromomethane
96.02335	95501	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	o-Dichlorobenzene (1,2)
96.02335	541731	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	m-Dichlorobenzene (1,3)
96.02335	106467	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	p-Dichlorobenzene (1,4)
96.02335	75718	< 10.		UG/L	0.0		4/11/96	UNDER CONTROL	Dichlorodifluoromethane

96.02335	75343	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	1,1-Dichloroethane
96.02335	107062	44.	13.2	UG/L	42.	2.2	4/11/96	UNDER CONTROL	1,2-Dichloroethane
96.02335	75354	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	1,1-Dichloroethene
96.02335	156605	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	trans-1,2-Dichloroethene
96.02335	156592	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	cis-1,2-Dichloroethylene
96.02335	78875	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	1,2-Dichloropropane
96.02335	142289	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	1,3-Dichloropropane
96.02335	594207	25.	7.5	UG/L	40.	2.1	4/11/96	UNDER CONTROL	2,2-Dichloropropane
96.02335	563586	65.	19.5	UG/L	89.	4.7	4/11/96	UNDER CONTROL	1,1-Dichloropropene
96.02335	10061015	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	cis-1,3-Dichloropropene
96.02335	10061026	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	trans-1,3-Dichloropropene
96.02335	100414	34.	10.2	UG/L	42.	2.2	4/11/96	UNDER CONTROL	Ethylbenzene
96.02335	106934	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	Ethylene dibromide
96.02335	591786	< 20.		UG/L	0.0		4/11/96	UNDER CONTROL	2-Hexanone
96.02335	98828	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	Isopropylbenzene
96.02335	99876	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	4-Isopropyltoluene
96.02335	74884	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	Methyl iodide
96.02335	108101	87.	26.1	UG/L	86.	4.5	4/11/96	UNDER CONTROL	4-Methyl-2-pentanone
96.02335	75092	40.	12.	UG/L	41.	2.2	4/11/96	UNDER CONTROL	Methylene chloride
96.02335	103651	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	Propylbenzene
96.02335	100425	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	Styrene
96.02335	630206	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	1,1,1,2-Tetrachloroethane
96.02335	79345	85.	25.5	UG/L	91.	4.8	4/11/96	UNDER CONTROL	1,1,2,2-Tetrachloroethane
96.02335	127184	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	Tetrachloroethylene
96.02335	108883	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	Toluene
96.02335	76131	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	1,1,2-Trichloro-1,2,2-trifluoroethane
96.02335	71556	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	1,1,1-Trichloroethane
96.02335	79005	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	1,1,2-Trichloroethane
96.02335	79016	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	Trichloroethene
96.02335	75694	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	Trichlorofluoromethane
96.02335	96184	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	1,2,3-Trichloropropane
96.02335	95636	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	1,2,4-Trimethylbenzene
96.02335	108678	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	1,3,5-Trimethylbenzene
96.02335	75014	< 10.		UG/L	0.0		4/11/96	UNDER CONTROL	Vinyl chloride
96.02335	1330207	< 5.		UG/L	0.0		4/11/96	UNDER CONTROL	Mixed-Xylenes (o ± m ± p)

********** EM-9 QUALITY ASSURANCE REPORT **********

SURROGATE RESULTS FOR EPA VOLATILES

Surrogate 1 = 1,2-Dichloroethane d4 (CAS # = 17060070)
Surrogate 2 = Toluene d8 (CAS # = 2037265)
Surrogate 3 = 4-Bromofluorobenzene (CAS # = 460004)
Surrogate 4 = 2-Chlorostyrene (CAS # = 2039874)
Surrogate 5 = Dibromofluoromethane (CAS # = 1868537)

SAMPLE NUMBER	UNITS	Surrogate 1	Surrogate 2	Surrogate 3	Surrogate 4	Surrogate 5	COMPLETION DATE	SAMPLE TYPE
96.02335	%	0.0	100.	97.		99.	11-Apr-1996	
96.02880	%	0.0	105.	109.		102.	13-Aug-1996	
96.02884	%	0.0	105.	108.		102.	13-Aug-1996	B
EPA Limits:								
Water	%	76 - 114	88 - 110	86 - 115	86 - 115	86 - 118		
Soil	%	70 - 121	81 - 117	74 - 121	74 - 121			

REPORT NUMBER: 41257

Analyst	Reviewer	Team Leader	QA Officer
8/15/96	8/15/96	08/15/96	8/15/96
Date	Date	Date	Date

