Los Alamos
NATIONAL LABORATORY

Solid Waste Regulatory Compliance
P.O. Box 1663, Mail Stop K490
Los Alamos, New Mexico 87545
(505) 667-0666/Fax (505) 667-5224

Date: September 27, 2004
Refer To: RRES- SWRC:04-065

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

John Kieling
RCRA Permits Management Program
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

Subject: Transmittal of Los Alamos National Laboratory's (LANL) Resource Conservation and Recovery Act (RCRA) Permit Containing All Changes since 1995

Dear Mr. Kieling:

The purpose of this transmittal is to provide NMED a copy of the LANL, RCRA Hazardous Waste Facility Permit (LA-UR-04-6218) incorporating all permit modifications submitted by U.S. Department of Energy-National Nuclear Security Administration (DOE-NNSA)/University of California (UC) since 1995. This copy of the permit has been developed based upon LANL records. We undertook this task because it is critically important that we have an accurate and complete copy of the permit we must comply with and can be inspected against.

The enclosure is a copy of the permit containing colored editing marks that compile all of the permit modification packages that have been submitted to the NMED since 1995, excluding changes made to Module VIII of the permit. Module VIII, the Hazardous and Solid Waste Amendments portion of the permit, was not addressed in order to limit the scope of this document to operating units.

The changes included consist of NMED-approved permit modifications and other changes that have not been incorporated into the control copy of the permit. The version of the NMED control copy used to develop this submittal was received by LANL in February 1995. The permit changes fall into the following five categories: (1) Class 1*, 2 and 3 permit modifications approved by NMED; (2) Class 1 modifications that were self-implemented; (3) an approved change in a unit designation made pursuant to NMED's request as a change during interim status under Code of Federal Regulations, Title 40, § 270.42; (4) Class 1 modifications submitted for class determinations for which a determination was never received; and (5) removal of certain units that are no longer

used from the permit (*e.g.* the Controlled Air Incinerator) that have been closed pursuant to an NMED-approved closure plans.

DOE-NNSA/UC would like to have met with you and your staff in person to describe how this document was compiled. We are available to meet if there are any questions. Included herein are two hard copies and one electronic copy of the document. The electronic copy includes files containing editing marks as well as clean versions of the sections. If you have any comments or questions, need more copies of the document, or have a suggested meeting date regarding this document, please contact me at (505) 667-0633.

Sincerely,

Jack Ellvinger

Jack Ellvinger
Solid Waste Regulatory Compliance

JE:LVH:vc

Enc. a/s

Cy: w/out enclosure:
James Bearzi
Hazardous Waste Bureau
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IM-5, LANL, MS A150
RRES-SWRC File, K490

MODULE I STANDARD CONDITIONS

I.A. EFFECT OF PERMIT

The Permittee is allowed to treat and store on site hazardous waste in accordance with the conditions of this permit. Any treatment or storage of hazardous waste not authorized in this permit or conducted under interim status, as defined by the Resource Conservation and Recovery Act (RCRA), is prohibited. Compliance with this permit constitutes compliance, for purposes of enforcement, with the New Mexico Hazardous Waste Act (Section 74-4-1 et seq. NMSA 1978) and the New Mexico Hazardous Waste Management Regulations (HWMR-5, as amended 1989), Parts V, VII and IX only for those management practices specifically authorized by this permit. The Permittee is also required to comply with HWMR-5, Parts I, II, III and IV to the extent the requirements of those Parts are applicable. The Permittee must also comply with all applicable self-implementing provisions imposed by the Resource Conservation and Recovery Act statute and/or the HWMR-5, Part VIII. A complete RCRA permit consists of this permit and a US EPA permit issued under the provisions of the Hazardous and Solid Waste Amendments of 1984 (HSWA) which addresses the portion of the RCRA program for which the State is not authorized. Issuance of this permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. Compliance with the terms of this permit does not constitute a defense to any action brought under Sections 3008(a), 3008(h), 3013 or 7003 of RCRA; Sections 106(a), 104 or 107 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 USC 9601 et seq., commonly known as CERCLA); Sections 74-4-1 et seq. NMSA 1978, or any other law governing protection of public health or the environment.

I.B. PERMIT ACTIONS

This permit may be modified, revoked and reissued, or terminated for cause as specified in HWMR-5, as amended 1989, Part IX, Subpart B, included herein by reference. The filing of a request for a permit modification, revocation and reissuance, or termination, or the notification of planned changes or anticipated noncompliance on the part of the permittee, does not stay the applicability or enforceability of any permit condition. Review of any application for a permit renewal shall consider improvements in the state of control and measurement technology as well as changes in applicable regulations and laws.

I.C. SEVERABILITY

The provisions of this permit are severable. If any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

I.D. DUTIES AND REQUIREMENTS

1. Duty to Comply The Permittee shall comply, in accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.30(a), with all conditions of this permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit issued in accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.61. Any permit noncompliance by any Permittee employee or contractor, other than noncompliance authorized by an emergency

permit, constitutes a violation of the New Mexico Hazardous Waste Act and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or denial of a permit renewal application.

2. Duty to Reapply In accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.30(b), if the Permittee wishes to continue an activity allowed by this permit after the expiration date of this permit, the Permittee shall submit an administratively complete application for a new permit at least 180 calendar days before this permit expires. [HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.10(h)]

3. Permit Expiration Pursuant to HWMR-5 Part IX, 40 CFR 270.50, this permit shall be effective for the fixed term of ten years. As long as the state is the permit-issuing authority, this permit and all conditions herein will remain in effect beyond the permit's expiration date, if the Permittee has submitted a timely, complete application (see HWMR-5, Part IX, 40 CFR 270.10, 270.13 through 270.29) and, through no fault of the Permittee, the Secretary has not issued a new permit, as set forth in HWMR-5, Part IX, 40 CFR 270.51.

4. Need to Halt or Reduce Activity Not a Defense In accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.30(c), it shall not be a defense for the Permittee, in an enforcement action, that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

5. Duty to Mitigate In accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.30(d), the Permittee shall take all reasonable steps to minimize or correct any adverse impact on human health or the environment resulting from non-compliance with this permit.

6. Proper Operation and Maintenance In accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.30(e), the Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control and related appurtenances which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance include effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facility or similar systems only when necessary to achieve compliance with the conditions of this permit.

7. Duty to Provide Information In accordance with HWMR-5, as amended l 989, Part IX, 40 CFR Section 270.30(h), the Permittee shall furnish to the Secretary, within a reasonable time, any relevant information which he may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Secretary, upon request, copies of records required to be kept by this permit. [HWMR-5, as amended 1989, Part V, 40 CFR Section 264.74(a)]

a. Los Alamos National Laboratory must submit on a semi-annual basis, by January 31, and July 31, of each calendar year, a list of any changes in the following information:

1. Changes to State, County, Department of Energy (DOE), and LANL telephone numbers.

2. Changes in addresses for State, County, DOE, and LANL entities.

3. Changes in administrative nomenclature for position titles, organizations, and physical structures.

4. Changes in names of responsible parties (personnel).

5. Changes in the names of contractors.

6. Typographical errors in this permit.

7. Any modifications not covered by numbers 1 through 6 above must be submitted in writing for a class determination by NMED prior to incorporation in the permit.

8. Inspection and Entry In accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.30(i), the Permittee shall allow the Secretary or any authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

a. Enter at reasonable times upon the Permittee's premises where a regulated activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any unclassified records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facility, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit;

d. Sample or monitor, at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the New Mexico Hazardous Waste Act, any substances or parameters at any location; and

e. The Secretary recognizes that the Permittee operates in some cases under security restrictions imposed by the Atomic Energy Act (42 USC 2011 et seq.) and the regulations promulgated thereunder, and by other federal laws and regulations. Should conflict arise under this permit section, the Secretary and the Permittee shall cooperate in working with the appropriate Federal agency to obtain access approval. Nothing in this permit section shall be construed to deny access authorized by the Resource Conservation and Recovery Act.

9. Monitoring

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample of the waste to be analyzed must be an accepted and appropriate method such as described in Test Methods for Evaluating Solid Waste: Physical/Chemical Methods SW-846, 1986, as revised, or an equivalent method. Laboratory analytical methods must be those specified in SW-846, 1986 as revised; Standard Methods for the Examination of Water and Wastewater, Fifteenth edition, 1980 and 1981 Supplement, or current edition; or an equivalent method, as specified in the Waste Analysis Plan, Permit Attachment A.

b. The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports and records required by this permit, the certification required by HWMR-5, as amended 1989, Part V, 40 CFR 264.73(b)(9), and records of all data used to complete the application for this permit for a period of at least 3 years from the date of the sample, measurement, report, record, certification, or application. These periods may be extended by request of the Secretary at any time and are automatically extended during the course of any unresolved enforcement action regarding this facility. The Permittee shall maintain records from all ground-water monitoring wells and associated ground-water surface elevations for the active life of the facility. [HWMR-5, as amended 1989, Part V, 40 CFR 264.74(b) and 270.30(j)(2)]

c. Pursuant to HWMR-5, Part IX, 40 CFR 270.30(j)(3), records of monitoring information shall specify:

(i) The dates, exact place, and times of sampling or measurements;

(ii) The individuals who performed the sampling or measurements;

(iii) The dates analyses were performed;

(iv) The individuals who performed the analyses;

(v) The analytical techniques or methods used; and

(vi) The results of such analyses.

10. Notice of Planned Physical Facility Changes The Permittee shall give notice to the Secretary, as soon as possible, of any planned physical alterations or additions to the permitted facility which may impact any procedure or system of treatment, storage or control, or any related appurtenances, installed or used by the Permittee to achieve compliance with this permit. Physical alterations or additions shall include all hazardous waste activities and associated underground tanks. Construction of new units may not begin until a permit or permit modification has been issued.

11. Certification of Construction or Modification The Permittee may not commence incineration, treatment or storage of waste at the modified unit until:

    a. The Permittee has submitted to the Secretary, by certified mail or hand delivery, a letter signed by the Permittee and a registered professional engineer, stating that the unit has been constructed or modified in compliance with the permit; and

    b. (i) The Secretary or his designee has inspected the modified or newly constructed unit and finds it is in compliance with the conditions of the permit; or

    (ii) The Secretary, or his designee, has either waived the inspection or has not, within 15 calendar days, notified the Permittee of his intent to inspect.

12. Anticipated Noncompliance The Permittee shall give advance notice to the Secretary of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

13. Transfer of Permit This permit may be transferred to a new owner or operator pursuant to HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.40. Before transferring ownership or operation of the facility during its operating life, the Permittee shall notify the new owner or operator in writing of the requirements of HWMR-5, as amended 1989, Parts III, V and IX; and HSWA.

14. Compliance Schedules Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 calendar days following each schedule date.

15. Other Information Whenever the Permittee becomes aware that he failed to submit any relevant facts in the permit application, or submitted incorrect information in a permit application or in any report to the Secretary, the Permittee shall verbally notify the Secretary of such fact on the next work day and submit, within thirty calendar days, written correction of such facts or information. The term "Permit Application" includes any information submitted on solid waste management units.

I.E. SIGNATORY REQUIREMENTS

All reports or other information requested by the Secretary shall be signed and certified as required by HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.11.

I.F. CONFIDENTIAL INFORMATION

The Permittee may claim confidential, in accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.12 any information, required to be submitted by this permit.

I.G. DOCUMENTS TO BE MAINTAINED AT FACILITY

The Permittee shall maintain at the facility, until closure is completed and certified by an independent registered professional engineer, the following documents and amendments, revisions and modifications to these documents:

1. This permit and its attachments;

2. Waste Analysis Plan, as required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.13(b) and this permit;

3. Personnel training documents and records required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.16(a) and this permit;

4. Contingency Plan, as required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.53(a) and this permit;

5. Closure Plans required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.112(a) and this permit;

6. Operating record required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.73 and this permit; and

7. Inspection schedules required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.15 and this permit.

I.H. PERMIT CONSTRUCTION

1. Citing Whenever paragraphs of this permit or of the Hazardous Waste Management Regulations are cited, such cite includes all subordinate 40 CFR sections of the cited paragraph. When subordinate 40 CFR sections are cited, such cite includes all 40 CFR subsections of the cited subparagraph. All such cites shall be considered an inclusion by reference in accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.30.

2. Gender Whenever the pronoun "he" is used in reference to the Secretary of the New Mexico Environment Department or the Permittee, it is to be read as "she," in any instance where the object of the reference is female.

3. Definitions For purposes of this Permit, terms used herein shall have the same meaning as those in HWMR-5, Parts I, V, VIII, and IX, unless this permit specifically provides otherwise; where terms are not defined in the regulations or the permit, the meaning associated with such terms shall be defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term. "Regional Administrator" means the Regional Administrator of EPA Region VI, or his designee or authorized representative. "Secretary" means the Secretary of the New Mexico Environment Department, or his designee or authorized representative.

a. References to "Wastes" in this permit mean "Hazardous Wastes" as regulated under RCRA unless specifically designated otherwise at the time of use.

b. The term "Knowledge of Process" means a written description of the waste, certified as true and correct by an individual familiar with the process that generated the waste. Such description shall specify the waste constituents and estimate their concentration or quantity.

c. The term "On-site" as used in permit paragraph II.B.2. means facilities under the operational control of the Permittee and located within the external perimeter of the Permittee's property. This includes Technical Areas 0, 2, 3, 6, 8, 9, 11, 14, 15, 16, 18, 21, 22, 26, 33, 35, 36, 37, 39, 40, 41, 43, 46, 48, 49, 50, 51, 52, 53, 54, 55, 58, and 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, and 74. See permit Figure 2 and Table I-1 and Table II-3.

d. Technical Area Zero (TA-0), includes only the detached sites listed in Table I-1.

e. The term "Analysis" includes physical analysis, chemical analysis and knowledge of process determinations.

f. The term "Permittee" as used in this permit applies jointly and severably to the Owner, U. S. Department of Energy, and to the Operator, the University of California Regents, doing business as the Los Alamos National Laboratory.

TABLE I-1
TECHNICAL AREA ZERO GENERATION SITES

DESIGNATION	DESCRIPTION	ANTICIPATED WASTES
0-480	Pajarito School Engineering offices	D001, D002
0-1197	Mesa School Training offices/classrooms	Any training materials
0-1237	Pueblo Complex Environmental laboratory	Any sample or analysis reagents

NOTE: Except for those sites listed in Table II-3, no other sites are included in the on-site definition in permit paragraph I.H.3.c.

MODULE II GENERAL FACILITY CONDITIONS

II.A. DESIGN AND OPERATION OF THE FACILITY

The Permittee shall maintain and operate the facility to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release to air, soil, or surface water of hazardous waste constituents which could threaten human health or the environment.

II.B. REQUIRED NOTICE

1. Foreign Wastes This permit does not allow the Permittee to accept wastes from a foreign source. If the Permittee is to receive hazardous waste from a foreign source, he shall apply for and receive a permit modification in accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.41 or 270.42, if appropriate, prior to accepting such waste.

2. Off-Site Wastes This permit does not allow the Permittee to accept wastes from an off-site source. "Off-site source" refers to wastes generated by sources other than the Permittee or its contractor(s) operating on-site. For the purposes of this permit, wastes generated by the Permittee at Technical Area 57, the Fenton Hill site, and waste generated through investigation of Potential Release Sites (PRS) and/or Solid Waste Management Units (SWMU) listed in Table II-3 (at the end of Module II); or the waste generated through the restoration of the PRS/SWMU sites listed in Table II-3 may be accepted for storage or treatment if all such waste is properly manifested in accordance with permit paragraph II.J. below. Waste or contaminated residuals of waste associated with off-site treatment of those waste streams originally generated by the Permittee and subsequently managed or treated by the off-site facilities listed in Module II, Table 2-2, may be accepted for storage or treatment if all such waste is properly characterized and manifested in accordance with permit paragraph II.J. If the Permittee is to receive hazardous waste from an off-site source, other than those off-site sources listed in Table II-3 and Table 2-2, he shall apply for and receive a permit modification in accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.42, if appropriate, prior to accepting such waste.

II.C. WASTE ANALYSIS

1. Waste Analysis Plan The Permittee shall follow the procedures described in Permit Attachment A.

2. Quality Assurance The Permittee shall verify its waste analysis as part of a written quality assurance program. The quality assurance program shall be in accordance with current accepted practices such as specified in Test Methods for Evaluating Solid Waste:Physical/Chemical Methods SW-846, 1986, as revised, or equivalent methods approved by the Secretary; and at a minimum ensure that the Permittee maintains proper functional instruments, uses approved sampling and analytical methods, verifies the validity of sampling and analytical procedures, and performs correct calculations. The Permittee will notify any contract laboratory of the requirements of this section and permit.

3. Waste Segregation The Permittee shall keep available at each place where waste storage for more than ninety days occurs, a copy of EPA-600/2-80-076, A Method of Determining the Compatibility of Hazardous Waste.

4. Annual Verification The Permittee shall annually, by the anniversary date of each quarterly report, verify the accuracy and currency of the waste stream determination made in Permit Attachment I.

II.D. SECURITY

The Permittee shall comply with the security provisions of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.14.

II.E. INSPECTION REQUIREMENTS

1. Inspection Plan The Permittee shall follow Permit Attachment B and the inspection requirements in Modules III through VII. The Permittee shall remedy any deterioration or malfunction of equipment or structure discovered by an inspection as required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.15(c). Inspection log sheets may be revised by the Permittee and submitted to the Secretary for inclusion in this permit by permit modification in accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.42.

2. Facility Release Inspection

   a. The Permittee shall take surface water samples and analyze for metals, volatile and both acid- and base-neutral semivolatile organic hazardous waste constituents in accordance with Table II-2 annually at the sample locations in Table II-1. See Figure 9.

   b. The sampling and analysis shall be done using EPA-approved procedures as published in the latest issue of SW-846.

   c. Analysis of Variance (ANOVA) statistical procedures as promulgated in 53 FR 39720 (October 11, 1988) shall be used to compare data between up-gradient and down-gradient stations.

   d. Records of this inspection shall be kept in accordance with permit paragraph II.K.1.a. below. All analytical results will be recorded and reported. Reports shall be on the form provided in Figure 10.

   e. Reports of releases detected by this inspection shall be made in accordance with permit paragraph II.K.2.c. below.

   f. In the event water samples cannot be obtained at one or more sites, the attempt to obtain samples will be documented in the facility record and the Secretary notified in writing within 30 days of each unsuccessful attempt.

II.F. PERSONNEL TRAINING

The Permittee shall conduct personnel training as required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.16. This training program shall follow Permit Attachment C, which shall be updated by the Permittee whenever necessary so as to remain current and accurate. A dated copy of the revised training program will be submitted to the Secretary for the permit files and permit modification in accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.42 prior to its implementation. The Permittee shall maintain training documents and records, as required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.16(d) and (e).

II.G. REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE

The Permittee shall comply with the requirements of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.17.

II.H. PREPAREDNESS AND PREVENTION

1. Required Equipment At a minimum, the Permittee shall equip the facility with the equipment set forth in Permit Attachments B. and D.

2. Testing and Maintenance of Equipment The Permittee shall test and maintain the equipment specified in permit paragraph II.H.1. above annually or more often if necessary to assure its proper operation in time of emergency.

3. Access to Communications or Alarm System The Permittee shall maintain access to the communications or alarm system(s) as required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.34.

4. Required Aisle Space The Permittee shall maintain aisle space as required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.35. The minimum aisle shall be twenty four inches. All containers in storage shall be accessible for inspection.

II.I. CONTINGENCY PLAN

1. Implementation of Plan The Permittee shall immediately carry out the provisions of Permit Attachment D. whenever there is an unplanned fire, explosion, or unpermitted release of hazardous waste or hazardous constituents which threatens or could threaten human health or the environment.

2. Amendment of the Plan The Permittee shall review, as required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.54., and immediately amend if necessary, the Contingency Plan.

3. Copies of the Plan The Permittee shall comply with the requirements of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.53. A dated copy of any amended Contingency Plan will be submitted to the Secretary for the permit files and permit modification in accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.42 prior to its implementation.

4. Emergency Coordinator The Permittee shall comply with the requirements of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.55 concerning the emergency coordinator.

II.J. MANIFEST SYSTEM

The Permittee shall comply with the manifest requirements of HWMR-5, as amended 1989, Part V, 40 CFR Sections 264.71 and 264.72 for any hazardous wastes received from or shipped off-site by the Permittee for treatment, storage or disposal.

II.K.RECORD KEEPING AND REPORTING

1. Facility Operating Record The Facility Operating Record maintained pursuant to HWMR-5, as amended 1989, Part V, 40 CFR Section 264.73 shall be maintained in such manner that any information required to be in the record shall be readily available to an inspector. Readily available means that, upon request by an inspector, the Permittee can provide the requested information within 24 hours or before the end of the inspection, whichever is less; or upon a schedule designated by the inspector.

   a. In accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.30(j), the Permittee shall maintain at the facility until the end of the last closure period, a written record of waste and decontamination wash-water analyses. The following information shall be recorded:

      (i) The dates, exact place, and times of sampling or measurements;

      (ii) The individual who performed the sampling or measurements;

      (iii) The dates analyses were performed;

      (iv) The individuals or off-site laboratory who performed the analyses;

      (v) The analytical techniques or methods used; and

      (vi) The results of such analyses. The results shall include range, mean, standard deviation and detection limits as applicable to facilitate data analysis.

   b. The Permittee shall maintain pursuant to HWMR-5, as amended 1989, Part V, 40 CFR Section 264.73(b) at the facility until the end of the last closure period, a written record of waste disposal activities. Current EPA approved nomenclature and codes shall be used where appropriate. The following information shall be recorded:

      (i) Waste Source;

      (ii) Waste Description;

      (iii) Waste Quantity;

(iv) Current Storage Location; and

(v) Disposal. Properly completed hazardous waste manifests will suffice for wastes shipped off-site.

c. The Permittee shall maintain at the facility a written record of Contingency Plan implementation reports. The record shall contain at least the information required in permit paragraph II K.2.b. below. These records shall be kept until the end of the last closure period.

d. The Permittee shall keep at the facility a written record of all inspections conducted in accordance with Permit Attachment B. and permit paragraph II.E. above. These records shall be maintained for a minimum period of three years from the date of the inspection. Records of inspections leading to corrective action shall be retained for three years after the corrective action taken as a result of the inspection.

e. The Permittee shall keep at the facility training documents and records as required by HWMR-5, as amended 1989, Part V, 40 CFR Sections 264.16(d) and 264.1 6(e), and Permit Attachment C. Records of training shall be kept on all current employees and for three years after an employee leaves the facility owner's or operator's employ.

f. The Permittee shall maintain at the facility a copy of all biennial reports submitted in accordance with permit paragraph II.K.2. below. These copies shall be kept until the end of the last closure period.

g. The Permittee shall keep sufficient monitoring records and documentation to demonstrate compliance with this permit. Records unique to one activity may be kept in the vicinity of that activity, subject to the availability requirement in permit paragraph II.K.1. above.

h. In accordance with HWMR-5, as amended 1989, part V, 40 CFR Section 264.74(b), the retention period for all records required by this permit is extended automatically during the course of any unresolved enforcement action regarding the facility, or as directed by the Secretary.

2. <u>Reports</u>

a. The Permittee shall comply with the Biennial Report requirements of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.75.

b. In accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.30(l)(6), the Permittee shall report to the Secretary any noncompliance with the permit which may endanger human health or the environment. Any such information shall be reported orally within 24 hours from the time the Permittee becomes aware of the circumstances. This report shall include the following:

(i) Information concerning the release of any hazardous waste which may endanger public or private drinking water supplies.

(ii) Information concerning the release or discharge of any hazardous waste, or of a fire or explosion at the facility, which could threaten the environment or human health. The description of the occurrence and its cause shall include:

(a) Name, address, and telephone number of the owner or operator;

(b) Name, address, and telephone number of the facility;

(c) Date, time, and type of incident;

(d) Name and quantity of materials involved;

(e) The extent of injuries, if any;

(f) An assessment of actual or potential hazard to the environment and human health outside the facility, where this is applicable; and

(g) Estimated quantity and disposition of recovered material that resulted from the incident.

The 24-hour report shall be made by calling (505) 827-4358 during normal duty hours or (505) 827-9329, the 24-hour emergency line.

c. The Permittee shall provide to the Secretary within five (5) working days of the time the Permittee becomes aware of the circumstances, a written report on the event(s) reported orally in permit paragraph II.K.2.b. above. The written submission shall contain a description of the noncompliance and its cause; the periods of noncompliance, including exact dates and times; whether the noncompliance has been corrected; and if not, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Permittee need not comply with the five-day written notice requirement if the Secretary waives the requirement and the Permittee submits a written report within fifteen (15) calendar days

of the time the Permittee becomes aware of the circumstances. The written report shall be submitted by certified mail to:

Secretary
New Mexico Environment Department
1190 St. Francis Drive, P.O.Box 26110
Harold Runnels Building
Santa Fe, NM 87503

d. In accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.30(l)(10), the Permittee shall report all other instances of noncompliance, not otherwise required to be reported above, in the annual Environmental Surveillance Report. The reports shall contain the information listed in permit paragraph II.K.2.b. above.

II.L. CLOSURE

The provisions of this permit section apply to individual units for partial closure of the facility, as well as total closure of the entire facility. Closure of one unit may or may not affect the remaining units. The impact of such sequential or partial closure may depend on the sequence and circumstances in existence at the time of closure. The Secretary may direct or the Permittee may request appropriate revisions to the closure plan at that time.

1. Performance Standard The Permittee shall close the facility as required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.111 and in accordance with each closure plan, Permit Attachment E.

2. Amendment of Closure Plans The Permittee shall amend each closure plan in accordance with HWMR-5 as amended 1989, Part V, 40 CFR Section 264.112(c) whenever necessary.

3. Notification of Closure The Permittee shall notify the Secretary at least 60 days prior to the date he expects to begin closure under any Permit Attachment E. closure plan.

4. Time Allowed For Closure After receiving the final volume of hazardous waste, the Permittee shall treat or remove from site all hazardous waste in accordance with the schedule specified in the closure plan. After receiving the final volume of hazardous waste, the Permittee shall complete closure activities in accordance with the schedule specified in the closure plan.

5. Disposal or Decontamination of Equipment The Permittee shall properly dispose of or decontaminate all facility equipment, structures, and soils, as required by the closure plan.

6. Certification of Closure The Permittee shall certify that the facility has been closed in accordance with the specifications in the closure plan.

II.M. MOVEMENT RESTRICTION

The Permittee shall not transport bulk liquid hazardous wastes in quantities per container in excess of 110 gallons over public roads between the hours of 7:00 AM to 8:30 AM, 12:15 PM to 1:30 PM or 4:00 PM to 5:45 PM on normal duty days. Off-site transportation under U.S. Department of Transportation regulations by EPA-registered transporters is not subject to this restriction. On-site transportation of waste~~s~~ generated as a result of an emergency cleanup in accordance with Permit Attachment D are not subject to this restriction.

II.N. Spills

The Permittee shall take corrective action, as required by Section 74-4-4.2B NMSA 1978, (as amended 1989), for all releases of hazardous wastes or constituents from any solid waste management unit at his facility. Corrective action may include, but shall not be limited to, the following: decontamination and/or removal of all releases, spills and leaks; immediate cleanup of release or spillage of hazardous wastes, or constituent residue or listed chemicals which become wastes; prevention of surface-water or ground-water contamination which could result from a release or spill; and, cleanup of any surface-water or ground-water contamination which results from a release or spill.

TABLE II-1

ENVIRONMENTAL MONITORING LOCATIONS

STATION	N-S Coordinate (LANL Grid)	E-W Coordinate (LANL Grid)	Map No.
Los Alamos Reservoir	N105	W090	7
Frijoles	S280	E180	9
Canada del Buey	N010	E150	46
Water Canyon at Beta	S090	E090	48
Acid Weir	N125	E070	49
Pueblo - 2	N120	E155	51
Pueblo - 3	N085	E315	53
DPS - 1	N090	E160	57
SCS - 2	N060	E140	66
Pajarito Stream	S180	E140	35
Ancho Stream	S295	E340	36
Frijoles Stream	S365	E235	37
Pajarito Canyon (PCO-3)	S098	E293	104
LAO-4.5	N065	E270	64
MCO-3	N040	E110	69
MCO-8	N030	E190	74
Basalt Spring	N065	E395	56

TABLE II-2

SAMPLING PARAMETERS

TOTAL METALS	ORGANICS	OTHER
Arsenic	Halogenated volatile organics	Cyanide
Barium	Nonhalogenated volatile organics	pH
Cadmium	Acid-extractable semivolatile	
Chromium	organics Base-neutral extractable	
Lead	semivolatile organics Phenols	
Mercury		
Selenium		
Silver		
Nickel		
Beryllium		
Copper		
Zinc		
Iron		

All methods are as published in US EPA SW-846, 3rd Edition or later.

If any metal's total concentration exceeds that metal's standard for Toxicity Characteristic Leachate Procedure (TCLP) toxicity , a determination of the TCLP toxicity concentration for that metal will be performed. Both data will be recorded and reported.

TABLE II-3

List of Off-Site Potential Release Site (PRS) and/or Off-Site Solid Waste Management Units (SWMU) that may have Investigative Derived Waste (IDW) or Remediation Waste (RW) brought on to Los Alamos National Laboratory.

PRS/SWMU Number	Technical Area	Operational Unit	Unit Type
00-003	0	1071	Container Storage
00-005	0	1071	Landfill
00-011(a)	0	1071	Mortar Impact Area
00-011(c)	0	1071	Mortar Impact Area
00-011(d)	0	1071	Mortar Impact Area
00-011(e)	0	1071	Mortar Impact Area
00-012	0	1071	Underground Storage Tank
00-016	0	1071	Firing Range
00-017	0	1071	Waste Lines
00-018(a)	0	1071	Pueblo Waste Water Treatment Plant
00-019	0	1071	Waste Water Treatment Plant
00-028(a)	0	1071	Effluent Discharge
00-028(b)	0	1071	Effluent Discharge
00-030(a)	0	1071	Septic System
00-030(b)	0	1071	Septic System (6th St.)
00-030(g)	0	1071	Septic System
00-030(l)	0	1071	Septic System
00-030(m)	0	1071	Septic System
00-033	0	1071	Warehouse
00-039	0	1071	Underground Storage Tank
01-001(a)	01	1078	Septic System

Table II-3
(Continued)

PRS/SWMU Number	Technical Area	Operational Unit	Unit Type
01-001(b)	01	1078	Septic System
01-001(c)	01	1078	Septic System
01-001(d)	01	1078	Septic System
01-001(e)	01	1078	Septic System
01-001(f)	01	1078	Septic System
01-001(g)	01	1078	Septic System
01-001(h)	01	1078	Septic System
01-001(i)	01	1078	Septic System
01-001(j)	01	1078	Septic System
01-001(k)	01	1078	Septic System
01-001(l)	01	1078	Septic System
01-001(m)	01	1078	Septic System
01-001(n)	01	1078	Septic Tank #276
01-001(o)	01	1078	Ind. or Sm Waste Water Treatment
01-001(s)	01	1078	Septic System
01-001(t)	01	1078	Septic System
01-001(u)	01	1078	Septic System
01-002	45	1079	Outfall TA-01
01-003(a)	01	1078	Landfill
01-003(d)	01	1078	Surface Disposal Site
01-003(e)	01	1078	Surface Disposal Site
01-006(a)	01	1078	Drain, Liner and Outfall
01-006(b)	01	1078	Drain, Liner and Outfall
01-006(c)	01	1078	Drain, Liner and Outfall
01-006(d)	01	1078	Drain, Liner and Outfall

Table II-3
(Continued)

PRS/SWMU Number	Technical Area	Operational Unit	Unit Type
01-006(h)	01	1078	Drain, Liner and Outfall
01-006(n)	01	1078	Drain, Liner and Outfall
01-006(o)	01	1078	Drain, Liner and Outfall
01-007(a)	01	1078	Soil Contamination Area
01-007(b)	01	1078	Soil Contamination Area
01-007(c)	01	1078	Soil Contamination Area
01-007(d)	01	1078	Soil Contamination Area
01-007(e)	01	1078	Soil Contamination Area
01-007(j)	01	1078	Soil Contamination Area
01-007(l)	01	1078	Soil Contamination Area
10-001(a)	10	1079	Firing Site
10-001(b)	10	1079	Firing Site
10-001(c)	10	1079	Firing Site
10-001(d)	10	1079	Firing Site
10-002(a)	10	1079	Disposal Pit
10-002(b)	10	1079	Disposal Pit
10-003(c)	10	1079	Disposal Pit
10-003(d)	10	1079	Disposal Pit
10-003(e)	10	1079	Disposal Pit
10-003(f)	10	1079	Disposal Pit
10-003(g)	10	1079	Manholes
10-003(h)	10	1079	Manholes
10-003(i)	10	1079	Septic Tank
10-003(j)	10	1079	Tank
10-003(k)	10	1079	Tank

Table II-3
(Continued)

PRS/SWMU Number	Technical Area	Operational Unit	Unit Type
10-003(l)	10	1079	Tank
10-003(m)	10	1079	Waste Line
10-003(n)	10	1079	Leach Field
10-003(o)	10	1079	Leach Field
10-004(a)	10	1079	Septic System
10-004(b)	10	1079	Septic System
10-005	10	1079	Surface Disposal Area
10-007	10	1079	Landfill
19-001	19	1071	Septic System
19-002	19	1071	Septic System
19-003	19	1071	Septic System
31-001	31	1079	Septic System
32-001	32	079	Incinerator
32-002(a)	32	1079	Septic System
32-002(b)	32	1079	Septic System
45-001	45	1079	Waste Water Treatment Facility
45-002	45	1079	Vehicle Decontamination Area
45-003	45	1079	Waste Line
45-004	45	1079	Sanitary Sewer Outfall
73-001(a)	73	1071	Landfill
73-001(b)	73	1071	Surface Disposal Area
73-001(c)	73	1071	Landfill
73-001(d)	73	1071	Landfill
73-002	73	1071	Incinerator and Surface Disposal Area

Table II-3
(Continued)

PRS/SWMU Number	Technical Area	Operational Unit	Unit Type
73-004(a)	73	1071	Septic System
73-004(b)	73	1071	Septic System
73-004(c)	73	1071	Septic System
73-005	73	1071	Septic System
73-006	73	1071	Industrial or Sanitary Waste Water Treatment\Facility

MODULE II
TABLE 2-2

List of Off-Site Waste Management Facilities that may return treatment derived waste or waste residuals to Los Alamos National Laboratory.

Off-Site Facility	**E.P.A. Identification Number**
Argonne National Laboratory, Argonne, IL	IL38900089
Catholic University, Washington, D.C.	DCD980204879
Consolidated Incineration Facility, Savannah River Site, SC	SC1890008989
Diversified Scientific Services, Inc., Kingston, TN	TND982109142
Envirocare, Clive, UT	UTI982598898
Waste Experimental Reduction Facility, Idaho National Engineering Laboratory, Idaho Falls, ID	ID4890008952
M4 Environmental Management, Inc., Oak Ridge, TN	RD&D Permit
EG&G Mound Applied Technologies, Miamisburg, OH	OH6890008984
Nuclear Fuel Services, Erwin, TN	TND003095635
Nuclear Sources & Services, Inc., Houston, TX	TXD982560294
Toxic Substance Control Act Incinerator, Oak Ridge National Laboratory, Oak Ridge, TN	TN0890090004
International Technology Corporation, Technology Center, Knoxville, TN	TND000770479
International Technology Corporation, Biotech Applications Center, Knoxville, TN	TND987782521
International Technology Corporation, Environmental Technology Development Center, Oak Ridge, TN	TND981933120
Perma-Fix, Albuquerque, NM	NM0000182121
Perma-Fix, Gainesville, FL	FLG980711071

MODULE III STORAGE IN CONTAINERS

III.A. DESIGNATED STORAGE UNITS

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

   a. Containers containing free liquids may be stored on the concrete containment structure, Facility Number 54-32 and 54-58.

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

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

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

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

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

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

a.

b. Building 50-37. Containers may be stored within storage room 115, 117, and 118 of the of TA-50-37 as shown in Figure 4.

c. Containers containing free liquids may be stored in the modular storage buildings, 0Model 22 or equivalent, Facility Number 50-114.

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

   a.

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

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

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

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

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

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

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

   a. Mixed waste containers potentially containing free liquids may be stored at TA-54-230. See Figure 11.

   b. Mixed waste containers not containing free liquids may be stored at TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, and on Storage Pad 10. See Figure 11.

   c. All mixed waste containers stored at TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, and on Storage Pad 10 will be placed on pallets or otherwise elevated four inches.

Palletized 55-gallon containers may be stored in groups of four and stacked three high. Palletized overpack containers may be stacked two high. Large containers (80-, 83-, 85-, and 99-gallon drums) will also be stored on pallets but will not be stacked. Fiberglass-reinforced plywood (FRP) boxes may be stacked two high, at a maximum.

III.B. AUTHORIZED WASTES

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

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

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

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

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

   c. Hazardous wastes meeting the treatment standards in 20 NMAC 4.1, Subpart VIII, 268.41, 268.42, 268.43, revised November 1, 1995, are not subject to the storage prohibition. Hazardous wastes meeting the treatment standards specified under the variance in 20 NMAC 4.1, Subpart VIII, 268.44, revised November 1, 1995, are not subject to the storage prohibition.

III.C. CONTAINERS

1. Capacity

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

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

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

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

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

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

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

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

b. No more than 17,220 gallons of liquid shall be stored at each concrete containment structure: facility Number 54-32.

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

d. No more than 3,630 gallons of liquid shall be stored in Building 50-37, Rooms 115, 117, and 118 combined.

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

g.

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

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

g. No more than 970,000 gallons of waste shall be stored at TA-54-226. No more than 790,000 gallons of waste shall be stored at each of the following locations: TA-54-229, TA-54-230, TA-54-231, and TA-54-232. Of the 790,000-gallon total that may be stored in TA-54-230, no more than 93,995 gallons shall be potential liquid-bearing waste. No more than 970,000 gallons of waste shall be stored at TA-54, Area G, Pad 10.

4. Condition

a. If a container holding hazardous or mixed waste is not in good condition (e.g. severe rusting, structural defects) or if it begins to leak, the Permittee shall transfer the hazardous or mixed waste from such container to a container that is in good condition or otherwise manage the waste in compliance with the conditions of this permit.

b. The Permittee may use overpack containers of more than 55-gallon capacity to manage defective waste storage containers. Each overpacked container shall be recorded in the facility record.

5. Compatibility of Waste with Containers

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

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

6. Management The Permittee shall manage containers as required by 20 NMAC 4.1, Subpart V, 264.173, revised November 1, 1995, and Permit Attachment F.

III.D. CONTAINMENT

The Permittee shall construct and maintain the containment systems for each storage unit in permit paragraphs III.A. above in accordance with the requirements of 20 NMAC 4.1, Subpart V, 264.175, revised November 1, 1995.

III.E. IGNITABLE OR REACTIVE WASTES

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

III.F. INCOMPATIBLE WASTES

The Permittee shall manage incompatible wastes or incompatible wastes and materials in accordance with the requirements of 20 NMAC 4.1, Subpart V, 264.177, revised November 1, 1995.

III.G. CLOSURE

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

III.H. INSPECTION

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

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

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

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

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

    c. Signs shall be in both English and Spanish.

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

MODULE IV TREATMENT IN TANKS

IV.A. DESIGNATED TREATMENT UNITS

The Permittee may treat hazardous wastes only in the tanks described in this module. No other treatment of hazardous wastes, EPA code T01, is permitted anywhere on the facility. Treatment of wastes subject to the exclusions of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.1(g) shall be documented in accordance with Permit Attachment I. A record or listing of all facility treatment units shall be kept by the Permittee. Their regulatory status and the reasons for claiming an exclusion under HWMR-5, as amended 1989, Part V, 40 CFR Section 264.1(g) shall be recorded. Laboratory staff neutralizing characteristic wastes in quantities of less than one liter need not be recorded if the resultant discharge is to a wastewater system subject to other regulation.

1. Technical Area 54 Area L Wastes may be treated in the two open-top steel tanks located in Area L.

IV.B. AUTHORIZED WASTES

1. Identification Only wastes identified in Permit Attachment G. with the process code "T01," in Column D.1. "Processes" shall be treated, subject to the limitations in permit paragraph IV.B.4. below.

2. Quantities The quantity of waste awaiting treatment shall not exceed the quantity indicated in Permit Attachment G. Column B. "Estimated Annual Quantity of Waste".

3. Additions to the List of Treated Wastes The Permittee shall apply for a permit modification in accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Sections 270.41 or 270.42 before treating wastes not identified in this permit module.

4. Special Limitation The limitations in Permit Attachment G, Column D.2. shall apply to choice of treatment unit.

5. Land Ban The Permittee must also comply with the following regarding storage of its wastes in tanks which are prohibited from land disposal. These restrictions are imposed on any waste as it becomes prohibited from land disposal. (HWMR-5, as amended 1989, Part VIII, 40 CFR Section 268.50)

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

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

c. Hazardous wastes meeting the treatment standards in HWMR-5, as amended 1989, Part VIII, 40 CFR Sections 268.41, 268.42, 268.43 are not subject to the storage prohibition. Hazardous wastes meeting the treatment standards specified under the variance in HWMR-5, Part VIII, 40 CFR Section 268.44 are not subject to the storage prohibition.

IV.C. DESIGN OF TANKS

1. Technical Area 54, Area L Treatment Tanks The tanks shall be nine feet in diameter and three feet six inches high. They shall be constructed of ten gauge carbon steel and shall be coated inside and out with Carboline Phenoline (@) film or equivalent. The tanks shall be on a containment slab constructed with six inch retaining curbs as in Figure 7.

IV.D. OPERATING REQUIREMENTS

1. Technical Area 54, Area L

a. The tanks shall maintain a minimum of six inches of freeboard at all times. The tanks shall not be left unattended when filling or addition of any material is in process.

b. Wastes in the tanks will be sampled before and after treatment and analyzed in accordance with Permit Attachment A.

c. Tanks containing hazardous wastes will be covered whenever significant precipitation is imminent or falling. Significant precipitation is one-half inch water equivalent.

d. Incompatible wastes shall not be treated in the tanks.

IV.E. INSPECTIONS

The Permittee shall inspect the treatment tanks in accordance with Permit Attachment B. and the requirements below.

1. Technical Area 54, Area L

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

b. In accordance with HWMR-5, as amended 1989, Part V, 40 CFR Section 264.193(c)(4), accumulated liquids discovered in secondary containment structures shall be removed within 24 hours of discovery. In the event inclement weather prevents such removal, the circumstances shall be documented in the facility record and the removal effected not later than the next duty day after the weather allows.

c. Cracks and/or gaps in secondary containment structures discovered during an inspection will be repaired within seven calendar days of discovery. Cracks determined to be minor and not adversely affecting containment integrity, shall be

logged and delay of repairs justified. Repair of minor cracks may be deferred until regularly scheduled maintenance.

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

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

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

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

   d. Signs shall be in English and Spanish.

IV.F. RESPONSE TO LEAKS OR SPILLS

The Permittee shall follow the requirements of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.196 in response to a leak or spill.

IV.G. CERTIFICATION OF REPAIRS

All major repairs to any tank or associated plumbing shall be certified in accordance with HWMR-5, as amended 1989, Part V, 40 CFR Section 264.196(f) prior to being placed back in service.

IV.H. CLOSURE

The Permittee shall close the tanks in accordance with Permit Attachment E, permit paragraph II.L. above and this permit module.

1. Technical Area 54 Area L

   a. At closure, all hazardous waste residues shall be removed from the tanks and the containment structure in accordance with HWMR-5, as amended 1989, Part V, 40 CFR Section 264.197(a).

   b. Any component not decontaminated shall be disposed of as hazardous waste in accordance with HWMR-5, as amended 1989, Part V, 40 CFR Section 264.197(a).

MODULE VI STORAGE IN TANKS

VI.A. DESIGNATED STORAGE UNITS

The Permittee may store for more than ninety days hazardous wastes in tanks only in Technical Area 54, Area L.

VI.B. AUTHORIZED WASTES

1. Identification Only hazardous wastes identified in Permit Attachment G. with the process code "S02" in column D.1. "Processes" shall be stored.

2. Quantities No more than 5,720 gallons of liquid waste shall be stored at any one time.

VI.C. TANK DESCRIPTION

1. Capacity The tanks shall be nine feet in diameter and three feet six inches high, holding approximately 1660 gallons.

2. Type They shall be constructed of ten-gauge carbon steel and shall be coated inside and out with Carboline Phenoline (@) film or equivalent.

3. Quantity No more than four tanks shall be used for storage.

4. Condition If a tank holding hazardous waste is not in good condition (e.g. severe rusting, structural defects) or if it begins to leak, the Permittee shall transfer the hazardous waste from such tank to a tank or container that is in good condition or otherwise manage the waste in compliance with the conditions of this permit.

5. Compatibility of Waste with Tanks The Permittee shall assure, as required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.199, that the ability of the tank to contain the waste is not impaired.

VI.D. CONTAINMENT

The Permittee shall construct and maintain the secondary containment systems for the tank storage unit in accordance with the requirements of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.193.

VI.E. IGNITABLE OR REACTIVE WASTE

The Permittee shall not locate tanks holding ignitable or reactive waste within 15 meters (50 feet) of the facility property line. The provisions of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.198 will be followed.

VI.F. INCOMPATIBLE WASTES

The Permittee shall manage incompatible wastes or incompatible wastes and materials in accordance with the requirements of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.199.

VI.G. CLOSURE

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

VI.H. INSPECTION

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

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

3. Accumulated Liquids In accordance with HWMR-5, as amended 1989, Part V, 40 CFR Section 264.193(c)(4), accumulated liquids discovered in secondary containment structures shall be removed within 24 hours of discovery. In the event inclement weather prevents such removal, the circumstances shall be documented in the facility record and the removal effected not later than the next duty day after the weather allows.

4. Repairs to Secondary Containment Structure Cracks and/or gaps in secondary containment structures discovered during an inspection will be repaired within seven calendar days of discovery. Cracks determined to be minor and not adversely affecting containment integrity, shall be logged and delay of repairs justified. Repair of minor cracks may be deferred until regularly scheduled maintenance.

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

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

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

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

    d. Signs shall be in English and Spanish.

6. Freeboard The tanks shall maintain a minimum of six inches of freeboard at all times.

VI.I. RESPONSE TO LEAKS OR SPILLS

The Permittee shall follow the requirements of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.196 in response to a leak or spill.

VI.J. CERTIFICATION OF REPAIRS

All major repairs to any tank or associated plumbing shall be certified in accordance with HWMR-5, as amended 1989, Part V, 40 CFR Section 264.196(f) prior to being placed back in service.

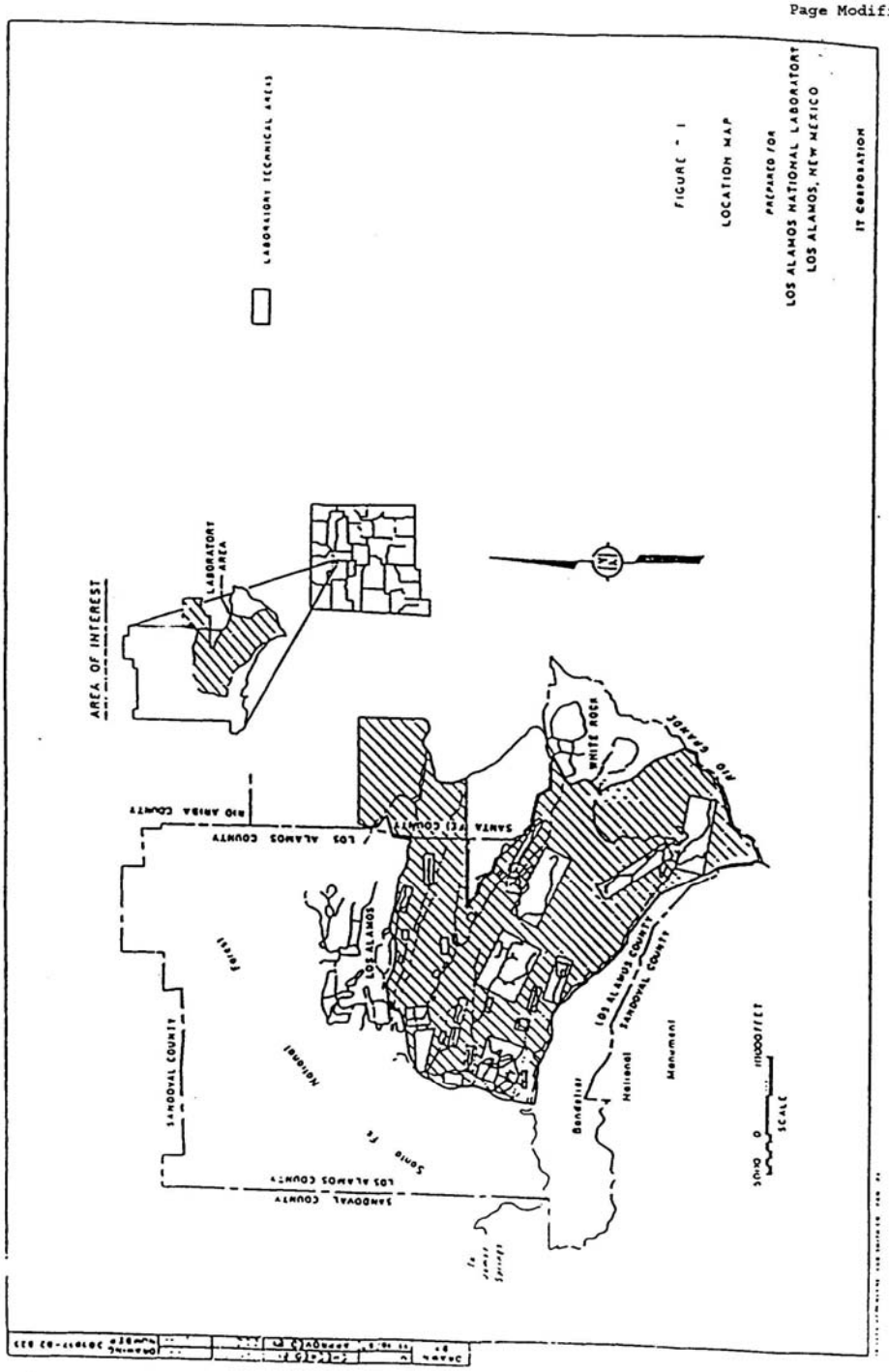
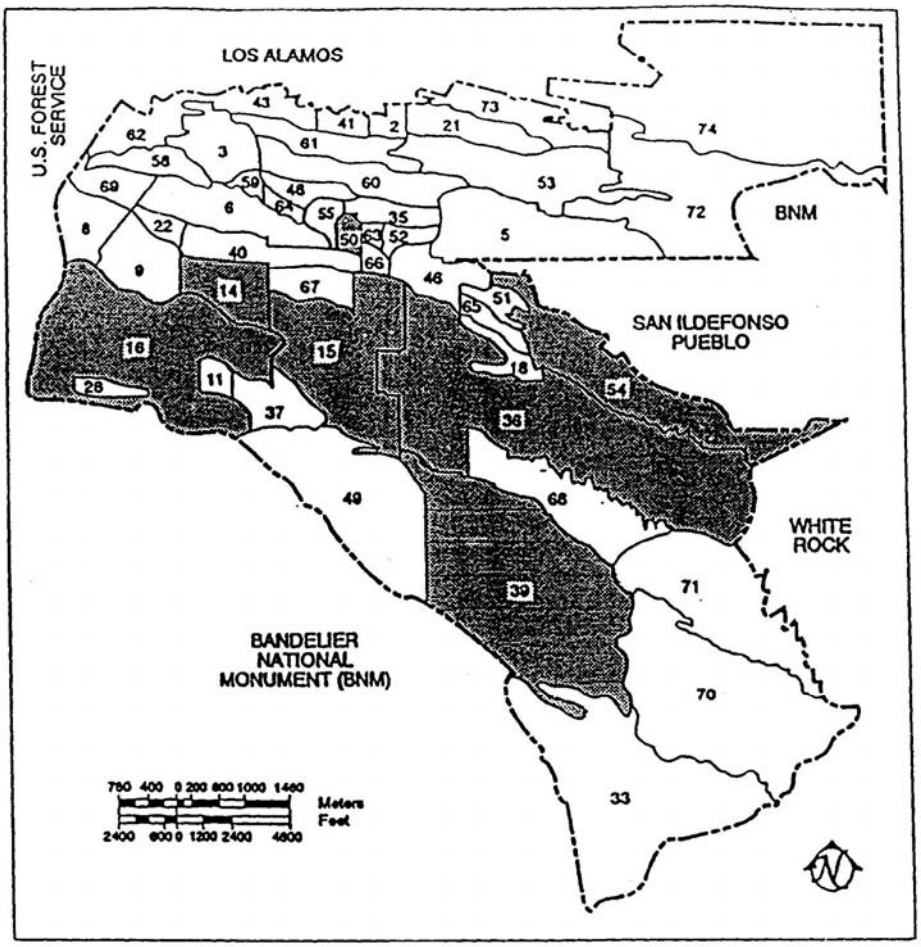


FIGURE 1

Vicinity Map

301215.01.09 A16



SHADING INDICATES TECHNICAL AREAS IN WHICH WASTE MANAGEMENT UNITS ARE LOCATED

FIGURE 2

LOS ALAMOS
TECHNICAL AREAS

PREPARED FOR

LOS ALAMOS
NATIONAL LABORATORY
LOS ALAMOS, NEW MEXICO
IT CORPORATION

FIGURE 2

Technical Area Map

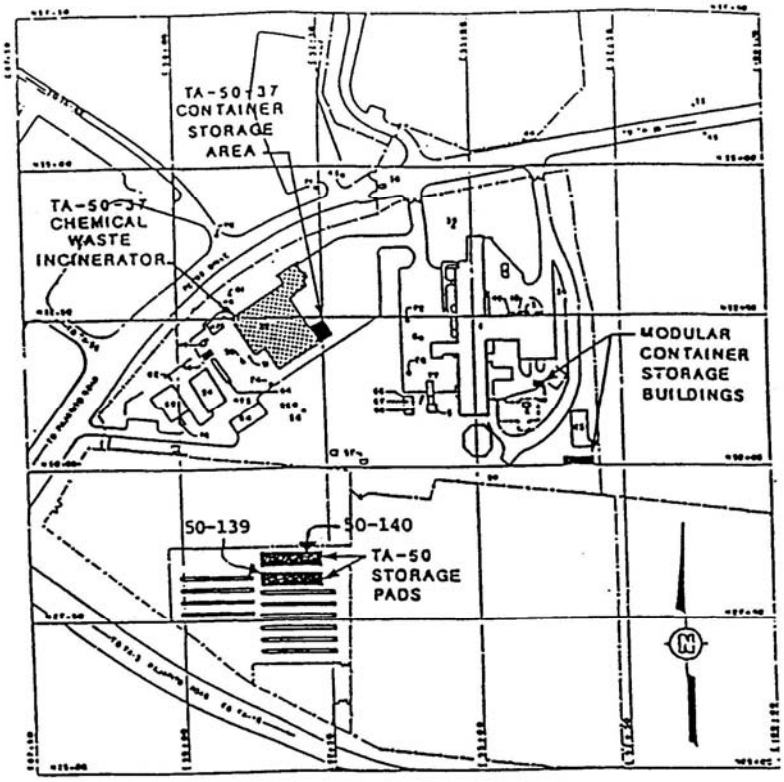


FIGURE 4

LOCATIONS OF TA-50
CHEMICAL WASTE INCINERATOR
AND CONTAINER STORAGE
UNITS

PREPARED FOR

LOS ALAMOS
NATIONAL LABORATORY
LOS ALAMOS, NEW MEXICO

INTERNATIONAL
TECHNOLOGY
CORPORATION

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FIGURE 4

Technical Area 50-37

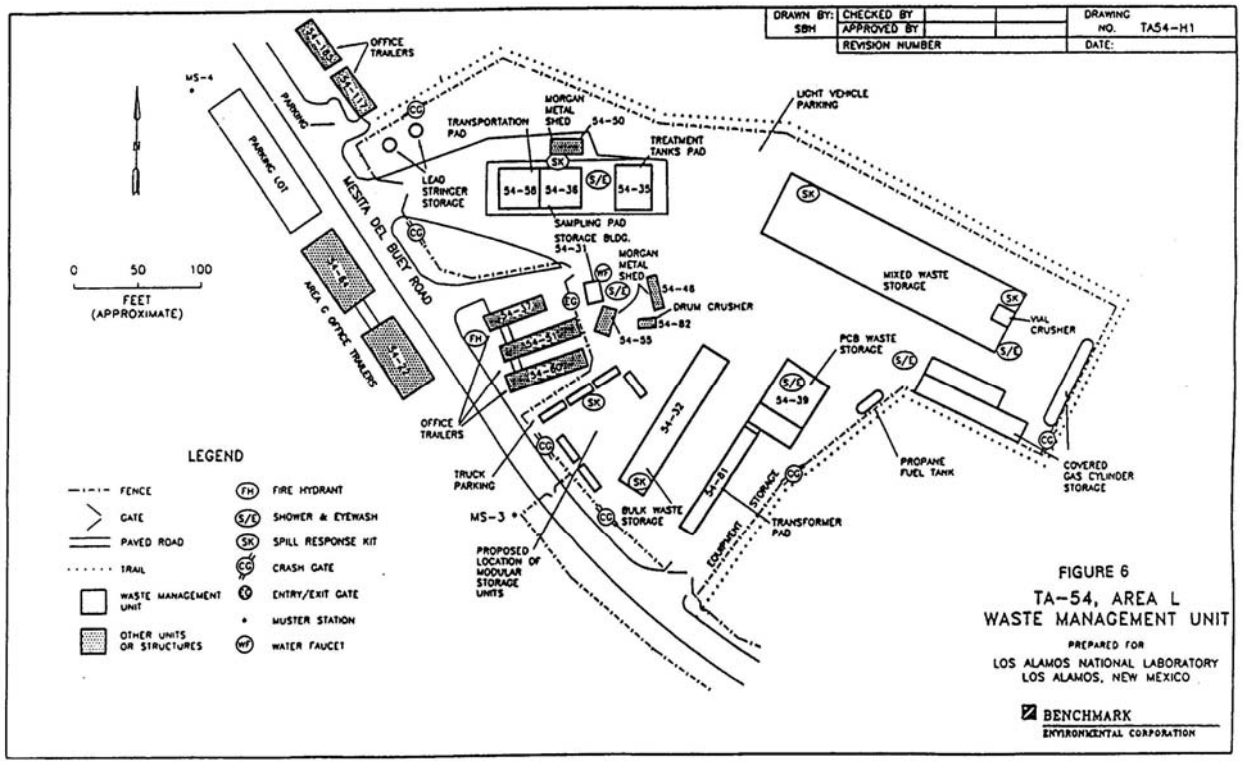


FIGURE 6

Technical Area 54 Area I Treatment Tanks Plan

Los alamos National Laboratory
Hazardous Waste Permit
NMED Control Copy
Page Modified 1-30-95

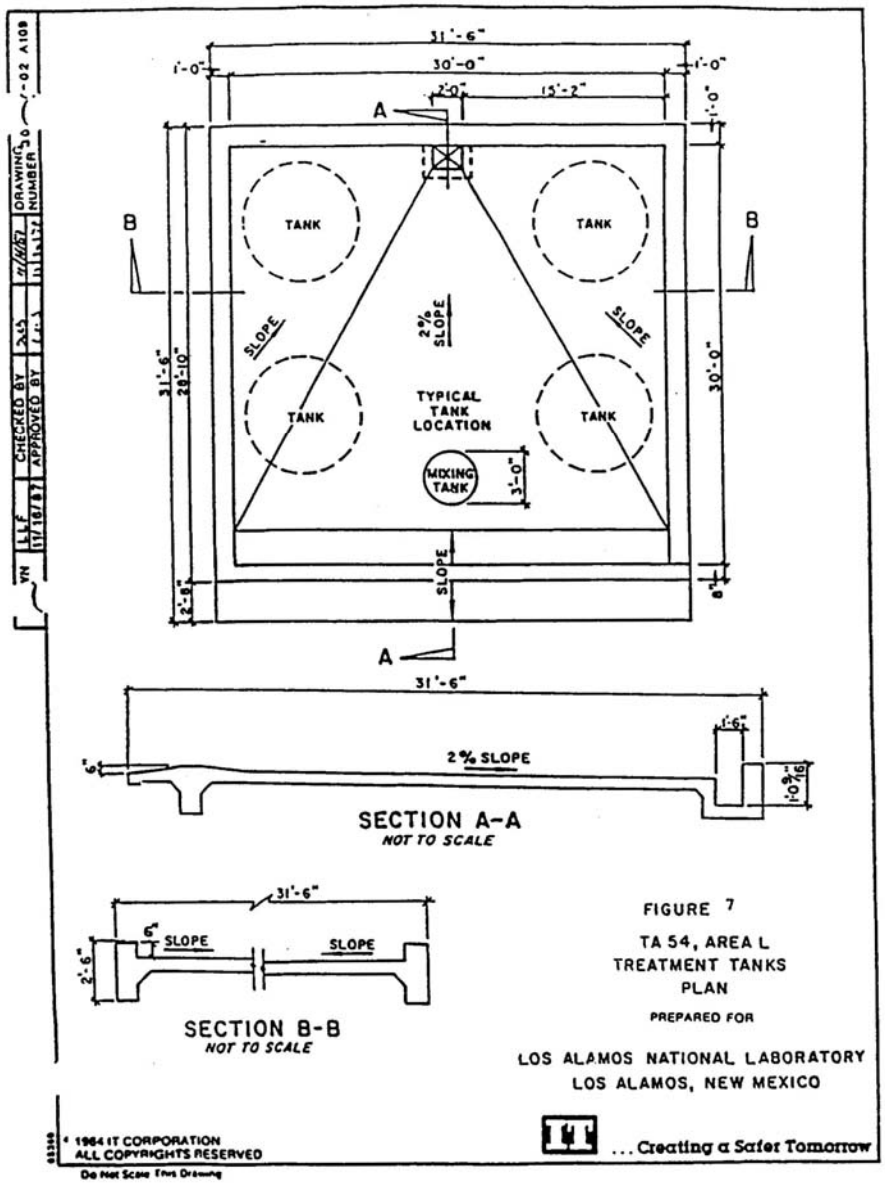


FIGURE 7

Technical Area 54 Area L Treatment Tanks Plan

LOS ALAMOS NATIONAL LABORATORY
ENVIRONMENTAL SURVEILLANCE 1987

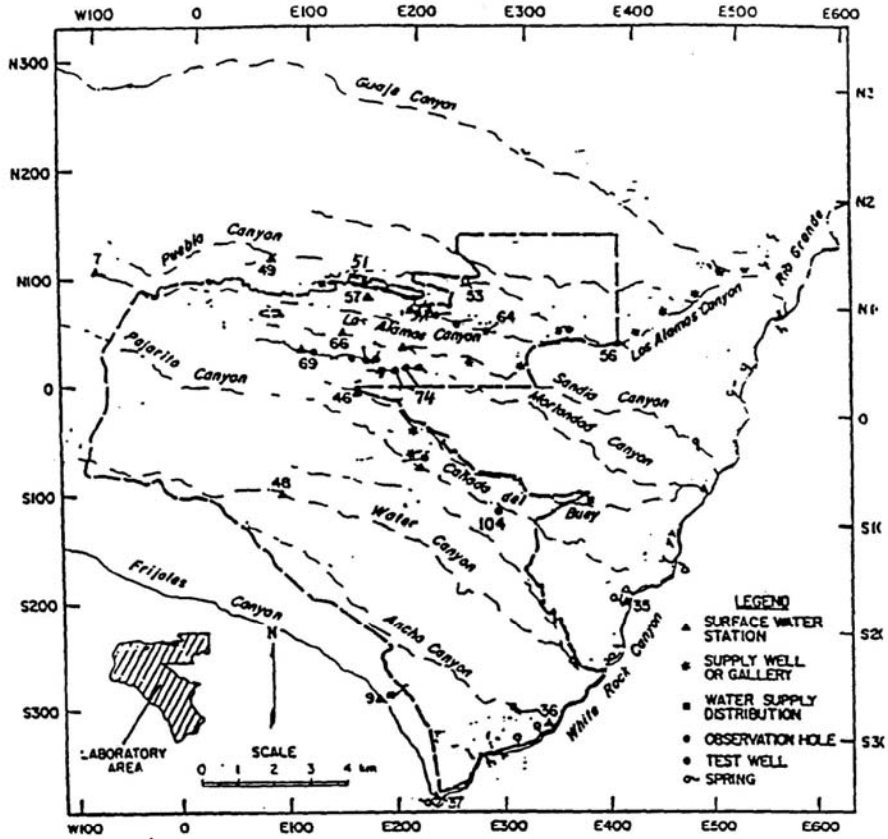


Fig. 9 Surface and ground water sampling locations on and near the Laboratory site.

FIGURE 9

Surface and Groundwater Sampling Locations

FIGURE 10

FACILITY RELEASE INSPECTION REPORT

Submit to:
Secretary,
New Mexico Environment Department
1190 St. Francis Drive
Santa Fe, NM 87503

SAMPLE LOCATION _____
SAMPLE DATE _____
SAMPLE NUMBER _____
SAMPLE COLLECTOR _____

METALS (Totals)

TRT.*		CODE	UNITS	QUANTITY	DATE ANALYZED
____	Arsenic	01002	ug/l	_____	_____
____	Barium	01007	ug/l	_____	_____
____	Cadmium	01027	ug/l	_____	_____
____	Chromium	01034	ug/l	_____	_____
____	Lead	01051	ug/l	_____	_____
____	Mercury	71900	ug/l	_____	_____
____	Selenium	01147	ug/l	_____	_____
____	Silver	01077	ug/l	_____	_____
____	Copper	01042	ug/l	_____	_____
____	Iron	01045	ug/l	_____	_____
____	Berylium	01012	ug/l	_____	_____
____	Nickel	01067	ug/l	_____	_____
____	Zinc	01092	ug/l	_____	_____

* Annotate field treatment as follows: **NF** = no filtration and/or **A** = 5 ml HNO_3

ORGANICS

SUBSTANCE	CODE	UNITS	QUANTITY	DATE ANALYZED
_____	___	___	_____	_____
_____	___	___	_____	_____
_____	___	___	_____	_____
_____	___	___	_____	_____
_____	___	___	_____	_____
_____	___	___	_____	_____

(Continue on a separate sheet if required)

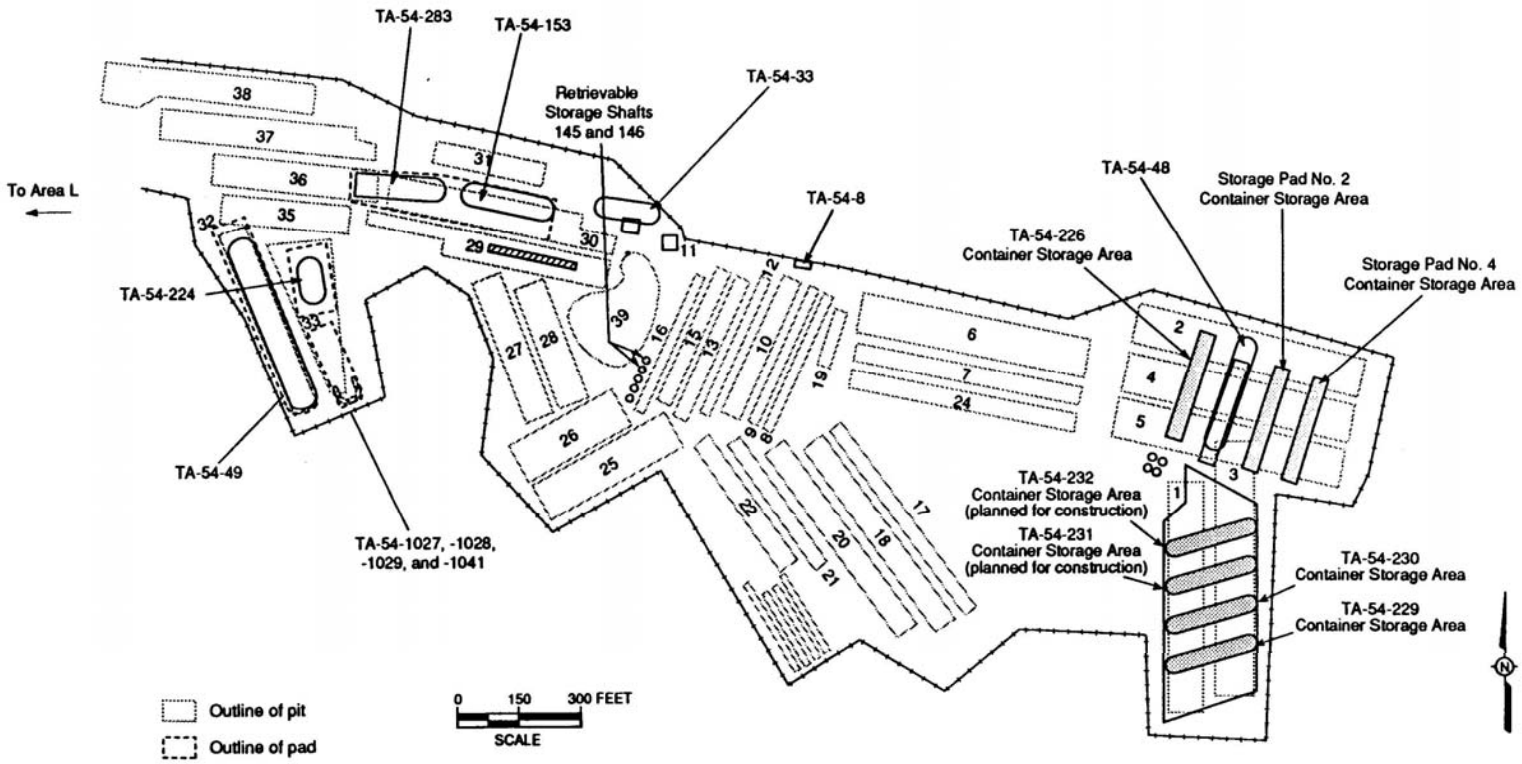
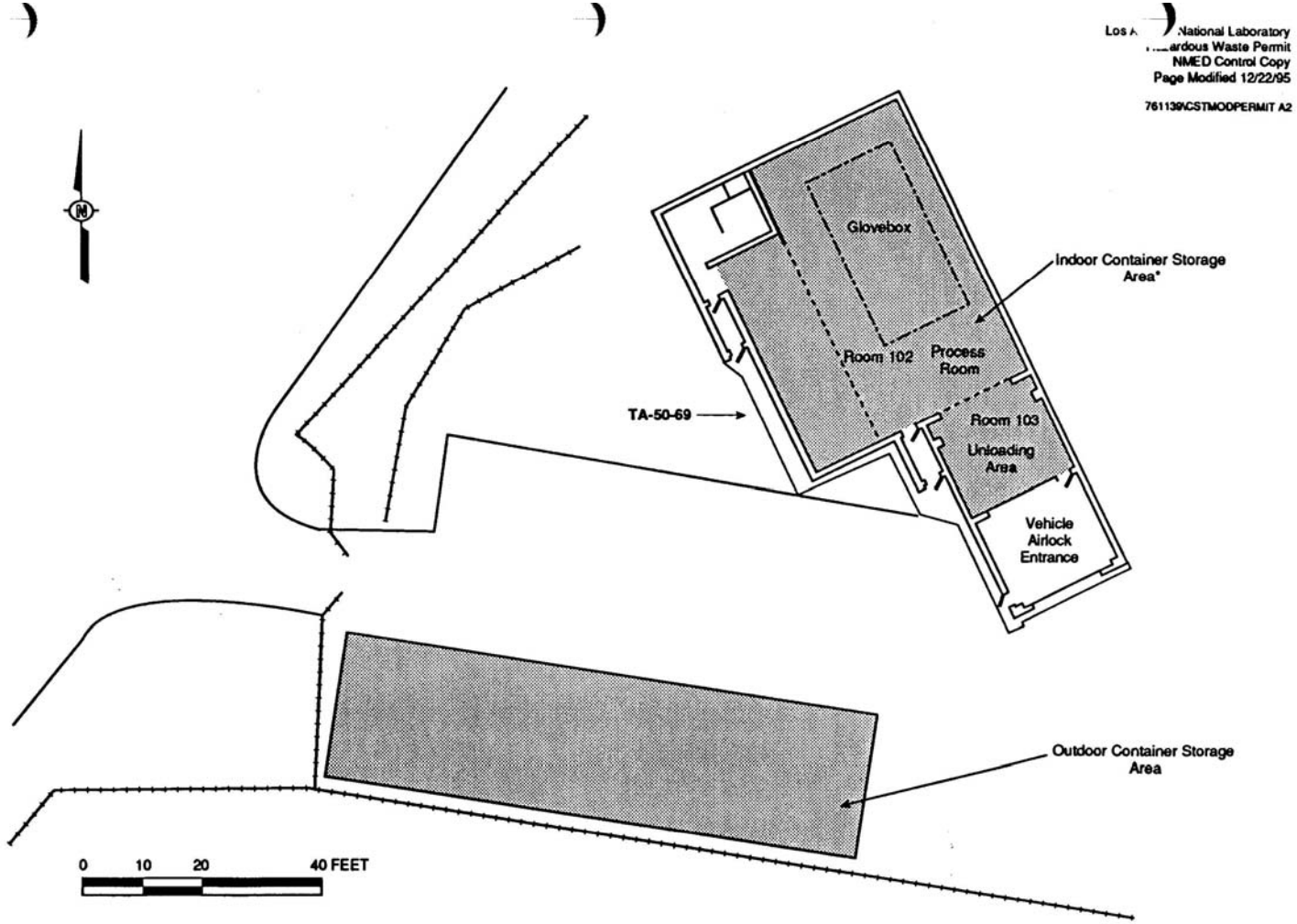


Figure 11
Technical Area (TA) 54, Area G, TA-54-226, -229, -230, -231, -232, Pad 2, and Pad 4



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

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

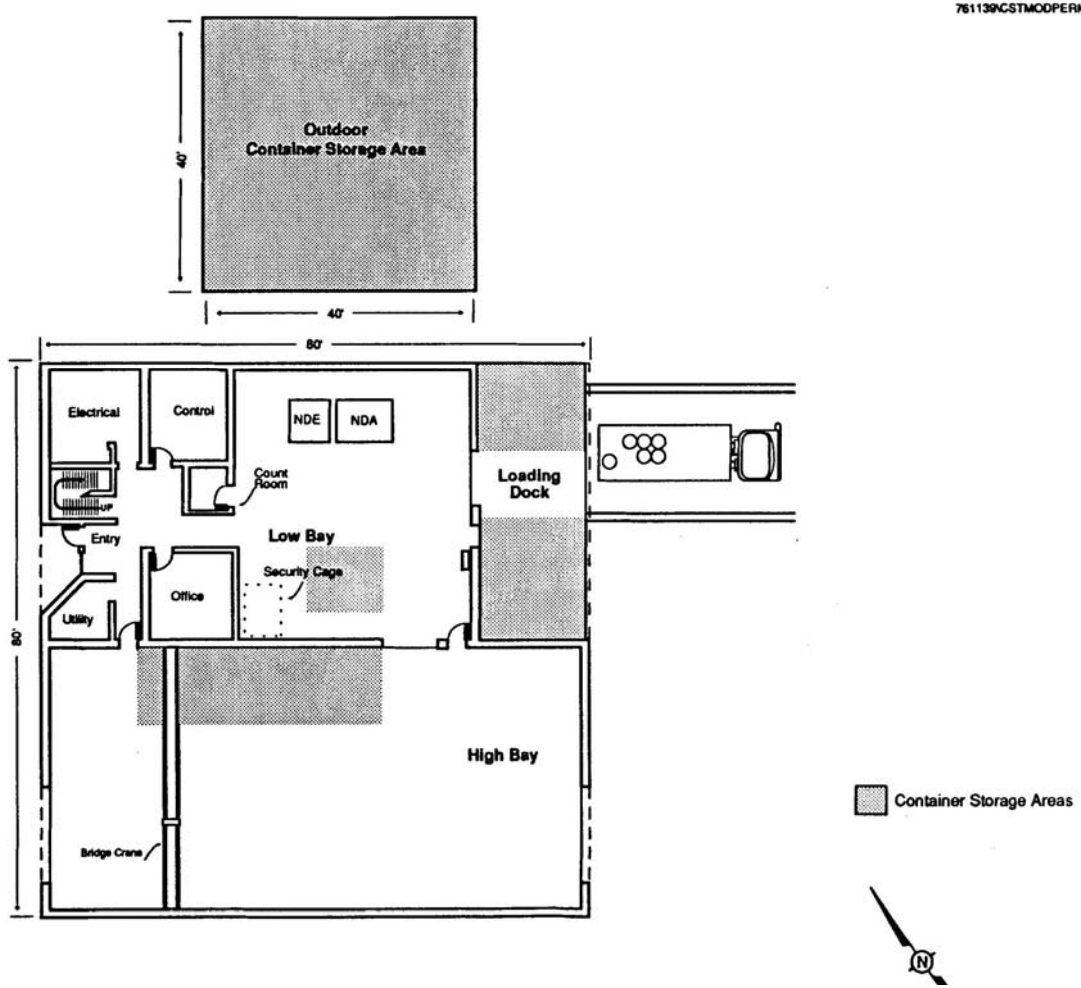


Figure 13
Technical Area (TA) 54 West, Building 38, First Floor Plan

WASTE ANALYSIS PLAN
AND
WASTE SEGREGATION PROCEDURES

PERMIT ATTACHMENT A.1
NM0890010515-1

ATTACHMENT A
WASTE ANALYSIS PLAN

A.1 INTRODUCTION

This Permit Attachment A addresses the waste analysis and waste segregation procedures implemented by Los Alamos National Laboratory (the Laboratory). Only the sampling and analysis procedures for RCRA-controlled hazardous wastes are discussed here.

A.2 TYPES OF WASTE GENERATED AT LOS ALAMOS

Hazardous waste generated by Laboratory activities can be considered as three general types: (1) wastes from processing operations, (2) wastes from research and development (R&D) activities, and (3) high explosive (HE) waste. Each of these general types has unique characteristics. Processing wastes typically are significant volumes of material that contain a very limited number of contaminants. R&D wastes, however, are typically lesser volumes of a variety of laboratory reagents, chemicals, solvents and other general laboratory waste. The composition and concentration of contaminants in a given process waste is generally uniform unless modifications to the process are made. Conversely, the waste species from R&D activities continually vary depending on the activities of the rapidly changing R&D efforts at the Laboratory. HE wastes consist of a narrow assemblage of chemicals, the concentrations of which may vary. The chemical assemblage, however, remains fairly constant.

The Laboratory has developed procedures for the identification and segregation of hazardous wastes. When a waste is identified as hazardous, it is diverted to the appropriate method of storage, treatment or disposal based on its characteristics as determined by the Waste Analysis Plan.

Presented below is a description of the types of wastes generated, treated, and stored at the Laboratory and those disposed of at off-site permitted facilities. The wastes are divided according to process or facility activities which generate the wastes.

A.2.1 Wastes from Basic and Applied Chemistry R&D Programs

Primary Laboratory sites for basic and applies chemistry R&D include the Chemistry and Metallurgy Research Building (TA-3-29), the Radiochemistry Laboratory (TA-48), the Sigma Building (TA-3-66), and the Health Research Laboratory (TA-43). Typical nonradioactive chemical wastes consist of large quantities of partly empty small containers of laboratory reagents, solvents, test samples, and other laboratory wastes. Up to several hundred waste types consisting of relatively small quantities of different acids, bases, organics, inorganics, reactive metals and other chemicals require disposal. These R&D wastes represent nearly all of the waste species included in Permit Attachment G.

A.2.2 Surface Finishing Process Wastes

The Electrochemistry Section of the MST-6 Materials Technology: Metallurgy Group located at TA-3-66 generates plating solutions containing heavy metals. Some of the wastes also contain cyanides. These plating solutions are coded as toxic and reactive wastes D007, D008, D011, F007, and F009. The Print Circuit Board Shop located at TA-3-40 generates primarily acid/base wastes heavily contaminated with

copper. This shop generates plating solutions contaminated with lead and mercury. These wastes are coded as D002, D008, and D009, respectively. The Fabrication Section of the DX-10 Detonation Systems Group, located at TA-22-91, generates copper contaminated ferric chloride etching waste that is corrosive. It is coded D002.

A.2.3 Isotope Separation Wastes

Research Groups generate 7N nitric acid and 14N sulfuric acid wastes that are hazardous because of their corrosive characteristic (D002). Based on knowledge of the waste generating process, it has been determined that these wastes do not contain heavy metals.

A.2.4 Shops Department Wastes

The Main Shops Department, Building TA-3-39, houses most of the machine shop capabilities at the Laboratory. Waste materials from machining operations are segregated by the metal they contain when generated. (For example, there are containers for aluminum chips and turnings.) Some machining operations generate waste lithium metal and lithium hydride, both of which are hazardous because of their reactivity (D003). These materials, when generated, are known and are not commingled with other metal wastes. The Main Shops Department also generates waste nonhalogenated solvents (F003) and halogenated degreasers (F001) and solvents (F002).

A.2.5 Explosives Wastes

High explosive (HE) waste is generated by the Dynamic Experimentation (DX)and Engineering Sciences and Applications (ESA) Divisions in the course of processing and testing various HE materials. Processing includes pressing, machining, and casting HE. Waste occurs as discrete pieces of HE, as well as chips, machine cuttings, and powder. Solid HE may include off-specification or old explosives, as well as scrap pieces of HE from processing operations. The chips, cuttings, and powder are usually in the form of waterborne suspensions, collected in specially designed accumulating/settling sump tanks. Spent carbon (K045) from the TA-16 wastewater treatment unit is generated approximately twice a year. Wastes also consist of materials contaminated with HE; these may include paper, oil, solvents, wood, machine tools, fixtures, etc. HE-contaminated equipment, tools, and other large items are considered reactive, D003. HE-contaminated oil may also contain listed solvents, F001, F002, F003, and/or F005, as well as exceeds TCLP levels for barium, (D005). Chemically, the predominant wastes consist of HMX (High Melting Explosives), RDX (cyclonite), TNT (2,4,6 trinitrotoluene), PETN (pentaerythriotol tetranitrate), ammonium nitrate, barium nitrate, TATB (triaminotrinitrobenzene), nitrocellulose, tetryl, nitroguanidine, and various plastic binders. Nearly all the HE waste substances are ignitable (D001) or reactive (D003) and barium nitrate is a TCLP waste (D005). Residues from HE waste are generated by flashing or burning HE waste at TA-16. These residues are typically present in the uppermost layer of sand that covers the burn pad. The sand from the two pads used to burn pieces of explosives is considered hazardous because of its barium content (D005).

A.2.6 Maintenance Activity Wastes

The Laboratory's Facilities, Security and Safeguards Division and support maintenance contractor, JCI, generate a variety of wastes in the course of performing maintenance work. Hazardous wastes range from residual pesticides and herbicides (e.g. D012and D014) to paints/thinners (e.g. D001 and D008).

Classification of these wastes can generally be performed by process knowledge and the use of Material Safety Data Sheets (MSDSs).

A.2.7 Chemically Contaminated Equipment

In addition to the wastes noted above, various laboratory items that contain chemical residues or are otherwise chemically contaminated may be considered hazardous waste. Empty process tanks are typical contaminated items. Empty drums and containers meet the requirements of HWMR-6 Part 2, Section 261.7 and are therefore not considered hazardous waste. Generation of this type of hazardous waste occurs throughout the Laboratory facilities and produces a wide variety of waste types.

A.2.8 Waste Treatment Residues

Treatment operations at the Laboratory generate solid hazardous waste. These residues include the barium contaminated sand from the explosives burning operations. The classification and volume of the waste varies with the waste that was treated.

A.3 WASTE ANALYSIS AND HANDLING PROCEDURES FOR STORAGE

This section specifies the procedures for the identification and handling of hazardous waste for storage at the Laboratory. The decision process is summarized in Table A-1.

A.3.1 Waste Identification

When chemical substances are declared to be in excess, the originating group completes Form 1541 (Figure A-1) to request disposal and sends the form to the Chemical and Mixed Waste Management Group (CST-5). The request lists the chemical waste the generating group needs to dispose of the quantity and physical form of the wastes, and other pertinent information such as the condition of the containers. Material Safety Data Sheets (MSDSs) and existing analytical data may also be available and attached.

Using 49 CFR § 172.101, the CST-5 staff assigns each chemical waste item (bottle, container, etc.) the appropriate DOT Hazard Class. This assignment and chemical characteristics determine the compatibility of one waste item with another waste item.

Additional information assigned during this review includes EPA hazardous waste codes and transportation information. The completed request form, container marking, and MSDS/analytical data serve as the waste analysis record for the waste to be stored per the following segregation schemes.

A.3.2 Waste Segregation

To prevent adverse interactions of incompatible chemical wastes and to facilitate recycling or treatment of wastes, chemical wastes will be segregated into the following general categories:

— Flammables, such as organic solvents (e.g. acetone, benzene, and toluene);

— Corrosive acidic wastes, including organic and mineral acids;

— Corrosive caustic wastes;

— Oxidizers, such as perchloric or chromic acid, and nonacidic oxidizers, such as permanganates and chlorates;

— Reactive metals and compounds, such as sodium, lithium hydride, and phosphorous trichloride; and

— Non-RCRA regulated wastes (e.g. nonreactive metals, salts, neutral compounds, and poisons)

Utilizing the DOT Hazard Class assigned to the container and Table A-2, an area for storage of the waste is assigned. The organics and oxidizers have subcategories of segregation that will be followed for packaging/compositing of wastes to ensure that potential incompatibles are not combined together.

A.4 WASTE ANALYSIS AND HANDLING PROCEDURES FOR TREATMENT AND DISPOSAL

The Land Disposal Restrictions (LDRs) require that hazardous waste be treated to specified levels or with a specified technology prior to land disposal. The analysis procedures used to determine the LDR treatment standards that are applicable to the waste are described in this section. The decision process for analysis, handling, treatment, and/or disposal is summarized in Table A-1.

Several terms used throughout this section require further explanation.

— LDR is land disposal restricted. When used in this section it refers to all waste currently regulated under 40 CFR Part 268.

— TCLP metals refers to those eight metals regulated under the TCLP characteristic.

— KOP refers to knowledge of process. In the case of original containers of materials, the information from the Chemical Disposal Request Form, as described earlier, is the KOP documentation. All other waste is documented by previous analyses or information provided by the generator.

— Lab pack waste refers to waste containers that have been packed with absorbents in "lab pack" containers for safe handling and storage. All containers less than 5 gallons must be lab packed.

— Commercial chemical waste refers to chemical substances still in their original containers that have been declared a hazardous waste.

— References to the use of a COLIWASA sampler also includes the use of COLIWASA-type sampling instruments

A.4.1 Organic Waste

Organic waste is divided into four processing categories: uncomposited chemical lab pack waste, drummed waste, composited commercial chemical waste, and composited drummed waste. The following discussions treat each as a unique analysis entity.

A.4.1.1 Uncomposited Lab Pack Waste

These wastes are those, that due to their toxicity or their physical (solid) state, will not be composited but will be packaged in lab pack containers with absorbent. Compatible inorganic and organic wastes are packaged together in these lab pack containers. The entire container is then incinerated. The Laboratory's incinerator cannot generally receive such a package, therefore, most of this waste is and will be shipped off site. The packaging list of bottles and cans in the lab pack container serves as the analytical record. This listing is sufficient to allow the identification of any and all LDR waste.

A.4.1.2 Drummed Waste

There are very few ongoing operations at the Laboratory that generate an organic process waste. As a result, each drum of this waste is virtually a unique entity. The exception would be those cases where we know more than one drum of waste came from the same place, e.g. 400 gallons of oil drained from the same machine reservoir. The drums are all sampled using a COLIWASA sampler if liquid or a core sampler if solid. Because this waste is destined for incineration, the following parameters are tested for: pH,viscosity, heat value, TCLP metals, total organic halogen, total organic chlorine, sulfur, and chemical composition. This latter will identify approximately ninety-five percent of the substances that are present in the waste. Availability of documented KOP will determine if the organic trace analyses need to be performed. Documentation or analyses will identify the presence/absence of organic LDR compounds. The test methods are listed in Table A-3.

Throughout the year, containers of organic waste mixtures, smaller than a 55-gallon drum, are generated in the many laboratories of LANL. The generator maintains a list of the substances placed in these containers. This allows CST-5 personnel to confirm compatibility of these wastes before they are composited into 55-gallon or larger containers. When the composite receptacle is full, the waste is analyzed as described above for any large container of organic waste.

Solid organic waste is sampled using a core sampler or a grab sampler if the material can not be penetrated by a core sampler. Analytical parameters, frequencies, and test methods would be the same as those outlined above for any large container of waste. Debris that is organically contaminated is analyzed per Section A.4.8.

A.4.1.3 Composited Commercial Chemical Waste

Composited commercial chemical wastes are those bottles and cans of liquid waste that have been combined for the purpose of incineration. Compatibility is ensured by following the procedures in Section A.3.1 and A.3.2. Since all chemicals in a composite drum are known entities, the list of chemicals and their quantity serves as the primary analysis record. This listing is sufficient to allow the identification of any and all LDR waste. When the drum is full, it is sampled with a COLIWASA sampler. Since chemical composition is known, only the physical parameters need to be calculated or analyzed for. If any physical characteristics can not be calculated due to the variety of substances placed in the drum, the sample is analyzed for that parameter. Therefore, analysis or calculation would provide pH, flashpoint, viscosity, heat value, total

organic halogens, and total organic chlorine. The methods used for these analyses are specified in Table A-3. This will be done for each container of composited waste since each container is unique.

A.4.2 Corrosive Acid Waste

Corrosive acid waste is handled in two primary processing categories: commercial chemical and process waste. The following discussions treat each as a unique analysis entity.

A.4.2.1 Commercial Chemical Waste

This waste stream consists of unused acids in original containers. The labels on the containers and MSDSs continue to serve as the primary analytical record. Those acids that can be reused by another component of the Laboratory are redistributed for use as a commercial product. Those that can not be reused are treated by elementary neutralization. This occurs primarily at the TA-50 Liquid Waste Treatment Plant but could occur throughout LANL in individual laboratories.

A.4.2.2 Process Waste

There are three categories of process waste: nonroutine nonmetallic waste, nonroutine metallic waste, and routine waste. Each is discussed separately. Documented KOP will negate the concern for the presence of LDR organic compounds. Therefore, references to LDR in this section refers only to inorganic constituents.

Nonroutine nonmetallic waste is periodically generated throughout the Laboratory. This waste will be analyzed for pH, the TCLP metals, nickel and thallium. This allows confirmation of the presence/absence of LDR material. The test methods employed are listed in Table A-3. Sampling is performed using a COLIWASA sampler. Because this is defined as a nonroutine waste stream, every unique drum or batch will be sampled.

Nonroutine metallic waste is generated primarily by the Laboratory's electroplating operations. At the time of generation, these wastes are identified by the generator as containing heavy metals. The generator may also provide the approximate metal concentration, if the information is available. This waste will be analyzed for pH, TCLP metals, nickel and thallium. This allows confirmation of the presence of LDR material and establishes the parameters that are analyzed for at the completion of treatment. The test methods employed are listed in Table A-3. Sampling is performed using a COLIWASA sampler. Because this is defined as a nonroutine waste stream, every unique drum or batch will be sampled.

There are five routinely generated acidic waste streams at the Laboratory: nonmetallic nitric acid, nonmetallic sulfuric acid, nonmetallic acid stream, metallic ferric chloride, and metallic ammonium persulfate. Each of these waste streams has a confirmed basis for RCRA regulation that establishes the parameters of concern for treatment. All three of the nonmetallic acid waste streams are routinely analyzed for pH. The metallic ferric chloride is analyzed for pH, chromium, silver, lead, and copper. The metallic ammonium persulfate is analyzed for pH, lead, and mercury. Annually, all of these streams are all reevaluated for pH, all TCLP metals, nickel, and thallium. This confirms that the waste has not changed in composition and identifies the LDR components. Sampling is conducted with a COLIWASA sampler. All test methods are listed in Table A-3.

If a nonroutine waste stream becomes a routine waste or a new waste stream is identified, these wastes will be characterized following the procedures described in the above paragraph. Routine testing parameters will be established and reverified on an annual basis.

A.4.3 Corrosive Caustic Waste

Corrosive caustic waste is divided into two processing categories: commercial chemical waste and process waste. The following discussions treat each as a unique entity for analysis.

A.4.3.1 Commercial Chemical Waste

This waste stream consists of caustic products (bases) in their original containers. The labels on the containers and MSDSs serve as the primary analytical record. Those bases that can be reused by another component of the Laboratory are redistributed for use as a commercial product. Those that can not be reused are generally treated by elementary neutralization. This occurs primarily at the TA-50 Liquid Waste Treatment Plant but could occur throughout LANL in individual laboratories.

A.4.3.2 Process Waste

There are three categories of process waste: nonroutine nonmetallic waste, nonroutine metallic waste, and routine waste. Each is discussed separately. Documented KOP will negate the concern for organic LDR compounds. Therefore, references to LDR in this section refers only to inorganic constituents.