No Sample Discrepancies Noted by Sample Management Section

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in 'Quality Assurance for Health and Environmental Chemistry: 1992,' LA-12790-MS, Vol. I, pp. 19-20

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REPORT NUMBER: 40267

********** CST ANALYTICAL REPORT **********

Prepared by: DLD on 16-Apr-1996

REQUEST NUMBER: 23254 MATRIX: ML ANALYST: JEFFREY ROBERTS PROGRAM CODE: M359

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792

NOTEBOOK: PAGE:

CUSTOMER SAMPLES:

CUSTOMER NUM	SAMPLE NUM	ANALYSIS	ANALYTICAL TECHNIQUE	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
96DS152	96.02881	AG	XRF	< 50.		PPM	4/11/96	
96DS152	96.02881	AS	XRF	< 4.		PPM	4/11/96	
96DS152	96.02881	BA	XRF	< 10.		PPM	4/11/96	
96DS152	96.02881	CA	XRF	0.013	0.0013	%	4/11/96	
96DS152	96.02881	CD	XRF	< 3.		PPM	4/11/96	
96DS152	96.02881	CR	XRF	< 12.		PPM	4/11/96	
96DS152	96.02881	CU	XRF	< 8.		PPM	4/11/96	
96DS152	96.02881	FE	XRF	0.006	0.0006	%	4/11/96	
96DS152	96.02881	HG	XRF	< 5.		PPM	4/11/96	
96DS152	96.02881	K	XRF	0.034	0.0034	%	4/11/96	
96DS152	96.02881	MN	XRF	< 16.		PPM	4/11/96	
96DS152	96.02881	NI	XRF	< 13.		PPM	4/11/96	
96DS152	96.02881	PB	XRF	< 7.		PPM	4/11/96	
96DS152	96.02881	SB	XRF	< 4.		PPM	4/11/96	
96DS152	96.02881	SE	XRF	< 4.		PPM	4/11/96	
96DS152	96.02881	TH	XRF	< 8.		PPM	4/11/96	
96DS152	96.02881	U	XRF	< 8.		PPM	4/11/96	
96DS152	96.02881	ZN	XRF	< 5.		PPM	4/11/96	

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********** CST QUALITY ASSURANCE REPORT *********

Prepared by: DLD on 16-Apr-1996

REQUEST NUMBER: 23254 MATRIX: ML ANALYST: JEFFREY ROBERTS PROGRAM CODE: M359

OWNER: Dustie L. Stephens GROUP: ESH-19 MAIL-STOP: K498 PHONE: 5-0792

NOTEBOOK: PAGE:

SUMMARY OF CONTROL STATUS OF OPEN (NON-BLIND) QC SAMPLES RUN WITH THIS BATCH

There were no open (non-blind) Quality Control materials run with the samples reported above for one of the following reasons

____ Only qualitative data requested

____ Only Blind QC samples run with this sample batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within CST

SUMMARY OF CONTROL STATUS OF BLIND QC SAMPLES RUN WITH THIS BATCH

There were no blind Quality Control materials run with the samples reported above for one of the following reasons:

____ Only qualitative data requested

____ Only Open (non-blind) QC samples run with this sample batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within CST

REPORT NUMBER: 40267				
	Analyst	Reviewer	Team Leader	QA Officer
	4/18/96	4/18/96	4/18/96	4/18/96
	Date	Date	Date	Date

No Sample Discrepancies Noted by Sample Management Section

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in 'Quality Assurance for Health and Environmental Chemistry: 1992,' LA-12790-MS, Vol. I, pp. 19-20.

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LABORATORY ANALYSES

SAMPLE SUBMITTED BY	Rick alexander		DATE: 4/2/96		
ORIGIN OF SAMPLE (S)					
GENERAL DESCRIPTION RANGE OF ACTIVITY					
DATE SAMPLE COLLECTED	4/2				
Test/Analysis	Result/Conc	By (Initials)	Test/Analysis	Result/Conc	By (Initials)
Gross α	4.3 ± .4	NC:lf			
β	210 ± 20	DC:lf			
γ	< 4	NC:lf			

REMARKS: 96-76211

APPROVED: TDF
Chief Chemist

DATE: 4/3/96

Lab Copy
H7-LAB-35

APPENDIX C

Swipe Sampling Results from the TA-50-37 Controlled Air Incinerator Closure

Table D-4. Controlled-Air Incinerator Swipe Sampling for Non-Metallic Analytes (units in µg/swipe).