Nonroutine nonmetallic waste is periodically generated throughout the Laboratory. This waste will be analyzed for pH, the TCLP metals, nickel and thallium. This allows confirmation of the presence of LDR material. The test methods employed are listed in Table A-3. Sampling is performed using a COLIWASA sampler. Because this is defined as a nonroutine waste stream, every unique drum or batch will be sampled.

Nonroutine metallic waste is generated primarily by the Laboratory's electroplating operations. At the time of generation, these wastes are identified by the generator as containing heavy metals. This waste will be analyzed for pH, TCLP metals, nickel, thallium, and cyanide. This procedure allows confirmation of the presence of LDR material and establishes the parameters that are analyzed for at the completion of treatment. The test methods employed are listed in Table A-3. Sampling is performed using a COLIWASA sampler. Because this is defined as a nonroutine waste stream, every unique drum or batch will be sampled.

There are three routinely generated corrosive base process waste streams at Los Alamos: ammonium etchant, "Replenisher" solution, and "Cuposit." The Replenisher and Cuposit are trade names. The ammonium etchant is analyzed for pH, copper, and lead. The Replenisher is analyzed for pH and lead. The Cuposit is analyzed for pH and mercury. Annually, these waste streams are all reevaluated for pH, all TCLP metals, nickel, and thallium. This allows confirmation of the presence of LDR substances and that the waste has not changed in composition. Sampling is performed with a COLIWASA sampler. Test methods used are listed in Table A-3.

If a nonroutine waste stream becomes a routine waste stream or a new waste stream is identified, these wastes will be characterized following the procedures described in the above paragraphs. Routine testing parameters will be established and reverified on an annual basis.

A.4.4 Oxidizer Waste

Oxidizer waste is divided into two processing categories: acid waste and uncomposited lab pack waste. Acid oxidizer waste is handled according to the procedures described Section A.4.2.

Oxidizer lab pack wastes are not composited due to the high fire risk of doing so. These wastes are packaged in lab pack containers with absorbent. The entire container is then incinerated. This waste is and will be shipped off site. The packing list of bottles and cans in the lab pack container serves as the analytical record. This listing is sufficient to allow the identification of any and all LDR waste.

A.4.5 Reactive Wastes

Reactive waste has only two processing categories: uncomposited lab pack waste and routine process waste. (Explosives waste is treated as a separate category of waste and is discussed in Section A.4.7.) The following discussions treat each as a unique analysis entity.

A.4.5.1 Uncomposited Lab Pack Waste

Reactive lab pack wastes are not composited due to the high fire and explosion risk of doing so. They are packaged in lab pack containers with absorbent. The entire container is then incinerated. This waste is and will be shipped off site. The packing list of bottles and cans in the lab pack container serves as the analytical record. This listing is sufficient to allow the identification of any and all LDR waste.

A.4.5.2 Process Waste

The only ongoing operation at the Laboratory that generates a reactive process waste is the machining operation. Periodically, the machinists are required to work with lithium hydride and to a lesser degree lithium metal. This results in drums of lithium hydride dust and lithium chips, respectively. Process knowledge serves as the analytical record for this waste stream.

If large quantities of reactive waste should be produced elsewhere in the Laboratory, documented process knowledge would also be used as the analytical record.

A.4.6 Inorganic Wastes

Inorganic wastes are divided into two processing categories: uncomposited commercial chemical waste and process waste. The following discussions treat each as a unique analysis entity.

A.4.6.1 Uncomposited Commercial Chemical Waste

These wastes are generally solid material and therefore do not lend themselves to compositing. They will be packaged in lab pack containers with absorbent. Organic and inorganic wastes that are compatible are lab packed together. The entire container is then usually destined for off-site land disposal. The packing list of bottles and cans in the lab pack container serves as the analytical record. This listing is sufficient to allow the identification of any and all LDR waste.

A.4.6.2 Process Waste

Four categories of inorganic process waste exist: liquid waste, primary metal waste, nonroutine solid waste, and routine solid waste. Inorganic liquid waste is generally acidic or basic and is thus treated under the scenarios described in Sections A.4.2 and A.4.3.

Process knowledge is considered adequate for the further treatment/disposal/recycle of waste streams such as lead and mercury.

Nonroutine solid waste is periodically generated throughout the Laboratory. This waste will be analyzed for TCLP metals, nickel and thallium. This allows confirmation of the presence of LDR material. The absence of organics will be established by either documented KOP or analysis. The test methods employed are listed in Table A-3. Sampling is performed using a core sampler if possible or a grab sampler if it is not possible to penetrate the waste with a core sampler. Because this is defined as a nonroutine waste stream, every unique drum or batch will be sampled.

There is one routinely generated inorganic solid waste at the Laboratory. It is the barium contaminated sand from the explosives burning operation. Barium is the only established parameter of concern for treatment and therefore is the only parameter routinely analyzed for. Annually, a sample will be analyzed for the other TCLP metals. Sampling is conducted with a core sampler. Test methods are listed in Table A-3.

If a nonroutine waste stream becomes a routine waste stream or a new waste stream is identified, these wastes will be characterized following the procedures described in the above paragraph. Routine testing parameters will be established and reverified on an annual basis.

A.4.7 Explosives Waste

Due to the limited number of areas producing explosives waste and the safety problems associated with analyzing explosives waste, process knowledge of the waste sent for treatment by open burning or open detonation is the waste analysis record. Table A-4 lists the various explosives used at the Laboratory. Open burning/open detonation is conducted under interim status according to HWMR-5 Part VI, Section 265.282.

A.4.8 Contaminated Solid Waste

The waste included in this category is generally classified as debris. Contaminated soil would be addressed under the respective chemical category as outlined in the above sections. The contaminant of concern is known for all waste in this category but the substrate can not be readily analyzed. Therefore, until the item in question is cleaned it is treated as a hazardous waste. The types of waste covered by this provision would be tanks and rags.

A.4.9 Waste Treatment Residuals

Waste treatment residuals are the liquid and solid waste streams resulting from the treatment of hazardous wastes. Barium contaminated sand is also a treatment residue but because it receives further chemical treatment it is discussed in Section A.4.6.2.

A.4.10 Unknown Material

Occasionally, chemicals of an unknown nature require disposal. These wastes are handled on a case-by-case basis. The individual waste may be tentatively characterized by knowledge of the operations and activities that were performed in the specific area in which the waste was generated. This information is used to restrict the choices of initial waste analysis to a small population of chemicals.

For purposes of managing unknown wastes a small volume is defined at the Laboratory as less than one liquid gallon (or approximately four liters). The rationale for the small volume designation is that this is the minimum quantity of sample that is needed to analyze the waste. At and below this volume limitation the sample is entirely consumed in the analytical procedure. Small volumes of unknown wastes are analyzed for pH, flashpoint, and reactivity. This allows the material to be categorized for further handling.

Volumes greater than one gallon or four liters of a single unknown waste require a more detailed analytical scheme. These wastes are tested for reactivity, corrosivity, ignitability, TCLP metals, and any other analyses indicated by the initial data gathered on the material. Sufficient detail must be reported to allow the assignment of the proper EPA hazardous waste code to the waste. All test methods used are outlined in Table A-3.

A.5 VERIFICATION ANALYSES

Knowledge of process is used to identify the waste streams; however, the hazardous constituents must be verified using specified analytical procedures at specified intervals. This section describes the verification process implemented by the Laboratory.

A.5.1 Knowledge of Process

One in each one hundred Knowledge of Process (KOP) determinations based on a list compiled by the generator as wastes are accumulated in a compositing container will be verified by quantitative chemical analysis. Factory sealed containers and original containers redistributed for use within the facility will not be included in this analysis. Detection of hazardous constituents above one percent by volume, not recorded in the KOP documentation, or variations in concentration greater than

twenty five percent from the estimate $\left| \frac{C_{meas} - C_{est}}{C_{est}} \right| 100 \geq 25$

shall be cause for rejection of the KOP and shall require an investigation into the cause. A written record of the investigation shall be retained with the facility record. Any individual who twice fails to properly document KOP constituents shall be permanently prohibited from KOP certification. An entry to this effect shall be made in the facility record.

Unused commercial chemicals in original containers that have been declared a hazardous waste accepted by an off-site disposal or treatment facility need not be verified unless rejected by the off-site treatment facility.

A.5.2 Annual Verification

All routinely generated waste streams that have documented waste profiles will be analyzed annually to verify that they have not changed. Any information that indicates a change in a process that generates a waste that may affect the waste, shall cause the waste to be analyzed not later than the next time the waste is generated. All such analyses shall be recorded in the facility record.

TABLE A-1
WASTE STREAMS, ANALYTICAL PARAMETERS, AND RATIONALE

Waste Stream	Analytical Parameters	Rationale Reference
Organic Waste		
- Uncomposited lab pack	Packing list	A.4.1.1
- Drummed	pH, TCLP toxic metals, TOX, TOC, viscosity, heat value, sulfur, chemical composition	A.4.1.2
- Composited lab packs and drums	List of chemicals, pH, flashpoint, viscosity, heat value, TOX, TOC	A.4.1.3, A.4.1.4
Corrosive Acid		
- Lab pack	pH, as necessary	A.4.2.1
- Nonroutine, nonmetallic process waste	pH, TCLP toxic metals, nickel, thallium	A.4.2.2
- Nonroutine, metallic process waste	pH, TCLP toxic meals, nickel, thallium	A.4.2.2
- Routine nonmetallic process waste	pH	A.4.2.2
- Ferric chloride	pH, chromium, silver, lead, copper	A.4.2.2
- Ammonium persulfate	pH, lead, mercury	A.4.2.2
Corrosive Base		
- Lab pack	pH, as necessary	A.4.3.1
- Nonroutine nonmetallic process waste	pH, TCLP toxic metals, nickel, thallium	A.4.3.2
- Nonroutine metallic process waste	pH, TCLP toxic metals, nickel, thallium	A.4.3.2

TABLE A-1
WASTE STREAMS, ANALYTICAL PARAMETERS, AND RATIONALE
(continued)

Waste Stream	Analytical Parameters	Rationale Reference
- Ammonium etchant	pH, copper, lead	A.4.3.2
- "Replenisher"	pH, lead	A.4.3.2
- "Cuposit"	pH, mercury	A.4.3.2
Oxidizer - Lab packs	Packing list	A.4.4
Reactive - Lab packs	Packing list	A.4.5.1
- Process Waste	Knowledge of process	A.4.5.2
Inorganic - Lab pack	Packing list	A.4.6.1
- Primary Metals	Knowledge of process	A.4.6.2
- Nonroutine Solid	TCLP toxic metals, nickel, thallium	A.4.6.2
- Barium Sand	Barium	A.4.6.2

TABLE A-1
WASTE STREAMS, ANALYTICAL PARAMETERS, AND RATIONALE
(continued)

Waste Stream	Analytical Parameters	Rationale Reference
Explosives	Knowledge of process	A.4.7
Contaminated Debris	Knowledge of process	A.4.8
Waste Treatment Residues	Previously established parameters	A.4.9
Unknowns - Small Volume (<1 gal.)	pH, flashpoint, reactivity	A.4.10
- Large Volume	All parameters necessary to identify waste completely	A.4.10

TABLE A-2
PACKAGING SEGREGATION SCHEME

Storage Category	Packaging Category	RGN
Organics (1)	A	4, 5, 9, 13, 14, 16, 17, 19, 26, 29, 31, 32, 101
	B	6, 7, 8, 27, 28
	C	12, 20
	D	34, 18
Oxidizers (2)	A	2
	B	104
	C	30
Acids (3)	N/A	1, 3
Bases (4)	N/A	10, 11, 33, 105
Reactives (5)	N/A	21, 22, 25, 102, 107 - ALL STORED INDIVIDUALLY - NO COMBINING ALLOWED
Nonreactive Metals (6)	N/A	11, 15, 23, 24, 33 - 11 and 33 would only be allowed in lab pack, solid quantities
Others		The following must be evaluated on a case-by case basis to determine which of the above categories is appropriate: 25, 102, 103.

TABLE A-3
WASTE ANALYSIS PARAMETERS AND TEST METHODS

Parameter	Test Method	Reference[1]
Ignitability	Pensky-Martens Closed-Cup Method	(L) SW1010 (L) ASTM D93-80
Reactivity	Numerous methods and tests[2]	(L,S) SW Section 2.1.3
pH	Electrometric	(L) SW9040
EP Toxicity	EP Toxicity Extraction[3]	(L,S) SW1310
Toxicity Characteristic Leaching Procedure (TCLP)	Toxicity Characteristic Leaching Procedure	(L,S) SW1311
Arsenic		(L) SW7060
Barium		(L) SW7081, SW7080
Cadmium		(L) SW7131, SW7130
Chromium		(L) SW7191, SW7190
Lead		(L) SW7421, SW7420
Selenium		(L) SW7740
Silver		(L) SW7761, SW7760
Mercury	Manual Cold Vapor Technique	(L) SW7470 (S) SW7474

TABLE A-3
WASTE ANALYSIS PARAMETERS AND TEST METHODS
(continued)

Parameter	Test Method	Reference[1]
Organochlorine Pesticides	Gas Chromatography	(L) SW8080
Chlorinated Herbicides		(L) SW8150
Chemical Composition	95% organic composition by GC/FID	(L) SW8100
Trace Organic Analysis	Any of the following:	
	Volatile organic compounds-GC/MS	(L) SW8240
	Semivolatile organic compounds-GC/MS	
	- Packed column	(L) SW8250
	- Capillary column	(L) SW8270
Heat Value	Bomb calorimeter	(L) A006, ASTM D240
Organic Chlorine	Halide titration of combustion residue	(L,S) A004, ASTM D2361
Ash Content	Residue after combustion in muffle furnace	(L) A001, ASTM D482 (S) A001, ASTM D3147

TABLE A-3
WASTE ANALYSIS PARAMETERS AND TEST METHODS
(continued)

Parameter	Test Method	Reference[1]
Cyanide-Free and Total	Distillation and colorimetric (UV)	(L) SW9012
Chrome	Colorimetric method for hexavalent chromium	(L) SW7196
Sulfide	Colorimetric titration	(L) SW9030
Total Metals	Digestion and inductively coupled plasma method	SW3020
Arsenic		(L) SW6010
Barium		(L) SW6010
Beryllium		(L) SW6010
Cadmium		(L) SW6010
Chromium		(L) SW6010
Lead		(L) SW6010
Nickel		(L) SW6010
Selenium		(L) SW6010
Silver		(L) SW6010
Thallium		(L) SW6010
Zinc		(L) SW6010
Mercury	Manual Cold Vapor Technique	(L) SW7470 (S) SW7471
Free Liquids	Paint Filter Liquids Test.	(S) SW9095

1 "A" refers to Sampling and Analysis Methods for Hazardous Waste Combustion, EPA-600/8-84-002, February 1984.
"ASTM" refers to American Society for Testing Material Standards.
"SW" refers to Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, 3rd Edition, EPA, November 1986.
"L" refers to liquid waste.
"S" refers to solid waste.
2 Methods for cyanide and sulfide gas generation are pending. SW-846 methods will be used when they become available. Methods recommended by the EPA will be used in the interim.
3 If TCLP analyses do not permit identification of an unknown chemical waste, digested metal samples (per SW3020) will be analyzed for the metals noted.

TABLE A-4
ESTABLISHED EXPLOSIVES AT TA-16
NOMINAL COMPOSITIONS

Name or Code	Composition
A1 AMFO	Ammonium nitrate/fuel oil/aluminum power
AN	Ammonium nitrate
AMFO	Ammonium nitrate/fuel oil
Baratol	76 wt% Barium nitrate/24 wt% TNT
BDNPA	Bis(dinitropropyl) acetal
BDNPF	Bis(dinitropropyl) formal
Black powder	74 wt% Potassium nitrate/15.6 wt% charcoal/10.4 wt% sulfur
Boracitol	60 wt% Boric acid/40 wt% TNT
BTX	5,7-Dinitro-1-picrylbenzotriazole
Composition A-3	91 wt% RDX/9 wt% beeswax
Composition A-4	97 wt% RDX/3 wt% beeswax
Composition A-5	98.5 wt% RDX/1.5 wt% beeswax
Composition B and B-3	60 wt% RDX/40 wt% TNT
Composition C-3	88 wt% RDX/12 wt% wax
Composition C-4	91 wt% RDX/2.1 wt% polyisobutylene/1.6 wt% motor oil/5.3 wt % de(2-ethylhexyl) sebacate
Cyclotol, 75/25	75 wt% RDX/25 wt% TNT
Cyclotol, 70/30	70 wt% RDX/30 wt% TNT
DATB	Diaminotrinitrobenzene
DBA-1[a]	AN/$NaNO_3$/TNT/H_2O/thickener

TABLE A-4
ESTABLISHED EXPLOSIVES AT TA-16
NOMINAL COMPOSITIONS
(continued)

Name or Code	Composition
Datasheet C	63 wt% PETN/8 wt% NC/29 wt% elastomeric binder
Datasheet D	75 wt% PETN/25 wt% elastomeric binder
	NOTE: Although this material may be red in color, it is an explosive and not an inert material.
DINGU	Dinitroglycoluril
DNPA	2,2-Dinitropropyl acrylate polymer
DNT	Dinitrotoluene
EDC-8[b]	76 wt% PETN/24 wt% Silicone rubber, MS 2420
EDC-28[c]	94 wt% RDX/6 wt% FPC 461
EDC-32[d]	85 wt% HMX/15 wt% Viton A
EDC-37[e]	91 wt% HMX/1 wt% nitrocellulose/8 wt% K-10 liquid
EDC-38[f]	94.5 wt% HMX/3.5 wt% K-10 Liquid/2 wt% Polyurethane
HBX-1	40 wt% RDX/38 wt% TNT/17 wt% Al/5 wt% Wax/0.5 wt% $CaCL_2$
High Energy Propellants[g]	Solid propellants generally used in missile systems
HMX	Cyclotetramethylenetetranitramine
HNS	Hexanitrostilbene
K-10[h]	65.3 wt% dinitroethylbenzene/34.7 wt% trinitroethylbenzene
LX-04	85 wt% HMX/15 wt% Viton A
LX-07	90 wt% HMX/10 wt% Viton A

TABLE A-4
ESTABLISHED EXPLOSIVES AT TA-16
NOMINAL COMPOSITIONS
(continued)

Name or Code	Composition
LX-14	95.5 wt% HMX/4.5 wt% Estane 5702 F-1
Methane/oxygen[h]	Explosive mixtures of methane and oxygen gases
NC	Nitrocellulose, cellulose nitrate
Nitromethane	Nitromethane
NQ	Nitroquanidine
NTO	1,2,4-nitro-triazole-5-one
Octol	75 wt% HMX/25 wt% TNT
PBX-9001	90 wt% RDX/8.5 wt% polystyrene / 1.5 wt% dioctyl phthalate
PBX-9007	90 wt% RDX/0.4 wt% polystyrene / 0.5 wt% dioctyl phthalate/0.4 wt% resin
PBX-9010	90 wt% RDX/10 wt% Kel-F 3700 elastomer
PBX-9011	90 wt% HMX/10 wt% Estane 5703 F-1
PBX-9205	92 wt% RDX/6 wt% polystyrene/2 wt% dioctyl phthalate
PBX-9206	92 wt% HMX/8 wt% Kel-F 3700 elastomer
PBX-9401	94.2 wt% RDX/3.6 wt% polystyrene/2.2 wt% trioctyl phosphate
PBX-9404	94 wt% HMX/3 wt% nitrocellulose/3 wt% chloroethyl phosphate
PBX-9405	94 wt% RDX/3 wt% nitrocellulose/3 wt% chloroethyl phosphate
PBX-9407	94 wt% RDX/6 wt% Exon 461
PBX-9501	95 wt% HMX/2.5 wt% Estane/2.5 wt% BDNPA/F
PBX-9502	95 wt% TATB/5 wt% Kel-F 800

TABLE A-4
ESTABLISHED EXPLOSIVES AT TA-16
NOMINAL COMPOSITIONS
(continued)

Name or Code	Composition
PBX-9503	80 wt% TATB (Class 2)/15 wt% HMX (Class 2)/5 wt% Kel-F 800
PBIW-113	88 wt% HMX/12 wt% rubber/plasticizer binder
Pentolite	50 wt% PETN/50 wt% TNT
PETN	Pentaerythritol tetranitrate
Picric Acid	Du Pont 85 wt% pure
PYX	2,6-Bis(picrylamino)-3,5-dinitropyridine
RDX	Cyclonite, cyclotrimethylenetrinitramine
Smokeless Powder (Single Base)	Standard military grades. Single or multi-perforated grains of colloided nitrocellulose. Stablizers, placticizers, inorganic nitrates, and other modifying agents may also be present.
Smokeless Powder (Double Base)	Standard military grades. Single or multi-perforated grains of colloided nitrocellulose containing nitroglycerine or nitroglycol. Stabilizers, plasticizers, inorganic nitrates, and other modifying agents may also be present.
STRATABLAST C[a]	Slurry blasting explosive
TAGN[h]	Triaminoguanidine nitrate
TAL-1005E[a]	Slurry blasting explosive
TATB	Triaminotrinitrobenzene
Tetryl	2,4,6-Trinitrophenylmethylnitramine
TNS	Trinitrostilbene
TNT	Trinitrotoluene
TNT/NC	80 wt% TNT/20 wt% NC

TABLE A-4
ESTABLISHED EXPLOSIVES AT TA-16
NOMINAL COMPOSITIONS
(continued)

Name or Code	Composition
Tritonal	80 wt% TNT/20 wt% aluminum powder
XTX-8003	80 wt% Recrystallized PETN/20 wt% Sylgard 182
XTX-8004	80 wt% RDX/20 wt% Sylgard 182

[a] For transportation only to and from DX -and ESA -Division Groups and storage by Group ESA-3.
[b] EDC-8 is the United Kingdom's version of XTX-8003.
[c] EDC-28 is the United Kingdom's version of PBX-9407.
[d] EDC-32 is the United Kingdom's version of LX-04.
[e] For shipping, storage, and experimental evaluation of quantities less than 5 g and for assembly of finished charges into test devices only.
[f] For shipping, storage, and analytical evaluation of molding powder and assembly of finished pieces into test devices.
[g] After approval by the Explosives Development Committee.
[h] For shipping, storage, and experimental evaluations on less than 5-g quantities.

FIGURE A-1

WASTE DISPOSAL REQUEST FORM

Los Alamos
National Laboratory

Chemical Waste Disposal Request

This form is used to request disposal of chemical and radioactive wastes. Mail completed form to Waste Services Group at MS J579

Waste Services Use Only

Account Information | Name (Print) | Telephone | Z Number | Date

Item Id	Waste Profile Number	Process ID	Shipping Container Information					Waste Information					Description
			Type	Volume	Unit	Tare Weight	Unit	Volume	Unit	Weight	Unit		

Container Types
01 - Bulk (unpackaged)
02 - Metal Drum
03 - Fiber or Plastic Drum
04 - Plastic Bottle or Container
05 - Glass Bottle or Container
06 - Plastic Bag
07 - Fiber or Plastic Box
08 - Wooden Box
09 - Metal Box
10 - Portable Tank
11 - Cylinder
12 - Bread Cask
13 - Other (Specify in Description)

Units for Volume
G - Gallons
L - Liters
F - Cubic Feet
M - Cubic Meters
O - Fluid Ounce
P - Pint
Q - Quart

Units for Weight
P - Pound
K - Kilograms
G - Grams
O - Ounce
T - Tons

Waste Accumulation *(Check all that apply)*
☐ < 90 Day Storage Area (Start Date: _____)
☐ Satellite Storage Area (Approximate Volume: _____)
☐ Rad Dumpster No: _____
☐ Security Area

TA
Building
Room

CERTIFICATION STATEMENT: To the best of my knowledge, 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.

Printed Name | Signature | Z Number | Date

Form 1641 (03/95)

FIGURE A-1

WASTE DISPOSAL REQUEST FORM
(continued)

Item Id	C/NC	Health Physics Information: Container Surface (mrem/hr)	1 Meter Dose (mrem/hr)	Package Surface Contamination (DPM/100 sq cm): Alpha	Beta-Gamma	Radionuclide	Amount	Unit	Uncertainty
							E + -		E + -
							E + -		E + -
							E + -		E + -
							E + -		E + -
							E + -		E + -
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C - Compactible NC - Non-compactible

Units for Activity: C - Curie M - Grams L - Curies/liter

Form 1541 (03/9[illegible]) Pg 2 of 2

EPA's Chemical Compatibility Chart

EPA-600/2-80-076 April 1980
A METHOD FOR DETERMINING THE COMPATIBILITY OF CHEMICAL MIXTURES

Please Note: This chart is intended as an indication of some of the hazards that can be expected on mixing chemical wastes. Because of the differing activities of the thousands of compounds that may be encountered, it is not possible to make any chart definitive and all inclusive. It cannot be assumed to ensure compatibility of wastes because wastes are not classified as hazardous on the chart, nor do any blanks necessarily mean that the mixture cannot result in a hazard occurring. Detailed instructions as to hazards involved in handling and disposing of any given waste should be obtained from the originator of the waste.

CODE	CONSEQUENCE
H	Heat Generation
F	Fire
G	Innocuous and non-flammable gas generation
GT	Toxic Gas formation
GF	Flammable Gas formation
E	Explosion
P	Violent Polymerization
S	Solubilization of toxic substance
U	May be hazardous, but Unknown

#	REACTIVITY GROUP NAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	101	102	103	104	105	106	107
1	Acids, Mineral, Non-oxidizing	1																																								
2	Acids, Mineral, Oxidizing		2																																							
3	Acids, Organic		G H	3																																						
4	Alcohols and Glycols	H	H F	H P	4																																					
5	Aldehydes	H P	H F	H P		5																																				
6	Amides	H	H GT				6																																			
7	Amines, Aliphatic and Aromatic	H	H GT	H		H		7																																		
8	Azo Compounds, Diazo Compounds and Hydrazines	H G	H GT	H G	H G	H			8																																	
9	Carbamates	H G	H GT						G H	9																																
10	Caustics	H	H	H		H				H G	10																															
11	Cyanides	GT GF	GT GF	GT GF					G			11																														
12	Dithiocarbamates	H,F GF	H,F GF	H,GT GF		GF GT		U	H G				12																													
13	Esters	H	H F						H G		H			13																												
14	Ethers	H	H F												14																											
15	Fluorides, Inorganic	GT	GT	GT												15																										
16	Hydrocarbons, Aromatic		H F														16																									
17	Halogenated Organics	H GT	H,F GT					H GT	H G		H GF	H						17																								
18	Isocyanates	H G	H,F GT	G	H P			P	H G		H,P G	H G	U						18																							
19	Ketones	H	H F						H G		H	H								19																						
20	Mercaptans and Other Organic Sulfides	GT GF	H,F GT						H G									H	H	H	20																					
21	Metals, Alkali and Alkaline Earth, Elemental	H,F GF	H,F GF	H,F GF	H,F GF	H,F GF	GF H	GF H	GF H	GF H	GF H	GF H	GF,H	GT	GF H			H E	GF H	GF H	GF H	21																				
22	Metals, Other Elemental & Alloys as Powders, Vapors, or Sponges	H,F GF	H,F GF	G F					H,F GT	U	GF H							H E	GF H		H,F GF		22																			
23	Metals, Other Elemental & Alloys as Sheets, Rods, Drums, etc.	H,F GF	H,F GF						H,F G									H F						23																		
24	Metals and Metal Compounds, Toxic	S	S	S			S	S			S														24																	
25	Nitrides	GF HF	H,F E	H GF	H,E GF	GF H			U	H G	U	GF H	GF	H				GF H	U	GF H	GF H	E				25																
26	Nitriles	H,GT GF	H,F GT	H							U											H P			S	GF H	26															
27	Nitro Compounds, Organic		H,F GT			H					H E											H,E GF				H,E GF		27														
28	Hydrocarbons, Aliphatic, Unsaturated	H	H F			H																	H E						28													
29	Hydrocarbons, Aliphatic, Saturated		H F																											29												
30	Peroxides and Hydroperoxides, Organic	H G	H E		H F	H G		H GT	H,F E	H,F GT		H,E GT	H,F	GT				H E	H E	E	H,F GT	H E	H G		H G	H,E GF	H,P GT		H P		30										
31	Phenols and Cresols	H	H F						H G										H P			GF H				GF H					H	31									
32	Organophosphates, Phosphothioates, Phosphodithioates	H GT GT	H						U		H E											H									U		32									
33	Sulfides, Inorganic	GF	HF GF	GT		H			E										H												H GT			33								
34	Epoxides	H P	H P	H P	H P	U		H P	H P		H P	H P	U								H P	H P	H P		H P	H P					H P	H P	U	H P	34							
101	Combustible and Flammable Materials, Miscellaneous	H G	H,F GT																			H,F G				H,F GF					H,F GT					101						
102	Explosives	H E P	H E P	H E P					H E P		H E P	P			H E							H E P	H E P	H E P	E P	E P					H E P	H E P		H E P	H E	H E	102					
103	Polymerizable Compounds	H	H	H					H P		H	H	U									H	H	H	H	H					H	H		H			H E	103					
104	Oxidizing Agents, Strong	H GT		H GT	H F	H F	H,F GT	H,F GT	H E	H,F GT		H,E GT	H,F	GT	H F	H F		H F	H GT	H,F GT	H GT	H,F E	H,F E	H F		H,F E	H,F GT	H E	H F	H F	H G	H F	H,F GT	H,F GT	H G	H,F E	H,F GT	104			
105	Reducing Agents, Strong	H	H,F	H	H,F	H,F	H	H G				H GT	H	F			H,F E	H E	H GF	H GF	H GF					H GF	H E				H E	H H	H,F GF	H,F GT		H	H GF	H E	H,F GF	H,F E	105		
106	Water and Mixtures Containing Water	H	H						G										H G			H GF	H GF		S	H GF								GT GF							GF GT	106	
107	Water Reactive Substances	<---EXTREMELY REACTIVE! DO NOT MIX WITH ANY CHEMICAL OR WASTE MATERIAL! EXTREMELY REACTIVE!--->																																								107

FIGURE A-2
HAZARDOUS WASTE COMPATIBILITY CHART

WASTE ANALYSIS PLAN

PERMIT ATTACHMENT A.2
NM0890010515-1

WASTE ANALYSIS PLAN FOR TRANSURANIC MIXED WASTE

LIST OF DEFINITIONS

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

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

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

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

Homogeneous waste - Waste that is of uniform composition.

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

Mixed waste - Waste that has both a hazardous waste component (see definition) and a radioactive waste component.

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

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

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

Radioactive Solid Waste Disposal Code - A waste identification system used exclusively at LANL to categorize TRU and TRU mixed waste forms generated by various on-site facilities.

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

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

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

LIST OF DEFINITIONS
(Continued)

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

TRUPACT-II Content (TRUCON) Code - A waste identification system developed by DOE to provide a consistent waste description for all TRU and TRU mixed waste generated throughout all of DOE's facilities. These codes are intended to assist DOE in establishing the characteristics of TRU and TRU mixed waste to be certified for transportation to the Waste Isolation Pilot Plant.

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

LIST OF REGULATORY REFERENCES AND CORRESPONDING WASTE ANALYSIS PLAN LOCATION

RCRA[a] Regulatory Reference 20 NMAC 4.1[b], Subparts V, VIII, and IX	Description of Requirement	Location in the Waste Analysis Plan
264.13(a)(1)	Analysis information adequate to meet 20 NMAC 4.1, Subparts V and VIII, Parts 264 and 268, revised November 1, 1995, storage requirements	A.2.2 and A.2.3
264.13(a)(2)	Waste analysis data	A.2.3.2
264.13(a)(3)	Repeat analysis	A.2.3.1, A.2.5, and A.2.5.2
264.13(a)(4)	Inspection and analysis after each movement of hazardous waste received from off-site	Not applicable (NA)
264.13(b)	Written waste analysis plan	Entire plan
264.13(b)(1)	Parameters and rationale for selection	A.2.2.1 and A.2.2.2 and Table A.2-3
264.13(b)(2)	Test methods	A.2.3, A.2.3.3, A.2.3.3.1, A.2.3.3.2, A.2.3.3.3, A.2.4, and Tables A.2-3 and A.2-4
264.13(b)(3)	Representative sample collection method	A.2.3.3, A.2.3.3.3, A.2.3.3.4, and A.2.3.3.5
264.13(b)(4)	Frequency for review or repeat of initial analysis	A.2.3.1, A.2.5.1, and A.2.5.2
264.13(b)(5)	Waste analysis information to be provided to off-site facilities	A.2.3.1, A.2.3.2, and Figure A.2-1
264.13(b)(6)	Additional waste analysis requirements	A.2.6
264.13(b)(7)	Surface impoundments exempted under 20 NMAC 4.1, Subpart VIII, 268.4(a), revised November 1, 1995	NA
264.13(c)	Inspection and analysis procedures for off-site facilities	NA

Refer to footnotes at end of table.

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

RCRA[a] Regulatory Reference 20 NMAC 4.1[b], Subparts V, VIII, and IX	Description of Requirement	Location in the Waste Analysis Plan
264.13(c)(1)	Procedures for identification of each movement of waste at off-site facilities	NA
264.13(c)(2)	Sampling method for the waste to be identified at off-site facilities	NA
264.13(c)(3)	For off-site landfills: procedures to determine whether a biodegradable sorbent has been added to containers	NA
268.7(a)	Determination of whether waste is restricted from land disposal	A.2.6.3
268.7(b)	Testing requirements for treatment facilities	NA
268.7(b)(1)	Testing of treatment residues or extract of waste with concentration-based treatment standards specified in 20 NMAC 4.1, Subpart VIII, 268.41, revised November 1, 1995	A.2.6.3
268.7(b)(2)	Testing of treatment residues pursuant to 20 NMAC 4.1, Subpart VIII, 268.32, revised November 1, 1995	NA
268.7(b)(3)	Testing of treatment residues of waste with concentration-based treatment standards specified in 20 NMAC 4.1, Subpart VIII, 268.43, revised November 1, 1995	A.2.6.3
268.7(b)(4)	Notice requirements	A.2.6.3 and Figure A.2-2
268.7(b)(5)	Certification of compliance with 20 NMAC 4.1, Subpart VIII, Part 268, revised November 1, 1995	A.2.6.3
268.7(b)(6)	Notice and certification requirements for treatment facilities that ship treatment residues to a different treatment, storage, or disposal (TSD) facility	NA
268.7(b)(7)	Notice requirement for recycling facilities using materials in a manner constituting disposal	NA

Refer to footnotes at end of table.

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

RCRA[a] Regulatory Reference 20 NMAC 4.1[b], Subparts V, VIII, and IX	Description of Requirement	Location in the Waste Analysis Plan
268.7(c)(1)	Recordkeeping requirements for land disposal facilities	NA
268.7(c)(2)	Testing requirements for land disposal facilities	NA
268.7(d)(1)	Notification requirements for excluded debris (i.e., pursuant to 20 NMAC 4.1, Subpart II, 261.3, revised November 1, 1995)	NA
268.7(d)(2)	Updated notification requirements for debris	NA
268.7(d)(3)	Documentation and certification requirements for debris excluded under 20 NMAC 4.1, Subpart II, 261.3(e)(1), revised November 1, 1995	NA
270.14(b)(2)	Chemical and physical analyses	A.2.2.1, A.2.3, A.2.3.1, A.2.3.2, A.2.3.3, A.2.3.3.1, A.2.3.3.2, A.2.3.3.3, Figure A.2-1, and Tables A.2-3 and A.2-4

Refer to footnotes at end of table.

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

[a] Resource Conservation and Recovery Act

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

ATTACHMENT A.2
WASTE ANALYSIS PLAN FOR TRANSURANIC MIXED WASTE

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

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

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

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

A.2.1 FACILITY DESCRIPTION

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

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

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

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

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

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

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

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

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

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

Tables A.2-1 and A.2-2 are organized in this hierarchical fashion, from the most general waste stream categorization scheme to the most specific waste stream identification system. As shown in Table A.2-1, the matrix parameter codes are the most general categorization scheme for TRU mixed waste. Each matrix parameter code includes specific IDCs, and each IDC in turn may include a number of TRUCON and RSWD codes. Each IDC, TRUCON code, and RSWD code in LANL's TRU mixed waste inventory is

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

A.2.1.1.1 LANL IDCs

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

IDC 001

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

IDC 002

IDC 002 waste is concreted (cemented) aqueous waste, which consists of caustic sludge stabilized with Portland cement to form a noncorrosive solid monolith. The sludge is a residue from the treatment of blended acidic and caustic aqueous liquid radioactive waste with calcium hydroxide, ferric sulfate, and a flocculation aid. This treatment produces a thin sludge (approximately 25 percent solids) that is always alkaline and is compatible with Portland cement. Final cemented waste monoliths are produced by tumbling 55-gallon steel drums containing empirically determined quantities of sludge, Portland cement, vermiculite, and sodium silicate.

IDC 003

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

IDC 004

Combustible waste (e.g., paper, rags, plastic, rubber) comprises IDC 004, including plastic-based and

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

IDC 005 and Subgroups

IDC 005 waste consists of the following subgroups:

IDC 005

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

IDC 005(LG)

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

IDC 005(LM)

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

IDC 005(P1)

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

IDC 005(P2G)

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

IDC 005(P2S)

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

IDC 006

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

A.2.1.1.2 LANL TRUCON Codes

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

TRUCON Code LA 111A

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

TRUCON Code LA 211A

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

TRUCON Code LA 111B

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

TRUCON Code LA 211B

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

TRUCON Code LA 114A

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

TRUCON Code LA 115A

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

TRUCON Code LA 116A

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

TRUCON Code LA 116B

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

TRUCON Code LA 116C

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

TRUCON Code LA 116D

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

TRUCON Code LA 116E

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

TRUCON Code LA 117A

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

TRUCON Code LA 117B

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

TRUCON Code LA 117C

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

TRUCON Code LA 117D

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

TRUCON Code LA 117

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

TRUCON Code LA 117F

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

TRUCON Code LA 117G

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

TRUCON Code LA 118A

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

TRUCON Code LA 119A

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

TRUCON Code LA 123A

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

TRUCON Code LA 123B

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

TRUCON Code LA 124A

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

TRUCON Code LA 125A

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

TRUCON Code LA 126A

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

A.2.1.1.3 LANL RSWD Codes

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

LANL RSWD Code A10

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

LANL RSWD Code A14

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

LANL RSWD Code A15

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

LANL RSWD Code A16

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

LANL RSWD Code A17

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

LANL RSWD Code A18

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

LANL RSWD Code A19

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

LANL RSWD Code A24

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

LANL RSWD Code A25

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

LANL RSWD Code A26

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

LANL RSWD Code A27

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

LANL RSWD Code A28

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

LANL RSWD Code A29

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

LANL RSWD Code A30

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

LANL RSWD Code A31

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

LANL RSWD Code A36

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

LANL RSWD Code A40

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

LANL RSWD Code A46

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

LANL RSWD Code A47

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

LANL RSWD Code A50

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

LANL RSWD Code A52

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

LANL RSWD Code A55

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

LANL RSWD Code A60

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

LANL RSWD Code A61

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

LANL RSWD Code A75

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

LANL RSWD Code A76

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

LANL RSWD Code A80

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

LANL RSWD Code A90

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

LANL RSWD Code A95

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

A.2.1.2 Description of TRU Mixed Waste Management Units

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

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

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

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

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

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

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

A.2.2 WASTE ANALYSIS PARAMETERS

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

A.2.2.1 Proposed Analytical Parameters and Characterization Methods

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

- Physical waste form characterization through real-time radiography (RTR) and visual examination to verify the absence of free liquids

- Headspace gas sampling to determine the presence of volatile organic compounds (VOC) in container headspace

- Hazardous constituent sampling to determine the presence and concentrations of:

  - RCRA-regulated metals
  - RCRA-regulated VOCs
  - RCRA-regulated semivolatile organic compounds (SVOC)

A.2.2.2 Criteria and Rationale for Parameter Selection

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

A.2.3 CHARACTERIZATION OF TRU MIXED WASTE

The characterization of TRU mixed waste managed at LANL can be divided into general approaches based on when the waste was generated and the differences involved in sampling the waste. Generally, the distinction is made between legacy, existing, and future TRU mixed waste to define the quality of

information available on the waste and the subsequent need for additional sampling and analysis. A secondary distinction between heterogeneous and homogeneous waste, as reflected in the matrix parameter codes, is made to determine the availability or appropriateness of sampling procedures.

As provided in the List of Definitions, *legacy* TRU mixed waste is waste generated before the LANL Waste Profile Form (WPF) was implemented in May 1991 (see Section A.2.3.1). Legacy TRU mixed waste has been characterized with qualitative assessments to evaluate the presence or absence of hazardous constituents. These assessments include examining past records and databases, conducting interviews with waste generators, and observing and evaluating similar waste-generating processes. *Existing (or currently generated)* TRU mixed waste (i.e., waste generated since May 1991) is characterized using LANL's WPF. *Future* TRU mixed waste will be characterized using both LANL's WPF and a certification program (see Section A.2.3.2).

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

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

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

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

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

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

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

A.2.3.1 Waste Profiling System

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

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

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

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

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

A.2.3.2 Acceptable Knowledge

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

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

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

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

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

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

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

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

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

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

- Waste packaging logs.

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

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

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

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

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

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

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

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

- Sampling and analysis data from comparable waste streams.
- Documented visual inspections to confirm or identify the physical characteristics and packaging of a waste.
- Laboratory notebooks that detail the research processes and raw materials used in an experiment.

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

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

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

A.2.3.3 Sampling and Analysis for TRU Mixed Waste

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

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

A.2.3.3.1 Real-Time Radiography

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

A.2.3.3.2 Visual Examination

Waste contents of select TRU mixed waste containers will be visually examined to confirm the RTR results. This visual examination will also verify aspects of acceptable knowledge amenable to visual confirmation. For example, the visual examination will verify the physical characteristics of the waste and the associated matrix parameter code (i.e., Matrix Parameter Code 3000, 4000, or 5000). In addition, the visual examination will verify the presence of certain hazardous constituents, such as lead in lead bricks or lead-lined gloves. These types of visual confirmations will further verify or refute the overall acceptable knowledge used to characterize the waste stream.

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

A.2.3.3.3 Headspace Gas Sampling and Analysis

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

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

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

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

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

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

A.2.3.3.4 Solid Waste Sampling and Analysis

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

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

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

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

Sample Core Collection

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

Rotational coring tools (i.e., lightweight augers) and nonrotational coring tools (i.e., thin-walled samplers) have each been tested for their ability to collect a vertical core of simulated solidified waste contained in 55-gallon drums and 1-gallon polyethylene bottles, as described in "Idaho National Engineering Laboratory

Simulated Solidified Transuranic Waste Sampling Program" (EG&G, 1994). The rotational coring tool used at the INEL has demonstrated core recoveries greater than 75 percent for soft simulated wastes and greater than 94 percent for hard simulated waste. The sampling tool has been designed to minimize the transfer of frictional heat to the core, thereby minimizing potential loss of VOCs (DOE, 1994). The nonrotational coring tool has demonstrated core recoveries greater than 88 percent for soft simulated wastes. LANL will use coring tools similar to those developed at the INEL.

Subsample Collection

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

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

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

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

A.2.3.4 Sample Handling, Preservation, and Storage

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

A.2.4 ANALYTICAL LABORATORY SELECTION AND ANALYTICAL METHODS

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

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

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

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

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

A.2.5 VERIFICATION ANALYSIS FOR TRU MIXED WASTE

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

A.2.5.1 Verification of Existing TRU Mixed Waste

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

examination of the contents of select waste containers (see Section A.2.3.3.2), and headspace gas sampling while venting (see Section A.2.3.3.3).

A.2.5.2 Verification of Future TRU Mixed Waste

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

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

A.2.6 SPECIAL PROCEDURAL REQUIREMENTS

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

A.2.6.1 Procedures for Ignitable and Reactive Wastes

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

A.2.6.2 Procedures for Incompatible Wastes

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

A.2.6.3 Procedures to Ensure Compliance with LDR Requirements

In accordance with LDR requirements, waste to be shipped off site may need to be analyzed to determine whether it meets the applicable LDR treatment standards in 20 NMAC 4.1, Subpart VIII, Part 268, Subpart D, revised November 1, 1995. If (1) it is known whether the wastes meet applicable LDR treatment standards based on acceptable knowledge or (2) waste will be transported to a RCRA-permitted waste management facility operating in conformance with a no-migration determination, then sampling and analysis to certify LDR compliance is not necessary for affected waste. Sampling and analysis will be conducted in accordance with 20 NMAC 4.1, Subpart VIII, Part 268, revised November 1, 1995, only to certify that the waste meets LDR treatment standards. Each waste for which a treatment standard has been

established will be evaluated for the applicable parameters in 20 NMAC 4.1, Subpart VIII, Part 268, Subpart D, revised November 1, 1995. All analytical results completed in support of LDR requirements will be retained within the facility operating record. LDR determinations will be documented on LANL's Land Disposal Restrictions Notification Form (Figure A.2-2).

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

Matrix Parameter[a] Code/ Description	Item Description Codes (IDCs)	Matrix Category (Waste Description)	TRUPACT-II Content and Radioactive Solid Waste Disposal Codes	Waste Descriptions
3000-Solid Process Residues	002	Stabilized aqueous waste	LA 111A/211A	Concreted/cemented aqueous waste
			A76	Cement paste
	003	Stabilized aqueous waste	LA 111B/211B	Dewatered sludge
			A75	Chemical treatment sludge
	005(P2S)	Waste salts	LA 124A	Transuranic (TRU) waste salts
			A27	Nitrated solid crystallized residues
			A28	Chloride salts
			A29	Hydroxide cake
	006	Solidified inorganic process solids	LA 114A	Solidified inorganic process solids
			A24	Cemented/immobilized residues/powders
			A26	Evaporator bottoms/salts
	006	Solidified organic process solids	LA 126A	Solidified organic process solids
			A24	Cemented/immobilized residues/powders
			A25	Leached process residues
			A26	Evaporator bottoms/salts
			A29	Hydroxide cake
			A46	Reaction process crucibles and oxide residues
4000-Soils	None	Contaminated soil	A90	Contaminated soil
5000-Debris Wastes	001	Mixed metal scrap and incidental combustibles	LA 125A	Incidental combustibles and mixed metal scrap
			A30	Property-numbered (PN) equipment

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

Matrix Parameter[a] Code/ Description	Item Description Codes (IDCs)	Matrix Category (Waste Description)	TRUPACT-II Content and Radioactive Solid Waste Disposal Codes	Waste Descriptions
			A31	Non-PN equipment
			A36	Noncombustible building debris
			A55	Filter media
	004	Combustible waste	LA 116A-E	Combustible waste
			A14	Combustible decontamination waste
			A15	Cellulosics (e.g., paper, wood)
			A16	Plastics
			A17	Rubber materials
			A18	Combined paper/plastics/rubber
			A19	Combined noncombustible trash
			A40	Combustible hot cell waste
			A60	Other combustibles
	005	High-efficiency particulate air (HEPA) filters	LA 119A	HEPA filters
			A55	Filter media
	005(LG)	Glass waste	LA 118A	TRU glass waste
			A47	Slag and porcelain
			A95	Glass waste
5000-Debris Wastes (Continued)	005(LM)	Metal waste	LA 117A-G	TRU noncombustible/ metal waste
			A50	Metal crucibles, scrap, dies
			A52	Scrap metal

Refer to footnotes at end of table.

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

		A61	Other noncombustibles
		A80	Irradiation sources
005(P1)	Leaded-rubber and metal waste	LA 123A-B	TRU leaded-rubber and TRU metal waste
		A61	Other noncombustibles
005(P2G)	Graphite waste	LA 115A	TRU graphite waste
		A10	Graphite solids

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

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

Item Description Codes (IDC)	Waste Description	TRUPACT-II Content (TRUCON) Codes	Process Generating the Waste/Technical Area (TA)	Radioactive Solid Waste Disposal (RSWD) Codes/Waste Description	Basis for Hazardous Waste Designation (knowledge and/or testing)	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents in the Waste	Regulatory Limits[c] (milligrams per liter)
001	Mixed metal scrap and incidental combustibles	LA 125A	Metal equipment from decommissioning (e.g., gloveboxes, process equipment, ductwork); small volumes of combustibles from decommissioning in TA-3, TA-21, TA-39, TA-49, and TA-55, and sectioning, and packaging in TA-50-69.	A30 - Property-numbered (PN) equipment A31 - Non-PN Equipment A36 - Non-combustible building debris A55 - Filter media	Knowledge[d]	D006 D008	Cadmium Lead	1.0 5.0
002	Stabilized aqueous waste	LA 111A LA 211A	Effluent from plutonium (Pu) processing operations in TA-21 and TA-55, treated in TA-50-1 to produce the resulting concreted monolith	A76 - Cement paste	Knowledge[d]	D004 D006 D007 D008 D009 None None	Arsenic Cadmium Chromium Lead Mercury Barium hydroxide Beryllium hydroxide	5.0 1.0 5.0 5.0 0.2 None None
003	Stabilized aqueous waste	LA 111B LA 211B	Sludge from Pu processing in TA-55 is chemically treated and mixed with dry concrete in TA-50-1	A75 - Chemical treatment sludge	Knowledge[d]	D004 D006 D007 D008 D009 D010 D011	Arsenic Cadmium Chromium Lead Mercury Selenium Silver	5.0 1.0 5.0 5.0 0.2 1.0 5.0

Refer to footnotes at end of table.

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

Item Description Codes (IDC)	Waste Description	TRUPACT-II Content (TRUCON) Codes	Process Generating the Waste/Technical Area (TA)	Radioactive Solid Waste Disposal (RSWD) Codes/Waste Description	Basis for Hazardous Waste Designation (knowledge and/or testing)	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents in the Waste	Regulatory Limits[c] (milligrams per liter)
						D019	Carbon tetrachloride	0.5
						D021	Chlorobenzene	100.0
						D022	Chloroform	6.0
						F002	Spent halogenated solvents	Not Applicable (NA)
						F004 F005	Spent nonhalogenated solvents Acetone	NA
						None	Barium chloride	None
						None	Barium hydroxide	None
						None	Beryllium	None
						None	Beryllium hydroxide	None
						None	Di-n-octyl-phthalate	None
						None	Ethanol	None
						None	Methanol	None
						None	Methylene chloride	None
						None	n-Butyl alcohol	None
						None	Nickel	None
						None	Thallium	None
						None	Toluene	None
						None	Xylene	None
						None		None
004	Combustible waste	LA 116A LA 116B	Combustible solids (e.g., paper, rags, plastic,	A14 - Combustible decontamination waste A15 - Cellulosics	Knowledge[d]/	D002 D004	Hydrofluoric acid Arsenic	NA 5.0

Refer to footnotes at end of table.

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

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

Refer to footnotes at end of table.

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

Item Description Codes (IDC)	Waste Description	TRUPACT-II Content (TRUCON) Codes	Process Generating the Waste/Technical Area (TA)	Radioactive Solid Waste Disposal (RSWD) Codes/Waste Description	Basis for Hazardous Waste Designation (knowledge and/or testing)	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents in the Waste	Regulatory Limits[c] (milligrams per liter)
			plastics) generated from Pu processing in TA-3, TA-21, TA-42, and TA-55			None	Barium hydroxide	None
005(LM)	Metal waste	LA 117A LA 117B LA 117C LA 117D LA 117E LA 117F LA 117G	Metal waste (e.g., motors, pumps, tools, process equipment) with a small fraction of combustible waste (e.g., plastics) generated from Pu processing in TA-3 and TA-55	A50 - Metal crucibles, scrap, dies A52 - Scrap metal A61 - Other noncombustibles A80 - Irradiation sources	Knowledge[d]/ Testing[e]	D002 D008 D019 None None	Hydrofluoric acid Lead Carbon tetrachloride Barium chloride Beryllium	NA 5.0 0.5 None None
005(P1)	Leaded-rubber and metal waste	LA 123A LA 123B	Lead-lined glovebox gloves and metal waste (e.g., motors, tools, discarded metals) generated from Pu processing in TA-55	A61 - Other noncombustibles	Knowledge[d]/Testing[e]	D002 D004 D006 D008 D009 D019 None None None	Hydrofluoric acid Arsenic Cadmium Lead Mercury Carbon tetrachloride Beryllium hydroxide Bromobenzene Nickel	NA 5.0 1.0 5.0 0.2 0.5 None None None
005(P2G)	Graphite waste	LA 115A	Discarded graphite molds, furnace equipment, and a small fraction of	A10 - Graphite solids	Knowledge[d]	D004 D006 D008	Arsenic Cadmium Lead	5.0 1.0 5.0

Refer to footnotes at end of table.

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

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

Refer to footnotes at end of table.

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

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

Refer to footnotes at end of table.

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

	TA-1, TA-3, TA-21, and TA-50

[a] This table is based on preliminary information from Los Alamos National Laboratory, 1994, "Draft Transuranic Waste Stream Hazardous Material Characterization Study," Rev. 0, and is subject to change upon further review. Potential EPA Hazardous Waste Numbers shown in this table may vary from those reported in LANL's Part A Permit Application for Mixed Waste (Rev. 2.0), September 1994, which reports the EPA Hazardous Waste Numbers in LANL's waste management database.

[b] U.S. Environmental Protection Agency.

[c] A solid waste exhibits the characteristic of toxicity if the extract from a representative sample of the waste contains any of the contaminants listed at a concentration equal to or greater than the respective value given in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Subpart D, revised November 1, 1995.

[d] Knowledge indicates process knowledge used as the basis for hazardous waste designation.

[e] Testing: In reference to the basis for hazardous waste classification, indicates that sampling and analysis has been performed, but either (1) the documentation is not available or (2) the data exist but are not verifiable.

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

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

Refer to footnotes at end of table.

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

		headspace gas	mass spectrometry – Fourier transform infrared spectrometry – Gas chromatography/ Flame ionization detector	confirm the presence of VOCs
		– VOCs and SVOCs (see Table A.2-4)	– Acceptable knowledge	– Determine compliance with LDR treatment standards, if applicable

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

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

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

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

Parameter[a]	Method Numbers	Test Methods	Rationale
Physical Waste Form		Waste inspection procedures Real-time radiography Visual examination Process knowledge	Identify and verify waste container contents
Volatile Organic Compounds (VOC) in waste matrix and container headspace gas: Acetone n-Butyl alcohol Carbon tetrachloride Chlorobenzene Chloroform Dichloroethane Formaldehyde Methanol Methylene chloride Spent halogenated solvents Spent nonhalogenated solvents Tetrachloroethylene Toluene 1,1,1-Trichloroethane Trichloroethylene Xylenes	ASTM Method D4547-91[b] U.S. EPA/540/4-91/001[c] SW-846 (1311, 8240, 8240A, 8240B, 8260, 8260A)[d], or equivalent methods[e]	Total and/or toxicity characteristic leaching procedure (TCLP) VOC analysis by gas chromatography/ mass spectrometry (GC/MS) Fourier transform infrared spectrometry Flame ionization detector Process knowledge for debris wastes	Determine total and/or TCLP VOC concentrations in samples of solid process residues and soils
Semivolatile Organic Compounds (SVOC) in waste: Cresols Ortho-dichlorobenzene 1,4-Dichlorobenzene 2,4-Dinitrotoluene Hexachloroethane Nitrobenzene Pyridine	SW-846 (1311, 8250, 8250A, 8270A, 8270B)[d], or equivalent methods[e]	Total and/or TCLP SVOC analysis by GC/MS Process knowledge for debris waste	Determine total and/or TCLP SVOC concentrations in samples of solid process residues and soils
Metals in waste: Arsenic Barium Cadmium Chromium Lead Mercury Nickel	SW-846 (3051, 1311, 6010A, 6020, 7060A, 7061A)[d] (3051, 1311, 6010A, 6020, 7080, 7080A, 7081)[d] (3051, 1311, 6010A, 6020, 7130, 7131A)[d] (3051, 1311, 6010A, 6020, 7190, 7191)[d] (3051, 1311, 6010A, 6020, 7420, 7421)[d] (1311, 7471A)[d] (3051, 1311, 6010A, 6020, 7520)[d]	Total and/or TCLP metals analysis Inductively coupled plasma Atomic absorption spectroscopy Cold vapor atomic	Determine total and/or TCLP metals concentrations in samples of solid process residues and soils

Refer to footnotes at end of table.

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

Selenium Silver Thallium	(3051, 1311, 6010A, 6020, 7740, 7741A, 7742)[d] (3051, 1311, 6010A, 6020, 7760A, 7761)[d] (3051, 1311, 6010A, 6020, 7840, 7841)[d], or equivalent methods[e]	absorption spectroscopy Process knowledge for debris wastes	

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

[b] American Society for Testing and Materials (ASTM), 1991, "Standard Practice for Sampling Waste and Soils for Volatile Organic Compounds," *ASTM D4547-91*, Annual Book of ASTM Standards, Philadelphia, Pennsylvania, American Society for Testing and Materials.

[c] U.S. Environmental Protection Agency (EPA), 1991, "Soil Sampling and Analysis for Volatile Organic Compounds," *EPA/540/4-91/001*, Office of Research and Development, U.S. Environmental Protection Agency.

[d] U.S. Environmental Protection Agency (EPA), 1994, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*, Third Edition, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

[e] Equivalent methods, subject to EPA approval, may be substituted.

Los Alamos
National Laboratory

WASTE PROFILE FORM

Account Information

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

Reference Number

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

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

Waste Accumulation
Check as many as apply.

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

Method of Characterization
Check as many as apply.

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

Section 1- Chemical and Physical Characteristics

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

Waste Type
Check only one.

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

Waste Classes
Check as many as apply.

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

Associated Documentation
Check as many as apply.

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

Waste Category
Check as many as apply.

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

Waste Sources
Check as many as apply.

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

Waste Matrix
Check only one.

Gas
- ☐ ≤ 1.5 Atmospheres
- ☐ > 1.5 Atmospheres

Liquid
- ☐ Aqueous
- ☐ Organic
- ☐ Inorganic

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

Matrix Type
Check only one.

- ☐ Homogeneous
- ☐ Heterogeneous --> describe below

Waste/Process Description

_____
_____
_____
_____
_____
_____
_____

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FIGURE A.2-1

WASTE PROFILE FORM

Section 1- Chemical and Physical Characteristics (continued)

Ignitability (degrees F.)
Check only one.

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

Corrosivity (pH)
Check only one.

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

Reactivity
Check as many as apply.

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

Boiling Point (degrees F.)
Check only one.

- ☐ ≤ 95
- ☐ > 95
- ☐ Not applicable

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

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

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

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FIGURE A.2-1

WASTE PROFILE FORM
(continued)

Section 2- Radiological Characteristics

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

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

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

Contamination Type: *Check as many as apply.*

☐ Volume Contamination
☐ Surface Contamination

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FIGURE A.2-1

WASTE PROFILE FORM
(continued)

Section 3 - Wastewater Characteristics

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

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

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

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

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

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

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

☐ Acid line ☐ Caustic line ☐ Industrial waste line

Section 4 - Additional Information

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

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

Signature	Date

Form 1348 (1/95) Page 4 of 4

FIGURE A.2-1

WASTE PROFILE FORM
(continued)

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LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

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

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

Check only one.

☐ Non-wastewater

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

NOTIFICATION OF CALIFORNIA LIST APPLICABILITY

Check all that apply.

☐ Liquid hazardous waste containing PCBs at a concentration of ≥50 ppm.

☐ A D001 – D017 liquid waste containing ≥134 mg/L of nickel and/or ≥130 mg/L of thallium.

☐ A D001 – D011 waste containing Halogenated Organic Compounds (HOCs) listed in 40 CFR 268, Appendix III, at ≥1000 ppm.

NOTIFICATION OF "D" CHARACTERISTIC EPA WASTE CODES

Check all that apply.

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

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

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

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LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

NOTIFICATION FOR F001 – F005 SPENT SOLVENT WASTES

Check all that apply.

Spent solvent wastes with the following constituents only.

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

Check all that apply.

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

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

Check only one, if applicable.

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

NOTIFICATION FOR OTHER "F" WASTES

Check only one, if applicable.

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

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LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

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

- ☐ P001
- ☐ P002
- ☐ P003
- ☐ P004
- ☐ P005
- ☐ P006
- ☐ P007
- ☐ P008
- ☐ P009
- ☐ P010
- ☐ P011
- ☐ P012
- ☐ P013
- ☐ P014
- ☐ P015
- ☐ P016
- ☐ P017
- ☐ P018
- ☐ P020
- ☐ P021
- ☐ P022
- ☐ P023
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- ☐ U248
- ☐ U249
- ☐ U328
- ☐ U353
- ☐ U359

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LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

TABLE UTS—Universal Treatment Standards

(Check the applicable underlying hazardous constituents for D001, D002, and D012 –D043 characteristic wastes only.)

Regulated constituent—common name

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

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LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

TABLE UTS—Universal Treatment Standards

(Check the applicable underlying hazardous constituents for D001, D002, and D012 –D043 characteristic wastes only.)

Regulated constituent—common name

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

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

Regulated constituent—common name

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

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

NOTIFICATION OF ADDITIONAL TREATMENT STANDARDS

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

WASTE ANALYSIS PLAN

PERMIT ATTACHMENT A.3
NM0890010515-1

WASTE ANALYSIS PLAN FOR LOW-LEVEL SOLID MIXED WASTE

LIST OF DEFINITIONS

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

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

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

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

Homogeneous waste - Waste that is of uniform composition.

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

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

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

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

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

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

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

LIST OF REGULATORY REFERENCES AND CORRESPONDING WASTE ANALYSIS PLAN LOCATION

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

Refer to footnotes at end of table.

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

RCRA[a] Regulatory Reference 20 NMAC 4.1[b], Subparts V, VIII, and IX	Description of Requirement	Location in the Waste Analysis Plan
264.13(c)(2)	Sampling method for the waste to be identified for off-site shipments	NA
264.13(c)(3)	For off-site landfills: procedures to determine whether a biodegradable sorbent has been added to containers	NA
268.7(a)	Determination of whether waste is restricted from land disposal	A.3.6.3
268.7(b)	Testing requirements for treatment facilities	NA
268.7(b)(1)	Testing of treatment residues or extract of waste with concentration-based treatment standards specified in 20 NMAC 4.1, Subpart VIII, 268.41, revised November 1, 1995	NA
268.7(b)(2)	Testing of treatment residues pursuant to 20 NMAC 4.1, Subpart VIII, 268.32, revised November 1, 1995	NA
268.7(b)(3)	Testing of treatment residues of waste with concentration-based treatment standards specified in 20 NMAC 4.1, Subpart VIII, 268.43, revised November 1, 1995	A.3.6.3
268.7(b)(4)	Notice requirements	A.3.6.3 and Figure A.3-2
268.7(b)(5)	Certification of compliance with 20 NMAC 4.1, Subpart VIII, Part 268, revised November 1, 1995	A.3.6.3
268.7(b)(6)	Notice and certification requirements for treatment facilities that ship treatment residues to a different treatment, storage, or disposal (TSD) facility	NA
268.7(b)(7)	Notice requirement for recycling facilities using materials in a manner constituting disposal	NA
268.7(c)(1)	Recordkeeping requirements for land disposal facilities	NA
268.7(c)(2)	Testing requirements for land disposal facilities	NA
268.7(d)(1)	Notification requirements for excluded debris (i.e., pursuant to 20 NMAC 4.1, Subpart II, 261.3, revised	NA

Refer to footnotes at end of table.

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

	November 1, 1995)	
268.7(d)(2)	Updated notification requirements for debris	NA
268.7(d)(3)	Documentation and certification requirements for debris excluded under 20 NMAC 4.1, Subpart II, 261.3(e)(1), revised November 1, 1995	NA
270.14(b)(2)	Chemical and physical analyses	A.3.2.1, A.3.3, A.3.3.1, A.3.3.2, A.3.3.3, Figure A.3-1, and Tables A.3-2 and A.3-3

[a] Resource Conservation and Recovery Act

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

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

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

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

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

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

A.3.1 FACILITY DESCRIPTION

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

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

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

A.3.1.1.1 Homogeneous Low-Level Solid Mixed Wastes

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

Dewatered Treatment Sludges

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

Soils with Heavy Metals

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

Environmental Restoration (ER) Soils

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

Inorganic Solid Oxidizers

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

A.3.1.1.2 Heterogeneous Low-Level Solid Mixed Wastes

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

Lead from Surface Decontamination

Lead from surface decontamination consists of contaminated lead shielding used as radiation shielding in radioisotope experiments and other reactor, accelerator, laser, and x-ray applications. The lead may be in

the form of sheets, pigs, bricks, and special shapes. The radioactive material on the surface of the lead may be removable by decontamination and the lead can then be recycled or reused.

Other Lead Waste

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

Noncombustible Debris

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

Combustible Debris

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

Organic-Contaminated Noncombustible Solids

This waste stream typically includes absorbed oils, laboratory trash, and discarded equipment. Absorbed oil waste is comprised of bulk drums containing rags or Kimwipes™ and vermiculite or corncob fractions used to absorb many different types of oil from spills and routine maintenance operations. The oil generally originates from vacuum pumps and may be contaminated by mercury, lead, or cadmium. Mercury is a common constituent in the waste stream because of its use at various LANL locations as a vacuum pumping fluid for early vacuum systems. Cadmium contamination may be the result of soldering and brazing-fume-hood operations. Lead contamination is the result of lead turnings contained in cooling oil. Absorbent is routinely added to these waste oils as required by standard operating procedures. Laboratory trash consists of noncombustible solid materials with residual solvent contamination. The laboratory debris includes reagent bottles, broken glassware, and discarded disposable materials (e.g., syringes and drying dishes). Large quantities of chemicals were not placed in this trash; however, residual liquids or powders may have remained on some of the disposed material. Discarded equipment with heavy metals and solvents primarily includes equipment and broken glassware that may have contained residual solvents.

Organic-Contaminated Combustible Solids

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

Water-Reactive Wastes

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

Mercury Wastes - To Be Determined

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

Nonradioactive or Suspect Waste Items to be Surveyed

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

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

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

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

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

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

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

- CSAs at TA-54, Area L
- CSAs at TA-55
- Storage units at TA-63.

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

A.3.2 WASTE ANALYSIS PARAMETERS

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

A.3.2.1 Proposed Analytical Parameters and Characterization Methods

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

A.3.2.2 Criteria and Rationale for Parameter Selection

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

A.3.3 CHARACTERIZATION OF LOW-LEVEL SOLID MIXED WASTE

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

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

Legacy low-level solid mixed waste was reviewed in partial fulfillment of the requirements of the "Federal

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

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

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

In addition to the distinction among legacy, existing, and future low-level solid mixed waste streams, characterization procedures are constrained by the physical nature of the waste stream (i.e., homogeneous or heterogeneous). Homogeneous low-level solid mixed waste may be characterized for the presence of hazardous constituents (i.e., volatile organic compounds [VOC], semivolatile organic compounds [SVOC], and metals) on the basis of process knowledge and/or sampling and analysis. Homogeneous waste streams may be sampled and analyzed for the toxicity characteristic (TC) contaminants listed in 20 NMAC 4.1, Subpart II, 261.24, revised November 1, 1995. Analytical data will be compared to the TC regulatory levels expressed as total values. These total values will be considered the regulatory threshold limit (RTL) values for the determination of whether a particular waste exhibits a TC. RTL values are obtained by calculating the weight/weight concentration (in the solid) of a TC contaminant that would give the regulatory weight/volume concentration in the toxicity characteristic leaching procedure (TCLP) extract. Because of the difficulty in obtaining representative samples and the lack of appropriate sampling methodology, heterogeneous low-level solid mixed waste will be characterized largely on the basis of process knowledge.

A.3.3.1 Waste Profiling System

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

- Point of generation

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

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

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

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

A.3.3.2 Acceptable Knowledge

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

According to EPA guidance, *acceptable knowledge* is broadly defined to include process knowledge, waste analysis data, and/or facility records of analysis (EPA, 1994). *Process knowledge* is described in 20 NMAC 4.1, Subpart V, 264.13(a)(2), revised November 1, 1995, as data developed under 20 NMAC 4.1, Subpart II, revised November 1, 1995, and existing published or documented data on a specific hazardous waste or hazardous waste generated from similar processes. *Waste analysis data* include concentration(s) of RCRA-regulated constituents and/or results of tests for hazardous characteristics. These data are used to determine if wastes are RCRA regulated and to determine their LDR status. *Facility records of analysis* performed

before the effective date of RCRA regulations will be used with caution. These analytical results must be accurate and applicable to the specified waste and should be supplemented with other existing information (e.g., published data). EPA guidance suggests that acceptable knowledge may be appropriate for wastes meeting the following descriptions:

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

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

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

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

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

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

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

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

- Waste packaging logs.

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

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

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

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

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

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

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

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

- Sampling and analysis data from comparable waste streams.

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

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

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

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

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

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

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

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

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

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

Because legacy and existing low-level solid mixed waste streams have been characterized in partial fulfillment of the FFCA (EPA, 1994), future low-level solid mixed waste that is of similar composition to the characterized low-level solid mixed waste will not be analyzed further unless the waste-generating process changes. Changes in waste-generating processes will be verified through an annual recharacterization evaluation. In addition, if the newly generated waste is of different composition than the stored waste or if waste verification inspections indicate a discrepancy between the waste and its WPF, additional characterization will be performed to recharacterize the waste. For future homogeneous waste, the recharacterization will include sampling and analysis sufficient to establish the range of regulated constituents potentially present in the waste. Both homogeneous and heterogeneous wastes will undergo reevaluation through review of documentation supporting waste characterization activities.

A.3.3.4 Sample Handling, Preservation, and Storage

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

A.3.4 ANALYTICAL LABORATORY SELECTION AND ANALYTICAL METHODS

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

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

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

- The physical form of the waste

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

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

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

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

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

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

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

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

Analytical results that show regulated constituents present at concentrations outside of the ranges documented on the WPF are cause for rejection of the WPF and will require investigation. Recharacterization of the waste stream will include sampling and analysis sufficient to establish the range of

regulated constituents potentially present in the waste stream. In addition, any time a process change that affects a waste stream occurs, verification analysis must be repeated to determine the regulatory status of the waste stream.

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

A.3.6 SPECIAL PROCEDURAL REQUIREMENTS

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

A.3.6.1 Procedures for Ignitable and Reactive Wastes

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

A.3.6.2 Procedures for Incompatible Wastes

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

A.3.6.3 Procedures to Ensure Compliance with LDR Requirements

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

Wastes resulting from facility operations that exceed applicable LDR treatment standards will be sent to a permitted treatment facility if treatment options are available for low-level solid mixed waste. For off-site

shipment of these wastes, LDR notifications, with information required under 20 NMAC 4.1, Subpart VIII, 268.7, revised November 1, 1995, will be supplied. In addition to the LDR notification, additional data for the waste stream (e.g., WPF, analytical data) may be provided to the designated treatment facility.

Any wastes that are determined through analysis to meet treatment standards as specified in 20 NMAC 4.1, Subpart VIII, Part 268, Subpart D, revised November 1, 1995, will be land disposed in a permitted facility without further treatment. An LDR notification form (Figure A.3-2), including all analytical records to support the notification, will be prepared and will accompany the shipment of waste to the receiving facility.

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

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

Refer to footnotes at end of table.

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

Waste Description[a]	Waste Generating Process Description[a]	Technical Areas (TA)[a] Where Waste is Generated	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
		TA-55				

Refer to footnotes at end of table.

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

Heterogeneous Wastes (continued)

Other lead waste	Activated or inseparable lead and other lead from radiation shielding where the lead is not amenable to decontamination	TA-2, TA-3, TA-8, TA-21, TA-35, TA-36, TA-41, TA-46, TA-48, TA-50, TA-52, TA-53, TA-54, TA-55	Knowledge[d]	D003 D007 D008 D009	Reactivity Chromium Lead Mercury	NA[f] 5.0 5.0 0.2
Noncombustible debris	Materials from demolition and decommissioning of research laboratories or reactor assemblies containing metal fittings and pipes, plus bricks and glass from dismantling buildings	TA-3, TA-16, TA-21, TA-46, TA-48, TA-50, TA-52, TA-53, TA-55	Knowledge[d]	D001 D003 D004 D005 D006 D007 D008 D009 D010 D011	Ignitability Reactivity Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	NA[f] NA[f] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0
Combustible debris	Machine shop and maintenance cleanup materials and rags (with potential residual liquids) and spent solvents, plus firing site debris	TA-3, TA-16, TA-21, TA-46, TA-48, TA-50, TA-54	Knowledge[d]	D001 D003 D005 D006 D007 D008 D009 D011 F001 F002 F003 F005	Ignitability Reactivity Barium Cadmium Chromium Lead Mercury Silver 1,1,1-Trichloroethane 1,1,1-Trichloroethane Spent non-halogenated solvents Spent non-halogenated solvents	NA[f] NA[f] 100.0 1.0 5.0 5.0 0.2 5.0 NA[f] NA[f] NA[f] NA[f]

Refer to footnotes at end of table.

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

Heterogeneous Wastes (continued)

Organic-contaminated noncombustible solids	Absorbed oils, laboratory trash, and discarded equipment	TA-3. TA-35, TA-50, TA-54, TA-55, TA-59	Knowledge[d]	D004	Arsenic	5.0
				D005	Barium	100.0
				D006	Cadmium	1.0
				D007	Chromium	5.0
				D008	Lead	5.0
				D009	Mercury	0.2
				D010	Selenium	1.0
				D011	Silver	5.0
				D027	1,4-Dichlorobenzene	7.5
				D030	2,4-Dinitrotoluene	0.13[g]
				D032	Hexachlorobenzene	0.13[g]
				D033	Hexachlorobutadiene	0.5
				D034	Hexachloroethane	3.0
				D042	2,4,6-Trichlorophenol	2.0
				F001	1,1,1-Trichloroethane	NA[f]
					Trichloroethylene	
				F002	Chlorobenzene[h]	NA[f]
					Methylene chloride	
					Tetrachloroethylene[h]	
					Trichloroethylene	
				F004	Cresol[h]	NA[f]
					Nitrobenzene[h]	
				F005	Toluene	NA[f]
					Methyl ethyl ketone[h]	
					Benzene[h]	

Refer to footnotes at end of table.

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

Heterogeneous Wastes (continued)

Organic-contaminated combustible solids	Similar to combustible debris plus paint-stripper trash	TA-3, TA-21, TA-35, TA-48, TA-50, TA-51, TA-52, TA-53, TA-54, TA-55,	Knowledge[d]	D001	Ignitability	NA[f]
				D003	Reactivitiy	NA[f]
				D007	Chromium	5.0
				D008	Lead	5.0
				D009	Mercury	0.2
				D030	2,4-Dinitrotoluene	0.13[g]
				D035	Methyl ethyl ketone[h]	
				F001	1,1,1-Trichloroethane	NA[f]
					Carbon tetrachloride	
				F002	1,1,1-Trichloroethane	NA[f]
					Tetrachloroethylene[h]	
					Trichloroethylene	
				F003	Acetone	NA[f]
					Ethyl Acetate	
					Methanol	
					Methyl Isobutyl Ketone	
					Xylene	
				F005	Toluene	NA[f]
					Methyl ethyl ketone[h]	
					Carbon Disulfide	
					Isobutanol	
Water-reactive wastes	Preparative machining and debris cleanup from high-explosives (HE) testing	TA-2, TA-3, TA-15, TA-16, TA-21, TA-36, TA-48, TA-53, TA-54, TA-55	Knowledge[d]	D001	Ignitability	NA[f]
				D003	Reactivity	NA[f]
				D005	Barium	100.0
				F002	1,1,1-Trichloroethane	NA[f]
Mercury wastes - to be determined	Old thermometers, hygrometers, vacuum tubes, and instruments containing unrecovered mercury	TA-3, TA-21, TA-43, TA-46, TA-48, TA-50, TA-53, TA-54, TA-55	Knowledge[d]	D007	Chromium	5.0
				D008	Lead	5.0
				D009	Mercury	0.2
				F001	1,1,1-Trichloroethane	NA[f]

Refer to footnotes at end of table.

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

Heterogeneous Wastes (continued)

Nonradioactive or suspect waste items to be surveyed	Various waste managed as radioactive because they were generated in a location that had a possibility of resulting in radioactive contamination	TA-2, TA-3, TA-8, TA-15, TA-21, TA-33, TA-35, TA-36, TA-41, TA-43. TA-48, TA-50, TA-53, TA-54, TA-55, TA-59	Knowledge	D001	Ignitability	NA[f]
				D002	Corrosivity	NA[f]
				D003	Reactivity	NA[f]
				D004	Arsenic	5.0
				D005	Barium	100.0
				D006	Cadmium	1.0
				D007	Chromium	5.0
				D008	Lead	5.0
				D009	Mercury	0.2
				D010	Selenium	1.0
				D011	Silver	5.0
				D018	Benzene	0.5
				D022	Chloroform	6.0
				D038	Pyridine	5.0[g]
				F001	1,1,1-Trichloroethane	NA[f]
				F002	1,1,1-Trichloroethane	NA[f]
					Methyl chloride	
				F003	Acetone	NA[f]
					Ethyl acetate	
					Methanol	
					Methyl isobutyl ketone	
					Xylene	
				F005	Methyl ethyl ketone	NA[f]
					Pyridine	
					Toluene	

Refer to footnotes at end of table.

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

Heterogeneous Wastes (continued)

Nonradioactive or suspect waste items to be surveyed (continued)	Various waste managed as radioactive because they were generated in a location that had a possibility of resulting in radioactive contamination	TA-2, TA-3, TA-8, TA-15, TA-21, TA-33, TA-35, TA-36, TA-41, TA-43. TA-48, TA-50, TA-53, TA-54, TA-55, TA-59	Knowledge	P012	Arsenic oxide	NA[f]
				P029	Copper cyanide	NA[f]
				P030	Cyanides, NOS	NA[f]
				P098	Potasium cyanide	NA[f]
				P106	Sodium cyanide	NA[f]
				P113	Thallium oxide	NA[f]
				P120	Vanadium oxide	NA[f]
				U075	Dichlorofluoromethane	NA[f]
				U077	Ethylene dichloride	NA[f]
				U121	Trichlorfluoromethane	NA[f]
				U131	Hexachloroethane	NA[f]
				U144	Acetic acid, lead salt	NA[f]
				U145	Lead phosphate	NA[f]
				U188	Phenol	NA[f]
				U190	Phthalic anhydride	NA[f]
				U204	Selenious acid	NA[f]
				U216	Thallium chloride	NA[f]
				U219	Thiourea	NA[f]
				U226	Methyl chloroform	NA[f]

[a] Denotes information from the Federal Facility Compliance Order, Los Alamos National Laboratory, "Site Treatment Plan Background Document," October 4, 1995. The TAs shown in this table were identified by LANL as waste generation points. Future waste may be generated at additional TAs.

[b] U.S. Environmental Protection Agency.

[c] A solid waste exhibits the characteristic of toxicity if the extract from a representative sample of the waste contains any of the contaminants listed at a concentration equal to or greater than the respective value given in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart II, Part 261, Subpart D, revised November 1, 1995.

[d] Knowledge: indicates process knowledge utilized as the basis for hazardous waste designation.

[e] Limited and/or preliminary analysis: In reference to the basis for hazardous waste classification, indicates that sampling and analysis has been performed but that the data may not be completely documented or that data may exist but may not be verifiable.

[f] Not applicable: Refers to the absence of regulatory limits for ignitable, corrosive, and reactive characteristic wastes and F-, P-, and U-listed wastes.

[g] Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level (20 NMAC 4.1, Subpart II, 261.24, Table 1, revised November 1, 1995).

[h] Process knowledge provided information that these constituents may have been used as solvents. Toxicity characteristic regulatory levels may also apply and will be evaluated.

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

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

Refer to footnotes at end of table.

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

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

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

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

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

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

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

[a] Information in this column is from "Report for the Characterization Review of Low-Level Mixed Waste, Final Draft," 1995, Los Alamos National Laboratory, Los Alamos, New Mexico, and its related database.

[b] American Society for Testing and Materials (ASTM), 1991, "Standard Practice for Sampling Waste and Soils for Volatile Organic Compounds," *ASTM D4547-91*, Annual Book of ASTM Standards, Philadelphia, Pennsylvania, American Society for Testing and Materials.

[c] U.S. Environmental Protection Agency (EPA), 1991, "Soil Sampling and Analysis for Volatile Organic Compounds," *EPA/540/4-91/001*, Office of Research and Development,

U.S. Environmental Protection Agency.

[d] U.S. Environmental Protection Agency (EPA), 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*, Third Edition, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

[e] Equivalent methods, subject to EPA approval, may be substituted.

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

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

Refer to footnotes at end of table.

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

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

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

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National Laboratory

WASTE PROFILE FORM

Account Information

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

Reference Number

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

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

Waste Accumulation
Check as many as apply.

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

Method of Characterization
Check as many as apply.

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

Section 1- Chemical and Physical Characteristics

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

Waste Type
Check only one.

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

Waste Classes
Check as many as apply.

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

Associated Documentation
Check as many as apply.

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

Waste Category
Check as many as apply.

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

Waste Sources
Check as many as apply.

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

Waste Matrix
Check only one.

Gas
- ☐ ≤ 1.5 Atmospheres
- ☐ > 1.5 Atmospheres

Liquid
- ☐ Aqueous
- ☐ Organic
- ☐ Inorganic

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

Matrix Type
Check only one.

- ☐ Homogeneous
- ☐ Heterogeneous --> describe below

Waste/Process Description

_____
_____
_____
_____
_____
_____
_____

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Page 1 of 4

FIGURE A.3-1

WASTE PROFILE FORM

Section 1- Chemical and Physical Characteristics (continued)

Ignitability (degrees F.)
Check only one.

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

Corrosivity (pH)
Check only one.

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

Reactivity
Check as many as apply.

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

Boiling Point (degrees F.)
Check only one.

- ☐ ≤ 95
- ☐ > 95
- ☐ Not applicable

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

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

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

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FIGURE A.3-1

WASTE PROFILE FORM
(continued)

Section 2- Radiological Characteristics

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

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

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

Contamination Type: *Check as many as apply.*

☐ Volume Contamination
☐ Surface Contamination

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FIGURE A.3-1

WASTE PROFILE FORM
(continued)

Section 3 - Wastewater Characteristics

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

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

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

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

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

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

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

☐ Acid line ☐ Caustic line ☐ Industrial waste line

Section 4 - Additional Information

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

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

Signature	Date

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FIGURE A.3-1

WASTE PROFILE FORM
(continued)

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LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

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

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

Check only one.

☐ Non-wastewater

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

NOTIFICATION OF CALIFORNIA LIST APPLICABILITY

Check all that apply.

☐ Liquid hazardous waste containing PCBs at a concentration of ≥50 ppm.

☐ A D001 – D017 liquid waste containing ≥134 mg/L of nickel and/or ≥130 mg/L of thallium.

☐ A D001 – D011 waste containing Halogenated Organic Compounds (HOCs) listed in 40 CFR 268, Appendix III, at ≥1000 ppm.

NOTIFICATION OF "D" CHARACTERISTIC EPA WASTE CODES

Check all that apply.

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

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

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

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LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

NOTIFICATION FOR F001 – F005 SPENT SOLVENT WASTES

Check all that apply.

Spent solvent wastes with the following constituents only.

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

Check all that apply.

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

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

Check only one, if applicable.

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

NOTIFICATION FOR OTHER "F" WASTES

Check only one, if applicable.

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

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LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

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

- ☐ P001
- ☐ P002
- ☐ P003
- ☐ P004
- ☐ P005
- ☐ P006
- ☐ P007
- ☐ P008
- ☐ P009
- ☐ P010
- ☐ P011
- ☐ P012
- ☐ P013
- ☐ P014
- ☐ P015
- ☐ P016
- ☐ P017
- ☐ P018
- ☐ P020
- ☐ P021
- ☐ P022
- ☐ P023
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- ☐ P026
- ☐ P027
- ☐ P028
- ☐ P029
- ☐ P030
- ☐ P031
- ☐ P033
- ☐ P034
- ☐ P036
- ☐ P037
- ☐ P038
- ☐ P039
- ☐ P040
- ☐ P041
- ☐ P042
- ☐ P043
- ☐ P044
- ☐ P045
- ☐ P046
- ☐ P047
- ☐ P048
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- ☐ P082
- ☐ P084
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- ☐ P087
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- ☐ P089
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- ☐ P109
- ☐ P110
- ☐ P111
- ☐ P112
- ☐ P113
- ☐ P114

- ☐ P115
- ☐ P116
- ☐ P118
- ☐ P119
- ☐ P120
- ☐ P121
- ☐ P122
- ☐ P123

- ☐ U001
- ☐ U002
- ☐ U003
- ☐ U004
- ☐ U005
- ☐ U006
- ☐ U007
- ☐ U008
- ☐ U009
- ☐ U010
- ☐ U011
- ☐ U012
- ☐ U014
- ☐ U015
- ☐ U016
- ☐ U017
- ☐ U018
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- ☐ U030
- ☐ U031
- ☐ U032
- ☐ U033
- ☐ U034
- ☐ U035
- ☐ U036
- ☐ U037
- ☐ U038

- ☐ U039
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- ☐ U249
- ☐ U328
- ☐ U353
- ☐ U359

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LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

TABLE UTS—Universal Treatment Standards

(Check the applicable underlying hazardous constituents for D001, D002, and D012 –D043 characteristic wastes only.)

Regulated constituent—common name

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

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LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

TABLE UTS—Universal Treatment Standards

(Check the applicable underlying hazardous constituents for D001, D002, and D012 –D043 characteristic wastes only.)

Regulated constituent—common name

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

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

Regulated constituent—common name

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

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

NOTIFICATION OF ADDITIONAL TREATMENT STANDARDS

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

INSPECTION PLAN

PERMIT ATTACHMENT B
NM0890010515-1

INSPECTION PLAN
PERMIT ATTACHMENT B
NM 0890010515-1

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

The modular container storage area is routinely inspected for potential problems with safety and emergency equipment, security devices, containers, and container storage facilities. Potential problems are listed on an inspection checklist. Potential problems include containment failure, fire, explosion, exposure, and system leakage.

B.1.1 Frequency and Content of Inspection

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

B.1.2 Remedial Action

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

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

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

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

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

B.2.1 Frequency and Content of Inspection

The storage area, building and emergency equipment are inspected according to the schedule in Table B-1.

B.2.2 Remedial Action

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

Remedial actions in the case of containment failure, fire, explosion, or exposure are identical to the measures at the TA-50 modular container storage area. See Section B.1.2 above.

B.2.3 Inspection Logs

General inspections are conducted by the operating group according to checklists associated with the operating log. Results of the inspection (Attachment B-1-), the inspector's name and title, and date and time of inspection are recorded on the inspection log sheet. A copy is sent for records to ESH-19and kept for at least three years after all remedial action is complete. The waste storage room will be inspected using Figures B-5 and B-6.

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

B.3.1 Potential Problems

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

B.3.2 Frequency and Content of Inspection

Area L is inspected according to the schedule in Table B-1. In addition, the treatment tank's shell and liner will be inspected annually to ensure that the tanks walls and liner have not experienced damage due to corrosion or erosion. For the annual inspection, the tank KYNAR (@) lining will be tested for pinholes, cracks, or other failures using a Holiday Detector (@) spark test or equivalent. The Holiday Detector (@) works by sweeping an electrically charged brush over the liner surface. If a pinhole or crack is present, the liner no longer insulates the metal tank shell from the current, and a spark is produced, thus identifying the failed surface. The tank shell and liner wall thickness will also be acoustically analyzed annually to determine the extent of deterioration (ASME NDT Section IX). The acoustic analytic analysis utilizes the travel time or changes of wall thickness. Should the liner wall exhibit considerable (unexpected) thinning, the inspection frequency will be increased. The results of the annual inspection will be maintained in the permanent operating record.

Prior to the interior inspection, the treatment tank is emptied by discharging in the normal manner. After it is empty, the tank must be thoroughly cleaned and checked to be sure it is free of flammable, toxic, and corrosive vapors and materials before entry. If this requires steaming, the tank must be cooled after cleaning and the rinse water checked to be sure it is essentially neutral. Any nearby operations considered hazardous to tank entry are shut down. Respiratory protection shall be used as necessary. Protective clothing or equipment may be required in some instances. A sufficient number of standby men must be present to give aid in case of trouble.

B.3.3 Remedial Action

If any defects, deterioration, damage or hazards are discovered during inspection, appropriate remedial actions including repairs, maintenance and replacement will be completed as soon as practical to preclude further damage and reduce the need for emergency repairs. If a hazard is found imminent or if a hazardous

situation already exists, remedial action will be initiated immediately and the unit will be taken out of service until corrective action is complete. Any remedial action taken due to an inspection will be noted on the operating log.

In the case of failure of run-on or run-off control measures, the CST-5 Group Leader or his qualified designee will assess the damage by visual observations and sampling and monitoring to determine the type and extent of contamination. Mitigation procedures and repairs, such as sandbagging and building berms, will be instituted immediately. All such action will be entered in the site log.

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

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

B.3.4 Inspection Logs

Each inspection is conducted by the operating groups according to the checklist in the inspection log (Attachment B-1-). Results of the inspection, the inspector's name and title, and date and time of inspection are recorded on the inspection log sheet. A copy is sent to ESH-19 for records and kept for at least three years after the completion of all remedial action.

B.5 PREPAREDNESS AND PREVENTION REQUIREMENTS

B.5.1 Internal Communication/Alarm Equipment

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

- Centrex telephone system
- Medium range radio nets (30-60 miles)
- Limited range radio nets (3-10-miles)
- Telephone/radio paging

- Two-way hand held radios
- Emergency central alarm system
- Mechanical central alarm system

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

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

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

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

A pole-mounted telephone for communication outside of TA-54, Area G, is located at TA-54-226. Public address (PA) telephones will be located at TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, and Pad 10. The PA system may be used locally to notify personnel of an emergency within TA-54, Area G. When handling waste in these container storage areas, personnel are equipped with cellular telephones and hand-held radios, which may be used to summon assistance in case of an emergency. Fire and heat detection alarm systems and fire alarm pull stations will be located inside TA-54-226, TA-54-229, TA-54-230, TA-54-231, and TA-54-232, and at Pad 10. Different alarms sound in case of a fire or an evacuation.

B.5.2 External Communication/Alarm Equipment

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

- Centrex telephone system
- Private telephone lines (if Centrex fails)
- Medium range radio nets (30-60 miles)
- Limited range radio nets (3-10 miles)

- Two national Warning System (NAWAS) stations
- Direct lines from Emergency Operations Centers to KRSN (local radio station)
- Local cable television
- A Community Alert Network

B.5.3 Emergency Equipment

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

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

B.5.4 Water for Fire Control

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

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

B.6 AISLE SPACE REQUIREMENTS

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

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

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

When waste volumes necessitate aisle spacing at the TA-50-69 Outdoor CSA; and the CSAs at TA-54-38, a minimum aisle space of 26 inches is maintained to permit access for inspection and handling. The limited number of containers in the TA-50-69 Indoor CSA does not require aisle spaces. Containers are placed in the storage areas either manually or with hoists, cranes, forklifts, or dollies.A minimum aisle space of 28 inches will be maintained between rows of containers at TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, and Storage Pad 10. In addition, 44-inch-wide emergency egress aisles will be located at every

100 feet of dome length. Curbed storage dome areas will be ramped at the entrance to each dome to facilitate access of forklifts and drum handling equipment.

B.7 TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, AND PAD 10 STORAGE AREAS

B.7.1 Potential Problems

The container storage areas (CSA) located at TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, and Pad 10 will be routinely inspected for various items, including integrity of containers and self-containment systems as well as conditions of safety and emergency equipment, security devices, and loading/unloading areas. Potential problems may include leaks, containment failure, and equipment deterioration or malfunction. Identified problems will be recorded in Part II of the Inspection Record Form (IRF). The IRF may be revised, as needed.

B.7.2 Frequency and Content of Inspection

CSAs and associated equipment located at TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, and Pad 10 will be inspected in accordance with the schedule in Table B-1. Items to be inspected daily include structural integrity of containers, condition of secondary containment structures, appropriate aisle space and stacking, and conditions of loading/unloading areas. Items to be inspected weekly include conditions of safety equipment, security devices, emergency equipment, and pallets. Inspectors will use the IRF when conducting daily and weekly inspections.

B.7.3 Preventive and Remedial Action

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

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

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

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

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

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

B.8.1 Potential Problems

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

B.8.2 Frequency and Content of Inspection

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

B.8.3 Preventive and Remedial Action

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

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

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

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

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

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

B.8.4 Inspection Logs

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

B.9 TA-54-38 STORAGE AREAS

B.9.1 Potential Problems

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

B.9.2 Frequency and Content of Inspection

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

B.9.3 Preventive and Remedial Action

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

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

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

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

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

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

B.9.4 Inspection Logs

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

TABLE B-1
INSPECTION SCHEDULE

MODULAR STORAGE UNITS	
Daily when loading or unloading	Inspection Record Form Boxes 7, 8, 9, 10, 11, 12, 13, 14, 18, 22, and 23
Weekly	Inspection Record Form Boxes 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, and 32
CONCRETE CONTAINMENT STRUCTURES	
Daily when loading or unloading	Inspection Record Form Boxes 7, 8, 9, 10, 11, 12, and 18
Weekly	Inspection Record Form Boxes 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, and 32
TA-50-37 STORAGE AREA	
Daily when loading or unloading	Inspection Record Form Boxes 7, 8, 22, 33, and 34
Weekly	Inspection Record Form Boxes 9, 12, 13, 14, 15, 16, 20, 21, 22, 23, 26, and 32
WASTE TRANSFER/STORAGE UNIT	
Daily when loading or unloading	Inspection Record Form Boxes 7, 8, 9, 10, 11, 12, and 18
Weekly	Inspection Record Form Boxes 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, and 32
SOLID WASTE STORAGE AREA	
Daily when loading or unloading	Inspection Record Form Boxes 7, 8, 9, 10, 11, 12, and 18
Weekly	Inspection Record Form Boxes 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, and 32
TA-54 AREA L WASTE TREATMENT/STORAGE TANKS	

Daily when in use with hazardous waste	Inspection Record Form Boxes 7, 8, 9, 10, 11, 12, and 18
Weekly	Inspection Record Form Boxes 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, and 32
Annually	Special Report
After Storms	Special Report
EMERGENCY VEHICLES	
Quarterly	Special Report
FIRE CONTROL SYSTEM	
Annually	Special Report
TA-50-69 INDOOR AND OUTDOOR STORAGE AREAS	
Daily for areas subject to spills and when new containers of waste are placed in the storage area	IRF
Weekly	IRF
TA-54-38 STORAGE AREAS	
Daily for areas subject to spills and when new containers of waste are placed in the storage area	IRF
Weekly	IRF
TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, AND PAD 10 STORAGE AREAS	
Daily for areas subject to spills and when new containers of waste are placed in the storage area	Inspection Record Form (IRF)
Weekly	IRF

ATTACHMENT B-1

Hazardous and Mixed Waste Facility

Inspection Record Form

HAZARDOUS AND MIXED WASTE FACILITY INSPECTION RECORD FORM

[1]FACILITY	[2] <90 DAY, GENERATOR STORAGE TREATMENT, STORAGE, DISPOSAL	[3]START DATE	[4]END DATE
[5] Containers Incinerator	Landfill Misc. Unit	Surface Impoundment Tank	Waste Pile UST
Thermal Treatment Land Treatment	Chem/Phys./Bio. Treat. Underground Inj.		

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

ITEM	INSPECTED FOR	SUN	MON	TUE	WED	THU	FRI	SAT
[6]No use	Check if no waste is present							
[7](Un)loading area tanks/ containers	Spills and deterioration							
[8]Communication equipment (phone/radio/alarms)	Properly functioning							
[9]Tanks (all above ground portions) monitoring data	Discharge controls condition, leaks, level (6 freeboard), corrosion							
[10]Surface impoundments and containment	Freeboard (2 ft) sudden drops in level							
[11]Porta berm	Leaks condition							
[12]Eye wash safety showers	Leaks, functioning							
[13]Structural integrity of containers/tanks, valves, pipes, and flanges	Deterioration and leaks, corrosion, damage							
[14]Cover/lid of containers	Closed and secured							
[15]Warning signs	Posted and readable (bilingual)							
[16]Labels	"HAZARDOUS WASTE" present on all containers/tanks							
[17]Accumulation start date (<90 day storage)	Present on all containers, tanks, none exceed 90 days							
[18]Run on/off control (Area L, G, H, P) landfills, detonation pads	Integrity, erosion, ponding							
[19]Cover integrity (Area L, G, H, P) landfills	Erosion, subsidence water intrusion							
[20]Security	Condition, fence/gates/locks							
[21]Site lighting	Functions properly							

HAZARDOUS AND MIXED WASTE FACILITY INSPECTION RECORD FORM, Continued

ITEM	INSPECTED FOR	SUN	MON	TUE	WED	THU	FRI	SAT
[22]Containment structures	Integrity, standing water, vegetation, erosion							
[23]Management of containers	Segregated according to compatibility, 2 ft aisle space							
[24]Hose bibs, water supply	Leaks, functioning							
[25]Storage Shed (Area L)	Floor damage, liquid							
[26]Road/work surfaces	Cracks/potholes							
[27]Wind sock	Damage, functioning							
[28]Shaft cover and rail	Present, damage							
[29]Pallets	Integrity, damage							
[30]Treatment tanks	Proper operation, leaks							
[31]Refrigerator	Damaged containers							
[32]Spill control, fire, and emergency equipment	Present and in good working order							
[33]Incinerator emergency waste feed cutoff/alarms	Proper operating condition of all shutdown controls							
[34]Incinerator pumps valves, pipes, monitoring controls	Leaks/spills/tampering operating within specifications							
[35]Pressure vessels (S-site)	Deterioration and sand condition							
[36]Oil burn pans (S-site)	Deterioration and leaks							
[37]HE burn pads (S-site)	Deterioration, vegetation, sand condition, erosion							
[38]Radiation safety	Signs, monitoring (ß ^{3}H)							
[39]Date	Date of inspection							
[40]Time	Time of inspection							
[41]Inspector	Initials of inspector							

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

[42]INSPECTOR	[43]GROUP	[44]DATE	[45]TIME

Part I

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

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

   Treatment, Storage, Disposal should be checked if this location is listed in LANL's Hazardous Waste Facility Permit or Part A Application as a permitted or interim status TSD operation.

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

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

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

6. NO USE: May be checked if the unit did not store, treat, dispose, or otherwise handle hazardous waste for the day/week in question. The individual responsible for the inspection must then only complete boxes 39, 40, 41 for that day/week. If any hazardous waste is subsequently placed at the site for any reason, a full inspection must be performed immediately, and every working day thereafter until all waste is properly disposed of.

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

8. Communication equipment: Includes all telephones, two-way radios, and alarms for the area being inspected. Consult with ESH-19 to determine what equipment is necessary at any particular location.

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

10. Surface impoundments must be operated with a minimum of 24 inches (60 cm) of freeboard from the top of the dike or berm to the surface of the waste therein. Inspectors must look for signs of leaks,

deterioration, and erosion of dikes and berms, and any associated plumbing or valves. These could include dying vegetation, guilies and sudden changes in level.

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

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

13. All containers and tanks must be checked for structural integrity, leaks, corrosion, or damage. This item includes checking condition of all construction materials, fixtures, seams, and auxiliary equipment. See 9 above.

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

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

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

17. All containers and tanks of hazardous waste in TSDs or <90 day storage areas must be marked with the accumulation start date. At TSDs, containers without dates must be dated when they arrive at the facility. At <90 day storage areas, containers must be marked with the accumulation start date at the time the container first receives any waste. For <90 day storage areas, no containers may exceed 90 days from accumulation start date to the time they are delivered to a permitted treatment, storage, or disposal unit. Transportation is by CST-5 or its representatives only.

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

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

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

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

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

23. All hazardous waste containers holding materials that may be incompatible with any other materials at that location must be separated from those materials by dikes, berms, or other physical barriers to prevent a possible reaction. All containers of hazardous waste must be stored in a manner that ensures a minimum of 2 feet of aisle space between containers. Drums containing free liquids or those holding hazardous waste (excluding mixed wastes) may not be stacked over two high.

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

25. The storage shed at Area L must be inspected for damage, free liquids that might indicate a leak, and chemical compatibility of materials stored therein.

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

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

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

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

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

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

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

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

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

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

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

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

38. Radioactive materials must be properly placarded, labeled, and stored within controlled areas. Containers should be monitored/swiped for outside contamination if suspected and all leaks or spills must be monitored to ensure adequate cleanup.

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

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

41. Inspectors will initial each daily inspection.

Part II

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

42. Signature of individual performing inspection.
43. Organization responsible for this location.
44. Date record was signed and completed.
45. Time record was signed and completed.

PERSONNEL TRAINING

PERMIT ATTACHMENT C
NM0890010515-1

ATTACHMENT C
PERSONNEL TRAINING

This attachment describes the personnel training program for Los Alamos National Laboratory (LANL) in accordance with the regulatory requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.16, "Personnel Training," revised November 1, 1995. The information presented outlines the personnel training program at LANL. The primary objective of the training program is to prepare persons to operate and maintain safely those areas managing hazardous and/or mixed waste in accordance with 20 NMAC 4.1, Subpart V, revised November 1, 1995. This training program applies to all employees of the U.S. Department of Energy, the University of California, and any of their subcontractors who work regularly at LANL and who handle or generate hazardous and/or mixed waste. The degree of training varies with the job duties. However, all personnel who may handle or generate hazardous and/or mixed waste receive an introduction to RCRA.

C.1 HAZARDOUS AND MIXED WASTE MANAGEMENT/RESPONSIBILITIES

Waste management groups within the Chemical Science and Technology Division (CST) and the Hazardous and Solid Waste Group (ESH-19) are responsible for most waste management activities at LANL. Waste management activities associated with high-explosive waste treatment are handled by the Engineering Sciences and Applications Division (ESA) and the Dynamic Experimentation Division (DX). The Nuclear Materials Technology Division (NMT) is responsible for waste management activities at Technical Area 55. With the noted exceptions, CST waste management groups are responsible for all day-to-day operational aspects of waste management. ESH-19 is responsible for providing waste management regulatory guidance to CST personnel and to waste generators at LANL.

Other LANL groups and various support personnel assist in waste management activities and provide support to ESH-19 and CST. Johnson Controls World Services Inc. (JCI) provides trained personnel to assist CST in waste-handling activities. Personnel in the Health Physics Operations Group (ESH-1), Occupational Medicine Group (ESH-2), Industrial Hygiene and Safety Group (ESH-5), Occurrence Investigation Group (ESH-7), Hazardous Materials Response Group (ESH-10), Air Quality Group (ESH-17), Water Quality and Hydrology Group (ESH-18), Environmental Assessments and Resource Evaluations Group (ESH-20), and personnel in ESH-19 are trained in their specialities to provide emergency response support. Protection Technology Los Alamos (PTLA) is responsible for LANL security, traffic control, and site access control.

The Emergency Management and Response (EM&R) Office provides emergency planning and response at LANL and has the overall responsibility for LANL's Emergency Management Plan (EMP) training. The Environment, Safety, and Health (ESH) Division Training Group (ESH-13) is responsible for developing and delivering LANL-wide Environment, Safety, and Health (ES&H) training. Environmental courses are designed with substantial input from ESH-19, the CST waste management groups, and others, as appropriate.

C.2 TRAINING CONTENT, FREQUENCY, AND TECHNIQUES

The training program instituted at LANL includes a combination of LANL-wide courses (received internally or through external vendors and usually classroom-based), facility-specific training (developed and delivered within a particular facility), and on-the-job training (OJT) (performance-based courses that focus primarily on procedures performed by individual workers). Each of these types of training is described briefly in Sections C.2.1 through C.2.3. All LANL, JCI, and PTLA employees will receive the appropriate level of training within six months of their date of hire or transfer. Personnel will not work in unsupervised positions until they successfully complete the appropriate level of training for their positions and responsibilities.

Records of LANL-wide training currently sponsored or administered by ESH-13 are entered by that group into the Employee Development System (EDS), the official LANL training database. These records document that the required training has been successfully completed by the worker. Training records of former workers are kept for at least three years from the date last worked at the facility. It is required that records documenting successful completion of facility-specific, on-the-job, or externally provided training be entered into the EDS by sponsoring organizations. Group or section training personnel or document control custodians will maintain, at a minimum, hard copies of training records for currently employed workers until the facility closes.

Table C-1 summarizes the components of the LANL-wide training program as administered through ESH-13. This table includes a listing of the relevant training courses, a summary of topics, and a designation of the relevant courses for each job category. Categories of workers summarized in Table C-1 include hazardous/mixed waste workers, managers and supervisors of hazardous/mixed waste workers, emergency responders, and uncontrolled area potential release site workers. Table C-2 summarizes the components of facility-specific training and OJT that workers must receive. Each training element was designed to ensure that every worker involved in hazardous and/or mixed waste operations is properly trained in procedures relevant to the positions in which they are employed. Tracking the completion of training is possible through the EDS training plans.

The responsibilities of the worker categories summarized in Table C-1 are presented herein. Hazardous/mixed waste workers are responsible for handling and/or managing hazardous/mixed wastes and assisting in spill and emergency response activities, as required. Managers and supervisors of hazardous/mixed waste workers are directly responsible for day-to-day operations related to waste management activities and ensuring that personnel safety and training requirements are met. Emergency responders are trained emergency response personnel (e.g., ESH-10) that respond to emergencies (e.g., spills, fires, explosions) involving hazardous and/or mixed wastes that provide support for emergency response activities. Uncontrolled area potential release site workers conduct investigations and remedial activities at potential release sites and are responsible for proper waste management from generation to disposal, including waste characterization, treatment, and storage.

Training materials of LANL-wide training courses are on file in the ES&H Training Center and are available for review by all hazardous/mixed waste management and handling personnel, emergency response personnel, and regulatory agencies. Course content will be reviewed annually and updated as required to remain current with RCRA regulations. Alternative forms of training (e.g., paper-based self-study courses, computer-based training) may be taken to meet specific training requirements. Such alternate forms of training must be approved by ESH-13 personnel and

determined to be equivalent in content to more traditional classroom-based training courses. Files listing the requisite skills, education, and training for workers who handle hazardous and/or mixed waste and the duties and responsibilities for each job description, as well as the name of each worker filling a job description, are maintained, as required by 20 NMAC 4.1, Subpart V, 264.16(d)(2), revised November 1, 1995. This information is located in the EDS as well as maintained at the facility by the group or section document control custodian.

C.2.1 LANL-Wide Training

The RCRA Personnel Training course provides an overview of RCRA regulations and emphasizes compliance with the RCRA requirements that apply to job-related activities, such as the safe handling of hazardous and mixed waste. Program instructors are trained in hazardous and mixed waste management programs and procedures and in RCRA provisions. The course is designed to provide training that is appropriate for the worker's responsibilities. ESH-13, with guidance from ESH-19, provides an annual refresher of applicable RCRA requirements. Personnel who handle hazardous/mixed waste and/or clean up spills or releases of hazardous/mixed waste and the managers and supervisors of these workers receive instruction on appropriate topics listed in Table C-1. In addition, personnel responsible for requisitioning the transport, treatment, or storage of hazardous and/or mixed waste receive supplemental training, as necessary, as listed in Table C-1. Training is typically provided by LANL training instructors or by external vendors knowledgeable about a particular subject.

C.2.2 Facility-Specific Training

All waste-handling personnel will participate in facility-specific training at their work locations. Table C-2 addresses program requirements that ensure that hazardous and mixed waste management and handling personnel know the specific requirements for their facilities and are able to respond effectively to emergencies. Personnel will become familiar with emergency and monitoring equipment use, inspection, repair, and replacement at their facility. In addition, they will receive instruction on contingency plan contents and implementation (as they apply to their facility) including, but not limited to, communications or alarm systems, response to fires and explosions at their facility, and key parameters for automatic waste-feed cutoff systems and shutdown of facility operations.

C.2.3 On-the-Job Training

Performance-based OJT is developed in conformance with LANL standards. Supervisors or other experts who can evaluate worker proficiency provide training appropriate for the procedures required of each function-specific position. To become proficient in hazardous and/or mixed waste procedures, workers receive this performance-based training, as necessary.

OJT topics include implementing facility-specific procedures, maintaining operating records, fulfilling reporting requirements, and conducting inspections specific to the facility. Workers whose duties include packaging and transportation support receive training on packaging, labeling, recordkeeping, and waste segregation for transportation within their facility. Emergency responders receive facility-specific training regarding emergency response and shutdown procedures at the facility to which they are assigned.

C.2.4 Training Coordinator

The ESH-13 Group Leader directs the LANL-wide ES&H training program. The Group Leader is trained in the operation of hazardous and mixed waste management facilities, waste management practices, and emergency procedures and is responsible for coordinating training courses. Line managers are responsible for ensuring that personnel under their supervision receive necessary training.

C.3 EMERGENCY TRAINING

If called upon by the EM&R Office, additional non-LANL emergency response personnel (e.g., JCI, PTLA) may assist the LANL Emergency Manager at the scene of a hazardous or mixed waste emergency. These professionals are trained in their specialties (e.g., heavy equipment operation, hazardous material cleanups, traffic control, security). JCI personnel are also trained in personal safety. At all times during an emergency, these workers are under the direct supervision of the Incident Commander in the Unified Command or the designated Crisis Manager, as appropriate. A more detailed discussion of emergency procedures, personnel, and equipment is provided in Permit Attachment D.

To ensure maximum protection of life and property and to mitigate the consequences of an emergency situation, facility personnel involved in waste handling and emergency response must be knowledgeable about appropriate building and operating area emergency procedures. These workers receive training in facility-specific emergency procedures or participate in the LANL-wide emergency training program. Group leaders and immediate supervisors are responsible for ensuring that education and training in facility-specific emergency procedures are provided to all personnel under their supervision. Training in facility-specific emergency procedures is given by the operating group. Periodic announced and unannounced emergency drills and exercises are used to familiarize workers with emergency procedures. Training is also provided to workers through prominent instructional displays and through presentations and discussions in safety meetings.

Each new or transferred worker is indoctrinated by an immediate supervisor regarding the general and specific emergency procedures related to the work area. The immediate supervisor also advises each worker of changes to any emergency procedures and provides an annual refresher of procedures affecting the work area. The organization that develops and delivers facility-specific training maintains these training records.

Specialized training is given to personnel assigned special functions or specific emergency duties. Emergency response personnel are required to attend courses on implementation of the RCRA contingency plan, spill response, and Occupational Safety and Health Administration (OSHA) emergency response provisions. The EM&R Office provides training related to implementing LANL's EMP. All waste management and handling personnel participate in a training program in which they are instructed in emergency procedures pertinent to their work areas. The operating group provides this site-specific instruction.

C.4 IMPLEMENTATION OF TRAINING PROGRAMS

General Employee Training (GET), an ES&H orientation course, is given on the first day of employment to all new employees. GET is also required of contract workers and visitors who work on site at LANL for ten or more consecutive days. GET includes, but is not limited to, ES&H policy, OSHA rights and regulations, industrial safety, waste minimization, general radiation

protection, industrial hygiene, emergency management, and fire protection. Personnel who will handle or be associated with hazardous waste are required to take the hazard communications and waste generator training courses. All workers who will handle or be associated with mixed waste also receive courses in hazard communications and waste generator training as well as radiation worker protection. Workers will not work without direct supervision or at a new position until they have been trained.

The Waste Generation Overview training course provides hazardous and mixed waste generators with information needed to identify wastes that are subject to RCRA regulations in 20 NMAC 4.1, Subpart II, revised November 1, 1995. The training defines hazardous waste and hazardous constituents (including hazardous components in mixed waste) and addresses how to identify hazardous waste and hazardous constituents. A second course, Waste Documentation Forms, focuses on documenting characterized waste according to RCRA and LANL requirements. Both training courses inform hazardous and mixed waste generators of their responsibilities and requirements and supports the documentation of process knowledge, which generators may use to characterize hazardous and mixed waste. All workers who handle hazardous and/or mixed waste are required to have RCRA Personnel Training, and those who work at treatment, storage, or disposal units are required to have Hazardous Waste Operations and Emergency Response (HAZWOPER) Occasional Site Worker training.

All hazardous and mixed waste management and handling personnel must attend annual refresher courses. These courses are intended to update personnel on LANL procedures and changes in RCRA provisions and to provide them with an overview of their introductory training. Line managers and group leaders will ensure that personnel participate in the appropriate introductory and annual training courses.

TABLE C-1
LOS ALAMOS NATIONAL LABORATORY-WIDE TRAINING PROGRAM

COURSES[a]	**Hazardous/Mixed Waste Worker**	**Manager/Supervisor of Hazardous/Mixed Waste Workers**	**Emergency Responder**	**Uncontrolled Area Potential Release Site Worker**
Criticality Safety Training (presents nuclear theory, criticality reactions, characteristics, exposure protection principles, and criticality prevention measures)	*[b]	*	*	*
General Employee Training (includes familiarization with standard operating safety guidelines)	X[c]	X	X	X
Hazard Communication Introduction (includes information on explosion/fire hazards, chemical burns, chemical compatibility, eye/skin hazards and protection, respiratory hazards and protection)	X	X	X	X
HAZWOPER[d]: First Responder (Operations Level) (provides an overview of hazardous materials emergency response including recognition and identification of hazardous materials and associated risks, required actions, and relationships with other emergency responders)			X	
HAZWOPER: General Site Worker (provides general information on hazardous waste operations and emergency response for general site workers engaged in corrective action, remediation, or decontamination and decommissioning activities)				X
HAZWOPER: Occasional Site Worker (provides general information on hazardous waste operations and emergency response for occasional and regular site workers)	X	X		

TABLE C-1
LOS ALAMOS NATIONAL LABORATORY-WIDE TRAINING PROGRAM
(continued)

COURSES[a]	**Hazardous/Mixed Waste Worker**	**Manager/Supervisor of Hazardous/Mixed Waste Workers**	**Emergency Responder**	**Uncontrolled Area Potential Release Site Worker**
HAZWOPER: Refresher for General Site Workers (provides general information on hazardous waste operations to general site workers)				X
HAZWOPER: Refresher for TSD[e] Workers (provides general information on hazardous waste operations to TSD workers)	X	X		
OSHA[f] Rights and Responsibilities (provides general information on worker's rights in relation to OSHA)	X	X	X	X
RCRA[g] Personnel Training (includes an overview of Code of Federal Regulations Title 40, Parts 260-265, 268; New Mexico Administrative Code, Title 20, Chapter 4, Part 1, revised November 1, 1995; Department of Transportation shipping regulations; internal and external protocol for facility inspections; operating equipment, communication systems, security systems; contingency plan; and emergency equipment use, inspection, and repair)	X	X	*	*
RCRA Refresher Training (includes regulatory and legislative updates, occurrence reports and lessons learned, audit findings, modification/review of the contingency plan; provides required retraining)	X	X	*	*
Refresher General Employee Radiological Training (provides refresher general radiological training)	X	X	X	X
Radiological Worker I and II Training (requires recertification every two years)	*	*	X	X

TABLE C-1
LOS ALAMOS NATIONAL LABORATORY-WIDE TRAINING PROGRAM
(continued)

COURSES[a]	Hazardous/Mixed Waste Worker	Manager/Supervisor of Hazardous/Mixed Waste Workers	Emergency Responder	Uncontrolled Area Potential Release Site Worker
Refresher Radiological Worker I and II Training (provides refresher radiological training)	*	*	X	X
Waste Generation Overview (includes waste management regulations and policies, definition of hazardous waste, waste minimization, cycle of waste management at Los Alamos National Laboratory, storage and disposal)	X	X	X	X
Waste Management Coordinator Requirements (provides training on waste management to coordinators)	*	*		*
Cardiopulmonary Resuscitation: Adult (requires annual recertification)	*	*	*	*
First Aid: Standard (requires recertification every three years)	*	*	*	*
Health Physics Checklist Indoctrination (provides health physics information to new workers)	*	*	X	X
HMPT[h] Training - General (includes introduction to HMPT regulations, identification and segregation of hazardous materials, packaging, placarding/labeling, manifesting/recordkeeping)	*	*		
Lockout/Tagout (provides information on lockout/tagout procedures and policy)	*	*	*	*
Respirators: Air-Purifying (provides required annual retraining for operation and inspection of device, changing filters, donning and doffing)	*	*	X	*

TABLE C-1
LOS ALAMOS NATIONAL LABORATORY-WIDE TRAINING PROGRAM
(continued)

COURSES[a]	**Hazardous/Mixed Waste Worker**	**Manager/Supervisor of Hazardous/Mixed Waste Workers**	**Emergency Responder**	**Uncontrolled Area Potential Release Site Worker**
Respirators: Self-Contained Breathing Apparatus (provides required annual retraining for operation and inspection, changing compressed air bottles, donning and doffing, safety features, care and cleaning, fitting)	*	*	X	*
Waste Documentation Forms (includes use of Waste Profile Form, use of waste disposal forms, use of manifest system, as applicable)	*	*		*

[a] Additional training courses (not listed in this attachment) may also be taken by personnel depending on the types of hazards (e.g., chemical) associated with a particular job description.
[b] * indicates that a course may be required for specific job tasks and/or work areas.
[c] X indicates a required course.
[d] HAZWOPER = Hazardous waste operations and emergency response
[e] TSD = Treatment, storage, and disposal
[f] OSHA = Occupational Safety and Health Act
[g] RCRA = Resource Conservation and Recovery Act
[h] HMPT = Hazardous materials packaging and transportation

TABLE C-2
FACILITY-SPECIFIC AND ON-THE-JOB
TRAINING FOR
HAZARDOUS AND MIXED WASTE HANDLING OPERATIONS

The following categories of facilities will provide facility-specific training for all workers and on-the-job training on procedures directly applicable to an individual's work assignment:

- Treatment units
- Open burning and explosives detonation areas
- Container and tank storage areas
- Other categories, as necessary.

Facility-specific training will include the following topics:

- Supervised operation of the facility
- Emergency shutdown and evacuation procedures
- Accidental release and spill response procedures
- Familiarization with emergency equipment use, inspection, and repair
- Use of communication/alarm system
- Contingency plan training
- Operations manual specific to the facility
- Specialized equipment at the facility
- Information about the particular chemical and radioactive hazards present at the facility.

On-the-job training will consist of training individuals to be familiar with and use the standard operating procedures that apply to their jobs.

CONTINGENCY PLAN
PERMIT ATTACHMENT D
NM0890010515-1

ATTACHMENT D
HAZARDOUS WASTE FACILITY CONTINGENCY PLAN

This attachment presents contingency measures for hazardous and mixed waste units at Los Alamos National Laboratory (LANL). The contingency plan is intended to meet the requirements specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, Part 264, Subpart D, revised November 1, 1995, "Contingency Plan and Emergency Procedures," for Resource Conservation and Recovery Act (RCRA) treatment, storage, or disposal (TSD) facilities. In addition, this document is consistent with the LANL Emergency Management Plan (EMP) (LANL, 1993), prepared by the LANL Emergency Management and Response (EM&R) Office. The provisions of this plan will be carried out immediately to minimize hazards whenever there is a fire, explosion, or release of hazardous or mixed waste or hazardous or mixed waste constituents that could threaten human health or the environment [20 NMAC 4.1, Subpart V, 264.51(b), revised November 1, 1995].

D.1 HAZARDOUS AND MIXED WASTE EMERGENCY RESPONSE RESOURCES

The primary resources for management of emergency incidents at LANL reside within the EM&R Office, which is part of the Facilities, Security, and Safeguards (FSS) Division. During an emergency situation, line management (i.e., the Group Leader of the affected area) works with the Duty Emergency Manager from the EM&R Office (FSS-20). The Emergency Manager has primary responsibility for managing emergency response operations, making appropriate notifications, activating the emergency response organizations, and proceeding to the scene. The Emergency Manager has authority to assume the role of Incident Commander (IC) during an emergency and typically assumes full responsibility for management of the emergency response operations at the scene. If an emergency can be resolved primarily by site-specific emergency response personnel, the Emergency Manager may choose not to assume command of the emergency response but will remain on standby in case additional response resources are needed. In these situations, site-specific management personnel (e.g., Group Leaders, Deputy Group Leaders) form a facility command and designate a Facility Incident Commander (FIC). Site-Specific emergency response personnel would then report directly to the FIC. Figure D-1 depicts the structure of a facility command.

Additional LANL resources that may provide assistance in an emergency include personnel from the Environment, Safety, and Health (ESH) Division and the Chemical Science and Technology (CST) Division at LANL. These groups are discussed in Sections D.1.2, D.1.3, and D.1.6.

Contracted services and other agencies are also available for assistance during emergencies. These are discussed in Section D.1.5 and include the contracted services of Protection Technology Los Alamos (PTLA) for security, Johnson Controls World Services Inc. (JCI) for facility maintenance, and the Los Alamos County Fire Department (LACFD). Other outside response agencies are discussed in Section D.1.7 and include the Los Alamos County Police Department (LACPD) and the Los Alamos Medical Center (LAMC). The LACPD and the LAMC each provide assistance under a memorandum of understanding (MOU).

Emergency response protocol at LANL is currently being modified to be consistent with the National Interagency Incident Management System (NIIMS). The NIIMS is a national standard that provides consistency in terminology/methodology and allows for an integrated emergency response both locally and nationally, if necessary.

The IC (e.g., the Duty Emergency Manager, the FIC) coordinates all groups and agencies responding to the emergency and personnel operating at the scene in what is called the Unified Command (UC). If the FIC is

in charge during an emergency and the Emergency Manager decides that additional resources are needed and assumes the position of IC, then the facility command formed by the FIC becomes the Facility Branch of the UC. The emergency response structure at LANL, as shown on Figure D-2, is designed to expand and collapse to include the response groups/agencies needed to address any particular emergency.

The IC may appoint and utilize a network of support personnel to assess, plan for, and mitigate emergencies. These personnel include a Safety Officer, a Public Information Officer, and a Liaison Officer than report directly to the IC and are responsible for issues related to safety, information, and the interaction of various groups associated with the overall emergency. Also reporting directly to the IC are an Operations Chief, a Logistics Chief, a Plans Chief, and an Administrative Chief. The Operations Chief oversees the Fire Branch, the Emergency Medical Services Branch, and the Facility Branch and is responsible for the actual emergency response. The Logistics Chief is responsible for providing support personnel and equipment necessary for the emergency response. The Plans Chief is responsible for planning the active mitigation and recovery for the emergency and the Administrative Chief is responsible for keeping records of expenditures. In some instances, one person may be assigned more than one of these positions. During an emergency at LANL, assistance may be provided to the IC and the IC's appointees by a large variety of response groups/agencies. The responsibilities and/or assistance available from the various response groups/agencies are listed in Table D-1 and discussed briefly in Sections D.1.2 through D.1.7

Each of the emergency response groups/agencies and the appropriate facility operators will retain a current copy of this contingency plan. The Hazardous and Solid Waste Group (ESH-19) is responsible for the controlled distribution of the contingency plan.

D.1.1 Emergency Management and Response Office

The Director of LANL has delegated the authority and responsibility for administering and implementing LANL's emergency management program to the FSS Division, which includes the EM&R Office. The EM&R Office coordinates and issues LANL's EMP and provides response coordination for emergencies. The EM&R Office also provides a 24-hour Duty Emergency Manager to respond to emergencies, including hazardous and mixed waste releases. The LANL Emergency Manager is the functional equivalent of the RCRA Emergency Coordinator (20 NMAC 4.1, Subpart V, 264.55, revised November 1, 1995). The EM&R Office maintains an Emergency Operations Center (EOC) in a ready condition should a center be required. The primary EOC is located at Technical Area (TA) 59, Building 1 (TA-59-1). An alternate EOC is located at TA-49-113. Should an EOC be activated during an emergency, all other emergency personnel including the IC and the entire facility or Unified Command fall under the control and direction of the EOC.

EM&R Office personnel designated as Emergency Managers are listed in Table D-2. Assignment as the Duty (i.e., primary) Emergency Manager is rotated. The Duty Emergency Manager can be reached by contacting the EM&R Office (667-6211 during working hours, 667-7080 after working hours) or the Central Alarm Station (CAS) operator (911).

The Duty Emergency Manager will respond to emergency incidents involving the release of hazardous or mixed waste to the environment, including spills, fires, and explosions. With input from the appropriate LANL groups (e.g., ESH, CST, and site groups), the Duty Emergency Manager will initially assess the possible hazards to human health or the environment and, if assuming incident command, will use whatever response personnel and/or emergency equipment necessary in order to control and contain the waste, as necessary. In the event of an emergency, the Emergency Manager becomes the IC with full responsibility for field activities (including logistics, planning, and operations or establishing these positions within the UC). The exception to this is when on-site personnel can adequately address the emergency and maintain

incident command internally. At the scene of the emergency, the IC will assemble a UC consisting of the senior person from each responding organization, functional specialists, and the Duty Emergency Manager (if not the IC). Additional technical or management representation may be integrated into the emergency response, as needed. The UC will receive direction from the IC and the members of the UC will work together to mitigate emergency situations.

The Duty Emergency Manager responding to an emergency will have access to a copy of the appropriate building emergency plan(s) (BEP) relating to the area in which the incident is occurring. These plans are maintained by the EM&R Office at TA-59 as well as located on site for use by emergency response personnel. The various response groups will obtain specific information relating to the facilities involved (including the layout of all affected buildings; the location of evacuation routes, equipment, and personnel; properties of the materials/wastes managed at the facility; and the hazards associated with these materials/wastes) from the BEP(s) and other site-specific information.

D.1.2 Hazardous Materials Response Group

The Hazardous Materials (HAZMAT) Team is comprised of personnel from the Hazardous Materials Response Group (ESH-10). The HAZMAT Team is responsible for the aggressive mitigation of chemical, radiological, hazardous waste, and mixed waste emergencies, including field decontamination of responders and response equipment. The HAZMAT Team may provide the LACFD with limited field decontamination support for victims. The HAZMAT Team is capable of providing a contamination-control station at the scene of a hazardous material incident to process people working in a contaminated area and is prepared to perform decontamination of personnel. LANL standards require that the HAZMAT Team meet the training criteria for emergency response personnel specified in the Code of Federal Regulations, Title 29 (29 CFR), Subparts 1910.120(q)(6)(iii), (iv), and (v). The HAZMAT Team acts as part of the UC reporting through the HAZMAT Group Supervisor (HMGS). The LANL HMGS coordinates the HAZMAT Team and radiological field monitoring activities.

During an emergency response, ESH-10 may also provide site field monitoring to determine the nature and extent of contamination, provide information on correct handling of chemicals, make recommendations on protective clothing and equipment, and provide exposure and treatment information to responders. To operate effectively, ESH-10 may obtain resources from other ESH groups, such as the Health Physics Operations Group (ESH-1) and the Industrial Hygiene and Safety Group (ESH-5).

D.1.3 CST and ESH Response Groups

At the scene, the IC coordinates representatives and technical advisors from the CST and ESH groups. In addition to their post-emergency duties, the groups discussed below may also be responsible for on-scene emergency operations such as planning. Depending on the type of emergency and the associated hazards, an individual from the most relevant group in the ESH Division will assume the position of the Environmental Safety and Health Advisor, will provide technical support, and will ensure LANL compliance with applicable federal, state, and local regulations.

D.1.3.1 Chemical Science and Technology Division

Waste management groups within CST Division are responsible for initial response actions at hazardous and mixed waste treatment and storage units at TA-21, TA-50, and TA-54. These groups also provide guidance on proper treatment, storage, and transportation of hazardous and mixed waste.

D.1.3.2 Air Quality Group

The Air Quality Group (ESH-17) provides field surveys of air to determine potential environmental effects of exposure after an emergency. In addition, ESH-17 provides expertise in meteorology to establish potential short- and long-term environmental effects of emergency conditions.

D.1.3.3 Water Quality and Hydrology Group

After an emergency, the Water Quality and Hydrology Group (ESH-18) provides sampling of water to determine potential environmental effects of an emergency and performs assessments for reporting requirements. ESH-18 also provides expertise in hydrogeology to establish potential short- and long-term environmental effects of emergency conditions.

D.1.3.4 Hazardous and Solid Waste Group

ESH-19 provides guidance on regulatory requirements to other groups. After an emergency, ESH-19 provides field sampling (e.g., of soil, surface water runoff, and sediments) to determine potential environmental effects of exposure.

D.1.3.5 Environmental Assessments and Resource Evaluations Group

The Environmental Assessments and Resource Evaluations Group (ESH-20) provides field surveys of biota to determine potential environmental effects of exposure after an emergency.

D.1.4 Other LANL Response Resources

Appropriate personnel from the Nuclear Materials Technology Division (NMT) have been trained in emergency procedures. If an emergency occurs at TA-55, NMT personnel are responsible for monitoring for leaks, pressure buildup, gas generation, and/or equipment ruptures. Dynamic Experimentation Division (DX) personnel are responsible for the hazardous and mixed waste treatment units (i.e., open burning/open detonation units) at TA-14, TA-15, TA-36, and TA-39. Appropriate DX personnel responsible for these units are trained in emergency procedures and may provide information and/or assistance during emergencies involving high-explosive waste. Engineering Science and Applications Division (ESA) personnel are responsible for treatment and storage units at TA-16. Appropriate ESA personnel are also trained in emergency procedures and may provide information and/or assistance during emergencies involving units at TA-16.

D.1.5 Contracted Response Groups

Contracted response groups report to the Crisis Manager in the UC if the EOC is activated. In a smaller emergency, the EOC is not activated and the contracted response groups report directly to the IC. If the IC deems it necessary, the IC may designate an Operations Chief to aid in the coordination and direction of these groups.

D.1.5.1 Protection Technology Los Alamos

PTLA is responsible for LANL security, which is provided by PTLA under contract to LANL. During an emergency, PTLA activities include maintaining security, directing traffic within LANL, and controlling access to the emergency scene. PTLA maintains the necessary equipment (such as crowd-control

equipment and patrol vehicles) to perform these functions. In addition, the CAS at TA-64-1 is manned by PTLA personnel 24 hours a day.

D.1.5.2 Johnson Controls World Services Inc.

JCI provides a maintenance support force under contract to LANL. This support force is under LANL's direction in an emergency. JCI conducts inspections of LANL equipment, maintains equipment, and participates in post-emergency cleanup under the direction of a Recovery Manager designated by the IC. The Utilities Control Center (UCC) at TA-3-223 is maintained by JCI personnel 24 hours a day.

D.1.5.3 Los Alamos County Fire Department

The LACFD provides fire protection and ambulance coverage for the residential communities of Los Alamos and White Rock and for LANL. In the case of an emergency within LANL, the LACFD coordinates fire suppression and Emergency Medical Services (EMS) efforts, while the IC retains overall responsibility for the emergency response effort. The U.S. Department of Energy (DOE) requires that LACFD personnel meet the training criteria for emergency response personnel specified in 29 CFR 1910.120(q)(6)(i) and (ii). A contract has been established between the DOE and the Incorporated County of Los Alamos.

D.1.6 LANL Support Groups

D.1.6.1 Health Physics Operations Group

ESH-1 provides field personnel to perform routine site evaluation and monitoring to determine the nature and extent of radiological contamination. ESH-1 also provides routine guidance on radiological decontamination. Field personnel conduct these activities under the supervision of certified health physicists. In addition, this group augments the assessment and monitoring functions of the HAZMAT Team.

D.1.6.2 Occupational Medicine Group

LANL maintains its own medical facility operated by the Occupational Medicine Group (ESH-2). ESH-2 provides appropriate medical treatment for occupation-related illnesses and injuries and monitors employees to assess the effectiveness of health protection programs. In addition to promoting early identification and prevention of illnesses or injuries that may arise from exposures to hazardous or radioactive materials, ESH-2 maintains documented records of the health status of employees and related occupational medicine activities.

Although ESH-2 is not routinely involved with on-scene emergency response, the group maintains a central medical facility with a fully equipped emergency room and decontamination facilities at TA-3, Building 409 (SM-409). The location of this and other emergency facilities is shown on Figure D-3. Medical staff at SM-409 includes physicians, physician's assistants, registered nurses, x-ray technicians, and clinical laboratory technicians. All full-time physicians and nurses receive radiation accident training.

ESH-2 also maintains access to a software program called the TOMES™ system at the central medical facility in SM-409. This extensive database provides the clinical staff with timely exposure and treatment information. ESH-2 is supported by ESH-5, as described below.

D.1.6.3 Industrial Hygiene and Safety Group

ESH-5 provides support to ESH-2 with its ability to obtain additional exposure and treatment information via telephone access to the National Library of Medicine's TOXLINE™ and CHEMLINE™, the Toxicity Databank files POISONDEX™ and TOMESPLUS™ (Micromedics), and the CC/INFO™ database files on Material Safety Data Sheets. In addition, ESH-5 maintains access to the National Institute of Occupational Safety and Health Technical Information Center and the Registry of Toxic Effects of Chemical Substances. During routine operations, ESH-5 performs site evaluations and field testing to determine the nature and extent of chemical contamination and specifies protective clothing and equipment.

D.1.6.4 Occurrence Investigation Group

The Occurrence Investigation Group (ESH-7) is responsible for the Occurrences Reporting and Processing System at LANL and has the lead in reporting the occurrence of an on-site emergency. ESH-7 is in part responsible for tracking follow-up corrective actions. ESH-7 personnel assist the facility manager in investigating the occurrence, determining the causal factors, identifying the appropriate corrective actions, and assisting in the preparation of reports documenting the occurrence to DOE. This group tracks the target and actual completion dates for all corrective actions associated with an emergency and maintains the information in an on-site database.

D.1.7 Outside Response Agencies

During an emergency, outside response agencies report directly to the IC. The IC may designate an Operations Chief to aid in coordinating and directing the groups responding to an emergency.

D.1.7.1 Los Alamos County Police Department

The LACPD has only minimal interaction with LANL in an on-site emergency. This interaction is limited to traffic control on DOE roads with public access and to criminal investigations. An MOU for mutual aid assistance has been established between the DOE and the Incorporated County of Los Alamos.

D.1.7.2 Los Alamos Medical Center

LANL maintains a fully equipped decontamination room adjacent to the emergency room at LAMC. In the event that a case is sent to LAMC, support for the emergency room staff is provided by ESH-2 medical personnel. ESH-1, ESH-5, and ESH-10 personnel also provide assistance to the emergency room staff. This assistance is coordinated through the EM&R Office. An MOU has been established between the DOE Los Alamos Area Office (DOE/LAAO) and LAMC.

D.2 EMERGENCY EQUIPMENT AND COMMUNICATIONS

D.2.1 Emergency Equipment

20 NMAC 4.1, Subpart V, Part 264, Subpart D, revised November 1, 1995, requires a listing of all emergency response equipment available that can be used in the event of an emergency. Appendix D-1 lists all emergency equipment available at or near the waste management units addressed in this permit and in LANL's HAZMAT vehicles and trailers. Appendix D-1 also includes a list of supplemental emergency equipment maintained by JCI, the LACFD, and ESH-2. The locations of emergency facilities are shown on Figure D-3.

D.2.2 Emergency Communications

Effective emergency response at LANL requires an efficient communication system that will integrate required personnel into the emergency response. The initial phase of an emergency will involve a small number of individuals at the affected area and notification of the Duty Emergency Manager. For small scale emergencies, local communication equipment/systems will be utilized. When responding to hazardous or mixed waste emergencies, the EM&R Office provides communications between response units and emergency organizations.

D.2.2.1 Emergency Central Alarm Station

The LANL emergency CAS is located at TA-64-1. This station is manned by PTLA personnel 24 hours a day and is equipped with telephones (including direct-line telephones), medium- and short-range radios, a National Warning System (NAWAS) station, and an emergency power system. The fire alarm board at the control room gives the location of automatic and manual fire alarm equipment. The CAS receives alarms from several sources and, in turn, notifies the Duty Emergency Manager of a hazardous or mixed waste emergency. Sources include:

- Telephone communication (911)
- Automatic fire alarms
- Manual pull alarms
- Computer interface (to warn of critical events at selected facilities)
- Security alarms
- Radio communications.

Upon receipt of an alarm, the CAS operator then notifies the LACFD and the Duty Emergency Manager. The Emergency Manager, the HMGS, the EOC communicator, and/or the CAS operator may request emergency response groups to respond. Should the LANL 911 system fail, the Los Alamos County System, located at the LACPD Station, will be used to activate emergency response groups.

D.2.2.2 Utilities Control Center

JCI personnel maintain the UCC at TA-3-223. This facility is maintained 24 hours a day. Alarms at this facility are connected to LANL experiments, equipment, and/or buildings to record outages and hazardous conditions. Any conditions that activate these alarms will be reported immediately to building management or to the CAS operator for notification and response.

D.2.2.3 Additional Communication Systems

Internal communication systems at LANL include:

- The Centrex telephone system

- A telephone paging system

- A variety of FM VHF simplex repeater and trunked radio systems, including:
  - Multiple base stations
  - Mobile and hand-held units

- Links to New Mexico public safety agencies

- A UHF radio system, including:
  - Multiple antenna sites
  - Mobile and base units
  - Links with the LACPD, the LACFD, and the State Medical System

- A 400-megahertz trunked radio system that includes a link with the LACFD

- Transmission and reception (through EOC) for:
  - Secure telephone
  - Secure fax
  - Secure still video

- Access to all radio systems outlined above (through EOC).

Off-site communications with federal, state, tribal, county, and other agencies are available through the following:

- A Centrex telephone system
- Private telephone lines (if Centrex fails)
- Two NAWAS stations
- A link to KRSN radio (local radio station)
- The local cable television
- A Community Alert Network.

The LANL EOC, maintained by the EM&R Office, operates radio systems on key LANL and off-site channels. Emergency personnel responding to on-site incidents have the benefit of wide-area radio coverage using EOC facilities. After hours, the Duty Emergency Manager is responsible for activating whatever support personnel, equipment, or services are needed.

D.3 CONTINGENCY PLAN IMPLEMENTATION

The following sections discuss guidelines used to implement this contingency plan, for emergency notifications, and for Emergency Manager actions in various types of emergencies.

D.3.1 Guidelines For Implementation

The decision to implement this contingency plan depends upon whether an imminent or actual incident involving a release of hazardous or mixed waste to the environment could threaten human health or the environment. The Duty Emergency Manager will use the guidelines listed below to decide whether to implement this plan.

This contingency plan will be implemented immediately in the following situations involving releases or potential releases of hazardous or mixed waste:

- Spills:
  - If a hazardous or mixed waste spill cannot be contained with secondary containment or application of sorbents.

- If precipitation threatens to move spilled material off site.

- If a hazardous or mixed waste spill causes the release of flammable material, creating a fire or explosion hazard.

- If a hazardous or mixed waste spill results in toxic fumes that threaten human health.

- If an earthquake or other natural disaster threatens containment integrity.

• Explosions:
  - If an unplanned explosion involving hazardous or mixed waste occurs (except at TA-14, TA-15, TA-16, TA-36, and TA-39).

  - If an imminent danger of an explosion involving hazardous or mixed waste exists.

• Fires:
  - If a fire involving hazardous or mixed waste occurs (except planned burning of HE waste).

  - If any building, grass, forest, or nonhazardous waste fire exists that threatens to volatilize or ignite hazardous or mixed waste.

D.3.2 Emergency Notification

During working hours, immediately upon discovery of an imminent or actual incident involving hazardous or mixed waste, on-site personnel will notify line management and the EM&R Office. During nonworking hours, personnel will report all incidents involving hazardous or mixed waste to the Duty Emergency Manager or the CAS operator. In the case of fire involving hazardous or mixed waste, notification of these individuals is superseded by the LANL fire alarm system. A fire is reported by dialing 911 (from telephone exchanges 667 and 665) or 667-7080 (from all exchanges), activating automatic alarms, or activating a fire alarm pull box. All fire alarms alert the CAS operator, the LACFD, and PTLA. In case of a fire involving hazardous or mixed waste or a hazardous or mixed waste unit, the CAS operator will contact the Duty Emergency Manager.

Upon recognition of a hazardous or mixed waste emergency, the first arriving emergency-trained person will become the temporary IC. Once the EM&R Office is notified of the emergency, the Duty Emergency Manager will proceed to the scene and be briefed by the temporary IC, building/area personnel, and/or other emergency units/teams. The Emergency Manager may then assume the position of IC. If necessary, the IC may recommend that the EOC be activated and that the necessary members of the emergency management team be determined. The IC will form a UC and contact the HMGS. The HMGS will notify the appropriate emergency response groups. The IC may determine from the list of response groups described in Table D-1 which groups to contact in an emergency. Each response group maintains an on-call person and/or a call-down procedure to respond to emergencies.

The EM&R Office will be notified of any potential hazardous or mixed waste emergency (e.g., spills, fires, explosions). The IC and the HMGS will use whatever means are available (including the assistance of other response groups, computer data searches, and sampling) to determine if a hazardous or mixed waste is being or has been generated and/or released. ESH-10, ESH-19, and waste management groups within CST

Division have the expertise to determine the nature and extent of contamination and the characteristics of the hazardous or mixed waste involved.

D.3.3 Emergency Manager Actions

Upon notification of an incident, the Duty Emergency Manager may:

- Proceed directly to the scene.
- Call the HMGS.
- Assess the nature of the incident (e.g., through communication with the temporary IC).
- Assume incident command.
- Make an initial assessment of the incident and, in conjunction with the UC, obtain resources to determine the source, quantities, and types of hazardous or mixed waste involved and the areal extent of any released materials.
- Based on the guidelines in Section D.3.1 of this plan, determine if implementation of this contingency plan is warranted.
- Recommend activation of the EOC, if necessary.

Upon deciding to implement this contingency plan, the IC will, when appropriate:

- Assess the hazards to human health and the environment, including both direct and indirect effects, such as generation of toxic, irritating, or asphyxiating gases and/or hazards of runoff of water or chemicals used for fire suppression. An individual designated by the IC will use the guidelines in Section D.3.1 to assess the hazards to human health and the environment. If any of the criteria under Section D.3.1 are met and if the responsible Group Leader or designee has not already accomplished evacuation of the area, the IC will initiate evacuation of the immediate area.
- Determine if evacuation of the local area is advisable and, if so, immediately notify appropriate response groups and the LACPD, if appropriate. The IC may activate one or more of the following community alert mechanisms: the Community Alert (telephone) Network, the KRSN radio remote input system, or the cable television capture system.
- Notify required response personnel and DOE/LAAO. In the case of fire, the IC will confirm that the LACFD Senior Officer at the scene is aware of the special hazards associated with hazardous or mixed waste.
- Warn the remaining on-scene and response personnel of imminent or actual hazards using internal radio communication systems or the public address (PA) system. A radio/PA system at key facilities throughout LANL may be used for emergency notification.
- In emergency situations, the appropriate ESH representative will notify the New Mexico Environment Department (NMED) at (505) 827-9329 and the National Response Center at (800) 424-8802, reporting:

- The name and telephone number of the ESH representative
- The name and address of the facility
- The time and type of incident
- The name and quantity of material involved, to the extent known
- The extent of injuries, if any
- The possible hazards to human health or the environment outside the facility.

- Advise the response groups of hazards in order to minimize personnel exposure and expedite mitigation.

- When an emergency occurs at hazardous or mixed waste treatment units, ensure that CST waste management personnel or, in the case of TA-55, the NMT emergency response personnel monitor for leaks, pressure buildup, gas generation, or equipment ruptures.

Once control of the emergency is established, the IC will take all reasonable measures to minimize the occurrence, recurrence, or spread of fires, explosions, or releases. In addition, the IC will delegate cleanup and decontamination responsibilities to include:

- Arranging for site cleanup.

- Providing for proper handling of recovered waste, contaminated soil, or contaminated surface/ground water.

- Providing for decontamination of equipment, as needed.

- Arranging for replacement and/or repair of equipment, as needed.

- Ensuring that testing is conducted to verify successful cleanup.

Within 15 days of the incident, DOE/LAAO will submit a report to the Secretary, NMED. The contents of this report will be generated by several LANL groups responding to the emergency, as detailed in Section D.12.

D.4 SPILLS

Sudden releases include spills of hazardous or mixed waste that pose a significant threat to human health or the environment. Spill incidents resulting in a sudden release of hazardous or mixed waste that presents a potential threat to human health or the environment, as listed in Section D.3.1, require implementation of this contingency plan.

Hazardous and mixed wastes are stored on site in a variety of containers including, but not limited to, 55-gallon drums, lab packs, tanks, fiberglass-reinforced plywood boxes, standard waste boxes, and small laboratory bottles. Volumes of hazardous or mixed waste stored or treated will vary from unit to unit. The general steps in handling hazardous and/or mixed waste spills are as follows:

- Isolate the immediate area and deny entry to all unauthorized personnel

- Contain the spill by spreading sorbents or forming temporary dikes to prevent further migration (performed by properly trained personnel, if safe)

- Monitor the spill area and sample the spilled waste and contaminated media
- Package the waste and contaminated media in sound containers
- Decontaminate the area and all involved equipment and personnel (follow by testing to assure adequate cleanup)
- Remove the waste and contaminated media (performed by appropriate waste management personnel).

The IC will determine the steps to be taken for spill mitigation. If initial mitigation of the spill is necessary and can be accomplished safely before the Emergency Manager arrives, a qualified member of the affected area's operating group will serve as the temporary IC.

The emergency preparedness procedures related to flammable organic solvent spills require stabilization of the spilled material with an organic solvent spill kit. Other chemical spills are to be stabilized using acid and caustic spill kits or by the addition of sorbents. During spill control and cleanup, all personnel will wear personal protective equipment (PPE). ESH-5 will conduct monitoring to ensure that chemical exposure is minimized. ESH-1 will conduct health physics monitoring whenever mixed waste is involved to ensure that radiation exposure is also minimized. The stabilized material may be treated as hazardous or mixed waste, depending on the components present. Runoff from spills of listed hazardous or mixed waste that have migrated outside waste storage and/or treatment areas must be contained and managed as hazardous or mixed waste, as appropriate. If the spill was from a characteristic hazardous or mixed waste and if analysis shows that the runoff does not exhibit the characteristic (i.e., ignitability, corrosivity, reactivity, and/or toxicity), then the runoff need not be managed as characteristic waste. Temporary dikes may be constructed to contain runoff.

D.4.1 Spill Control Procedures

When a flammable organic solvent spill, a highly acidic spill, or a highly caustic spill has been stabilized with the contents of an organic solvent spill kit, an acid spill kit, or a caustic spill kit, respectively, the resulting material may be sorbed using a nonbiodegradable sorbent. Nonbiodegradable sorbent can be used to control spills if it is known to be compatible with the spilled material. Approved drums or packaging will be used to collect all spilled material and contaminated sorbent. For corrosives, the drums will be lined with polyethylene drum liners. Appendix D-1 lists emergency equipment available for spill control at each waste management unit addressed in this permit. Appropriate waste management personnel will determine the ultimate disposition of any contaminated sorbent or waste material, according to RCRA regulatory requirements.

D.4.2 Decontamination Verification

Decontamination will be accomplished at the spill site. After the spilled material has been sorbed, the material will be containerized. If the spill occurs on a cemented or asphaltic concrete area, water or an appropriate solvent will be used to clean the area. Liquids (i.e., spilled material and cleaning water or solvents used to clean a spill) will be sorbed with a compatible, nonbiodegradable sorbent and will be containerized. If a spill is from an identifiable source, then the spilled material will be analyzed for the hazardous waste constituents known to be components of the waste managed at that unit. The appropriate analytical method(s) given in Table D-4 will be utilized. If the spill is from other than an identifiable

source, then the spilled material will be analyzed for all of the parameters listed in Table D-4. All personnel conducting decontamination verification will wear PPE. ESH-1 will conduct health physics monitoring whenever mixed waste is involved to ensure that radiation exposure is minimized. Any hazardous or mixed waste collected from decontamination activities will be handled appropriately.

In order to establish baseline data, a sample of decontamination water or solvent and nonbiodegradable sorbent material will be taken prior to the start of the decontamination effort. A sample of the material used to sorb the final wash water will then be taken. No hazardous waste constituents should be present in this sample at levels above those found in the baseline data. If the sample exhibits any of the characteristics of a hazardous waste as defined in 20 NMAC 4.1, Subpart II, Part 261, Subpart C, revised November 1, 1995, or if a hazardous constituent listed in 20 NMAC 4.1, Subpart II, Part 261, Appendix VIII, revised November 1, 1995 (and not detected in the baseline data), is present above established health-based levels, the decontamination procedure will be repeated. An alternative demonstration of decontamination may be proposed and justified to NMED, who will evaluate the proposed alternative in accordance with the standards and guidance then in effect. If the proposed alternative is accepted, decontamination levels will meet the levels approved by NMED. Each sample will be collected with an appropriate sampling device (e.g., thief or trier) as specified in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA, 1992).

If the spill occurs on soil, any free liquid present will be sorbed with a compatible nonbiodegradable sorbent, and the resulting material will be containerized. For such a spill, all contaminated soil will be excavated and containerized. ESH-5 will conduct industrial hygiene monitoring, and if mixed waste is involved, ESH-1 will conduct health physics monitoring to minimize exposure during soil removal operations. To establish comparative background data, one or more samples will be collected from an unaffected area near the spill site. The spill site will then be characterized, and the data will be compared to the background data to ensure that all contaminated material has been removed.

If a spill occurs in an area with sealed floors, verification sampling will be performed after decontamination. Swipe samples or other types of sampling appropriate for the contaminant will be collected at random in the area and analyzed. For a spill that occurs in an area that does not have sealed floors, random samples of the floor material, such as concrete chips, will be collected and analyzed for decontamination verification. Contaminated floor material will be removed if the level of contamination remains above that detected in the background data after repeated decontamination attempts. If a spill occurs on asphaltic concrete, the asphaltic concrete will be decontaminated, and a sample of the final wash water and/or the material used to sorb the final wash water will be collected and analyzed for decontamination verification. Contaminated asphaltic concrete that cannot be decontaminated will be removed.

D.5 EXPLOSION

Explosions and resultant releases may result in a significant threat to human health or the environment. The potential exists for hazardous or mixed waste to be released during an explosion. Implementation of this contingency plan is required whenever a sudden release that cannot be contained or that presents a threat to human health or the environment occurs as a result of an explosion.

In the case of an explosion at LANL, all personnel will immediately evacuate the area. Any injured personnel will be decontaminated at the site, if required and if time allows. An LACFD ambulance will transport these personnel to the ESH-2 facility or to LAMC for treatment. If an injury is severe and requires immediate medical evacuation, the injured person will be wrapped to contain contamination, if necessary. In the case of an actual or potential explosion, on-site personnel will contact the EM&R Office immediately

so that the Emergency Manager can ensure that all necessary emergency response personnel are alerted. The LACFD is notified automatically upon central alarm system activation. The Emergency Manager assumes incident command and will remain near but at a safe distance from the site in order to inform personnel responding to the explosion of the known hazards.

If a fire results from an explosion, the LACFD Senior Officer will, upon arrival at the scene, evaluate all available information and determine the appropriate firefighting methods and tactics. The LACFD Senior Officer will direct firefighting operations under the general direction of the IC.

D.6 FIRE

Fires and resultant releases of hazardous or mixed waste may result in a significant threat to human health or the environment. Implementation of this contingency plan is required whenever a fire incident results in a sudden release of hazardous or mixed waste that cannot be contained or that presents a threat to human health or the environment.

Depending on the size of the fire and the fuel source, portable fire extinguishers may be used. However, LANL policy does not encourage the use of portable fire extinguishers by employees unless properly trained. Instead, LANL policy encourages immediate evacuation of the area and notification of the LACFD. For any fire, including a fire that involves hazardous or mixed waste, the responsible Group Leader and the EM&R Office must be contacted immediately. The Emergency Manager will alert the LACFD and all other necessary emergency response personnel. If the fire spreads or increases in intensity, all personnel must evacuate to an area designated by the responsible Group Leader, Group Leader designee, or Emergency Manager. The Emergency Manager assumes incident command and will remain near the scene to advise personnel responding to the fire of the known hazards.

Upon arrival at the scene, the LACFD Senior Officer will evaluate all available information and determine the appropriate firefighting methods and tactics. The LACFD Senior Officer will direct firefighting operations under the general direction of the IC.

D.7 UNPLANNED NONSUDDEN RELEASES

Nonsudden releases include those incidents that, if uncontrolled, impact the environment over a long period of time. Such incidents include minor leaks from containers, loss of secondary containment integrity, and incomplete treatment.

D.7.1 Responsibility

The operating group is responsible for correction of a nonsudden release from a hazardous or mixed waste unit if the correction can be performed safely with normal maintenance and management procedures. Personnel from the EM&R Office may provide assistance in mitigating releases. Any correction methods for nonsudden releases that have resulted in an impact to the environment will be coordinated with the NMED.

D.7.2 Nonsudden Releases

Not all failures can be predicted. In general, the response to a nonsudden release will be (1) to contain the release, (2) to correct the cause of the release, and (3) to clean up any release to a level that protects human health and the environment.

The operating group will conduct regularly scheduled inspections to detect failure of containment at the hazardous and mixed waste units addressed in this permit. Inspections of these units will be conducted to ensure that containers and tanks are not leaking. In addition, the operating group will inspect the secondary containment systems regularly to ensure that the integrity of the containment systems has not deteriorated. If an inspection reveals that containers or tanks are leaking or that secondary containment has deteriorated, operating group personnel will ensure that maintenance or replacement of containment is performed, as appropriate.

D.7.3 Nonsudden Release Surveillance

In addition to routine inspection and site-specific sampling and testing, LANL has established an areawide environmental monitoring network maintained by ESH. Monitoring and sampling locations for various types of measurements are organized into three main groups. Regional monitoring stations located within the five counties surrounding Los Alamos County are placed up to 80 kilometers (50 miles) from LANL. These stations serve to determine background conditions. Perimeter stations, located within approximately 4 kilometers (2.5 miles) of the LANL boundary, document conditions in residential areas surrounding LANL. On-site stations, most of which are accessible only to employees during normal working hours, are within the LANL boundary.

Routine surveillance conducted at these stations includes measuring radiation and collecting samples of air particulates, surface waters, ground waters, soil, sediment, and foodstuffs for subsequent analysis. Additional samples provide information about particular events, such as major runoff events and nonroutine releases. Data from these efforts are used for comparison with standards, for background levels, and for radiation dose calculations.

D.8 EXPOSURE TO HAZARDOUS OR MIXED WASTE

If a person is exposed to hazardous or mixed waste, the affected person, a co-worker, or line management will notify the EM&R Office. Appropriate first aid should be administered immediately. An EM&R Office representative will notify ESH-10 directly, as soon as possible, so that exposure levels and decontamination requirements can be established. The injured person will then be quickly transported to the ESH-2 medical facility or to LAMC for evaluation. If possible, the material involved in the injury will be ascertained and the information given to the medical staff.

Other potential exposures will necessitate evacuation of the area, if appropriate, or under any of the following conditions:

- Irritation of the eyes, breathing passages, or skin
- Difficulty in breathing
- Nausea, lightheadedness, vertigo, or blurred vision.

The affected person will be transferred to the ESH-2 medical facility or to LAMC. An ESH-1, ESH-5, or ESH-10 representative will attempt to ascertain what, if any, exposure occurred and what corrective measure is appropriate.

D.9 EVACUATION

A facility will be evacuated upon the voice command to evacuate the area or upon the sounding of the evacuation or fire alarm.

D.9.1 Emergency Process Shutdown Prior To Evacuation

Personnel are instructed to shut down equipment prior to evacuating a building unless an immediate building evacuation is announced or signaled. To ensure efficient shutdown, training and exercises addressing the shutdown process are performed. In the case of an immediate evacuation, a selected team may shut down designated equipment in an evacuated area. The team will be equipped with the proper equipment, clothing, and breathing apparatus. If they are on location, ESH-1, ESH-5, and/or ESH-10 will provide advice and assistance. Process-shutdown procedures apply mainly to hazardous or mixed waste treatment units only.

D.9.2 Evacuation Plan

Emergency situations may warrant the shutdown and evacuation of areas or buildings in order to protect personnel and property, to anticipate the emergency condition, or to enhance the appropriate response. Table D-5 lists the criteria for evacuation, persons responsible for initiating evacuations, and reentry conditions.

To initiate the evacuation of a building/area, the evacuation or fire alarm is sounded and/or the PA system may be used. Evacuation alarms cannot be silenced and reset by site personnel. Only the Fire Alarm Maintenance Section at 667-4027 and the LACFD Battalion Chief at 667-7026 can silence and reset alarms. To evacuate a portion of a building or area, use of the PA system may be more appropriate. The PA system will notify the occupants of the area to be evacuated and will advise personnel throughout the building of the existence of a problem in a specific area. Once evacuation has been initiated and if conditions allow, personnel will turn off all equipment that could contribute to the hazard if left unattended. All personnel will then proceed from the affected area to the assembly/muster area.

In the event of the evacuation of a building, an outbuilding, or an outlying work area, the responsible Group Leader or designee will establish a control point at the closest safe location (e.g., considering wind direction). The designated area will be outside the affected area and will serve as an assembly/muster area where the Group Leader or designee can oversee evacuation operations and work to prevent further spread of the hazard.

As personnel exit an affected building/area, a primary sweep of the building/area will be performed to ensure that all personnel have evacuated. If the building/area is evacuated, a Group Leader designee will take attendance at the assembly/muster area and report personnel accountability to the IC. The evacuation procedure follows:

- Person discovering the accident or emergency will call 911 and ensure that line management and the EM&R Office are notified.

- Site-specific BEPs and/or emergency action procedures will be followed concerning evacuation, sweep, personnel accountability, and equipment shutdown procedures.

For a small-scale evacuation, a responsible on-site person may direct the evacuation. For a large-scale evacuation, the central alarm system may be activated. The EM&R Office will be notified immediately and will dispatch the Duty Emergency Manager. A responsible on-site person may begin the evacuation process until the Duty Emergency Manager arrives at the scene to assume that responsibility.

D.10 SALVAGE AND CLEANUP

Appropriate representatives from the ESH groups will survey the affected area before salvage and cleanup begin. They will conduct visual inspections and sampling of the affected area to determine whether cleanup is complete. If gases or fumes, electrical or radiological problems, or other conditions present a hazardous situation, personnel or selected teams equipped with proper breathing apparatus and protective clothing will reenter the area to perform designated decontamination tasks, repairs, and salvage to allow the return to normal operations. After an emergency, the IC will turn the operation over to the Recovery Manager, who will:

- Provide for proper handling of recovered waste, contaminated soil or surface water, or any other material that results from a spill, fire, or explosion. Contaminated material will be managed appropriately and temporarily stored at one of the hazardous or mixed waste storage areas at LANL. Waste management personnel will be responsible for determining the final disposition of the waste. This determination will be made in compliance with RCRA TSD standards.

- Arrange to monitor for damage or improper operation of the unit and associated equipment as a result of the emergency or of plant shutdown in response to the emergency.

- Arrange for site cleanup procedures to be completed and ensure that no waste that may be incompatible with the released material is treated or stored in the same area.

- Ensure that emergency equipment is cleaned, decontaminated, and fit for its intended use before operations are resumed. Equipment will be inspected visually and then sampled, if necessary, to determine the type and degree of contamination and to determine appropriate cleanup measures.

The Recovery Manager is the functional equivalent of the RCRA Emergency Coordinator for post-emergency actions.

Prior to resuming operations, facility management will verify that the previously mentioned tasks have been performed. The owner/operator (DOE/LAAO) will notify appropriate state and local authorities that cleanup procedures are completed and that emergency equipment is clean and fit for its intended use.

The IC assumes the coordination of post-emergency actions (particularly during the time period immediately following the emergency) until a Recovery Manager is appointed. The Recovery Manager then assumes this coordination role. The post-emergency actions include cleanup operations, repairing vital equipment, or interim hazard-removal operations (such as arranging for the demolition of unstable walls). The services of the affected operational organizations, ESH groups, JCI, and other on-site resources will also be used to estimate cleanup costs and operational impact.

D.11 POST-EMERGENCY ASSESSMENT

When the emergency is over, the cause of the emergency and the effectiveness of the response are investigated in an effort to prevent future emergencies and to facilitate more effective responses to them.

Following each event requiring the implementation of this contingency plan, the EM&R Office will schedule and conduct a critique with representatives from all response groups, from representatives in the building/area in which the emergency occurred, and from LANL management to determine the adequacy of the response.

D.12 EMERGENCY RESPONSE RECORDS AND REPORTS

Any emergency that requires implementation of the contingency plan will be documented by the Group Leader or designee responsible for the hazardous or mixed waste unit, and reported in writing within 15 days to the NMED. The incident report, submitted by DOE/LAAO, will include the following data:

- Name, address, and phone number of owner or operator
- Name, address, and phone number of the facility
- Date, time, and type of incident (e.g. fire, explosion, spill)
- Name of material(s) involved
- Quantity of material(s) involved
- Extent of injuries (if any)
- Assessment of actual or potential hazards to human health or the environment
- Estimated quantity and disposition of material recovered from the incident.

Various LANL personnel responding to the emergency will record the details of any incident requiring implementation of this plan. The CAS operator, the EOC communicator, the Emergency Manager, and/or the Group Leader or designee responsible for the hazardous or mixed waste management area in which the emergency occurred will record the date, time, location of the incident, wastes/materials involved, injuries (if any), property damage (if any), and a detailed description of the incident. This information will be maintained in the facility operating record. ESH-7 will supply information concerning any follow-up actions. Appropriate LANL personnel will provide details regarding the removal and disposition of hazardous and mixed wastes associated with the emergency.

D.13 CONTINGENCY PLAN AMENDMENT

This contingency plan will be reviewed periodically by the EM&R Office, waste management groups, and ESH-19 and, if necessary, will be reviewed as appropriate by ESH-10. The plan will be amended immediately if determined to be inadequate to handle releases (spills, explosions, and/or fires), and whenever:

- The facility permit is revised

- There is significant change in the design or operation of the facility (e.g., quantities of waste handled and handling techniques) that increases the likelihood of an emergency and requires changes in emergency response

- The list of Emergency Managers changes

- The list of emergency equipment changes significantly.

This plan is a controlled document distributed by ESH-19. Amendments to this contingency plan will be distinguished by the revision number and date of revision noted in the upper right corner of each page. Amendments will be issued to all contingency plan holders and will include a cover letter that describes the

plan changes and the rationale for those changes.

TABLE D-1

RESPONSE GROUPS AND AGENCIES AVAILABLE TO THE EMERGENCY MANAGEMENT AND RESPONSE OFFICE FOR GUIDANCE AND/OR EMERGENCY ASSISTANCE

LANL[a]-Controlled Response Group	Telephone	Responsibilities
CST, Chemical Science and Technology Division	667-7579 667-6095	Provides guidance on proper treatment, storage, and off-site shipment of hazardous and mixed waste.
ESH-1, Health Physics Operations	667-5296	Provides routine guidance on radiological decontamination. Provides routine site evaluation and monitoring to determine the nature and extent of contamination (radiological).
ESH-2, Occupational Medicine	667-7251	Provides emergency medical treatment.
ESH-5, Industrial Hygiene and Safety	667-4644	Provides guidance on industrial hygiene equipment and on operational safety.
	665-4427	Provides routine site evaluation/support field testing to determine the nature and extent of contamination (chemical).
ESH-7, Occurrence Investigation	667-0598	Reports occurrences and tracks follow-up actions.
ESH-10, Hazardous Materials Response	665-5237	Provides emergency site evaluation/field monitoring (chemical and radiological). Specifies protective clothing and equipment. Dispatches Hazardous Materials Response Team. Provides support for chemical, radiological, hazardous, and mixed waste incidents and decontamination of responders and response equipment.

TABLE D-1
RESPONSE GROUPS AND AGENCIES AVAILABLE TO THE EMERGENCY MANAGEMENT AND RESPONSE OFFICE FOR GUIDANCE AND/OR EMERGENCY ASSISTANCE
(continued)

LANL[a]-Controlled Response Group	Telephone	Responsibilities
ESH-17, Air Quality	665-8855	Provides information on meteorological conditions.
ESH-18, Water Quality and Hydrology	665-0453	Provides information on hydrologic conditions.
ESH-19, Hazardous and Solid Waste	667-0666	Provides guidance on regulatory requirements. Conducts field surveys to determine spread of contamination and adequacy of cleanup.
ESH-20, Environmental Assessments and Resource Evaluations	667-0730	Provides information on biotic conditions.
NMT, Nuclear Materials Technology Division	667-2556	Provides initial emergency site evaluations at Technical Area (TA) 55 and conducts activities related to the prevention, notification, and control of emergencies at TA-55. In the event of an emergency at TA-55, monitors for leaks, pressure buildup, gas generation, or equipment ruptures, if necessary. Maintains and operates TA-55 Emergency Response Team.
ESA, Engineering Science and Applications Division	667-4136	Provides information and/or assistance during emergencies involving units at TA-16.
DX, Dynamic Experimentation Division	667-5653	Provides information and/or assistance during emergencies involving units at TA-14, TA-15, TA-36, and TA-39.

TABLE D-1
RESPONSE GROUPS AND AGENCIES AVAILABLE TO THE EMERGENCY MANAGEMENT AND RESPONSE OFFICE FOR GUIDANCE AND/OR EMERGENCY ASSISTANCE
(continued)

LANL[a]-Controlled Response Group	Telephone	Responsibilities
PTLA, Protection Technology Los Alamos	667-4437	Provides traffic control, security.
JCI, Johnson Controls World Services Inc.	667-6191	Dispatches maintenance personnel and equipment. Assists in waste cleanup under direction of Recovery Manager.

TABLE D-1
RESPONSE GROUPS AND AGENCIES AVAILABLE TO THE EMERGENCY MANAGEMENT AND RESPONSE OFFICE FOR GUIDANCE AND/OR EMERGENCY ASSISTANCE
(continued)

Non-LANL[a]-Controlled Response Group	Telephone	Responsibilities
Los Alamos County Fire Department	667-7080 9-911	Dispatches firefighting personnel, equipment, and Emergency Medical Services.
Los Alamos County Police Department	662-8222	Provides traffic control on public access roads.
Los Alamos Medical Center[b]	662-4201 662-2455	Provides medical services. Provides and maintains Emergency Room.

[a] Los Alamos National Laboratory.
[b] Medical services related to hazardous and mixed waste injuries are provided under the direction of ESH-2.

TABLE D-2
EMERGENCY MANAGEMENT AND RESPONSE OFFICE
EMERGENCY MANAGERS[a]

Emergency Managers[b]	Laboratory Telephone	Home Telephone	Home Address
Gary W. Bequette	667-6211	662-5636	1781 37th St., Los Alamos, NM
Cheryl S. Bequette	667-6211	662-5636	1781 37th St., Los Alamos, NM
George Van Tiem	667-6211	662-4623	197 El Viento St., Los Alamos, NM
Ed Nettles	667-6211	662-5690	1461 Oakwood Lp., Los Alamos, NM
Eugene Darling	667-6211	662-2521	1860 Camino Redondo, Los Alamos, NM
Douglas Tuggle	667-6211	672-1231	117 Grand Canyon Drive, White Rock, NM

[a] To ensure immediate response, the Emergency Manager may be reached at the Emergency Management and Response Office (667-6211 or after hours, 667-7080).
[b] Assignments as the designated (i.e., primary) Emergency Manager are rotated. A current schedule is maintained at the Emergency Management and Response Office (667-6211 or after hours, 667-7080) and at the Central Alarm Station (911)

TABLE D-4
WASTE ANALYSIS PARAMETERS AND TEST METHODS[a]

Parameter	Test Method	Reference[b]
Ignitability	Pensky-Martens closed-cup method	(L) SW1010 (L) ASTM D93-80
Reactivity	Test method to determine hydrogen cyanide released from waste Test method to determine hydrogen sulfide released from waste	(L, S) HCN Test Method, Section 7.3 (L, S) H_2S Test Method, Section 7.3
Corrosivity	Electrometric (pH of aqueous solution)	(L) SW9040B
Toxicity characteristic:	Toxicity characteristic leaching procedure (TCLP) extraction	(L, S) SW1311
Metals:	Graphite furnace atomic absorption (AA) spectroscopy, gaseous hydride AA, or direct aspiration AA	
Arsenic		(L, S) SW7060A, SW7061A
Barium		(L, S) SW7080A, SW7081
Cadmium		(L, S) SW7130, SW7131A
Chromium		(L, S) SW7190, SW7191
Lead		(L, S) SW7420, SW7421
Selenium		(L, S) SW7740, SW7741A
Silver		(L, S) SW7760A, SW7761
Mercury	Manual cold-vapor technique	(L) SW7470A, (S) SW7471A
Volatile organics	Gas chromatography(GC)/mass spectrometry (MS) GC/MS capillary column technique	(L, S) SW8240B (L, S) SW8260A

Refer to footnotes at end of table.

TABLE D-4
WASTE ANALYSIS PARAMETERS AND TEST METHODS[a]
(continued)

Parameter	Test Method	Reference[b]
Semivolatile organics	GC/MS GC/MS capillary column technique	(L, S) SW8250A (L, S) SW8270B
Organochlorine pesticides	TCLP extraction and GC	(L, S) SW8080A
Chlorinated herbicides		(L, S) SW8150B
Heat value	Bomb calorimeter	(L) A006, ASTM D240
Organic chloride	Halide titration of combustion residue	(L, S) A004, ASTM D2361
Ash content	Residue after combustion in muffle furnace	(L) A001, ASTM D482 (S) A001, ASTM D3174
Cyanide, free and total	Distillation and colorimetric ultraviolet	(L, S) SW9010A, SW9012
Total chromium	Colorimetric method for hexavalent chromium	(L, S) SW7196A
Sulfide	Colorimetric titration	(L, S) SW9030A

Refer to footnotes at end of table.

TABLE D-4
WASTE ANALYSIS PARAMETERS AND TEST METHODS[a]
(continued)

Parameter	Test Method	Reference[b]
Total metals[c]:	Acid digestion	(L) SW3010A, (S) SW3050A
	Inductively coupled plasma atomic emission spectroscopy	(L, S) SW6010A
Arsenic		(L, S) SW6010A
Barium		(L, S) SW6010A
Beryllium		(L, S) SW6010A
Cadmium		(L, S) SW6010A
Chromium		(L, S) SW6010A
Lead		(L, S) SW6010A
Nickel		(L, S) SW6010A
Selenium		(L, S) SW6010A
Silver		(L, S) SW6010A
Thallium		(L, S) SW6010A
Zinc		(L, S) SW6010A
Mercury	Manual cold-vapor technique	(L) SW7470A (S) SW7471A
Free liquids	Paint Filter Liquids Test	(L, S) SW9095

Refer to footnotes at end of table.

TABLE D-4
WASTE ANALYSIS PARAMETERS AND TEST METHODS[a]
(continued)

[a] At Los Alamos National Laboratory, current analytical capabilities include limited analyses of mixed waste samples. These analyses include gross alpha, beta, and gamma screening.

[b] "A" (e.g., A006) refers to U.S. Environmental Protection Agency, 1984, "Sampling and Analysis Methods for Hazardous Waste Combustion," *EPA-600/8-84-002*.
"ASTM" refers to American Society for Testing and Materials standards.
"SW" refers to U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
(L) refers to liquid waste.
(S) refers to solid waste.

[c] See also atomic absorption methods.

TABLE D-5
EVACUATION DETERMINATION AND REENTRY CONDITIONS

Reason for Evacuation	Evacuation Determination Made by	Reentry Conditions[a]
Fire	Fire or evacuation alarm, Group Leader or alternate, Lead Engineer, Senior Staff Member present, Senior Technician, or Emergency Manager	Following survey by the Chief Fire Officer, ESH-1[b], ESH-5[c], and/or ESH-10[d], and R&D[e] supervision
Explosion	Same as above	Same as above
Loss of ventilation	Group Leader or alternate, Senior Staff Member, Lead Engineer, or Senior Technician	Following survey by ESH-1 and/or ESH-5, and R&D supervision
Loss of electric power	Same as above	Same as above
Extensive contamination	Same as above or ESH-1 Representative	Same as above or ESH-10
Airborne contamination	Same as above or Radiation Monitor	Same as above or ESH-10
Escape or release of toxic or hazardous gas or fumes	Group Leader or alternate, Senior Staff Member, Lead Engineer, Senior Technician, or Emergency Manager	Same as above plus ESH-5 or ESH-10
Bomb or bomb threat	EM&R[f] or PTLA[g] representative, R&D Section Leader or alternate, Senior Staff Member, or Lead Engineer	Following determination by the Emergency Manager or HDT[h] Leader

[a] All reentries are authorized by the Incident Commander.
[b] "ESH-1" refers to the Health Physics Operations Group.
[c] "ESH-5" refers to the Industrial Hygiene and Safety Group.
[d] "ESH-10" refers to the Hazardous Materials Response Group.
[e] "R&D" refers to the Research and Development Section.
[f] "EM&R" refers to the Emergency Management and Response Office.
[g] "PTLA" refers to Protection Technology Los Alamos.
[h] "HDT" refers to the Hazardous Devices Team.

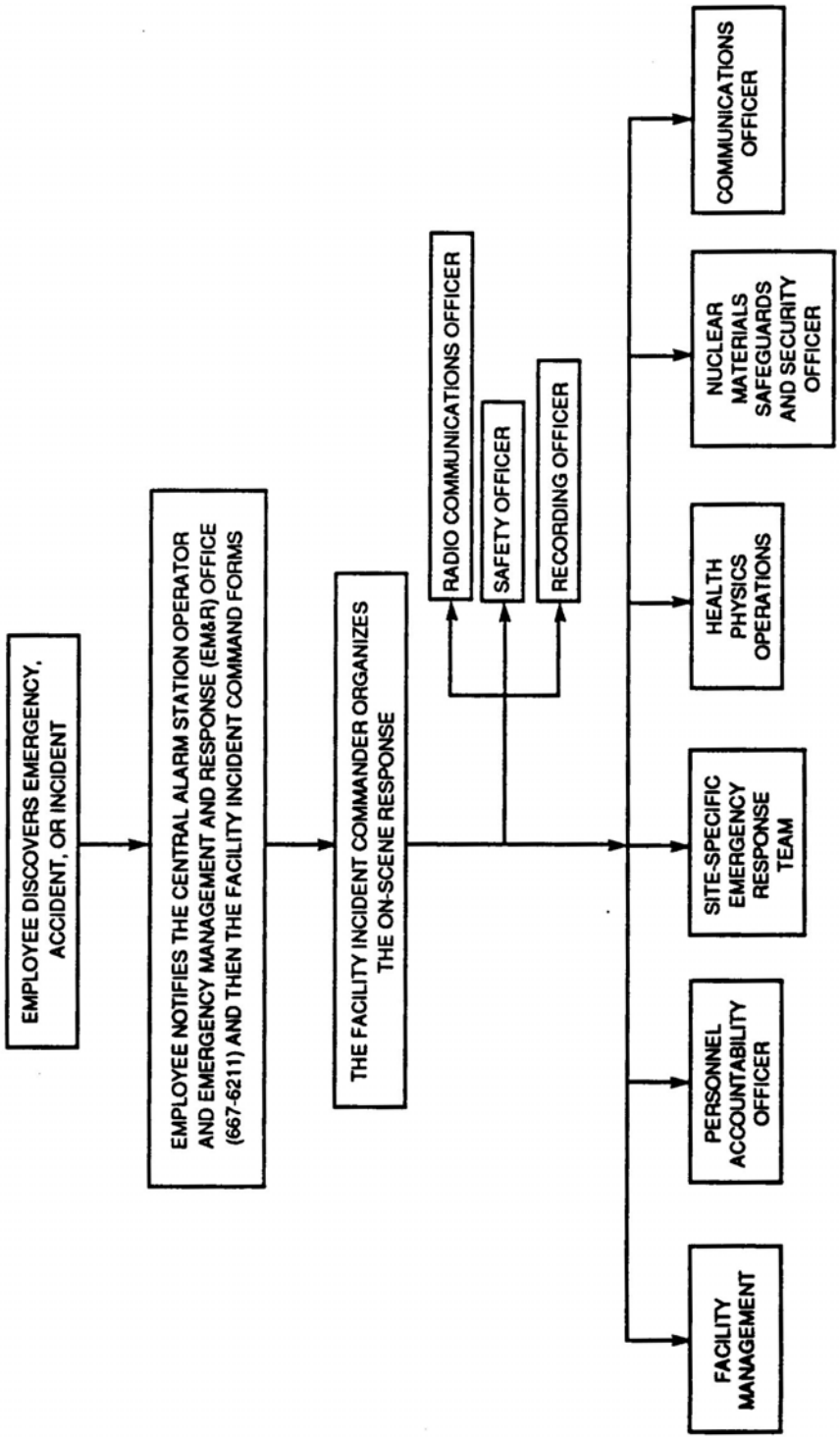


FIGURE D-1
EMERGENCY NOTIFICATION STRUCTURE FOR SITE-SPECIFIC EMERGENCY RESPONSES

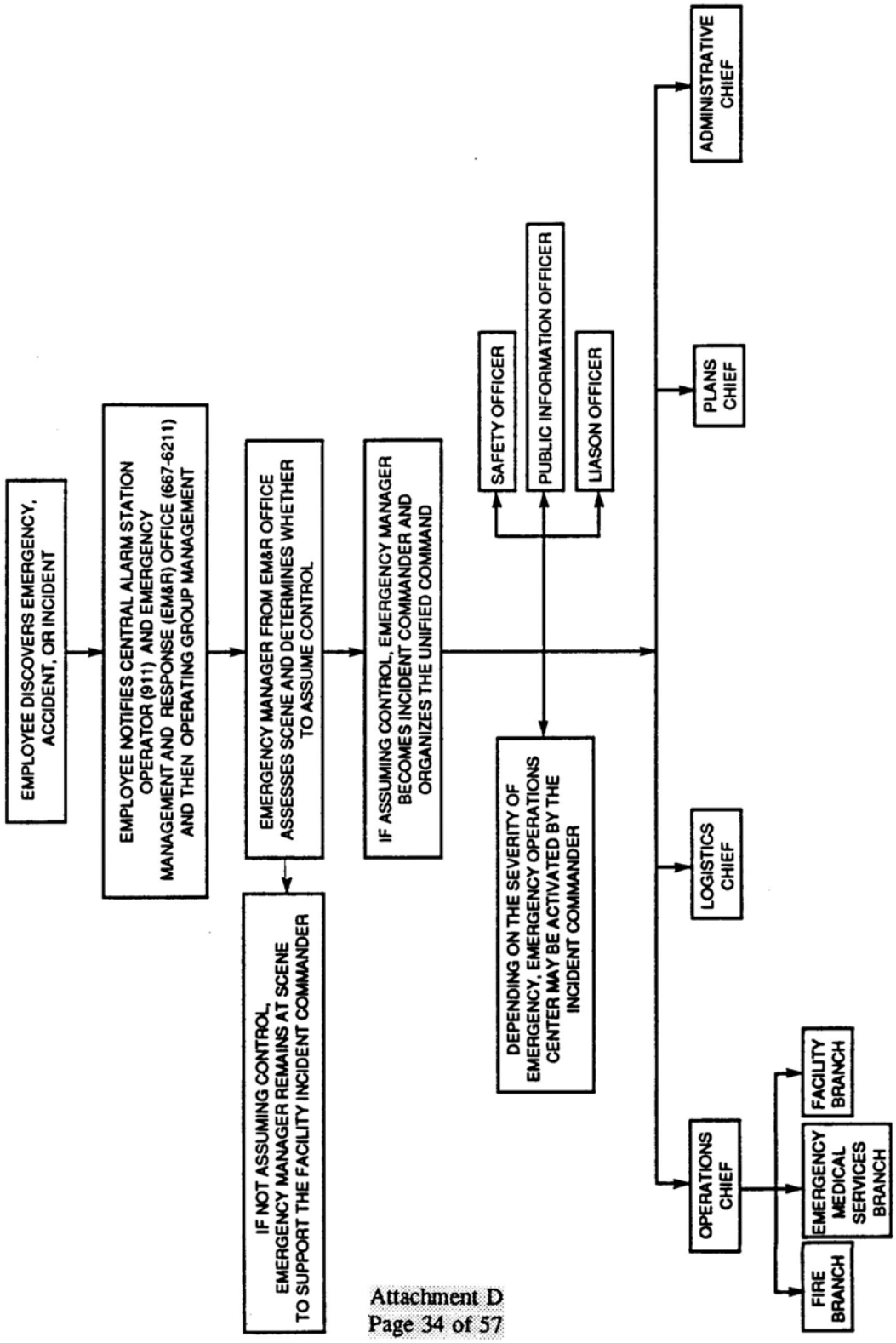


FIGURE D-2
GENERAL HAZARDOUS AND MIXED WASTE EMERGENCY NOTIFICATION STRUCTURE

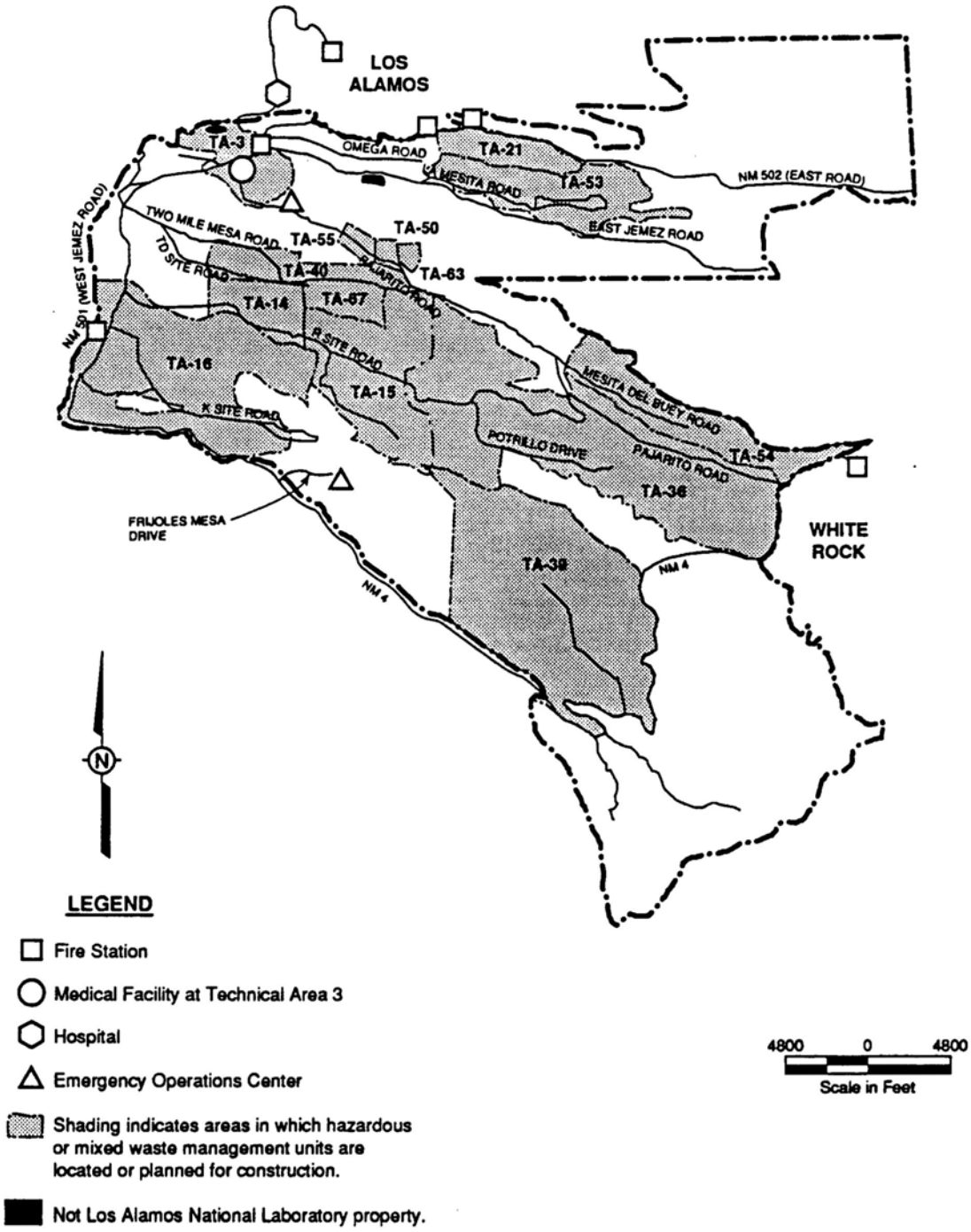


FIGURE D-3

EMERGENCY FACILITIES

APPENDIX D-1
Emergency Equipment

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

APPENDIX D-1
EMERGENCY EQUIPMENT

Hazardous Materials (HAZMAT) Vehicles and Associated Emergency Equipment:

Hazardous Materials (HAZMAT) vehicles and trailers are located at Technical Area (TA) 64, Building 39 (TA-64-39). They are available to the Environment, Safety, and Health (ESH) Division Hazardous Materials Response Group (ESH-10) for emergency response to all of the TAs at Los Alamos National Laboratory (LANL). ESH-10 is responsible for maintaining the supplies of appropriate emergency equipment in each vehicle and trailer.

The HAZMAT vehicles and trailers are equipped with safety and emergency equipment, personal protective clothing, and other supplies, which may include, but are not limited to: assorted personal protective equipment, T-shirts, and gloves; safety goggles and glasses; boots and booties; face shields; totally encapsulating suits and boots; Level A and B suits; flash suits; self-contained breathing apparatus (SCBA) and SCBA bottles; hazardous chemical reference books and other reference materials; shovels; siphon pumps; assorted spill kits and sorbents; chemical burn and neutralizing solutions; two-way radios, cellular phones, and communication equipment; bottles of leak detector; leak repair kits; emergency repair packs; HAZMAT bags; gas detectors and chemical detectors; respirators and cartridges; radiological equipment; sponges and cleaners; warning signs and barricade tape; traffic control barriers; flashlights; cameras and film; knives; portable power supplies; warning and signal horns; harnesses and belts; portable emergency oxygen; decontamination equipment; sampling equipment; and assorted tools, tape, and other supplies.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

APPENDIX D-1
EMERGENCY EQUIPMENT

EMERGENCY EQUIPMENT AT THE BURNING GROUND AND THE OPEN DETONATION PADS, TAs 14, 15, 16, 36, AND 39

Fire Control Equipment

Fire Extinguisher in each vehicle used to transport HE material
Fire Extinguisher in each control bunker

Description of General Capabilities:

These are portable units of approximately 9 to 15 pounds capacity used in wet chemical laboratory applications. May be used by any employee in case of fire. Fire extinguishers are never used to put out controlled fires at the burning grounds.

Communication Equipment

Telephones
Two-way radios

Description of General Capabilities:

Telephones for internal communication at the Laboratory and off-site communication with federal, state, county, and other agencies are available. A Centrex telephone system and a private telephone line (if Centrex fails) are available for use by all employees.

Located in each control bunker, in the control building at the burning ground, and at the waste water treatment facility at the burning ground. Radios allow communication between each vehicle.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

APPENDIX D-1
(continued)

EMERGENCY EQUIPMENT AT THE TA-50 ROOM 117 STORAGE AREA

Fire Control Equipment

13 fire extinguishers (9C-CO; 4 A-water)

Description of General Capabilities:
These are portable units of approximately 9 to 15 pounds capacity used in wet chemical laboratory applications. May be used by any employee in the event of fire.