Section	Location ID	CN	PCBs	bis (2-ethyl hexyl phthalate)	Acetone	Methylene Chloride	2-Butanone	Naphthalene	1,1,1,2 Tetrachloroethane	4-Methyl-2-Pentanone	Trans-1, 2-Dichloroethene	2-Hexanone	Carbon Disulfide	1,2,4-Trimethylbenzene	Hexachlorobutadiene	1,1,1-Trichloroethane
							SVOC[5]	VOCs[6]								
Glove Box	CAI-GB-1	0.6	ND	ND	7	4.8	5.9	ND	ND	ND	ND	ND	ND	ND	ND	ND
Glove Box	CAI-GB-2	ND	ND	ND	ND	3.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Glove Box	CAI-GB-3	1	ND	ND	ND	4.6	6.7	ND	ND	ND	ND	ND	ND	ND	ND	ND
Glove Box	CAI-GB-4	0.5	ND	ND	ND	4.9	ND	ND	ND	MD	ND	ND	ND	ND	ND	ND
Glove Box	CAI-GB-5	0.5	ND	ND	ND	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Absorb Tower	CAI-AT-1	ND	ND	ND	5.8	2.4	ND	ND	ND	ND	ND	ND	ND	0.9J	ND	ND
Absorb Tower	CAI-AT-2	ND	ND	ND	ND	4.1	ND	ND	ND	ND	ND	ND	ND	0.8J	ND	ND
Absorb Tower	CAI-AT-3	ND	ND	ND	ND	3.4	ND	ND	ND	ND	ND	ND	ND	0.9J	ND	ND
HEPA	CAI-HP-1	0.8	ND	ND	5.6	3.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HEPA	CAI-HP-2	ND	ND	181	6.7	4.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HEPA	CAI-HP-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HEPA	CAI-HP-4	ND	ND	ND	23	4.6	6.7	24	ND	ND	ND	ND	ND	ND	ND	ND
HEPA	CAI-HP-5[4]	ND	ND	ND	2.6	5.2	ND	2.3J	3.2J	ND	ND	ND	ND	ND	ND	ND
Solid Feed	CAI-SF-1	ND	ND	ND	10	ND	37	ND	ND	16	ND	ND	ND	ND	ND	ND
Solid Feed	CAI-SF-2	ND	ND	ND	5.9	ND	ND	ND	ND	2.9	ND	ND	ND	ND	ND	ND
Solid Feed	CAI-SF-3	ND	ND	25J	5.6	ND	9.1	ND	ND	4.6J	ND	ND	ND	ND	ND	ND
Solid Feed	CAI-SF-4[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Solid Feed	CAI-SF-5	NS	NS	NS	ND	20	4.6J	ND	ND	73	9.8	ND	3.1J	ND	ND	ND
Solid Feed	CAI-SF-6	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Solid Feed	CAI-SF-7[1]	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Activated Carbon	CAI-AC-1	ND	ND	94J	7.9	4.1	15	ND	ND	ND	ND	ND	ND	ND	ND	ND
Activated Carbon	CAI-AC-2	0.8	ND	33J	6.2	4.6	14	1.9J	ND	ND	ND	ND	ND	ND	ND	ND
Activated Carbon	CAI-AC-3	ND	ND	45J	8.1	4	5.2	ND	ND	ND	ND	ND	ND	ND	ND	ND
Quench Tower	CAI-QT-1	ND	ND	ND	ND	4	22	ND	ND	ND	ND	ND	ND	0.9J	ND	ND
Quench Tower	CAI-QT-2	ND	ND	ND	ND	3.5	ND	ND	ND	ND	ND	ND	ND	0.9J	ND	ND
Quench Tower	CAI-QT-3	0.6	ND	ND	ND	3.8	ND	ND	ND	ND	ND	ND	ND	0.8J	ND	ND
Exhaust	CAI-EX-1	ND	.32J	ND	5.7	7.4	5.5	ND	ND	ND	7.3	4.9J	ND	ND	ND	ND
Exhaust	CAI-EX-2	ND		ND	ND	13	ND	ND	ND	ND	12.7	ND	ND	ND	ND	ND
Exhaust	CAI-EX-3	ND	ND	ND	ND	8.4	ND	ND	ND	ND	8.4	ND	ND	ND	ND	ND
Liquid Feed	CAI-LF-1	ND	240	ND	ND	8	ND	ND	ND	ND	8.9	ND	ND	ND	ND	ND
Liquid Feed	CAI-LF-2	ND	.63J	ND	ND	5.1	ND	ND	ND	ND	5.1	ND	3.4	ND	ND	ND
Liquid Feed	CAI-LF-3	ND	1.1	ND	ND	5	10.2	ND	ND	ND	4.9J	ND	ND	ND	ND	ND
Liquid Feed	CAI-LF-4[1]	ND	ND	ND	ND	4.6	60.7	ND	ND	ND	4.5J	ND	ND	ND	ND	ND
Liquid Feed	CAI-LF-5[2]	ND	.57J	ND	ND	4.9	ND	ND	ND	ND	4.9J	ND	3.3	ND	ND	ND
Scrubber Tank	CAI-ST-1[3]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Scrubber Tank	CAI-ST-4[4]	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Scrubber Tank	CAI-ST-5[4]	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ash Removal	CAI-AR-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.3J	ND
Ash Removal	CAI-AR-2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ash Removal	CAI-AR-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ash Removal	CAI-AR-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ash Removal	CAI-AR-5	ND	ND	30J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.1J
Laboratory Detection Limit		0.5	1	100	5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		