Manually operated fire alarm may be activated by any employee in the event of fire to notify Central Alarm Station.

The sprinkler system is an automatic system which delivers a maximum of 200 psi of water spray through shower heads placed at locations which maximize fire suppression range capability. In the event of fire, this system should function automatically, requiring no manual assistance.

Halon Extinguishing Systems are indicated to supplement automatic sprinkler systems which protect high value equipment, or suppress special hazardous operations or occupancies.

Location:
1 Room 117

11 Fire Alarm Pull Boxes connected to the CAS
Location:
1 Mechanical Equipment Room 111
1 High Bay Room 112
2 South of Library and Conference Room
2 High Bay Room 114
1 East of women's changing room
1 Process Engineering Laboratory
1 Office Area Room 202
2 Room 21

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Automatic thermal alarm on inlet and exhaust of ventilation system
Automatic thermal sprinkler system throughout offices

4 Fire Hydrants
Location:
1 Northeast corner of Building 84
1 West of Building 69
1 Northeast of Building 37

Communication Equipment

Telephones throughout building with building-wide paging system

Description of General Capabilities:
Telephones for internal communication at the Laboratory and off-site communication with federal, state, county and other agencies are available. A Centrex telephone system and a private telephone line (if Centrex fails) are available for use by all employees.

Radio located in Room 202

Spill Control Equipment

Absorbent kept onsite
PCB room is bermed to handle all liquids stored
Have Spill Prevention and Containment Plan

Description of General Capabilities
Containment is designed to handle all liquids stored. Absorbent is used in the event of a small spill.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Decontamination Equipment

Showers
Emergency eye wash

Description of General Capabilities
Safety showers and eye washes are used by personnel who receive a chemical splash to skin or eyes. Specific material safety data sheets for the chemical should be obtained prior to working with the chemical to determine if the application of water is indicated for decontamination.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

APPENDIX D-1
(continued)

EMERGENCY EQUIPMENT - HSE-7 CONTROLLED

Spill Control Equipment: Located at TA-54, Area G

Heavy equipment available for emergencies may include

- 2 scrapers
- 1 bulldozer
- 1 tractor (front end loader)
- Shovels
- Absorbents (vermiculite) in combustibles storage shed

Description of General Capabilities:

The following pieces of heavy equipment will be used in the event of large spills. Small spills will be absorbed with absorbent.

Decontamination Equipment

Small decontamination pit for heavy equipment
Showers (MD-11)

Other

Change room with protective clothing (MD-11)
2-3 dozen respirators (particulates) (MD-11)
2 self-contained, portable air masks (MD-11)
2 emergency generators, portable
3 vehicles are available for evacuation of personnel:
2 sanfu
2 Jeep (with emergency equipment, e.g., coveralls, booties, tape, rope)

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

APPENDIX D-1
(continued)
EMERGENCY EQUIPMENT AT TA-54, AREA L

Fire Control Equipment

1 fire hydrant located 30 feet south of site entrance to site
1 CO fire extinguisher located inside trailer at west end of site (B, C)
1 CO fire extinguisher located inside storage shed (B, C)
1 freeze-proof faucet located immediately east of shed

Description of General Capabilities:
These are portable units of approximately 9 to 15 pounds capacity used in wet chemical laboratory applications. May be used by any employee in the event of fire.

Spill Control Equipment

Shovels
Oversized drums
Absorbent inside storage shed
Heavy equipment from Area G available for any emergencies at Area L
Bermed storage area

Description of General Capabilities:
The following pieces of heavy equipment will be used in the event of large spills. Small spills will be absorbed with absorbent.

Communications Equipment

2-way radios are available to all personnel when in area
2-way radios are in all vehicles used for moving hazardous waste
Telephone located inside trailer

Description of General Capabilities
External and internal Laboratory communications which may be used in emergency situations are listed.

Decontamination Equipment

1 emergency shower and eye wash located immediately east of shed

Description of General Capabilities:
Safety showers and eye washes are used by personnel who receive a chemical splash to skin or

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

eyes. Specific material safety data sheets for the chemical should be obtained prior to working with the chemical to determine if the application of water is indicated for decontamination.

Other
2 self-contained, portable air masks located inside trailer

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

APPENDIX D-1
EMERGENCY EQUIPMENT

TA-50

Emergency equipment at TA-50-69, the Waste Characterization, Reduction, and Repackaging Facility (WCRRF):

FIRE CONTROL EQUIPMENT:

Two carbon dioxide fire extinguishers are located in the WCRRF.
A fire extinguisher is located within 20 feet of the WCRRF Outdoor Container Storage Area (CSA).

Description of General Capabilities:
These portable, manually operated units are available for use by technicians and/or firefighters.

Two fire alarm pull stations are located in the WCRRF. Personnel working at the WCRRF Outdoor CSA may use the pull stations in the WCRRF in the event of a fire.
A wet-pipe sprinkler system is located in the WCRRF and in the large glovebox in the WCRRF. The sprinkler system is heat activated.

Description of General Capabilities:
Fire alarms may be activated by any employee in the event of a fire to notify the CAS.

A fire hydrant is located approximately 55 feet west of the WCRRF.

SPILL CONTROL EQUIPMENT:

Spill control kits are located in the WCRRF and at the WCRRF Outdoor CSA.

COMMUNICATION EQUIPMENT:

Three telephones with PA capabilities are located in the WCRRF. The PA system can be heard at the WCRRF Outdoor CSA. Personnel working at the WCRRF Outdoor CSA may use the telephones in the WCRRF. When working at the CSAs, the buddy system will be employed.
The fire alarm is a pulsing sound.
The evacuation alarm is a wailing sound that can be heard throughout the WCRRF and at the WCRRF Outdoor CSA.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Continuous air monitors are connected to a computer system in the vehicle airlock entrance of the WCRRF.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Emergency equipment at TA-50-69, the Waste Characterization, Reduction, and Repackaging Facility (WCRRF), (Continued):

Description of General Capabilities:
Telephones with PA capabilities for internal and external communication are available for use by any employee. Fire and evacuation alarms are activated in the event of a fire or in case an evacuation is required.

DECONTAMINATION EQUIPMENT:

A safety shower is located in the main room of the WCRRF, and a personnel shower is located adjacent to the change room in the WCRRF.
An eyewash is located in the main room of the WCRRF.
The safety shower and eyewash in the WCRRF may be used by personnel working at the WCRRF Outdoor CSA.
MSDS are located in the WCRRF.

Description of General Capabilities:
Safety showers and eyewashes are used by personnel who receive a chemical splash to the skin or to the eyes. Specific MSDS for the chemical(s) being managed should be obtained prior to working with hazardous or mixed waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT:

Protective clothing (Level D with thermoluminescent dosimeters [TLD]) will be worn when working at the WCRRF Outdoor CSA. Inside the WCRRF, workers wear anti-C coveralls, surgical gloves, booties, and respirators when unpackaging a waste item, cutting open a waste box, and during large bag-out efforts. Workers wear surgeon's gloves, lab coats, booties, and TLDs while working through enclosure gloves. Workers inside the enclosure airlock must wear anti-C coveralls, surgical gloves, booties, TLDs, and respirators. Workers inside the cutting enclosure wear at least two layers of anti-C coveralls, surgical gloves, booties, TLDs, and air-purifying respirators with supplied breathing air. Every visitor wears an anti-C lab coat, a TLD, safety glasses, and booties.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

TA-54 West

Emergency equipment at TA-54-38, the Radioassay and Nondestructive Testing (RANT) Facility:

FIRE CONTROL EQUIPMENT:

Five fire extinguishers

Locations:
4 Halon fire extinguishers are located inside TA-54-38; 2 in the high bay and 2 in the low bay.
1 Halon fire extinguisher is located at the Outdoor CSA.

Description of General Capabilities:
These portable, manually operated units are available for use by technicians and/or firefighters.

Four fire alarm pull boxes are located inside TA-54-38; 1 in the main entrance, 2 in the high bay near each fire extinguisher, and 1 in the low bay near the exit to the loading dock.

A dry-pipe sprinkler system is located throughout TA-54-38, including the loading dock area. The dry pipe sprinkler system is heat activated in the high bay and at the loading dock. It is smoke activated in the low bay.

Description of General Capabilities:
Fire alarms may be activated by any employee in the event of a fire to notify the CAS.

One fire hydrant is located approximately 220 feet west of TA-54-38 near the entrance to TA-54 West.

Three freeze-proof faucets are located on the northwest, southwest, and southeast sides of TA-54-38. A wall hydrant is located on the northwest side of the building.

SPILL CONTROL EQUIPMENT:

A mobile response kit is located at TA-54-38. The kit includes sorbent socks, pillows, and sheets; goggles; and large plastic bags.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Emergency equipment at TA-54-38, the Radioassay and Nondestructive Testing (RANT) Facility, (Continued):

COMMUNICATION EQUIPMENT:

Three telephones with PA capabilities are located on the first floor of TA-54-38; 1 in the high bay, 1 in the low bay, and 1 outside the main entrance. An emergency telephone is also located outside the main entrance .
The fire alarm is a double slow whoop sound.
The evacuation alarm is a high-pitched wailing sound that can be heard throughout TA-54-38 and TA-54-34.

Description of General Capabilities:
Telephones with PA capabilities for internal and external communication are available for use by any employee. Fire and evacuation alarms are activated in the event of a fire or in case an evacuation is required.

DECONTAMINATION EQUIPMENT:

Two safety showers and two eyewashes are located at TA-54-38; 1 of each is located in the high bay and 1 of each is located on the loading dock.
MSDS are located at the TA-54-38 muster area (approximately 120 feet northwest of TA-54-38) and in the TA-54-38 main entry area.

Description of General Capabilities:
Safety showers and eyewashes are used by personnel who receive a chemical splash to the skin or to the eyes. Specific MSDS for the chemical(s) being managed should be obtained prior to working with hazardous or mixed waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT:

Gloves and steel-toed shoes will be worn when working in the container storage areas. Coveralls may also be worn. Special crane equipment operators will wear hard hats when moving waste containers in the high bay.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

TA-54

Emergency equipment at TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, and Pad 10:

FIRE CONTROL EQUIPMENT:

Fire extinguishers will be located in TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, and within 300 feet of Pad 10.

Description of General Capabilities:
These portable, manually operated units are available for use by technicians and/or firefighters.

Fire and heat detection alarm systems and fire alarm pull stations will be located within structures at TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, and at Pad 10. Dry-pipe sprinkler systems will be installed in TA-54-226 and TA-54-229.

Description of General Capabilities:
Fire alarms may be activated by any employee in the event of a fire to notify the Central Alarm Station. The sprinkler systems will automatically activate in the event of a fire.

Five fire hydrants will be located in the vicinity of the container storage areas.

Description of General Capabilities:
The fire hydrants will supply water at adequate volume and pressure (i.e., approximately 800 gallons per minute and 90 pounds per square inch) to satisfy the requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart V, 264.32, revised November 1, 1995.

SPILL CONTROL EQUIPMENT:

A 6-inch asphaltic concrete curb will be installed around the interior floor perimeter of TA-54-226, TA-54-229, TA-54-230, TA-54-231, and TA-54-232 to contain any potential liquids from fire-suppression activities. Pads 2 and 4 are surrounded by a 6-inch-high, 6-inch-wide curb to contain any potential liquids from precipitation. Spill control kits will be located near the main entrance to each structure. TA-54-230 is lined with high-density polyethylene and has an emergency secondary containment system.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Emergency equipment at TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, and Pad 10 (Continued):

COMMUNICATION EQUIPMENT:

A pole-mounted telephone for communication outside of TA-54, Area G, is located at TA-54-226. Public address (PA) capabilities will be located at TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, and Pad 10. The PA system may be used locally to notify personnel of an emergency within TA-54, Area G. When handling waste in these container storage areas, personnel are provided with cellular telephones and hand-held radios capable of summoning assistance from the EM&R Office in case of an emergency and the buddy system is employed.

Fires and evacuations are announced via the building paging system.
The fire alarm is a double slow whoop sound.
The evacuation alarm is a high-pitched wailing sound.

Description of General Capabilities:
PA telephones may be used for internal communication and are available for use by any employee. External telephones may be used to notify LANL support agencies outside of Area G and are also available for use by any employee. Fire and evacuation alarms are activated in the event of a fire or in case of an evacuation. When activated, the fire alarm notifies the Central Alarm Station.

DECONTAMINATION EQUIPMENT:

A trailer equipped with a change room and showers will be available onsite during retrieval, characterization, and drum venting operations. Portable eyewash stations will also be available onsite during these operations.
Material Safety Data Sheets (MSDS) are available at TA-54-2, TA-54-11, TA-54-22; in Storage Domes 48 (TA-54-48), 49 (TA-54-49), and 153 (TA-54-153); and in the Drum Prep Facility (TA-54-33). They will also be available in Storage Domes 224 (TA-54-224) and 283 (TA-54-283).

Description of General Capabilities:
Showers and eyewashes are used by personnel who receive chemical exposure to the skin or to the eyes. Specific MSDS for the chemical(s) being managed should be obtained prior to working with mixed waste to determine if the application of water is indicated for decontamination.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Emergency equipment at TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, and Pad 10 (Continued):

PERSONAL PROTECTIVE EQUIPMENT:

Appropriate personal protective equipment (specified in a Health & Safety Plan) will be worn during retrieval, characterization, and drum venting operations at TA-54-226, and Pad 10. Personnel involved in waste handling at TA-54-229, TA-54-230, TA-54-231, and TA-54-232 will be required to wear protective coveralls and steel-toed shoes. Hard hats and gloves will be worn as prescribed in the Health & Safety Plan. Protective clothing and respirators are available in TA-54-157.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Supplemental emergency equipment and personnel available from the Los Alamos County Fire Department (9-911):

Engine companies - 1,250 gallons per minute
- Engines 1, 3, 4, 5, 6, 10, and 40

Engine 50 (Reserve) - 1,000 gallons per minute
Mini-pumpers
- MT-1, -3, -4, and -5

Modular ambulances
- 3 First line - M1, M3, M4
- 1 Reserve Unit - M10

Rescue vehicles
- 1 First Line
- 1 Newly Purchased

Crash-Fire-Rescue (CFR) units
- CFR 6
- CFR 60 (small, fast attack unit)

SCBA units
SCBA air tanks
105-foot tower ladder with pump - 1,500 gallons per minute
Personnel with 120 hours Emergency Medical Technician training
Personnel with Advanced Life Support training
Water tankers
- T-1 = 1,500 gallons
- T-3 = 2,500 gallons
- T-4 = 3,000 gallons
- T-5 = 2,500 gallons
- T-50 = 1,500 gallons

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Supplementary emergency equipment and personnel available from Johnson Controls World Services Inc. (667-6191):

TRANSPORTATION:

Pickups, 1/2 through 3/4 ton
Trucks, 1 through 3 ton
Vans, panels, and carryalls

SPECIAL EQUIPMENT:

Road grader, Cat, self-propelled blade, with radio
Grader, John Deere, self-propelled, with radio
Loaders, bucket, Melroe, Bobcat, 1/3 cubic yards
Loader, bucket, Cat, 2-3/4 cubic yards, with radio
Loader, Fiat-Allis, 3 cubic yards
Loader, bucket, Cat, 2-1/2 cubic yards
Loader, bucket, Cat, 3-1/4 cubic yards
Loader, bucket, Yale, 3 cubic yards, with radio
Loader, bucket, backhoe, Case, 1-1/2 cubic yards
Loaders, bucket, backhoe, Case, 7/8 cubic yards
Loader, backhoe, Ford, 1 cubic yard
Loader, bucket, backhoe, JCB, 7/8 cubic yards
Snowplows, Bombardier, with blade
Bulldozer, D-8, Crawler
Bulldozers, TD-25, International
Scraper, Terex, self-propelled
Scraper, Fiat-Allis, self-propelled
Bulldozer, 280, rubber-tired, with radio
Semitrailers
Chain saws
Flusher, street, 3,000-gallon truck, tanker, 500-gallon, FMC
Mobile transceivers (2-way, KOB-753)
Generators
Handsets (2-way)
Pageboys (1-way)
Welders, mounted on trailers and trucks

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Supplementary emergency equipment and personnel available from Johnson Controls World Services Inc. (667-6191), (continued):

PERSONNEL:

Heavy equipment operators
Clerks
Dispatchers
Mechanics
Power saw operators
Radio and telephone operators
Truck drivers

OTHER EQUIPMENT:

Portable toilets
Light bank set 2/3 kilowatt generator
Hand-held two-way radios
6" x 8" landscape timbers
15-ton dump truck
8-ton dump truck
Fuel truck 3,000 gallons (diesel)
Service truck (petroleum, oil, lubricant)
Combination fuel truck (392 gallons diesel) (392 gallons gasoline)

SNOW REMOVAL EQUIPMENT:

Truck-mounted snow plows
Motor graders w/wing plow attachment
Truck-mounted sand/salt spreaders
Sand/salt spreader/plow
Front end loaders
Rubber-tired bulldozer
Farm tractors w/blade attachments
Skid steer loaders
Rubber tracked bombardiers
Hand-operated snow blowers
Road-configured snow blower
Wheel Horses w/blade attachments

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Supplementary emergency equipment and personnel available from Johnson Controls World Services Inc. (667-6191), (continued):

SNOW REMOVAL PERSONNEL:

Laborers
Teamsters
Operators
Mechanics
Supervisors

SPILL RESPONSE EQUIPMENT:

Spill trailer
Material storage shed
Submersible pump
Acid/caustic pump
Wet/vacuums
Vacuum

SPILL RESPONSE MATERIAL:

Sorbent sheets
Zorball (sacks)
55-gallon barrel w/bung
55-gallon barrel w/o bung
3" x 96" spill booms
Sand bags
Gallon ND-165 degreaser
White mop heads w/handles

PERSONNEL:

Teamsters
Operators
Laborers
Supervisors

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Supplementary emergency equipment and personnel available from Johnson Controls World Services Inc. (667-6191), (continued):

UTILITIES EQUIPMENT:

Line truck (digger derrick)
Basket truck
Backhoe
Boom truck
Dump truck
Sewage trucks
Potable water truck
Trailer-mounted generator 110 volt
Truck-mounted welders
Thawing machine

UTILITIES PERSONNEL:

Operators
Pipefitters
Laborers

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Emergency equipment and personnel at the Central Medical Facility, Occupational Medicine Group (ESH-2) (667-7251):

At TA-3 (SM-409) Central Clinic:

PERSONNEL:

Physicians
Physician's Assistants
Nurses
X-ray Technicians
Clinical Laboratory Technicians
Clinical Testing Technicians

SPECIAL EQUIPMENT-PORTABLE:

Multichannel emergency receiver-base station
Two-way radio on the State Med Net,
the LANL Emergency Management channel, and the LANL Health-Safety Net
Cardiac monitors and defibrillators
Crash cart emergency equipment with E-tank oxygen (O_2)
Portable physicians' bag with medications
Portable suction unit
Portable stretchers (ambulance, gurney, folding)
Wheelchairs
O_2 tanks
Manual resuscitators
Intravenous (IV) stands
IV solutions
Otoscope/ophthalmoscopes
Portable sphygmomanometers
Stethoscopes
Anticontamination apparel
Eye irritation solution
Industrial first-aid kits
Extrication and cervical collars, crutches, canes
Suture sets
Protective apparel
Morgan lends and irrigation sets
Decontamination equipment (portable)

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Emergency equipment and personnel at the Central Medical Facility, ESH-2 (667-7251) (continued):

At TA-3 (SM-409) Central Clinic (continued):

SUPPLIES-GENERAL:

Bedding/pillows
Rescue blankets
Burn blankets
Thermal/icing pouches
Multitrauma dressings, surgical and first aid supplies
Disposable ice bags

SPECIAL FACILITIES - NONPORTABLE:

Completely equipped emergency room with ambulance entrance
Emergency lighting system
Complete X-ray suite
Protective clothing and wound counters
12-lead electrocardiograph
Fully equipped crash cart with Life Pak, intubation equipment, emergency medications, etc.
Fully equipped decontamination room at Los Alamos Medical Center (LAMC) adjacent to the LAMC emergency room

TRANSPORTATION:

Full ambulance service is available within minutes to the central facility.

COMMUNICATION:

Base station on State Medical Net and Los Alamos County Fire Department trunked radio system.

MODIFIED
CLOSURE PLAN
PERMIT ATTACHMENT E.3
NM 0890010515-1

CLOSURE PLAN
PERMIT ATTACHMENT E.3
NM 0890010515-1

E.3 MODULAR STORAGE UNITS

Some containerized wastes are stored in prefabricated modular storage buildings at various locations in TA-50 and TA-54, Area L. See Figures E.3.1 and E.3.2. These storage units are self-contained and are equipped with chemical resistant walls to provide separation of incompatible wastes, a corrosion resistant fiberglass floor grating, and a polypropylene building sump liner.

E.3.1 Estimate of Maximum Waste in Storage

Each storage unit can store a maximum of thirty 55 gallons drums or a total of 1650 gallons of liquid wastes. The maximum total inventory of waste in storage at any time in the TA-50-114 CSU is 1,210 gallons.

E.3.2 Description of Waste Handled

Three waste streams compose the bulk of the waste stored in the modular units at TA-50, although the system is flexible enough to allow storage of other wastes that may be generated through new Laboratory projects. These streams are an acid/base waste that contains copper, chromate plating waste, and waste cyanide plating solutions. These structures may also be used to store any regulated waste while awaiting lab packing.

The modular units at TA-54, Area L will be used primarily for the storage of lab-packed waste. Since six separate cells are available for storage, there may be up to six different categories of waste stored there while waiting treatment or disposal.

The modular unit at TA-54, Area L (TA-54-36) will be used primarily for:

(1) sorting, surveying, and decontaminating certain wastes currently in storage and labeled “suspect mixed waste.”, and;

(2) staging, inspecting, sampling, and analyzing specific mixed waste streams for which commercial treatment and/or disposal is currently available.

E.3.3 Closure Procedures and Decontamination

E.3.3.1 Partial Closure

Partial closure would consist of closure of one unit or more, while leaving other units in service. In such an event, the following procedures would apply to the unit(s) to be closed.

E.3.3.2 Unit Closure

Personnel involved in disassembly and handling of equipment will wear protective equipment, including: acid/solvent-resistant coveralls, head protection, neoprene coated gloves and boots. Wrists and ankles are to be taped to protect against upward and inward splash. As a minimum protection, face shields will be worn. Full face respirators will be used if specified by the Laboratory's Industrial Hygiene and Safety Group, ~~ESH-5~~HSR-5, following a field inspection.

The inside of the unit will be scrubbed and rinsed with a warm solution of Liquinox(@) or Alconox(@) in water. The cleaning solutions will accumulate in the internal sumps and will be pumped into drums with a small manually operated drum pump. Samples of this solution will be taken from the drum to verify decontamination. Washdown will be repeated until decontamination is verified. The drummed liquid will be transported to TA-54, Area L for sampling, analysis and off site treatment and/or disposal.

The unit will be disassembled by removing all removable walls, grates etc. and then visually inspected. Any residual matter found will be scraped or brushed off the area where the residue occurred, then washed and rinsed. Dry residues will be placed in drums for transport to TA-54, Area L, for storage, sampling and analysis prior to off site disposal at a permitted facility. Liquids from washing and rinsing will be placed in approved Department of Transportation (DOT) containers and transported to TA-54, Area L for sampling, analysis and off site disposal. Cleaned pieces will be removed from the unit and handled as an unregulated waste or reassembled into the unit after decontamination is verified.

Spills occurring during disassembly will be contained in the unit and will be picked up with mops. No decontamination of container handling equipment is anticipated during closure because the wastes are inside containers and no contact is expected between wastes and handling equipment. If breaching of any container of hazardous waste or hazardous material occurs, all contaminated equipment will be decontaminated by washing with appropriate cleaning solutions. Spills occurring outside the unit will be picked up with absorbent material such as vermiculite or commercial absorbent. The absorbed material will be swept up, placed in a DOT approved container and disposed of as hazardous waste. The area will be mopped or flushed with Liquinox(@) or Alconox(@) solution, the wash water picked up with absorbent material as above and placed in a container for disposal as a hazardous waste. Each container may be sampled and analyzed for hazardous constituents as listed in HWMR-5, Part II, Appendix VIII. Containers not containing hazardous constituents may be handled as unregulated waste.

Units emplaced over impervious surfaces, concrete or asphalt, need not have the surface sampled for spill residues from past handling practices. Units emplaced over absorbent surfaces will have a minimum of three soil samples to a depth of six inches taken in the area of each access door. The samples will be separately analyzed for the parameters in Table E.3.2. If contamination is discovered, a three foot grid centered on the locus of contaminated points will be sited and samples taken and analyzed to determine the extent of contamination. Analyses for this investigation can be made for the constituent(s) found in the initial survey. All contaminated soil to a depth of six inches will be removed and disposed of at a permitted facility.

Protective clothing, coveralls, face shields, and boots worn during the wash down will be rinsed in clean water while the items are within the unit. The rinse water will be handled with the dirty water from the external wash down. Following internal and external decontamination, the unit will be considered free from regulated wastes if the wash waters do not show any contamination from the constituents listed in Table E.3.2. Protective clothing will be worn by personnel disassembling the unit. The protective clothing and tools used during disassembly will be washed with detergent and water. The wash water will be collected and analyzed. If the wash water is nonhazardous, the water will be discharged to the industrial waste water sewer. If the wash water contains hazardous constituents, it will be transported off site to a permitted

disposal facility. Mops and rags used for cleanup will be placed in drums for transport to Area L, for ultimate off site disposal at a permitted facility. Nondisposable tools, equipment, etc. which come in contact with the dirty wash water will be decontaminated.

E.3.4 Decontamination Verification

Before the first wash down, two samples will be taken of the clean Liquinox(@) or Alconox(@) solution in water and analyzed for the constituents listed in table E.3.2.

One additional clean solution sample will be taken for each additional washdown event. These analytical results provide background data for decontamination verification.

Dirty washdown solutions will also be analyzed for the constituents listed in Table E.3.2. Analytical procedures will conform to methods found in SW-846. Equipment will be considered to be contaminated if the used wash solutions show a significant increase in the listed constituents over the clean wash solution.

The constituents listed in Table E.3.2. include regulated constituents normally stored in the units. A scan for volatile and semivolatile organics is performed to ensure that solvents commonly used within the Laboratory have not contaminated the unit.

Successful decontamination is defined as:

1. No detectable hazardous constituents in the final sample, or

2. Detectable hazardous constituents in the final sample are equal to or less than, at the 0.01 confidence level, their concentration in the unused wash water or background sample.

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

E.3.5 Closure Schedule

The year of closure for the modular storage units is 2003 for TA-50-114 and 2100 for the various units located at TA-54, Area L. Closure will observe the schedule given in Table E.3.1.

The contract for closure activities is expected to exceed $100,000. Because Laboratory policy requires that the work be put out for bid, 90 days are required to solicit and process the bids. The selection of a contractor will be made before closure begins. Closure is estimated to take 180 days.

E.3.6 Closure Certification

An independent registered professional engineer and the Permittee shall witness the closure and ensure that the closure follows this plan. Upon completion of closure, the engineer and the DOE shall prepare a letter certifying that the facility has been closed in accordance with this plan. The letter shall be dated and signed by each party, stamped by the registered engineer, and the original copy submitted by the DOE to the Secretary of NMED. One copy shall be maintained at the DOE office and one copy maintained by the ~~ESH-19 Hazardous and Solid Waste Group~~ Risk Reduction and Environmental Stewardship Division's Solid Waste Regulatory Compliance Group.

E.3.7 Sampling and Analytical Procedure

The following section defines procedures and methods for sampling, analysis and documentation applicable to closure plans. While the procedures and method are specific, any applicable procedure or method given in SW-846 may be used if conditions or experience shows the alternate method to be more appropriate. All analytical procedures actually used will be annotated in the final closure report. Disposable samplers may be used.

Samples will be taken, placed in bottles, sealed, tagged, and immediately packed in vermiculite, sawdust, or, if refrigeration is required, an insulated container with ice. One sample for every ten samples will be either duplicated or split. The duplicated or split sample will be identified by a code so that its source is not available to the analytical laboratory, but analytical results can be compared to its twin.

Sample containers appropriate for the requested analyses will be used for all samples. Sampling will be conducted in accordance with procedures given in *Samplers and Sampling Procedures for Hazardous Waste Streams*, EPA 600/2-80-0 1 8 and/or SW-846.

E.3.7.1 Soil and Solid Residues Sampling

Under normal circumstances the following soil sampling information will be inapplicable. Should however, spills occur outside the modular unit, sampling of the area will be required to verify that no hazardous constituents remain upon closure. The sampling procedures outlined below are used to determine the amount of hazardous material deposited on a particular area of land, or to determine the leaching rate of the material, or determine the residue level on the soil. Adequate preparation ensures that proper sampling is accomplished.

Surface soil samples will be collected with a trowel or scoop. To sample below 3 in. (8 cm), samples will be collected with a Veihmeyer soil sampler. Drums of solid residues will be sampled with a core sampler or Veihmeyer soil sampler. Drums not capable of being sampled will be assumed to be hazardous waste.

E.3.7.1.1 Cleaning of sampler

It is important to clean the samplers after each site is sampled. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a warm Liquinox(@) or Alconox(@) solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. Prevention of cross contamination is of particular importance in these samples.

E.3.7.1.2 Sampling procedures

Trowel or Scoop

- Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
- Combine the samples in a glass container.
- Cap the container, attach a label and seal, record in field log book, and complete the sample analysis request sheet and chain-of-custody record.

Veihmeyer Sampler

- Assemble the sampler by screwing in the tip and drive head on the sampling tube.
- Insert the tapered handle (drive guide) of the drive hammer through the drive head.
- Place the sampler in a perpendicular position on the material to be sampled.
- With the left hand holding the tube, drive the sampler into the material to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube further than the tip of the hammer's drive guide.
- Record the length of the tube that penetrated the material.
- Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.
- Rotate the sampler at least two revolutions to shear off the sample at the bottom.
- Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.
- Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a pullerjack and grip.
- Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.
- Store the core sample in a 1,000 or 2,000 ml (1 qt or 1/2 gal) sample container.
- Label the sample, affix the seals, record in the field log book, complete the sample analysis request sheet and chain-of-custody record, and deliver the samples to the laboratory for analysis.

E.3.7.2 Liquid Sampling

A COLIWASA sampler or similar device will be used to sample water solutions in order to determine background parameters before washing the area; it will also be used to sample the dirty wash water used in cleaning equipment. The recommended model of the COLIWASA is shown in Figure E.3.3, the main parts consisting of the sampling tube, the closure-locking mechanism, and the closure system. As an alternative to the COLIWASA, glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of as hazardous waste after each sample is collected, thus eliminating the potential for cross contamination.

E.3.7.2.1 Cleaning of sampler

The sampler must be clean before use. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The used sampler must be washed with a warm detergent solution (Liquinox(@) or Alconox(@)), rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the COLIWASA is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Using the ramrod and fiber reinforced paper towels, the COLIWASA tube may be quickly cleaned. Improper cleaning of sample equipment will cause cross contamination of samples. Prevention of contamination is of particular importance in these samples. Clean samplers should be stored in polyethylene plastic tubes or bags in a clean and protected area.

E.3.7.2.2 Sampling procedures

- Assemble the COLIWASA-sampler.
- Make sure that the COLIWASA sampler is clean.
- Check to make sure the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.
- Wear necessary protective clothing and gear and observe required sampling precautions.
- Put the sampler in the open position by placing the stopper rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.
- Slowly lower the COLIWASA sampler into the liquid at a rate that permits the levels of the Liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a nonrepresentative sample.
- When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.
- Slowly withdraw the sampler from the container with one hand while wiping the sampler tube with a disposable cloth with the other hand.
- Carefully discharge the sample into a glass container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block while the lower end of the sampler is positioned in the glass container.
- Cap the glass container, attach a label and seal, record in the field log book, and complete the sample analysis request sheet and chain-of-custody record.
- Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.

E.3.7.3 Sample Handling and Documentation

Soil and liquid samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and a sample analysis request form.

The sample container must be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. An example of a sample seal is shown in Figure E.3.4.

The sample label is necessary to prevent misidentification of samples and shall include, if applicable, the grid number referenced to positions staked on the site perimeter. The "field information" in the case of soil sampling, shall include observations such as the soil texture and surface appearance, ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling. An example of a sample label is shown in Figure E.3.5.

The chain-of-custody form is necessary to trace sample possession from the time of collection and must accompany every sample. This record becomes especially important when the sample is to be introduced as evidence in litigation. This is a two-page record with the original accompanying shipment and the "copy" retained by the Laboratory. An example of this form is shown in Figure E.3.6.

A separate closure sampling field log book will be kept and will contain all information pertinent to field surveys and sampling. The log book shall have bound and consecutively numbered pages in 8-1/2 by 11-inch format. Minimum entries include:

a. Purpose of sample (routine sampling, special sampling);

b. Location of sampling (coordinates referenced to staked field points, if soil sample);

c. Name and address of person making log entry;

d. Type of process producing waste;

e. Number and volume of sample;

f. Description of each sampling location, sampling methodology, equipment used, etc.;

g. Date and time of sample collection;

h. Sample destination and transporter's name (name of laboratory, UPS, etc);

i. Map or photograph of the sampling site, if any;

j. Field observations (ambient temperature, sky conditions, past 24-hour precipitation, etc);

k. Field measurements, if any (pH, flammability, conductivity, explosivity, etc);

l. Collector's sample identification number(s); and

m. Signature of person responsible for the log entry.

Sampling situations vary widely. No general rule can be given as to the extent of information that must be entered in the log book. A good rule, however, is to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

The sample shipment and chain-of-custody record is accompanied by a sample analysis request sheet. The request sheet has two parts: field and laboratory. The field portion of this form must be completely by the person collecting the sample and include most of the pertinent information noted in the log book. The laboratory portion is intended to be completed by the laboratory personnel when the sample is received.

E.3.8 Quality Assurance/Quality Control

The Permittee shall designate a qualified individual or individuals to independently oversee the closure activities and report directly to senior management on the quality of the performance of this closure. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed and review the analysis reports for accuracy and adequacy. A written QA/QC plan in accordance with SW-846 guidance shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the adequacy of the analysis showing decontamination.

E.3.9 Final Closure Report

Upon completion of the closure activities, the Permittee shall submit a Final Closure Report to the Secretary. The report shall document the final closure and contain, at a minimum, the following:

A. The certification described in paragraph E.3.6.

B. Any variance from the approved activities and the reason for the variance.

C. A tabular summary of all sampling results, showing:

1. Sample identification,

2. Sampling location,

3. The datum reported,

4. Detection limit for each datum,

5. A measure of analytical precision (e.g. uncertainty, range, variance),

6. Identification of analytical procedure, and

7. Identification of analytical laboratory.

D. A QA/QC statement on the adequacy of the analyses and the decontamination determination.

E. The location of the file of supporting documentation:

1. Field log books,

2. Laboratory sample analysis reports,

3. The QA/QC documentation, and

4. Chain of custody records.

F. Disposal location of all regulated and nonregulated residues.

G. A certification of accuracy of the report.

TABLE E.3.1.
CLOSURE SCHEDULE

Activity	Maximum Time Required
Notify NMED of closure	-90 Days
Advertise for proposals	-90 Days
Receive proposals	-30 Days
Select contractor and award contract	-10 Days
Begin closure activities	Day 0
Internal wash down complete	Day 30
External wash down complete	Day 50
Unit disassembly, as required	Day 80
Floor wash down	Day 100
Final clean up	Day 120
Decontamination verification	Day 150
Submit final report to NMED	Day 180

NOTES: The calendar days given above are completion dates for each activity. In some cases more than one activity may occur simultaneously.

This schedule is applicable to either partial or final closure.

TABLE E.3.2.
ANALYTICAL PARAMETERS

Metals	Organics	Other
Arsenic	Halogenated volatile organics	Cyanides
Barium	Nonhalogenated volatile organics	Ignitability
Cadmium	Acid-extractable semivolatile organics	Reactivity
Selenium	Base-neutral extractable semivolatile organics	pH
Lead	Phenols	
Mercury	Organochlorine pesticides	
Nickel	Chlorinated herbicides	
Beryllium		
Chromium		
Silver		

NOTES: Analytical methods are taken from *Test Methods for Evaluating Solid Waste*, EPA SW-846, and may be superseded by more current methods from SW-846 or alternate EPA-approved methods.

Metals may be analyzed for total content. Any metal whose total concentration exceeds the standard for the toxicity characteristic shall be analyzed by the Toxicity Characteristic Leaching Procedure. Both data shall be reported in the final report.

TABLE E.3.3.
SAMPLING SUMMARY

Material Sampled	Metals	Organics	Other
Soil sampling[a]	X	X	X
Solid wastes & residues	X	X	X
Wash water before use	X	X	X
Wash water after use	X	X	X
Protective clothing wash water		X	

NOTES: Analytical parameters are given in Table E.3.2.

[a]For units placed over permeable surfaces.

FIGURE E.3.1
LOCATION OF TA-50 CHEMICAL WASTE INCINERATOR MAP

FIGURE E.3.3
COMPOSITE LIQUID WASTE SAMPLER (COLIWASA)

FIGURE E.3.4
EXAMPLE OF SAMPLE SEAL

OFFICIAL SAMPLE SEAL

Collected by _____ Collector's sample No._____
(Signature)

Date Collected_____ Time Collected_____

Place Collected_____

_____

_____

FIGURE E.3.5
EXAMPLE OF SAMPLE LABEL

OFFICIAL SAMPLE LABEL

Collector_____ Collector's Sample No._____

Place of Collection_____

_____

Date Sampled_____ Time Sampled _____

Field Information_____

_____

_____

FIGURE E.3.6
EXAMPLE CHAIN OF CUSTODY RECORD
Hazardous Materials
Collector's Sample No.____

Location of Sampling: Producer Hauler
Disposal Site Other: _____

Company's Name_____ Telephone (___)_____

Address_____
Number Street City State Zip

Collector's Name_____ Telephone (___)_____

Date Sampled_____ Time Sampled_____ hou

Type of Process Producing Waste_____

Waste Type Code_____ Other_____

Field Information_____

_____

Sample Allocation:

1. _____
(Name of Organization)

2. _____
(Name of Organization)

3. _____
(Name of Organization)

Chain of Possession:

1. _____ _____ _____
Signature Title Inclusive Dates

2. _____ _____ _____
Signature Title Inclusive Dates

3. _____ _____ _____
Signature Title Inclusive Dates

FIGURE E.3.2
TA-54 AREA L MAP

MODIFIED
CLOSURE PLAN
PERMIT ATTACHMENT E.5
NM 0980010515-1

CLOSURE PLAN
PERMIT ATTACHMENT E.5
NM 0980010515-1

E.5 CHEMICAL WASTE INCINERATOR CONTAINER STORAGE AREA

Contained wastes to be incinerated are stored in Room 117 of Building 37, TA-50 (Figure E.5.1). The storage area has a concrete floor with a grated false floor sixteen inches above the concrete. The concrete is coated with Semstone (@). Liquid and solid contained compatible wastes are stored in the area. The waste containers are predominately 55-gallon drums and 330-gallon polyethylene containers, all meeting Department of Transportation (DOT) specifications. Solid wastes may be stored in boxes.

E.5.1 Estimate of Maximum Waste in Storage and Treatment

The maximum inventory of hazardous wastes stored at the TA-50 waste incinerator is estimated at 13 cubic meters (solid wastes plus 3630 gallons of liquids).

E.5.2 Description of Waste Handled

The Laboratory wastes are a mixture of liquid and solid hazardous wastes composed of various organic solvents and liquids as well as chemically contaminated paper, wood, and plastics. The liquids can contain either ignitable or listed wastes containing HWMR-5, Part II, Appendix VIII constituents. The incinerator is fed all HWMR-5, Part II, Appendix VIII constituents with an incinerability ranking equal to or better than carbon tetrachloride.

E.5.3 Closure Procedure

E.5.3.1 Partial Closure

Partial closure of this unit is not expected to occur.

E.5.3.2 Final Closure

Personnel involved in decontaminating the storage area will wear protective equipment, including, acid/solvent resistant coveralls, head protection, neoprene-coated gloves, and ~~boots,~~ boots. Wrists and ankles are to be taped to protect against upward and inward splash. As a minimum protection, face shields will be worn. Full face respirators or other protective equipment will be used if specified by the Laboratory's Industrial Hygiene and Safety Group, ~~ESH-5~~HSR-5, following a field inspection.

All remaining wastes will be incinerated before closing the storage area. If for some reason it is not possible to incinerate all the waste on the site, the waste will be sent to a designated off site treatment or disposal facility.

Following removal of all stored waste, the floor and grate of Room 117 will be washed and rinsed with a warm Liquinox(@) and Alconox(@) solution in water. The wash water will be picked up and put into approved DOT containers using a drum pump, rags and/or mops, wringing the excess water into an approved

DOT container. This water will be sampled to demonstrate decontamination and transferred to TA-54, Area L for sampling, analysis and off site disposal at a permitted facility.

The protective clothing and tools used during the wash down will be cleaned with detergent and water. The wash water will be collected and analyzed. If the wash water is not hazardous, the water will be discharged to the industrial waste water sewer. If the wash water contains hazardous constituents, it will be treated on site or transported off site to a permitted facility. Mops and rags used for clean up will be placed in approved DOT containers for transport to TA-54, Area L, for sampling, analysis, storage and off site disposal at a permitted facility.

E.5.4 Decontamination Verification

Before the first wash down, two samples will be taken of the clean Liquinox(@) or Alconox(@) solution in water and analyzed for the constituents listed in Table E.5.2. One additional clean solution sample will be taken for each additional wash down event. These analytical results provide background data for decontamination verification.

Dirty wash down solutions will also be analyzed for the constituents listed in Table E.5.2. Analytical procedures will conform to methods found in SW 846. Equipment will be considered to be contaminated if the used wash solutions show a significant increase in the listed constituents over the clean wash solution.

Successful decontamination is defined as:

1. No detectable hazardous constituents in the final sample, or

2. Detectable hazardous constituents in the final sample are equal to or less than, at the 0.01 confidence level, their concentration in the unused wash water or background sample.

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

E.5.5 Closure Schedule

Characterization of the final delivery of hazardous waste may require up to 30 days. An estimated 60 days will be required to schedule and process the final wastes received. The year of closure for the TA-50-37 container storage area is 2003. Closure will observe the schedule given in Table E.5.1.

E.5.6 Closure Certification

An independent registered professional engineer and the Permittee shall witness the closure and ensure that the closure follows this plan. Upon completion of closure, the engineer and the DOE shall prepare a letter certifying that the facility has been closed in accordance with this plan. The letter shall be dated and signed by each party, stamped by the registered engineer, and the original copy submitted by the DOE to the Secretary of NMED. One copy shall be maintained at the DOE office and one copy maintained by ~~the ESH~~

~~19 Hazardous and Solid Waste Group~~ Risk Reduction and Environmental Stewardship Division's Solid Waste Regulatory Compliance Group.

E.5.7 Sampling and Analytical Procedure

The following section defines procedures and methods for sampling, analysis and documentation applicable to closure plans. While the procedures and method are specific, any applicable procedure or method given in SW-846 may be used if conditions or experience ~~shows~~ show the alternate method to be more appropriate. Disposable samplers may be used.

Sample containers appropriate for the requested analyses will be used for all samples. Sampling will be conducted in accordance with procedures given in Samplers and Sampling Procedures for Hazardous Waste Streams, EPA 600/2-80-018 and/or SW-846.

Samples will be taken, placed in bottles, sealed, tagged, and immediately packed in vermiculite, sawdust, or, if refrigeration is required, an insulated container with ice. One sample for every ten samples will be either duplicated or split. The duplicated or split sample will be identified by a code so that its source is not available to the analytical laboratory, but analytical results can be compared to its twin.

~~E.5.8.1~~ E.5.7.1 Soil and Solid Residue Sampling

Under normal circumstances soil sampling will be inapplicable. If, however, a spill should occur outside the building, sufficient sampling and analysis will be required to ensure that hazardous constituents do not remain after closure. The sampling procedures outlined below are used to determine the amount of hazardous material deposited on a particular area of land, or to determine the leaching rate of the material, or determine the residue level on the soil. Adequate preparation ensures that proper sampling is accomplished.

Units emplaced over impervious surfaces, concrete or asphalt, need not be sampled for spill residues from past handling practices. Units emplaced over absorbent surfaces such as soil will have a minimum of three soil samples to a depth of six inches taken in the area of each access door. The samples will be separately analyzed for the parameters in Table E.5.2. If contamination is discovered, a three foot grid centered on the locus of contaminated points will be sited and samples taken and analyzed to determine the extent of contamination. Analyses for this investigation can be made for the constituent(s) found in the initial survey. All contaminated soils shall be removed.

Surface soil samples will be collected with a trowel or scoop. To sample below 3 in. (8 cm), samples will be collected with a Veihmeyer soil sampler. Solid residues in drums will also be sampled with a core sampler or Veihmeyer sampler. Drums not able to be sampled will be assumed to be hazardous waste.

E.5.7.1.1 Cleaning of sampler

It is important to clean the samplers after each site is sampled. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a warm Liquinox(@) or Alconox(@) solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. Prevention of cross contamination is of particular importance in these samples.

E.5.7.1.2 Sampling procedures

Trowel or Scoop

- Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
- Combine the samples in a glass container.
- Cap the container, attach a label and seal, record in field log book, and complete the sample analysis request sheet and chain-of-custody record.

Veihmeyer Sampler

- Assemble the sampler by screwing in the tip and drive head on the sampling tube.
- Insert the tapered handle (drive guide) of the drive hammer through the drive head.
- Place the sampler in a perpendicular position on the material to be sampled.
- With the left hand holding the tube, drive the sampler into the material to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube farther than the tip of the hammer's drive guide.
- Record the length of the tube that penetrated the material.
- Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.
- Rotate the sampler at least two revolutions to shear off the sample at the bottom.
- Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.
- Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a pullerjack and grip.

- Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.

- Store the core sample in a 1,000 or 2,000 ml (1 qt or 1/2 gal) sample container.

- Label the sample, affix the seals, record in the field log book, complete the sample analysis request sheet and chain-of-custody record, and deliver the samples to the laboratory for analysis.

E.5.7.2 Liquid Sampling

A COLIWASA sampler or similar device will be used to sample water solutions in order to determine background parameters before washing the area; it will also be used to sample the dirty wash water used in cleaning equipment. The recommended model of the COLIWASA is shown in Figure E.5.2, the main parts consisting of the sampling tube, the closure-locking mechanism, and the closure system. As an alternative to the COLIWASA, glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of as hazardous waste after each sample is collected, thus eliminating the potential for cross contamination.

E.5.7.2.1 Cleaning of sampler

The sampler must be clean before use. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The used sampler must be washed with a warm detergent solution (Liquinox(@) or Alconox(@)), rinsed several times with tap water, rinsed with distilled water, drained of excess water, and ~~sir~~ air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the COLIWASA is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Using the ramrod and fiber reinforced paper towels, the COLIWASA tube may be quickly cleaned. Improper cleaning of sample equipment will cause cross contamination of samples. Prevention of contamination is of particular importance in these samples. Clean samplers should be stored in polyethylene plastic tubes or bags in a clean ~~an~~ and protected area.

E.5.7.2.2 Sampling procedures

- Assemble the COLIWASA sampler.

- Make sure that the COLIWASA sampler is clean.

- Check to make sure the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.

- Wear necessary protective clothing and gear and observe required sampling precautions.

- Put the sampler in the open position by placing the stopper rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.

- Slowly lower the COLIWASA sampler into the liquid at a rate that permits the levels of the liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a non-representative sample.

- When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.

- Slowly withdraw the sampler from the container with one hand while wiping the sampler tube with a disposable cloth with the other hand.

- Carefully discharge the sample into a glass container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block while the lower end of the sampler is positioned in the glass container.

- Cap the glass container, attach a label and seal, record in the field log book, and complete the sample analysis request sheet and chain-of-custody record.

- Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.

E.5.7.3 Sample Handling and Documentation

Soil and liquid samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and a sample analysis request form.

The sample container must be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. An example of a sample label is shown in Figure E.5.4.

The chain-of-custody form is necessary to trace sample possession from the time of collection and must accompany every sample. This record becomes especially important when the sample is to be introduced as evidence in litigation. This is a two page record with the original accompanying the shipment and the "copy" retained by the Laboratory. An example of this form is shown in Figure E.5.5.

A separate closure sampling field log book will be kept and will contain all information pertinent to field surveys and sampling. The log book shall have bound and consecutively numbered pages in 8-½by 11-inch format. Minimum entries include:

a. Purpose of sample (routine sampling, special sampling);

b. Location of sampling (coordinates referenced to staked field points, if soil sample);

c. Name and address of person making log entry;

d. Type of process producing waste;

e. Number and volume of sample;

f. Description of each sampling location, sampling methodology, equipment used, etc;

g. Date and time of sample collection;

h. Sample destination and transporter's name (name of laboratory, UPS, etc);

i. Map or photograph of the sampling site, if any;

j. Field observations (ambient temperature, sky conditions, past 24-hour precipitation, etc);

k. Field measurements, if any (pH, flammability, conductivity, explosivity, etc);

l. Collector's sample identification number(s); and

m. Signature of person responsible for the log entry.

Sampling situations vary widely. No general rule can be given as to the extent of information that must be entered in the log book. A good rule, however, is to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

The sample shipment and chain-of-custody record is accompanied by a sample analysis request sheet. The request sheet has two parts: field and laboratory. The field portion of this form must be completed by the person collecting the sample and include most of the pertinent information noted in the log book. The laboratory portion is intended to be completed by the laboratory personnel when the sample is received.

~~E.5.9~~ E.5.8 Quality Assurance/Quality Control

The Permittee shall designate a qualified individual or individuals to independently oversee the closure activities and report directly to senior management on the quality of the performance of this closure. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed and review the analysis reports for accuracy and adequacy. A written QA/QC plan shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the adequacy of the analysis showing decontamination.

E.5.9 Final Closure Report

Upon completion of the closure activities, the Permittee shall submit a Final Closure Report to the Secretary. The report shall document the final closure and contain, at a minimum, the following:

A. The certification described in paragraph E.5.6.

B. Any variance from the approved activities and the reason for the variance.

C. A tabular summary of all sampling results, showing:

1. Sample identification,
2. Sampling location,
3. The datum reported,
4. Detection limit for each datum,
5. A measure of analytical precision (e.g. uncertainty, range, variance),
6. Identification of analytical procedure, and
7. Identification of analytical laboratory.

D. A QA/QC statement on the adequacy of the analyses and decontamination demonstration.

E. The location of the file of supporting documentation:

1. Field log books,
2. Laboratory sample analysis reports,
3. The QA/QC documentation, and
4. Chain of custody records.

F. Disposal location of all regulated and unregulated residues.

G. A certification of accuracy of the report.

TABLE E.5.1.
CLOSURE SCHEDULE

Activity	Maximum Time Required
Notify NMED of the closure	-90 Days
Advertise for proposals	-90 Days
Receive proposals	-30 Days
Select contractor and award contract	-10 Days
Begin closure activities	Day 0
Characterize remaining wastes	Day 30
Complete incineration of wastes	Day 60
Removal of wastes	Day 60
Floor wash down	Day 75
Analyze samples	Day 120
Final clean up	Day 130
Decontamination verification	Day 150
Submit final report to NMED	Day 180

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

TABLE E.5.2.
ANALYTICAL PARAMETERS

Metals	Organics	Other
Arsenic	Halogenated volatile organics	Cyanides
Barium	Nonhalogenated volatile organics	Ignitability
Cadmium	Acid-extractable semivolatile organics	Reactivity
Selenium	Base-neutral extractable semivolatile organics	pH
Lead	Phenols	
Mercury	Organochlorine pesticides	
Beryllium	Chlorinated herbicides	
Chromium		
Silver		
Nickel		

NOTES: Analytical methods are taken from *Test Methods for Evaluating Solid Waste*, EPA SW-846, and may be superseded by more current methods from SW-846 or alternate EPA-approved methods.

Metals may be analyzed for total content. Any metal whose total concentration exceeds the standard for the toxicity characteristic shall be analyzed by the Toxicity Characteristic Leaching Procedure. Both data shall be reported in the final report.

TABLE E.5.3
SAMPLING SUMMARY

Material Sampled	Metals	Organics	Other
Wash water before use	X	X	X
Wash water after use	X	X	X
Protective clothing wash water		X	
Soil samples[a]	X	X	X

NOTE: Analytical parameters are given in Table E.5.2.

[a]As required. See paragraph E.5.8.1.

FIGURE E.5.1
LOCATIONS OF TA-50 CHEMICAL WASTE INCINERATOR AND CONTAINER STORAGE UNITS

FIGURE E.5.2
COMPOSITE LIQUID WASTE SAMPLER (COLIWASA)

FIGURE E.5.3
EXAMPLE OF SAMPLE SEAL

OFFICIAL SAMPLE SEAL

Collected by _____ Collector's sample No._____
(Signature)

Date Collected_____ Time Collected_____

Place Collected_____

_____

_____

FIGURE E.5.4
EXAMPLE OF SAMPLE LABEL

OFFICIAL SAMPLE LABEL

Collector_____ Collector's Sample No._____

Place of Collection_____

_____

Date Sampled_____ Time Sampled _____

Field Information_____

_____

_____

FIGURE E.5.5
EXAMPLE CHAIN OF CUSTODY RECORD
Hazardous Materials
Collector's Sample No.____

Location of Sampling: Producer Hauler
Disposal Site Other: _____

Company's Name_____ Telephone (___)_____

Address_____
Number Street City State Zip

Collector's Name_____ Telephone (___)_____

Date Sampled_____ Time Sampled_____ hours

Type of Process Producing Waste_____

Waste Type Code_____ Other_____

Field Information_____

_____

Sample Allocation:

1. _____
(Name of Organization)

2. _____
(Name of Organization)

3. _____
(Name of Organization)

Chain of Possession:

1. _____ _____ _____
Signature Title Inclusive Dates

2. _____ _____ _____
Signature Title Inclusive Dates

3. _____ _____ _____
Signature Title Inclusive Dates

CLOSURE PLAN
PERMIT ATTACHMENT E.6
NM 0890010515-1

CLOSURE PLAN
PERMIT ATTACHMENT E.6
NM 0890010515-1

E.6 CLOSURE FOR TA-54 AREA L HAZARDOUS WASTE TRANSFER/STORAGE UNIT

E.6.1 TA-54 Area L Description

The storage unit consists of a single-story transfer/storage building, Facility Number 54-31, encompassing 196 square feet. Liquid wastes are segregated into compatible types and placed upon one of the three fiberglass grates inside the building. This closure plan applies to the transfer/storage unit only.

The remainder of TA-54 Area L consists of liquid waste storage and treatment tanks, a roofed concrete containment structure, two modular storage units and specified areas within the fenced portions of Area L for storage of solid containerized waste. These areas are used for the accumulation, packaging, and storage of waste containers, which are generated throughout the laboratory and delivered to Area L routinely. Wastes in small containers are stored in the modular units before being put into lab-packs. Wastes suitable for recycling are consolidated into drums, and any damaged or leaking drums are repackaged into larger drums in this area. Solid containerized wastes are stored in cleared areas within the fenced portions of Area L. Four treatment storage tanks are also located at Area L. They are used to neutralize, oxidize, and evaporate waste. The tanks are located on a bermed concrete pad. Each of these units has a separate closure plan.

E.6.2 Estimate of Maximum Waste in Storage and Treatment

The maximum amount of waste stored in the transfer/storage building at Area L is 440 gallons. Small quantities in excess of this amount may be temporarily present on any one day while actively being handled.

E.6.3 Description of Waste Handled

A wide variety of wastes generated throughout the Laboratory are brought to Area L, including wastes from basic and applied chemistry R & D programs (small quantities of different acids, bases, organics, inorganics and reactive materials from transfer, accumulation, or storage sites), processing wastes (sludge resulting from treatment at Area L), and chemically contaminated equipment, to be stored, recycled, treated or packed for off site disposal at a permitted facility. Any characteristic or listed waste used at the laboratory could have been handled at one time in the transfer/storage unit.

E.6.4 Partial Closure

No partial closure of the transfer/storage unit is anticipated.

E.6.5 Closure Procedure

Before decontamination, all wastes in storage will either be treated on site or disposed of off site. Given the diversity of wastes handled, it is not possible to estimate the exact wastes on hand at the initiation of closure and, therefore, the final disposition of the wastes. In general, recyclable wastes will be reused internally or recycled to users off site. Permitted wastes will be burned at the permitted incinerator at TA-50-37. Any wastes compatible with permitted treatment at the TA-50-1 Batch Waste Treatment Unit or the TA-54, Area L treatment tanks will be so treated. The remaining wastes will be transported off site to a permitted disposal facility. If on site treatment is not possible due to prior closure of the permitted units, off site disposal will occur.

Following removal of the wastes, the transfer/storage building will be decontaminated by washing with Liquinox(@) or Alconox(@) in water. The resulting used wash solution will be placed in approved DOT containers, sampled, analyzed and transported off site to a permitted treatment or disposal facility.

E.6.5.1 Waste Removal

The waste on site at the start of closure includes wastes in all size containers, from vials and ampules to 55-gallon drums. Contained wastes will be handled with hand trucks or forklifts as necessary. Trucks of adequate size will be used to move packed wastes to off site treatment or disposal facilities, and a forklift is suitable for loading the trucks or to move wastes to the treatment tanks at Area L. All wastes shipped off site will be in approved Department of Transportation (DOT) containers and manifested in accordance with the facility permit. All waste transporters will have an EPA identification number in accordance with HWMR-5, Part IV, Section 263.11.

E.6.5.2 Decontamination

All floor and wall surfaces, as well as any equipment present, will be washed down using a solution of Liquinox(@) or Alconox(@) in warm water. Areas will be scraped or brushed clean as necessary to remove any residues. The floor is sloped to sumps, and wash water will flow into them. The water in each sump will be tested using the sampling and analytical procedures described in section E.6.9. Afterwards, the water will be removed from each sump with a vacuum truck or pumped into drums with a hand pump, sampled, analyzed and transported off site for treatment or disposal. This washing procedure will be repeated until decontamination of the cells is demonstrated by testing of the wash water. Following decontamination, the building and equipment will be handled as nonregulated waste. The inside of the vacuum truck, if used, will be rinsed when its service is complete and the rinse water will be placed in approved DOT containers for off site treatment or disposal. Every effort will be made to minimize the volume of wash and rinse water generated by decontamination.

E.6.5.3 Soil Decontamination

Soil sampling will be conducted as described in Section E.6.9. to determine if hazardous wastes have been tracked outside of contaminated areas. After the building is decontaminated, it will be removed and three soil samples, one under each sump, will be collected. Three soil samples will be taken at each edge of the asphalt apron around the transfer/storage building. Each will be made up of cores six inches deep taken six inches off the asphalt edge and equally spaced to cover each edge.

If contamination is found in any of these samples, the limits of the sampling area will be expanded by establishing a three foot sampling grid around a single contamination point, or centered on the area defined by the locus of multiple contamination points, to determine the outside perimeter of the contamination. Sampling will be continued until the extent of contamination is determined. Background samples will be taken in the same manner as the initial closure soil survey.

Once the limits of the contaminated area are determined, the contaminated soil will then be removed to a depth of 6 inches and handled as a regulated waste. The adequacy of decontamination is determined by additional sampling. Sampling, analysis, and documentation procedures are detailed in section E.6.9. In order to demonstrate final decontamination, soil samples will be analyzed for all HWMR-5, Part V, Section 264, Appendix IX constituents. Analysis and quality assurance/quality control will follow methods defined in SW-846.

E.6.5.4 Personnel Protection

Personnel who are washing equipment will wear rubber gloves, neoprene acid/solvent resistant coveralls, rubber boots, and a face shield. The Laboratory's Industrial Hygiene and Safety Group (ESH-5) will review the site survey analytical data and may recommend additional protective clothing.

E.6.5.5 Equipment Decontamination

Shovels, drum trucks and other equipment used for decontamination will be scraped and brushed to remove residue, and the residue collected will be placed in drums for disposal off site at a permitted facility. The equipment will be placed on a 30 mil plastic sheet that is bermed to contain liquids and pressure washed with water and detergent. Large equipment such as backhoes and forklifts will also be washed. Testing will be performed on this water to determine if decontamination is adequate. Washing is considered adequate to decontaminate the equipment. The wash water will be placed in the treatment tanks to evaporate and the plastic lining and residue will be packed in DOT approved containers for off site disposal at a permitted facility. If evaporation is not an available treatment, the wastes will be packed and shipped off site for treatment and disposal.

E.6.6 <u>Decontamination Verification</u>

A minimum of two samples of the clean Liquinox(@) or Alconox(@) solution will be sampled as background for wash water and, along with the wash water samples, analyzed for the constituents listed in HWMR-5, Part V, Section 264, Appendix IX. Successful decontamination is defined as:

1. No detectable hazardous constituents in the final sample, or

2. Detectable hazardous constituents in the final sample are equal to or less than, at the 0.01 confidence level, their concentration in the unused wash water or background sample. Hazardous constituents detected in the background sample will invalidate that sample as true background unless adequate explanation of their source is provided.

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

standards and guidance then in effect and, if approved, incorporate by permit modification the alternative into the closure plan.

E.6.7 Closure Schedule

The year of closure is 2100. Contracting and closure activities will observe the schedule given in Table E.6.1. Closure is estimated to take 340 days. Soil sampling and the decontamination contractor selection may be completed before closure begins. Several of the closure steps may occur simultaneously.

Contracts for analytical work and, if necessary, soil removal are expected to exceed $100,000. The Laboratory is required by policy to put the work out for bid, and ninety days are required to solicit and process the bids. The location of the site is prone to snow cover in the winter months. The closure may be delayed until the site is free of snow and the ground is thawed adequately to allow the soil sampling and other closure operations. The schedule includes a weather factor to allow for this delay.

E.6.8 Closure Certification

An independent, registered professional engineer and the Permittee shall witness the closure and ensure that the closure follows this plan. Upon completion of closure, the engineer and the DOE shall prepare a letter certifying that the facility has been closed in accordance with this plan. The letter shall be dated and signed by each party, stamped by the registered engineer, and the original copy submitted by the DOE to the Secretary of NMED. One copy shall be maintained at the DOE office and one copy maintained by the ESH-19 Hazardous and Solid Waste Group.

E.6.9 Sampling and Analytical Procedure

The following section defines procedures and methods for sampling, analysis and documentation applicable to closure plans. While the procedures and method are specific, any applicable procedure or method given in SW-846 or other EPA approved procedure may be used if conditions or experience show the alternate method to be more appropriate. Disposable samplers may be used.

Sample containers appropriate for the requested analyses will be used for all samples. Sampling will be conducted in accordance with procedures given in *Samplers and Sampling Procedures for Hazardous Waste Streams*, EPA 600/2-80-018 and/or SW-846.

Samples will be taken, placed in bottles, sealed, tagged, and immediately packed in vermiculite, sawdust, or, if refrigeration is required, an insulated container with ice. One sample for every ten samples will be either duplicated or split. The duplicated or split sample will be identified by a code so that its source is not available to the analytical laboratory, but analytical results can be compared to its twin.

E.6.9.1 Soil and Solid Residues Sampling

The sampling procedures outlined below are used to determine the amount of hazardous material deposited on a particular area of land, or to determine the leaching rate of the material, or determine the residue level on the soil. Adequate preparation ensures that proper sampling is accomplished.

Surface soil samples will be collected with a trowel or scoop. To sample below 3 in. (8 cm), samples will be collected with a Veihmeyer soil sampler. Drums of solid residues will be sampled with a core sampler or Veihmeyer soil sampler. Drums not capable of being sampled will be assumed to be reactive hazardous waste.

E.6.9.1.1 Cleaning of sampler

It is important to clean the samplers after each site is sampled. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a warm Liquinox(@) or Alconox(@) solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. Prevention of cross contamination is of particular importance in these samples.

E.6.9.1.2 Sampling procedures

Trowel or Scoop

- Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
- Combine the samples in a glass container.
- Cap the container, attach a label and seal, record in the field log book, and complete the sample analysis request sheet and chain-of-custody record.

Veihmeyer Sampler

- Assemble the sampler by screwing in the tip and drive head on the sampling tube.
- Insert the tapered handle (drive guide) of the drive hammer through the drive head.
- Place the sampler in a perpendicular position on the material to be sampled.
- With the left hand holding the tube, drive the sampler into the material to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube farther than the tip of the hammer's drive guide.
- Record the length of the tube that penetrated the material.
- Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.

- Rotate the sampler at least two revolutions to shear off the sample at the bottom.
- Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.
- Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a pullerjack and grip.
- Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.
- Store the core sample in a 1,000 or 2,000 ml (1 qt or 1/2 gal) sample container.
- Label the sample, affix the seals, record in the field log book, complete the sample analysis request sheet and chain-of-custody record, and deliver the samples to the laboratory for analysis.

E.6.9.2 Liquid Sampling

A COLIWASA sampler or similar device will be used to sample water solutions in order to determine background parameters before washing the area; it will also be used to sample the dirty wash water used in cleaning equipment. The recommended model of the COLIWASA is shown in Figure E.6.2., the main parts consisting of the sampling tube, the closure-locking mechanism, and the closure system. As an alternative to the COLIWASA , glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of as hazardous waste after each sample is collected, thus eliminating the potential for cross contamination.

E.6.9.2.1 Cleaning of sampler

The sampler must be clean before use. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The used sampler must be washed with a warm detergent solution (Liquinox(@) or Alconox(@)), rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the COLIWASA is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Using this ramrod and fiber reinforced paper towels, the COLIWASA tube may be quickly cleaned. Improper cleaning of sample equipment will cause cross contamination of samples. Prevention of contamination is of particular importance in these samples. Clean samplers should be stored in polyethylene plastic tubes or bags in a clean and protected area.

E.6.9.2.2 Sampling procedures

- Assemble the COLIWASA sampler.
- Make sure that the COLIWASA sampler is clean.

- Check to make sure the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.

- Wear necessary protective clothing and gear and observe required sampling precautions.

- Put the sampler in the open position by placing the stopper rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.

- Slowly lower the COLIWASA sampler into the liquid at a rate that permits the levels of the liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a nonrepresentative sample.

- When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.

- Slowly withdraw the sampler from the container with one hand while wiping the sampler tube with a disposable cloth with the other hand.

- Carefully discharge the sample into a glass container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block while the lower end of the sampler is positioned in the glass container.

- Cap the glass container, attach a label and seal, record in the field log book, and complete the sample analysis request sheet and chain-of-custody record.

- Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.

E.6.9.3 Sample Handling and Documentation

Soil and liquid samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and a sample analysis request form.

The sample container must be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. An example of a sample seal is shown in Figure E.6.3.

The sample label is necessary to prevent misidentification of samples and shall include, if applicable, the grid number referenced to positions staked on the site perimeter. The "field information" in the case of soil sampling, shall include observations such as the soil texture and surface appearance, ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling. An example of a sample label is shown in Figure E.6.4.

The chain-of-custody form is necessary to trace sample possession from the time of collection and must accompany every sample. This record becomes especially important when the sample is to be introduced as evidence in litigation. This is a two page record with the original accompanying shipment and the "copy" retained by the Laboratory. An example of this form is shown in Figure E.6.5.

A separate -closure sampling field log book will be kept and will contain all information pertinent to field surveys and sampling. The log book shall have bound and consecutively numbered pages in 8-½ by 11-inch format. Minimum entries include:

a. Purpose of sample (routine sampling, special sampling);

b. Location of sampling (coordinates referenced to staked field points, if soil sample);

c. Name and business address of person making log entry;

d. Type of process producing waste;

e. Number and volume of sample;

f—Description of each sampling location, sampling methodology, equipment used, etc.;

g. Date and time of sample collection;

h. Sample destination and transporter's name (name of laboratory, UPS, etc.);

i. Map or photograph of the sampling site, if any;

j. Field observations (ambient temperature, sky conditions, past 24-hour precipitation, etc.);

k. Field measurements, if any (pH, flammability, conductivity, explosivity, etc.);

l. Collector's sample identification number(s); and

m. Signature of person responsible for the log entry.

Sampling situations vary widely. No general rule can be given as to the extent of information that must be entered in the log book. A good rule, however, is to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

The sample shipment and chain-of-custody record is accompanied by a sample analysis request sheet. The request sheet has two parts: field and laboratory. The field portion of this form must be completed by the person collecting the sample and include most of the pertinent information noted in the log book. The laboratory portion is intended to be completed by the laboratory personnel when the sample is received.

E.6.10 Quality Assurance/Quality Control

The Permittee shall designate a qualified individual or individuals to independently oversee the closure activities and report directly to senior management on the quality of the performance of this closure. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed and review the analysis reports for accuracy and adequacy. A written QA/QC plan prepared in accordance with SW-846 guidance shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the adequacy of the analysis showing decontamination.

E.6.11 Final Closure Report

Upon completion of the closure activities, the Permittee shall submit a Final Closure Report to the Secretary. The report shall document the final closure and contain, at a minimum, the following:

A. The certification described in paragraph E.6.8.

B. Any variance from the approved activities and the reason for the variance.

C. A tabular summary of all sampling results, showing:

1. Sample identification,
2. Sampling location,
3. The datum reported,
4. Detection limit for each datum,
5. A measure of analytical precision (e.g. uncertainty, range, variance),
6. Identification of analytical procedure, and
7. Identification of analytical laboratory.

D. A QA/QC statement on the adequacy of the analyses and decontamination demonstration.

E. The location of the file of supporting documentation:

1. Field log books,
2. Laboratory sample analysis reports,
3. The QA/QC documentation, and
4. Chain of custody records.

F. Disposal location of all regulated and unregulated residues.

G. A certification of accuracy of the report.

TABLE E.6.1.
CLOSURE SCHEDULE

Activity	Maximum Time Required
Notify NMED of the closure	-90 Days
Let contract request for proposals	-90 Days
Receive proposals	-30 Days
Select and award contract	-10 Days
Begin closure activities	Day 0
Disposal of final wastes	Day 60
Internal/external washdown	Day 70
Equipment disassembly	Day 95
Individual component decontamination	Day 105
Residue removal from concrete pad/floor	Day 125
Floor decontamination	Day 140
Final building clean up and removal	Day 160
Initial soil sampling and analysis	Day 190
Expanded sampling and analysis (contingency)	Day 210
Contaminated soil removal	Day 250
Resample and analysis	Day 285
Decontamination verification	Day 310
Final closure report submitted to NMED	Day 340

NOTE: The calendar days given above are completion dates for each activity. In some cases more than one activity may occur simultaneously.

TABLE E.6.2.
ANALYTICAL PARAMETERS

Metals	Organics	Other
Arsenic	Halogenated volatile organics	Cyanides
Barium	Nonhalogenated volatile organics	pH
Cadmium	Acid-extractable semivolatile organics	
Chromium	Base-neutral extractable semivolatile organics	
Lead	Organochorine pesticides	
Mercury	Chlorinated herbicides	
Selenium	Phenols	
Silver		
Nickel		
Beryllium		

NOTES: Analytical methods are taken from *Test Methods for Evaluating Solid Waste*, EPA SW-846, and may be superseded by more current methods from SW-846 or alternate EPA-approved methods.

Metals may be analyzed for total content. Any metal whose total concentration exceeds the standard for the toxicity characteristic shall be analyzed by the Toxicity Characteristic Leaching Procedure. Both data shall be reported in the final report.

TABLE E.6.3
SAMPLING SUMMARY

Material Sampled	Metals	Organics	Other
Washdown solutions before use	X	X	X
Washdown solutions after use	X	X	X
Soils background	X	X	X
Soil samples	X	X	X
Final decontamination samples	[a]	[a]	[a]

NOTES: Analytical parameters are given in Table E.6.2.

[a]Parameters given in HWMR-5, Part V, Section 264, Appendix IX

FIGURE E.6.2
COMPOSITE LIQUID WASTE SAMPLER (COLIWASA)

FIGURE E.6.3
EXAMPLE OF SAMPLE SEAL

OFFICIAL SAMPLE SEAL

Collected by _____ Collector's sample No._____
(Signature)

Date Collected_____ Time Collected_____

Place Collected_____

_____

_____

FIGURE E.6.4
EXAMPLE OF SAMPLE LABEL

OFFICIAL SAMPLE LABEL

Collector_____ Collector's Sample No._____

Place of Collection_____

_____

Date Sampled_____ Time Sampled _____

Field Information_____

_____

_____

FIGURE E.6.5
CHAIN OF CUSTODY RECORD
Hazardous Materials
Collector's Sample No.____

Location of Sampling: Producer Hauler
Disposal Site Other: _____

Company's Name_____ Telephone (___)_____

Address_____
Number Street City State Zip

Collector's Name_____ Telephone (___)_____

Date Sampled_____ Time Sampled_____ hours

Type of Process Producing Waste_____

Waste Type Code_____ Other_____

Field Information_____

_____

Sample Allocation:

1. _____
(Name of Organization)

2. _____
(Name of Organization)

3. _____
(Name of Organization)

Chain of Possession:

1. _____ _____ _____
Signature Title Inclusive Dates

2. _____ _____ _____
Signature Title Inclusive Dates

3. _____ _____ _____
Signature Title Inclusive Dates

FIGURE E.6.1
TA-54 AREA L WASTE MANAGEMENT UNITS

CLOSURE PLAN
PERMIT ATTACHMENT E.7
NM0890010515-1

CLOSURE PLAN
PERMIT ATTACHMENT E.7
NM0890010515-1

E.7 STORAGE CONCRETE CONTAINMENT UNITS

E.7.1 Description

There are two units used to store hazardous chemical waste lab packs in 55-gallon drums and other DOT-approved storage containers, at TA-50 and one at TA-54, Area L. Each unit consists of a roofed concrete containment structure encompassing 1,596 square feet. The wastes are segregated into compatible waste types upon arrival at the unit and placed within one of the six storage cells. Wastes are stored in 55-gallon drums, 220-gallon polyethylene containers or 330-gallon polyethylene containers. All containers meet DOT specifications. Two units are located south of Building TA-50-37 (Figure E.7.1) and the other is at TA-54, Area L (Figure E.7.2).

E.7.2 Estimate of Maximum Waste in Storage

The maximum amount of waste in storage at any one unit is 65 cubic meters (17,220 gallons).

E.7.3 Description of Waste Handled

A wide variety of wastes generated throughout the Laboratory are stored at the units, including wastes from basic and applied chemistry R & D programs (small quantities of different acids, bases, organics, inorganics, and reactive metals), processing waste (sludge resulting from treatment at TA-50-1 Batch Treatment Plant), and chemically contaminated equipment packed for off site disposal at a permitted facility. Any characteristic or listed waste used at the laboratory may be stored at any unit. The units at TA-50 normally store only characteristic waste code D002 and listed wastes F001 through F009, but may store any regulated waste generated by the Laboratory.

E.7.4 Closure

E.7.4.1 Partial Closure

Partial closure would consist of one unit while leaving the other units in service. In such an event, the following procedures would apply to the unit to be closed.

E.7.4.2 Closure Procedure

Personnel involved in decontaminating the unit will wear protective equipment, including, acid/solvent resistant coveralls, head protection, neoprene-coated gloves, and boots.. Wrists and ankles are to be taped to protect against upward and inward splash. As a minimum protection, face shields will be worn. Full face respirators or other protective equipment will be used if specified by the Laboratory's Industrial Hygiene and Safety Group, (ESH-5), following a field inspection. Before decontamination, all wastes in storage will either be treated or shipped off site for disposal at a permitted facility. Given the diversity of wastes handled, it is not possible to estimate the exact wastes on hand at the initiation of closure and, therefore, the final disposition of the wastes. In general, recyclable wastes will be reused internally or recycled to users off

site. Organic wastes will be burned at the permitted Incinerator at TA-50-37. Any wastes compatible with permitted treatment at the TA-54, Area L treatment tanks will be so treated. The remaining wastes will be transported off site to a permitted facility.

Following removal of the wastes on site at the start of closure, the storage unit will be decontaminated by washing with Liquinox(@) and Alconox(@) in water. Wash water is expected to be contained within the curbed area and collect in the sump. If spills occur outside the curbed area, the spilled materials will be absorbed on suitable material, collected and placed in containers. The area affected by the spill will be included in the final cleanup determination. The resulting wash solutions will be placed in approved DOT containers, and taken to TA-54, Area L for sampling and analysis, and shipped off site for treatment or disposal at a permitted facility. The protective clothing and tools used during the wash down will be cleaned with detergent and water. The wash water will be collected and analyzed. If the wash water is not hazardous, the water will be discharged to the industrial waste water sewer. If the wash water contains hazardous constituents, it will be treated on site or transported off site to a permitted facility. Spill residues, sludges, mops and rags used for clean-up will be placed in containers for transport to Area L, with ultimate off site disposal at a permitted facility.

E.7.4.3 Soil Decontamination

Soil sampling will be conducted to determine if hazardous wastes have been tracked outside of contaminated areas, as described in section E.7.8. After the building is decontaminated, three soil samples will be collected along each short edge of the asphalt apron around the building and ten along each long side. Each will be made up of cores six inches deep taken six inches off the asphalt edge and equally spaced to cover each edge.

If contamination is found in any of these samples, the limits of the sampling area will be expanded by establishing a three foot sampling grid around a single contamination point, or centered on the area defined by the locus of multiple contamination points, to determine the outside perimeter of the contamination. Sampling will be continued until the extent of the contamination is determined. Background samples will be taken from an uncontaminated area up-gradient from and unaffected by the waste management activity, in the same manner as the initial closure soil survey.

Once the limits of the contaminated area are determined, the contaminated soil will then be removed to a depth of 6 inches and handled as regulated waste. The adequacy of decontamination is determined by additional sampling. Sampling, analysis, and documentation procedures are detailed in section E.6.9. In order to demonstrate final decontamination, soil samples will be analyzed for all HWMR-5, Part V, Section 264, Appendix IX constituents. Analysis and quality assurance/quality control will follow methods defined in SW-846.

E.7.5 Decontamination Verification

Before the first wash down, two samples will be taken of the clean Liquinox(@) or Alconox(@) solution in water and analyzed for the constituents listed in Table E.7.2. The constituents listed in Table E.7.2 include regulated constituents normally stored at the unit.

One additional clean solution sample will be taken for each additional washdown event. These analytical results provide background data for decontamination verification.

Used washdown solutions will be analyzed for the constituents listed in Table E.7.2. Analytical procedures will conform to methods found in SW-846. The constituents listed in Table E.7.2. include regulated constituents normally stored in the units. A scan for volatile and semivolatile organics is performed to ensure that solvents commonly used within the Laboratory have not contaminated the unit.

Successful decontamination is defined as:

1. No detectable hazardous constituents in the final sample, or

2. Detectable hazardous constituents in the final sample are equal to or less than, at the 0.01 confidence level, their concentration in the unused wash water or background sample.

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

E.7.6 Closure Schedule

The year of closure for either unit is 2100. Closure will observe the schedule given in Table E.7.1. Closure is expected to take 270 days.

E.7.7 Closure Certification

An independent registered professional engineer and the Permittee shall witness the closure and ensure that the closure follows this plan. Upon completion of closure, the engineer and the DOE shall prepare a letter certifying that the facility has been closed in accordance with this plan. The letter shall be dated and signed by each party, stamped by the registered engineer, and the original copy submitted by the DOE to the Secretary of NMED. One copy shall be maintained at the DOE office and one copy maintained by the ESH-19 Hazardous and Solid Waste Group .

E.7.8 Sampling and Analytical Procedure

The following section defines procedures and methods for sampling, analysis and documentation applicable to closure plans. While the procedures and method are specific, any applicable procedure or method given in SW-846 may be used if conditions or experience shows the alternate method to be more appropriate. Disposable samplers may be used.

Samples will be taken, placed in bottles, sealed, tagged, and immediately packed in vermiculite, sawdust, or, if refrigeration is required, an insulated container with ice.

One sample for every ten samples will be either duplicated or split. The duplicated or split sample will be identified by a code so that its source is not available to the analytical laboratory, but analytical results can be compared to its twin.

Sample containers appropriate for the requested analyses will be used for all samples. Sampling will be conducted in accordance with procedures given in *Samplers and Sampling Procedures for Hazardous Waste Streams*, EPA 600/2-80-018 and/or SW-846.

E.7.8.1 Soil and Solid Residues Sampling

The sampling procedures outlined below are used to determine the amount of hazardous material deposited on a particular area of land, or to determine the leaching rate of the material, or determine the residue level on the soil. Adequate preparation ensures that proper sampling is accomplished.

Surface soil samples will be collected with a trowel or scoop. To sample below 3 in. (8 cm), samples will be collected with a Veihmeyer soil sampler. Drums not capable of being sampled will be assumed to be hazardous waste.

E.7.8.1.1 Cleaning of Sampler

It is important to clean the samplers after each site is sampled. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a warm Liquinox(@) or Alconox(@) solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. Prevention of cross contamination is of particular importance in these samples.

E.7.8.1.2 Sampling Procedures

Trowel or Scoop

- Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
- Combine the samples in a glass container.
- Cap the container, attach a label and seal, record in field log book, and complete the sample analysis request sheet and chain-of-custody record.

Veihmeyer Sampler

- Assemble the sampler by screwing in the tip and drive head on the sampling tube.
- Insert the tapered handle (drive guide) of the drive hammer through the drive head.
- Place the sampler in a perpendicular position on the material to be sampled.
- With the left hand holding the tube, drive the sampler into the material to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube farther than the tip of the hammer's drive guide.
- Record the length of the tube that penetrated the material.

- Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.

- Rotate the sampler at least two revolutions to shear off the sample bottom.

- Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.

- Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a pullerjack and grip.

- Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.

- Store the core sample in a 1,000 or 2,000 ml (1 qt or 1/2 gal) sample container.

- Label the sample, affix the seals, record in the field log book, complete the sample analysis request sheet and chain-of-custody record, and deliver the samples to the laboratory for analysis.

E.7.8.2 Liquid Sampling

A COLIWASA sampler or similar device will be used to sample water solutions in order to determine background parameters before washing the area; it will also be used to sample the dirty wash water used in cleaning equipment. The recommended model of the COLIWASA is shown in Figure E.7.3, the main parts consisting of the sampling tube, the closure-locking mechanism, and the closure system. As an alternative to theCOLIWASA, glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of as hazardous waste after each sample is collected, thus eliminating the potential for cross contamination.

E.7.8.2.1 Cleaning of sampler

The sampler must be clean before use. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The used sampler must be washed with a warm detergent solution (Liquinox(@) or Alconox(@)), rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the COLIWASA is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Using the ramrod and fiber reinforced paper towels, the COLIWASA tube may be quickly cleaned. Improper cleaning of sample equipment will cause cross contamination of samples. Prevention of contamination is of particular importance in these samples. Clean samplers should be stored in polyethylene plastic tubes or bags in a clean ~~an~~ and protected area.

E.7.8.2.2 Sampling procedures

- Assemble the COLIWASA sampler.

- Make sure that the COLIWASA sampler is clean.

- Check to make sure the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.
- Wear necessary protective clothing and gear and observe required sampling precautions.

- Put the sampler in the open position by placing the stopper rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.

- Slowly lower the COLIWASA sampler into the liquid at a rate that permits the levels of the Liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a non-representative sample.

- When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.

- Slowly withdraw the sampler from the container with one hand while wiping the sampler tube with a disposable cloth with the other hand.

- Carefully discharge the sample into a glass container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block while the lower end of the sampler is positioned in the glass container.

- Cap the glass container, attach a label and seal, record in the field log book, and complete the sample analysis request sheet and chain-of-custody record.

- Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.

E.7.8.3 Sample Handling and Documentation

Soil and liquid samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and a sample analysis request form.

The sample container must be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. An example of a sample seal is shown in Figure E.7.4.

The sample label is necessary to prevent misidentification of samples and shall include, if applicable, the grid number referenced to positions staked on the site perimeter. The "field information" in the case of soil sampling, shall include observations such as the soil texture and surface appearance, ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling. An example of a sample label is shown in Figure E.7.5.

The chain-of-custody form is necessary to trace sample possession from the time of collection and must accompany every sample. This record becomes especially important when the sample is to be introduced as evidence in litigation. This is a two page record with the original accompanying the shipment and the "copy" retained by the Laboratory. An example of this form is shown in Figure E.7.6.

A separate closure sampling field log book will be kept and will contain all information pertinent to field surveys and sampling. The log book shall have bound and consecutively numbered pages in 8-½ by 11-inch format. Minimum entries include:

a. Purpose of sample (routine sampling, special sampling);

b. Location of sampling (coordinates referenced to staked field points, if soil sample);

c. Name and address of person making log entry;

d. Type of process producing waste;

e. Number and volume of sample;

f. Description of each sampling location, sampling methodology, equipment used, etc;

g. Date and time of sample collection;

h. Sample destination and transporter's name (name of laboratory, UPS, etc);

i. Map or photograph of the sampling site, if any;

j. Field observations (ambient temperature, sky conditions, past 24-hour precipitation, etc);

k. Field measurements, if any (pH, flammability, conductivity, explosivity, etc);

l. Collector's sample identification number(s); and

m. Signature of person responsible for the log entry.

Sampling situations vary widely. No general rule can be given as to the extent of information that must be entered in the log book. A good rule, however, is to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

The sample shipment and chain-of-custody record is accompanied by a sample analysis request sheet. The request sheet has two parts: field and laboratory. The field portion of this form must be completed by the person collecting the sample and include most of the pertinent information noted in the log book. The laboratory portion is intended to be completed by the laboratory personnel when the sample is received.

E.7.9 Quality Assurance/Quality Control

The Permittee shall designate a qualified individual or individuals to independently oversee the closure activities and report directly to senior management on the quality of the performance of this closure. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed and review the analysis reports for accuracy and adequacy. A written QA/QC plan shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the adequacy of the analysis showing decontamination.

E.7.10 Final Closure Report

Upon completion of the closure activities, the Permittee shall submit a Final Closure Report to the Secretary. The report shall document the final closure and contain, at a minimum, the following:

A. The certification described in paragraph E.7.7.

B. Any variance from the approved activities and the reason for the variance.

C. A tabular summary of all sampling results, showing:

1. Sample identification,

2. Sampling location,

3. The datum reported,

4. Detection limit for each datum,

5. A measure of analytical precision (e.g. uncertainty, range, variance),

6. Identification of analytical procedure, and

7. Identification of analytical laboratory.

D. A QA/QC statement on the adequacy of the analyses and decontamination demonstration.

E. The location of the file of supporting documentation:

1. Field log books,

2. Laboratory sample analysis reports,

3. The QA/QC documentation, and

4. Chain of custody records.

F. Disposal location of all regulated and unregulated residues.

G. A certification of accuracy of the report.

TABLE E.7.1.
CLOSURE SCHEDULE

Activity	Maximum Time Required
Notify NMED of the closure	-90 Days
Advertise for proposals	-90 Days
Receive proposals	-30 Days
Select contractor and award contract	-10 Days
Begin closure activities	Day 0
Removal of wastes	Day 60
Wash down complete	Day 80
Sampling of wash water	Day 90
Soil sampling and analysis	Day 120
Soil removal	Day 160
Soil sampling and analysis	Day 190
Final clean up	Day 210
Decontamination verification	Day 240
Submit final report to NMED	Day 270

NOTES: The calendar days given above are completion dates for each activity. In some cases more than one activity may occur simultaneously.

This schedule applies equally to partial closure and final closure.

TABLE E.7.2.
ANALYTICAL PARAMETERS

Total Metals	Organics	Other
Arsenic	Halogenated volatile organics	Cyanides
Barium	Nonhalogenated volatile organics	Ignitability
Cadmium	Acid-extractable semivolatile organics	Reactivity
Selenium	Base-neutral extractable semivolatile organics	pH
Lead	Phenols	
Mercury	Organochloride pesticides	
Beryllium	Chlorinated herbicides	
Chromium		
Silver		
Nickel		

NOTES: Analytical methods are taken from *Test Methods for Evaluating Solid Waste*, EPA SW-846, and may be superseded by more current methods from SW-846 or alternate EPA-approved methods.

Metals may be analyzed for total content. Any metal whose total concentration exceeds the standard for the toxicity characteristic shall be analyzed by the Toxicity Characteristic Leaching Procedure. Both data shall be reported in the final report.

TABLE E.7.3
SAMPLING SUMMARY

Material Sampled	Metals	Organics	Other
Washdown solutions before use	X	X	X
Washdown solutions after use	X	X	X
Soils background	X	X	X
Soil samples	X	X	X
Final decontamination samples	[a]	[a]	[a]

NOTES: Analytical parameters are given in Table E.7.2.

[a]Parameters given in HWMR-5, Part V, Section 264, Appendix IX

FIGURE E.7.1
LOCATIONS OF TA-50 CHEMICAL WASTE INCINERATOR AND CONTAINER STORAGE UNITS

FIGURE E.7.3
COMPOSITE LIQUID WASTE SAMPLER (COLIWASA)

FIGURE E.7.4
EXAMPLE OF SAMPLE SEAL

OFFICIAL SAMPLE SEAL

Collected by _____ Collector's sample No._____
(Signature)

Date Collected_____ Time Collected_____

Place Collected_____

_____

_____

FIGURE E.7.5
EXAMPLE OF SAMPLE LABEL

OFFICIAL SAMPLE LABEL

Collector_____ Collector's Sample No._____

Place of Collection_____

_____

Date Sampled_____ Time Sampled _____

Field Information_____

_____

_____

FIGURE E.7.6
CHAIN OF CUSTODY RECORD
Hazardous Materials
Collector's Sample No.____

Location of Sampling: Producer Hauler
Disposal Site Other: _____

Company's Name_____ Telephone (___)_____

Address_____
Number Street City State Zip

Collector's Name_____ Telephone (___)_____

Date Sampled_____ Time Sampled_____ hours

Type of Process Producing Waste_____

Waste Type Code_____ Other_____

Field Information_____

_____

Sample Allocation:

1. _____
(Name of Organization)

2. _____
(Name of Organization)

3. _____
(Name of Organization)

Chain of Possession:

1. _____ _____ _____
Signature Title Inclusive Dates

2. _____ _____ _____
Signature Title Inclusive Dates

3. _____ _____ _____
Signature Title Inclusive Dates

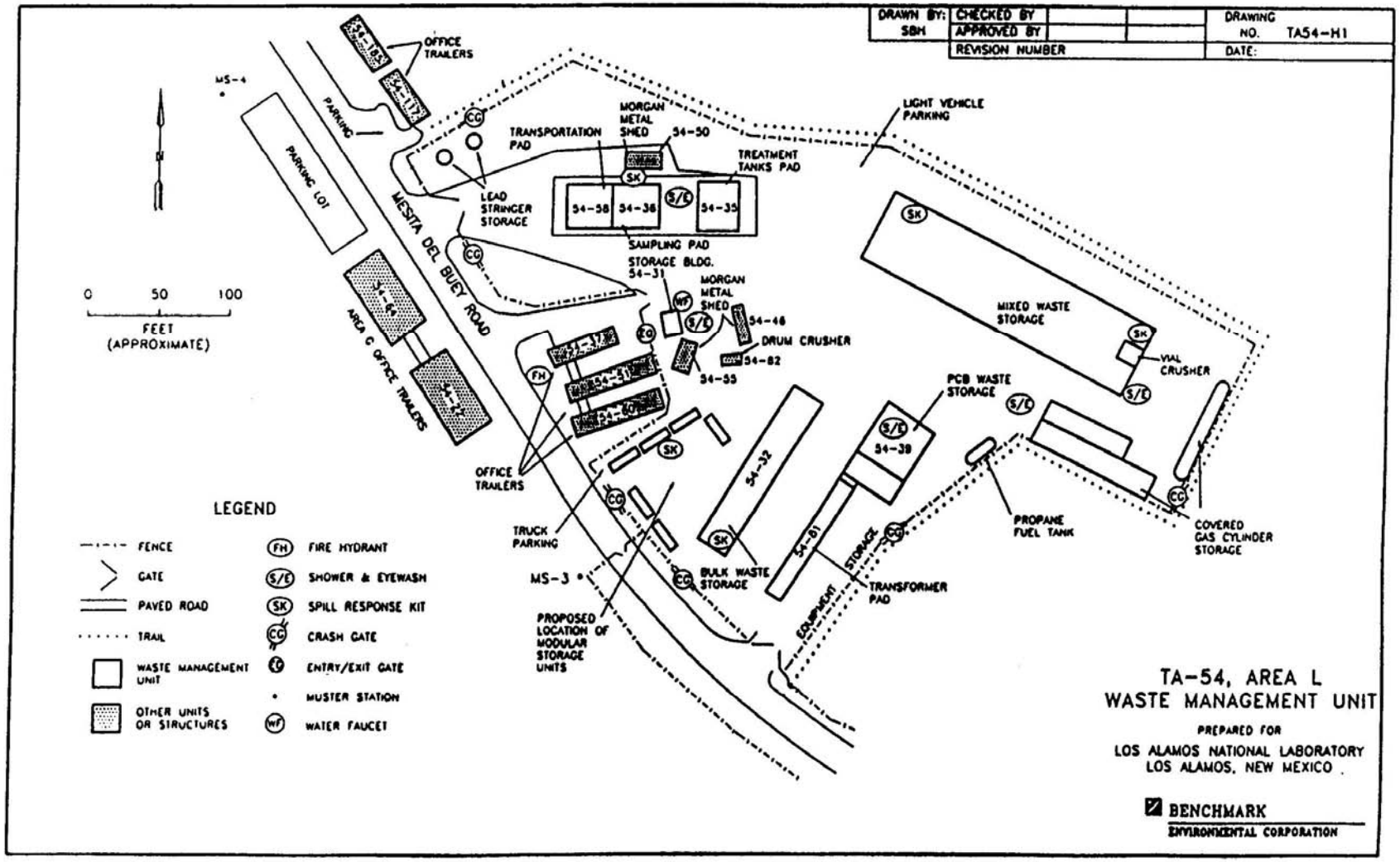


FIGURE E.7.2
TA-54 AREA L WASTE MANAGEMENT UNITS

CLOSURE PLAN
PARTIAL CLOSURE
PERMIT ATTACHMENT E.8
NM 0890010515-1

CLOSURE PLAN
PARTIAL CLOSURE
PERMIT ATTACHMENT E.8
NM 0890010515-1

E.8 PARTIAL CLOSURE FOR TA-54 AREA L HAZARDOUS WASTE TREATMENT/STORAGE TANKS

E.8.1 Unit Description

Two 1,660-gallon, 10-gauge steel treatment/storage tanks located at Area L will be closed. They are lined with plastic (except when treating reactive wastes) and used to neutralize, oxidize, and evaporate waste. The tanks are located on a bermed concrete pad. (Figure E.8.1) This closure plan addresses only the two tanks indicated (Figure E.8.2).

The remainder of TA-54, Area L storage units consist of a single-story metal transfer/storage building, a roofed concrete storage pad, six transportable storage buildings and specified areas within the fenced portions of Area L for storage of solid containerized waste. These areas are used for the accumulation, packing, and storage of waste containers, which are generated throughout the Laboratory and delivered to the facility routinely. Liquid wastes are segregated into compatible types and placed inside the transfer/storage building or within one of the storage cells of the roofed concrete pad. Wastes in small containers are put into one of the transportable storage buildings or the transfer/storage building for placing into lab packs. Wastes suitable for recycling are consolidated into drums, and any damaged or leaking drums are repacked into larger drums in this area. Solid containerized wastes are stored on pallets, or otherwise elevated four inches, in cleared areas within the fenced portions of Area L.

E.8.2 Estimate of Maximum Waste in Storage and Treatment

The maximum amount of waste that could be stored in the tanks is 3,320 gallons if the tanks were filled with no freeboard. The expected maximum volume of waste is 2,860 gallons.

E.8.3 Description of Waste Handled

The waste treated or stored normally ~~at~~ in the tanks is barium-contaminated sand. Occasionally plating bath treatment residues from treating F003, F004, F005 and F006 wastes are also treated here. Potentially, any wastes or clean up wastes amenable to evaporation or chemical treatment may be treated in the tanks. Therefore, any waste generated at the laboratory potentially has, or could be, treated or stored in the tanks.

E.8.4 Partial Closure

Partial closure will consist of closing two of the existing four tanks. All portions of this plan addressing tank decontamination shall apply to the closing of two tanks.

E.8.5 Closure Procedure

Cleanup and closure will be done in sequential order, culminating in the disposal of any residues or contaminated material by shipment off site to a permitted facility. Before decontamination, all wastes in storage will either be treated on site or disposed of off site. Given the diversity of wastes handled, it is not possible to estimate the exact wastes on hand at the initiation of closure and, therefore, the final disposition of the wastes. In general, recyclable wastes will be reused internally or recycled to users off site. Permitted wastes will be burned at the permitted incinerator at TA-50-37. Any wastes compatible with permitted on-site treatment will be so treated. The remaining wastes will be transported off site to a permitted disposal facility. If on-site treatment is not possible due to prior closure of the permitted units, off-site disposal will occur.

E.8.5.1 Waste Removal

The waste of concern at the start of closure consist of liquids and residues in the treatment tanks. Following removal of the tank liners and residual wastes, the tanks will be decontaminated. The wash water will be removed, placed in drums, sampled, analyzed and transported off site to a permitted facility for treatment or disposal. All wastes shipped off site will be manifested in accordance with the facility permit. All waste transporters will have an EPA identification number in accordance with HWMR-5, Part IV, Section 263.11.

E.8.5.2 Storage/Treatment Decontamination

Following removal of the two tank liners and residual wastes, the two tanks will be decontaminated by scraping and washing with Liquinox(@) or Alconox(@) in water. The wash water will be removed, placed in drums, sampled, analyzed and transported off site to a permitted facility for treatment or disposal. The tanks will be then be scraped and brushed to remove residue and the residue will be collected and placed in drums. The tanks will be removed and the concrete pad on which the two treatment tanks are placed will be washed with a Liquinox(@) or Alconox(@) solution in water. The wash water will be contained with the curbed concrete pad, collected, sampled, and analyzed. If the wash water is not hazardous or requires only neutralization, it will be removed with a vacuum truck and transported to an industrial sewer which drains to the facility industrial wastewater treatment plant at TA-50-1. If the water contains hazardous constituents, it will be removed, placed in drums and transported off site to a permitted facility for treatment or disposal. Wash-down of the two tanks and pad will be repeated until decontamination is demonstrated.

E.8.5.3 Soil Decontamination

Partial closure of this unit will result in the removal of two of the existing four tanks, with the remaining two tanks continuing in service. Therefore, soil sampling, as described in section E.8.9, will be conducted to determine if hazardous wastes have been tracked outside of contaminated areas at the time of final closure of this unit. When final closure is initiated eight soil samples will be collected around the edge of the bermed concrete pad beneath the treatment tanks as shown in Figure E.8.2. Each sample will be made up of six inch deep cores taken six inches off the edge and equally spaced to cover each edge. Soil and sediment samples will be analyzed for Table E.8.2 parameters. Analysis and quality assurance/quality control will follow methods defined in SW-846.

If the sample survey indicates that there are no contaminated soil areas, no further soil decontamination action will be taken at the site. If contamination is found in any of these samples, the limits of the sampling

area will be expanded by establishing a three foot sampling grid around a single contamination point, or centered on the area defined by the locus of multiple contamination points, to determine the outside perimeter of the contamination. Sampling will be continued until the extent of contamination is determined. Background samples will be taken in the same manner as the initial closure soil survey.

Once the limits of the contaminated area are determined, the contaminated soil will then be removed to a depth of 6 inches and handled as a regulated waste. Contaminated soil will be placed in drums or sealed in dump trucks for off site disposal at a permitted facility. The adequacy of decontamination is determined by additional sampling. Sampling, analysis, and documentation procedures are detailed in section E.8.9. In order to demonstrate final decontamination, soil samples will be analyzed for all Table E.8.2 parameters. Analysis and quality assurance/quality control will follow methods defined in SW-846.

E.8.5.4 Personnel Protection

Personnel who are washing equipment will wear rubber gloves, neoprene acid/solvent resistant coveralls, rubber boots, and a face shield. The Laboratory's Industrial Hygiene and Safety Group (ESH-5) will review the site survey analytical data and recommend additional protective clothing if necessary.

E.8.5.5 Equipment Decontamination

Shovels, drum trucks and other equipment used for decontamination will be scraped and brushed to remove residue, and the residue collected will be placed in drums for disposal off site at a permitted facility. The equipment will be placed on a 30 mil plastic sheet that is bermed to contain liquids and pressure washed with water and detergent. Large equipment such as backhoes and forklifts will also be washed. Testing will be performed on this water to determine if decontamination is adequate. Washing is considered adequate to decontaminate the equipment. The wash water will be allowed to evaporate and the plastic and residue will be packed in drums for off site disposal at a permitted facility.

E.8.6 Decontamination Verification

E.8.6.1. Wash water Decontamination Verification

A minimum of two samples of the clean Liquinox(@) or Alconox(@) solution will be sampled as background for wash water and, along with the wash water samples, analyzed for the constituents listed in Table E.8.2. Successful decontamination is defined as:

1. No detectable hazardous constituents in the final sample, or

2. Detectable hazardous constituents in the final sample are equal to or less than, at the 0.01 confidence level, their concentration in the unused wash water or background sample. Hazardous

constituents detected in the background sample will invalidate that sample as true background unless adequate explanation of their source is provided.

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

E.8.6.2 Soil Decontamination

The criteria for determining contaminated soil are the same as discussed in Section E.8.6.1. Regulated constituent concentrations will be compared to background concentrations. Soils containing levels of contamination above the background will be considered contaminated and removed as hazardous waste.

Decontamination of the site soil will be demonstrated by additional sampling. Because removal of contaminated soil will leave an exposed surface, the disturbed surface will be resampled in the same places used to define the contaminated area. Analysis and the determination of contamination is as previously discussed, and reanalysis will be conducted only for those constituents that caused the area to be determined contaminated.

E.8.7 Closure Schedule

The year of closure is 1994. Soil survey, contracting and closure activities will observe the schedule given in Table E.8.1. Some soil sampling and the decontamination contractor selection will be completed before closure begins. Because several of the closure steps will occur simultaneously, closure is estimated to take 210 days.

Contracts for analytical work and, if necessary, soil removal are expected to exceed $100,000. The Laboratory is required by policy to put the work out for bid, and ninety days are required to solicit and process the bids. The location of the site is prone to snow cover in the winter months. The closure may be delayed until the site is free of snow and the ground is thawed adequately to allow the soil sampling and other closure operations. The schedule includes a weather factor to allow for this delay.

E.8.8 Closure Certification

An independent, registered professional engineer and the Permittee shall witness closure of the two tanks and ensure that the closure follows this plan. Upon completion of closure, the engineer and the DOE shall prepare a letter certifying that the two tanks have been closed in accordance with this plan. The letter shall be dated and signed by each party, stamped by the registered engineer, and the original copy submitted by the DOE to the Secretary of the NMED. One copy shall be maintained at the DOE office and one copy maintained by the ESH-19 Hazardous and Solid Waste Group.

E.8.9 Sampling and Analytical Procedure

The following section defines procedures and methods for sampling, analysis and documentation applicable to closure plans. While the procedures and method are specific, any applicable procedure or method given in SW-846 or other EPA approved procedure may be used if conditions or experience show the alternate method to be more appropriate. Disposable samplers may be used.

Sample containers appropriate for the requested analyses will be used for all samples. Sampling will be conducted in accordance with procedures given in *Samplers and Sampling Procedures for Hazardous Waste Streams*, EPA 600/2-80-018 and/or SW-846. Samples will be taken, placed in bottles, sealed, tagged, and immediately packed in vermiculite, sawdust, or, if refrigeration is required, an insulated container with ice. One sample for every ten samples will be either duplicated or split. The duplicated or split sample will be identified by a code so that its source is not available to the analytical laboratory, but analytical results can be compared to its twin.

E.8.9.1 Soil and Solid Residues Sampling

The sampling procedures outlined below are used to determine the amount of hazardous material deposited on a particular area of land, or to determine the leaching rate of the material, or determine the residue level on the soil. Adequate preparation ensures that proper sampling is accomplished.

Surface soil samples will be collected with a trowel or scoop. To sample below 3 in. (8 cm), samples will be collected with a Veihmeyer soil sampler. Drums of solid residues will be sampled with a core sampler or Veihmeyer soil sampler. Drums not capable of being sampled will be assumed to be reactive hazardous waste.

E.8.9.1.1 Cleaning of sampler

It is important to clean the samplers after each site is sampled. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a warm Liquinox(@) or Alconox(@) solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. Prevention of cross contamination is of particular importance in these samples.

E.8.9.1.2 Sampling procedures

Trowel or Scoop

- Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
- Combine the samples in a glass container.
- Cap the container, attach a label and seal, record in field log book, and complete the sample analysis request sheet and chain-of-custody record.

Veihmeyer Sampler

- Assemble the sampler by screwing in the tip and drive head on the sampling tube.
- Insert the tapered handle (drive guide) of the drive hammer through the drive head.
- Place the sampler in a perpendicular position on the material to be sampled.
- With the left hand holding the tube, drive the sampler into the material to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube farther than the tip of the hammer's drive guide.
- Record the length of the tube that penetrated the material.
- Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.
- Rotate the sampler at least two revolutions to shear off the sample at the bottom.
- Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.
- Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a pullerjack and grip.
- Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.
- Store the core sample in a 1,000 or 2,000 ml (1 qt or 1/2 gal) sample container.
- Label the sample, affix the seals, record in the field log book, complete the sample analysis request sheet and chain-of-custody record, and deliver the samples to the laboratory for analysis.

E.8.9.2 Liquid Sampling

A COLIWASA sampler or similar device will be used to sample water solutions in order to determine background parameters before washing the area; it will also be used to sample the dirty wash water used in cleaning equipment. The recommended model of the COLIWASA is shown in Figure E.8.3., the main parts consisting of the sampling tube, the closure-locking mechanism, and the closure system. As an alternative to the COLIWASA , glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of as hazardous waste after each sample is collected, thus eliminating the potential for cross contamination.

E.8.9.2.1 Cleaning of sampler

The sampler must be clean before use. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The used sampler must be washed with a warm detergent solution (Liquinox(@) or Alconox(@)), rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the COLIWASA is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Using this ramrod and fiber reinforced paper towels, the COLIWASA tube may be quickly cleaned. Improper cleaning of sample equipment will cause cross contamination of samples. Prevention of contamination is of particular importance in these samples. Clean samplers should be stored in polyethylene plastic tubes or bags in a clean and protected area.

E.8.9.2.2 Sampling procedures

- Assemble the COLIWASA sampler.
- Make sure that the COLIWASA sampler is clean.
- Check to make sure the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.
- Wear necessary protective clothing and gear and observe required sampling precautions.
- Put the sampler in the open position by placing the stopper rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.
- Slowly lower the COLIWASA sampler into the liquid at a rate that permits the levels of the liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a nonrepresentative sample.
- When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.
- Slowly withdraw the sampler from the container with one hand while wiping the sampler tube with a disposable cloth with the other hand.
- Carefully discharge the sample into a glass container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block while the lower end of the sampler is positioned in the glass container.
- Cap the glass container, attach a label and seal, record in the field log book, and complete the sample analysis request sheet and chain-of-custody record.

- Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.

E.8.9.3 Sample Handling and Documentation

Soil and liquid samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and a sample analysis request form.

The sample container must be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. An example of a sample seal is shown in Figure E.8.4.

The sample label is necessary to prevent misidentification of samples and shall include, if applicable, the grid number referenced to positions staked on the site perimeter. The "field information" in the case of soil sampling, shall include observations such as the soil texture and surface appearance, ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling. An example of a sample label is shown in Figure E.8.5.

The chain-of-custody form is necessary to trace sample possession from the time of collection and must accompany every sample. This record becomes especially important when the sample is to be introduced as evidence in litigation. This is a two page record with the original accompanying shipment and the "copy" retained by the Laboratory. An example of this form is shown in Figure E.8.6.

A separate closure sampling field log book will be kept and will contain all information pertinent to field surveys and sampling. The log book shall have bound and consecutively numbered pages in 8-1/2 by 11-inch format. Minimum entries include:

a. Purpose of sample (routine sampling, special sampling);

b. Location of sampling (coordinates referenced to staked field points, if soil sample);

c. Name and business address of person making log entry;

d. Type of process producing waste;

e. Number and volume of sample;

f. Description of each sampling location, sampling methodology, equipment used, etc.;

g. Date and time of sample collection;

h. Sample destination and transporter's name (name of laboratory, UPS, etc.);

i. Map or photograph of the sampling site, if any;

j. Field observations (ambient temperature, sky conditions, past 24-hour precipitation, etc.);

k. Field measurements, if any (pH, flammability, conductivity, explosivity, etc.);

l. Collector's sample identification number(s); and

m. Signature of person responsible for the log entry.

Sampling situations vary widely. No general rule can be given as to the extent of information that must be entered in the log book. A good rule, however, is to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

The sample shipment and chain-of-custody record is accompanied by a sample analysis request sheet. The request sheet has two parts: field and laboratory. The field portion of this form must be completed by the person collecting the sample and include most of the pertinent information noted in the log book. The laboratory portion is intended to be completed by the laboratory personnel when the sample is received.

E.8.10 Quality Assurance/Quality Control

The Permittee shall designate a qualified individual or individuals to independently oversee the closure activities and report directly to senior management on the quality of the performance of this closure. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed and review the analysis reports for accuracy and adequacy. A written QA/QC plan prepared in accordance with SW-846 guidance shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the adequacy of the analysis showing decontamination.

E.8.11 Final Closure Report

Upon completion of the closure activities, the Permittee shall submit a Final Closure Report to the Secretary. The report shall document the final closure and contain, at a minimum, the following:

A. The certification described in paragraph E.8.8.

B. Any variance from the approved activities and the reason for the variance.

C. A tabular summary of all sampling results, showing:

1. Sample identification,

2. Sampling location,

3. The datum reported,

4. Detection limit for each datum,

5. A measure of analytical precision (e.g. uncertainty, range, variance),

6. Identification of analytical procedure, and

7. Identification of analytical laboratory.

D. QA/QC statement on the adequacy of the analyses and the decontamination demonstration.

E. The location of the file of supporting documentation:

1. Field log books,

2. Laboratory sample analysis reports,

3. The QA/QC documentation, and

4. Chain of custody records.

F. Disposal location of all regulated and non-regulated residues.

G. A certification of accuracy of the report.

TABLE E.8.1
CLOSURE SCHEDULE

Activity	Maximum Time Required
Preclosure Activities	
Notify NMED of the closure	-45 days
Conduct first soil sampling survey	-30 days
Analyze first soil samples	-20 days
Conduct second soil survey if needed	-10 days
Analyze second soil set of soil samples	
Closure Activities	
Begin Closure	Day 0
Analyze first soil samples	Day 30
Conduct second soil samples survey, if needed	Day 45
Treat or remove final wastes	Day 50
Analyze second soil samples, if needed	Day 65
Evaporate waste water from treatment tanks	Day 90
Soil decontamination, if necessary	Day 105
Remove soil	Day 130
Dispose of tanks and residue	Day 140
Weather delay contingency	Day 175
Conduct verification samples	Day 200
Analyze samples	Day 200
Submit final report to NMED	Day 210

NOTES: Many of the above steps may be taken concurrently, and the total closure period will not exceed 360 calendar days.

The calendar days given above are completion dates for each activity. In some cases more than one activity may occur simultaneously.

This schedule applies to both partial and final closure.

TABLE E.8.2.
ANALYTICAL PARAMETERS

Metals	Organics	Other
Arsenic	Halogenated volatile organics	Cyanides
Barium	Nonhalogenated volatile organics	pH
Cadmium	Acid-extractable semivolatile organics	
Chromium	Base-neutral extractable	
Lead	semivolatile organics	
Mercury		
Selenium		
Silver		
Nickel		
Beryllium		

NOTES: Analytical methods are taken from *Test Methods for Evaluating Solid Waste*, EPA SW-846, and may be superseded by more current methods from SW-846 or alternate EPA-approved methods.

Metals may be analyzed for total content. Any metal whose total concentration exceeds the standard for Toxic Characteristic Leaching Procedure (TCLP) shall be analyzed by using TCLP procedures. Both data shall be reported in the final report.

TABLE E.8.3
SAMPLING SUMMARY

Material Sampled	Metals	Organics	Other
Washdown solutions before use	X	X	X
Washdown solutions after use	X	X	X
Soils background	X	X	X
Soil samples	X	X	X
Final decontamination samples	X	X	X

NOTES: Analytical parameters are given in Table E.8.2.

FIGURE E.8.1
TA-54 AREA L WASTE MANAGEMENT UNITS

FIGURE E.8.2
TA-54 AREA L TREATMENT TANKS SAMPLE LOCATIONS

FIGURE E.8.3
COMPOSITE LIQUID WASTE SAMPLER (COLIWASA)

FIGURE E.8.4
EXAMPLE OF SAMPLE SEAL

OFFICIAL SAMPLE SEAL

Collected by _____ Collector's sample No._____
(Signature)

Date Collected_____ Time Collected_____

Place Collected_____

_____

_____

FIGURE E.8.5
EXAMPLE OF SAMPLE LABEL

OFFICIAL SAMPLE LABEL

Collector_____ Collector's Sample No._____

Place of Collection_____

_____

Date Sampled_____ Time Sampled _____

Field Information_____

_____

_____

FIGURE E.8.6
CHAIN OF CUSTODY RECORD
Hazardous Materials
Collector's Sample No.____

Location of Sampling: Producer Hauler
Disposal Site Other: _____

Company's Name_____ Telephone (___)_____

Address_____
Number Street City State Zip

Collector's Name_____ Telephone (___)_____

Date Sampled_____ Time Sampled_____ hours

Type of Process Producing Waste_____

Waste Type Code_____ Other_____

Field Information_____

_____

Sample Allocation:

1. _____
(Name of Organization)

2. _____
(Name of Organization)

3. _____
(Name of Organization)

Chain of Possession:

1. _____ _____ _____
Signature Title Inclusive Dates

2. _____ _____ _____
Signature Title Inclusive Dates

3. _____ _____ _____
Signature Title Inclusive Dates

CLOSURE PLAN
PERMIT ATTACHMENT E.9
NM 0890010515-1

CLOSURE PLAN
PERMIT ATTACHMENT E.9
NM 0890010515-1

E.9 CLOSURE FOR TA-54 AREA L SOLIDIFIED HAZARDOUS WASTE STORAGE UNIT

The storage unit is a specified area within the fenced portion of Technical Area 54, Area L, used for storage of solidified packaged waste. (Figure E.9.1.) Approximately 60 percent of the area within the perimeter fence is designated for solidified waste storage. Solid contained wastes are stored on pallets, or otherwise elevated four inches, in cleared areas within the fenced portions of Area L. This closure plan applies only to this area.

Other storage units at Area L consist of a single story metal building, a roofed concrete containment structure, two transportable storage units, and two treatment/storage tanks. These units are used for the accumulation, packaging, and storage of waste containers, which are generated throughout the Laboratory and delivered to Area L routinely. Liquid wastes are segregated into compatible types and placed inside the transportable storage units , the metal building or within one of the six storage cells of the concrete containment structure. Wastes suitable for recycling are consolidated into drums, and any damaged or leaking drums are repackaged into larger drums in this area. Four tanks are located at Area L. They are used to neutralize, oxidize, and evaporate waste. The tanks are located on a bermed concrete pad.

E.9.1 Estimate of Maximum Waste in Storage and Treatment

No more than 3,600 55-gallon containers of solidified wastes will be stored within the fenced area at Area L.

E.9.2 Description of Waste Handled

A wide variety of wastes generated throughout the Laboratory are brought to Area L, including wastes from basic and applied chemistry R & D programs (small quantities of different acids, bases, organics, inorganics and reactive metals), processing wastes (sludge resulting from treatment at Area L), and chemically contaminated equipment, to be stored, recycled, treated or packed for off site disposal at a permitted facility.

E.9.3 Closure Procedures

E.9.3.1 Partial Closure

Partial closure would be the change in use of a portion of the designated area from solidified storage to another use such as a new building. Should this occur, all portions of this plan shall apply to the closing area.

E.9.3.2 Closure Procedure

Cleanup and closure will be done in sequential order, culminating in the disposal of any residues or contaminated material by shipment off site to a permitted facility. Before decontamination, all wastes in storage will either be treated on site or disposed of off site. Given the diversity of wastes handled, it is not possible to estimate the exact wastes on hand at the initiation of closure and, therefore, the final disposition of the wastes. In general, recyclable wastes will be reused internally or recycled to users off site. Permitted wastes will be burned at the permitted incinerator at TA-50-37. Any wastes compatible with permitted treatment at the TA-54, Area L treatment tanks will be so treated. The remaining wastes will be transported off site to a permitted disposal facility. If on site treatment is not possible due to prior closure of the permitted units, off site disposal will occur.

E.9.3.3 Waste Removal

The waste on site at the start of closure will be only packaged solidified wastes. Contained wastes will be handled with hand trucks or forklifts. Trucks of adequate size will be used to move contained wastes to off site treatment or disposal facilities. All wastes shipped off site will be manifested in accordance with the facility permit. All waste transporters will have an EPA identification number in accordance with HWMR-5, amended 1989, Part IV, section 263.11.

E.9.4 Soil Decontamination

Soil sampling, as described in E.9.9, will be conducted to determine if hazardous wastes have been tracked outside of containment areas. A sampling survey of the entire contained solid waste storage area within the TA-54, Area L fence will be conducted using a grid with 10 foot centers to determine the area of possible contamination. The survey will be performed by collecting a sample from the surface to six inches below ground surface at each grid point. Additional samples will be collected from areas with visible contamination (i.e., soil discoloration). If the initial surface grid sample analysis indicates contamination, additional sampling at the same points at one foot depth will be performed to determine the depth of contamination. If contamination is determined on the surface, additional sampling will be conducted by reducing the grid distance by one-half and taking additional surface samples, dictated by terrain, until the contaminated area is defined. If contamination is found at the outside grid samples, the limits of the grid will be expanded to determine the outside perimeter of contamination, to include areas outside of the perimeter fence and at the discharge point of the run off ditch. The contaminated soil will then be removed and handled as a regulated waste. The adequacy of decontamination is determined by additional sampling. Sampling, analysis, and documentation procedures are detailed in section E.9.9.

Soil and sediment samples will be analyzed for all HWMR-5, amended 1989, Part V, Appendix IX constituents. Analysis and quality assurance/quality control will follow methods defined in SW-846. The approach to soil decontamination depends on the extent of contamination determined by the sampling. If the sample survey indicates that there are no contaminated soil areas, no further soil decontamination action will be taken at the site. If the soil is contaminated, it will be placed in drums or sealed in dump trucks for off site disposal at a permitted facility.

E.9.5 Personnel Protection

Personnel who are washing equipment will wear rubber gloves, neoprene acid/solvent resistant coveralls, rubber boots, and a face shield. The Laboratory's Industrial Hygiene and Safety Group (ESH-5) will review the site survey analytical data and recommend additional protective clothing if necessary.

E.9.6 Equipment Decontamination

Shovels, drum trucks and other equipment used for decontamination will be scraped and brushed to remove residue, and the residue collected will be placed in drums for disposal off site at a permitted facility. The equipment will be placed on a plastic sheet that is bermed to contain liquids and washed with water and detergent. Large equipment such as backhoes and forklifts will also be washed. Testing will be performed on this water to determine if decontamination is adequate. Washing is considered adequate to decontaminate the equipment. The wash water will be allowed to evaporate in the permitted evaporation tanks and the plastic and residue will be packed in drums for off site disposal at a permitted facility.

E.9.6.1 Decontamination Verification

Samples of soil and decontamination wash water will be analyzed for the constituents in HWMR-5, amended 1989,~~,~~ Part V, Section 264, Appendix IX. Soils containing levels of contamination above the background will be considered contaminated and removed as hazardous waste.

Decontamination of the site soil will be demonstrated by additional sampling. Because removal of contaminated soil will leave an exposed surface, the disturbed surface will be resampled in the same places used to define the contaminated area. Analysis and the determination of contamination is as previously discussed, and reanalysis will be conducted only for those constituents that caused the area to be determined contaminated.

A minimum of two samples of the clean Liquinox(@) or Alconox(@) solution will be sampled as background for wash water and, along with the wash water samples, analyzed for the constituents listed in HWMR-5, amended 1989, Part V, Section 264, Appendix IX.

Successful decontamination is defined as:

1. No detectable hazardous constituents in the final sample, or

2. Detectable hazardous constituents in the final sample are equal to or less than, at the 0.01 confidence level, their concentration in the unused wash water or background sample.

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

E.9.7 Closure Schedule

The year of closure is 2100. Soil survey, contracting and closure activities will observe the schedule given in Table E.9.1.

Soil sampling and the decontamination contractor selection may be completed before closure begins. Closure is estimated to take 340 days.

Contracts for analytical work and, if necessary, soil removal are expected to exceed $100,000. The Laboratory is required by policy to put the work out for bid, and ninety days are required to solicit and process the bids. The location of the site is prone to snow cover in the winter months. The closure may be delayed until the site is free of snow and the ground is thawed adequately to allow the soil sampling and other closure operations. The schedule includes a weather factor to allow for this delay.

E.9.8 Closure Certification

An independent registered professional engineer and the owner/operator of the facility shall witness the closure and ensure that the closure follows this plan. Upon completion of closure, the engineer and the DOE shall prepare a letter certifying that the facility has been closed accordingly. The letter shall be dated and signed by each party and stamped by the registered engineer, and the original copy shall be submitted by the DOE to the Secretary of NMED. One copy shall be maintained at the DOE offices and one copy maintained by the ESH-19 Hazardous and Solid Waste Group.

E.9.9 Sampling and Analytical Procedure

The following section defines procedures and methods for sampling, analysis and documentation applicable to closure plans. While the procedures and method are specific, any applicable procedure or method given in SW-846 or other EPA approved procedure may be used if conditions or experience shows the alternate method to be more appropriate. Disposable samplers may be used.

Containers appropriate for the analyses requested will be used. Sampling will be conducted in accordance with procedures given in *Samplers and Sampling Procedures for Hazardous Waste Streams*, EPA 600/2-80-018 and/or SW-846.

Samples will be taken, placed in bottles, sealed, tagged, and immediately packed in vermiculite, sawdust, or, if refrigeration is required, an insulated container with ice. One sample for every ten samples will be either duplicated or split. The duplicated or split sample will be identified by a code so that its source is not available to the analytical laboratory, but analytical results can be compared to its twin.

E.9.9.1 Soil Sampling

The sampling procedures outlined below are used to determine the amount of hazardous material deposited on a particular area of land, or to determine the leaching rate of the material, or determine the residue level on the soil. Adequate preparation ensures that proper sampling is accomplished.

Surface soil samples will be collected with a trowel or scoop. To sample below 3 in. (8 cm), samples will be collected with a Veihmeyer soil sampler.

E.9.9.1.1 Cleaning of sampler

It is important to clean the samplers after each site is sampled. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a warm Liquinox(@) or Alconox(@) solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. Prevention of cross contamination is of particular importance in these samples.

E.9.9.1.2 Sampling procedures

Trowel or Scoop

- Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
- Combine the samples in a glass container.
- Cap the container, attach a label and seal, record in field log book, and complete the sample analysis request sheet and chain-of-custody record.

Veihmeyer Sampler

- Assemble the sampler by screwing in the tip and drive head on the sampling tube.
- Insert the tapered handle (drive guide) of the drive hammer through the drive head.
- Place the sampler in a perpendicular position on the material to be sampled.
- With the left hand holding the tube, drive the sampler into the material to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube farther than the tip of the hammer's drive guide.
- Record the length of the tube that penetrated the material.
- Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.
- Rotate the sampler at least two revolutions to shear off the sample at the bottom.
- Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.
- Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a pullerjack and grip.
- Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.

- Store the core sample in a 1,000 or 2,000 ml (1 qt or 1/2 gal) sample container.

- Label the sample, affix the seals, record in the field log book, complete the sample analysis request sheet and chain-of-custody record, and deliver the samples to the laboratory for analysis.

E.9.9.2 Liquid Sampling

A COLIWASA sampler or similar device will be used to sample water solutions in order to determine background parameters before washing the area; it will also be used to sample the dirty wash water used in cleaning equipment. The recommended model of the COLIWASA is shown in Figure E.9.2., the main parts consisting of the sampling tube, the closure-locking mechanism, and the closure system. As an alternative to the COLIWASA, glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of as hazardous waste after each sample is collected, thus eliminating the potential for cross contamination.

E.9.9.2.1 Cleaning of sampler

The sampler must be clean before use. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The used sampler must be washed with a warm detergent solution (Liquinox(@) or Alconox(@)), rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the COLIWASA is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Using this ramrod and fiber reinforced paper towels, the COLIWASA tube may be quickly cleaned. Improper cleaning of sample equipment will cause cross contamination of samples. Prevention of contamination is of particular importance in these samples. Clean samplers should be stored in polyethylene plastic tubes or bags in a clean and protected area.

E.9.9.2.2 Sampling procedures

- Assemble the COLIWASA sampler.

- Make sure that the COLIWASA sampler is clean.

- Check to make sure the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.

- Wear necessary protective clothing and gear and observe required sampling precautions.

- Put the sampler in the open position by placing the stopper rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.

- Slowly lower the COLIWASA sampler into the liquid at a rate that permits the levels of the liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a nonrepresentative sample.

- When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.

- Slowly withdraw the sampler from the container with one hand while wiping the sampler tube with a disposable cloth with the other hand.

- Carefully discharge the sample into a glass container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block while the lower end of the sampler is positioned in the glass container.

- Cap the glass container, attach a label and seal, record in the field log book, and complete the sample analysis request sheet and chain-of-custody record.

- Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.

E.9.9.3 Sample Handling and Documentation

Soil and liquid samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and a sample analysis request form.

The sample container must be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. An example of a sample seal is shown in Figure E.9.3.

The sample label is necessary to prevent misidentification of samples and shall include, if applicable, the grid number referenced to positions staked on the site perimeter. The "field information" in the case of soil sampling, shall include observations such as the soil texture and surface appearance, ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling. An example of a sample label is shown in Figure E.9.4.

The chain-of-custody form is necessary to trace sample possession from the time of collection and must accompany every sample. This record becomes especially important when the sample is to be introduced as evidence in litigation. This is a two page record with the original accompanying shipment and the "copy" retained by the Laboratory. An example of this form is shown in Figure E.9.5.

A separate closure sampling field log book will be kept and will contain all information pertinent to field surveys and sampling. The log book shall have bound and consecutively numbered pages in 8-1/2 by 11-inch format. Minimum entries include:

a. Purpose of sample (routine sampling, special sampling);

b. Location of sampling (coordinates referenced to staked field points, if soil sample);

c. Name and business address of person making log entry;

d. Type of process producing waste;

e. Number and volume of sample;

f. Description of each sampling location, sampling methodology, equipment used, etc.;

g. Date and time of sample collection;

h. Sample destination and transporter's name (name of laboratory, UPS, etc.);

i. Map or photograph of the sampling site, if any;

j. Field observations (ambient temperature, sky conditions, past 24-hour precipitation, etc.);

k. Field measurements, if any (pH, flammability, conductivity, explosivity, etc.);

l. Collector's sample identification number(s);

m. Signature of person responsible for the log entry.

Sampling situations vary widely. No general rule can be given as to the extent of information that must be entered in the log book. A good rule, however, is to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

The sample shipment and chain-of-custody record is accompanied by a sample analysis request sheet. The request sheet has two parts: field and laboratory. The field portion of this form must be completed by the person collecting the sample and include most of the pertinent information noted in the log book. The laboratory portion is intended to be completed by the laboratory personnel when the sample is received.

E.9.10 Quality Assurance/Quality Control

The Permittee shall designate a qualified individual or individuals to independently oversee the closure activities and report directly to senior management on the quality of the performance of this closure. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed and review the analysis reports for accuracy and adequacy. A written QA/QC plan prepared in accordance with SW-846 guidance shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the adequacy of the analysis showing decontamination.

E.9.11 Final Closure Report

Upon completion of the closure activities, the Permittee shall submit a Final Closure Report to the Secretary. The report shall document the final closure and contain, at a minimum, the following:

A. The certification described in paragraph E.9.8.

B. Any variance from the approved activities and the reason for the variance.

C. A tabular summary of all sampling results, showing:

1. Sample identification,
2. Sampling location,
3. The datum reported,
4. Detection limit for each datum,
5. A measure of analytical precision (e.g. uncertainty, range, variance),
6. Identification of analytical procedure, and
7. Identification of analytical laboratory.

D. A QA/QC statement on the adequacy of the analyses and the decontamination demonstration.

E. The location of the file of supporting documentation:

1. Field log books,
2. Laboratory sample analysis reports,
3. The QA/QC documentation, and
4. Chain of custody records.

F. Disposal location of all regulated and non-regulated residues.

G. A certification of accuracy of the report.

TABLE E.9.1
CLOSURE SCHEDULE

Activity	Maximum Time Required
Preclosure Activities	
Notify the NMED of closure	-90 days
Advertise contract request for proposals	-90 days
Receive proposals sampling survey	-20 days
Award contract	-10 days
Closure Activities	
Begin Closure	Day 0
Analyze first soil samples	Day 60
Conduct second soil samples survey, if needed	Day 90
Treat or remove final wastes	Day 90
Analyze second soil samples, if needed	Day 120
Contract for soil decontamination	Day 210
Remove soil	Day 240
Conduct verification samples	Day 270
Analyze samples	Day 310
Submit final report to NMED	Day 340

NOTES: The calendar days above are completion dates for each activity. In some cases more than one activity may be taken concurrently.

This schedule applies to both partial and final closure.

TABLE E.9.2.
ANALYTICAL PARAMETERS

Metals	Organics	Other
Arsenic	Halogenated volatile organics	Cyanides
Barium	Nonhalogenated volatile organics	pH
Cadmium	Acid-extractable semivolatile organics	
Chromium	Base-neutral extractable semivolatile organics	
Lead	Organochlorine pesticides	
Mercury	Chlorinated herbicides	
Selenium	Phenols	
Silver		
Nickel		
Beryllium		

NOTES: Analytical methods are taken from *Test Methods for Evaluating Solid Waste*, EPA SW-846, and may be superseded by more current methods from SW-846 or alternate EPA-approved methods.

Metals may be analyzed for total content. Any metal whose total concentration exceeds the standard for the toxicity characteristic shall be analyzed by the Toxicity Characteristic Leaching Procedure. Both data shall be reported in the final report.

TABLE E.9.3
SAMPLING SUMMARY

Material Sampled	Metals	Organics	Other
Washdown solutions before use	X	X	X
Washdown solutions after use	X	X	X
Soils background	X	X	X
Soil samples	X	X	X
Final decontamination samples	a	a	a

NOTES: Analytical parameters are given in Table E.9.2.

[a]Parameters given in HWMR-5, Part V, Section 264, Appendix IX

FIGURE E.9.2
COMPOSITE LIQUID WASTE SAMPLER (COLIWASA)

FIGURE E.9.3
EXAMPLE OF SAMPLE SEAL

OFFICIAL SAMPLE SEAL

Collected by _____ Collector's sample No._____
(Signature)

Date Collected_____ Time Collected_____

Place Collected_____

_____

_____

FIGURE E.9.4
EXAMPLE OF SAMPLE LABEL

OFFICIAL SAMPLE LABEL

Collector_____ Collector's Sample No._____

Place of Collection_____

_____

Date Sampled_____ Time Sampled _____

Field Information_____

_____

_____

FIGURE E.9.5
CHAIN OF CUSTODY RECORD
Hazardous Materials
Collector's Sample No.____

Location of Sampling: Producer Hauler
Disposal Site Other: _____

Company's Name_____ Telephone (___)_____

Address_____
Number Street City State Zip

Collector's Name_____ Telephone (___)_____

Date Sampled_____ Time Sampled_____ hours

Type of Process Producing Waste_____

Waste Type Code_____ Other_____

Field Information_____

_____

Sample Allocation:

1. _____
(Name of Organization)

2. _____
(Name of Organization)

3. _____
(Name of Organization)

Chain of Possession:

1. _____ _____ _____
Signature Title Inclusive Dates

2. _____ _____ _____
Signature Title Inclusive Dates

3. _____ _____ _____
Signature Title Inclusive Dates

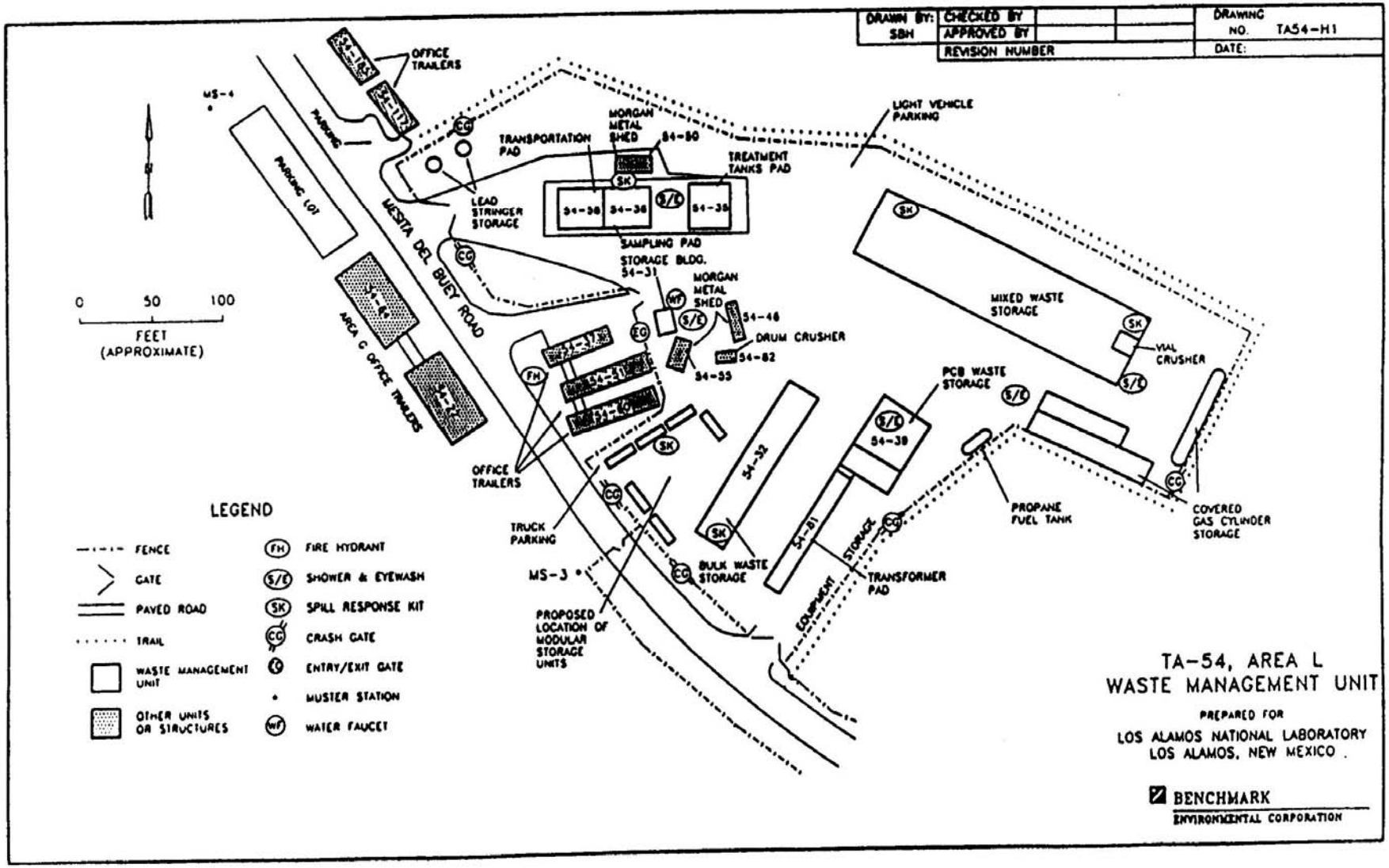


FIGURE E.9.1
TA-54 AREA L WASTE MANAGEMENT UNITS

CLOSURE PLAN
PERMIT ATTACHMENT E.10
NM 0890010515-1

CLOSURE PLAN
PERMIT ATTACHMENT E.10
NM0890010515-1

E.10 TECHNICAL AREA 54, AREA G, CONTAINER STORAGE AREAS TA-54-226, -229, -230, -231, -232, AND PAD 10

The container storage areas (CSA) addressed in this closure plan include TA-54-226, -229, -230, -231, -232, and Pad 10 at Technical Area (TA) 54, Area G. These CSAs are located at the east end of Area G and will be used to store containerized transuranic (TRU) mixed waste retrieved from under earthen cover. The existing asphalt pad at TA-54-226 is approximately 43 feet wide and 300 feet long. A 6- to 8-inch-high asphalt berm surrounds the perimeter of the pad. Once all of the drums are retrieved for characterization and subsequent drum venting operations, the existing pad will either be retrofitted or replaced to fit the dome currently covering the pad. The dome is 88 feet, 7 inches wide and 286 feet long, with a maximum design capacity of 970,000 gallons. Pad 10 is also constructed of asphalt. TA-54-229, -230, -231, and -232 are being constructed on an approximately 275 feet wide by 570 feet long asphalt pad, which is gently sloped (from 1 to 1.5 percent). TA-54-230 will store containers of potential liquid-bearing TRU mixed waste whereas TA-54-229, -231, and -232 will be used solely to store solid TRU mixed waste. TA-54-229, -230, -231, and -232, are 88 feet, 7 inches wide and 246 feet long, with a maximum design storage capacity of 790,000 gallons each.

E.10.1 Estimate of Maximum Waste in Storage

The maximum total inventory of waste in storage at any time at the CSAs mentioned above is estimated at 5,530,045 gallons. A breakdown of the maximum inventories for each of these areas is as follows:

- TA-54-226 - 970,000 gallons
- TA-54-229 - 790,000 gallons
- TA-54-230 - 790,000 gallons
- TA-54-231 - 790,000 gallons
- TA-54-232 - 790,000 gallons
- Pad 10 - 970,000 gallons

E.10.2 Description of Waste

TRU mixed waste stored in the TA-54, Area G, CSAs mentioned above was generated during research activities, processing and recovery operations, and decontamination and decommissioning operations primarily at TA-3, TA-21, TA-50, and TA-55. These wastes are classified as mixed wastes because Resource Conservation and Recovery Act (RCRA) characteristic and/or listed wastes[1] are or may be present in the waste, along with a radioactive component.

[1]Use of the terms, "RCRA characteristic and/or listed waste" or "RCRA constituents" refers to hazardous wastes or hazardous constituents as defined in 20 NMAC 4.1, Subpart II, Part 261, revised November 1, 1995.

E.10.3 Closure Procedure and Decontamination

E.10.3.1 Partial Closure

Partial closure would consist of closing one or more of the regulated hazardous/mixed waste management units or subunits at the LANL facility, while leaving the other regulated hazardous/mixed waste management units at LANL in service. In the event of a partial closure, the following procedures would apply to the unit(s) being closed.

E.10.3.2 Unit Closure

To the extent possible, all contaminated structures and equipment at the CSAs addressed in this closure plan will be decontaminated. Structures, equipment, and media that cannot be decontaminated will be containerized and managed in compliance with appropriate regulations. All sampling conducted during closure and decontamination will be done in accordance with quality assurance/quality control (QA/QC) procedures (see Section E.10.7).

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

Personnel involved in closure activities will wear appropriate PPE, specified by ESH-1 and ESH-5, and will follow good hygiene practices to protect employees from exposure to hazardous and/or mixed waste. The level of PPE that will be required will depend upon the levels of radiological and/or chemical contamination that are detected, if any. If ESH-1 and ESH-5 surveys do not indicate detectable contamination levels, minimum PPE requirements will consist of coveralls, steel-toed boots, and safety glasses or face shields. If an overhead danger is present, a hard hat will be worn. All workers involved in closure activities will be required to have training and medical monitoring. Contaminated PPE will either be decontaminated or managed in compliance with appropriate regulations.

All wastes will be removed from the CSA scheduled to be closed prior to the initiation of closure activities. Containers will be removed from each storage area primarily with forklifts. Small containers may be handled manually or with dollies. All containers will be placed onto flatbed trucks or trailers for transport. All appropriate shipping papers will accompany the wastes during transport. Containers holding regulated hazardous/mixed wastes will be moved to an approved on-site facility or permitted off-site disposal facility.

Before decontamination activities begin, samples of the clean water and detergent (wash water) solution squeezed from mops and/or sponges prior to use will be collected for analysis of the parameters listed in Table E.10-1. The analytical results from these samples will be used to provide a baseline for decontamination verification.

Prior to decontamination of a dome, any portable equipment to be removed from the area will be wiped down with wash water solution. This may include items such as wooden pallets and miscellaneous equipment. The dome walls will be wiped down with mops and sponges to minimize the amount of liquid waste generated as a result of decontamination activities. A portable berm will be used to collect used wash water from the dome walls. The berm will be placed along the exterior perimeter of the dome so that wash water collects between the portable berm and the curb surrounding the dome's interior perimeter. After the washdown process, the used wash water will be collected, transferred to containers, sampled, and analyzed for the parameters in Table E.10-1. If the used wash water is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise the used wash water will be managed at an appropriate on-site facility. Used wash water samples may exhibit anomalously high levels of organic compounds due to leaching of the dome walls during washdown. If this is the case, record reviews (e.g., manufacturer's specifications, material safety data sheets [MSDS]) and additional analyses may be performed to determine if leaching of organics from dome walls contributed to the organic compound concentration in used wash water. If this additional evaluation confirms the dome walls as the source of contamination, baseline concentrations of clean washwater will be adjusted accordingly. If sampling and analysis indicate that radioactive and/or hazardous constituents are present, which are not attributed to leaching of organics from dome walls, the wash cycles and analyses will continue until the structure or equipment has been decontaminated or the decision is made to manage it appropriately as contaminated waste. This material may be transported to and stored at other waste management facilities to facilitate the closure process.

The same procedure will be used to decontaminate asphalt pads/floors. Before the first washdown, two samples of the clean washdown solution will be collected and analyzed for the parameters listed in Table E.10.1 to provide a baseline for decontamination verification. Portable berms will be used to collect and provide containment for the used wash water. After the washdown process, the used wash water will be collected, stored in containers at the site, sampled, and analyzed for the parameters in Table E.10-1. If the used wash water is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise, the used wash water will be managed at an appropriate on-site facility, depending on the regulated constituents present. Each asphalt pad may undergo up to two wash cycles. If decontamination verification cannot be demonstrated after two wash cycles, the asphalt pads will be removed from the site and managed as appropriate for the waste type. Used wash water samples may exhibit anomalously high levels of organic compounds due to leaching of the asphalt pads during washdown. If this is the case, record reviews (e.g. manufacturer's specifications, MSDS) and additional analyses may be performed to determine if leaching of organics from asphalt pads contributed to the organic compound concentration in used wash water. If this additional evaluation confirms the asphalt pad as the source of contamination, baseline concentrations for clean washwater will be adjusted accordingly. Decontamination verification is discussed further in Section E.10.3.3.

Soil sampling will also be conducted to determine if contaminants have migrated from the container storage areas. Prior to the initiation of closure activities, a background soil sample will be collected near each storage dome or pad and analyzed for the parameters listed in E.10-1. After dome and asphalt pad washdown activities are completed, discrete soil samples will be collected from the soil surrounding the asphalt pads. Samples will be collected 6 inches off the asphalt edge to a depth of 6 inches and equally spaced to cover the edge. Samples will be analyzed for the parameters in Table E.10-1. Due to the presence of disposal pits beneath the storage areas, there is a potential for subsurface contamination from these underlying units. If contamination is found in any of the soil samples as a result of the container storage

subunits, the contaminated soil will be removed to levels equal to or less than concentrations in background soil samples from the site or below levels agreed upon with the New Mexico Environment Department (NMED). If the contamination cannot be attributed to the storage activities, it will be addressed when the site undergoes corrective activities pursuant to conditions in Module VIII of this permit.

Prior to use, all decontamination equipment will be rinsed with distilled water. Decontamination equipment rinsate blanks will be collected and analyzed in accordance with QA/QC procedures (see Section E.10.7). Reusable protective clothing, tools, and equipment used during closure activities will be cleaned with a wash water solution and scraped as necessary to remove any residue. Residue, disposable equipment, and reusable equipment that cannot be decontaminated will be containerized and managed appropriately at an approved on-site facility, depending on the regulated constituents present. Used wash water will be collected and analyzed for the parameters listed in Table E.10-1. If the used wash water is nonhazardous and nonradioactive, the water will be managed appropriately in accordance with LANL policy. Otherwise, it will be managed at an appropriate on-site facility, depending on the regulated constituents present.

E.10.3.3 Decontamination Verification

Sufficient sampling and analysis will be required to demonstrate that hazardous or mixed waste residue is not present at the site after closure. Two samples of clean wash water solution squeezed from mops and/or sponges prior to use will be collected before initial washdown of the CSAs. The samples will be analyzed for parameters listed in Table E.10-1 to provide baseline data for decontamination verification. Analytical procedures will conform to methods found in the most current version of "Test Methods for Evaluating Solid Waste," Physical/Chemical Methods (SW-846). Used washdown solutions will also be analyzed for the parameters listed in Table E.10-1. Washdown solutions will be considered contaminated if the used wash water solution shows a significant increase (i.e., determined using statistical methods defined in SW-846) in the analytical parameters over the clean wash water solution. If subsequent washdowns are deemed necessary, an additional sample of clean wash water solution squeezed from mops and/or sponges prior to use will be taken for each additional washdown event.

Successful decontamination meets one of the following criteria:

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

- Detectable hazardous waste or constituents from container storage activities in the final sample are removed to statistically significant levels based on baseline concentrations in the clean wash water or established background soil data.

- Detectable hazardous waste or constituents from container storage activities in the final sample are at or below levels agreed upon with the New Mexico Environment Department (NMED).

- Detectable hazardous waste or constituent concentrations from container storage activities do not significantly decrease after several washdowns.

E.10.4 Closure Schedule

Closure will not commence until all of the wastes have been removed from the CSA scheduled to be closed. Closure activities will begin in accordance with the approved closure plan, as required by the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.113(a), revised November 1, 1995, within 90 days after final receipt of waste at the CSA. This timeframe will be met as long as facilities are available for disposal of these wastes. In the event that waste removal activities cannot be completed at the CSA within 90 days, LANL will notify the Secretary of the NMED in accordance with the extension requirements cited in 20 NMAC 4.1, Subpart V, 264.113(a), revised November 1, 1995. Closure activities and reporting requirements will be completed within 180 days of the receipt of the final volume of waste at the waste management area to be closed. Closure will be conducted in accordance with the schedule presented in Table E.10-2. In the event that closure of a CSA is prevented from proceeding according to schedule, LANL will notify the Secretary of the NMED in accordance with extension request requirements in 20 NMAC 4.1, Subpart V, 264.113(b), revised November 1, 1995. In addition, the demonstrations in 20 NMAC 4.1, Subpart V, 264.113(a)(1) and (b)(1), revised November 1, 1995, will be made in accordance with 20 NMAC 4.1, Subpart V, 264.113(c), revised November 1, 1995.

E.10.5 Closure Certification

Within 60 days after completion of closure activities for each of the CSAs, the U.S. Department of Energy (DOE) will submit to the Secretary of the NMED, via certified mail, a certification that the area has been closed in accordance with the specifications of the closure plan. The certification will be attested to by an independent, registered professional engineer and will be signed by the appropriate DOE and LANL officials, in accordance with 20 NMAC 4.1, Subpart V, 264.115, revised November 1, 1995. Documentation supporting the independent registered engineer's certification will be furnished to the Secretary of the NMED with the original certification. A copy of the certification and supporting documentation shall be maintained by both the DOE/Los Alamos Area Office and LANL's Hazardous and Solid Waste Group.

E.10.6 Sampling and Analytical Procedures

The following sections describe procedures and methods for sampling, analysis, and documentation applicable to closure activities. While the procedures and methods are specific, other applicable procedures or methods given in SW-846 may be used if conditions or experience show the alternate method to be more appropriate. All sampling and analytical procedures actually used will be annotated in the final closure report. Sampling will be conducted in accordance with procedures given in SW-846 (for hazardous components) and LANL's Inorganic Trace Analysis Group (CST-9) procedures (for radiological analysis).

E.10.6.1 Soil Sampling

Soil samples will be collected at the CSAs at TA-54, Area G, to determine if contaminants have migrated from the CSAs and, if so, to determine the horizontal and vertical extent of such migration.

E.10.6.1.1 Cleaning of Samplers

To prevent cross contamination, it is important to clean the samplers after each sample is collected. An unused, disposable sampler may be presumed clean if still in a factory-sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a detergent and water solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry.

E.10.6.1.2 Sampling Procedures

The sampling procedures outlined below will be used to obtain samples to determine the amount of RCRA constituents,[2] if any, in soil associated with the units undergoing closure. Soil samples will be collected from the 6-inch depth with a trowel or scoop or with a Veihmeyer soil sampler. Sampling procedures will be performed as follows:

- Trowel or Scoop
  - Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
  - Combine the samples in a container appropriate for the required analysis.
  - Cap the container, attach a label and seal, and preserve as required (see Table E.10-3). Record in the field logbook, and complete the sample analysis request sheet and chain-of-custody form. Deliver the samples to CST-9 for radiological screening and to the laboratory for analysis.
- Veihmeyer Sampler
  - Assemble the sampler by screwing in the tip and drive head on the sampling tube.
  - Insert the tapered handle (drive guide) of the drive hammer through the drive head.
  - Place the sampler in a perpendicular position on the soil to be sampled.
  - With the left hand holding the tube, drive the sampler into the soil to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube further than the tip of the hammer's drive guide.
  - Record the length of the tube that penetrated the material.

[2]Refer to Footnote 1.

- Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.

- Rotate the sampler at least two revolutions to shear off the sample at the bottom.

- Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.

- Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a puller jack and grip.

- Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.

- Store the sample in an appropriate sample container.

- Label the sample, affix the seals, preserve as required (see Table E.10-3), record in the field logbook, complete the sample analysis request sheet and chain-of-custody form, and deliver the samples to CST-9 for radiological screening and to the laboratory for analysis.

E.10.6.2 Liquid Sampling

A coliwasa or similar device will be used to sample unused wash water solutions before decontamination begins in order to determine baseline parameters. It will also be used to sample the wash water used in cleaning structures and equipment. As an alternative to the coliwasa, glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of appropriately after each sample is collected, thus eliminating the potential for cross contamination.

E.10.6.2.1 Cleaning of Samplers

The sampler must be clean before use. An unused, disposable sampler may be presumed clean if still in a factory-sealed wrapper. Unsealed samplers will be cleaned prior to use. Samplers will be washed with a detergent and water solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the coliwasa is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Improper cleaning of sampling equipment will cause cross contamination of samples. Clean samplers should be stored in clean polyethylene plastic tubes or bags in a clean and protected area.

E.10.6.2.2 Sampling Procedure

Liquid sampling with a coliwasa will be performed as follows:

- Ensure that the coliwasa is clean.

- Assemble the coliwasa.
- Check that the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.
- Wear necessary protective clothing and gear, and observe required sampling precautions.
- Put the sampler in the open position by placing the stopper-rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.
- Slowly lower the coliwasa into the liquid at a rate that permits the level of the liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a nonrepresentative sample.
- When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.
- Slowly withdraw the sampler from the container with one hand, while wiping the sampler tube with a disposable cloth with the other hand.
- Carefully discharge the sample into a sample container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block, while the lower end of the sampler is positioned in the sample container.
- Preserve as required (see Table E.10-4), cap the container, attach a label and seal, place immediately in an insulated container with ice (if required), record in the field logbook, and complete the sample analysis request sheet and chain-of-custody form.
- Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site, or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.

E.10.6.3 Sample Handling and Documentation

Samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and sample analysis request form. The chain-of-custody form is necessary to trace sample possession from the time of collection to the time of analysis and must accompany every sample. The original record accompanies shipment. The copy is retained by LANL. If samples are analyzed at LANL, the original will be maintained by LANL. The request for analysis form has two parts: field and laboratory. The field portion of this form must be completed by the person collecting the sample and must include most of the pertinent information noted in the logbook. The laboratory portion is intended to be completed by the analytical laboratory personnel when the sample is received. The analytical laboratory retains the original record and sends a copy to

LANL.

Sample containers appropriate for the requested analyses will be used for all samples. Sample containers, preservation, and holding times will conform to those specified in SW-846 for the corresponding analyses. Samples will be collected, placed in bottles, sealed, and tagged. Sample container surfaces will be screened for radiological contamination and decontaminated, if necessary. Sample containers will then be immediately packed in vermiculite, sawdust, or if refrigeration is required, an insulated container with ice. Recommended sample containers, preservation, and holding times are presented in Tables E.10-3 and E.10-4.

The sample container must be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. A sample label is necessary to prevent misidentification of samples and should include, if applicable, the grid number referenced to positions staked on the site perimeter. The sample label must be completed to include the project name, sample number, collection date/time, collector's name, sample location, sample media description, preservative, and analysis requested. In the case of soil sampling, field information shall include observations such as the soil texture and surface appearance, ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling.

A field logbook will be kept and will contain all information pertinent to field surveys and sampling. The logbook shall have bound and consecutively numbered pages in 8 1/2 - by 11 inch format. Minimum entries should include:

- Purpose of sample (routine sampling, special sampling)
- Location of sampling (coordinates referenced to staked field points, if soil sample)
- Name and business address of person making log entry
- Type of process producing waste
- Number and volume of sample
- Description of each sampling location, sampling methodology, equipment used, etc.
- Date and time of sample collection
- Sample destination and transporter's name (e.g., name of laboratory, United Parcel Service, etc.)
- Map or photograph of the sampling site, if any
- Field observations, if applicable (e.g., ambient temperature, sky conditions, past 24-hour precipitation)
- Field measurements, if applicable (e.g., pH, conductivity)

- Collector's sample identification number(s)

- Signature of person responsible for the log entry.

Because sampling situations vary widely, no specific rule can be given as to the extent of information that must be entered in the logbook. It is recommended, however, to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

E.10.7 Quality Assurance/Quality Control

A qualified individual or individuals shall be designated to independently oversee the closure activities and to report directly to senior management on the quality of the closure performance. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed, and review the analysis reports for accuracy and adequacy. A written QA/QC plan prepared in accordance with SW-846 guidance shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the level of decontamination verification achieved.

E.10.8 Closure Report

Upon completion of the closure activities for each CSA addressed in this closure plan, a closure report shall be submitted to the Secretary of the NMED. The report shall document the closure and contain, at a minimum, the following:

- The certification described in Section E.10.5

- Any variance from the approved activities and the reason for the variance

- A tabular summary of all sampling results, showing:
  - Sample identification
  - Sampling location
  - The datum reported
  - Detection limit for each datum
  - A measure of analytical precision (e.g., uncertainty, range, variance)
  - Identification of analytical procedure
  - Identification of analytical laboratory.

- A QA/QC statement on analytical data validation and decontamination verification

- The location of the file of supporting documentation, including:
  - Field logbooks
  - Laboratory sample analysis reports
  - QA/QC documentation
  - Chain-of-custody forms.

- Disposition location of regulated closure materials

- A certification of accuracy of the report.

TABLE E.10-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 54, AREA G, CONTAINER STORAGE AREAS

Parameter	Test Method	Reference[b]
Ignitability	Pensky-Martens closed-cup method	(L) SW1010 (L) ASTM D93-80
Corrosivity	Electrometric (pH of aqueous solution)	(L) SW9040B
Toxicity characteristic	Toxicity characteristic leaching procedure (TCLP) extraction	(L, S) SW1311
Metals:	Graphite furnace atomic absorption (AA) spectroscopy, gaseous hydride AA, or direct aspiration AA	
Arsenic		(L, S) SW7060A, SW7061A
Barium		(L, S) SW7080A, SW7081
Cadmium		(L, S) SW7130, SW7131A
Chromium		(L, S) SW7190, SW7191
Lead		(L, S) SW7420, SW7421
Selenium		(L, S) SW7740, SW7741A
Silver		(L, S) SW7760A, SW7761
Mercury	Manual cold-vapor technique	(L)SW7470A, (S) SW7471A
Volatile organics	Gas chromatography (GC)/mass spectrometry (MS)	(L, S) SW8240B
	GC/MS capillary column technique	(L, S) SW8260A

Refer to footnotes at end of table.

Refer to footnotes at end of table.

TABLE E.10-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 54, AREA G, CONTAINER STORAGE AREAS
(continued)

Parameter	Test Method	Reference[b]
Semivolatile organics	GC/MS	(L, S) SW8250A
	GC/MS capillary column technique	(L, S) SW8270B
Total metals[c]	Acid digestion	(L) SW3010A, (S) SW3050A
	Inductively coupled plasma atomic emission spectroscopy	(L, S) SW6010A
Arsenic		(L, S) SW6010A
Barium		(L, S) SW6010A
Beryllium		(L, S) SW6010A
Cadmium		(L, S) SW6010A
Chromium		(L, S) SW6010A
Lead		(L, S) SW6010A
Nickel		(L, S) SW6010A
Selenium		(L, S) SW6010A
Silver		(L, S) SW6010A
Thallium		(L, S) SW6010A
Zinc		(L, S) SW6010A
Mercury	Manual cold-vapor technique	(L) SW7470A (S) SW7471A

Refer to footnotes at end of table.

TABLE E.10-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 54, AREA G, CONTAINER STORAGE AREAS
(continued)

Parameter	Test Method	Reference[b]
Free liquids	Paint Filter Liquids Test	(L, S) SW9095

[a] At Los Alamos National Laboratory, current analytical capabilities include limited analyses of mixed waste samples. These analyses include, but are not limited to, gross alpha, beta, and gamma screening.
[b] "ASTM" refers to American Society for Testing and Materials standards.
"SW" refers to U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
(L) refers to liquid waste.
(S) refers to solid waste.
[c] See also atomic absorption methods.

TABLE E.10-2
SCHEDULE FOR CLOSURE ACTIVITIES AT TECHNICAL AREA 54, AREA G, CONTAINER STORAGE AREAS TA-54-226, -229, -230, -231, -232, AND PAD 10

Activity	Maximum Time Required[a]
Let contract request for proposals-90 Days	
Notify the New Mexico Environment Department (NMED)	-45 Days
Receive proposals	-30 Days
Select contractor and award contract	-10 Days
Collect background samples	-5 Days
Final receipt of waste	Day 0
Begin closure activities - removal of wastes	Day 10
Washdown of structures	Day 20
Perform initial sampling of the waste management area	Day 25
Analyze samples	Day 55
Perform additional washdown (if necessary)	Day 60
Perform additional sampling (if necessary)	Day 70
Analyze samples (if necessary)	Day 100
Perform pad washdown and sampling	Day 110
Analyze samples	Day 140
Perform final cleanup (e.g., removal of decontaminated equipment and decontamination wastes)	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.

TABLE E.10-3
SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES
FOR SEDIMENT/SOIL/SLUDGE SAMPLES

Analyte Group	Container	Preservative	Holding Time[a]
Target compound volatile organics[b]	8 ounce (oz.) WM[c]-G[d]	Cool 4°Celsius (C)	14 days from field collection to toxicity characteristic leaching procedure (TCLP) extraction 14 days from preparative extraction to determinative analysis
Target compound semivolatile organics[b]	2 x 120 milliliter (ml) G vial Teflon™-lined cap	Cool 4°C	14 days from field collection to TCLP extraction 7 days from TCLP extraction to preparative extraction 40 days from preparative extraction to determinative analysis
Target analyte metals[b] (except mercury)	8 oz. WM-G	Cool 4°C	180 days from field collection to TCLP extraction 180 days from preparative extraction to determinative analysis
Mercury	1 liter P[e]	HNO_3[f] to pH <2	28 days from field collection to TCLP extraction 28 days from preparative extraction to determinative analysis
Radioactivity screening	120 ml G vial	None	Analyze upon receipt

[a] Holding time information was taken from the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Appendix II, revised November 1, 1995.
[b] Target compound volatile and semivolatile organics and target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[c] WM = Wide-mouth
[d] G = Glass
[e] P = Polyethylene
[f] HNO_3 = Nitric acid

TABLE E.10-4
SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES
FOR LIQUID SAMPLES

Analyte Group	Container	Preservative	Holding Time[a]
Target compound volatile organics[b]	2 x 40 milliliter (ml) AG[c] septa vials	HCI[d], Cool 4°Celsius (C)	14 days from field collection to toxicity characteristic leaching procedure (TCLP) extraction 14 days from preparative extraction to determinative analysis
Target compound semivolatile organics[b]	2 x 1 liter AG	Cool 4°C	14 days from field collection to TCLP extraction 7 days from TCLP extraction to preparative extraction 40 days from preparative extraction to determinative analysis
Target analyte metals[b] (except mercury)	1 liter P[e]	HNO_3[f] to pH <2	180 days from field collection to TCLP extraction 180 days from preparative extraction to determinate analysis
Mercury	500 ml P	HNO_3 to pH <2	28 days from field collection to TCLP extraction 28 days from preparative extraction to determinative analysis
Radioactivity screening	40 ml G[g] vial, no septa	None	Analyze upon receipt

[a] Holding time information was taken from the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Appendix II, revised November 1, 1995.
[b] Target compound volatile and semivolatile organics and target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[c] AG = Amber glass
[d] HCl = Hydrochloric acid
[e] P = Polyethylene
[f] HNO_3 = Nitric acid
G = Glass

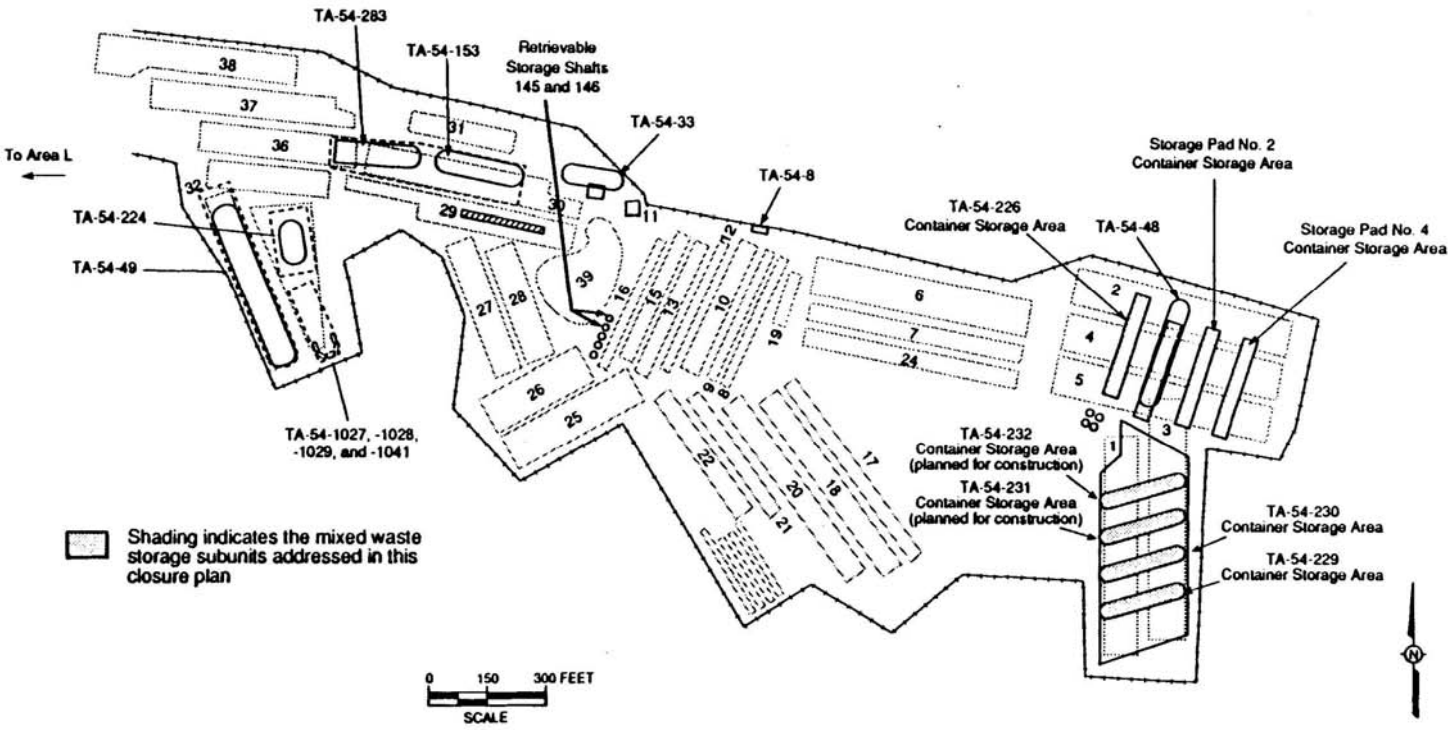


FIGURE E.10-1

TECHNICAL AREA (TA) 54, AREA G, TA-54-226, -239, -230, -231, -232, AND PAD 10

CLOSURE PLAN
PERMIT ATTACHMENT E.11
NM 0890010515-1

CLOSURE PLAN
PERMIT ATTACHMENT E.11
NM0890010515-1

E.11 TECHNICAL AREA 50, BUILDING 69, WASTE CHARACTERIZATION, REDUCTION, AND REPACKAGING FACILITY (WCRRF) INDOOR AND OUTDOOR CONTAINER STORAGE AREAS

The container storage areas (CSA) addressed in this closure plan include the Indoor and Outdoor CSAs at the Technical Area 50, Building 69 (TA-50-69), Waste Characterization, Reduction, and Repackaging Facility (WCRRF) (Figure E.11-1). The CSAs are used to store transuranic (TRU) mixed waste, low-level mixed waste, and hazardous waste.

Waste containers stored in the WCRRF Indoor CSA include drums of various sizes, fiberglass-reinforced plywood (FRP) boxes, standard waste boxes (SWB), and other irregular containers. The WCRRF Indoor CSA consists of Rooms 102 and 103. Room 102 is approximately 45 feet (ft) wide and 52 ft long. The floor is reinforced concrete slab with epoxy paint. A floor drain located near the glovebox enclosure in Room 102 is connected directly to the Radioactive Liquid Waste Treatment Facility (RLWTF) at TA-50-1. Whenever waste containers known or suspected to contain free liquids are managed in this room, the floor drain grate is replaced by a metal plate and rubber gasket. Room 103 is approximately 18 ft wide and 19 ft long. The floor is epoxy painted, reinforced concrete slab. A floor drain located in the eastern part of Room 103 is plumbed directly to the RLWTF; however, the floor drain grate is replaced by a metal plate and rubber gasket whenever waste containers known or suspected to contain free liquids are managed in this room.

Waste containers stored in the WCRRF Outdoor CSA, located approximately 30 ft from the southwest corner of TA-50-69, include drums of various sizes, FRP boxes, SWBs, B25 boxes, and other irregular containers. Transportainers are also utilized at the WCRRF Outdoor CSA to provide weather protection for containers of various sizes. The Outdoor CSA is 24 ft wide and 90 ft long. It is constructed of asphaltic concrete, approximately 4 inches thick.

E.11.1 Estimate of Maximum Waste in Storage

The maximum inventory of waste in storage at any time at the TA-50-69 WCRRF Indoor and Outdoor CSAs is estimated at 31,500 gallons. A breakdown of the maximum inventories for each of these areas is as follows:

- WCRRF Indoor CSA - 1,500 gallons
- WCRRF Oudoor CSA - 30,000 gallons

E.11.2 Description of Waste

TRU mixed waste stored in the TA-50-69 WCRRF Indoor and Outdoor CSAs is generated during research activities, processing and recovery operations, and decontamination and decommissioning operations primarily at TA-3, TA-21, TA-50, and TA-55. Low-level mixed waste stored is generated during research

activities, processing and recovery operations, decontamination and decommissioning operations, and environmental remediation/restoration activities at various TAs throughout Los Alamos National Laboratory (LANL). These wastes are classified as mixed wastes because Resource Conservation and Recovery Act (RCRA) characteristic and/or listed wastes are or may be present in the waste, along with a radioactive component. Hazardous wastes generated throughout LANL and stored at these CSAs are generated primarily from research and development activities, processing and recovery operations, decontamination and decommissioning projects, and environmental remediation/restoration activities.

E.11.3 Closure Procedure and Decontamination

E.11.3.1 Partial Closure

Partial closure would consist of closing one or more of the RCRA-regulated waste management units or subunits at the LANL facility, while leaving the other RCRA-regulated waste management units at LANL in service. In the event of a partial closure, the following procedures would apply to the unit(s) being closed.

E.11.3.2 Unit Closure

To the extent possible, all contaminated structures and equipment at the CSAs addressed in this closure plan will be decontaminated. Structures, equipment, and media that cannot be decontaminated will be containerized and managed in compliance with appropriate regulations. All sampling conducted during closure and decontamination will be done in accordance with quality assurance/quality control (QA/QC) procedures (see Section E.11.7).

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

Personnel involved in closure activities will wear appropriate PPE, specified by ESH-1 and ESH-5, and will follow good hygiene practices to protect employees from exposure to hazardous and/or mixed waste. The level of PPE that will be required will depend upon the levels of radiological and/or chemical contamination that are detected, if any. If ESH-1 and ESH-5 surveys do not indicate detectable contamination levels, minimum PPE requirements will consist of coveralls, steel-toed boots, and safety glasses or face shields. If an overhead danger is present, a hard hat will be worn. All workers involved in closure activities will be required to have training and medical monitoring. Contaminated PPE will either be decontaminated or managed in compliance with appropriate regulations.

All wastes will be removed from the CSA scheduled to be closed prior to the initiation of closure activities. Containers will be removed from each storage area primarily with forklifts. Small containers may be handled manually or with dollies. All containers will be placed onto flatbed trucks or trailers for transport. All appropriate shipping papers will accompany the wastes during transport. Containers holding

RCRA-regulated wastes will be moved to an approved on-site facility or permitted off-site treatment and/or disposal facility.

Before decontamination activities begin, samples of the clean water and detergent (wash water) solution squeezed from mops and/or sponges prior to use will be collected for analysis of the parameters listed in Table E.11-1. The analytical results from these samples will be used to provide a baseline for decontamination verification.

Prior to decontamination of the main surfaces of the CSA, any portable equipment to be removed from the area will be wiped down with wash water solution. This may include equipment such as self-containment pallets, wooden pallets, and miscellaneous equipment. Portable berms will be used to provide containment for the used wash water. After the washdown process, the used wash water will be collected, transferred to containers, sampled, and analyzed for the parameters in Table E.11-1. If the used wash water is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise the used wash water will be managed at an appropriate on-site facility. If sampling and analysis indicate that radioactive and/or hazardous constituents are present, the wash cycles and analyses will continue until the equipment has been decontaminated or the decision is made to manage it appropriately as contaminated waste. This material may be transported to and stored at other waste management facilities to facilitate the closure process.

The walls, floors, and remaining equipment of the WCRRF Indoor CSA will then be wiped down with wash water solution. Portable berms will be used to collect and provide containment for the used wash water. The used wash water will be collected, sampled, and analyzed for the parameters in Table E.11-1. If the used wash water is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise, the used wash water will be managed at an appropriate on-site facility, depending on the regulated constituents present. If sampling and analysis indicate that hazardous and/or radioactive constituents are present, the wash cycles and analyses will continue until the area has been decontaminated or the decision is made to segregate contaminated portions of the storage area for subsequent management as contaminated waste. Decontamination verification is discussed further in Section E.11.3.3.

Prior to use, all decontamination equipment will be rinsed with distilled water. Decontamination equipment rinsate blanks will be collected and analyzed in accordance with QA/QC procedures (see Section E.11.7). Reusable protective clothing, tools, and equipment used during closure activities will be cleaned with a wash water solution and scraped as necessary to remove any residue. Residue, disposable equipment, and reusable equipment that cannot be decontaminated will be containerized and managed appropriately at an approved on-site facility, depending on the regulated constituents present. Used wash water will be collected and analyzed for the parameters listed in Table E.11-1. If the used wash water is nonhazardous and nonradioactive, the water will be managed appropriately in accordance with LANL policy. Otherwise, it will be managed at an appropriate on-site facility, depending on the regulated constituents present.

The transportainers used as equipment to provide weather protection for containerized wastes at the Outdoor CSA will be decontaminated as follows. The inside of the units will be scrubbed and rinsed with a wash water solution. (A sample of unused wash water solution will be collected and analyzed for parameters listed in Table E.11-1 to provide a baseline for decontamination verification.) Portable berms will be used to collect and provide containment for the used wash water. The wash water will be pumped into U. S. Department of Transportation (DOT)-approved drums with pumps. The used wash water will be sampled

and analyzed for the parameters in Table E.11-1 to demonstrate decontamination. If sampling and analysis indicate that hazardous and/or radioactive constituents are present, the inside of the units will be washed a second time in the same manner. The wash cycles and analyses will continue until the unit has been completely decontaminated. Decontamination verification is discussed further in Section E.11.3.3. If the used wash water is nonhazardous and nonradioactive, it will be disposed of via the industrial waste water sewer. Otherwise, it will be managed at the appropriate on-site facility, depending on the regulated constituents present. The outside surfaces and equipment of the transportainers will not be exposed to waste material during normal operations. Therefore, these surfaces will not be sampled beyond radiological surveying unless there is information that these surfaces have been exposed to spills during the active life of the unit or that interior spills may have caused leakage from the transportainer.

The asphaltic concrete pad at the Outdoor CSA will be washed down with a wash water solution. Portable berms or other containment structures will be used to collect the wash water from the pad. Before the first washdown, a sample of the clean wash water solution will be collected and analyzed for the parameters listed in Table E.11-1 to provide a baseline for decontamination verification. The used wash water from the pad will also be collected, transferred to DOT-approved containers, sampled, and analyzed for the parameters in Table E.11-1. If the used wash water is nonhazardous and nonradioactive, it will be discharged to the industrial wastewater sewer. Otherwise, the used wash water will be managed at the appropriate on-site facility, depending on the regulated constituents present.

Used wash water samples from the Outdoor CSA asphaltic concrete pad may exhibit anomalously high levels of organic compounds due to leaching of the pad materials during washdown. If this is the case, record reviews (e.g., manufacturer's specifications, MSDS) and additional analyses may be performed to determine if leaching of organic constituents from the pad contributed to the organic compound concentration in used wash water. If this additional evaluation confirms the asphaltic concrete materials as the source of contamination, baseline concentrations for clean wash water will be adjusted accordingly. The pad area may undergo up to two wash cycles. If decontamination verification cannot be demonstrated after two wash cycles, the asphaltic concrete material will be removed from the site and managed as appropriate for the waste type. If the wash water is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise, it will be managed at an appropriate on-site facility, depending on the regulated constituents present.

Soil sampling will be conducted as part of the closure activities to determine if contaminants have migrated from the south side of the WCRRF Outdoor CSA. Prior to the initiation of closure activities, background soil samples will be collected near the pad and analyzed for the parameters listed in Table E.11-1. After washdown activities at the CSA are complete, a statistically representative number of soil samples will be collected from the soil surrounding the pad. Samples will be collected 6 inches from the edge of the pad to a depth of 6 inches and equally spaced to ensure that samples are representative of the entire perimeter of the storage area. Samples will be analyzed for the parameters listed in Table E.11-1. If contamination is found in any of the soil samples as a result of container storage on the pad, the contaminated soil will be removed to statistically significant levels based on concentrations in the background soil samples.

The north, west, and east boundaries of the WCRRF Outdoor CSA are not situated near soil areas. After washdown activities at the CSA are complete, a statistically representative number of small area washdown samples will be collected from the asphalt surrounding the pad in a manner similar to the above soil samples. One-foot-square areas approximately 3 feet from the boundary of the CSA will be wiped down.

The wash water will be collected and analyzed for the parameters listed in Table E.11-1. The baseline concentration asphalt leachate samples or information described above will also apply for these samples. The degree of contamination, if present, will be assessed for these areas. If the samples do not exhibit contamination, the area will be considered to be decontaminated. If contamination is found in these samples as a result of container storage on the pad, the asphalt area around the CSA may be subject to the same wash down or removal process described above for the asphalt inside the CSA.

E.11.3.3 Decontamination Verification

Sufficient sampling and analysis will be required to demonstrate that hazardous or mixed waste residue is not present at the site after closure. Two samples of clean wash water solution squeezed from mops and/or sponges prior to use will be collected before initial washdown of the CSAs. The samples will be analyzed for parameters listed in Table E.11-1 to provide baseline data for decontamination verification. Analytical procedures will conform to methods found in the most current version of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846). Used washdown solutions will also be analyzed for the parameters listed in Table E.11-1. Washdown solutions will be considered contaminated if the used wash water solution shows a significant increase (i.e., determined using statistical methods defined in SW-846) in the analytical parameters over the clean wash water solution. If subsequent washdowns are deemed necessary, an additional sample of clean wash water solution squeezed from mops and/or sponges prior to use will be taken for each additional washdown event.

Existing background soil data for TA-50-69 may also be used to demonstrate that hazardous or mixed waste residue resulting from storage activities is not present at the site after closure. A comparison of closure sampling data to existing background soil data will be used to establish the source of any hazardous waste or constituents present in the soil. If the data comparison indicates that contamination is from container storage activities, additional contaminated soil excavations will be performed until at least one of the decontamination criteria has been met successfully.

Successful decontamination meets one of the following criteria:

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

- Detectable hazardous waste or constituents from container storage activities in the final sample are removed to statistically significant levels based on baseline concentrations in the clean wash water or established background soil data.

- Detectable hazardous waste or constituents from container storage activities in the final sample are at or below levels negotiated with the New Mexico Environment Department (NMED).

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

E.11.4 Closure Schedule

Closure will not commence until all of the wastes have been removed from the CSA scheduled to be closed. Closure activities will begin in accordance with the approved closure plan, as required by the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.113(a), revised November 1, 1995, within 90 days after final receipt of waste at the CSA. This timeframe will be met as long as facilities are available for treatment and/or disposal of these wastes. In the event that closure activities cannot be completed at the CSA within 90 days, LANL will notify the Secretary of the NMED in accordance with the extension requirements cited in 20 NMAC 4.1, Subpart V, 264.113(a), revised November 1, 1995. Closure activities and reporting requirements will be completed within 180 days of the receipt of the final volume of waste at the waste management area to be closed. Closure will be conducted in accordance with the schedule presented in Table E.11-2. In the event that closure of a CSA is prevented from proceeding according to schedule, LANL will notify the Secretary of the NMED in accordance with extension request requirements in 20 NMAC 4.1, Subpart V, 264.113(b), revised November 1, 1995. In addition, the demonstrations in 20 NMAC 4.1, Subpart V, 264.113(a)(1) and (b)(1), revised November 1, 1995, will be made in accordance with 20 NMAC 4.1, Subpart V, 264.113(c), revised November 1, 1995.

E.11.5 Closure Certification

Within 60 days after completion of closure activities for each of the CSAs, the U.S. Department of Energy (DOE) will submit to the Secretary of the NMED, via certified mail, a certification that the area has been closed in accordance with the specifications of the closure plan. The certification will be attested to by an independent, registered professional engineer and will be signed by the appropriate DOE and LANL officials, in accordance with 20 NMAC 4.1, Subpart V, 264.115, revised November 1, 1995. Documentation supporting the independent registered engineer's certification will be furnished to the Secretary of the NMED with the original certification. A copy of the certification and supporting documentation shall be maintained by both the DOE/Los Alamos Area Office and LANL's Hazardous and Solid Waste Group.

E.11.6 Sampling and Analytical Procedures

The following sections describe procedures and methods for sampling, analysis, and documentation applicable to closure activities. While the procedures and methods are specific, other applicable procedures or methods given in SW-846 may be used if conditions or experience show the alternate method to be more appropriate. All sampling and analytical procedures actually used will be annotated in the final closure report. Sampling will be conducted in accordance with procedures given in SW-846 (for hazardous components) and LANL's Inorganic Trace Analysis Group (CST-9) procedures (for radiological analysis).

E.11.6.1 Soil Sampling

Soil samples will be collected at the WCRRF Outdoor CSA at TA-50-69. The soil samples will be collected to determine if contaminants have migrated from the CSA and, if so, to determine the horizontal and vertical extent of such migration.

E.11.6.1.1 Cleaning of Samplers

To prevent cross contamination, it is important to clean the samplers after each sample is collected. An unused, disposable sampler may be presumed clean if still in a factory-sealed wrapper. Unsealed samplers

will be cleaned prior to use. The samplers will be washed with a detergent and water solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry.

E.11.6.1.2 Sampling Procedures

The sampling procedures outlined below will be used to obtain samples to determine the amount of RCRA constituents in soil associated with the units undergoing closure. Soil samples will be collected from the 6-inch depth with a trowel or scoop or with a Veihmeyer soil sampler. Sampling procedures will be performed as follows:

- Trowel or Scoop
  - Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
  - Combine the samples in a container appropriate for the required analysis.
  - Cap the container, attach a label and seal, and preserve as required (see Table E.11-3). Record in the field logbook, and complete the sample analysis request sheet and chain-of-custody form. Deliver the samples to CST-9 for radiological screening and to the laboratory for analysis.
- Veihmeyer Sampler
  - Assemble the sampler by screwing in the tip and drive head on the sampling tube.
  - Insert the tapered handle (drive guide) of the drive hammer through the drive head.
  - Place the sampler in a perpendicular position on the soil to be sampled.
  - With the left hand holding the tube, drive the sampler into the soil to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube further than the tip of the hammer's drive guide.
  - Record the length of the tube that penetrated the material.
  - Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.
  - Rotate the sampler at least two revolutions to shear off the sample at the bottom.
  - Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.
  - Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a puller jack and grip.

- Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.

- Store the sample in an appropriate sample container.

- Label the sample, affix the seals, preserve as required (see Table E.11-3), record in the field logbook, complete the sample analysis request sheet and chain-of-custody form, and deliver the samples to CST-9 for radiological screening and to the laboratory for analysis.

E.11.6.2 Liquid Sampling

A coliwasa or similar device will be used to sample unused wash water solutions before decontamination begins in order to determine baseline parameters. It will also be used to sample the wash water used in cleaning structures and equipment. As an alternative to the coliwasa, glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of appropriately after each sample is collected, thus eliminating the potential for cross contamination.

E.11.6.2.1 Cleaning of Samplers

The sampler must be clean before use. An unused, disposable sampler may be presumed clean if still in a factory-sealed wrapper. Unsealed samplers will be cleaned prior to use. Samplers will be washed with a detergent and water solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the coliwasa is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Improper cleaning of sampling equipment will cause cross contamination of samples. Clean samplers should be stored in clean polyethylene plastic tubes or bags in a clean and protected area.

E.11.6.2.2 Sampling Procedure

Liquid sampling with a coliwasa will be performed as follows:

- Ensure that the coliwasa is clean.

- Assemble the coliwasa.

- Check that the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.

- Wear necessary protective clothing and gear, and observe required sampling precautions.

- Put the sampler in the open position by placing the stopper-rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.

- Slowly lower the coliwasa into the liquid at a rate that permits the level of the liquid inside and

outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a nonrepresentative sample.

- When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.

- Slowly withdraw the sampler from the container with one hand, while wiping the sampler tube with a disposable cloth with the other hand.

- Carefully discharge the sample into a sample container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block, while the lower end of the sampler is positioned in the sample container.

- Preserve as required (see Table E.11-4), cap the container, attach a label and seal, place immediately in an insulated container with ice (if required), record in the field logbook, and complete the sample analysis request sheet and chain-of-custody form.

- Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site, or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.

E.11.6.3 Sample Handling and Documentation

Samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and sample analysis request form. The chain-of-custody form is necessary to trace sample possession from the time of collection to the time of analysis and must accompany every sample. The original record accompanies shipment. The copy is retained by LANL. If samples are analyzed at LANL, the original will be maintained by LANL. The request for analysis form has two parts: field and laboratory. The field portion of this form must be completed by the person collecting the sample and include most of the pertinent information noted in the logbook. The laboratory portion is intended to be completed by the analytical laboratory personnel when the sample is received. The analytical laboratory retains the original record and sends a copy to LANL.

Sample containers appropriate for the requested analyses will be used for all samples. Sample containers, preservation, and holding times will conform to those specified in SW-846 for the corresponding analyses. Samples will be collected, placed in bottles, sealed, and tagged. Sample container surfaces will be screened for radiological contamination and decontaminated, if necessary. Sample containers will then be immediately packed in vermiculite, sawdust, or if refrigeration is required, an insulated container with ice. Recommended sample containers, preservation, and holding times are presented in Tables E.11-3 and E.11-4.

The sample container must be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. A sample label is necessary to prevent misidentification of samples and should include, if

applicable, the grid number referenced to positions staked on the site perimeter. The sample label must be completed to include the project name, sample number, collection date/time, collector's name, sample location, sample media description, preservative, and analysis requested. In the case of soil sampling, field information shall include observations such as the soil texture and surface appearance, ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling.

A field logbook will be kept and will contain all information pertinent to field surveys and sampling. The logbook shall have bound and consecutively numbered pages in 8 1/2 - by 11 inch format. Minimum entries should include:

- Purpose of sample (routine sampling, special sampling)
- Location of sampling (coordinates referenced to staked field points, if soil sample)
- Name and business address of person making log entry
- Type of process producing waste
- Number and volume of sample
- Description of each sampling location, sampling methodology, equipment used, etc.
- Date and time of sample collection
- Sample destination and transporter's name (e.g., name of laboratory, United Parcel Service, etc.)
- Map or photograph of the sampling site, if any
- Field observations, if applicable (e.g., ambient temperature, sky conditions, past 24-hour precipitation)
- Field measurements, if applicable (e.g., pH, conductivity)
- Collector's sample identification number(s)
- Signature of person responsible for the log entry.

Because sampling situations vary widely, no specific rule can be given as to the extent of information that must be entered in the logbook. It is recommended, however, to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

E.11.7 Quality Assurance/Quality Control

A qualified individual or individuals shall be designated to independently oversee the closure activities and to report directly to senior management on the quality of the closure performance. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed, and

review the analysis reports for accuracy and adequacy. A written QA/QC plan prepared in accordance with SW-846 guidance shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the level of decontamination verification achieved.

E.11.8 Closure Report

Upon completion of the closure activities for each CSA addressed in this closure plan, a closure report shall be submitted to the Secretary of the NMED. The report shall document the closure and contain, at a minimum, the following:

- The certification described in Section E.11.5

- Any variance from the approved activities and the reason for the variance

- A tabular summary of all sampling results, showing:
  - Sample identification
  - Sampling location
  - The datum reported
  - Detection limit for each datum
  - A measure of analytical precision (e.g., uncertainty, range, variance)
  - Identification of analytical procedure
  - Identification of analytical laboratory.