Adapted from original table and data supplied by Los Alamos National Laboratory

NOTES:
1. Field Blanks
2. Duplicate of CAI-LF-2
3. H_2O Sample from Actual Tank
4. H_2O Blanks
5. All VOCs analyzed according to SW-846 Method 8260
6. All SVOCs analyzed according to SW-846 Method 8270

Table D-5. Controlled-Air Incinerator Swipe Sampling for Metallic Analytes (units in μg/swipe).

Section	Location ID	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Lead	Mercury	Nickel	Selenium	Silver	Thallium
		Metals[5]											
Glove Box	CAI-GB-1	12	0.25	190	0.05	0.03	68	2.9	0.01	41	0.25	0.01	0.4
Glove Box	CAI-GB-2	10	0.25	240	0.05	0.03	38	1.2	0.01	25	0.25	0.01	0.4
Glove Box	CAI-GB-3	11	0.25	210	0.05	0.1	29	1	0.01	21	0.25	0.01	0.4
Glove Box	CAI-GB-4	12	0.25	160	0.05	0.08	28	1.4	0.01	15	0.25	0.01	0.4
Glove Box	CAI-GB-5	10	0.25	180	0.05	0.03	13	0.91	0.01	10	0.25	0.01	0.4
Absorb Tower	CAI-AT-1	15	0.26	290	ND	0.44	9.3	3.7	0.018	22	ND	ND	ND
Absorb Tower	CAI-AT-2	13	0.31	270	ND	1.2	14	9.9	0.06	66	ND	0.12	ND
Absorb Tower	CAI-AT-3	10	0.13	180	ND	ND	16	1.1	0.028	59	ND	ND	ND
HEPA	CAI-HP-1	10	0.28	250	ND	0.11	31	2.5	0.69	34	ND	ND	ND
HEPA	CAI-HP-2	10	ND	160	ND	0.09	28	4	0.017	18	ND	0.16	ND
HEPA	CAI-HP-3	8.6	ND	270	ND	ND	24	0.52	ND	30	ND	ND	ND
HEPA	CAI-HP-4	8.1	ND	240	ND	0.06	9.4	1.1	0.025	7.5	ND	ND	ND
HEPA	CAI-HP-5[1]	11	ND	160	ND	ND	2.2	0.24	ND	0.64	ND	ND	ND
Solid Feed	CAI-SF-1	11	0.84	130	0.06	ND	250	3.4	0.06	59	ND[4]	ND	ND[4]
Solid Feed	CAI-SF-2	15	0.63	250	0.06	0.86	13	12	0.099	10	ND	ND	ND
Solid Feed	CAI-SF-3	25	0.91	270	0.06	0.49	31	60	0.1	17	ND[4]	ND	ND[4]
Solid Feed	CAI-SF-4[1]	10	0.13	250	0.06	ND	3.8	0.3	ND	4.6	ND	ND	ND
Solid Feed	CAI-SF-5[2]	13	ND	120	ND	ND	1.3	0.25	ND	0.26	ND	ND	ND
Solid Feed	CAI-SF-6												
Solid Feed	CAI-SF-7[1]												
Activated Carbon	CAI-AC-1	11	1.5	200	0.08	0.48	62	26	3.1	100	0.36	0.19	ND
Activated Carbon	CAI-AC-2	9.3	0.54	170	ND	0.14	31	7.3	5.2	38	ND	ND	ND
Activated Carbon	CAI-AC-3	9.5	0.27	170	ND	0.2	53	3.8	0.026	44	ND	ND	ND
Quench Tower	CAI-QT-1	13	ND	240	ND	0.24	7.9	2.6	0.015	25	ND	ND	ND
Quench Tower	CAI-QT-2	12	ND	260	ND	0.33	5.4	3.2	0.019	10	ND	ND	ND
Quench Tower	CAI-QT-3[3]	107	1.3	200	0.15	6.4	4.6	180	ND	2.9	ND	ND	ND
Exhaust	CAI-EX-1	11	0.34	110	ND	ND	13	2.3	ND	8.1	ND	ND	ND
Exhaust	CAI-EX-2	9.1	ND	130	ND	ND	1.5	0.59	ND	0.6	ND	ND	ND
Exhaust	CAI-EX-3	9	ND	110	ND	ND	1.4	0.51	ND	1.2	ND	ND	ND
Liquid Feed	CAI-LF-1	11	ND	100	ND	ND	0.59	0.25	ND	ND	ND	ND	ND
Liquid Feed	CAI-LF-2	12	ND	140	ND	ND	3.8	0.57	ND	2.1	ND	ND	ND
Liquid Feed	CAI-LF-3	11	ND	130	ND	0.06	2.3	0.77	ND	1	ND	ND	ND
Liquid Feed	CAI-LF-4[1]	10	ND	98	ND	ND	0.45	0.21	ND	ND	ND	ND	ND
Duplicate of LF-2	CAI-LF-5	13	ND	120	ND	ND	4.7	0.71	ND	2.8	ND	ND	ND
Ash Removal	CAI-AR-1	11.3	0.47	184	0.05	1.1	320	75.6	0.08	156	0.36	0.1	0.4
Ash Removal	CAI-AR-2	11.2	0.28	220	0.05	0.1	7.7	2	0.01	4.8	0.33	0.1	0.4
Ash Removal	CAI-AR-3	8.8	0.32	177	0.05	0.07	10.5	2.5	0.01	6.4	0.25	0.1	0.4
Ash Removal	CAI-AR-4	9.1	0.25	191	0.05	0.12	54	7.5	0.01	34	0.25	0.1	0.4
Ash Removal	CAI-AR-5	10.4	0.25	233	0.05	0.05	0.66	0.2	0.01	0.23	0.25	0.1	0.4
Laboratory Detection Limit		0.25	0.25	0.25	0.05	0.05	0.05	0.15	0.01	0.1	0.25	0.1	0.4

Adapted from original table and data supplied by Los Alamos National Laboratory

NOTES:
1. Field Blanks
2. DECON
3. Swipe of refractory at end of hot duct.
4. For these two samples, the detection limits were 10x higher than the reporting limits listed.
5. All analytes except Mercury analyzed by SW-846 Method 6010; Mercury analyzed by SW-846 Method 7470

July 29, 2002

Mr. Jack Ellvinger
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Project No. 819592

Task Order No.7
Contract No. 003CT0008-8L

Transmittal
Los Alamos National Laboratory Technical Area 50
Closure Plan for Container Storage Units TA-50-1, Room 59; TA-50-37; and TA-50-114

Dear Mr. Ellvinger:

Shaw Environmental & Infrastructure (Shaw E&I) is pleased to provide a final copy of the "Los Alamos National Laboratory Technical Area 50 Closure Plan for Container Storage Units TA-50-1, Room 59; TA-50-37; and TA-50-114" for signature. Upon receipt of signatures, a total of three copies will then be provided for submittal to the NMED. In addition, copies will be provided to the following:

Gene Turner (OLASO)
Beth Oshiem (OLASO Legal)
Ellen Louderbough (UC Legal)
Sean French (FWO-SWO)
Rick Alexander (FWO-RLW)
Loren Abercrombie (RRES-AT)
Johnny Harper (RRES-AT)
Luciana Vigil-Holterman (RRES-SWRC)
RRES Division Office

If you have any questions or require additional information on this submittal, please contact me at 661-5710.

Respectfully submitted,
Shaw E&I

Jennifer Griffin
Project Manager

Enclosures
cc: Central Files