- A QA/QC statement on analytical data validation and decontamination verification

- The location of the file of supporting documentation, including:
  - Field logbooks
  - Laboratory sample analysis reports
  - QA/QC documentation
  - Chain-of-custody forms.

- Disposition location of RCRA-regulated closure materials

- A certification of accuracy of the report.

TABLE E.11-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 50, BUILDING 69 (TA-50-69), WASTE CHARACTERIZATION, REDUCTION, AND REPACKAGING FACILITY (WCRRF) INDOOR AND OUTDOOR CONTAINER STORAGE AREAS

Parameter	Test Method	Reference[b]
Ignitability	Pensky-Martens closed-cup method	(L) SW1010 (L) ASTM D93-80
Reactivity	Test method to determine hydrogen cyanide released from waste	(L, S) HCN Test Method, Section 7.3
	Test method to determine hydrogen sulfide released from waste	(L, S) H_2S Test Method, Section 7.3
Corrosivity	Electrometric (pH of aqueous solution)	(L) SW9040B
Toxicity characteristic	Toxicity characteristic leaching procedure (TCLP) extraction	(L, S) SW1311
Metals:	Graphite furnace atomic absorption (AA) spectroscopy, gaseous hydride AA, or direct aspiration AA	
Arsenic		(L, S) SW7060A, SW7061A
Barium		(L, S) SW7080A, SW7081
Cadmium		(L, S) SW7130, SW7131A
Chromium		(L, S) SW7190, SW7191
Lead		(L, S) SW7420, SW7421
Selenium		(L, S) SW7740, SW7741A
Silver		(L, S) SW7760A, SW7761

Refer to footnotes at end of attachment.

TABLE E.11-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 50, BUILDING 69 (TA-50-69), WASTE CHARACTERIZATION, REDUCTION, AND REPACKAGING FACILITY (WCRRF) INDOOR AND OUTDOOR CONTAINER STORAGE AREAS
(continued)

Parameter	Test Method	Reference[b]
Mercury	Manual cold-vapor technique	(L)SW7470A, (S) SW7471A
Volatile organics	Gas chromatography (GC)/mass spectrometry (MS)	(L, S) SW8240B
	GC/MS capillary column technique	(L, S) SW8260A
Semivolatile organics	GC/MS	(L, S) SW8250A
	GC/MS capillary column technique	(L, S) SW8270B
Organochlorine pesticides	TCLP extraction and GC	(L, S) SW8080A
Chlorinated herbicides		(L, S) SW8150B
Total metals[c]	Acid digestion	(L) SW3010A, (S) SW3050A
	Inductively coupled plasma atomic emission spectroscopy	(L, S) SW6010A
Arsenic		(L, S) SW6010A
Barium		(L, S) SW6010A
Beryllium		(L, S) SW6010A

Refer to footnotes at end of attachment.

TABLE E.11-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 50, BUILDING 69 (TA-50-69), WASTE CHARACTERIZATION, REDUCTION, AND REPACKAGING FACILITY (WCRRF) INDOOR AND OUTDOOR CONTAINER STORAGE AREAS
(continued)

Parameter	Test Method	Reference[b]
Cadmium		(L, S) SW6010A
Chromium		(L, S) SW6010A
Lead		(L, S) SW6010A
Nickel		(L, S) SW6010A
Selenium		(L, S) SW6010A
Silver		(L, S) SW6010A
Thallium		(L, S) SW6010A
Zinc		(L, S) SW6010A
Mercury	Manual cold-vapor technique	(L) SW7470A (S) SW7471A
Free liquids	Paint Filter Liquids Test	(L, S) SW9095

[a] At Los Alamos National Laboratory, current analytical capabilities include limited analyses of mixed waste samples. These analyses include, but are not limited to, gross alpha, beta, and gamma screening.
[b] "ASTM" refers to American Society for Testing and Materials standards.
"SW" refers to U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
(L) refers to liquid waste.
(S) refers to solid waste.
[c] See also atomic absorption methods.

TABLE E.11-2
SCHEDULE FOR CLOSURE ACTIVITIES AT THE TECHNICAL AREA 50, BUILDING 69 (TA-50-69), WASTE CHARACTERIZATION, REDUCTION, AND REPACKAGING FACILITY (WCRRF) INDOOR AND OUTDOOR CONTAINER STORAGE AREAS

Activity	Maximum Time Required[a]
Let contract request for proposals-90 Days	
Notify the New Mexico Environment Department (NMED)	-45 Days
Receive proposals	-30 Days
Select contractor and award contract	-10 Days
Collect background samples	-5 Days
Final receipt of waste	Day 0
Begin closure activities (perform washdown of structures)	Day 10
Perform initial sampling of the waste management area	Day 15
Analyze samples	Day 45
Perform additional washdown (if necessary)	Day 50
Perform additional sampling (if necessary)	Day 60
Analyze samples (if necessary)	Day 90
Perform pad washdown and sampling	Day 100
Analyze samples	Day 130
Perform final cleanup (e.g., removal of decontaminated equipment and decontamination wastes)	Day 130
Verify decontamination	Day 140
Submit final report to NMED	Day 180

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

TABLE E.11-3
SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES
FOR SEDIMENT/SOIL/SLUDGE SAMPLES

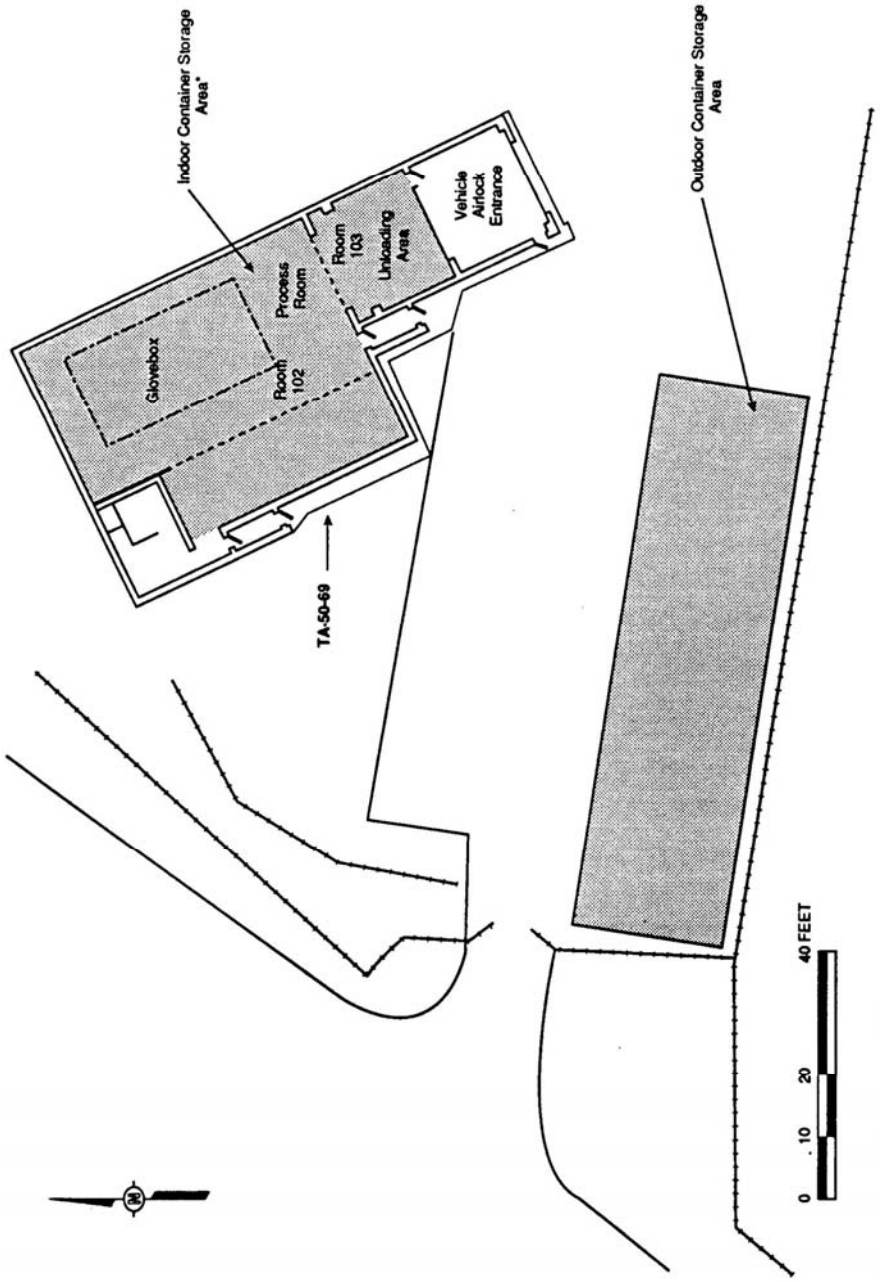
Analyte Group	Container	Preservative	Holding Time[a]
Target compound volatile organics[b]	8 ounce (oz.) WM[c]-G[d]	Cool 4°Celsius (C)	14 days from field collection to toxicity characteristic leaching procedure (TCLP) extraction 14 days from preparative extraction to determinative analysis
Target compound semivolatile organics[b]	2 x 120 milliliter (ml) G vial Teflon™-lined cap	Cool 4°C	14 days from field collection to TCLP extraction 7 days from TCLP extraction to preparative extraction 40 days from preparative extraction to determinative analysis
Target analyte metals[b] (except mercury)	8 oz. WM-G	Cool 4°C	180 days from field collection to TCLP extraction 180 days from preparative extraction to determinative analysis
Mercury	1 liter P[e]	HNO_3[f] to pH <2	28 days from field collection to TCLP extraction 28 days from preparative extraction to determinative analysis
Radioactivity screening	120 ml G vial	None	Analyze upon receipt

[a] Holding time information was taken from the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Appendix II, revised November 1, 1995.
[b] Target compound volatile and semivolatile organics and target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[c] WM = Wide-mouth
[d] G = Glass
[e] P = Polyethylene
[f] HNO_3 = Nitric acid

TABLE E.11-4
SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES
FOR LIQUID SAMPLES

Analyte Group	Container	Preservative	Holding Time[a]
Target compound volatile organics[b]	2 x 40 milliliter (ml) AG[c] septa vials	HCI[d], Cool 4°Celsius (C)	14 days from field collection to toxicity characteristic leaching procedure (TCLP) extraction 14 days from preparative extraction to determinative analysis
Target compound semivolatile organics[b]	2 x 1 liter AG	Cool 4°C	14 days from field collection to TCLP extraction 7 days from TCLP extraction to preparative extraction 40 days from preparative extraction to determinative analysis
Target analyte metals[b] (except mercury)	1 liter P[e]	HNO_3[f] to pH <2	180 days from field collection to TCLP extraction 180 days from preparative extraction to determinate analysis
Mercury	500 ml P	HNO_3 to pH <2	28 days from field collection to TCLP extraction 28 days from preparative extraction to determinative analysis
Radioactivity screening	40 ml G[g] vial, no septa	None	Analyze upon receipt

[a] Holding time information was taken from the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Appendix II, revised November 1, 1995.
[b] Target compound volatile and semivolatile organics and target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[c] AG = Amber glass
[d] HCl = Hydrochloric acid
[e] P = Polyethylene
[f] HNO_3 = Nitric acid
[g] G = Glass



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

FIGURE E.11-1

TECHNICAL AREA (TA) 50, BUILDING 69, WASTE CHARACTERIZATION, REDUCTION, AND REPACKAGING FACILITY (WCRRF)
INDOOR AND OUTDOOR CONTAINER STORAGE AREAS

CLOSURE PLAN
PERMIT ATTACHMENT E.12
NM 0890010515-1

CLOSURE PLAN
PERMIT ATTACHMENT E.12
NM0890010515-1

E.12 TECHNICAL AREA 54 WEST, BUILDING 38, RADIOASSAY AND NONDESTRUCTIVE TESTING (RANT) FACILITY CONTAINER STORAGE AREAS

The container storage areas (CSA) addressed in this closure plan include the Low Bay, the High Bay, the Loading Dock, and the Outdoor CSAs at the Technical Area 54 West, Building 38 (TA-54-38), Radioassay and Nondestructive Testing (RANT) Facility (Figure E.12-1). The CSAs are used to store transuranic (TRU) mixed waste and low-level mixed waste.

Waste drums of various sizes are stored in the Low Bay CSA and the Loading Dock CSA. The Low Bay CSA is approximately 11 feet (ft) square, and the low bay floor is 6-inch reinforced concrete slab coated with industrial grade enamel paint. The Loading Dock, located just east of the low bay, is approximately 16 ft wide and 39 ft long. It is constructed of cast-in-place concrete. A truck ramp, which is not part of the Loading Dock CSA, runs perpendicular to the loading dock platform. At the bottom of the truck ramp is a 38-inch-square grate covering a drainage culvert. A slide gate valve is closed to seal the culvert whenever potential liquid-bearing waste containers are loaded or unloaded at the loading dock. The Loading Dock CSA is divided into two areas on the platform. One area at the north end of the loading dock is 16 ft by 10 ft. The second area at the south end of the loading dock is 16 ft by 12 ft.

The High Bay CSA stores drums of various sizes, fiberglass-reinforced plywood boxes, standard waste boxes (SWB), and B25 boxes. The High Bay CSA, located along the south side of the center wall, is approximately 11 ft wide and 34 ft long. The high bay floor is 6-inch reinforced concrete slab. It slopes gently toward a central 50-ft trench and a sump. The sump is locked out and a pipe plug has been installed.

Waste containers stored in the Outdoor CSA include drums of various sizes, SWBs, and B25 boxes. The Outdoor CSA, located just north of the RANT Facility, is 40 ft square. It is constructed of asphaltic concrete, is approximately 4 inches thick, and slopes gently to the northeast.

E.12.1 Estimate of Maximum Waste in Storage

The maximum inventory of waste in storage at any time at the TA-54-38 RANT Facility is estimated at 11,660 gallons. A breakdown of the maximum inventories for each of these areas is as follows:

- Low Bay CSA - 880 gallons
- High Bay CSA - 2,200 gallons
- Loading Dock CSA - 660 gallons
- Outdoor CSA - 7,920 gallons

E.12.2 Description of Waste

TRU mixed waste stored in the TA-54-38 RANT Facility CSAs is generated during research activities, processing and recovery operations, and decontamination and decommissioning operations primarily at TA-3, TA-21, TA-50, and TA-55. Low-level mixed waste stored is generated during research activities, processing and recovery operations, decontamination and decommissioning operations, and environmental remediation/restoration activities at various TAs throughout Los Alamos National Laboratory (LANL). These wastes are classified as mixed wastes because Resource Conservation and Recovery Act (RCRA) characteristic and/or listed wastes are or may be present in the waste, along with a radioactive component.

E.12.3 Closure Procedure and Decontamination

E.12.3.1 Partial Closure

Partial closure would consist of closing one or more of the RCRA-regulated waste management units or subunits at the LANL facility, while leaving the other RCRA-regulated waste management units at LANL in service. In the event of a partial closure, the following procedures would apply to the unit(s) being closed.

E.12.3.2 Unit Closure

To the extent possible, all contaminated structures and equipment at the CSAs addressed in this closure plan will be decontaminated. Structures, equipment, and media that cannot be decontaminated will be containerized and managed in compliance with appropriate regulations. All sampling conducted during closure and decontamination will be done in accordance with quality assurance/quality control (QA/QC) procedures (see Section E.12.7).

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

Personnel involved in closure activities will wear appropriate PPE, specified by ESH-1 and ESH-5, and will follow good hygiene practices to protect employees from exposure to hazardous and/or mixed waste. The level of PPE that will be required will depend upon the levels of radiological and/or chemical contamination that are detected, if any. If ESH-1 and ESH-5 surveys do not indicate detectable contamination levels, minimum PPE requirements will consist of coveralls, steel-toed boots, and safety glasses or face shields. If an overhead danger is present, a hard hat will be worn. All workers involved in closure activities will be required to have training and medical monitoring. Contaminated PPE will either be decontaminated or managed in compliance with appropriate regulations.

All wastes will be removed from the CSA scheduled to be closed prior to the initiation of closure activities. Containers will be removed from each storage area primarily with forklifts. Small containers may be handled manually or with dollies. All containers will be placed onto flatbed trucks or trailers for transport. All appropriate shipping papers will accompany the wastes during transport. Containers holding RCRA-regulated wastes will be moved to an approved on-site facility or permitted off-site treatment and/or disposal facility.

Before decontamination activities begin, samples of the clean water and detergent (wash water) solution squeezed from mops and/or sponges prior to use will be collected for analysis of the parameters listed in Table E.12-1. The analytical results from these samples will be used to provide a baseline for decontamination verification.

The walls, floors, and equipment in the Low Bay, High Bay, and Loading Dock CSAs will then be wiped down with wash water solution. Portable berms will be used to collect and provide containment for the used wash water. After the washdown process, the used wash water will be collected, sampled, and analyzed for the parameters in Table E.12-1. If the used wash water is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise, the used wash water will be managed at an appropriate on-site facility, depending on the regulated constituents present. If sampling and analysis indicate that hazardous and/or radioactive constituents are present, the wash cycles and analyses will continue until the area has been decontaminated or the decision is made to segregate contaminated portions of the storage area for subsequent management as contaminated waste. Decontamination verification is discussed further in Section E.12.3.3.

Under normal circumstances, the following soil sampling information will not be applicable for the Low Bay and High Bay CSAs because they are located inside a building with an impervious floor. However, if soil sampling is deemed necessary based on analytical evidence and the operational history of the unit, sampling of the area will be performed to verify that no hazardous constituents remain upon closure as a result of container storage. A grid will be sited over the area to be sampled, boreholes will be drilled through the floor material, and soil samples will be collected and analyzed to determine the horizontal and vertical extent of contamination.

Prior to use, all decontamination equipment will be rinsed with distilled water. Decontamination equipment rinsate blanks will be collected and analyzed in accordance with QA/QC procedures (see Section E.12.7). Reusable protective clothing, tools, and equipment used during closure activities will be cleaned with a wash water solution and scraped as necessary to remove any residue. Residue, disposable equipment, and reusable equipment that cannot be decontaminated will be containerized and managed appropriately at an approved on-site facility, depending on the regulated constituents present. Used wash water will be collected and analyzed for the parameters listed in Table E.12-1. If the used wash water is nonhazardous and nonradioactive, the water will be managed appropriately in accordance with LANL policy. Otherwise, it will be managed at an appropriate on-site facility, depending on the regulated constituents present.

The Outdoor CSA asphaltic concrete pad will be washed down with a wash water solution. Portable berms or other containment structures will be used to collect the wash water from the pad. Before the first washdown, a sample of clean wash water solution will be collected and analyzed for the parameters listed in Table E.12-1 to provide a baseline for decontamination verification. The used wash water will also be

collected, transferred to DOT-approved containers, sampled, and analyzed for the parameters in Table E.12-1. If the used wash water is nonhazardous and nonradioactive, it will be discharged to the industrial wastewater sewer. Otherwise, the used wash water will be managed at an appropriate on-site facility, depending on the regulated constituents present.

Used wash water samples from the Outdoor CSA may exhibit anomalously high levels of organic compounds due to leaching of the asphaltic concrete pad materials during washdown. If this is the case, record reviews (e.g., manufacturer's specifications, MSDS) and additional analyses may be performed to determine if leaching of organic constituents from the pad contributed to the organic compound concentration in the used wash water. If this additional evaluation confirms the asphaltic concrete materials as the source of contamination, baseline concentrations for clean wash water will be adjusted accordingly. The pad area may undergo up to two wash cycles. If decontamination verification cannot be demonstrated after two wash cycles, the asphaltic concrete material will be removed from the site and managed as appropriate for the waste type. If the wash water is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise, it will be managed at an appropriate on-site facility, depending on the regulated constituents present.

The RANT Facility Outdoor CSA is situated on an extensive asphalt area and container storage is not likely to result in soil contamination except in the case of a major spill that would initiate the cleanup conditions of the contingency plan and be recorded in the facility record. Therefore, after washdown activities at the CSA are complete, a statistically representative number of small area washdown samples will be collected from the asphalt surrounding the pad in a manner similar to the above washdown of the CSA. One-foot-square areas approximately 3 feet from the boundary of the CSA will be wiped down. This wash water will be collected and analyzed for the parameters listed in Table E.12-1. The baseline concentration asphalt leachate samples or information described above will also apply for these samples. The degree of contamination, if present, will be assessed for these areas. If the samples do not exhibit contamination, the area will be considered to be decontaminated. If contamination is found in these samples as a result of container storage on the pad, the asphalt area around the CSA may be subject to the same wash down or removal process described above for the asphalt inside the CSA.

E.12.3.3 Decontamination Verification

Sufficient sampling and analysis will be required to demonstrate that hazardous or mixed waste residue is not present at the site after closure. Two samples of clean wash water solution squeezed from mops and/or sponges prior to use will be collected before initial washdown of the CSAs. The samples will be analyzed for parameters listed in Table E.12-1 to provide baseline data for decontamination verification. Analytical procedures will conform to methods found in the most current version of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846). Used washdown solutions will also be analyzed for the parameters listed in Table E.12-1. Washdown solutions will be considered contaminated if the used wash water solution shows a significant increase (i.e., determined using statistical methods defined in SW-846) in the analytical parameters over the clean wash water solution. If subsequent washdowns are deemed necessary, an additional sample of clean wash water solution squeezed from mops and/or sponges prior to use will be taken for each additional washdown event.

Existing background soil data for the RANT Facility CSAs may also be used to demonstrate that hazardous or mixed waste residue resulting from storage activities is not present at the site after closure. A comparison

of closure sampling data to existing background soil data will be used to establish the source of any hazardous waste or constituents present in the soil. If the data comparison indicates that contamination is from container storage activities, additional contaminated soil excavations will be performed until at least one of the decontamination criteria has been met successfully.

Successful decontamination meets one of the following criteria:

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

- Detectable hazardous waste or constituents from container storage activities in the final sample are removed to statistically significant levels based on baseline concentrations in the clean wash water or established background soil data.

- Detectable hazardous waste or constituents from container storage activities in the final sample are at or below levels negotiated with the New Mexico Environment Department (NMED).

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

E.12.4 Closure Schedule

Closure will not commence until all of the wastes have been removed from the CSA scheduled to be closed. Closure activities will begin in accordance with the approved closure plan, as required by the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.113(a), revised November 1, 1995, within 90 days after final receipt of waste at the CSA. This timeframe will be met as long as facilities are available for treatment and/or disposal of these wastes. In the event that closure activities cannot be completed at the CSA within 90 days, LANL will notify the Secretary of the NMED in accordance with the extension requirements cited in 20 NMAC 4.1, Subpart V, 264.113(a), revised November 1, 1995. Closure activities and reporting requirements will be completed within 180 days of the receipt of the final volume of waste at the waste management area to be closed. Closure will be conducted in accordance with the schedule presented in Table E.12-2. In the event that closure of a CSA is prevented from proceeding according to schedule, LANL will notify the Secretary of the NMED in accordance with extension request requirements in 20 NMAC 4.1, Subpart V, 264.113(b), revised November 1, 1995. In addition, the demonstrations in 20 NMAC 4.1, Subpart V, 264.113(a)(1) and (b)(1), revised November 1, 1995, will be made in accordance with 20 NMAC 4.1, Subpart V, 264.113(c), revised November 1, 1995.

E.12.5 Closure Certification

Within 60 days after completion of closure activities for each of the CSAs, the U.S. Department of Energy (DOE) will submit to the Secretary of the NMED, via certified mail, a certification that the area has been closed in accordance with the specifications of the closure plan. The certification will be attested to by an independent, registered professional engineer and will be signed by the appropriate DOE and LANL officials, in accordance with 20 NMAC 4.1, Subpart V, 264.115, revised November 1, 1995. Documentation supporting the independent registered engineer's certification will be furnished to the Secretary of the NMED with the original certification. A copy of the certification and supporting documentation shall be maintained by both the DOE/Los Alamos Area Office and LANL's Hazardous and Solid Waste Group.

E.12.6 Sampling and Analytical Procedures

The following sections describe procedures and methods for sampling, analysis, and documentation applicable to closure activities. While the procedures and methods are specific, other applicable procedures or methods given in SW-846 may be used if conditions or experience show the alternate method to be more appropriate. All sampling and analytical procedures actually used will be annotated in the final closure report. Sampling will be conducted in accordance with procedures given in SW-846 (for hazardous components) and LANL's Inorganic Trace Analysis Group (CST-9) procedures (for radiological analysis).

E.12.6.1 Soil and Sediment Sampling

Soil samples will be collected only if evidence is found that hazardous constituents have migrated from the CSAs discussed in this closure plan. The soil samples will only then be collected to determine if contaminants have migrated from the CSAs and, if so, to determine the horizontal and vertical extent of such migration. Sediment samples from the sump associated with the High Bay CSA may also need to be obtained if evidence is found that hazardous constituents have migrated from this CSA.

E.12.6.1.1 Cleaning of Samplers

To prevent cross contamination, it is important to clean the samplers after each sample is collected. An unused, disposable sampler may be presumed clean if still in a factory-sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a detergent and water solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry.

E.12.6.1.2 Sampling Procedures

The sampling procedures outlined below will be used to obtain samples to determine the amount of RCRA constituents in soil associated with the units undergoing closure. Soil samples will be collected from the 6-inch depth with a trowel or scoop or with a Veihmeyer soil sampler. Sediment samples will be collected with a trowel or scoop. Sampling procedures will be performed as follows:

- Trowel or Scoop
  - Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
  - Combine the samples in a container appropriate for the required analysis.

- Cap the container, attach a label and seal, and preserve as required (see Table E.12-3). Record in the field logbook, and complete the sample analysis request sheet and chain-of-custody form. Deliver the samples to CST-9 for radiological screening and to the laboratory for analysis.

• Veihmeyer Sampler
  - Assemble the sampler by screwing in the tip and drive head on the sampling tube.
  - Insert the tapered handle (drive guide) of the drive hammer through the drive head.
  - Place the sampler in a perpendicular position on the soil to be sampled.
  - With the left hand holding the tube, drive the sampler into the soil to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube further than the tip of the hammer's drive guide.
  - Record the length of the tube that penetrated the material.
  - Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.
  - Rotate the sampler at least two revolutions to shear off the sample at the bottom.
  - Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.
  - Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a puller jack and grip.
  - Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.
  - Store the sample in an appropriate sample container.
  - Label the sample, affix the seals, preserve as required (see Table E.12-3), record in the field logbook, complete the sample analysis request sheet and chain-of-custody form, and deliver the samples to CST-9 for radiological screening and to the laboratory for analysis.

E.12.6.2 Liquid Sampling

A coliwasa or similar device will be used to sample unused wash water solutions before decontamination begins in order to determine baseline parameters. It will also be used to sample the wash water used in cleaning structures and equipment. As an alternative to the coliwasa, glass tubes may be used to sample

liquids. The primary advantage in using a glass tube is that the tube will be disposed of appropriately after each sample is collected, thus eliminating the potential for cross contamination.

E.12.6.2.1 Cleaning of Samplers

The sampler must be clean before use. An unused, disposable sampler may be presumed clean if still in a factory-sealed wrapper. Unsealed samplers will be cleaned prior to use. Samplers will be washed with a detergent and water solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the coliwasa is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Improper cleaning of sampling equipment will cause cross contamination of samples. Clean samplers should be stored in clean polyethylene plastic tubes or bags in a clean and protected area.

E.12.6.2.2 Sampling Procedure

Liquid sampling with a coliwasa will be performed as follows:

- Ensure that the coliwasa is clean.
- Assemble the coliwasa.
- Check that the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.
- Wear necessary protective clothing and gear, and observe required sampling precautions.
- Put the sampler in the open position by placing the stopper-rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.
- Slowly lower the coliwasa into the liquid at a rate that permits the level of the liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a nonrepresentative sample.
- When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.
- Slowly withdraw the sampler from the container with one hand, while wiping the sampler tube with a disposable cloth with the other hand.
- Carefully discharge the sample into a sample container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block, while the lower end of the sampler is positioned in the sample container.

- Preserve as required (see Table E.12-4), cap the container, attach a label and seal, place immediately in an insulated container with ice (if required), record in the field logbook, and complete the sample analysis request sheet and chain-of-custody form.

- Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site, or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.

E.12.6.3 Sample Handling and Documentation

Samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and sample analysis request form. The chain-of-custody form is necessary to trace sample possession from the time of collection to the time of analysis and must accompany every sample. The original record accompanies shipment. The copy is retained by LANL. If samples are analyzed at LANL, the original will be maintained by LANL. The request for analysis form has two parts: field and laboratory. The field portion of this form must be completed by the person collecting the sample and include most of the pertinent information noted in the logbook. The laboratory portion is intended to be completed by the analytical laboratory personnel when the sample is received. The analytical laboratory retains the original record and sends a copy to LANL.

Sample containers appropriate for the requested analyses will be used for all samples. Sample containers, preservation, and holding times will conform to those specified in SW-846 for the corresponding analyses. Samples will be collected, placed in bottles, sealed, and tagged. Sample container surfaces will be screened for radiological contamination and decontaminated, if necessary. Sample containers will then be immediately packed in vermiculite, sawdust, or if refrigeration is required, an insulated container with ice. Recommended sample containers, preservation, and holding times are presented in Tables E.12-3 and E.12-4.

The sample container must be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. A sample label is necessary to prevent misidentification of samples and should include, if applicable, the grid number referenced to positions staked on the site perimeter. The sample label must be completed to include the project name, sample number, collection date/time, collector's name, sample location, sample media description, preservative, and analysis requested. In the case of soil sampling, field information shall include observations such as the soil texture and surface appearance, ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling.

A field logbook will be kept and will contain all information pertinent to field surveys and sampling. The logbook shall have bound and consecutively numbered pages in 8 1/2 - by 11 inch format. Minimum entries should include:

- Purpose of sample (routine sampling, special sampling)

- Location of sampling (coordinates referenced to staked field points, if soil sample)

- Name and business address of person making log entry

- Type of process producing waste
- Number and volume of sample
- Description of each sampling location, sampling methodology, equipment used, etc.
- Date and time of sample collection
- Sample destination and transporter's name (e.g., name of laboratory, United Parcel Service, etc.)
- Map or photograph of the sampling site, if any
- Field observations, if applicable (e.g., ambient temperature, sky conditions, past 24-hour precipitation)
- Field measurements, if applicable (e.g., pH, conductivity)
- Collector's sample identification number(s)
- Signature of person responsible for the log entry.

Because sampling situations vary widely, no specific rule can be given as to the extent of information that must be entered in the logbook. It is recommended, however, to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

E.12.7 Quality Assurance/Quality Control

A qualified individual or individuals shall be designated to independently oversee the closure activities and to report directly to senior management on the quality of the closure performance. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed, and review the analysis reports for accuracy and adequacy. A written QA/QC plan prepared in accordance with SW-846 guidance shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the level of decontamination verification achieved.

E.12.8 Closure Report

Upon completion of the closure activities for each CSA addressed in this closure plan, a closure report shall be submitted to the Secretary of the NMED. The report shall document the closure and contain, at a minimum, the following:

- The certification described in Section E.12.5
- Any variance from the approved activities and the reason for the variance

- A tabular summary of all sampling results, showing:
  - Sample identification
  - Sampling location
  - The datum reported
  - Detection limit for each datum
  - A measure of analytical precision (e.g., uncertainty, range, variance)
  - Identification of analytical procedure
  - Identification of analytical laboratory.

- A QA/QC statement on analytical data validation and decontamination verification

- The location of the file of supporting documentation, including:
  - Field logbooks
  - Laboratory sample analysis reports
  - QA/QC documentation
  - Chain-of-custody forms.

- Disposition location of RCRA-regulated closure materials

- A certification of accuracy of the report.

TABLE E.12-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 54, BUILDING 38 (TA-54-38), RADIOASSAY AND NONDESTRUCTIVE TESTING (RANT) FACILITY CONTAINER STORAGE AREAS

Parameter	Test Method	Reference[b]
Ignitability	Pensky-Martens closed-cup method	(L) SW1010 (L) ASTM D93-80
Reactivity	Test method to determine hydrogen cyanide released from waste	(L, S) HCN Test Method, Section 7.3
	Test method to determine hydrogen sulfide released from waste	(L, S) H_2S Test Method, Section 7.3
Corrosivity	Electrometric (pH of aqueous solution)	(L) SW9040B
Toxicity characteristic	Toxicity characteristic leaching procedure (TCLP) extraction	(L, S) SW1311
Metals:	Graphite furnace atomic absorption (AA) spectroscopy, gaseous hydride AA, or direct aspiration AA	
Arsenic		(L, S) SW7060A, SW7061A
Barium		(L, S) SW7080A, SW7081
Cadmium		(L, S) SW7130, SW7131A
Chromium		(L, S) SW7190, SW7191
Lead		(L, S) SW7420, SW7421

Refer to footnotes at end of attachment.

Selenium		(L, S) SW7740, SW7741A
Silver		(L, S) SW7760A, SW7761
Mercury	Manual cold-vapor technique	(L)SW7470A, (S) SW7471A

TABLE E.12-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 54, BUILDING 38 (TA-54-38), RADIOASSAY AND NONDESTRUCTIVE TESTING (RANT) FACILITY CONTAINER STORAGE AREAS
(continued)

Parameter	Test Method	Reference[b]
Volatile organics	Gas chromatography (GC)/mass spectrometry (MS) GC/MS capillary column technique	(L, S) SW8240B (L, S) SW8260A
Semivolatile organics	GC/MS GC/MS capillary column technique	(L, S) SW8250A (L, S) SW8270B
Organochlorine pesticides	TCLP extraction and GC	(L, S) SW8080A
Chlorinated herbicides		(L, S) SW8150B
Total metals[c]	Acid digestion Inductively coupled plasma atomic emission spectroscopy	(L) SW3010A, (S) SW3050A (L, S) SW6010A

Refer to footnotes at end of attachment.

Arsenic	(L, S) SW6010A
Barium	(L, S) SW6010A
Beryllium	(L, S) SW6010A
Cadmium	(L, S) SW6010A
Chromium	(L, S) SW6010A
Lead	(L, S) SW6010A
Nickel	(L, S) SW6010A

Refer to footnotes at end of attachment.

TABLE E.12-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 54, BUILDING 38 (TA-54-38), RADIOASSAY AND NONDESTRUCTIVE TESTING (RANT) FACILITY CONTAINER STORAGE AREAS
(continued)

Parameter	Test Method	Reference[b]
Selenium		(L, S) SW6010A
Silver		(L, S) SW6010A
Thallium		(L, S) SW6010A
Zinc		(L, S) SW6010A
Mercury	Manual cold-vapor technique	(L) SW7470A (S) SW7471A
Free liquids	Paint Filter Liquids Test	(L, S) SW9095

[a] At Los Alamos National Laboratory, current analytical capabilities include limited analyses of mixed waste samples. These analyses include, but are not limited to, gross alpha, beta, and gamma screening.
[b] "ASTM" refers to American Society for Testing and Materials standards.
"SW" refers to U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
(L) refers to liquid waste.
(S) refers to solid waste.
[c] See also atomic absorption methods.

TABLE E.12-2
SCHEDULE FOR CLOSURE ACTIVITIES AT THE TECHNICAL AREA 54, BUILDING 38 (TA-54-38), RADIOASSAY AND NONDESTRUCTIVE TESTING (RANT) FACILITY CONTAINER STORAGE AREAS

Activity	Maximum Time Required[a]
Let contract request for proposals-90 Days	
Notify the New Mexico Environment Department (NMED)	-45 Days
Receive proposals	-30 Days
Select contractor and award contract	-10 Days
Collect background samples	-5 Days
Final receipt of waste	Day 0
Begin closure activities (perform washdown of structures)	Day 10
Perform initial sampling of the waste management area	Day 15
Analyze samples	Day 45
Perform additional washdown (if necessary)	Day 50
Perform additional sampling (if necessary)	Day 60
Analyze samples (if necessary)	Day 90
Perform pad washdown and sampling	Day 100
Analyze samples	Day 130
Perform final cleanup (e.g., removal of decontaminated equipment and decontamination wastes)	Day 130
Verify decontamination	Day 140
Submit final report to NMED	Day 180

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

TABLE E.12-3
SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES
FOR SEDIMENT/SOIL/SLUDGE SAMPLES

Analyte Group	Container	Preservative	Holding Time[a]
Target compound volatile organics[b]	8 ounce (oz.) WM[c]-G[d]	Cool 4°Celsius (C)	14 days from field collection to toxicity characteristic leaching procedure (TCLP) extraction 14 days from preparative extraction to determinative analysis
Target compound semivolatile organics[b]	2 x 120 milliliter (ml) G vial Teflon™-lined cap	Cool 4°C	14 days from field collection to TCLP extraction 7 days from TCLP extraction to preparative extraction 40 days from preparative extraction to determinative analysis
Target analyte metals[b] (except mercury)	8 oz. WM-G	Cool 4°C	180 days from field collection to TCLP extraction 180 days from preparative extraction to determinative analysis
Mercury	1 liter P[e]	HNO_3[f] to pH <2	28 days from field collection to TCLP extraction 28 days from preparative extraction to determinative analysis
Radioactivity screening	120 ml G vial	None	Analyze upon receipt

[a] Holding time information was taken from the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Appendix II, revised November 1, 1995.
[b] Target compound volatile and semivolatile organics and target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[c] WM = Wide-mouth
[d] G = Glass
[e] P = Polyethylene
[f] HNO_3 = Nitric acid

TABLE E.12-4
SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES
FOR LIQUID SAMPLES

Analyte Group	Container	Preservative	Holding Time[a]
Target compound volatile organics[b]	2 x 40 milliliter (ml) AG[c] septa vials	HCI[d], Cool 4°Celsius (C)	14 days from field collection to toxicity characteristic leaching procedure (TCLP) extraction 14 days from preparative extraction to determinative analysis
Target compound semivolatile organics[b]	2 x 1 liter AG	Cool 4°C	14 days from field collection to TCLP extraction 7 days from TCLP extraction to preparative extraction 40 days from preparative extraction to determinative analysis
Target analyte metals[b] (except mercury)	1 liter P[e]	HNO_3[f] to pH <2	180 days from field collection to TCLP extraction 180 days from preparative extraction to determinate analysis
Mercury	500 ml P	HNO_3 to pH <2	28 days from field collection to TCLP extraction 28 days from preparative extraction to determinative analysis
Radioactivity screening	40 ml G[g] vial, no septa	None	Analyze upon receipt

[a] Holding time information was taken from the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Appendix II, revised November 1, 1995.
[b] Target compound volatile and semivolatile organics and target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[c] AG = Amber glass
[d] HCl = Hydrochloric acid
[e] P = Polyethylene
[f] HNO_3 = Nitric acid
[g] G = Glass

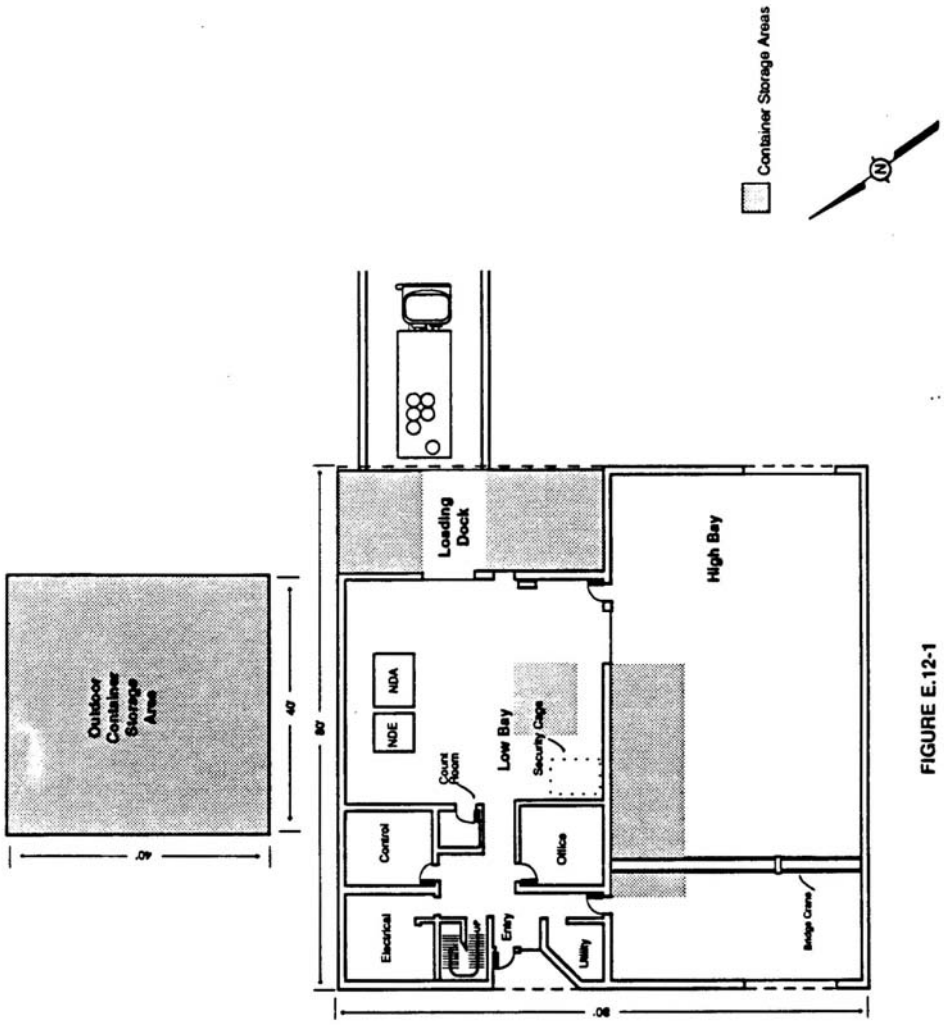


FIGURE E.12-1

TECHNICAL AREA (TA) 54 WEST, BUILDING 38, RADIOASSAY AND NONDESTRUCTIVE TESTING (RANT) FACILITY
LOW BAY, HIGH BAY, LOADING DOCK, AND OUTDOOR CONTAINER STORAGE AREAS

CONTAINER MANAGEMENT
PERMIT ATTACHMENT F
NM0890010515-1

ATTACHMENT F
CONTAINER MANAGEMENT

F.1 CONTAINER PACKAGING, SAMPLING and LABELING

F.1.1 Container Packaging and Transport

When chemical substances are declared to be in excess, the originating group completes Waste Profile Form (WPF, see Permit Attachments A.2 and A.3) and sends the form to the Chemical and Mixed Waste Management Group (CMWM). The WPF provides waste characterization information for subsequent management of material. The WPF is reviewed for adequacy of information and assignation of segregation codes, Department of Transportation information, and Environmental Protection Agency (EPA) Hazardous Waste Numbers. When the WPF is approved, the waste generator submits a Chemical Waste Disposal Request (CWDR) to CMWM. The CWDR lists the chemical waste the generating group needs to dispose of, the quantity of the wastes, and other pertinent information about the containers.

A uniform waste manifest is prepared for use when the waste is collected, packaged, and transported. All waste materials are packaged and transferred in accordance with DOT regulations.

CST-5 personnel review the waste disposal request for adequacy of information and assignation of segregation codes, DOT information, and EPA codes. CST-5 personnel then use the waste disposal request to complete the shipping papers for waste collection. Also, CST-5 use the waste disposal request to create a second record as part of the Hazardous Waste Database. CST-5 personnel visit the generating site to package the waste and transport it to TA-54, Area L. All waste is transferred in accordance with DOT regulations and Laboratory procedures.

Containers will be visually inspected for integrity before transport. If the container is unacceptable, it will be repackaged or overpacked prior to transport. The wastes are transported by vehicles ranging from half-ton to trucks to semitrailers with maximum capacities of up to 80,000 pounds.

Upon arrival at a hazardous or mixed waste management unit, the wastes are unloaded from the transport vehicle and placed into appropriate storage areas. Lab pack waste will be temporary placed at the packaging building for labeling or compositing. Drums and Tuff-Tanks will be placed on either the sampling pad or storage pad for sampling and labeling.

F.1.2 Drum Labeling, Recording, and Sampling System

Each unique package of waste is labeled with the following information:

—chemical segregation group number

—unique record number

—date of generation (if this information is not already on the container, the date from the CWDR form is used)

—either an EPA hazardous waste label or the words “hazardous waste.”

—DOT Hazard class and shipping information, as appropriate

This information and the data from the CWDR are entered into a chemical and mixed waste database. All records are then maintained in accordance with the requirements of this permit.

Sampling of the waste is then performed as outlined in Permit Attachment A. The sampling pad at TA-54, Area L, is restricted to one compatibility group of chemicals at a time (e.g., organics). The group allowed at the time will be posted on the pad. This ensures that incompatible chemicals do not react in the containment basin of the pad. Before a new compatibility group of chemicals is placed on the pad, the containment area will be cleaned. For this reason, the main sampling pad will generally be used for organic waste and acid/base waste will be sampled at the appropriate storage cell.

After all packages are labeled and/or sampled, they are moved to one of the Laboratory's storage areas. The permitted areas are defined in Permit Module III.

F.2 STORAGE AREA PRACTICES

F.2.1 Storage Areas at TA-50 and TA-54

The Laboratory has the following storage areas that are the subject of this permit: two modular storage units and the main storage pad at TA-54, Area L; the modular storage unit at TA-50, the storage room ; ; the TA-50-69 indoor and outdoor storage units (two total); and the TA-54-38 storage units (four total); and TA-54-226, -229, -230, -231, -232, and Pad 10 at TA-54, Area G. The usage of each of these units is discussed below.

F.2.1.1 Modular Storage Units, TA-54, Area L (TA-54-68 and -69)

The primary usage of the modular units will be for the storage of lab pack waste, particularly those in fiberboard containers. After labeling, the lab packs are placed directly in the appropriate storage cell. Each modular unit has three cells allowing a maximum of six chemical family groups to be stored at any one time. However, multiple cells may be used for the same chemical family, such as two cells containing organic waste. Each cell will be labeled as to the chemical family stored there. If at any time the cell designation changes, such as from organic to reactive, the cell will first be cleaned to ensure that no organic residues remain that would create an incompatibility problem during a spill.

F.2.1.2 Storage Pad at TA-54, Area L (TA-54-32)

Material stored on the storage pad at TA-54, Area L, will generally be placed there after labeling and sampling. This may not be the case for acids and bases where the storage cell is also used as the sampling pad. The pad is divided into six cells allowing the storage of six families of chemicals. However, more than one cell may be used for the same chemical type. All cells will be labeled as to which chemical type is stored there. If at any time it is necessary to change the designation of a cell, it will first be cleaned to remove any residues that might produce an unfavorable reaction with the new chemical type.

F.2.1.3 Modular Storage Unit at TA-50 (TA-50-114)

The modular storage units at TA-50 will be used primarily to store acid and base wastes. Each cell will be labeled acid or base to indicate the type of waste stored there. If at any time the designation of a cell needs to be changed, the cell will first be cleaned to ensure that incompatible residues have been removed. All waste stored here will have been labeled and sampled at TA-54, Area L.

F.2.1.5 Storage Room at TA-50-37, Room 117

The storage room at TA-50-37 is divided into two areas, one for solids and one for liquids. The liquid side is further divided into two cells. Therefore, up to three chemical types may be stored at any one time. Cells will be labeled as to the chemical type stored there. If at any time the cell designation needs to be changed, the cell will be cleaned to remove any incompatible residues.

F.2.1.6 Storage Pads at TA-54, Area L (TA-54-36 and –58)

The primary activities at TA-54-36 and TA-54-58 will fall into two categories. The first is sorting, surveying, and decontaminating certain waste currently in storage and labeled "suspect mixed waste." All of the waste found to contain no radioactive component will be repackaged, shipped off-site, and disposed of at a permitted Hazardous Waste Treatment, Storage and Disposal Facility.

The second is directed at specific mixed waste streams for which commercial treatment and/or disposal is currently available. These mixed waste streams will be staged, inspected, sampled, and analyzed to provide complete hazardous waste and radiological characterization. When these steps are completed, the mixed waste streams will be profiled into the commercial facilities and shipped for ultimate treatment and/or disposal.

The activities at pads #58 and #36 consist of opening the drums, surveying the contents for radiological content, decontaminating the material as warranted, repackaging the material for either return to storage, shipment off-site for disposal, or disposal as low level waste at TA-54, Area G.

Pads #58 and #36 consist of two cement pads that are sloped toward a dry containment sump at the centerline of the rear wall to facilitate pumping of any captured liquids. The walls encircling the pads vary from approximately 4 inches in height at the drive over entrance to the pad to approximately eleven and one-half inches in height at the edge of the dry sump. The "dry sump" in each pad is to provide secondary containment only, has no discharge and must be pumped in the event any liquid is captured. The pads are coated with an impermeable epoxy coating and are covered by a single, metal "pole barn."

Pad #36 has a temporary modular containment structure constructed over it. This structure provides containment and protection for the sampling and repackaging activities. The sides of the structure have been equipped with slanted sheets of plywood to direct the snow and rain away from the secondary containment. The modular containment structure is secured to the beams supporting the "pole barn" wit guy wires. Whenever this temporary structure is removed from Pad #36, it will be decontaminated according to the procedures of Permit Attachment E.3, E.3.3 and E.3.4: Closure Procedures and Decontamination and Decontamination Verification.

F.2.1.6 TA-54, Area G, Container Storage Areas (TA-54-226, -229, -230, -231, -232, and Pad 10)

The container storage areas (CSA) at TA-54, Area G (TA-54-226, -229, -230, -231, -232, and Pad 10) will be used for the storage of transuranic (TRU) mixed waste containers retrieved from under earthen cover at Pad 1 (TA-54-226) and Pads 2 and 4. The waste containers, including drums and fiberglass-reinforced plywood (FRP) boxes, will be segregated by LANL waste code prior to being placed in a storage dome. If any of the retrieved containers require overpacking or repackaging, the overpack or repackaging container will be labeled with barcodes that identify the original waste container. None of the wastes to be placed in the storage domes will be ignitable or reactive, no incompatible wastes will be mixed, and no wastes will be placed in containers that previously held incompatible wastes. TA-54-230 will be used to store drums and FRP crates that potentially contain liquids. The remaining CSAs will store only solid TRU mixed waste.

F.2.1.7 TA-50-69 Indoor and Outdoor Container Storage Areas

The indoor and outdoor storage areas associated with TA-50-69 are used for storage of TRU mixed waste, low-level mixed waste, and hazardous waste. Potentially incompatible wastes will be segregated on self-containment pallets at both the indoor and outdoor storage areas. Potential liquid-bearing waste containers will be stored on self-containment pallets at both the indoor and outdoor storage areas.

F.2.1.8 TA-54-38 Container Storage Areas

The four container storage areas at TA-54-38 are used for storage of TRU mixed waste and low-level mixed waste. Potentially incompatible wastes will be segregated on self-containment pallets at each storage area. Potential liquid-bearing waste containers will be stored on self-containment pallets at each storage area.

F.2.2 General Container Management Practices

All recyclable materials are stored as hazardous waste until such time as they are recycled. They are placed in the same segregated storage areas as the other waste.

Any bulging drums are handled in accordance with accepted practice and Laboratory procedures. Generally this means that personnel will follow such practices as slowly venting the drum as it is being opened and personnel wearing protective clothing and splash guards.

Any spills resulting from the transfer/storage of waste will be cleaned up in accordance with Attachment D.

Inspection will be conducted and aisle space will be maintained in accordance with Permit Attachment B.

Off-site shipments of waste will occur at either the given storage area directly or from the transport pad at TA-54, Area L. This will avoid unnecessary transport on Pajarito Road.

Repackaging of waste will generally occur adjacent to the storage area the waste was removed from. Other possible areas include the TA-54, Area L, sampling pad (TA-54-31), transport pad (TA-54-58), and TA-54-59; and the TA-50-69 indoor storage area. Repackaging can range from overpacking a leaking container to off-site contractors repackaging the lab pack waste to meet incinerator specifications.

Permit Module III provides additional requirements all container storage areas.

ATTACHMENT G
Authorized Wastes
NM0890010515-1

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
D	0	0	1	100,000	P	S	0	1							
D	0	0	2	320,000	P	S	0	1	T	0	1				
D	0	0	3	35,000	P	S	0	1	T	0	1				Reacted at TA-16 (see IIIc)
D	0	0	3	5,000	P	S	0	1	T	0	1				Lithium hydride only
D	0	0	4	2,000	P	S	0	1	T	0	1				
D	0	0	5	60,000	P	S	0	1	S	0	2	T	0	1	Sand from cleanout of explosives burn pads
D	0	0	6	1,000	P	S	0	1	T	0	1				
D	0	0	7	1,500	P	S	0	1	T	0	1				
D	0	0	8	100,000	P	S	0	1	T	0	1				May contain other metals (D004-D011)
D	0	0	9	15,000	P	S	0	1	T	0	1				
D	0	1	0	7,500	P	S	0	1	T	0	1				
D	0	1	1	7,500	P	S	0	1	T	0	1				
D	0	1	2	1,000	P	S	0	1							
D	0	1	3	500	P	S	0	1							
D	0	1	4	500	P	S	0	1							
D	0	1	5	500	P	S	0	1							
D	0	1	6	1,000	P	S	0	1							
D	0	1	7	500	P	S	0	1							
D	0	1	8	15,000	P	S	0	1							
D	0	1	9	500	P	S	0	1							
D	0	2	0	500	P	S	0	1							
D	0	2	1	500	P	S	0	1							
D	0	2	2	3,000	P	S	0	1							
D	0	2	3	500	P	S	0	1							
D	0	2	4	500	P	S	0	1							
D	0	2	5	500	P	S	0	1							
D	0	2	6	1,000	P	S	0	1							
D	0	2	7	500	P	S	0	1							

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
D	0	2	8	500	P	S	0	1							
D	0	2	9	500	P	S	0	1							
D	0	3	0	500	P	S	0	1							
D	0	3	1	500	P	S	0	1							
D	0	3	2	500	P	S	0	1							
D	0	3	3	500	P	S	0	1							
D	0	3	4	500	P	S	0	1							
D	0	3	5	2,500	P	S	0	1							
D	0	3	6	500	P	S	0	1							
D	0	3	7	500	P	S	0	1							
D	0	3	8	500	P	S	0	1							
D	0	3	9	1,000	P	S	0	1							
D	0	4	0	2,500	P	S	0	1							
D	0	4	1	500	P	S	0	1							
D	0	4	2	500	P	S	0	1							
D	0	4	3	500	P	S	0	1							
				END OF D DESIGNATOR											

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
F	0	0	1	360,000	P	S	0	1	S	0	2				Solidified if treatment standards are met
F	0	0	2	75,000	P	S	0	1	S	0	2				
F	0	0	3	150,000	P	S	0	1	S	0	2				
F	0	0	4	2,000	P	S	0	1							
F	0	0	5	100,000	P	S	0	1	S	0	2				
F	0	0	6	500*	P	S	0	1	T	0	1				
F	0	0	7	12,500	P	S	0	1	T	0	1				
F	0	0	8	1,000	P	S	0	1	T	0	1				
F	0	0	9	6,000	P	S	0	1	T	0	1				
F	0	2	7	700	P	S	0	1							
F	0	2	8	700	P	S	0	1							
				END OF F DESIGNATOR											

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
K	0	4	4	20,000	P	S	0	1							
K	0	4	7	500*	P	S	0	1							
K	0	4	5	2,000	P	S	0	1							
				END OF K DESIGNATOR											

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
P	0	0	1	1,000	P	S	0	1							
P	0	0	2	1,000	P	S	0	1							
P	0	0	3	1,000	P	S	0	1							
P	0	0	4	1,000	P	S	0	1							
P	0	0	4	1,000	P	S	0	1	T	0	3				
P	0	0	5	1,000	P	S	0	1							
P	0	0	6	1,000	P	S	0	1							
P	0	0	7	1,000	P	S	0	1							
P	0	0	8	1,000	P	S	0	1							
P	0	0	9	1,000	P	S	0	1							
P	0	1	0	1,000	P	S	0	1							
P	0	1	1	1,000	P	S	0	1							
P	0	1	2	1,000	P	S	0	1							
P	0	1	3	1,000	P	S	0	1	T	0	1				
P	0	1	4	1,000	P	S	0	1							
P	0	1	5	1,000	P	S	0	1							
P	0	1	6	1,000	P	S	0	1							
P	0	1	7	1,000	P	S	0	1							
P	0	1	8	1,000	P	S	0	1							
P	0	2	0	1,000	P	S	0	1							
P	0	2	1	1,000	P	S	0	1	T	0	1				
P	0	2	2	1,000	P	S	0	1							
P	0	2	3	1,000	P	S	0	1							
P	0	2	4	1,000	P	S	0	1							
P	0	2	6	1,000	P	S	0	1							
P	0	2	7	1,000	P	S	0	1							
P	0	2	8	1,000	P	S	0	1							
P	0	2	9	500*	P	S	0	1	T	0	1				
P	0	3	0	500*	P	S	0	1	T	0	1				
P	0	3	1	500*	P	S	0	1							
P	0	3	3	500*	P	S	0	1							
P	0	3	4	500*	P	S	0	1							

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
P	0	3	6	500*	P	S	0	1							
P	0	3	7	500*	P	S	0	1							
P	0	3	8	500*	P	S	0	1							
P	0	3	9	500*	P	S	0	1							
P	0	4	0	500*	P	S	0	1							
P	0	4	1	500*	P	S	0	1							
P	0	4	2	500*	P	S	0	1							
P	0	4	3	500*	P	S	0	1							
P	0	4	4	500*	P	S	0	1							
P	0	4	5	500*	P	S	0	1							
P	0	4	6	500*	P	S	0	1							
P	0	4	7	500*	P	S	0	1							
P	0	4	8	500*	P	S	0	1							
P	0	4	9	500*	P	S	0	1							
P	0	5	0	500*	P	S	0	1							
P	0	5	1	500*	P	S	0	1							
P	0	5	4	500*	P	S	0	1	T	0	1				
P	0	5	6	6,000	P	S	0	1							
P	0	5	7	500*	P	S	0	1							
P	0	5	8	500*	P	S	0	1							
P	0	5	9	500*	P	S	0	1							
P	0	6	0	500*	P	S	0	1							
P	0	6	2	500*	P	S	0	1							
P	0	6	3	500*	P	S	0	1							
P	0	6	4	500*	P	S	0	1							
P	0	6	5	500*	P	S	0	1							
P	0	6	6	500*	P	S	0	1							
P	0	6	7	500*	P	S	0	1							
P	0	6	8	500*	P	S	0	1							
P	0	6	9	500*	P	S	0	1							
P	0	7	0	500*	P	S	0	1							

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
P	0	7	1	500*	P	S	0	1							
P	0	7	2	500*	P	S	0	1							
P	0	7	3	500*	P	S	0	1	T	0	1				
P	0	7	4	500*	P	S	0	1	T	0	1				
P	0	7	5	500*	P	S	0	1							
P	0	7	6	500*	P	S	0	1	T	0	1				
P	0	7	7	500*	P	S	0	1							
P	0	7	8	500*	P	S	0	1	T	0	1				
P	0	8	1	500*	P	S	0	1							
P	0	8	2	500*	P	S	0	1							
P	0	8	4	500*	P	S	0	1							
P	0	8	5	500*	P	S	0	1							
P	0	8	7	500*	P	S	0	1							
P	0	8	8	500*	P	S	0	1							
P	0	8	9	500*	P	S	0	1							
P	0	9	2	500*	P	S	0	1							
P	0	9	3	500*	P	S	0	1							
P	0	9	4	500*	P	S	0	1							
P	0	9	5	500*	P	S	0	1							
P	0	9	6	500*	P	S	0	1							
P	0	9	7	500*	P	S	0	1							
P	0	9	8	500*	P	S	0	1	T	0	1				
P	0	9	9	500*	P	S	0	1	T	0	1				
P	1	0	1	500*	P	S	0	1							
P	1	0	2	500*	P	S	0	1							
P	1	0	3	500*	P	S	0	1							
P	1	0	4	500*	P	S	0	1	T	0	1				
P	1	0	5	500*	P	S	0	1							
P	1	0	6	500*	P	S	0	1	T	0	1				
P	1	0	7	500*	P	S	0	1							
P	1	0	8	500*	P	S	0	1							
P	1	0	9	500*	P	S	0	1							

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
P	1	1	0	500*	P	S	0	1							
P	1	1	1	500*	P	S	0	1							
P	1	1	2	500*	P	S	0	1							
P	1	1	3	500*	P	S	0	1	T	0	1				
P	1	1	4	500*	P	S	0	1	T	0	1				
P	1	1	5	500*	P	S	0	1	T	0	1				
P	1	1	6	500*	P	S	0	1							
P	1	1	8	500*	P	S	0	1							
P	1	1	9	500*	P	S	0	1							
P	1	2	0	500*	P	S	0	1							
P	1	2	1	1,000	P	S	0	1	T	0	1				
P	1	2	2	1,000	P	S	0	1							
P	1	2	3	1,000	P	S	0	1							
				END OF P DESIGNATOR											

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
U	0	0	1	500*	P	S	0	1							
U	0	0	2	1,000	P	S	0	1							
U	0	0	3	500*	P	S	0	1							
U	0	0	4	500*	P	S	0	1							
U	0	0	5	500*	P	S	0	1							
U	0	0	6	500*	P	S	0	1							
U	0	0	7	500*	P	S	0	1							
U	0	0	8	500*	P	S	0	1							
U	0	0	9	500*	P	S	0	1							
U	0	1	0	500*	P	S	0	1							
U	0	1	1	500*	P	S	0	1							
U	0	1	2	500*	P	S	0	1							
U	0	1	4	500*	P	S	0	1							
U	0	1	5	500*	P	S	0	1							
U	0	1	6	500*	P	S	0	1							
U	0	1	7	500*	P	S	0	1							
U	0	1	8	500*	P	S	0	1							
U	0	1	9	1,000	P	S	0	1							
U	0	2	0	500*	P	S	0	1							
U	0	2	1	500*	P	S	0	1							
U	0	2	2	500*	P	S	0	1							
U	0	2	3	500*	P	S	0	1							
U	0	2	4	500*	P	S	0	1							
U	0	2	5	500*	P	S	0	1							
U	0	2	6	500*	P	S	0	1							
U	0	2	7	500*	P	S	0	1							
U	0	2	8	1,000	P	S	0	1							
U	0	2	9	1,000	P	S	0	1							
U	0	3	0	1,000	P	S	0	1							
U	0	3	1	1,000	P	S	0	1							
U	0	3	2	1,000	P	S	0	1	T	0	1				
U	0	3	3	1,000	P	S	0	1							

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
U	0	3	4	1,000	P	S	0	1							
U	0	3	5	1,000	P	S	0	1							
U	0	3	6	1,000	P	S	0	1							
U	0	3	7	1,000	P	S	0	1							
U	0	3	8	1,000	P	S	0	1							
U	0	3	9	1,000	P	S	0	1							
U	0	4	1	1,000	P	S	0	1							
U	0	4	2	1,000	P	S	0	1							
U	0	4	3	1,000	P	S	0	1							
U	0	4	4	1,000	P	S	0	1							
U	0	4	5	1,000	P	S	0	1							
U	0	4	6	1,000	P	S	0	1							
U	0	4	7	1,000	P	S	0	1							
U	0	4	8	1,000	P	S	0	1							
U	0	4	9	1,000	P	S	0	1							
U	0	5	0	1,000	P	S	0	1							
U	0	5	1	1,000	P	S	0	1							
U	0	5	2	1,000	P	S	0	1							
U	0	5	3	1,000	P	S	0	1							
U	0	5	5	1,000	P	S	0	1							
U	0	5	6	500*	P	S	0	1							
U	0	5	7	500*	P	S	0	1							
U	0	5	8	500*	P	S	0	1							
U	0	5	9	500*	P	S	0	1							
U	0	6	0	500*	P	S	0	1							
U	0	6	1	500*	P	S	0	1							
U	0	6	2	500*	P	S	0	1							
U	0	6	3	500*	P	S	0	1							
U	0	6	4	500*	P	S	0	1							
U	0	6	6	500*	P	S	0	1							
U	0	6	7	500*	P	S	0	1							
U	0	6	8	500*	P	S	0	1							

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
U	0	6	9	500*	P	S	0	1							
U	0	7	0	500*	P	S	0	1							
U	0	7	1	500*	P	S	0	1							
U	0	7	2	500*	P	S	0	1							
U	0	7	3	500*	P	S	0	1							
U	0	7	4	500*	P	S	0	1							
U	0	7	5	500*	P	S	0	1							
U	0	7	6	500*	P	S	0	1							
U	0	7	7	500*	P	S	0	1							
U	0	7	8	500*	P	S	0	1							
U	0	7	9	500*	P	S	0	1							
U	0	8	0	1,000	P	S	0	1							
U	0	8	1	500*	P	S	0	1							
U	0	8	2	500*	P	S	0	1							
U	0	8	3	500*	P	S	0	1							
U	0	8	4	500*	P	S	0	1							
U	0	8	5	500*	P	S	0	1							
U	0	8	6	500*	P	S	0	1							
U	0	8	7	500*	P	S	0	1							
U	0	8	8	500*	P	S	0	1							
U	0	8	9	500*	P	S	0	1							
U	0	9	0	500*	P	S	0	1							
U	0	9	1	500*	P	S	0	1							
U	0	9	2	500*	P	S	0	1							
U	0	9	3	500*	P	S	0	1							
U	0	9	4	500*	P	S	0	1							
U	0	9	5	500*	P	S	0	1							
U	0	9	6	500*	P	S	0	1							
U	0	9	7	500*	P	S	0	1							
U	0	9	8	500*	P	S	0	1							
U	0	9	9	500*	P	S	0	1							
U	1	0	1	500*	P	S	0	1							

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
U	1	0	2	500*	P	S	0	1							
U	1	0	3	500*	P	S	0	1							
U	1	0	5	500*	P	S	0	1							
U	1	0	6	500*	P	S	0	1							
U	1	0	7	500*	P	S	0	1							
U	1	0	8	500*	P	S	0	1							
U	1	0	9	500*	P	S	0	1							
U	1	1	0	500*	P	S	0	1							
U	1	1	1	500*	P	S	0	1							
U	1	1	2	500*	P	S	0	1							
U	1	1	3	500*	P	S	0	1							
U	1	1	4	500*	P	S	0	1							
U	1	1	5	500*	P	S	0	1							
U	1	1	6	500*	P	S	0	1							
U	1	1	7	500*	P	S	0	1							
U	1	1	8	500*	P	S	0	1							
U	1	1	9	500	P	S	0	1							
U	1	2	0	500*	P	S	0	1							
U	1	2	1	500*	P	S	0	1							
U	1	2	2	1,000	P	S	0	1							
U	1	2	3	500*	P	S	0	1							
U	1	2	4	500*	P	S	0	1							
U	1	2	5	500*	P	S	0	1							
U	1	2	6	500*	P	S	0	1							
U	1	2	7	500*	P	S	0	1							
U	1	2	8	500*	P	S	0	1							
U	1	2	9	500*	P	S	0	1							
U	1	3	0	500*	P	S	0	1							
U	1	3	1	500*	P	S	0	1							
U	1	3	2	500*	P	S	0	1							
U	1	3	3	500*	P	S	0	1							
U	1	3	4	10,000	P	S	0	1	T	0	1				

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
U	1	3	5	500*	P	S	0	1				T	0	1	
U	1	3	6	500*	P	S	0	1							
U	1	3	7	1,000	P	S	0	1							
U	1	3	8	1,000	P	S	0	1							
U	1	3	9	1,000	P	S	0	1							
U	1	4	0	1,000	P	S	0	1							
U	1	4	1	1,000	P	S	0	1							
U	1	4	2	1,000	P	S	0	1							
U	1	4	3	1,000	P	S	0	1							
U	1	4	4	1,000	P	S	0	1							
U	1	4	5	1,000	P	S	0	1							
U	1	4	6	1,000	P	S	0	1							
U	1	4	7	1,000	P	S	0	1							
U	1	4	8	1,000	P	S	0	1							
U	1	4	9	1,000	P	S	0	1							
U	1	5	0	1,000	P	S	0	1							
U	1	5	1	1,000	P	S	0	1							
U	1	5	2	1,000	P	S	0	1							
U	1	5	3	1,000	P	S	0	1							
U	1	5	4	1,000	P	S	0	1							
U	1	5	5	1,000	P	S	0	1							
U	1	5	6	1,000	P	S	0	1							
U	1	5	7	1,000	P	S	0	1							
U	1	5	8	1,000	P	S	0	1							
U	1	5	9	1,000	P	S	0	1							
U	1	6	0	1,000	P	S	0	1							
U	1	6	1	1,000	P	S	0	1							
U	1	6	2	1,000	P	S	0	1							
U	1	6	3	500*	P	S	0	1							
U	1	6	4	500*	P	S	0	1							
U	1	6	5	500*	P	S	0	1							
U	1	6	6	500*	P	S	0	1							

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
U	1	6	7	500*	P	S	0	1							
U	1	6	8	500*	P	S	0	1							
U	1	6	9	500*	P	S	0	1							
U	1	7	0	500*	P	S	0	1							
U	1	7	1	500*	P	S	0	1							
U	1	7	2	500*	P	S	0	1							
U	1	7	3	500*	P	S	0	1							
U	1	7	4	500*	P	S	0	1							
U	1	7	6	500*	P	S	0	1							
U	1	7	7	500*	P	S	0	1							
U	1	7	8	500*	P	S	0	1							
U	1	7	9	500*	P	S	0	1							
U	1	8	0	500*	P	S	0	1							
U	1	8	1	500*	P	S	0	1							
U	1	8	2	500*	P	S	0	1							
U	1	8	3	500*	P	S	0	1							
U	1	8	4	500*	P	S	0	1							
U	1	8	5	500*	P	S	0	1							
U	1	8	6	500*	P	S	0	1							
U	1	8	7	500*	P	S	0	1							
U	1	8	8	1,000	P	S	0	1							
U	1	8	9	500*	P	S	0	1							
U	1	9	0	500*	P	S	0	1							
U	1	9	1	500*	P	S	0	1							
U	1	9	2	500*	P	S	0	1							
U	1	9	3	500*	P	S	0	1							
U	1	9	4	500*	P	S	0	1							
U	1	9	6	500*	P	S	0	1							
U	1	9	7	500*	P	S	0	1							
U	2	0	0	500*	P	S	0	1							
U	2	0	1	500*	P	S	0	1							
U	2	0	2	500*	P	S	0	1							

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
U	2	0	3	500*	P	S	0	1							
U	2	0	4	500*	P	S	0	1							
U	2	0	5	500*	P	S	0	1							
U	2	0	6	500*	P	S	0	1							
U	2	0	7	500*	P	S	0	1							
U	2	0	8	500*	P	S	0	1							
U	2	0	9	500*	P	S	0	1							
U	2	1	0	500*	P	S	0	1							
U	2	1	1	1,000	P	S	0	1							
U	2	1	2	500*	P	S	0	1							
U	2	1	3	500*	P	S	0	1							
U	2	1	4	500*	P	S	0	1							
U	2	1	5	500*	P	S	0	1							
U	2	1	6	500*	P	S	0	1							
U	2	1	7	500*	P	S	0	1							
U	2	1	8	500*	P	S	0	1							
U	2	1	9	500*	P	S	0	1							
U	2	2	0	1,000	P	S	0	1							
U	2	2	1	500*	P	S	0	1							
U	2	2	2	500*	P	S	0	1							
U	2	2	3	1,000	P	S	0	1							
U	2	2	5	500*	P	S	0	1							
U	2	2	6	1,500	P	S	0	1							
U	2	2	7	500*	P	S	0	1							
U	2	2	8	2,000	P	S	0	1							
U	2	3	0	500*	P	S	0	1							
U	2	3	1	500*	P	S	0	1							
U	2	3	2	500*	P	S	0	1							
U	2	3	3	500*	P	S	0	1							
U	2	3	4	500*	P	S	0	1							
U	2	3	5	500*	P	S	0	1							
U	2	3	6	500*	P	S	0	1							

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
U	2	3	7	500*	P	S	0	1							
U	2	3	8	500*	P	S	0	1							
U	2	3	9	1,000	P	S	0	1							
U	2	4	0	500*	P	S	0	1							
U	2	4	2	500*	P	S	0	1							
U	2	4	3	500*	P	S	0	1							
U	2	4	4	500*	P	S	0	1							
U	2	4	6	500*	P	S	0	1							
U	2	4	7	500*	P	S	0	1							
U	2	4	8	500*	P	S	0	1							
U	2	4	9	500*	P	S	0	1							
U	3	2	6	500*	P	S	0	1							
U	3	5	3	500*	P	S	0	1							
U	3	5	9	500*	P	S	0	1							
				END OF U DESIGNATOR											

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	*A. EPA Hazardous Waste No. (enter code)*	*B. Estimated Annual Quantity Of Waste*	*C. Unit of Measure (enter code)*	*D. PROCESSES*			
				(1) PROCESS CODES (enter)			*(2) PROCESS DESCRIPTION (If a code is not entered in D(1))*
Technical Area 50, Building 69, Indoor and Outdoor Container Storage Area							
263	D001	1,170	K	S01			Low-level Mixed Waste (LLMW) and Transuranic Mixed Waste (TRUMW)
264	D002	610	K	S01			LLMW and TRUMW
265	D003	60	K	S01			LLMW and TRUMW
266	D004	390	K	S01			LLMW and TRUMW
267	D005	360	K	S01			LLMW and TRUMW
268	D006	57,130	K	S01			LLMW and TRUMW
269	D007	59,610	K	S01			LLMW and TRUMW
270	D008	135,280	K	S01			LLMW and TRUMW
271	D009	4,120	K	S01			LLMW and TRUMW
272	D010	430	K	S01			LLMW and TRUMW
273	D011	480	K	S01			LLMW and TRUMW
274	D018	20	K	S01			LLMW and TRUMW
275	D019	450	K	S01			LLMW and TRUMW
276	D021	170	K	S01			LLMW and TRUMW
277	D022	100	K	S01			LLMW and TRUMW
278	D027	70	K	S01			LLMW and TRUMW
279	D028	18,250	K	S01			LLMW and TRUMW
280	D029	18,160	K	S01			LLMW and TRUMW
281	D030	410	K	S01			LLMW and TRUMW
282	D031	10	K	S01			LLMW and TRUMW
283	D032	260	K	S01			LLMW and TRUMW
284	D033	180	K	S01			LLMW and TRUMW
285	D034	90	K	S01			LLMW and TRUMW
286	D035	10	K	S01			LLMW and TRUMW
287	D036	30	K	S01			LLMW and TRUMW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
288	D037	50	K	S01			LLMW and TRUMW
289	D038	10	K	S01			LLMW and TRUMW
290	D039	120	K	S01			LLMW and TRUMW
291	D040	280	K	S01			LLMW and TRUMW
292	D041	10	K	S01			LLMW and TRUMW
293	D042	90	K	S01			LLMW and TRUMW
294	D043	40	K	S01			LLMW and TRUMW
295	F001	35,050	K	S01			LLMW and TRUMW
296	F002	4,540	K	S01			LLMW and TRUMW
297	F003	2,300	K	S01			LLMW and TRUMW
298	F004	130	K	S01			LLMW and TRUMW
299	F005	20,430	K	S01			LLMW and TRUMW
300	P003	10	K	S01			LLMW and TRUMW
301	P012	10	K	S01			LLMW and TRUMW
302	P015	10	K	S01			LLMW and TRUMW
303	P029	10	K	S01			LLMW and TRUMW
304	P030	10	K	S01			LLMW and TRUMW
305	P031	10	K	S01			LLMW and TRUMW
306	P038	10	K	S01			LLMW and TRUMW
307	P056	20	K	S01			LLMW and TRUMW
308	P063	10	K	S01			LLMW and TRUMW
309	P068	10	K	S01			LLMW and TRUMW
310	P073	110	K	S01			LLMW and TRUMW
311	P076	10	K	S01			LLMW and TRUMW
312	P078	10	K	S01			LLMW and TRUMW
313	P095	10	K	S01			LLMW and TRUMW
314	P096	10	K	S01			LLMW and TRUMW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	*A. EPA Hazardous Waste No. (enter code)*	*B. Estimated Annual Quantity Of Waste*	*C. Unit of Measure (enter code)*	*D. PROCESSES*			
				(1) PROCESS CODES (enter)			*(2) PROCESS DESCRIPTION (If a code is not entered in D(1))*
315	P098	10	K	S01			LLMW and TRUMW
316	P106	10	K	S01			LLMW and TRUMW
317	P113	10	K	S01			LLMW and TRUMW
318	P120	10	K	S01			LLMW and TRUMW
319	U001	10	K	S01			LLMW and TRUMW
320	U002	10	K	S01			LLMW and TRUMW
321	U003	10	K	S01			LLMW and TRUMW
322	U012	10	K	S01			LLMW and TRUMW
323	U019	10	K	S01			LLMW and TRUMW
324	U022	10	K	S01			LLMW and TRUMW
325	U029	10	K	S01			LLMW and TRUMW
326	U031	10	K	S01			LLMW and TRUMW
327	U037	10	K	S01			LLMW and TRUMW
328	U044	10	K	S01			LLMW and TRUMW
329	U045	10	K	S01			LLMW and TRUMW
330	U052	10	K	S01			LLMW and TRUMW
331	U056	10	K	S01			LLMW and TRUMW
332	U057	10	K	S01			LLMW and TRUMW
333	U075	10	K	S01			LLMW and TRUMW
334	U077	10	K	S01			LLMW and TRUMW
335	U080	10	K	S01			LLMW and TRUMW
336	U108	10	K	S01			LLMW and TRUMW
337	U112	10	K	S01			LLMW and TRUMW
338	U115	10	K	S01			LLMW and TRUMW
339	U117	10	K	S01			LLMW and TRUMW
340	U121	10	K	S01			LLMW and TRUMW
341	U122	10	K	S01			LLMW and TRUMW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	*A. EPA Hazardous Waste No. (enter code)*	*B. Estimated Annual Quantity Of Waste*	*C. Unit of Measure (enter code)*	*D. PROCESSES*			
				(1) PROCESS CODES (enter)			*(2) PROCESS DESCRIPTION (If a code is not entered in D(1))*
342	U123	10	K	S01			LLMW and TRUMW
343	U131	10	K	S01			LLMW and TRUMW
344	U133	10	K	S01			LLMW and TRUMW
345	U134	10	K	S01			LLMW and TRUMW
346	U135	10	K	S01			LLMW and TRUMW
347	U140	10	K	S01			LLMW and TRUMW
348	U144	10	K	S01			LLMW and TRUMW
349	U145	10	K	S01			LLMW and TRUMW
350	U151	10	K	S01			LLMW and TRUMW
351	U154	10	K	S01			LLMW and TRUMW
352	U159	10	K	S01			LLMW and TRUMW
353	U160	10	K	S01			LLMW and TRUMW
354	U161	10	K	S01			LLMW and TRUMW
355	U165	10	K	S01			LLMW and TRUMW
356	U169	10	K	S01			LLMW and TRUMW
357	U188	10	K	S01			LLMW and TRUMW
358	U190	10	K	S01			LLMW and TRUMW
359	U196	10	K	S01			LLMW and TRUMW
360	U204	10	K	S01			LLMW and TRUMW
361	U210	10	K	S01			LLMW and TRUMW
362	U211	10	K	S01			LLMW and TRUMW
363	U213	10	K	S01			LLMW and TRUMW
364	U216	10	K	S01			LLMW and TRUMW
365	U218	10	K	S01			LLMW and TRUMW
366	U219	10	K	S01			LLMW and TRUMW
367	U220	10	K	S01			LLMW and TRUMW
368	U225	10	K	S01			LLMW and TRUMW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
369	U226	10	K	S01			LLMW and TRUMW
370	U227	10	K	S01			LLMW and TRUMW
371	U228	10	K	S01			LLMW and TRUMW
372	U239	10	K	S01			LLMW and TRUMW
373	U246	10	K	S01			LLMW and TRUMW
374	D001	25,360	K	S01			Hazardous Waste (HW)
375	D002	20,550	K	S01			HW
376	D003	1,200	K	S01			HW
377	D004	1,700	K	S01			HW
378	D005	1,900	K	S01			HW
379	D006	5,250	K	S01			HW
380	D007	9,400	K	S01			HW
381	D008	39,200	K	S01			HW
382	D009	16,400	K	S01			HW
383	D010	2,150	K	S01			HW
384	D011	11,700	K	S01			HW
385	D016	10	K	S01			HW
386	D017	20	K	S01			HW
387	D018	2,270	K	S01			HW
388	D019	40	K	S01			HW
389	D021	110	K	S01			HW
390	D022	1,450	K	S01			HW
391	D026	180	K	S01			HW
392	D027	80	K	S01			HW
393	D028	18,400	K	S01			HW
394	D029	18,300	K	S01			HW
395	D030	730	K	S01			HW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	*A. EPA Hazardous Waste No. (enter code)*	*B. Estimated Annual Quantity Of Waste*	*C. Unit of Measure (enter code)*	*D. PROCESSES*			
				(1) PROCESS CODES (enter)			*(2) PROCESS DESCRIPTION (If a code is not entered in D(1))*
396	D031	10	K	S01			HW
397	D032	300	K	S01			HW
398	D033	210	K	S01			HW
399	D034	120	K	S01			HW
400	D035	670	K	S01			HW
401	D036	50	K	S01			HW
402	D037	50	K	S01			HW
403	D038	580	K	S01			HW
404	D039	200	K	S01			HW
405	D040	570	K	S01			HW
406	D041	10	K	S01			HW
407	D042	100	K	S01			HW
408	D043	60	K	S01			HW
409	F001	51,170	K	S01			HW
410	F002	46,030	K	S01			HW
411	F003	12,770	K	S01			HW
412	F004	660	K	S01			HW
413	F005	61,650	K	S01			HW
414	F009	20	K	S01			HW
415	F027	20	K	S01			HW
416	P003	10	K	S01			HW
417	P006	10	K	S01			HW
418	P011	10	K	S01			HW
419	P012	10	K	S01			HW
420	P015	10	K	S01			HW
421	P029	10	K	S01			HW
422	P030	10	K	S01			HW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES			
				(1) PROCESS CODES (enter)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
423	P031	10	K	S01			HW
424	P033	10	K	S01			HW
425	P038	10	K	S01			HW
426	P043	10	K	S01			HW
427	P048	10	K	S01			HW
428	P056	1,030	K	S01			HW
429	P063	10	K	S01			HW
430	P068	10	K	S01			HW
431	P073	10	K	S01			HW
432	P076	60	K	S01			HW
433	P078	70	K	S01			HW
434	P092	10	K	S01			HW
435	P095	10	K	S01			HW
436	P096	10	K	S01			HW
437	P098	10	K	S01			HW
438	P104	10	K	S01			HW
439	P105	10	K	S01			HW
440	P106	10	K	S01			HW
441	P112	10	K	S01			HW
442	P113	10	K	S01			HW
443	P119	10	K	S01			HW
444	P120	10	K	S01			HW
445	U001	10	K	S01			HW
446	U002	310	K	S01			HW
447	U003	10	K	S01			HW
448	U007	10	K	S01			HW
449	U008	10	K	S01			HW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	*A. EPA Hazardous Waste No. (enter code)*	*B. Estimated Annual Quantity Of Waste*	*C. Unit of Measure (enter code)*	*D. PROCESSES*			
				(1) PROCESS CODES (enter)			*(2) PROCESS DESCRIPTION (If a code is not entered in D(1))*
450	U009	10	K	S01			HW
451	U012	10	K	S01			HW
452	U018	10	K	S01			HW
453	U019	90	K	S01			HW
454	U022	10	K	S01			HW
455	U029	10	K	S01			HW
456	U031	10	K	S01			HW
457	U033	10	K	S01			HW
458	U037	10	K	S01			HW
459	U041	10	K	S01			HW
460	U044	10	K	S01			HW
461	U045	10	K	S01			HW
462	U052	10	K	S01			HW
463	U055	10	K	S01			HW
464	U056	10	K	S01			HW
465	U057	10	K	S01			HW
466	U067	10	K	S01			HW
467	U068	10	K	S01			HW
468	U070	20	K	S01			HW
469	U075	50	K	S01			HW
470	U077	10	K	S01			HW
471	U080	1,690	K	S01			HW
472	U085	10	K	S01			HW
473	U091	180	K	S01			HW
474	U092	10	K	S01			HW
475	U103	10	K	S01			HW
476	U108	10	K	S01			HW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	*A. EPA Hazardous Waste No. (enter code)*	*B. Estimated Annual Quantity Of Waste*	*C. Unit of Measure (enter code)*	*D. PROCESSES*			
				(1) PROCESS CODES (enter)			*(2) PROCESS DESCRIPTION (If a code is not entered in D(1))*
477	U109	10	K	S01			HW
478	U112	10	K	S01			HW
479	U115	10	K	S01			HW
480	U117	10	K	S01			HW
481	U121	10	K	S01			HW
482	U122	230	K	S01			HW
483	U123	10	K	S01			HW
484	U124	10	K	S01			HW
485	U131	10	K	S01			HW
486	U133	10	K	S01			HW
487	U134	180	K	S01			HW
488	U135	80	K	S01			HW
489	U136	10	K	S01			HW
490	U140	10	K	S01			HW
491	U144	10	K	S01			HW
492	U145	10	K	S01			HW
493	U151	240	K	S01			HW
494	U153	10	K	S01			HW
495	U154	40	K	S01			HW
496	U159	20	K	S01			HW
497	U160	10	K	S01			HW
498	U161	90	K	S01			HW
499	U162	10	K	S01			HW
500	U163	10	K	S01			HW
501	U165	10	K	S01			HW
502	U167	10	K	S01			HW
503	U168	10	K	S01			HW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	*A. EPA Hazardous Waste No. (enter code)*	*B. Estimated Annual Quantity Of Waste*	*C. Unit of Measure (enter code)*	*D. PROCESSES*			
				(1) PROCESS CODES (enter)			*(2) PROCESS DESCRIPTION (If a code is not entered in D(1))*
504	U169	10	K	S01			HW
505	U170	10	K	S01			HW
506	U188	10	K	S01			HW
507	U190	10	K	S01			HW
508	U196	10	K	S01			HW
509	U204	10	K	S01			HW
510	U210	100	K	S01			HW
511	U211	40	K	S01			HW
512	U213	10	K	S01			HW
513	U216	10	K	S01			HW
514	U218	10	K	S01			HW
515	U219	10	K	S01			HW
516	U220	100	K	S01			HW
517	U223	10	K	S01			HW
518	U225	10	K	S01			HW
519	U226	2,540	K	S01			HW
520	U227	10	K	S01			HW
521	U228	420	K	S01			HW
522	U239	170	K	S01			HW
523	U240	10	K	S01			HW
524	U246	10	K	S01			HW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	*A. EPA Hazardous Waste No. (enter code)*	*B. Estimated Annual Quantity Of Waste*	*C. Unit of Measure (enter code)*	*D. PROCESSES*			
				(1) PROCESS CODES (enter)			*(2) PROCESS DESCRIPTION (If a code is not entered in D(1))*
Technical Area 54 West, Building 38, Container Storage Area							
525	D001	4,210	K	S01			Low-level Mixed Waste (LLMW) and Transuranic Mixed Waste (TRUMW)
526	D002	2,180	K	S01			LLMW and TRUMW
527	D003	200	K	S01			LLMW and TRUMW
528	D004	1,400	K	S01			LLMW and TRUMW
529	D005	1,280	K	S01			LLMW and TRUMW
530	D006	205,660	K	S01			LLMW and TRUMW
531	D007	214,580	K	S01			LLMW and TRUMW
532	D008	487,000	K	S01			LLMW and TRUMW
533	D009	14,840	K	S01			LLMW and TRUMW
534	D010	1,540	K	S01			LLMW and TRUMW
535	D011	1,720	K	S01			LLMW and TRUMW
536	D018	80	K	S01			LLMW and TRUMW
537	D019	1,600	K	S01			LLMW and TRUMW
538	D021	610	K	S01			LLMW and TRUMW
539	D022	380	K	S01			LLMW and TRUMW
540	D027	230	K	S01			LLMW and TRUMW
541	D028	65,680	K	S01			LLMW and TRUMW
542	D029	65,350	K	S01			LLMW and TRUMW
543	D030	1,480	K	S01			LLMW and TRUMW
544	D031	20	K	S01			LLMW and TRUMW
545	D032	940	K	S01			LLMW and TRUMW
546	D033	630	K	S01			LLMW and TRUMW
547	D034	330	K	S01			LLMW and TRUMW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	*A. EPA Hazardous Waste No. (enter code)*	*B. Estimated Annual Quantity Of Waste*	*C. Unit of Measure (enter code)*	*D. PROCESSES*			
				(1) PROCESS CODES (enter)			*(2) PROCESS DESCRIPTION (If a code is not entered in D(1))*
548	D035	30	K	S01			LLMW and TRUMW
549	D036	100	K	S01			LLMW and TRUMW
550	D037	160	K	S01			LLMW and TRUMW
551	D038	20	K	S01			LLMW and TRUMW
552	D039	440	K	S01			LLMW and TRUMW
553	D040	990	K	S01			LLMW and TRUMW
554	D041	20	K	S01			LLMW and TRUMW
555	D042	320	K	S01			LLMW and TRUMW
556	D043	120	K	S01			LLMW and TRUMW
557	F001	126,190	K	S01			LLMW and TRUMW
558	F002	16,330	K	S01			LLMW and TRUMW
559	F003	8,270	K	S01			LLMW and TRUMW
560	F004	490	K	S01			LLMW and TRUMW
561	F005	73,530	K	S01			LLMW and TRUMW
562	P003	10	K	S01			LLMW and TRUMW
563	P012	10	K	S01			LLMW and TRUMW
564	P015	10	K	S01			LLMW and TRUMW
565	P029	10	K	S01			LLMW and TRUMW
566	P030	10	K	S01			LLMW and TRUMW
567	P031	10	K	S01			LLMW and TRUMW
568	P038	10	K	S01			LLMW and TRUMW
569	P056	80	K	S01			LLMW and TRUMW
570	P063	10	K	S01			LLMW and TRUMW
571	P068	10	K	S01			LLMW and TRUMW
572	P073	10	K	S01			LLMW and TRUMW
573	P076	10	K	S01			LLMW and TRUMW
574	P078	10	K	S01			LLMW and TRUMW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	*A. EPA Hazardous Waste No. (enter code)*	*B. Estimated Annual Quantity Of Waste*	*C. Unit of Measure (enter code)*	*D. PROCESSES*			
				(1) PROCESS CODES (enter)			*(2) PROCESS DESCRIPTION (If a code is not entered in D(1))*
575	P095	10	K	S01			LLMW and TRUMW
576	P096	10	K	S01			LLMW and TRUMW
577	P098	10	K	S01			LLMW and TRUMW
578	P106	10	K	S01			LLMW and TRUMW
579	P113	10	K	S01			LLMW and TRUMW
580	P120	10	K	S01			LLMW and TRUMW
581	U001	10	K	S01			LLMW and TRUMW
582	U002	10	K	S01			LLMW and TRUMW
583	U003	10	K	S01			LLMW and TRUMW
584	U012	10	K	S01			LLMW and TRUMW
585	U019	10	K	S01			LLMW and TRUMW
586	U022	10	K	S01			LLMW and TRUMW
587	U029	10	K	S01			LLMW and TRUMW
588	U031	10	K	S01			LLMW and TRUMW
589	U037	10	K	S01			LLMW and TRUMW
590	U044	10	K	S01			LLMW and TRUMW
591	U045	10	K	S01			LLMW and TRUMW
592	U052	10	K	S01			LLMW and TRUMW
593	U056	10	K	S01			LLMW and TRUMW
594	U057	10	K	S01			LLMW and TRUMW
595	U075	10	K	S01			LLMW and TRUMW
596	U077	10	K	S01			LLMW and TRUMW
597	U080	30	K	S01			LLMW and TRUMW
598	U108	10	K	S01			LLMW and TRUMW
599	U112	10	K	S01			LLMW and TRUMW
600	U115	10	K	S01			LLMW and TRUMW
601	U117	10	K	S01			LLMW and TRUMW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	*A. EPA Hazardous Waste No. (enter code)*	*B. Estimated Annual Quantity Of Waste*	*C. Unit of Measure (enter code)*	*D. PROCESSES*			
				(1) PROCESS CODES (enter)			*(2) PROCESS DESCRIPTION (If a code is not entered in D(1))*
602	U121	10	K	S01			LLMW and TRUMW
603	U122	10	K	S01			LLMW and TRUMW
604	U123	10	K	S01			LLMW and TRUMW
605	U131	10	K	S01			LLMW and TRUMW
606	U133	10	K	S01			LLMW and TRUMW
607	U134	10	K	S01			LLMW and TRUMW
608	U135	10	K	S01			LLMW and TRUMW
609	U140	10	K	S01			LLMW and TRUMW
610	U144	10	K	S01			LLMW and TRUMW
611	U145	10	K	S01			LLMW and TRUMW
612	U151	60	K	S01			LLMW and TRUMW
613	U154	20	K	S01			LLMW and TRUMW
614	U159	30	K	S01			LLMW and TRUMW
615	U160	10	K	S01			LLMW and TRUMW
616	U161	10	K	S01			LLMW and TRUMW
617	U165	10	K	S01			LLMW and TRUMW
618	U169	10	K	S01			LLMW and TRUMW
619	U188	10	K	S01			LLMW and TRUMW
620	U190	10	K	S01			LLMW and TRUMW
621	U196	10	K	S01			LLMW and TRUMW
622	U204	10	K	S01			LLMW and TRUMW
623	U210	10	K	S01			LLMW and TRUMW
624	U211	10	K	S01			LLMW and TRUMW
625	U213	10	K	S01			LLMW and TRUMW
626	U216	10	K	S01			LLMW and TRUMW
627	U218	10	K	S01			LLMW and TRUMW
628	U219	10	K	S01			LLMW and TRUMW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	*A. EPA Hazardous Waste No. (enter code)*	*B. Estimated Annual Quantity Of Waste*	*C. Unit of Measure (enter code)*	*D. PROCESSES*			
				(1) PROCESS CODES (enter)			*(2) PROCESS DESCRIPTION (If a code is not entered in D(1))*
629	U220	10	K	S01			LLMW and TRUMW
630	U225	10	K	S01			LLMW and TRUMW
631	U226	260	K	S01			LLMW and TRUMW
632	U227	10	K	S01			LLMW and TRUMW
633	U228	20	K	S01			LLMW and TRUMW
634	U239	20	K	S01			LLMW and TRUMW
635	U246	10	K	S01			LLMW and TRUMW

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XIV. Description of Hazardous Wastes (Continued)

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	D. Processes			
				(1) Process Codes (enter)			(2) Process Description (If a code is not entered in D[1])
Technical Area (TA) 54-226, -229, -230, -231, -232, and Pad 10							
1	F001	1,301	P	S01			Transuranic Mixed Waste (TRUMW); A15
2	F002						
3	THIS LINE INTENTIONALLY LEFT BLANK						
4	D007	406,940	P	S01			TRUMW; A25
5	D008						
6	THIS LINE INTENTIONALLY LEFT BLANK						
7	D006	311,765	P	S01			TRUMW; A26
8	D007						
9	D008						
10	THIS LINE INTENTIONALLY LEFT BLANK						
11	D001	101,995	P	S01			TRUMW; A27
12	THIS LINE INTENTIONALLY LEFT BLANK						
13	D003	71,062	P	S01			TRUMW; A28
14	THIS LINE INTENTIONALLY LEFT BLANK						
15	D008	96,700	P	S01			TRUMW; A30
16	THIS LINE INTENTIONALLY LEFT BLANK						
17	D008	190,691	P	S01			TRUMW; A31
18	THIS LINE INTENTIONALLY LEFT BLANK						
19	D008	434,743	P	S01			TRUMW; A61
20	THIS LINE INTENTIONALLY LEFT BLANK						
21	D004	2,413,802	P	S01			TRUMW; A75
22	D007						
23	D008						
24	D011						
25	F001						
26	F002						

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XIV. Description of Hazardous Wastes (Continued)

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	D. Processes			
				(1) Process Codes (enter)			(2) Process Description (If a code is not entered in D[1])
27	F003						
28	F005						
29	THIS LINE INTENTIONALLY LEFT BLANK						
30	D007	313,787	P	S01			TRUMW; A76
31	F001						
32	F002						
33	F005						

ADDITIONAL DATA SUBMITTAL SCHEDULE
PERMIT ATTACHMENT I
NM0890010515-1

ADDITIONAL DATA SUBMITTAL SCHEDULE
PERMIT ATTACHMENT I
NM0890010515-1

As used in this attachment, "investigate" means, within the restraints of personnel safety, to visually observe and trace from the point of origin or generation to the point of discharge, accumulation or treatment, a waste stream. Investigate further includes documentation of analyses accomplished to ascertain the chemical nature of the waste in accordance with HWMR-5, as amended 1989, Part III, 40 CFR section 262.11.

1. Within three months of the effective date of this permit, the Permittee shall:

    a. For each building and site in Technical Areas 0, 1, 2, and 4, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

    b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

    c. The requested information shall be compiled by technical area and building or outside test site and submitted to theNMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

2. Within six months of the effective date of this permit, the Permittee shall:

    a. For each building and site in Technical Areas 5, 6, 7, and 8, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

    b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

    c. The requested information shall be compiled by technical area and building or outside test site and submitted to theNMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

3. Within nine months of the effective date of this permit, the Permittee shall:

    a. For each building and site in Technical Areas 3, 9, 10, and 11, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

c. The requested information shall be compiled by technical area and building or outside test site and submitted to theNMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

4. Within twelve months of the effective date of this permit, the Permittee shall:

a. For each building and site in Technical Areas 12, 13, 14, and 15, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

c. The requested information shall be compiled by technical area and building or outside test site and submitted to theNMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

5. Within fifteen months of the effective date of this permit, the Permittee shall:

a. For each building and site in Technical Areas 16, 18, 19, and 20, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

c. The requested information shall be compiled by technical area and building or outside test site and submitted to theNMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

6. Within eighteen months of the effective date of this permit, the Permittee shall:

    a. For each building and site in Technical Areas 21, 22, 26, and 28, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

    b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

    c. The requested information shall be compiled by technical area and building or outside test site and submitted to theNMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

7. Within twenty-one months of the effective date of this permit, the Permittee shall:

    a. For each building and site in Technical Areas 29, 30, 31, and 32, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

    b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

    c. The requested information shall be compiled by technical area and building or outside test site and submitted to theNMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

8. Within twenty-four months of the effective date of this permit, the Permittee shall:

    a. For each building and site in Technical Areas 33, 35, 36, and 37, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

    b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made

in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

c. The requested information shall be compiled by technical area and building or outside test site and submitted to theNMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

9. Within twenty-seven months of the effective date of this permit, the Permittee shall submit to theNMED:

a. For each building and site in Technical Areas 39, 40, 41, and 43, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

c. The requested information shall be compiled by technical area and building or outside test site and submitted to theNMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

10. Within thirty months of the effective date of this permit, the Permittee shall:

a. For each building and site in Technical Areas 44, 46, 47, and 48, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

c. The requested information shall be compiled by technical area and building or outside test site and submitted to theNMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

11. Within thirty-three months of the effective date of this permit, the Permittee shall submit to theNMED:

a. For each building and site in Technical Areas 49, 50, 51, and 52, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11 if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

c. The requested information shall be compiled by technical area and building or outside test site and submitted to the ~~EID~~ NMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

12. Within thirty-six months of the effective date of this permit, the Permittee shall:

a. For each building and site in Technical Areas 53, 54, 55, and 56, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

c. The requested information shall be compiled by technical area and building or outside test site and submitted to theNMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

13. Within thirty-nine months of the effective date of this permit, the Permittee shall submit to theNMED:

a. For each building and site in Technical Areas 57, 58, 59, and all other sites not identified above, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process

determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

c. The requested information shall be compiled by technical area and building or outside test site and submitted to theNMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

LA-UR-04-6218
September 2004

Los Alamos National Laboratory Hazardous Waste Facility Permit

Modified from 1995 NMED Control Copy to Include All Previously Submitted Permit Modifications

Prepared by:

Los Alamos National Laboratory
Risk Reduction and Environmental Stewardship Division
Solid Waste Regulatory Compliance Group (RRES-SWRC)
Los Alamos, New Mexico 87545

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LA-UR-04-6218

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Title: Los Alamos National Laboratory Hazardous Waste Permit, Modified from 1995 NMED Control Copy to Include All Previously Submitted Permit Modifications

Author(s): Luciana Vigil-Holterman, RRES-SWRC

Submitted to: New Mexico Environment Department-Hazardous Waste Bureau

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Form 836 (8/00)

Forward

The following submittal has been prepared to detail specific New Mexico Environment Department (NMED)-approved changes made to the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit from 1995 to the present. These changes consist of NMED-approved permit modifications and other changes that have not been incorporated into the control copy of the permit. The version of the NMED control copy of the permit used to develop this submittal was received by LANL in February 1995. The permit changes fall into the following five categories: (1) Class 1*, 2 and 3 permit modifications approved by NMED; (2) Class 1 modifications that were self-implemented; (3) an approved change in a unit designation made pursuant to NMED's request as a change during interim status under 40 CFR § 270.42; (4) Class 1 modifications submitted for class determinations for which a determination was never received; and (5) removal of certain units that are no longer used from the permit (*e.g.* the Controlled Air Incinerator) that have been closed pursuant to an NMED-approved closure plan.

The first table included in this submittal, "*Changes to the 1995 NMED Control Copy of the Los Alamos National Laboratory Hazardous Waste Facility Permit*," summarizes the changes by section, submittal, and approval date for each submittal. Permit changes are denoted by different colors in redline/strikeout format within each of the sections of the permit. The redline/strikeout colors are broken out as follows:

- Red – Self-implementing Class 1 permit modifications.
- Blue – A Class 2 permit modification.
- Purple – Class 3 permit modifications.
- Green – Units that have closed pursuant to an NMED-approved closure plan, or an NMED-approved change in unit designation under interim status.
- Orange-Brown – Class 1 permit modifications submitted with a request for class determination.

A second table included in this submittal, "Requested Changes to Los Alamos National Laboratory Hazardous Waste Facility Permit" identifies non-substantive administrative changes that NMED should incorporate into the LANL permit for update or clarity purposes. These changes have not been identified within the redline/strikeout version of the permit in this submittal, but are necessary to update the permit to reflect current conditions.

TABLE 1

Changes to the 1995 NMED Control Copy of the Los Alamos National Laboratory Hazardous Waste Facility Permit

Changes to the 1995 NMED Control Copy of the Los Alamos National Laboratory Hazardous Waste Facility Permit

Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Module I	I.A	Removed references to "incinerate" and "incineration" in first paragraph.	Closure of the Controlled Air Incinerator and the Industrial Incinerator.	N/A	July 2, 1998 and October 31, 2001
Module I	I.A	Changed "U.S.C." to "USC".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module I	I.C	Changed "invalid,the" to "invalid, the".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module I	I.D.2	Changed "270 30(b)" to "270.30(b)".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module I	I.D.7	Changed "shall-" to "shall".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module I	I.D.15	Changed "Director" to "Secretary".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module I	I.H.2	Changed "Environmental Improvement Division" to "New Mexico Environment Department".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module I	I.H.3	Changed "Enviorment" to "Environment".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module I	I.H.3.c	Changed "Figure 1-1 and Table 1-1 and Table 2-1" to "Figure 2 and Table I-1 and Table II-3" for consistency.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module I	I.H.3.d	Changed "Table 1-1" to "Table I-1".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module I	Table I-1	Moved Table I-1 to the last page of Module I.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module I	Table I-1	Changed "No other site are included in the on-site definition in permit paragraph I.H.3.c." to "Except for those sites listed in Table II-3, no other sites are included in the on-site definition in permit paragraph I.H.3.c.".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module II	II.B.2	Changed "Module II Table 1" and "Module II Table 2-1" to "Table II-3" in three places.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module II	II.B.2	Inserted sentence " Waste or contaminated residuals of waste associated with off-site treatment of those waste streams originally generated by the Permittee and subsequently managed or treated by the off-site facilities listed in Module II, Table 2-2, may be accepted for storage or treatment if all such waste is properly characterized and manifested in accordance with permit paragraph II.J."	November 20, 1996 Permit Modification Regarding Off-site Waste Acceptance for Treatment Residuals.	2	May 19, 1997

Changes to the 1995 NMED Control Copy of the Los Alamos National Laboratory Hazardous Waste Facility Permit

Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Module II	II.B.2	Added "and Table 2-2".	November 20, 1996 Permit Modification Regarding Off-site Waste Acceptance for Treatment Residuals.	2	May 19, 1997
Module II	II.E.1	Changed "logsheets" to "log sheets".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module II	II.F	Changed "...shall follow Permit Attachment C. Permit Attachment C shall be updated...." to "...shall follow Permit Attachment C, which shall be updated...."	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module II	II.K	Changed "RECORDKEEPING" to "RECORD KEEPING".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module II	II.K.1.a	Deleted ", effluent, water" from first sentence.	Closure of the Batch Waste Treatment Unit and/or the Controlled Air Incinerator.	N/A	September 15, 1994 and July 2, 1998
Module II	II.M	Changed "Hazardous wastes in quantities per vehicle in excess of 110 gallons shall not be transported by the Permittee to, from, or within the facility over public roads between the hours of 7:00 AM to 8:30 AM, 11:30 AM to 1:30 PM or 4:00 PM to 5:00 PM on normal duty days." to "Permittees shall not transport bulk liquid hazardous wastes in quantities per container in excess of 110 gallons over public roads between the hours of 7:00 AM to 8:30 AM, 12:15 PM to 1:30 PM or 4:00 PM to 5:45 PM on normal duty days."	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Module II	Table II-2	Changed "If any metal's total concentration exceeds that metal's standard for Extraction Procedure Toxicity, a determination of the Extraction Procedure Toxicity concentration for that metal will be performed." to "If any metal's total concentration exceeds that metal's standard for Toxicity Characteristic Leachate Procedure (TCLP) toxicity, a determination of the TCLP toxicity concentration for that metal will be performed."	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module II	Table II-3	Changed "Module II Table 2-1" to "Table II-3".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module II	Table II-3	Changed "Nationa" to "National".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module II	Table 2-2	Added table listing off-site facilities that may return treatment residuals.	November 20, 1996 Permit Modification Regarding Off-site Waste Acceptance for Treatment Residuals.	2	May 19, 1997

Changes to the 1995 NMED Control Copy of the Los Alamos National Laboratory Hazardous Waste Facility Permit

Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Module III	III.A.1.d	Added a comma after "restraint".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module III	III.A.1.e	Changed "fenceline" to "fence line".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module III	III.A.2.a	Deleted III.A.2.a due to closure of the unit.	Unit closed is Batch Waste Treatment Unit- the text modification was submitted with December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	September 15, 1994
Module III	III.A.2	Renumbered items.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit	1	Self-implementing
Module III	III.A.2.b	Deleted section because units were removed from permit.	Removal of TA-50-137, -138, -139, and -140 Storage Areas from permit.	N/A	April 21, 2003
Module III	III.A.2.d	Deleted reference to "50-137 and 50-138" because units were removed from permit.	Removal of TA-50-137, -138, -139, and -140 Storage Areas from permit.	N/A	April 21, 2003
Module III	III.A.2.d	Deleted "located as shown in Figure III-2" because this figure does not exist.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module III	III.A.3	Added information on hazardous and mixed waste container storage areas at TA-50 (III.A.3 a-b).	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Module III	III.A.3.a	Deleted section.	Removal of TA-50-1-35, -36, -38, and -38A Decon Operation Storage Areas from permit.	N/A	November 25, 2003
Module III	III.A.4	Added information on mixed waste container storage areas at TA-54 West (III.A.4 a-d).	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Module III	III.A.3	Added information on specific mixed waste container storage areas at TA-54 Area G (III.A.3 a-c).	January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	May 11, 1994
Module III	III.A.3.b	Changed "Pad 2 and Pad 4" to "Pad 10" within the information about TA-54 Area G container storage areas.	Approved change to the unit.	N/A	December 12, 2002
Module III	III.A.3.c	Changed "Pad 2 and Pad 4" to "Pad 10" within the information about TA-54 Area G container storage areas.	Approved change to the unit.	N/A	December 12, 2002
Module III	III.B.1	Added "and/or mixed".	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Module III	III.B.2	Added "and/or mixed".	January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	May 11, 1994

Changes to the 1995 NMED Control Copy of the Los Alamos National Laboratory Hazardous Waste Facility Permit

Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Module III	III.B.3	Updated regulatory citations throughout section.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Module III	III.C.1.a	Changed "Labpacked" to "Lab-packed".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module III	III.C.1.c	Added "and/or mixed".	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Module III	III.C.2	Changed "Type Containers must be of a type specified in the DOT hazardous materials regulations, 49 CFR 171 to 179, those regulations specify a particular containers for the waste. As applicable, the containers shall be either: (1) previously unused or certified reconditioned DOT shipping containers" to "Type Containers must be of a type specified in the DOT hazardous materials regulations, 49 CFR parts 171 to 179, which specify authorized containers for the waste. As applicable, the containers shall be either: (1) previously unused or reused according to DOT requirements".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Module III	III.C.2	Changed "if" to "If".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module III	III.C.2	Added "and/or mixed".	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Module III	III.C.2	Changed "insure" to "ensure"	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module III	III.C.2	Changed "specification number E9052" to "requirements".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Module III	III.C.3.a	Deleted III.C.3.a due to closure of the unit.	Unit closed is Batch Waste Treatment Unit- the text modification was submitted with December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	September 15, 1994

Changes to the 1995 NMED Control Copy of the Los Alamos National Laboratory Hazardous Waste Facility Permit

Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Module III	III.C.3.a	Renumbered items.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module III	III.C.3.c	Deleted references to "each concrete containment structure" and "50-139 or 50-140"	Closure of the Batch Waste Treatment Unit and removal of the TA-50-137, -138, -139, and -140 Storage Areas from the permit.	N/A	September 15, 1994 and April 21, 2003
Module III	III.C.3.g	Added information on quantities of wastes in container storage areas at TA-50-1.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Module III	III.C.3.g	Deleted section.	Removal of TA-50-1-35, -36, -38, and -38A Decon Operation Storage Areas from permit.	N/A	November 25, 2003
Module III	III.C.3.h	Added information on quantities of wastes in container storage areas at TA-50-69.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Module III	III.C.3.i	Added information on quantities of wastes in container storage areas at TA-54 West.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Module III	III.C.3.g	Added information on quantities of wastes in specific container storage areas at TA-54, Area G.	January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	May 11, 1994
Module III	III.C.3.g	Deleted sentence about the capacity of Pad 2 (third sentence) and Changed "Pad 4" to "Pad 10" in the last sentence. The approved capacity for Pad 10 is equal to that of Pad 4.	Approved change to the unit.	N/A	December 12, 2002
Module III	III.C.4.a	Added "or mixed" two places in section.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Module III	III.C.5.a	Updated regulatory citation and added "or mixed".	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Module III	III.C.6	Updated regulatory citation.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994

Changes to the 1995 NMED Control Copy of the Los Alamos National Laboratory Hazardous Waste Facility Permit

Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Module III	III.D	Simplified language and updated regulatory citation.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Module III	III.F	Updated regulatory citation.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Module III	III.H.3.a	Added "or mixed".	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Module IV	IV.B.5.b	Changed "container" to "tank".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module IV	IV.B.5.c	Added a comma after "268.41"; Changed "prohibitation" to "prohibition".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module IV	IV.H.1.b	Changed "264.197(b)" to "264.197(a)".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module V	V.C.1	Changed "A.4.1.2" to "A.4".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module V	V.D.1.c	Changed "trichloromethane" to "trichloroethane".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module V	V.D.1.d	Changed "Tetrachloroethane" to "Tetrachloromethane".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module V	V.E.7	Changed "airflowrate" to "air flow rate".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module V	V.F.9.a	Changed "shall!" to "shall".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module V	V.F.11.b.(1)	Changed "Manual, Chapter 1, Health and Safety" to "Environment, Safety, and Health Manual, Chapter 1".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module V	V.H.2	Changed "manufacturers," to "manufacturer's".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module V	V.I	Changed "RECORDKEEPING" to "RECORD KEEPING".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module V	All	Removed Module	Closure of the Controlled Air Incinerator.	N/A	July 2, 1998

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Module VI	VI.C.1	Changed "Holding" to "holding".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module VII	Header	Changed "Wasste" to "Waste".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module VII	VII.B.1.c	Changed "ignitability" to "ignitability".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Module VII	All	Removed Module.	Closure of the Industrial Incinerator.	N/A	October 31, 2001
Module VIII	All	Module VIII is not addressed in this submittal so as to limit the document discussion to operating units only.			
Figures	Figure 3	Deleted figure.	Closure of the Batch Waste Treatment Unit.	N/A	September 15, 1994
Figures	Figure 5	Deleted figure.	Closure of the Industrial Incinerator.	N/A	October 31, 2001
Figures	Figure 8	Deleted figure.	Closure of the Controlled Air Incinerator.	N/A	July 2, 1998
Figures	Figure 11	New figure added to show container storage area locations at TA-50-1.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Figures	Figure 11	Delete figure showing container storage areas at TA-50-1.	Removal of TA-50-1-35, -36, -38, and -38A Decon Operation Storage Areas from permit.	N/A	25-Nov-03
Figures	Figure 12	New figure added to show container storage area locations at TA-50-69.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Figures	Figure 13	New figure added to show container storage area locations at TA-54 West.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Figures	Figure 11	A new figure was added to show specific container storage area locations at TA-54, Area G.	January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	May 11, 1994
Attachment A.1	Cover	Changed from Permit Attachment A to Permit Attachment A.1.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment A.1	A.1	Changed "impleemnted" to "implemented".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.1	Changed "controled" to "controlled".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.2	Changed "TPYES" to "TYPES".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.2.2	Changed "MST-7" to "MST-6".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing

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Attachment A.1	A.2.2	Changed "Polymers and Coatings Group," to "Metallurgy Group".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.2.2	Deleted "of the MEC 10 Electronic Manufacturing and Technician Resources Group,".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.2.2	Changed "M-7" to "DX-10".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.2.3	Changed "The Isotope and Structural Chemistry Group, INC-4, generates" to "Research Groups generate".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.2.4	Deleted second occurrence of "when generated".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.2.5	Changed "Dynamics Testing (M)" to "Dynamic Experimentation (DX)".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.2.5	Changed "Design Engineering (WX)" to "Engineering Sciences and Applications (ESA)".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.2.6	Changed "Engineering" to "Facilities, Security and Safeguards".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.2.6	Changed "D001 and D016" to "D012 through D014".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment A.1	A.2.6	Changed "(e.g. D001, D008, and F003)" to "(e.g. D001 and D008)".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment A.1	A.2.6	Changed "MSDS's" to "MSDSs".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.2.8	Added Title "Waste Treatment Residues".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.2.8	Removed reference to "ash from incinerator, and sludge from the chemical treatment operations".	Closure of the Batch Waste Treatment Unit, the Controlled Air Incinerator, and the Industrial Incinerator.	N/A	September 15, 1994; July 2, 1998; and October 31, 2001
Attachment A.1	A.3.1	Changed "a Chemical Waste Disposal Request (Form 103A Part A, Figure A-1)" to "Form 1541 (Figure A-1) to request disposal".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment A.1	A.3.1	Inserted "Chemical and Mixed" before "Waste Management".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.3.1	Changed "CST-7" to "CST-5" (two times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.3.1	Changed "containrt" to "container" and "ect." to "etc.".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing

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Attachment A.1	A.3.2	Inserted ")" after "toluene".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.3.2	Changed "DOT" to "RCRA".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.3.2	Deleted "cyanide or sulfide compounds".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment A.1	A.4	Changed "DISPSOAL" TO "DISPOSAL".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.4	Inserted "to" after "Lab pack waste refers".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.4	Changed "absorbants" to "absorbents".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.4	Changed "coliwasa" to "COLIWASA" twice.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.4.1.1	Changed "offsite" to "off site".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.4.1.2	Changed "Coliwasa" to "COLIWASA"	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.4.1.2	Changed "onsite" to "on site".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.4.1.2	Deleted references to "ash content" and any other parameters that are required for waste that is incinerated onsite.	Closure of the Controlled Air Incinerator.	N/A	July 2, 1998
Attachment A.1	A.4.1.2	Changed "CST-7" to "CST-5".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.4.1.3	Changed "coliwasa" to "COLIWASA".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.4.1.3	Changed "onsite" to "on site".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.4.1.3	Deleted references to "ash content" and any other parameters that are required for waste that is incinerated onsite.	Closure of the Controlled Air Incinerator.	N/A	July 2, 1998
Attachment A.1	A.4.1.4	Changed "offsite" to "off-site" and "onsite" to "on-site".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.4.1.4	Changed "is" to "are" after "such as heat value,".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.4.1.4	Deleted section.	Closure of the Controlled Air Incinerator.	N/A	July 2, 1998

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Attachment A.1	A.4.2.1	Changed "Waste" to "Commercial Chemical Waste".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.4.2.2	Changed "coliwasa" to "COLIWASA" three times.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.4.3.2	Changed "EP toxic" to "TCLP".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment A.1	A.4.3.2	Changed "coliwasa" to "COLIWASA" three times.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.4.4	Changed "waste" to "wastes" after "Oxidizer lab pack" and "offsite" to "off site".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.4.4	Deleted reference to "The Laboratory's incinerator".	Closure of the Controlled Air Incinerator.	N/A	July 2, 1998
Attachment A.1	A.4.5.1	Deleted reference to "The Laboratory's incinerator".	Closure of the Controlled Air Incinerator.	N/A	July 2, 1998
Attachment A.1	A.4.5.2	Changed "operations" to "operation".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.4.6	Changed "is" to "are" after "Inorganic wastes".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.4.6.1	Changed "Uncommposited" to "Uncomposited".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.4.6.1	Changed "offsite" to "off-site".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.4.6.2	Changed colon to period after "solid waste at the Laboratory".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.4.9	Deleted "a" after "resulting from the treatment of".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.4.9	Changed "coliwasa" to "COLIWASA".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.4.9	Deleted most of section because it deals with all treatment units.	Closure of the Batch Waste Treatment Unit, the Controlled Air Incinerator, and the Industrial Incinerator.	N/A	September 15, 1994; July 2, 1998; and October 31, 2001
Attachment A.1	A.4.10	Deleted "Number" from after "hazardous waste code".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.5	Changed "implementated" to "implemented".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.5	Changed comma to a period after "by the Laboratory".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing

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Attachment A.1	A.5.1	Changed "off site" to "off-site" (two times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	A.5.2	Deleted "which" after "a process that".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	Table A-1	Changed "EP toxic" to "TCLP toxic" within table.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment A.1	Table A-1	Deleted references to "ash content", "Chemical Treatment", "Incinerator Ash" and "Incinerator Scrubber Water".	Closure of the Batch Waste Treatment Unit, the Controlled Air Incinerator, and the Industrial Incinerator.	N/A	September 15, 1994; July 2, 1998; and October 31, 2001
Attachment A.1	Table A-2	Changed "RGW" to "RGN".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	Table A-3	Deleted "and Graphite Furnace AA Spectroscopy".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment A.1	Table A-3	Deleted "EP Toxicity Extraction[3] and" for the entry for "Mercury".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment A.1	Table A-3	Changed "SW1310" to "(L) SW7470, (S) SW7474".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment A.1	Table A-3	Moved the entry for "TCLP" to above the entry for "Arsenic"; inserted "Toxicity Characteristic Leaching Procedure" in the Test Method column; and changed "40 CFR Part 268, Appendix I" to "SW1311".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment A.1	Table A-3	Deleted "EP Toxicity Extraction[3] and" from the entry for "Organochlorine Pesticides".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment A.1	Table A-3	Changed "EP Toxicity and other" to "TCLP" within table.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment A.1	Table A-4	Changed "Amonium" to "Ammonium".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	Table A-4	Changed "Hezanitrostilbene" to "Hexanitrostilbene".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	Table A-4	Changed "wt%polystyrene" to "wt% polystyrene" (two times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	Table A-4	Changed "multi perorated" to "multi-perforated" (two times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	Table A-4	Changed "M-" to "DX-" and "WX-" to "ESA-".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing

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Attachment A.1	Table A-4	Changed "GRoups" to "Groups" and "group" to "Group".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.1	Figure A-1	Deleted "CHEMICAL" from figure title.	December 1996 Class 1 Permit Modification to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment A.2	All	Added new Permit Attachment A.2 to address waste analysis for transuranic mixed waste.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment A.3	All	Added new Permit Attachment A.3 to address waste analysis for low-level solid mixed waste.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Attachment B	B.1	Deleted "deterioration of the batch waste treatment unit or construction materials" from 3rd sentence.	Closure of the Batch Waste Treatment Unit.	N/A	September 15, 1994
Attachment B	B.1.2	Changed "HSE-2" to "ESH-2".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment B	B.2	Deleted reference to "WASTE INCINERATOR" in title.	Closure of the Controlled Air Incinerator.	N/A	July 2, 1998
Attachment B	B.2	Removed reference to "waste incinerator system building"; Changed "are" to "is".	Closure of the Controlled Air Incinerator.	N/A	July 2, 1998
Attachment B	B.2.1	Deleted "waste incinerator," from the first paragraph.	Closure of the Controlled Air Incinerator.	N/A	July 2, 1998
Attachment B	B.2.1	Deleted "Standard operating procedures require that process operators "walk through," their operating areas each hour to visually observe, monitor, and record and leaks, spills, malfunctions or other unusual conditions. The walkthrough and remedial actions will be annotated in the operating log."	Closure of the Controlled Air Incinerator.	N/A	July 2, 1998
Attachment B	B.2.2	Deleted "Batch waste treatment unit and".	Unit closed is Batch Waste Treatment Unit- the text modification was submitted with December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	N/A	September 15, 1994 **Requested class determination in 1996 submittal.**

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Attachment B	B.2.2	Deleted "Should any of these problems occur, the waste incinerator can be shut down at the discretion of the operator. Failure of the HEPA filtration system or wet scrubbers, equipment deterioration or malfunction, or leaks from the waste incinerator will be remedied during and following process shutdown. The process operator will assess the situation and decide upon which shutdown method will be most expeditious and efficient. He will supervise the operating area during the shutdown process."	Closure of the Controlled Air Incinerator.	N/A	July 2, 1998
Attachment B	B.2.3	Changed "HSE-8" to "ESH-19".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment B	B.2.3	Deleted "In addition, process operators will fill out process data sheets associated with the operations and every four hours when not feeding wastes. These sheets are record of operating conditions and provide evidence that the operator has checked and is aware of the operating status of the system. The time at which entries are made and the actual instrument reading for each variable will be entered into each checklist. When shutdown occurs, the log will state the nature of the shutdown, the time it occurred, and the suspected cause. Once each shift, the shift supervisor will inspect the facility for malfunctions, deterioration, operator error, and discharges. The time, individual, and results of this inspection will be entered in the log. Prestarting inspection procedures, general inspection checklists and the operating log will be kept with the incinerator system during operations."	Closure of the Controlled Air Incinerator.	N/A	July 2, 1998
Attachment B	B.3.2.	Changed "The annual inspection procedure is the same as the triennial inspection outlined for the TA-50 Batch Waste Treatment Unit Tanks in Section B.1.1. above" to the narrative provided.	Unit closed is Batch Waste Treatment Unit- the text modification was submitted with December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	N/A	September 15, 1994 **Requested class determination in 1996 submittal.**
Attachment B	B.3.3	Changed "HSE-7" to CST-5".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing

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Attachment B	B.3.3	Changed "batch waste treatment unit" to "modular storage unit" in the third paragraph.	Unit closed is Batch Waste Treatment Unit- the text modification was submitted with December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	N/A	September 15, 1994 **Requested class determination in 1996 submittal.**
Attachment B	B.3.3	Added a comma after "packaging and storage facilities in Area L".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment B	B.3.3	Changed "In" to "in" before "sumps as well as beams".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment B	B.3.4.	Changed "Figures B-7 and B-8" to "Attachment B-1".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment B	B.3.4	Changed "HSE-8" to "ESH-19".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment B	B.4.3	Changed "HSE-7" to "CST-13".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment B	B.4.3	Changed "HSE-2" to ESH-2".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment B	B.4.4.	Changed "Figures B-3 and B-4" to "Attachment B-1".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment B	B.4.4.	Changed "HSE-8" to "ESH-19".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment B	B.4	Deleted section.	Closure of the Batch Waste Treatment Unit.	N/A	September 15, 1994
Attachment B	B.5.1	Changed "Equipment Requirements" to "Internal Communication/Alarm Equipment".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment B	B.5.1	Clarified/updated language and added language to address mixed wastes.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment B	B.5.1.	Deleted "The TA-50 batch waste treatment unit is equipped with telephones, one pull alarm, one automatic thermal alarm, and one automatic smoke alarm. There is an intercom system at each telephone. In the case of an emergency, the nearest source of communication for personnel handling wastes is the intercom/paging systems on each telephone."	Unit closed is Batch Waste Treatment Unit- the text modification was submitted with December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	N/A	September 15, 1994 **Requested class determination in 1996 submittal.**

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Attachment B	B.5.1	Break second bullet "One radio-equipped vehicle telephone paging system" into two bullets "On radio-equipped vehicle" and "telephone paging system".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment B	B.5.1	Removed paragraph about "TA-50 waste incinerator".	Closure of Controlled Air Incinerator.	N/A	July 2, 1998
Attachment B	B.5.1	Deleted "TA-50-Storage Pads and".	Removal of the TA-50-137, -138, -139, and -140 Storage Areas from the permit.	N/A	April 21, 2003
Attachment B	B.5.1	Added information on communication and alarm equipment for the container storage areas at TA-50-1, TA-50-69 and TA-54 West.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Attachment B	B.5.1	Deleted paragraph about "Rooms 35, 36, and 38/38A at TA-50-1"	Removal of the TA-50-1-35, -36, -38, and -38A Decon Operation Storage Areas from the permit.	N/A	25-Nov-03
Attachment B	B.5.1	Added information on communication and alarm equipment for specific container storage areas at TA-54, Area G.	January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	May 11, 1994
Attachment B	B.5.1	Changed "Pad 4" to "Pad 10" twice.	Approved change to the unit.	N/A	December 12, 2002
Attachment B	B.5.2	Updated language regarding external communication/alarm equipment.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment B	B.5.4	Changed "ENG-8" to "FSS-21".	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West; January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G; and December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	3 & 1	February 28, 1997 and May 11, 1994
Attachment B	B.6.	Deleted "batch treatment and".	Unit closed is Batch Waste Treatment Unit- the text modification was submitted with December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	N/A	September 15, 1994 **Requested class determination in 1996 submittal.**
Attachment B	B.6.	Changed "areas" to "area".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment B	B.6	Deleted reference to "the TA-50 storage pads".	Removal of the TA-50-137, -138, -139, and -140 Storage Areas from the permit.	N/A	April 21, 2003

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Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment B	B.6.	Clarified language and added aisle space information for the container storage areas at TA-50-1, TA-50-69, and TA-54 West.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Attachment B	B.6	Deleted references to "TA-50-1, Room 38/38A CSA" and "TA-50-1, Rooms 35 and 36 CSAs" in fourth paragraph and changed "do" to "does".	Removal of the TA-50-1-35, -36, -38, and -38A Decon Operation Storage Areas from the permit.	N/A	November 25, 2003
Attachment B	B.6.	Clarified language and added aisle space information for specific container storage areas at TA-54, Area G.	January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	May 11, 1994
Attachment B	B.6	Changed "Pad 2 and Pad 4" to "Pad 10".	Approved change to the unit.	N/A	December 12, 2002
Attachment B	B.7	Added inspection information for the container storage areas at TA-50-1.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Attachment B	B.7	Deleted section with information for the container storage areas at TA-50-1.	Removal of the TA-50-1-35, -36, -38, and -38A Decon Operation Storage Areas from the permit.	N/A	November 25, 2003
Attachment B	B.7	Added inspection information for specific container storage areas at TA-54, Area G.	January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	May 11, 1994
Attachment B	B.7	Changed "Pad 2 and Pad 4" to "Pad 10" in the title.	Approved change to the unit.	N/A	December 12, 2002
Attachment B	B.7.1	Changed "Pad 2 and Pad 4" to "Pad 10".	Approved change to the unit.	N/A	December 12, 2002
Attachment B	B.7.2	Changed "Pad 2 and Pad 4" to "Pad 10".	Approved change to the unit.	N/A	December 12, 2002
Attachment B	B.8	Added inspection information for the container storage areas at TA-50-69.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Attachment B	B.9	Added inspection information for the container storage areas at TA-54 West.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Attachment B	Table B-1	Deleted references to Figures B-1 to B-8 and replace with references to the appropriate IRF boxes.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment B	Table B-1	Deleted CAI references in table.	Closure of the Controlled Air Incinerator.	N/A	July 2, 1998
Attachment B	Table B-1	Added inspection schedule information for the container storage areas at TA-50-1, TA-50-59, and TA-54 West.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Attachment B	Table B-1	Deleted section on TA-50-1.	Removal of the TA-50-1-35, -36, -38, and -38A Decon Operation Storage Areas from the permit.	N/A	November 25, 2003
Attachment B	Table B-1	Added inspection schedule information for specific container storage areas at TA-54, Area G.	January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	May 11, 1994
Attachment B	Table B-1	Changed "Pad 2 and Pad 4" to "Pad 10".	Approved change to the unit.	N/A	December 12, 2002
Attachment B	Figures B-1 through B-8	Replace existing inspections forms with the revised form and instructions as "Attachment B-1".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	

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Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment B	Attachment B-1	Added "Attachment B-1"	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment B	Appendix A	Deleted appendix.	Unit Closed is the Batch Waste Treatment Unit- Text was submitted as December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	N/A	September 15, 1994 **Requested class determination in 1996 submittal.**
Attachment C	All	Deleted previous version of Attachment C because training information has been updated and/or revised extensively and provided a new Attachment C to reflect updated/revised training information.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment C	Table C-2	Deleted "Incinerators" from bulleted list of facilities.	Closure of the Controlled Air Incinerator and the Industrial Incinerator.	N/A	July 2, 1998 and October 31, 2001
Attachment D	All	Deleted previous version of Attachment D because contingency measures have been updated and/or revised extensively and the plan addressed only hazardous waste and provided a new Attachment D to reflect updated/revised contingency measures information and to address both hazardous and mixed waste.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment D	D.3.3	Deleted "The instruments monitored at the incinerator and what they are monitored for are listed in Table D-3."	Closure of the Controlled Air Incinerator.	N/A	July 2, 1998
Attachment D	D.9.1	Deleted "Process-shutdown procedures are described below."	Closure of the Controlled Air Incinerator.	N/A	July 2, 1998
Attachment D	D.9.1.1	Language regarding emergency process shutdown for the TA-50 Waste Incinerator was retained from the previous version of Attachment D.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment D	D.9.1.1	Deleted section.	Closure of the Controlled Air Incinerator.	N/A	July 2, 1998

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Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment D	D.9.1.2	Language regarding emergency process shutdown for the TA-16 Industrial Incinerator was retained from the previous version of Attachment D.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment D	D.9.1.2	Deleted section.	Closure of the Industrial Incinerator.	N/A	October 31, 2001
Attachment D	Table D-3	Table D-6 from the previous version of Attachment D was retained and renumbered as Table D-3.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment D	Table D-3	Deleted table.	Closure of the Controlled Air Incinerator.	N/A	July 2, 1998
Attachment D	Appendix D-1	Information regarding emergency equipment for the specific units included in the previous version of Attachment D was retained and is now included in Appendix D-1.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment D	Appendix D-1	Deleted references and emergency equipment associated with the Controlled Air Incinerator.	Closure of the Controlled Air Incinerator.	N/A	July 2, 1998
Attachment D	Appendix D-1	Deleted references to TA-50-1, Decontamination Facility and associated equipment.	Removal of the TA-50-1-35, -36, -38, and -38A Decon Operation Storage Areas from the permit.	N/A	November 25, 2003
Attachment D	Appendix D-1	Changed "Pad 2 and Pad 4" to "Pad 10".	Approved change to the unit.	N/A	December 12, 2002
Attachment E.1	E.1.3.2.	Changed "Industrial Hygiene Group, HSE-5" to "Industrial Hygiene and Safety Group, ESH-5".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.1	E.1.3.2.	Changed "offsite" to "off site" (two times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.1	E.1.5.	Changed "Director" to "Secretary".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.1	E.1.5.	Changed "Director of NMEID" to "Secretary of NMED".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.1	E.1.5.	Changed "HSE-8 Regulatory Compliance Section" to "ESH-19 Hazardous and Solid Waste Group".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.1	E.3.6.1.	Changed "E.3.6.1" to "E.1.6.1".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.1	E.3.6.1.1.	Changed "E.3.6.1.1" to E.1.6.1.1".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.1	E.1.6.2	Changed "coliwasa" to "COLIWASA" (three times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing

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Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment E.1	E.1.6.2.1	Changed "coliwasa" to "COLIWASA" (two times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.1	E.1.6.2.2.	Changed "coliwasa" to "COLIWASA" (three times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.1	E.1.7.	Deleted the duplicate language as shown.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.1	E.1.8.	Changed "Director" to "Secretary".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.1	Table E.1.1	Changed "EID" to "NMED".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.1	All	Removed Attachment.	Closure of the Industrial Incinerator.	N/A	October 31, 2001
Attachment E.3	Title	Added "MODIFIED" to title.	August 25, 2003 Request for Class 1 Resource Conservation and Recovery Act (RCRA) Permit Modification on Attachment E.3; Closure Plan for Container Storage Unit Technical Area 50, Building 114 (TA-50-114).	1	March 24, 2004
Attachment E.3	E.3.1	Added sentence "The maximum total inventory of waste in storage at any time in the TA-50-114 CSU is 1,210 gallons."	August 25, 2003 Request for Class 1 Resource Conservation and Recovery Act (RCRA) Permit Modification on Attachment E.3; Closure Plan for Container Storage Unit Technical Area 50, Building 114 (TA-50-114).	1	March 24, 2004
Attachment E.3	E.3.2.	Changed "lab-packing" to "lab packing" and "labpacked" to "lab-packed".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.3	E.3.3.2.	Changed "Industrial Hygiene Group, HSE-5" to "Industrial Hygiene and Safety Group, ESH-5".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.3	E.3.3.2.	Changed group designation to "HSR-5".	August 25, 2003 Request for Class 1 Resource Conservation and Recovery Act (RCRA) Permit Modification on Attachment E.3; Closure Plan for Container Storage Unit Technical Area 50, Building 114 (TA-50-114).	1	March 24, 2004
Attachment E.3	E.3.3.2.	Changed "a" to "an" after "unit and handled as".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.3	E.3.3.2.	Inserted "be" before "picked up with mops".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.3	E.3.3.2.	Changed "breeching" to "breaching".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.3	E.3.3.2.	Changed "washwater" to "wash water".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing

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Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment E.3	E.3.3.2.	Changed "waster" to "water".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.3	E.3.4.	Inserted "be" before "contaminated if the used".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.3	E.3.4.	Changed "Director" to "Secretary".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.3	E.3.4.	Changed first sentence to "The year of closure for the modular storage units is 2003 for TA-50-114 and 2100 for the various units located at TA-54, Area L".	August 25, 2003 Request for Class 1 Resource Conservation and Recovery Act (RCRA) Permit Modification on Attachment E.3; Closure Plan for Container Storage Unit Technical Area 50, Building 114 (TA-50-114).	1	March 24, 2004
Attachment E.3	E.3.6.	Changed "Director of NMEID" to "Secretary of NMED".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.3	E.3.6.	Changed "HSE-8 Regulatory Compliance Section" to "ESH-19 Hazardous and Solid Waste Group".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.3	E.3.6.	Changed group designation to "Risk Reduction and Environmental Stewardship Division's Solid Waste Regulatory Compliance Group".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	March 24, 2004
Attachment E.3	E.3.7.1.2.	Moved "trowel or scoop" from title and placed it as subheading.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.3	E.3.7.2.	Changed "coliwasa" to "COLIWASA" (three times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.3	E.3.7.2.1.	Changed "coliwasa" to "COLIWASA" (two times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.3	E.3.7.2.1.	Changed "an" to "and".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.3	E.3.7.2.2.	Changed "coliwasa" to "COLIWASA" (three times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.3	E.3.9.	Changed "Director" to "Secretary".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.3	Table E.3.1.	Changed "EID" to "NMED" (two times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.3	Table E.3.1.	Changed "disassemblyas" to "disassembly, as".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.3	Table E.3.2.	Changed "Extraction Procedure Toxicity" to "the toxicity characteristic".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment E.3	Table E.3.2.	Changed "Extraction Procedure Toxicity procedures" to "the Toxicity Characteristic Leaching Procedure".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	

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Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment E.3	Table E.3.3.	Changed "washwater" to "wash water" (three times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.3	Figure E.3.2	Updated Figure E.3.2 to include new location of Modular units plus new Modular units.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.3	Figure E.3.6	Added "EXAMPLE" to figure title.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	March 24, 2004
Attachment E.4	E.4.3.2.	Changed "EID" to "NMED".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	E.4.3.2.	Changed "neoprenecoated gloves, and boots," to "neoprene-coated gloves, and boots".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	E.4.3.2.	Changed "Industrial Hygiene Group, HSE-5" to "Industrial Hygiene and Safety Group, ESH-5".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	E.4.3.2.	Changed "waster" to "water".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	E.4.4.	Changed "washwater" to "wash water".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	E.4.4.	Changed "Director" to "Secretary".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	E.4.6.	Changed "Director of NMEID" to "Secretary of NMED".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	E.4.6.	Changed "HSE-8 Regulatory Compliance Section" to "ESH-19 Hazardous and Solid Waste Group".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	E.4.7.	Inserted comma after "if refrigeration is required".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	E.4.7.1.2.	Moved "trowel or scoop" from title and placed it as subheading.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	E.4.7.1.2.	Changed "further" to "farther".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	E.4.8.2.	Changed "E.4.8.2" to "E.4.7.2".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	E.4.8.2.	Changed "coliwasa" to "COLIWASA" (three times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	E.4.8.2.1.	Changed "E.4.8.2.1" to "E.4.7.2.1".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	E.4.8.2.1.	Changed "coliwasa" to "COLIWASA" (two times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	E.4.8.2.2.	Changed "E.4.8.2.2" to "E.4.7.2.2".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing

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Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment E.4	E.4.7.2.2.	Changed "coliwasa" to "COLIWASA" (three times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	E.4.8.3.	Changed "E.4.8.3" to "E.4.7.3".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	E.4.8.3.	Changed "8 1/12" to "8 1/2".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	E.4.9.	Changed "E.4.9" to "E.4.8".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	E.4.10.	Changed "E.4.10" to "E.4.9".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	E.4.10.	Changed "Director" to "Secretary".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	E.4.10.A.	Changed "E.3.6" to "E.4.6".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	Table E.4.1	Changed "EID" to "NMED" (two times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	Table E.4.2	Changed "Berylium" to "Beryllium".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	Table E.4.3	Changed "washwater" to "wash water" (three times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.4	All	Replaced attachment with "Amended Closure Plan Attachment E.4 Dismantlement Revision" in June 1996 for the closure of the CAI.	Amended Closure Plan for the Controlled Air Incinerator.	N/A	July 1, 1996
Attachment E.5	Title	Added "MODIFIED" to title.	August 25, 2003 Request for Class 1 Resource Conservation and Recovery Act (RCRA) Permit Modification on Attachment E.5; Closure Plan for Technical Area 50, Building 37, Room 117 (TA-50-37-117).	1	March 24, 2004
Attachment E.5	E.5.2.	Changed "E.5.2" to "E.5.1".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.3.	Changed "E.5.3" to "E.5.2".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.4.	Changed "E.5.4" to "E.5.3".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.4.1.	Changed "E.5.4.1" to "E.5.3.1".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.4.2.	Changed "E.5.4.2" to "E.5.3.2".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing

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Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment E.5	E.5.4.2.	Changed "decontaiminating" to "decontaminating".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.4.2.	Changed "neoprene coated gloves, and boots," to "neoprene-coated gloves, and boots".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.4.2.	Changed "Industrial Hygiene Group, HSE-5" to "Industrial Hygiene and Safety Group, ESH-5".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.4.2.	Changed group designation to "HSR-5".	August 25, 2003 Request for Class 1 Resource Conservation and Recovery Act (RCRA) Permit Modification on Attachment E.5; Closure Plan for Technical Area 50, Building 37, Room 117 (TA-50-37-117).	1	March 24, 2004
Attachment E.5	E.5.4.2.	Changed "sotred" to "stored".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.4.2.	Changed "transpoted" to "transported".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.5.	Changed "E.5.5" to "E.5.4".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.5.	Changed "Director" to "Secretary".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.6.	Changed "E.5.6" to "E.5.5".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.6.	Changed year of closure from "2100" to "2003".	August 25, 2003 Request for Class 1 Resource Conservation and Recovery Act (RCRA) Permit Modification on Attachment E.5; Closure Plan for Technical Area 50, Building 37, Room 117 (TA-50-37-117).	1	March 24, 2004
Attachment E.5	E.5.7.	Changed "E.5.7" to "E.5.6".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.7.	Changed "Permitee" to "Permittee".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.7.	Changed "orignial" to "original".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.7.	Changed "Director of NMEID" to "Secretary of NMED".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.7.	Changed "the HSE-8 Regulatory Compliance Section" to "the ESH-19 Hazardous and Solid Waste Group".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing

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Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment E.5	E.5.7	Changed group designation to "Risk Reduction and Environmental Stewardship Division's Solid Waste Regulatory Compliance Group".	August 25, 2003 Request for Class 1 Resource Conservation and Recovery Act (RCRA) Permit Modification on Attachment E.5; Closure Plan for Technical Area 50, Building 37, Room 117 (TA-50-37-117).	1	March 24, 2004
Attachment E.5	E.5.8.	Changed "E.5.8" to "E.5.7".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.	Changed "shows" to "show".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.1.	Changed "E.5.8.1" to "E.5.7.1".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.1.	Changed "E.3.2" to "E.5.2".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.1.	Changed "wiht" to "with".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.1.1.	Changed "E.5.8.1.1" to "E.5.7.1.1".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.1.1.	Changed "ot" to "or".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.1.1.	Changed "sir-dried" to "air-dried".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.1.2.	Changed "E.5.8.1.2" to "E.5.7.1.2".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.1.2.	Changed "further" to "farther".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.1.2.	Inserted "at least two revolutions to shear off the sample at the bottom" to the seventh bullet for the Veihmeyer sampler.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.1.2.	Inserted "Lower the sampler" before "handle (hammer)" and make this item a separate bullet. Also changed "protusions" to "protrusions".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.2.	Changed "E.5.8.2" to "E.5.7.2".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.2.	Changed "coliwasa" to "COLIWASA" (three times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.2.	Changed "useed" to "used".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.8.8.2.1.	Changed "E.8.8.2.1" to "E.5.7.2.1".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing

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Attachment E.5	E.8.8.2.1.	Changed "sir-dried" to "air-dried".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.8.8.2.1.	Changed "coliwasa" to "COLIWASA".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.8.8.2.1.	Changed "an" to "and".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.2.2.	Changed "E.5.8.2.2" to "E.5.7.2.2".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.2.2.	Changed "coliwasa" to "COLIWASA" (three times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.2.2.	Changed "Liquid" to "liquid".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.2.2.	Changed "jplostic" to "plastic".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.3.	Changed "E.5.8.3" to "E.5.7.3".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.3.	Changed "imprtant" to "important".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.3.	Changed "shipmemnt" to "the shipment".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.3.	Changed "8-I/1" to "8-1/2".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.3.i.	Changed "smapling" to "sampling".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.3.	Changed "completely" to "completed".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.8.3.	Changed "completyed" to "completed".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.9.	Changed "E.5.9" to "E.5.8".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.9.	Changed "Permitee" to "Permittee".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.9.	Changed "follwoed" to "followed".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.10.	Changed "E.5.10" to "E.5.9".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.10.	Changed "Permitee shal" to "Permittee shall".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing

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Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment E.5	E.5.10.	Changed "Director" to "Secretary".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	E.5.10.A.	Changed "E.5.7" to "E.5.6".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	Table E.5.1	Changed "EID" to "NMED" (two times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	Table E.5.2	Changed "Berylium" to "Beryllium".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	Table E.5.2	Changed "Chloronated" to "Chlorinated".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	Table E.5.2	Changed "Extraction Procedure Toxicity" to "the toxicity characteristic".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment E.5	Table E.5.2	Changed "Extraction Procedure Toxicity procedures" to "the Toxicity Characteristic Leaching Procedure".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment E.5	Figure E-5.4	Changed "E-5.4" to "E.5.4" for consistency.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	Figure E-5.5	Changed "E-5.5" to "E.5.5" for consistency.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.5	Figure E-5.5	Added "EXAMPLE" to figure title.	August 25, 2003 Request for Class 1 Resource Conservation and Recovery Act (RCRA) Permit Modification on Attachment E.5; Closure Plan for Technical Area 50, Building 37, Room 117 (TA-50-37-117).	1	March 24, 2004
Attachment E.6	E.6.1.	Inserted "/" between "transfer" and "storage building".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.3.	Changed "transfer/storages" to "materials from transfer, accumulation, or storage sites".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.3.	Changed "treatment either at Area L or at TA-50-1 Batch Treatment Plant" to "treatment at Area L".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.5.1.	Changed "HWMR-S" to "HWMR-5".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.5.3.	For clarity, changed "Soil sampling will be conducted to determine if hazardous wastes have been tracked outside of contaminated areas, as described in section E.6.9" to "Soil sampling will be conducted as described in Section E.6.9. to determine if hazardous waste have been tracked outside of contaminated areas".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing

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Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment E.6	E.6.5.3.	Changed "HWMR-S" to "HWMR-5".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.5.5.	Changed "E.6.5.5" to "E.6.5.4".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.5.5.	Changed "shied" to shield".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.5.5.	Changed "Industrial Hygiene group (HSE-5)" to "Industrial Hygiene and Safety Group (ESH-5)".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.5.6.	Changed "E.6.5.6" to "E.6.5.5".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.6.	Changed "Director" to "Secretary".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.8.	Changed "Director of NMEID" to "Secretary of NMED".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.8.	Changed "HSE-8 Regulatory Compliance Section" to "ESH-19 Hazardous and Solid Waste Group".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.9.	Changed "shows" to "show".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.9.	Inserted "," after "refrigeration is required".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.9.1.2.	Inserted "the" between "in" and "field log book" in the third bullet for trowel or scoop.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.9.1.2.	Changed "further" to "farther" in fourth bullet for the Veihmeyer sampler.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.9.2	Changed "coliwasa" to "COLIWASA" (three times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.9.2.1.	Changed "coliwasa" to "COLIWASA" (two times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.9.2.2.	Changed "coliwasa" to "COLIWASA" (three times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.9.2.2.	Changed "Liquid" to "liquid" in sixth bullet.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.9.2.2.	Changed "storethe" to store the".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.9.3.	Changed "accopanying" to "accompanying".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.9.3.	Changed "seperate" to "separate".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing

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Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment E.6	E.6.9.3.	Changed "8I/1" to "8-1/2".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.9.3.	Changed "entires" to "entries".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.9.3.f.	Changed "Descrioption" to "Description".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.9.3.f.	Changed "smapling" to "sampling".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.9.3.	Deleted "(Figure E.8.8)".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.9.3.	Changed "completely" to "completed".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.10.	Changed "Permitee" to "Permittee".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.10.	Changed "wiht" to "with".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.11.	Changed Permitee" to "Permittee".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.11.	Changed "Director" to "Secretary".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	E.6.11.A.	Changed "p[aragraph" to "paragraph".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	Table E.5.1	Changed "E.5.1" to "E.6.1".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	Table E.5.1	Changed "EID" to "NMED" (two times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	Table E.6.2	Changed "Berylium" to "Beryllium".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	Table E.6.2	Changed "Chloronated" to "Chlorinated".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	Table E.6.2	Changed "Extraction Procedure Toxicity" to "the toxicity characteristic".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment E.6	Table E.6.2	Changed "Extraction Procedure Toxicity procedures" to "the Toxicity Characteristic Leaching Procedure".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment E.6	Table E.6.3	Changed "2654" to "264".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.6	Figure E.6.1	Updated Figure E.6.1 to include new location of Modular units plus new Modular units.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing

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Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment E.7	E.7.1.	Changed "labpacks" to "lab packs".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.1.	Inserted "-" between "55" and "gallon" (two times); "220" and "gallon" and "330" and "gallon".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.1.	Changed "Storage containers, meeting DOT specifications" to "DOT-approved storage containers".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.1.	Deleted duplicate occurrence of "concrete".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.3.	Changed "sotred" to "stored".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.4.2.	Changed "boots," to "boots.".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.4.2.	Changed "Industrial Hygiene Group, HSE-5" to "Industrial Hygiene and Safety Group, (ESH-5)".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.4.2.	Changed "frecycled" to "recycled".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.4.2.	Deleted "the TA-50 1 Batch Waste Treatment Unit or".	Unit Closed is the Batch Waste Treatment Unit- Text was submitted as December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	N/A	September 15, 1994 **Requested class determination in 1996 submittal.**
Attachment E.7	E.7.4.2.	Changed "containers and taken to TA-54, Area L for sampling, analysis" to "containers, and taken to TA-54, Area L for sampling and analysis,".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.4.2.	Changed "waster" to "water".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.4.3.	Changed "upgradient" to "up-gradient".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.5.	Changed "sotred" to "stored".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.5.	Changed "fwill" to "will".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.5.	Changed "washwater" to "wash water".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.5.	Changed "Director" to "Secretary".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.7.	Changed "Permitee" to "Permittee".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing

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Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment E.7	E.7.7.	Changed "Director of NMEID" to "Secretary of NMED".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.7.	Changed "the HSE-8 Regulatory Compliance Section" to "the ESH-19 Hazardous and Solid Waste Group".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.5.8.	Changed "E.5.8" to "E.7.8".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.5.8.	Changed "Containers" to "containers".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.8.1.1.	Changed "sir-dried" to "air-dried".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.8.1.2.	Changed "further" to "farther" on the fourth bullet for Veihmeyer samplers.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.8.1.2.	Changed "Rotate the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees" to "Rotate the sampler at least two revolutions to shear off the sample bottom" on the seventh bullet for the Veihmeyer sampler.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.8.1.2.	Changed "protusions" to "protrusions".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.8.2.	Changed "coliwasa" to "COLIWASA" (three times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.8.2.	Changed "useed" to "used".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.8.2.	Changed "E.7.2" to "E.7.3".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.7.2.1.	Changed "E.7.7.2.1" to "E.7.8.2.1".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.7.2.1.	Changed "sir-dried" to "air-dried".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.7.2.1.	Changed "coliwasa" to "COLIWASA" (two times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.7.2.1.	Changed "an" to "and".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.8.2.1.	Changed "E.7.8.2.1" to "E.7.8.2.2".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.8.2.1.	Changed "coliwasa" to "COLIWASA" (three times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing

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Attachment E.7	E.7.8.2.1.	Changed "own" to "down".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.8.2.1.	Changed "jplastic" to "plastic".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.8.3.	Changed "label" to "seal".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.8.3.	Changed "ambnient" to "ambient".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.8.3.	Changed "imprtant" to "important".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.8.3.	Changed "shipmemnt" to "the shipment".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.8.3.	Changed "8 I/1" to "8-1/2".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.8.3.i.	Changed "smapling" to "sampling".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.8.3.	Changed "completely" to "completed".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.8.3.	Changed "completyed" to "completed".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.9.	Changed "Permitee" to "Permittee".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.9.	Changed "follwoed" to "followed".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.10.	Changed "Permitee shal" to "Permittee shall".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	E.7.10.	Changed "Director" to "Secretary".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	Table E.7.1	Changed "EID" to "NMED" (two times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	Table E.7.2	Changed "Berylium" to Beryllium".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	Table E.7.2	Changed "Chloronated" to "Chlorinated".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	Table E.7.2	Changed "Extraction Procedure Toxicity" to "the toxicity characteristic".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment E.7	Table E.7.2	Changed "Extraction Procedure Toxicity procedures" to "the Toxicity Characteristic Leaching Procedure".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	

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Attachment E.7	Figure E-7.1	Changed "E-7.1" to "E.7.1" for consistency.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	Figure E-7.2	Changed "E-7.2" to "E.7.2" for consistency.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	Figure E-7.2	Updated Figure E.7.2 to include new location of Modular units plus new Modular units.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.7	Figures E-7.4, E-7.5, and E-7.6	Changed "E-7.4," "E-7.5," and "E-7.6" to "E.7.4," "E.7.5," and "E.7.6," respectively.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.8	All	Inserted recent Closure Plan Modification discussions.	September 30, 2003 Request for Class 1 Resource Conservation and Recovery Act (RCRA) Permit Modification on Attachment E.8; Closure Plan Partial Closure for TA-54 Area L Hazardous Waste Treatment/Storage Tanks Permit Attachment E.8 EPA ID# NM 0890010515-1.	1	Pending
Attachment E.8	Global	Changed "coliwasa" to "COLIWASA".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.8	E.8.1.	Deleted "are" from before "located at Area L".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.8	E.8.1.	Changed "laboratory" to "Laboratory".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.8	E.8.3.	Changed "The wastes treated or stored normally at the tanks are ammonium bifluoride and lithium hydride" to "The waste treated or stored normally in the tanks is barium-contaminated sand".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment E.8	E.8.3.	Inserted "or chemical treatment" after evaporation.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.8	E.8.5.	Changed "Any waste compatible with permitted treatment at the TA-50-1 Batch Waste Treatment Unit will be so treated: to "Any waste compatible with on-site treatment will be so treated."	Unit Closed is the Batch Waste Treatment Unit- Text was submitted as December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	N/A	September 15, 1994 **Requested class determination in 1996 submittal.**
Attachment E.8	E.8.5.	Changed "on site" and "off site" to "on-site" and "off-site".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.8	E.8.5.1.	Changed "HWMR-S" to "HWMR-5".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.8	E.8.5.2.	Changed "tank" to "tanks".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing

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Attachment E.8	E.8.5.3.	Deleted duplication of "eight".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.8	E.8.5.4.	Changed "Industrial Hygiene Group (HR-5)" to "Industrial Hygiene and Safety Group (ESH-5)".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.8	E.8.6.1.2.	Changed "washwater" to "wash water".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.8	E.8.6.2.	Changed "Criteria" to "criteria".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.8	E.8.8.	Changed "the ES-8 Regulatory Compliance Section" to "the ESH-19 Hazardous and Solid Waste Group".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.8	E.8.9.	Changed "shows" to "show".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.8	E.8.9.1.2.	Moved "trowel or scoop" from title and placed it as subheading.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.8	E.8.9.1.2.	Changed "further" to "farther" on fourth bullet for the Veihmeyer sampler.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.8	E.8.9.2	Changed "coliwasa" to "COLIWASA" (three times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.8	E.8.9.2.1	Changed "coliwasa" to "COLIWASA" (two times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.8	E.8.9.2.2.	Changed "coliwasa" to "COLIWASA" (three times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.8	E.8.9.2.2.	Changed "Liquid" to "liquid" on the sixth bullet.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.8	E.8.9.3.	Changed "completely" to "completed".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.8	Table E.8.1.	Changed "Some" to "some".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.8	Table E.8.2.	Inserted "organics" after each use of "semivolatile".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.8	Table E.8.2.	Changed "Berylium" to "Beryllium".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.8	Table E.8.2.	Changed second use of "(TCLP)" to "TCLP".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	E.9.	Changed "four treatment / storage tanks" to ", and two treatment/storage tanks".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	E.9.	Changed "laboratory" to "Laboratory".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing

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Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment E.9	E.9.2.	Changed "either at Area L or at TA-50 1 Batch Treatment Unit" to "at Area L".	Unit Closed is the Batch Waste Treatment Unit- Text was submitted as December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	N/A	September 15, 1994 **Requested class determination in 1996 submittal.**
Attachment E.9	E.9.3.2.	Deleted "the TA-50 1 Batch Waste Treatment Unit or".	Unit Closed is the Batch Waste Treatment Unit- Text was submitted as December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	N/A	September 15, 1994 **Requested class determination in 1996 submittal.**
Attachment E.9	E.9.4.	Changed "soilid" to "solid".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	E.9.4.	Changed "dictating" to "dictated".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	E.9.5.	Changed "shied" to "shield".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	E.9.5.	Changed "Industrial Hygiene Group (HSE-5)" to "Industrial Hygiene and Safety Group (ESH-5)".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	E.9.6.	Changed "to" to "is" before "considered adequate to decontaminate".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	E.9.6.1.	Deleted duplicate "," after "1989" (two times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	E.9.6.1.2.	Changed "washwater" to "wash water".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	E.9.6.1.	Changed "Director" to "Secretary".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	E.9.8.	Changed "Director of NMEID" to "Secretary of NMED".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	E.9.8.	Changed "the HSE-8 Regulatory Compliance Section" to "the ESH-19 Hazardous and Solid Waste Group".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	E.8.9.1.1.	Changed "E.8.9.1.1" to "E.9.9.1.1".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	E.9.9.1.2.	Changed "further" to "farther" on the fourth bullet for the Veihmeyer sampler.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	E.9.9.2.	Changed "coliwasa" to "COLIWASA" (three times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	E.9.9.2	Changed "E.8.3" to "E.9.2".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing

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Attachment E.9	E.9.8.2.1.	Changed "E.9.8.2.1" to "E.9.9.2.1".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	E.9.9.2.1.	Changed "coliwasa" to "COLIWASA" (two times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	E.9.9.2.2.	Changed "coliwasa" to "COLIWASA" (three times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	E.9.9.2.2.	Changed "Liquid" to "liquid" in the sixth bullet.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	E.9.9.3.	Changed "E.8.4" to "E.9.3".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	E.9.9.3.	Added "." after "etc" (three times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	E.9.9.3.	Changed "completely " to "completed".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	E.9.11.	Changed "Director" to "Secretary".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	Table E.9.1	Changed "EID" to "NMED" (two times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	Table E.9.1	Changed "proposalsl" to "proposals".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	Table E.9.2	Changed "Chloronated" to "Chlorinated".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	Table E.9.2	Changed "Berylium " to "Beryllium".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.9	Table E.9.2	Changed "Extraction Procedure Toxicity" to "the toxicity characteristic".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment E.9	Table E.9.2	Changed "Extraction Procedure Toxicity procedures" to "the Toxicity Characteristic Leaching Procedure".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment E.9	Figure E.9.1	Updated Figure E.9.1 to include new location of Modular units plus new Modular units.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment E.10	All	Provided new Attachment E.10, which is the Closure Plan for the container storage areas at TA-50-1.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Attachment E.10	All	Deleted Closure Plan for the container storage areas at TA-50-1.	Removal of the TA-50-1-35, -36, -38, and -38A Decon Operation Storage Areas from the permit.	N/A	November 25, 2003
Attachment E.10	All	Provided new Attachment E.10, which is the Closure Plan for specific container storage areas at TA-54, Area G.	January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	May 11, 1994

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Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment E.10	E.10	Changed "Pad 2 and Pad 4" to "Pad 10" in title.	Approved change to the unit.	N/A	December 12, 2002
Attachment E.10	E.10	Changed "Pad 2 and Pad 4" to "Pad 10".	Approved change to the unit.	N/A	December 12, 2002
Attachment E.10	E.10	Changed "Pads 2 and 4 are also constructed of asphalt and have the same dimensions and perimeter berm as TA-54-226." to "Pad 10 is also constructed of asphalt."	Approved change to the unit.	N/A	December 12, 2002
Attachment E.10	E.10.1	Deleted " • Pad 2 - 430,045 gallons" and changed "Pad 4" to "Pad 10".	Approved change to the unit.	N/A	December 12, 2002
Attachment E.10	Table E.10.2	Changed "Pad 2 and Pad 4" to "Pad 10".	Approved change to the unit.	N/A	December 12, 2002
Attachment E.10	Figure E.10-1	Changed "Pad 2 and Pad 4" to "Pad 10".	Approved change to the unit.	N/A	December 12, 2002
Attachment E.11	All	Provided new Attachment E.11, which is the Closure Plan for the container storage areas at TA-50-69.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Attachment E.12	All	Provided new Attachment E.12, which is the Closure Plan for the container storage areas at TA-54 West.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Attachment F	Global	Changed "labpack" to "lab pack" and "labpacks" to "lab packs".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment F	F.1.1.	Changed "a Chemical Waste Disposal Request Form 10-3A)" to "Waste Profile Form (WPF, see Permit Attachments A.2 and A.3)"	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment F	F.1.1.	Changed "Waste Management Group (HSE-7)" to "Chemical and Mixed Waste Management Group (CMWM)".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit and December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994

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Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment F	F.1.1.	Replaced "The request " with "The WPF provides waste characterization information for subsequent management of material. The WPF is reviewed for adequacy of information and assignation of segregation codes, Department of Transportation information, and Environmental Protection Agency (EPA) Hazardous Waste Numbers. When the WPF is approved, the waste generator submits a Chemical Waste Disposal Request (CWDR) to CMWM. The CWDR"	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment F	F.1.1.	Deleted "and physical form" from the first paragraph.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment F	F.1.1.	Changed "such as the condition of " to "about" in the first paragraph.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment F	F.1.1.	Deleted "Material Safety Data Sheets (MSDS's) and existing analytical data may also be available. The containers described will range from two ounce bottles of unusable chemical to 330-gallon Tuff-Tanks of plating material".	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment F	F.1.1.	Changed "The Chemical Waste Disposal Request form is reviewed for adequacy of information and assignation of segregation codes, DOT information, and EPA codes. It is then used by HSE-7 personnel as the shipping form when the waste is collected. HSE-7 personnel then visit the generating site to package the waste for transport to TA-54, Area L." to "A uniform waste manifest is prepared for use when the waste is collected, packaged, and transported."	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Attachment F	F.1.1.	Changed "All waste is transferred in accordance with the Laboratory's On-Site Transportation Manual" to "All waste materials are packaged and transferred in accordance with DOT regulations."	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997

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Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment F	F.1.1.	Changed "The Chemical Waste Disposal Request Form is reviewed" to "CST-5 personnel review the waste disposal request".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment F	F.1.1.	Changed "It is then used by HSE-7 personnel as the shipping form when the waste is collected" to "CST-5 personnel then use the waste disposal request to complete the shipping papers for waste collection".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment F	F.1.1.	Changed "HSE-7 personnel then" to "Also, CST-5 personnel use the waste disposal request to create a second record as part of the Hazardous Waste Database. CST-5 personnel".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment F	F.1.1.	Inserted paragraph "CST-5 personnel… and Laboratory procedures."	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment F	F.1.1.	Changed "for transport" to "and transport it".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment F	F.1.1.	Inserted "-" between "DOT" and "approved".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment F	F.1.1.	Changed "(referred to as labpacks)" to "(this packaging configuration is commonly referred to as a lab pack)".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment F	F.1.1.	Changed "comcobs" to "corncobs".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment G	F.1.1.	Deleted paragraph "Small containers… labpacks for storage."	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment F	F.1.1.	Changed "Drums and Tuff-Tanks" to "Containers".	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment F	F.1.1.	Changed "drum" to "container".	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994

Changes to the 1995 NMED Control Copy of the Los Alamos National Laboratory Hazardous Waste Facility Permit

Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment F	F.1.1.	Changed "The wastes are transported on a half-ton to twelve-ton truck" to "The wastes are transported by vehicles ranging from half-ton trucks to semitrailers with maximum capacities of up to 80,000 pounds."	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment F	F.1.1.	Changed "Upon arrival at TA-54, Area L, the wastes are unloaded from the transport vehicle." to "Upon arrival at a hazardous or mixed waste management unit, the wastes are unloaded from the transport vehicle and placed into appropriate storage areas."	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment F	F.1.1.	Added " and placed into appropriate storage areas".	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment F	F.1.1.	Changed "Labpack" to "Lab pack".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
	F.1.2.	Changed "labpack" to "lab pack".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
	F.1.2.	Added "segregation" to first bulleted item.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment F	F.1.2.	Changed "Chemical Waste Disposal Request form" to "waste disposal request".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
	F.1.2.	Changed "Chemical Waste Disposal Request" to "CWDR".	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment F	F.1.2.	Inserted "- DOT Hazard Class and shipping information, as appropriate".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	
Attachment F	F.1.2.	This paragraph was rewritten and changed "Chemical Waste Disposal Request form" to "waste disposal request" and updated data analysis responsibilities.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	Proposed Class 1	

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Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment F	F.1.2.	Updated language regarding labeling, recording, and sampling to reflect most current and accurate information.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment F	F.2.1	Added language to address storage areas at TA-50-1, TA-50-69, and TA-54-38.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Attachment F	F.2.1	Deleted reference to "two storage pads" at TA-50 in the first sentence.	Removal of the TA-50-137, -138, -139, and -140 Storage Areas from the permit.	N/A	April 21, 2003
Attachment F	F.2.1	Deleted reference to "at the incinerator" in the first paragraph.	Closure of the Controlled Air Incinerator.	N/A	July 2, 1998
Attachment F	F.2.1	Deleted "TA-50-1, Rooms 35, 36, and 38/38A storage units (three total);".	Removal of the TA-50-1-35, -36, -38, and -38A Decon Operation Storage Areas from the permit.	N/A	November 25, 2003
Attachment F	F.2.1	Added language to address storage areas at TA-54, Area G.	January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	May 11, 1994
Attachment F	F.2.1	Changed "Pad 2 and Pad 4" to "Pad 10".	Approved change to the unit.	N/A	December 12, 2002
Attachment F	F.2.1.1.	Changed "contain" to "containing".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment F	F.2.1.3	Deleted "137, and 138" from the title of the section.	Removal of the TA-50-137, -138, -139, and -140 Storage Areas from the permit.	N/A	April 21, 2003
Attachment F	F.2.1.3	Deleted reference to the "Batch Waste Treatment Unit".	Closure of the Batch Waste Treatment Unit.	N/A	September 15, 1994
Attachment F	F.2.1.3.	Changed "incompatibility" to "incompatible".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment F	F.2.1.4	Deleted section.	Removal of the TA-50-137, -138, -139, and -140 Storage Areas from the permit.	N/A	April 21, 2003

Changes to the 1995 NMED Control Copy of the Los Alamos National Laboratory Hazardous Waste Facility Permit

Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment F	F.2.1.5	Deleted "Generally, only waste that is already approved for onsite incineration will be stored there. This means the waste has not only been sampled and labeled but also analyzed per Permit Attachment A. However, if the need should arise, the area will be used for compatible waste for which analytical results are pending. All labeling and sampling will have occurred at TA-54, Area L. The primary chemical type stored here will be organic waste. If small quantities of other waste types, such as oxidizers, are to be incinerated, it will generally be delivered the day of the burn to avoid storage in this room."	Closure of the Controlled Air Incinerator.	N/A	July 2, 1998
Attachment F	F.2.1.6	Added language to address storage areas at TA-50-1.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Attachment F	F.2.1.6	Deleted section on TA-50-1.	Removal of the TA-50-1-35, -36, -38, and -38A Decon Operation Storage Areas from the permit.	N/A	November 25, 2003
Attachment F	F.2.1.6	Added language to address storage areas at TA-54, Area G.	January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	May 11, 1994
Attachment F	F.2.1.6	Changed "Pad 2 and Pad 4" to "Pad 10" in title and once in text. The last mention of Pads 2 and 4 describes where waste containers were retrieved from.	Approved change to the unit.	N/A	December 12, 2002
Attachment F	F.2.1.7	Added language to address storage areas at TA-50-69.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Attachment F	F.2.1.8	Added language to address storage areas at TA-54-38.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Attachment F	F.2.2.	Changed sentence beginning with "Generally" to active voice for clarity.	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment F	F.2.2.	Changed "offsite" to "off-site" (two times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment F	F.2.2	Removed reference to "TA-50-1, Rooms 35 and 36 storage areas".	Removal of the TA-50-1-35, -36, -38, and -38A Decon Operation Storage Areas from the permit.	N/A	November 25, 2003

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Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment F	F.2.2.	Added language for clarification of general container management practices.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West and January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	February 28, 1997 and May 11, 1994
Attachment G	None	Deleted Process Codes "T03" and "T04".	Closure of the Batch Waste Treatment Unit, the Controlled Air Incinerator, and the Industrial Incinerator.	N/A	September 15, 1994; July 2, 1998; and October 31, 2001
Attachment G	None	Inserted or changed "Estimated Annual Quantity of Waste" values in 35 places.	November 10, 1993 Class 1 Permit Modification Submittal.	1	Self-implementing
Attachment G	None	Deleted the Process Code "T04" in 47 places.	November 10, 1993 Class 1 Permit Modification Submittal.	1	Self-implementing
Attachment G	None	Added authorized wastes for container storage areas at TA-50-1, Rooms 35, 36, and 38/38A.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Attachment G	None	Deleted section on TA-50-1.	Removal of the TA-50-1-35, -36, -38, and -38A Decon Operation Storage Areas from the permit.	N/A	November 25, 2003
Attachment G	None	Added authorized wastes for container storage areas at TA-50-69 Indoor and Outdoor container storage areas.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Attachment G	None	Added authorized wastes for container storage areas at TA-54 West, Building 38, container storage areas.	December 22, 1995 Proposed Hazardous Waste Facility Permit Modification Technical Area 50 and Technical Area 54 West.	3	February 28, 1997
Attachment G	None	Added authorized wastes for specific container storage areas at TA-54, Area G.	January 31, 1996 Proposed Hazardous Waste Facility Permit Modification Technical Area 54, Area G.	3	May 11, 1994
Attachment G	None	Changed "Pad 2 and Pad 4" to "Pad 10".	Approved change to the unit..	N/A	December 12, 2002
Attachment I	Global	Changed "EID" to "NMED".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment I	7	Changed "twentyone" to "twenty-one".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment I	8	Changed "twentyfour" to "twenty-four".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment I	9	Changed "twentyseven" to "twenty-seven".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment I	11	Changed "thirtythree" to "thirty-three".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment I	12	Changed "thirtysix" to "thirty-six".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing

Changes to the 1995 NMED Control Copy of the Los Alamos National Laboratory Hazardous Waste Facility Permit

Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment I	13	Changed "thirtynine" to "thirty-nine".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment J	J.1.2.1.	Changed "model" to "mode".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment J	J.1.2.1.	Changed "an" to "and".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment J	J.1.3.1.	Changed "nd" to "and".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment J	J.1.3.3.	Changed ":" to ";" after "pumps and sprays".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment J	J.1.3.4.	Changed "Section Leader for Technical Support" to "Group Leader for CST-16".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment J	J.1.5.2.	Changed "NMEID" to "NMED".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment J	J.1.5.2.	Changed "an" to "and".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment J	J.1.7.	Changed "Health and Safety" to "Environment, Safety, and Health".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment J	J.2.1.	Changed "retensioned" to "pretensioned".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment J	J.2.5.	Changed "which" to "that" after "automatic switchgear".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment J	J.2.6.1.	Changed "an" to "and".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment J	J.2.6.1.	Inserted "the" before "pit in Room 112".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment J	J.2.6.2.	Changed "liquidblend/feed" to "liquid blend/feed".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment J	J.3.1.	Changed "HSE" to "CST".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment J	J.3.3.	Changed "Technical Support Section" to "Thermal Destruction and Science Technology Group".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment J	J.3.4.	Changed "HSE-7" to "ESH-5" (two times).	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment J	J.3.4.	Changed "HSE-3, Industrial Safety" to "ESH-5, Industrial Hygiene and Safety".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment J	J.3.5.2.	Changed "Health and Safety" to "Environment, Safety, and Health".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing

Changes to the 1995 NMED Control Copy of the Los Alamos National Laboratory Hazardous Waste Facility Permit

Part	Section	Modification Description	Modification Package Submittal or Unit Association Information	Class	Approval Date
Attachment J	J.3.5.2.	Changed "The Technical Support Section" to "CST-16".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment J	J.3.5.2.	Changed "HSE" to "ESH".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment J	J.3.5.3.	Changed "Facilities Engineering (ENG-5)" to "Operations and Maintenance Support (FSS-9)".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment J	J.3.5.3.	Changed "Radiation Safety (HSE-1)" to "Health Physics Operations (ESH-1)".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment J	J.3.5.3.	Changed "Industrial Safety (HSE-3), and Industrial Hygiene (HSE-5)" to "and Industrial Hygiene and Safety (ESH-5)".	December 1996 Class 1 Permit Modifications to the LANL Hazardous Waste Facility Permit.	1	Self-implementing
Attachment J	All	Removed Attachment.	Closure of the Controlled Air Incinerator.	N/A	July 2, 1998

TABLE 2

Requested Changes to Los Alamos National Laboratory Hazardous Waste Facility Permit

Suggested change	*Comment*
Consistency update to regulatory citations throughout permit.	Changes to regulatory citations within this submittal were only made when they were in a previous permit modification submittal.
Figure renumbering to address deletions and additions.	
Section renumbering to address deletions and additions.	Changes to section numbering within this submittal were only made when they were included in a previous permit modification submittal.
Update Attachment K with most recent Hazardous Waste Management Regulations.	
Consistency change for container storage units because they are currently not uniform (e.g. storage areas, container storage areas, units, etc.).	

MODULE I STANDARD CONDITIONS

I.A. EFFECT OF PERMIT

The Permittee is allowed to ~~incinerate,~~ treat and store on site hazardous waste in accordance with the conditions of this permit. Any ~~incineration,~~ treatment or storage of hazardous waste not authorized in this permit or conducted under interim status, as defined by the Resource Conservation and Recovery Act (RCRA), is prohibited. Compliance with this permit constitutes compliance, for purposes of enforcement, with the New Mexico Hazardous Waste Act (Section 74-4-1 et seq. NMSA 1978) and the New Mexico Hazardous Waste Management Regulations (HWMR-5, as amended 1989), Parts V, VII and IX only for those management practices specifically authorized by this permit. The Permittee is also required to comply with HWMR-5, Parts I, II, III and IV to the extent the requirements of those Parts are applicable. The Permittee must also comply with all applicable self-implementing provisions imposed by the Resource Conservation and Recovery Act statute and/or the HWMR-5, Part VIII. A complete RCRA permit consists of this permit and a US EPA permit issued under the provisions of the Hazardous and Solid Waste Amendments of 1984 (HSWA) which addresses the portion of the RCRA program for which the State is not authorized. Issuance of this permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. Compliance with the terms of this permit does not constitute a defense to any action brought under Sections 3008(a), 3008(h), 3013 or 7003 of RCRA; Sections 106(a), 104 or 107 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 ~~U.S.C.~~ USC 9601 et seq., commonly known as CERCLA); Sections 74-4-1 et seq. NMSA 1978, or any other law governing protection of public health or the environment.

I.B. PERMIT ACTIONS

This permit may be modified, revoked and reissued, or terminated for cause as specified in HWMR-5, as amended 1989, Part IX, Subpart B, included herein by reference. The filing of a request for a permit modification, revocation and reissuance, or termination, or the notification of planned changes or anticipated noncompliance on the part of the permittee, does not stay the applicability or enforceability of any permit condition. Review of any application for a permit renewal shall consider improvements in the state of control and measurement technology as well as changes in applicable regulations and laws.

I.C. SEVERABILITY

The provisions of this permit are severable. If any provision of this permit, or the application of any provision of this permit to any circumstance, is held ~~invalid,the~~invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

I.D. DUTIES AND REQUIREMENTS

1. Duty to Comply The Permittee shall comply, in accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.30(a), with all conditions of this permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit issued in accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.61. Any permit noncompliance by any Permittee employee or contractor, other than noncompliance authorized by an emergency

permit, constitutes a violation of the New Mexico Hazardous Waste Act and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or denial of a permit renewal application.

2. Duty to Reapply In accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section ~~270 30(b)~~270.30(b), if the Permittee wishes to continue an activity allowed by this permit after the expiration date of this permit, the Permittee shall submit an administratively complete application for a new permit at least 180 calendar days before this permit expires. [HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.10(h)]

3. Permit Expiration Pursuant to HWMR-5 Part IX, 40 CFR 270.50, this permit shall be effective for the fixed term of ten years. As long as the state is the permit-issuing authority, this permit and all conditions herein will remain in effect beyond the permit's expiration date, if the Permittee has submitted a timely, complete application (see HWMR-5, Part IX, 40 CFR 270.10, 270.13 through 270.29) and, through no fault of the Permittee, the Secretary has not issued a new permit, as set forth in HWMR-5, Part IX, 40 CFR 270.51.

4. Need to Halt or Reduce Activity Not a Defense In accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.30(c), it shall not be a defense for the Permittee, in an enforcement action, that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

5. Duty to Mitigate In accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.30(d), the Permittee shall take all reasonable steps to minimize or correct any adverse impact on human health or the environment resulting from non-compliance with this permit.

6. Proper Operation and Maintenance In accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.30(e), the Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control and related appurtenances which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance include effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facility or similar systems only when necessary to achieve compliance with the conditions of this permit.

7. Duty to Provide Information In accordance with HWMR-5, as amended l 989, Part IX, 40 CFR Section 270.30(h), the Permittee ~~shall~~ shall furnish to the Secretary, within a reasonable time, any relevant information which he may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Secretary, upon request, copies of records required to be kept by this permit. [HWMR-5, as amended 1989, Part V, 40 CFR Section 264.74(a)]

a. Los Alamos National Laboratory must submit on a semi-annual basis, by January 31, and July 31, of each calendar year, a list of any changes in the following information:

1. Changes to State, County, Department of Energy (DOE), and LANL telephone numbers.

2. Changes in addresses for State, County, DOE, and LANL entities.

3. Changes in administrative nomenclature for position titles, organizations, and physical structures.

4. Changes in names of responsible parties (personnel).

5. Changes in the names of contractors.

6. Typographical errors in this permit.

7. Any modifications not covered by numbers 1 through 6 above must be submitted in writing for a class determination by NMED prior to incorporation in the permit.

8. Inspection and Entry In accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.30(i), the Permittee shall allow the Secretary or any authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

a. Enter at reasonable times upon the Permittee's premises where a regulated activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any unclassified records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facility, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit;

d. Sample or monitor, at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the New Mexico Hazardous Waste Act, any substances or parameters at any location; and

e. The Secretary recognizes that the Permittee operates in some cases under security restrictions imposed by the Atomic Energy Act (42 USC 2011 et seq.) and the regulations promulgated thereunder, and by other federal laws and regulations. Should conflict arise under this permit section, the Secretary and the Permittee shall cooperate in working with the appropriate Federal agency to obtain access approval. Nothing in this permit section shall be construed to deny access authorized by the Resource Conservation and Recovery Act.

9. Monitoring

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample of the waste to be analyzed must be an accepted and appropriate method such as described in Test Methods for Evaluating Solid Waste: Physical/Chemical Methods SW-846, 1986, as revised, or an equivalent method. Laboratory analytical methods must be those specified in SW-846, 1986 as revised; Standard Methods for the Examination of Water and Wastewater, Fifteenth edition, 1980 and 1981 Supplement, or current edition; or an equivalent method, as specified in the Waste Analysis Plan, Permit Attachment A.

b. The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports and records required by this permit, the certification required by HWMR-5, as amended 1989, Part V, 40 CFR 264.73(b)(9), and records of all data used to complete the application for this permit for a period of at least 3 years from the date of the sample, measurement, report, record, certification, or application. These periods may be extended by request of the Secretary at any time and are automatically extended during the course of any unresolved enforcement action regarding this facility. The Permittee shall maintain records from all ground-water monitoring wells and associated ground-water surface elevations for the active life of the facility. [HWMR-5, as amended 1989, Part V, 40 CFR 264.74(b) and 270.30(j)(2)]

c. Pursuant to HWMR-5, Part IX, 40 CFR 270.30(j)(3), records of monitoring information shall specify:

(i) The dates, exact place, and times of sampling or measurements;

(ii) The individuals who performed the sampling or measurements;

(iii) The dates analyses were performed;

(iv) The individuals who performed the analyses;

(v) The analytical techniques or methods used; and

(vi) The results of such analyses.

10. Notice of Planned Physical Facility Changes The Permittee shall give notice to the Secretary, as soon as possible, of any planned physical alterations or additions to the permitted facility which may impact any procedure or system of treatment, storage or control, or any related appurtenances, installed or used by the Permittee to achieve compliance with this permit. Physical alterations or additions shall include all hazardous waste activities and associated underground tanks. Construction of new units may not begin until a permit or permit modification has been issued.

11. Certification of Construction or Modification The Permittee may not commence incineration, treatment or storage of waste at the modified unit until:

    a. The Permittee has submitted to the Secretary, by certified mail or hand delivery, a letter signed by the Permittee and a registered professional engineer, stating that the unit has been constructed or modified in compliance with the permit; and

    b. (i) The Secretary or his designee has inspected the modified or newly constructed unit and finds it is in compliance with the conditions of the permit; or

    (ii) The Secretary, or his designee, has either waived the inspection or has not, within 15 calendar days, notified the Permittee of his intent to inspect.

12. Anticipated Noncompliance The Permittee shall give advance notice to the Secretary of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

13. Transfer of Permit This permit may be transferred to a new owner or operator pursuant to HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.40. Before transferring ownership or operation of the facility during its operating life, the Permittee shall notify the new owner or operator in writing of the requirements of HWMR-5, as amended 1989, Parts III, V and IX; and HSWA.

14. Compliance Schedules Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 calendar days following each schedule date.

15. Other Information Whenever the Permittee becomes aware that he failed to submit any relevant facts in the permit application, or submitted incorrect information in a permit application or in any report to the Secretary, the Permittee shall verbally notify the ~~Director~~ Secretary of such fact on the next work day and submit, within thirty calendar days, written correction of such facts or information. The term "Permit Application" includes any information submitted on solid waste management units.

I.E. SIGNATORY REQUIREMENTS

All reports or other information requested by the Secretary shall be signed and certified as required by HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.11.

I.F. CONFIDENTIAL INFORMATION

The Permittee may claim confidential, in accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.12 any information, required to be submitted by this permit.

I.G. DOCUMENTS TO BE MAINTAINED AT FACILITY

The Permittee shall maintain at the facility, until closure is completed and certified by an independent registered professional engineer, the following documents and amendments, revisions and modifications to these documents:

1. This permit and its attachments;

2. Waste Analysis Plan, as required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.13(b) and this permit;

3. Personnel training documents and records required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.16(a) and this permit;

4. Contingency Plan, as required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.53(a) and this permit;

5. Closure Plans required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.112(a) and this permit;

6. Operating record required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.73 and this permit; and

7. Inspection schedules required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.15 and this permit.

I.H. PERMIT CONSTRUCTION

1. Citing Whenever paragraphs of this permit or of the Hazardous Waste Management Regulations are cited, such cite includes all subordinate 40 CFR sections of the cited paragraph. When subordinate 40 CFR sections are cited, such cite includes all 40 CFR subsections of the cited subparagraph. All such cites shall be considered an inclusion by reference in accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.30.

2. Gender Whenever the pronoun "he" is used in reference to the Secretary of the ~~Environmental Improvement Division~~ New Mexico Environment Department or the Permittee, it is to be read as "she," in any instance where the object of the reference is female.

3. Definitions For purposes of this Permit, terms used herein shall have the same meaning as those in HWMR-5, Parts I, V, VIII, and IX, unless this permit specifically provides otherwise; where terms are not defined in the regulations or the permit, the meaning associated with such terms shall be defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term. "Regional Administrator" means the Regional Administrator of EPA Region VI, or his designee or authorized representative. "Secretary" means the Secretary of the New Mexico ~~Enviorment~~ Environment Department, or his designee or authorized representative.

a. References to "Wastes" in this permit mean "Hazardous Wastes" as regulated under RCRA unless specifically designated otherwise at the time of use.

b. The term "Knowledge of Process" means a written description of the waste, certified as true and correct by an individual familiar with the process that generated the waste. Such description shall specify the waste constituents and estimate their concentration or quantity.

c. The term "On-site" as used in permit paragraph II.B.2. means facilities under the operational control of the Permittee and located within the external perimeter of the Permittee's property. This includes Technical Areas 0, 2, 3, 6, 8, 9, 11, 14, 15, 16, 18, 21, 22, 26, 33, 35, 36, 37, 39, 40, 41, 43, 46, 48, 49, 50, 51, 52, 53, 54, 55, 58, and 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, and 74. See permit Figure ~~1-1~~ 2 and Table ~~1-1~~I-1 and Table ~~2-1~~II-3.

d. Technical Area Zero (TA-0), includes only the detached sites listed in Table ~~1-1~~I-1.

e. The term "Analysis" includes physical analysis, chemical analysis and knowledge of process determinations.

f. The term "Permittee" as used in this permit applies jointly and severably to the Owner, U. S. Department of Energy, and to the Operator, the University of California Regents, doing business as the Los Alamos National Laboratory.

TABLE I-1
TECHNICAL AREA ZERO GENERATION SITES

DESIGNATION	DESCRIPTION	ANTICIPATED WASTES
0-480	Pajarito School Engineering offices	D001, D002
0-1197	Mesa School Training offices/classrooms	Any training materials
0-1237	Pueblo Complex Environmental laboratory	Any sample or analysis reagents

NOTE: ~~No other site are included in the on-site definition in permit paragraph I.H.3.c.~~ Except for those sites listed in Table II-3, no other sites are included in the on-site definition in permit paragraph I.H.3.c.

MODULE II GENERAL FACILITY CONDITIONS

II.A. DESIGN AND OPERATION OF THE FACILITY

The Permittee shall maintain and operate the facility to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release to air, soil, or surface water of hazardous waste constituents which could threaten human health or the environment.

II.B. REQUIRED NOTICE

1. Foreign Wastes This permit does not allow the Permittee to accept wastes from a foreign source. If the Permittee is to receive hazardous waste from a foreign source, he shall apply for and receive a permit modification in accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.41 or 270.42, if appropriate, prior to accepting such waste.

2. Off-Site Wastes This permit does not allow the Permittee to accept wastes from an off-site source. "Off-site source" refers to wastes generated by sources other than the Permittee or its contractor(s) operating on-site. For the purposes of this permit, wastes generated by the Permittee at Technical Area 57, the Fenton Hill site, and waste generated through investigation of Potential Release Sites (PRS) and/or Solid Waste Management Units (SWMU) listed in ~~Module II Table 1~~ Table II-3 (at the end of Module II); or the waste generated through the restoration of the PRS/SWMU sites listed in ~~Module II Table 2-1~~ Table II-3 may be accepted for storage or treatment if all such waste is properly manifested in accordance with permit paragraph II.J. below. Waste or contaminated residuals of waste associated with off-site treatment of those waste streams originally generated by the Permittee and subsequently managed or treated by the off-site facilities listed in Module II, Table 2-2, may be accepted for storage or treatment if all such waste is properly characterized and manifested in accordance with permit paragraph II.J. If the Permittee is to receive hazardous waste from an off-site source, other than those off-site sources listed in ~~Module II Table 1~~ Table II-3 and Table 2-2, he shall apply for and receive a permit modification in accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.42, if appropriate, prior to accepting such waste.

II.C. WASTE ANALYSIS

1. Waste Analysis Plan The Permittee shall follow the procedures described in Permit Attachment A.

2. Quality Assurance The Permittee shall verify its waste analysis as part of a written quality assurance program. The quality assurance program shall be in accordance with current accepted practices such as specified in Test Methods for Evaluating Solid Waste:Physical/Chemical Methods SW-846, 1986, as revised, or equivalent methods approved by the Secretary; and at a minimum ensure that the Permittee maintains proper functional instruments, uses approved sampling and analytical methods, verifies the validity of sampling and analytical procedures, and performs correct calculations. The Permittee will notify any contract laboratory of the requirements of this section and permit.

3. Waste Segregation The Permittee shall keep available at each place where waste storage for more than ninety days occurs, a copy of EPA-600/2-80-076, A Method of Determining the Compatibility of Hazardous Waste.

4. Annual Verification The Permittee shall annually, by the anniversary date of each quarterly report, verify the accuracy and currency of the waste stream determination made in Permit Attachment I.

II.D. SECURITY

The Permittee shall comply with the security provisions of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.14.

II.E. INSPECTION REQUIREMENTS

1. Inspection Plan The Permittee shall follow Permit Attachment B and the inspection requirements in Modules III through VII. The Permittee shall remedy any deterioration or malfunction of equipment or structure discovered by an inspection as required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.15(c). Inspection ~~logsheets~~ log sheets may be revised by the Permittee and submitted to the Secretary for inclusion in this permit by permit modification in accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.42.

2. Facility Release Inspection

   a. The Permittee shall take surface water samples and analyze for metals, volatile and both acid- and base-neutral semivolatile organic hazardous waste constituents in accordance with Table II-2 annually at the sample locations in Table II-1. See Figure 9.

   b. The sampling and analysis shall be done using EPA-approved procedures as published in the latest issue of SW-846.

   c. Analysis of Variance (ANOVA) statistical procedures as promulgated in 53 FR 39720 (October 11, 1988) shall be used to compare data between up-gradient and down-gradient stations.

   d. Records of this inspection shall be kept in accordance with permit paragraph II.K.1.a. below. All analytical results will be recorded and reported. Reports shall be on the form provided in Figure 10.

   e. Reports of releases detected by this inspection shall be made in accordance with permit paragraph II.K.2.c. below.

   f. In the event water samples cannot be obtained at one or more sites, the attempt to obtain samples will be documented in the facility record and the Secretary notified in writing within 30 days of each unsuccessful attempt.

II.F. PERSONNEL TRAINING

The Permittee shall conduct personnel training as required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.16. This training program shall follow ~~Permit Attachment C. Permit Attachment C.~~ Permit Attachment C, which shall be updated by the Permittee whenever necessary so as to remain current and accurate. A dated copy of the revised training program will be submitted to the Secretary for the permit files and permit modification in accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.42 prior to its implementation. The Permittee shall maintain training documents and records, as required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.16(d) and (e).

II.G. REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE

The Permittee shall comply with the requirements of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.17.

II.H. PREPAREDNESS AND PREVENTION

1. Required Equipment At a minimum, the Permittee shall equip the facility with the equipment set forth in Permit Attachments B. and D.

2. Testing and Maintenance of Equipment The Permittee shall test and maintain the equipment specified in permit paragraph II.H.1. above annually or more often if necessary to assure its proper operation in time of emergency.

3. Access to Communications or Alarm System The Permittee shall maintain access to the communications or alarm system(s) as required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.34.

4. Required Aisle Space The Permittee shall maintain aisle space as required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.35. The minimum aisle shall be twenty four inches. All containers in storage shall be accessible for inspection.

II.I. CONTINGENCY PLAN

1. Implementation of Plan The Permittee shall immediately carry out the provisions of Permit Attachment D. whenever there is an unplanned fire, explosion, or unpermitted release of hazardous waste or hazardous constituents which threatens or could threaten human health or the environment.

2. Amendment of the Plan The Permittee shall review, as required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.54., and immediately amend if necessary, the Contingency Plan.

3. Copies of the Plan The Permittee shall comply with the requirements of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.53. A dated copy of any amended Contingency Plan will be submitted to the Secretary for the permit files and permit modification in accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.42 prior to its implementation.

4. Emergency Coordinator The Permittee shall comply with the requirements of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.55 concerning the emergency coordinator.

II.J. MANIFEST SYSTEM

The Permittee shall comply with the manifest requirements of HWMR-5, as amended 1989, Part V, 40 CFR Sections 264.71 and 264.72 for any hazardous wastes received from or shipped off-site by the Permittee for treatment, storage or disposal.

II.K. ~~RECORDKEEPING~~ RECORD KEEPING AND REPORTING

1. Facility Operating Record The Facility Operating Record maintained pursuant to HWMR-5, as amended 1989, Part V, 40 CFR Section 264.73 shall be maintained in such manner that any information required to be in the record shall be readily available to an inspector. Readily available means that, upon request by an inspector, the Permittee can provide the requested information within 24 hours or before the end of the inspection, whichever is less; or upon a schedule designated by the inspector.

   a. In accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.30(j), the Permittee shall maintain at the facility until the end of the last closure period, a written record of waste~~, effluent, water~~ and decontamination wash-water analyses. The following information shall be recorded:

      (i) The dates, exact place, and times of sampling or measurements;

      (ii) The individual who performed the sampling or measurements;

      (iii) The dates analyses were performed;

      (iv) The individuals or off-site laboratory who performed the analyses;

      (v) The analytical techniques or methods used; and

      (vi) The results of such analyses. The results shall include range, mean, standard deviation and detection limits as applicable to facilitate data analysis.

   b. The Permittee shall maintain pursuant to HWMR-5, as amended 1989, Part V, 40 CFR Section 264.73(b) at the facility until the end of the last closure period, a written record of waste disposal activities. Current EPA approved nomenclature and codes shall be used where appropriate. The following information shall be recorded:

      (i) Waste Source;

      (ii) Waste Description;

      (iii) Waste Quantity;

(iv) Current Storage Location; and

(v) Disposal. Properly completed hazardous waste manifests will suffice for wastes shipped off-site.

c. The Permittee shall maintain at the facility a written record of Contingency Plan implementation reports. The record shall contain at least the information required in permit paragraph II K.2.b. below. These records shall be kept until the end of the last closure period.

d. The Permittee shall keep at the facility a written record of all inspections conducted in accordance with Permit Attachment B. and permit paragraph II.E. above. These records shall be maintained for a minimum period of three years from the date of the inspection. Records of inspections leading to corrective action shall be retained for three years after the corrective action taken as a result of the inspection.

e. The Permittee shall keep at the facility training documents and records as required by HWMR-5, as amended 1989, Part V, 40 CFR Sections 264.16(d) and 264.1 6(e), and Permit Attachment C. Records of training shall be kept on all current employees and for three years after an employee leaves the facility owner's or operator's employ.

f. The Permittee shall maintain at the facility a copy of all biennial reports submitted in accordance with permit paragraph II.K.2. below. These copies shall be kept until the end of the last closure period.

g. The Permittee shall keep sufficient monitoring records and documentation to demonstrate compliance with this permit. Records unique to one activity may be kept in the vicinity of that activity, subject to the availability requirement in permit paragraph II.K.1. above.

h. In accordance with HWMR-5, as amended 1989, part V, 40 CFR Section 264.74(b), the retention period for all records required by this permit is extended automatically during the course of any unresolved enforcement action regarding the facility, or as directed by the Secretary.

2. <u>Reports</u>

a. The Permittee shall comply with the Biennial Report requirements of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.75.

b. In accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.30(l)(6), the Permittee shall report to the Secretary any noncompliance with the permit which may endanger human health or the environment. Any such information shall be reported orally within 24 hours from the time the Permittee becomes aware of the circumstances. This report shall include the following:

(i) Information concerning the release of any hazardous waste which may endanger public or private drinking water supplies.

(ii) Information concerning the release or discharge of any hazardous waste, or of a fire or explosion at the facility, which could threaten the environment or human health. The description of the occurrence and its cause shall include:

(a) Name, address, and telephone number of the owner or operator;

(b) Name, address, and telephone number of the facility;

(c) Date, time, and type of incident;

(d) Name and quantity of materials involved;

(e) The extent of injuries, if any;

(f) An assessment of actual or potential hazard to the environment and human health outside the facility, where this is applicable; and

(g) Estimated quantity and disposition of recovered material that resulted from the incident.

The 24-hour report shall be made by calling (505) 827-4358 during normal duty hours or (505) 827-9329, the 24-hour emergency line.

c. The Permittee shall provide to the Secretary within five (5) working days of the time the Permittee becomes aware of the circumstances, a written report on the event(s) reported orally in permit paragraph II.K.2.b. above. The written submission shall contain a description of the noncompliance and its cause; the periods of noncompliance, including exact dates and times; whether the noncompliance has been corrected; and if not, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Permittee need not comply with the five-day written notice requirement if the Secretary waives the requirement and the Permittee submits a written report within fifteen (15) calendar days

of the time the Permittee becomes aware of the circumstances. The written report shall be submitted by certified mail to:

Secretary
New Mexico Environment Department
1190 St. Francis Drive, P.O.Box 26110
Harold Runnels Building
Santa Fe, NM 87503

d. In accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.30(l)(10), the Permittee shall report all other instances of noncompliance, not otherwise required to be reported above, in the annual Environmental Surveillance Report. The reports shall contain the information listed in permit paragraph II.K.2.b. above.

II.L. CLOSURE

The provisions of this permit section apply to individual units for partial closure of the facility, as well as total closure of the entire facility. Closure of one unit may or may not affect the remaining units. The impact of such sequential or partial closure may depend on the sequence and circumstances in existence at the time of closure. The Secretary may direct or the Permittee may request appropriate revisions to the closure plan at that time.

1. Performance Standard The Permittee shall close the facility as required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.111 and in accordance with each closure plan, Permit Attachment E.

2. Amendment of Closure Plans The Permittee shall amend each closure plan in accordance with HWMR-5 as amended 1989, Part V, 40 CFR Section 264.112(c) whenever necessary.

3. Notification of Closure The Permittee shall notify the Secretary at least 60 days prior to the date he expects to begin closure under any Permit Attachment E. closure plan.

4. Time Allowed For Closure After receiving the final volume of hazardous waste, the Permittee shall treat or remove from site all hazardous waste in accordance with the schedule specified in the closure plan. After receiving the final volume of hazardous waste, the Permittee shall complete closure activities in accordance with the schedule specified in the closure plan.

5. Disposal or Decontamination of Equipment The Permittee shall properly dispose of or decontaminate all facility equipment, structures, and soils, as required by the closure plan.

6. Certification of Closure The Permittee shall certify that the facility has been closed in accordance with the specifications in the closure plan.

II.M. MOVEMENT RESTRICTION

The Permittee shall not transport bulk liquid hazardous~~Hazardous~~ wastes in quantities per container~~vehicle~~ in excess of 110 gallons ~~shall not be transported by the Permittee to, from, or within the facility~~ over public roads between the hours of 7:00 AM to 8:30 AM, 12:15 PM~~11:30 AM~~ to 1:30 PM or 4:00 PM to 5:45 PM on normal duty days. Off-site transportation under U.S. Department of Transportation regulations by EPA-registered transporters is not subject to this restriction. On-site transportation of waste~~s~~ generated as a result of an emergency cleanup in accordance with Permit Attachment D are not subject to this restriction.

II.N. Spills

The Permittee shall take corrective action, as required by Section 74-4-4.2B NMSA 1978, (as amended 1989), for all releases of hazardous wastes or constituents from any solid waste management unit at his facility. Corrective action may include, but shall not be limited to, the following: decontamination and/or removal of all releases, spills and leaks; immediate cleanup of release or spillage of hazardous wastes, or constituent residue or listed chemicals which become wastes; prevention of surface-water or ground-water contamination which could result from a release or spill; and, cleanup of any surface-water or ground-water contamination which results from a release or spill.

TABLE II-1

ENVIRONMENTAL MONITORING LOCATIONS

STATION	N-S Coordinate (LANL Grid)	E-W Coordinate (LANL Grid)	Map No.
Los Alamos Reservoir	N105	W090	7
Frijoles	S280	E180	9
Canada del Buey	N010	E150	46
Water Canyon at Beta	S090	E090	48
Acid Weir	N125	E070	49
Pueblo - 2	N120	E155	51
Pueblo - 3	N085	E315	53
DPS - 1	N090	E160	57
SCS - 2	N060	E140	66
Pajarito Stream	S180	E140	35
Ancho Stream	S295	E340	36
Frijoles Stream	S365	E235	37
Pajarito Canyon (PCO-3)	S098	E293	104
LAO-4.5	N065	E270	64
MCO-3	N040	E110	69
MCO-8	N030	E190	74
Basalt Spring	N065	E395	56

TABLE II-2

SAMPLING PARAMETERS

TOTAL METALS	ORGANICS	OTHER
Arsenic	Halogenated volatile organics	Cyanide
Barium	Nonhalogenated volatile organics	pH
Cadmium	Acid-extractable semivolatile	
Chromium	organics Base-neutral extractable	
Lead	semivolatile organics Phenols	
Mercury		
Selenium		
Silver		
Nickel		
Beryllium		
Copper		
Zinc		
Iron		

All methods are as published in US EPA SW-846, 3rd Edition or later.

If any metal's total concentration exceeds that metal's standard for ~~Extraction Procedure Toxicity~~ Toxicity Characteristic Leachate Procedure (TCLP) toxicity , a determination of the ~~Extraction Procedure Toxicity~~ TCLP toxicity concentration for that metal will be performed. Both data will be recorded and reported.

~~MODULE II TABLE 2-1~~

TABLE II-3

List of Off-Site Potential Release Site (PRS) and/or Off-Site Solid Waste Management Units (SWMU) that may have Investigative Derived Waste (IDW) or Remediation Waste (RW) brought on to Los Alamos ~~Nationa~~ National Laboratory.

PRS/SWMU Number	Technical Area	Operational Unit	Unit Type
00-003	0	1071	Container Storage
00-005	0	1071	Landfill
00-011(a)	0	1071	Mortar Impact Area
00-011(c)	0	1071	Mortar Impact Area
00-011(d)	0	1071	Mortar Impact Area
00-011(e)	0	1071	Mortar Impact Area
00-012	0	1071	Underground Storage Tank
00-016	0	1071	Firing Range
00-017	0	1071	Waste Lines
00-018(a)	0	1071	Pueblo Waste Water Treatment Plant
00-019	0	1071	Waste Water Treatment Plant
00-028(a)	0	1071	Effluent Discharge
00-028(b)	0	1071	Effluent Discharge
00-030(a)	0	1071	Septic System
00-030(b)	0	1071	Septic System (6th St.)
00-030(g)	0	1071	Septic System
00-030(l)	0	1071	Septic System
00-030(m)	0	1071	Septic System
00-033	0	1071	Warehouse
00-039	0	1071	Underground Storage Tank
01-001(a)	01	1078	Septic System

Table II-3
(Continued)

PRS/SWMU Number	Technical Area	Operational Unit	Unit Type
01-001(b)	01	1078	Septic System
01-001(c)	01	1078	Septic System
01-001(d)	01	1078	Septic System
01-001(e)	01	1078	Septic System
01-001(f)	01	1078	Septic System
01-001(g)	01	1078	Septic System
01-001(h)	01	1078	Septic System
01-001(i)	01	1078	Septic System
01-001(j)	01	1078	Septic System
01-001(k)	01	1078	Septic System
01-001(l)	01	1078	Septic System
01-001(m)	01	1078	Septic System
01-001(n)	01	1078	Septic Tank #276
01-001(o)	01	1078	Ind. or Sm Waste Water Treatment
01-001(s)	01	1078	Septic System
01-001(t)	01	1078	Septic System
01-001(u)	01	1078	Septic System
01-002	45	1079	Outfall TA-01
01-003(a)	01	1078	Landfill
01-003(d)	01	1078	Surface Disposal Site
01-003(e)	01	1078	Surface Disposal Site
01-006(a)	01	1078	Drain, Liner and Outfall
01-006(b)	01	1078	Drain, Liner and Outfall
01-006(c)	01	1078	Drain, Liner and Outfall
01-006(d)	01	1078	Drain, Liner and Outfall

Table II-3
(Continued)

PRS/SWMU Number	Technical Area	Operational Unit	Unit Type
01-006(h)	01	1078	Drain, Liner and Outfall
01-006(n)	01	1078	Drain, Liner and Outfall
01-006(o)	01	1078	Drain, Liner and Outfall
01-007(a)	01	1078	Soil Contamination Area
01-007(b)	01	1078	Soil Contamination Area
01-007(c)	01	1078	Soil Contamination Area
01-007(d)	01	1078	Soil Contamination Area
01-007(e)	01	1078	Soil Contamination Area
01-007(j)	01	1078	Soil Contamination Area
01-007(l)	01	1078	Soil Contamination Area
10-001(a)	10	1079	Firing Site
10-001(b)	10	1079	Firing Site
10-001(c)	10	1079	Firing Site
10-001(d)	10	1079	Firing Site
10-002(a)	10	1079	Disposal Pit
10-002(b)	10	1079	Disposal Pit
10-003(c)	10	1079	Disposal Pit
10-003(d)	10	1079	Disposal Pit
10-003(e)	10	1079	Disposal Pit
10-003(f)	10	1079	Disposal Pit
10-003(g)	10	1079	Manholes
10-003(h)	10	1079	Manholes
10-003(i)	10	1079	Septic Tank
10-003(j)	10	1079	Tank
10-003(k)	10	1079	Tank

Table II-3
(Continued)

PRS/SWMU Number	Technical Area	Operational Unit	Unit Type
10-003(l)	10	1079	Tank
10-003(m)	10	1079	Waste Line
10-003(n)	10	1079	Leach Field
10-003(o)	10	1079	Leach Field
10-004(a)	10	1079	Septic System
10-004(b)	10	1079	Septic System
10-005	10	1079	Surface Disposal Area
10-007	10	1079	Landfill
19-001	19	1071	Septic System
19-002	19	1071	Septic System
19-003	19	1071	Septic System
31-001	31	1079	Septic System
32-001	32	079	Incinerator
32-002(a)	32	1079	Septic System
32-002(b)	32	1079	Septic System
45-001	45	1079	Waste Water Treatment Facility
45-002	45	1079	Vehicle Decontamination Area
45-003	45	1079	Waste Line
45-004	45	1079	Sanitary Sewer Outfall
73-001(a)	73	1071	Landfill
73-001(b)	73	1071	Surface Disposal Area
73-001(c)	73	1071	Landfill
73-001(d)	73	1071	Landfill
73-002	73	1071	Incinerator and Surface Disposal Area

Table II-3
(Continued)

PRS/SWMU Number	Technical Area	Operational Unit	Unit Type
73-004(a)	73	1071	Septic System
73-004(b)	73	1071	Septic System
73-004(c)	73	1071	Septic System
73-005	73	1071	Septic System
73-006	73	1071	Industrial or Sanitary Waste Water Treatment\Facility

MODULE II
TABLE 2-2

List of Off-Site Waste Management Facilities that may return treatment derived waste or waste residuals to Los Alamos National Laboratory.

Off-Site Facility	**E.P.A. Identification Number**
Argonne National Laboratory, Argonne, IL	IL38900089
Catholic University, Washington, D.C.	DCD980204879
Consolidated Incineration Facility, Savannah River Site, SC	SC1890008989
Diversified Scientific Services, Inc., Kingston, TN	TND982109142
Envirocare, Clive, UT	UTI982598898
Waste Experimental Reduction Facility, Idaho National Engineering Laboratory, Idaho Falls, ID	ID4890008952
M4 Environmental Management, Inc., Oak Ridge, TN	RD&D Permit
EG&G Mound Applied Technologies, Miamisburg, OH	OH6890008984
Nuclear Fuel Services, Erwin, TN	TND003095635
Nuclear Sources & Services, Inc., Houston, TX	TXD982560294
Toxic Substance Control Act Incinerator, Oak Ridge National Laboratory, Oak Ridge, TN	TN0890090004
International Technology Corporation, Technology Center, Knoxville, TN	TND000770479
International Technology Corporation, Biotech Applications Center, Knoxville, TN	TND987782521
International Technology Corporation, Environmental Technology Development Center, Oak Ridge, TN	TND981933120
Perma-Fix, Albuquerque, NM	NM0000182121
Perma-Fix, Gainesville, FL	FLG980711071

MODULE III STORAGE IN CONTAINERS

III.A. DESIGNATED STORAGE UNITS

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

   a. Containers containing free liquids may be stored on the concrete containment structure, Facility Number 54-32 and 54-58.

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

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

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

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

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

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

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

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

   ~~c~~ b. Building 50-37. Containers may be stored within storage room 115, 117, and 118 of the of TA-50-37 as shown in Figure 4.

~~d~~ c. Containers containing free liquids may be stored in the modular storage buildings, 0Model 22 or equivalent, Facility Number~~s~~ 50-114~~, 50-137 and 50-138~~. ~~located as shown in Figure III-2.~~

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

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

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

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

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

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

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

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

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

a. Mixed waste containers potentially containing free liquids may be stored at TA-54-230. See Figure 11.

b. Mixed waste containers not containing free liquids may be stored at TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, and on Storage Pad 10~~s 2 and 4~~. See Figure 11.

c. All mixed waste containers stored at TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, and on Storage Pad 10~~s 2 and 4~~ will be placed on pallets or otherwise elevated four inches. Palletized 55-gallon containers may be stored in groups of four and stacked three high. Palletized overpack containers may be stacked two high. Large containers (80-, 83-, 85-, and 99-gallon drums) will also be stored on pallets but will not be stacked. Fiberglass-reinforced plywood (FRP) boxes may be stacked two high, at a maximum.

III.B. AUTHORIZED WASTES

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

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

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

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

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

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

III.C. CONTAINERS

1. Capacity

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

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

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

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

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

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

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

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

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

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

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

~~e~~ d. No more than 3,630 gallons of liquid shall be stored in Building 50-37, Rooms 115, 117, and 118 combined.

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

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

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

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

g. No more than 970,000 gallons of waste shall be stored at TA-54-226. No more than 790,000 gallons of waste shall be stored at each of the following locations: TA-54-229, TA-54-230, TA-54-231, and TA-54-232. Of the 790,000-gallon total that may be stored in TA-54-230, no more than 93,995 gallons shall be potential liquid-bearing waste. ~~No more than 430,045 gallons of waste shall be stored at TA-54, Area G, Pad 2.~~ No more than 970,000 gallons of waste shall be stored at TA-54, Area G, Pad 10~~-4~~.

4. Condition

a. If a container holding hazardous or mixed waste is not in good condition (e.g. severe rusting, structural defects) or if it begins to leak, the Permittee shall transfer the hazardous or mixed waste from such container to a container that is in good condition or otherwise manage the waste in compliance with the conditions of this permit.

b. The Permittee may use overpack containers of more than 55-gallon capacity to manage defective waste storage containers. Each overpacked container shall be recorded in the facility record.

5. Compatibility of Waste with Containers

a. The Permittee shall assure, as required by ~~HWMR-5, as amended 1989, Part V, 40 CFR Section 264.172~~20 NMAC 4.1, Subpart V, 264.172, revised November 1, 1995, that the ability of the container to contain the waste is not impaired. When necessary, this shall

include procedures for determining whether the hazardous or mixed waste is no longer compatible with the shipping container if it is to be stored in its original container (e.g. determination of container adequacy for chemicals that have a finite shelf life or may change in composition upon aging).

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

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

III.D. CONTAINMENT

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

III.E. IGNITABLE OR REACTIVE WASTES

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

III.F. INCOMPATIBLE WASTES

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

III.G. CLOSURE

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

III.H. INSPECTION

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

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

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

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

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

   c. Signs shall be in both English and Spanish.

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

MODULE IV TREATMENT IN TANKS

IV.A. DESIGNATED TREATMENT UNITS

The Permittee may treat hazardous wastes only in the tanks described in this module. No other treatment of hazardous wastes, EPA code T01, is permitted anywhere on the facility. Treatment of wastes subject to the exclusions of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.1(g) shall be documented in accordance with Permit Attachment I. A record or listing of all facility treatment units shall be kept by the Permittee. Their regulatory status and the reasons for claiming an exclusion under HWMR-5, as amended 1989, Part V, 40 CFR Section 264.1(g) shall be recorded. Laboratory staff neutralizing characteristic wastes in quantities of less than one liter need not be recorded if the resultant discharge is to a wastewater system subject to other regulation.

1. Technical Area 54 Area L Wastes may be treated in the two open-top steel tanks located in Area L.

IV.B. AUTHORIZED WASTES

1. Identification Only wastes identified in Permit Attachment G. with the process code "T01," in Column D.1. "Processes" shall be treated, subject to the limitations in permit paragraph IV.B.4. below.

2. Quantities The quantity of waste awaiting treatment shall not exceed the quantity indicated in Permit Attachment G. Column B. "Estimated Annual Quantity of Waste".

3. Additions to the List of Treated Wastes The Permittee shall apply for a permit modification in accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Sections 270.41 or 270.42 before treating wastes not identified in this permit module.

4. Special Limitation The limitations in Permit Attachment G, Column D.2. shall apply to choice of treatment unit.

5. Land Ban The Permittee must also comply with the following regarding storage of its wastes in tanks which are prohibited from land disposal. These restrictions are imposed on any waste as it becomes prohibited from land disposal. (HWMR-5, as amended 1989, Part VIII, 40 CFR Section 268.50)

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

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

c. Hazardous wastes meeting the treatment standards in HWMR-5, as amended 1989, Part VIII, 40 CFR Sections 268.41, 268.42, 268.43 are not subject to the storage prohibition. Hazardous wastes meeting the treatment standards specified under the variance in HWMR-5, Part VIII, 40 CFR Section 268.44 are not subject to the storage ~~prohibitation~~ prohibition.

IV.C. DESIGN OF TANKS

1. Technical Area 54, Area L Treatment Tanks The tanks shall be nine feet in diameter and three feet six inches high. They shall be constructed of ten gauge carbon steel and shall be coated inside and out with Carboline Phenoline (@) film or equivalent. The tanks shall be on a containment slab constructed with six inch retaining curbs as in Figure 7.

IV.D. OPERATING REQUIREMENTS

1. Technical Area 54, Area L

a. The tanks shall maintain a minimum of six inches of freeboard at all times. The tanks shall not be left unattended when filling or addition of any material is in process.

b. Wastes in the tanks will be sampled before and after treatment and analyzed in accordance with Permit Attachment A.

c. Tanks containing hazardous wastes will be covered whenever significant precipitation is imminent or falling. Significant precipitation is one-half inch water equivalent.

d. Incompatible wastes shall not be treated in the tanks.

IV.E. INSPECTIONS

The Permittee shall inspect the treatment tanks in accordance with Permit Attachment B. and the requirements below.

1. Technical Area 54, Area L

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

b. In accordance with HWMR-5, as amended 1989, Part V, 40 CFR Section 264.193(c)(4), accumulated liquids discovered in secondary containment structures shall be removed within 24 hours of discovery. In the event inclement weather prevents such removal, the circumstances shall be documented in the facility record and the removal effected not later than the next duty day after the weather allows.

c. Cracks and/or gaps in secondary containment structures discovered during an inspection will be repaired within seven calendar days of discovery. Cracks determined to be minor and not adversely affecting containment integrity, shall be

logged and delay of repairs justified. Repair of minor cracks may be deferred until regularly scheduled maintenance.

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

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

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

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

   d. Signs shall be in English and Spanish.

IV.F. RESPONSE TO LEAKS OR SPILLS

The Permittee shall follow the requirements of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.196 in response to a leak or spill.

IV.G. CERTIFICATION OF REPAIRS

All major repairs to any tank or associated plumbing shall be certified in accordance with HWMR-5, as amended 1989, Part V, 40 CFR Section 264.196(f) prior to being placed back in service.

IV.H. CLOSURE

The Permittee shall close the tanks in accordance with Permit Attachment E, permit paragraph II.L. above and this permit module.

1. Technical Area 54 Area L

   a. At closure, all hazardous waste residues shall be removed from the tanks and the containment structure in accordance with HWMR-5, as amended 1989, Part V, 40 CFR Section 264.197(a).

   b. Any component not decontaminated shall be disposed of as hazardous waste in accordance with HWMR-5, as amended 1989, Part V, 40 CFR Section 264.197~~(b)~~ (a).

~~MODULE V CONTROLLED AIR INCINERATOR OPERATION~~

~~V.A. GENERAL CONDITIONS~~

1. ~~Authorized Unit The unit is the modified Environmental Control Products model ECP 500-T Controlled Air Incinerator (CAI) located in Technical Area 50, Building 37 and configured as shown in Figure 8.~~

2. ~~Destruction and Removal Efficiency The incinerator and associated effluent control system shall be operated to achieve a minimum destruction and removal efficiency (DRE) of 99.99% calculated in accordance with HWMR-5, as amended 1989, Part V, 40 CFR Section 264.343(a). A minimum DRE of 99.9999% shall be achieved whenever waste F027 is incinerated.~~

3. ~~Regulatory Compliance In accordance with HWMR-5, as amended 1989, Part V, 40 CFR Section 264.343(d), compliance with the operating conditions of this permit will be regarded as compliance with HWMR-5, as amended 1989, Part V, 40 CFR Section 264.343. Evidence that compliance with these conditions is insufficient to ensure compliance with the performance standards of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.343, shall be information justifying permit modification in accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.41 or 270.42 or permit revocation in accordance with HWMR-5, as amended 1989, Part IX, 40 CFR Section 270.43.~~

~~V.B. WASTE IDENTIFICATION~~

1. ~~Authorized Wastes~~

   a. ~~Only wastes identified in Permit Attachment G. with the process code "T03" in column D.1. "Processes" shall be incinerated at the CAI.~~

   b. ~~Only wastes generated at the Permittee's facility shall be incinerated. See permit paragraph II.B.2. above.~~

2. ~~Prohibited Wastes~~

   a. ~~The following listed hazardous wastes shall not be incinerated unless chemical analysis shows them to not exceed one hundred micrograms per gram concentration in the waste:~~

      (i) ~~U121 Trichloromonofluoromethane (Freon 11)~~

      (ii) ~~U225 Tribromomethane~~

      (iii) ~~U075 Dichlorodifluoromethane (Freon 12)~~

   b. ~~Any future listed hazardous waste with a heat of combustion less than 0.24 kilocalories per gram shall not be incinerated unless chemical analysis shows it to not exceed one hundred micrograms per gram concentration in the waste.~~

c. Wastes generated off-site shall not be incinerated. See permit paragraph II.B.2.above.

3. Physical Form Wastes in gaseous, liquid, solid, or semi-solid sludge forms may be incinerated.

V.C. WASTE ANALYSIS

1. Waste Analysis Plan The Permittee shall follow Permit Attachment A. Each knowledge of process determination shall be documented and justified. Each batch of waste shall be analyzed in accordance with Permit Attachment A.4.1.2 A.4.

2. Analysis of Waste Blends Waste blends of previously analyzed materials shall not require reanalysis unless:

a. Physical properties are expected to vary more than five percent (5%) from those of the original feedstock; and

b. Those physical properties cannot be calculated based on previous analytical knowledge of the individual components or blends forming the new mixture.

c. Five percent (5%) of the waste blends not analyzed on an annual basis shall be subject to analysis as a quality control check of the calculated values. Agreement between analytical data and calculated values of ten percent (10%), based on the analytical data, shall be acceptable. Disagreement shall be investigated for cause and documented in the record, along with appropriate corrective actions. The next waste blend created after a disagreement shall be analyzed to confirm corrective action.

d. Waste blends may not be incinerated prior to receipt of analytical data.

3. Determination of Radionuclides Content Each batch of waste treated under this permit shall be surveyed to determine its radionuclide content. Knowledge of Process shall not be used for this survey.

4. Metals Standards Each batch of liquid waste treated under this permit shall be analyzed to determine its metal content. For each metal, the waste feed rate, in grams/sec, should not exceed that dictated by the emissions screening limits for noncarcinogenic and carcinogenic metals for facilities in complex terrain determined by using the terrain adjusted effective stack height according to the EPA "Guidance on Metals and Hydrogen Chloride Controls for Hazardous Waste incinerators, Vol. IV, March, 1989'" or the succeeding guidance documents. Knowledge of Process analyses may be used on no more than 80% by volume of the wastes treated.

V.D. PRINCIPAL ORGANIC HAZARDOUS CONSTITUENTS

1. Routine Operations For all hazardous waste burns the following constituents are designated as POHCs unless chemical or physical analysis shows they comprise less than 100 micrograms per gram of the waste:

a. U044 Chloroform

b. U228 Trichloroethylene

c. U226 1,1,1-trichloromethane trichloroethane

d. U211 Tetrachloroethane Tetrachloromethane

2. Bulk Feed Operations Whenever the hazardous waste feed contains ten percent by weight or more of any listed hazardous waste, each such constituent is designated a POHC.

V.E. MONITORING

For each hazardous waste burn, the continuous monitoring and/or recording devices below shall be observed hourly by an operator during waste feed operation and the observation recorded in the operating record. For purposes of this requirement, permanent charts which are made a part of the record may be initialed to document such observation. A log identifying the full name associated with the initials shall be included with the record.

1. Flue gas scrubber solution pH, "Process Sump pH Out";

2. Primary Combustion Chamber Temperature, "Lower Chamber Temperature";

3. Secondary Combustion Chamber Temperature, "Upper Chamber Temperature";

4. Waste Feed Rate;

5. Flue gas carbon monoxide content;

6. Secondary combustion chamber oxygen content, "Upper Chamber Oxygen";

7. Combustion airflowrate air flow rate , "Final Flow Totalizer";

8. Scrubber water recycle flow rate, "Absorber Liquid Flow" and "Quench Liquid Flow";

9. Total hydrocarbon reading from the exhaust stack;

10. Radioactivity from the exhaust stack.

~~V.F. OPERATION~~

~~During hazardous waste feed operations the following operational limits shall be observed:~~

1. ~~Total Chloride Content~~ ~~The aggregate chlorine content of the waste plus fuel shall not exceed 99.4 pounds per hour input to the CAI. Each batch of waste shall meet this standard.~~

2. ~~Waste Feed Rates~~

   a. ~~Liquid hazardous wastes shall be introduced at a rate not to exceed 1.5 million Btu per hour total thermal input. Total thermal input shall include contributions from auxiliary fuel, hazardous and nonhazardous wastes.~~

   b. ~~Solid hazardous wastes shall be introduced at a rate not to exceed 1.5 million Btu per hour total thermal input. Total thermal input shall include contributions from auxiliary fuel, hazardous and nonhazardous wastes. Of this feed rate, solid hazardous waste mixtures shall not exceed 125 pounds per hour.~~

3. ~~Venturi Scrubber~~ ~~The pressure drop across the venturi scrubber shall be a minimum of forty inches W.C.~~

4. ~~High Efficiency Particulate Air Filters~~ ~~The pressure drop across both on-line incinerator exhaust gas HEPA filter banks shall be a minimum of one-tenth inch W.C. or alternative equivalent manufacturer's performance specification.~~

5. ~~Operating Temperatures~~

   a. ~~The incinerator shall be brought to operating temperature in both the primary and secondary combustion chambers before hazardous wastes are introduced.~~

   b. ~~Primary chamber operating temperature shall be a minimum of 1400 degrees Fahrenheit, measured at the hot duct between the primary and secondary chambers.~~

   c. ~~Secondary chamber operating temperature shall be a minimum of 2000 degrees Fahrenheit, measured at the chamber exit to the high temperature duct.~~

   d. ~~Temperatures shall be maintained above these minimums as long as hazardous wastes remain in the incinerator, except that during an emergency shutdown these temperatures need not be maintained after waste feed is terminated.~~

6. ~~Effluent Control System Solution~~

   a. ~~The effluent control system (ECS) scrubber solution shall be recycled to the packed column absorber at a minimum flow rate of 10 gallons per minute.~~

   b. ~~The ECS scrubber solution shall be controlled with either sodium hydroxide or potassium hydroxide to a pH range above 1.0 ± 3% .~~

7. ~~Combustion Air~~

   a. ~~Exhaust gas flow shall not exceed:~~

      ~~(i) 3654 pounds per hour during solid or semisolid waste incineration; or~~

      ~~(ii) 3933 pounds per hour during liquid waste incineration.~~

   b. ~~Carbon monoxide concentration, as measured by the continuous recording carbon monoxide analyzer, shall not exceed 100 parts per million by volume, except that for a period not to exceed five minutes, the system may continue to burn waste if the carbon monoxide concentration does not exceed 500 parts per million.~~

   c. ~~Oxygen concentration in the secondary combustion chamber shall be a minimum of seven and one-half percent (7.5%) for solids and six percent (6%) for liquids. Measurement accuracy shall be ± 3%.~~

8. ~~Total Hydrocarbon~~

   a. ~~Total hydrocarbon reading in the exhaust gas shall not exceed 20 parts per million corrected to dry stack gas for more than one hour rolling average where the stack gas is sampled at least 4 times per minute.~~

   b. ~~Total hydrocarbon reading in the exhaust gas shall not exceed 100 parts per million for more than one minute.~~

   c. ~~Total hydrocarbon reading in the exhaust gas shall not exceed 500 parts per million for any reading.~~

9. ~~Radioactivity~~

   a. ~~The exhaust gas radioactivity measured during operation under this permit shall!shall not exceed the background by ten percent (10%) for more than one minute.~~

   b. ~~The exhaust gas radioactivity measured during operation under this permit shall not exceed the background by fifty percent (50%).~~

   c. ~~Background is defined as that level of radiation read when the incinerator is operating at the parameters required for hazardous waste treatment but no waste feed occurring measured prior to hazardous waste treatment.~~

10. Automatic Shutdown

a. The Permittee shall install and properly maintain a system of monitors and automatic waste feed cutoff so that hazardous waste feed is shutdown whenever the operating conditions in permit paragraphs V.F.3. through V.F.9. above are not met.

b. Hazardous wastes shall not be reintroduced to the incinerator until the cause of any automatic shutdown is determined and appropriate corrective action is taken.

11. Waste Handling Practices

a. Wastes to be incinerated shall be stored only at storage areas authorized in permit paragraph III.A. above.

b. Liquid and solid feed preparation operations which take place at the CAI shall be performed in accordance with the provisions of:

(1) Los Alamos National Laboratory Manual Environment, Safety, and Health Manual , Chapter 1, Health and Safety, Current edition. A copy shall be readily available to the operator.

(2) Permit Attachment J, "Incinerator Operational Safety." A copy shall be readily available to the operator.

(3) The operating manual for the Controlled Air Incinerator. A copy shall be readily available to the operator.

(4) The applicable Operating Instruction(s), Safe Operating Procedures, and/or Special Work Permit(s) required for the particular operation being conducted. A copy of the applicable document(s) shall be readily available to the operator.

c. Sampling of wastes for analysis in accordance with Permit Attachment A. shall be done at the place of storage or at the incinerator waste feed tanks. Periodic quality control spot sampling may be done elsewhere in the incinerator area at the discretion of the inspector and with the approval of the incinerator supervisor.

V.G. EFFLUENT CONTROL

The incinerator effluent controls shall be operational at all times the incinerator is burning hazardous wastes.

1. Ash Control Ash resulting from a listed waste burn shall be cemented and disposed of off site as a hazardous waste. Ash resulting from incineration of characteristic wastes or wastes listed solely due to characteristic shall be disposed of as a hazardous waste or analyzed for alternate disposition. If such analysis demonstrates the waste is no longer characteristic as defined in HWMR-5, as amended 1989, Part II, 40 CFR Section 261, subpart C, it may be disposed of in accordance with other applicable regulations.

2. ~~Effluent Control System~~ ~~Effluent control system wastewater and filters shall be disposed of as a hazardous waste in accordance with applicable regulations. "Filters" as used herein applies to both the HEPA filters and the carbon absorber materials. The carbon absorber unit materials shall be replaced at intervals no longer than 2000 operating hours.~~

~~V.H. INSPECTION~~

~~The Permittee shall inspect the incinerator in accordance with Permit Attachment B. and the requirements below.~~

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

2. ~~Instrumentation~~ ~~All gauges and instruments shall be inspected for calibration dates prior to incineration of wastes. No instrument or gauge shall be used if it has not been calibrated in accordance with its manufacturers, manufacturer's recommendations.~~

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

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

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

   c. ~~Signs shall be in English and Spanish.~~

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

4. ~~Automatic Cutoff~~ ~~The automatic cutoff system shall be tested every 2000 operating hours to demonstrate proper operation.~~

5. ~~Destruction and Removal Efficiency~~ ~~The destruction and removal efficiency (DRE) shall be verified after incinerator modifications affecting the DRE, upon accumulation of eight thousand hours of hazardous waste incineration time or three years after the commencement of hazardous waste incineration (whichever occurs first), or if NMED determines that new information requires further testing of the incinerator. The time calculation shall be restarted following any verification required by this paragraph.~~

~~V.I. RECORDKEEPING~~ ~~RECORD KEEPING~~

1. ~~Waste History~~ ~~The incinerator operating record shall include the source, date of receipt, description, quantity and rate of incineration for each batch of hazardous waste incinerated.~~

2. ~~Waste Analysis~~ ~~Records of waste analysis shall be kept in accordance with permit paragraph II.K.1.a. above.~~

3. ~~Inspections~~ ~~Records of inspection shall be kept for three years from the date of the last action taken as a result of the inspection.~~

4. ~~Automatic Waste Feed Cutoff~~ ~~Whenever the automatic waste feed cutoff system required by permit paragraph V.F.8. above operates, the cause, time and remedy or repair shall be entered in the operating record. This record shall include the testing or demonstration operations required by permit paragraph V.H.4. above.~~

5. ~~Effluent Analysis~~

   a. ~~Whenever sampling and analysis of the incinerator combustion exhaust or effluent control system scrubber solution are done, the sampling date, individual(s), methods and analytical results shall be entered in the operating record.~~

   b. ~~Results of calculations of the DRE associated with effluent analysis shall be entered in the operating record.~~

~~V.J. CLOSURE~~

~~The incinerator shall be closed in accordance with HWMR-5, as amended 1989, Part V, Subpart G and Part V, 40 CFR Section 264.351, permit paragraphs II.L. and V.J. and Permit Attachment E.~~

1. ~~Incinerator Components~~ ~~The waste feed components and combustion chambers, along with interconnecting plumbing, may be steam cleaned with a detergent solution. The spent cleaning solution shall be collected and analyzed for hazardous constituents. If no hazardous constituents are detected, those components may be considered closed. If hazardous constituents are detected, the steam cleaning may be repeated until no detectable hazardous constituents are found.~~

2. ~~Effluent Control System~~ ~~The ECS may be drained and flushed with a detergent solution. The spent cleaning solution shall be collected and analyzed for hazardous constituents. If no hazardous constituents are detected, those components may be considered closed. If hazardous constituents are detected, the cleaning may be repeated until no detectable hazardous constituents are found.~~

3. ~~Waste Storage Tanks~~ ~~The waste storage tanks may be either drained and washed with a detergent solution or steam cleaned. The spent cleaning solution shall be collected and analyzed for hazardous constituents. If no hazardous constituents are detected, those components may be considered closed. If hazardous constituents are detected, the cleaning may be repeated until no detectable hazardous constituents are found.~~

~~4. Closure Residues~~

~~a. All final cleaning solutions used for closure shall be tested for POHCs designated in permit paragraph V.D. above. Solutions showing detectible POHC(s) or hazardous waste characteristics shall be disposed of as hazardous wastes.~~

~~b. Any component not decontaminated in accordance with permit paragraph V.J. above shall be disposed of as hazardous waste.~~

MODULE VI STORAGE IN TANKS

VI.A. DESIGNATED STORAGE UNITS

The Permittee may store for more than ninety days hazardous wastes in tanks only in Technical Area 54, Area L.

VI.B. AUTHORIZED WASTES

1. Identification Only hazardous wastes identified in Permit Attachment G. with the process code "S02" in column D.1. "Processes" shall be stored.

2. Quantities No more than 5,720 gallons of liquid waste shall be stored at any one time.

VI.C. TANK DESCRIPTION

1. Capacity The tanks shall be nine feet in diameter and three feet six inches high, ~~Holding~~ holding approximately 1660 gallons.

2. Type They shall be constructed of ten-gauge carbon steel and shall be coated inside and out with Carboline Phenoline (@) film or equivalent.

3. Quantity No more than four tanks shall be used for storage.

4. Condition If a tank holding hazardous waste is not in good condition (e.g. severe rusting, structural defects) or if it begins to leak, the Permittee shall transfer the hazardous waste from such tank to a tank or container that is in good condition or otherwise manage the waste in compliance with the conditions of this permit.

5. Compatibility of Waste with Tanks The Permittee shall assure, as required by HWMR-5, as amended 1989, Part V, 40 CFR Section 264.199, that the ability of the tank to contain the waste is not impaired.

VI.D. CONTAINMENT

The Permittee shall construct and maintain the secondary containment systems for the tank storage unit in accordance with the requirements of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.193.

VI.E. IGNITABLE OR REACTIVE WASTE

The Permittee shall not locate tanks holding ignitable or reactive waste within 15 meters (50 feet) of the facility property line. The provisions of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.198 will be followed.

VI.F. INCOMPATIBLE WASTES

The Permittee shall manage incompatible wastes or incompatible wastes and materials in accordance with the requirements of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.199.

VI.G. CLOSURE

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

VI.H. INSPECTION

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

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

3. Accumulated Liquids In accordance with HWMR-5, as amended 1989, Part V, 40 CFR Section 264.193(c)(4), accumulated liquids discovered in secondary containment structures shall be removed within 24 hours of discovery. In the event inclement weather prevents such removal, the circumstances shall be documented in the facility record and the removal effected not later than the next duty day after the weather allows.

4. Repairs to Secondary Containment Structure Cracks and/or gaps in secondary containment structures discovered during an inspection will be repaired within seven calendar days of discovery. Cracks determined to be minor and not adversely affecting containment integrity, shall be logged and delay of repairs justified. Repair of minor cracks may be deferred until regularly scheduled maintenance.

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

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

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

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

    d. Signs shall be in English and Spanish.

6. Freeboard The tanks shall maintain a minimum of six inches of freeboard at all times.

VI.I. RESPONSE TO LEAKS OR SPILLS

The Permittee shall follow the requirements of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.196 in response to a leak or spill.

VI.J. CERTIFICATION OF REPAIRS

All major repairs to any tank or associated plumbing shall be certified in accordance with HWMR-5, as amended 1989, Part V, 40 CFR Section 264.196(f) prior to being placed back in service.

~~MODULE VII INDUSTRIAL INCINERATOR OPERATION~~

~~VII.A. GENERAL CONDITIONS~~

1. ~~Authorized Unit The unit is the Spronz Incinerator Corporation, model RL80-P incinerator located in Technical Area 16 and listed as structure 16-1409.~~

2. ~~Destruction and Removal Efficiency Emissions from the incinerator shall meet all Federal and State air standards and regulations.~~

~~VII.B. WASTE IDENTIFICATION~~

1. ~~Authorized Wastes~~

   a. ~~Wastes listed as hazardous waste solely because they are ignitable, corrosive or both (F003).~~

   b. ~~Wastes listed as hazardous waste solely because they are reactive.~~

   c. ~~Wastes listed as hazardous wastes solely because they exhibit the characteristic(s) of ignitabilty ignitability , corrosivity, or both.~~

   d. ~~Wastes listed as hazardous wastes solely because they exhibit the characteristic of reactivity.~~

2. ~~Prohibited Wastes~~

   a. ~~No hazardous wastes other than those identified in permit paragraph VII.B.1. above shall be incinerated in this unit.~~

   b. ~~No off-site wastes shall be incinerated.~~

~~VII.C. WASTE ANALYSIS~~

1. ~~Waste Analysis Plan The Permittee shall follow Permit Attachment A. where applicable.~~

2. ~~Batch Analysis Each batch to be incinerated shall be inspected by a knowledgeable individual for the presence of ignitable, corrosive or reactive wastes and the absence of prohibited wastes. A signed record of each inspection shall be retained in the facility records.~~

3. ~~Initial Analysis Each new mixture of wastes not previously analyzed shall be analyzed prior to incineration for:~~

   a. ~~Heating value;~~

   b. ~~Viscosity or physical form;~~

~~c. Identification of any hazardous constituent;~~

~~d. An approximate quantification of any hazardous constituent; and~~

~~e. The absence of any HWMR-5, as amended 1989, Part II, Appendix VIII constituent in a concentration in excess of one hundred micrograms per gram of waste.~~

~~VII.D. WASTE STORAGE~~

~~Wastes to be incinerated shall be stored in Technical Area 16, Building 290. Building 290 shall not accumulate hazardous wastes for greater than ninety days. All the requirements of HWMR-5, as amended 1989, Part III, 40 CFR Section 262.34 shall be met.~~

~~VII.E. RECORD KEEPING~~

~~1. Waste History The incinerator operating record shall include the source, date of receipt, description, quantity and date of incineration for each batch of hazardous waste incinerated.~~

~~2. Waste Analysis Where applicable, the sampling date, individual(s), method and analytical results for each batch sampled at the incinerator shall be entered in the operating record.~~

~~3. Closure The final disposition of the closure residues shall be recorded.~~

~~VII.F. CLOSURE~~

~~The incinerator shall be closed in accordance with the requirements of HWMR-5, as amended 1989, Part V, 40 CFR Section 264.351 and Permit Attachment E.~~

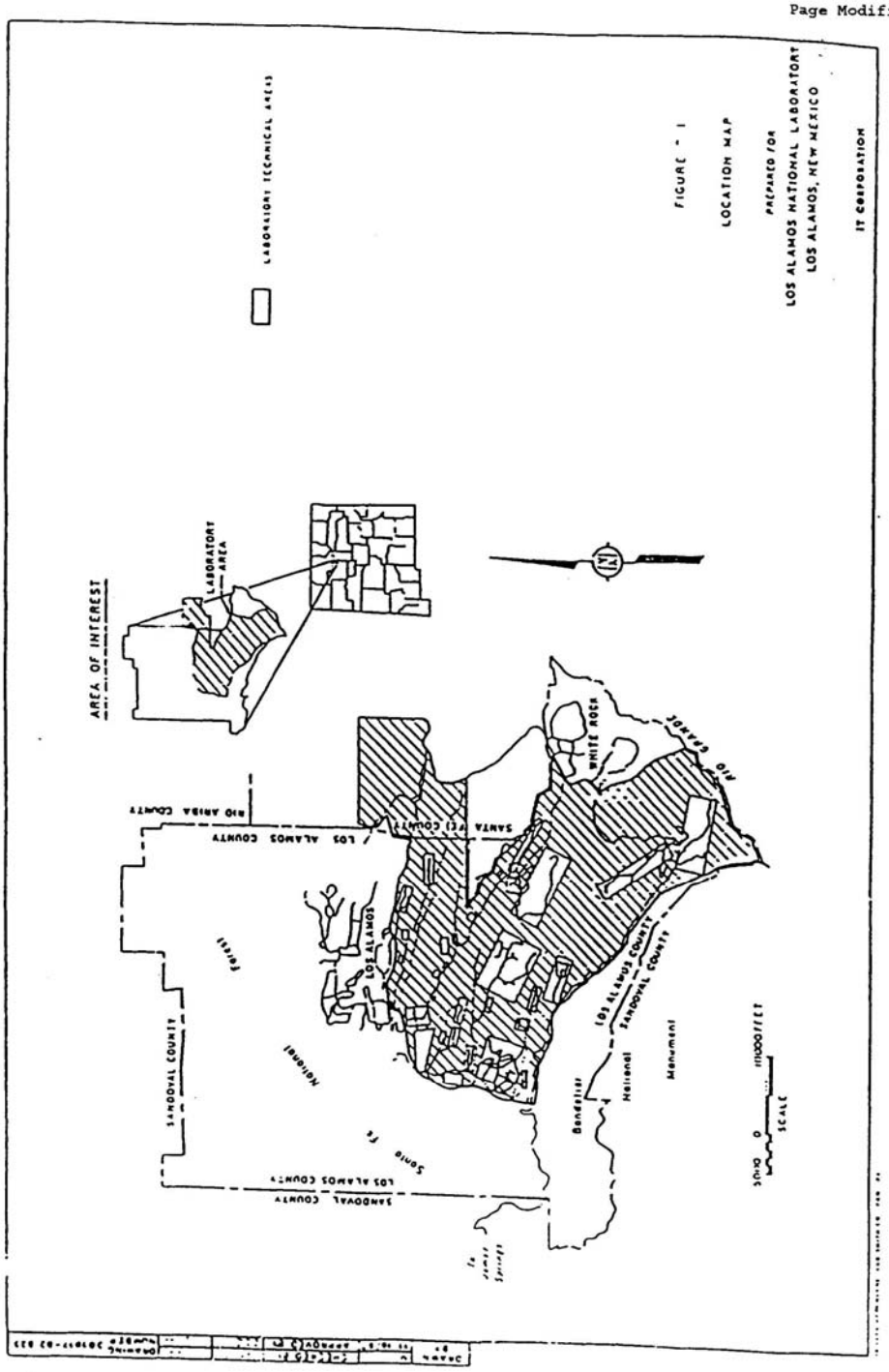
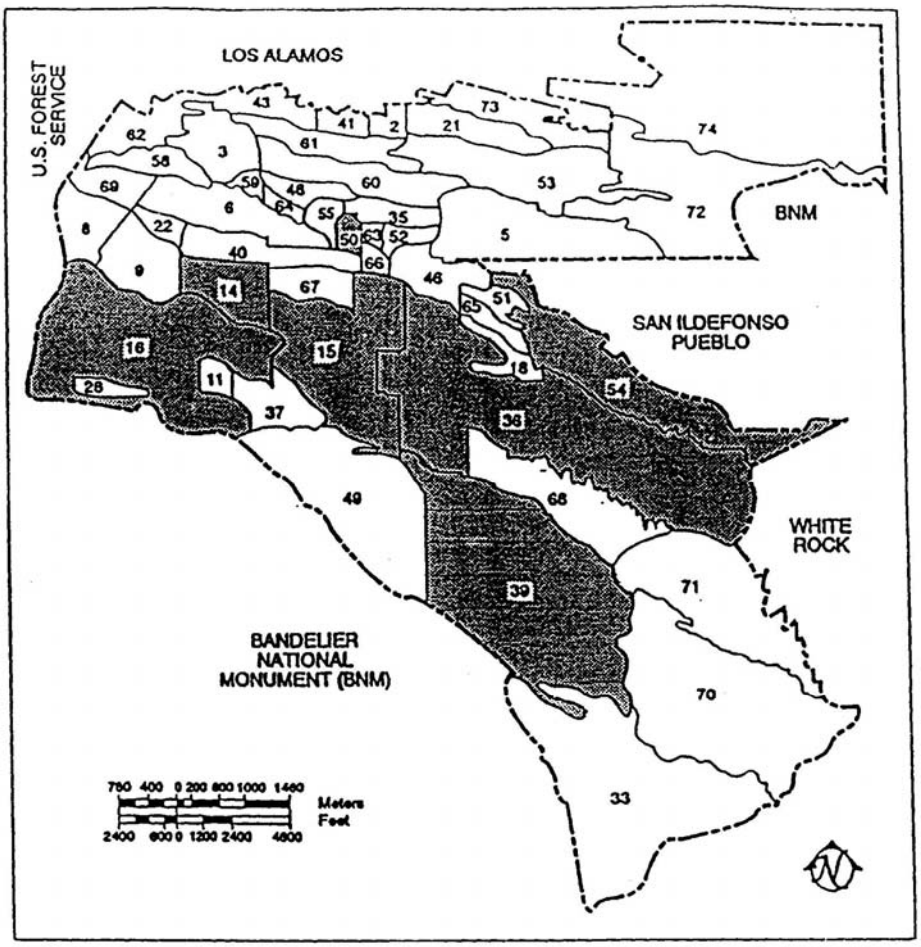


FIGURE 1

Vicinity Map

301215.01.09 A16



SHADING INDICATES TECHNICAL AREAS IN WHICH WASTE MANAGEMENT UNITS ARE LOCATED

FIGURE 2

LOS ALAMOS
TECHNICAL AREAS

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NATIONAL LABORATORY
LOS ALAMOS, NEW MEXICO
IT CORPORATION

FIGURE 2

Technical Area Map

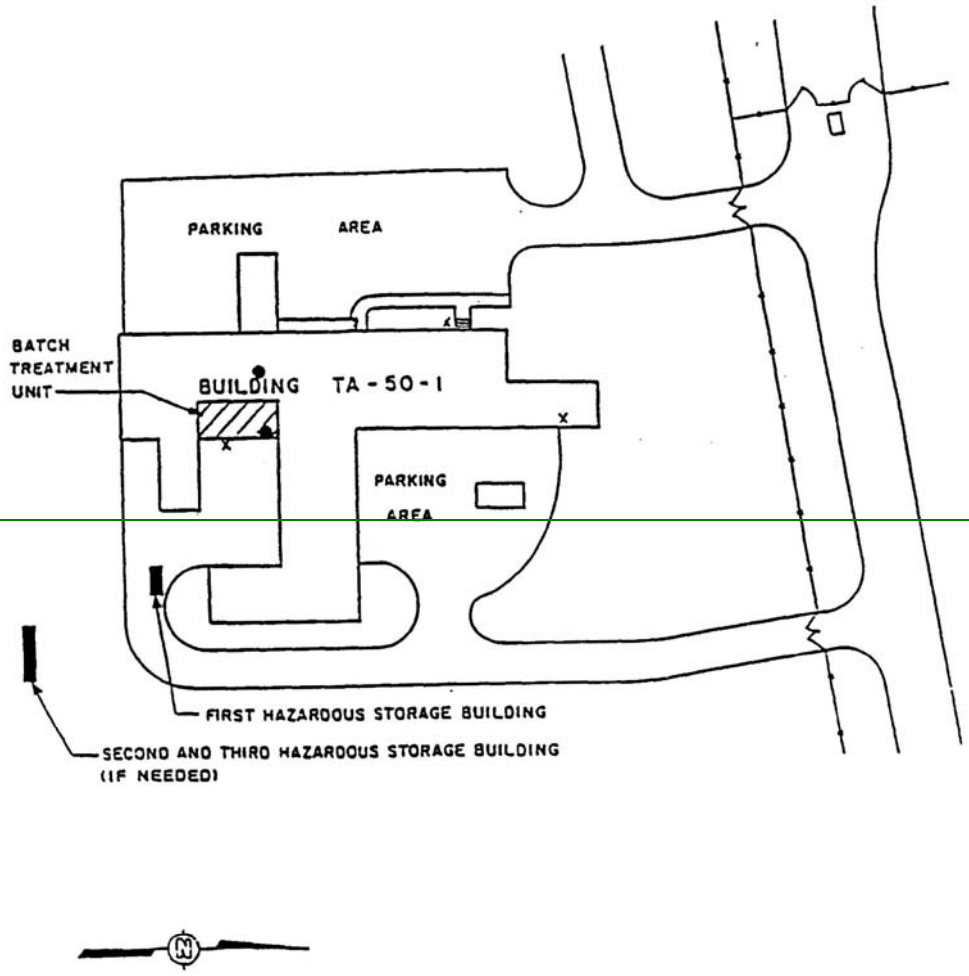

FIGURE 3 BATCH TREATMENT UNIT BUILDING TA-50-1

FIGURE 3

Batch Treatment Unit Building TA-50-1
(slated for closure, 1984)

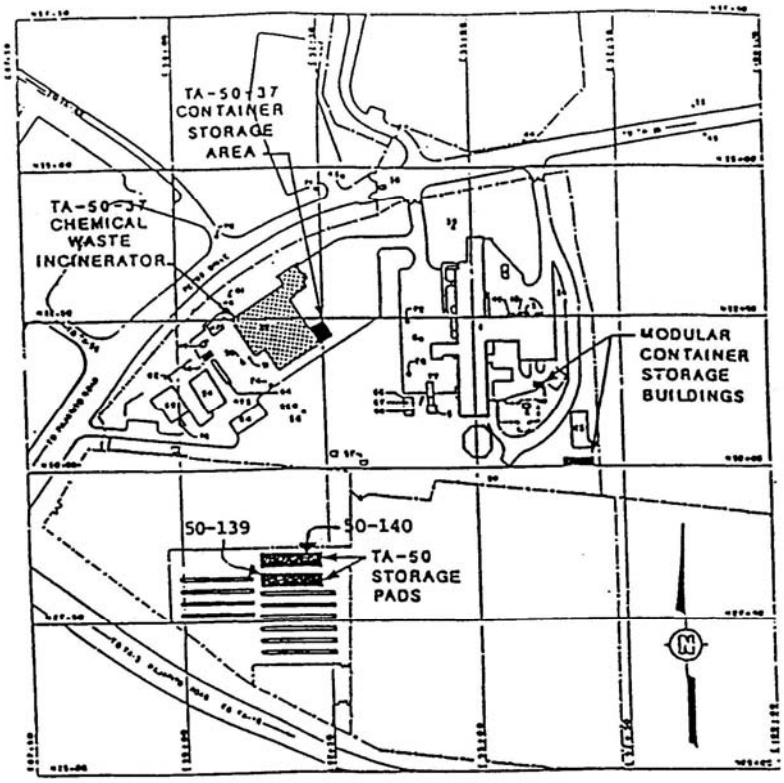

FIGURE 4

LOCATIONS OF TA-50
CHEMICAL WASTE INCINERATOR
AND CONTAINER STORAGE
UNITS

PREPARED FOR

LOS ALAMOS
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LOS ALAMOS, NEW MEXICO

INTERNATIONAL
TECHNOLOGY
CORPORATION

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FIGURE 4

Technical Area 50-37

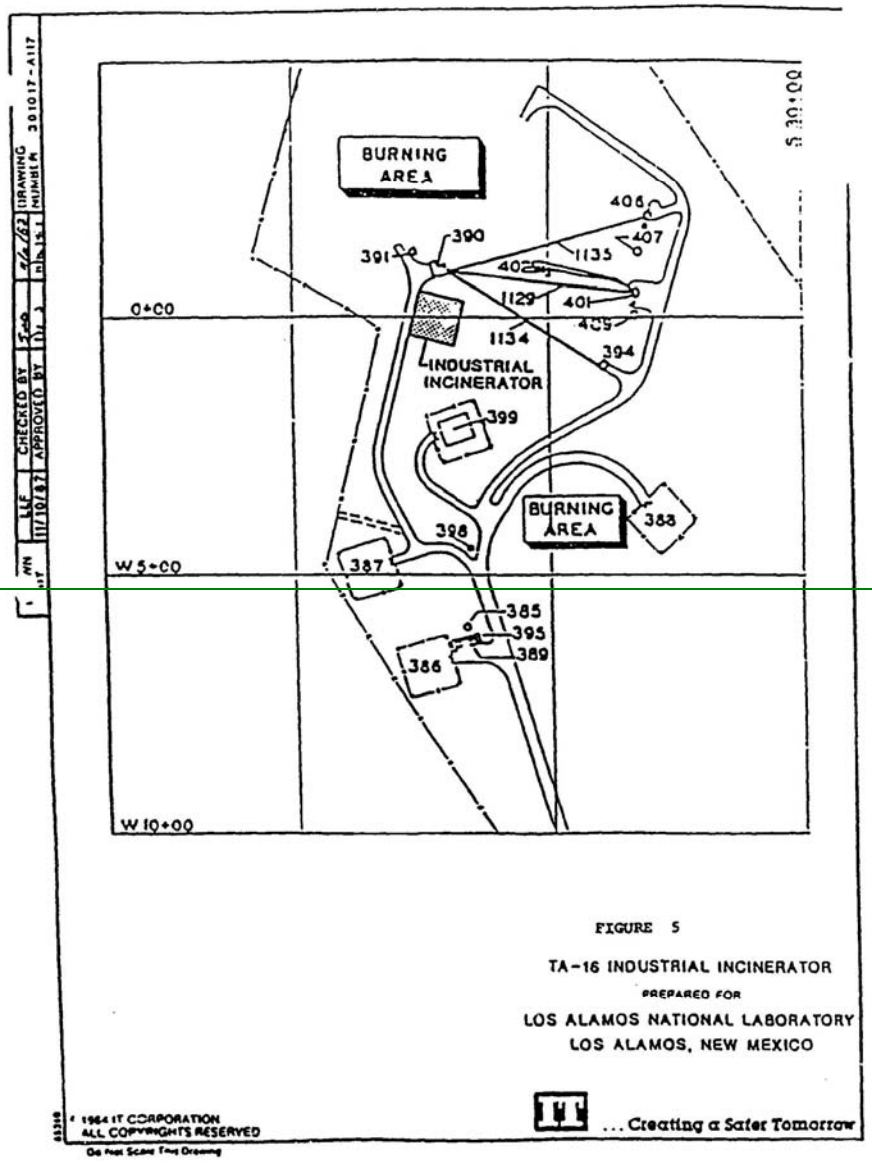

FIGURE 5

Technical Area 16 Incinerator

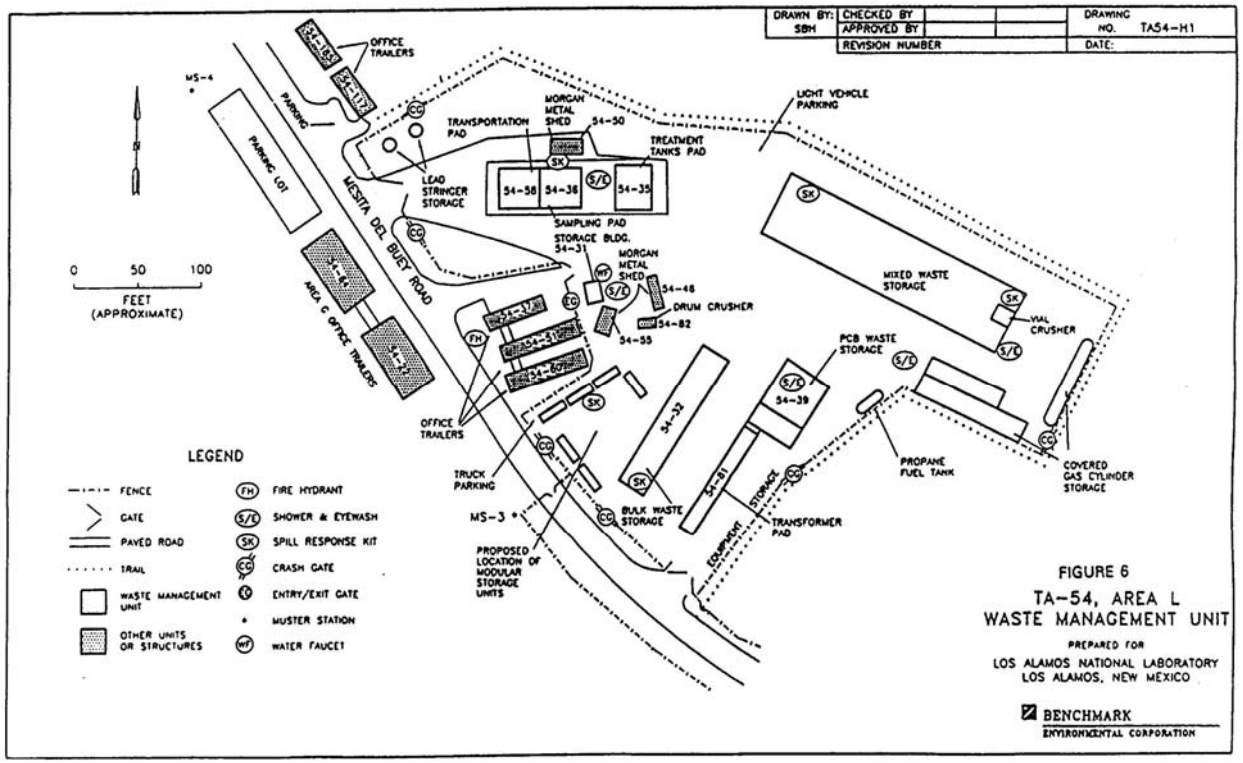

FIGURE 6

Technical Area 54 Area I Treatment Tanks Plan

Los alamos National Laboratory
Hazardous Waste Permit
NMED Control Copy
Page Modified 1-30-95

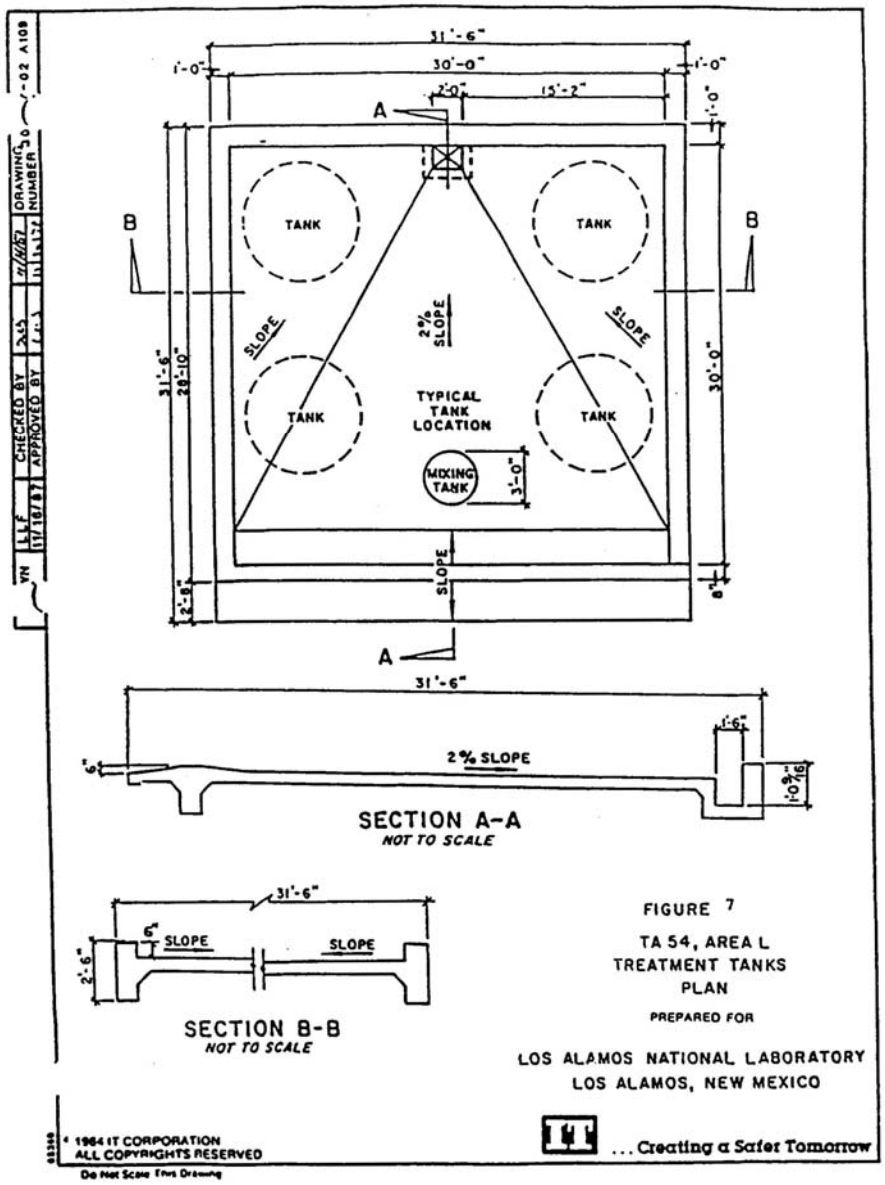

FIGURE 7

Technical Area 54 Area L Treatment Tanks Plan

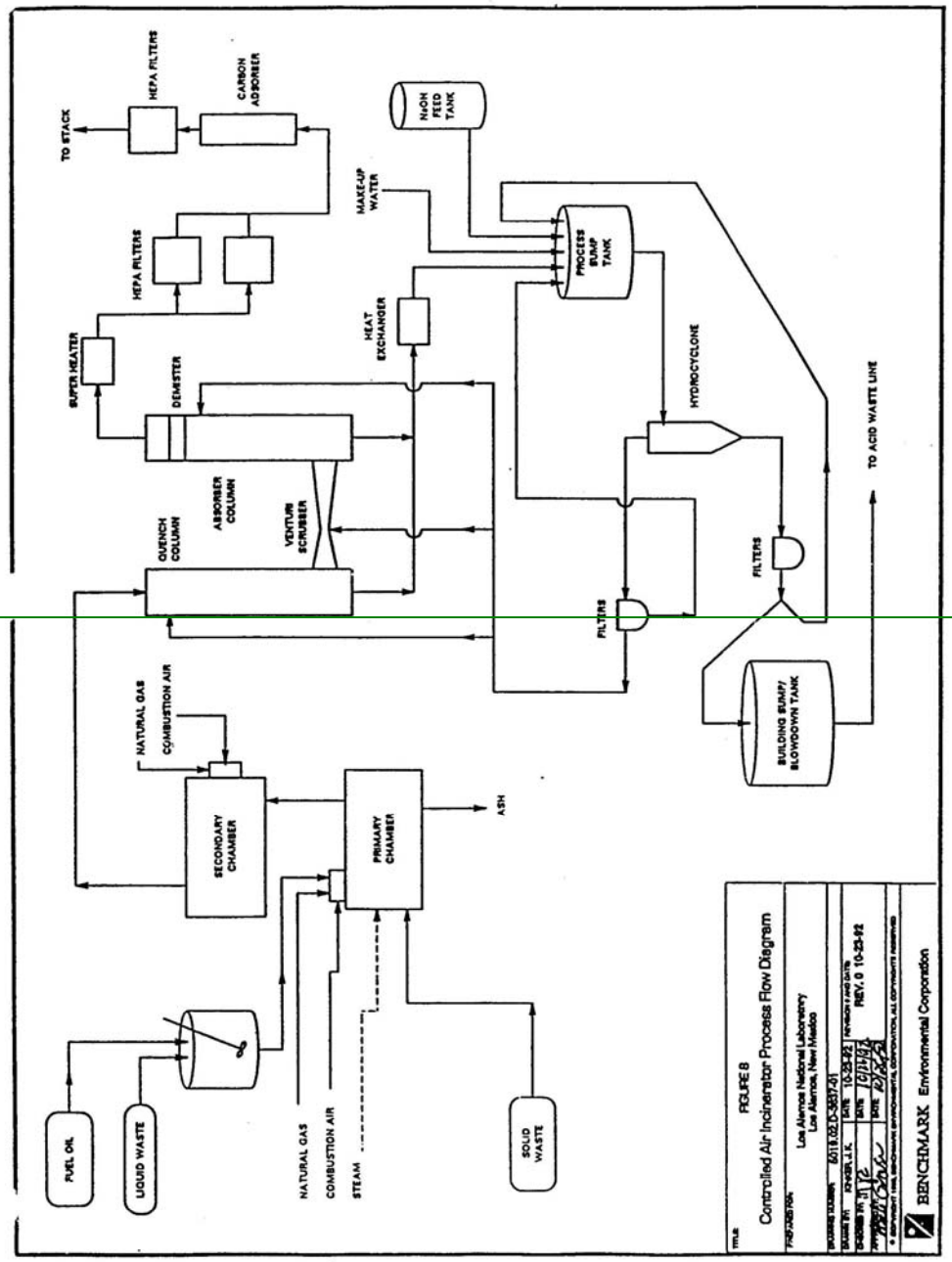

FIGURE 8

Incinerator Process Diagram

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ENVIRONMENTAL SURVEILLANCE 1987

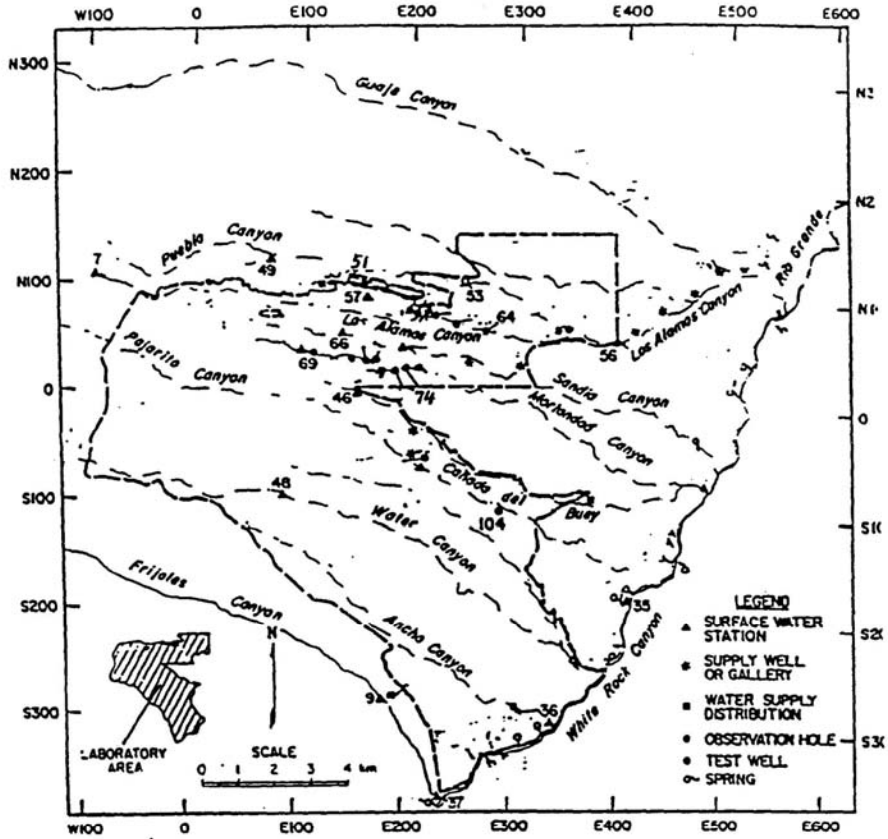


Fig. 9 Surface and ground water sampling locations on and near the Laboratory site.

FIGURE 9

Surface and Groundwater Sampling Locations

FIGURE 10

FACILITY RELEASE INSPECTION REPORT

Submit to:
Secretary,
New Mexico Environment Department
1190 St. Francis Drive
Santa Fe, NM 87503

SAMPLE LOCATION _____
SAMPLE DATE _____
SAMPLE NUMBER _____
SAMPLE COLLECTOR _____

METALS (Totals)

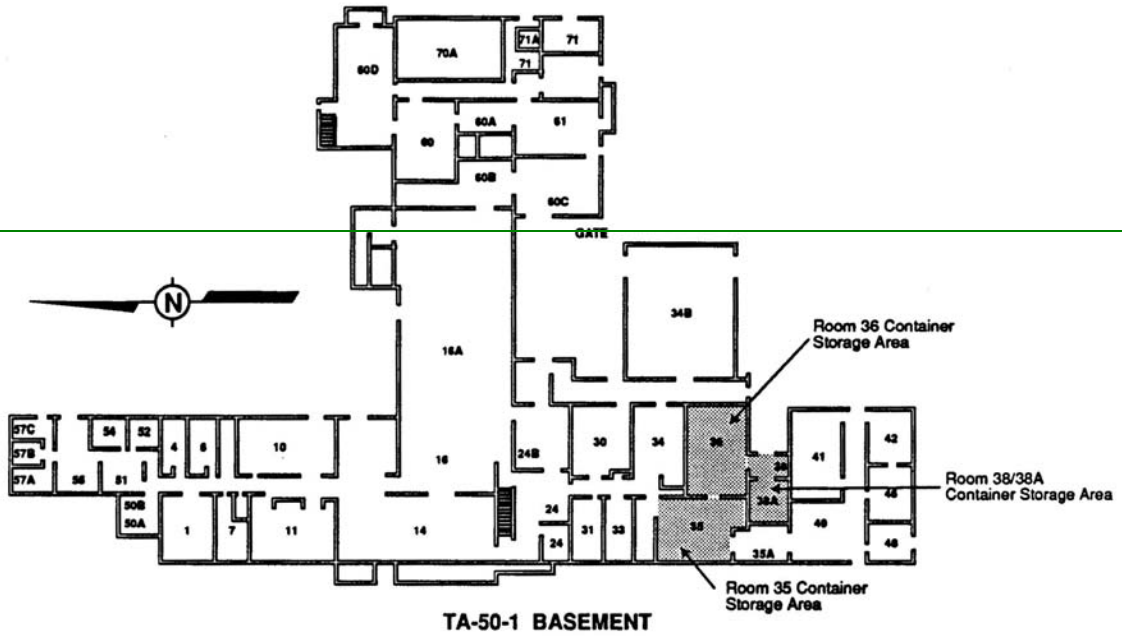
TRT.*		CODE	UNITS	QUANTITY	DATE ANALYZED
____	Arsenic	01002	ug/l	_____	_____
____	Barium	01007	ug/l	_____	_____
____	Cadmium	01027	ug/l	_____	_____
____	Chromium	01034	ug/l	_____	_____
____	Lead	01051	ug/l	_____	_____
____	Mercury	71900	ug/l	_____	_____
____	Selenium	01147	ug/l	_____	_____
____	Silver	01077	ug/l	_____	_____
____	Copper	01042	ug/l	_____	_____
____	Iron	01045	ug/l	_____	_____
____	Berylium	01012	ug/l	_____	_____
____	Nickel	01067	ug/l	_____	_____
____	Zinc	01092	ug/l	_____	_____

* Annotate field treatment as follows: **NF** = no filtration and/or **A** = 5 ml HNO_3

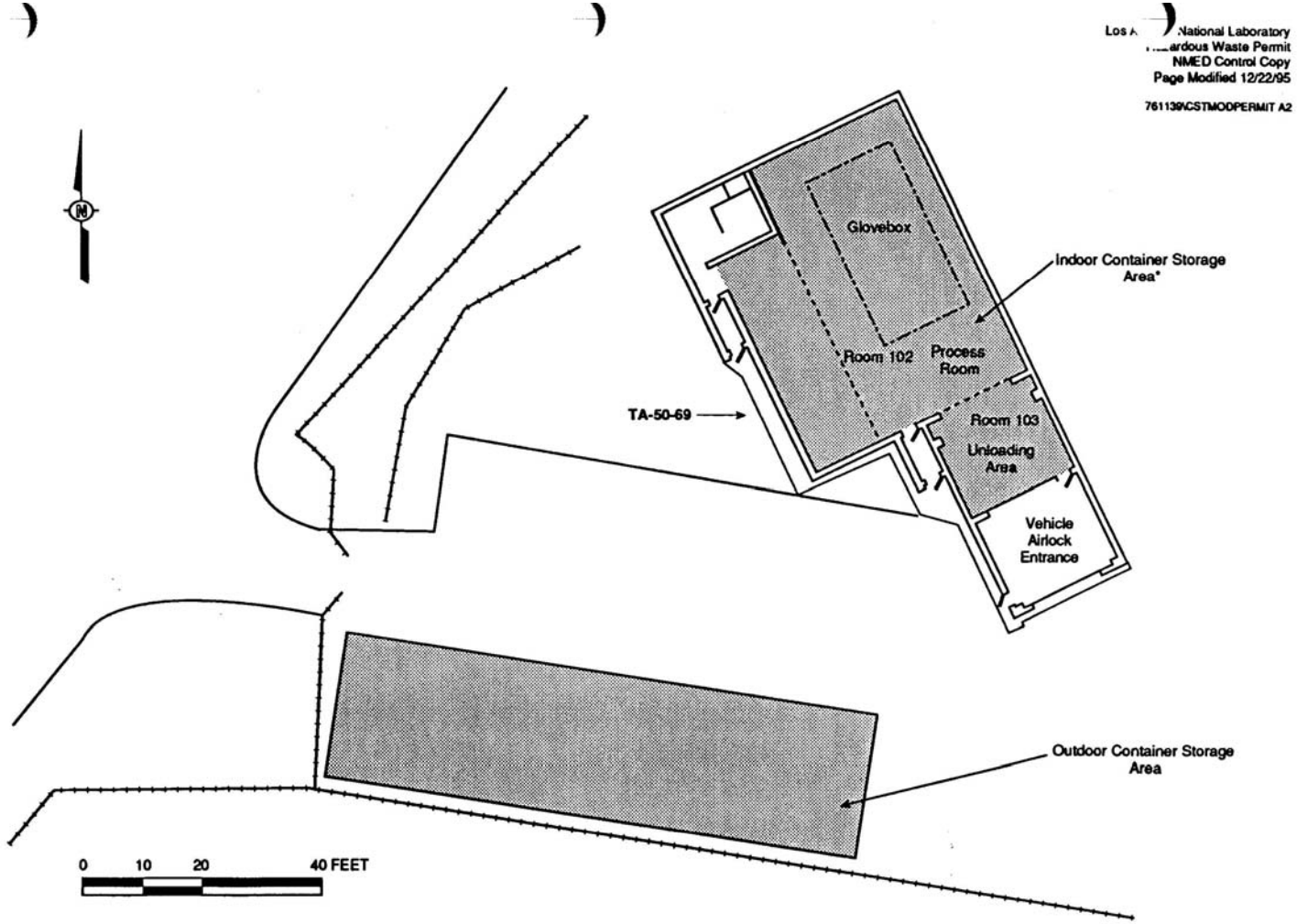
ORGANICS

SUBSTANCE	CODE	UNITS	QUANTITY	DATE ANALYZED
_____	___	___	_____	_____
_____	___	___	_____	_____
_____	___	___	_____	_____
_____	___	___	_____	_____
_____	___	___	_____	_____
_____	___	___	_____	_____

(Continue on a separate sheet if required)



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



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

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

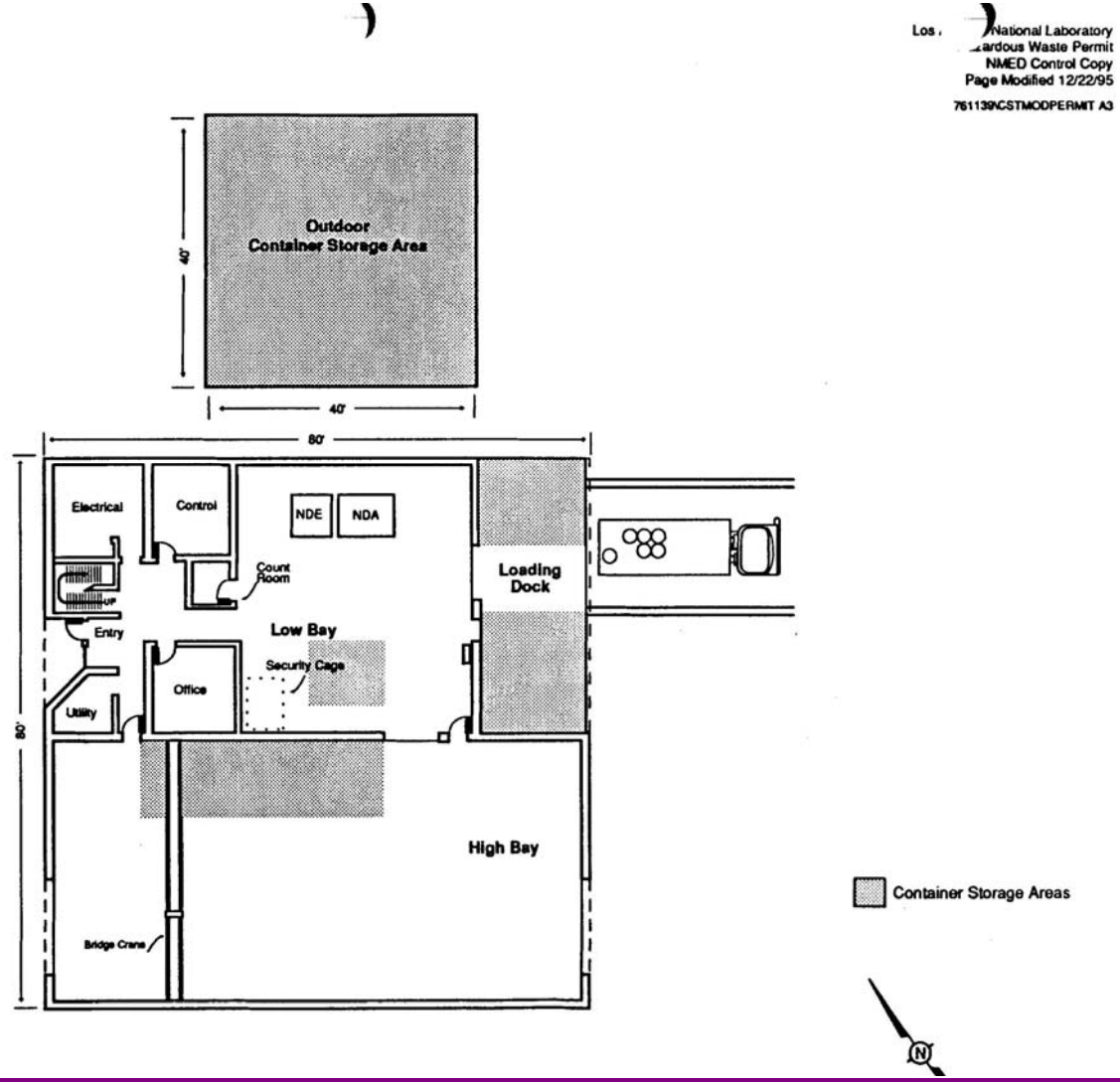


Figure 13
Technical Area (TA) 54 West, Building 38, First Floor Plan

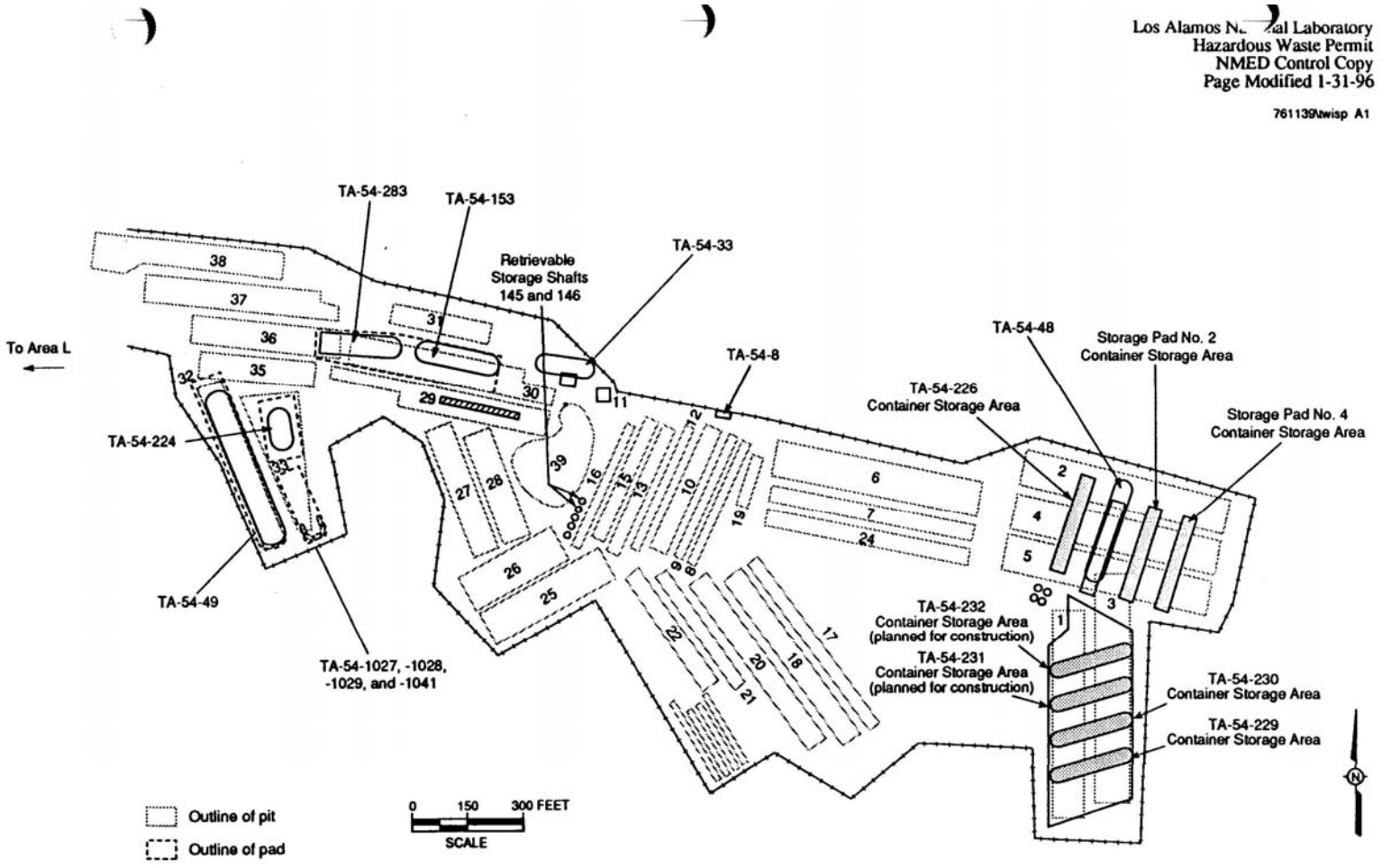


Figure 11
Technical Area (TA) 54, Area G, TA-54-226, -229, -230, -231, -232, and Pad 10

WASTE ANALYSIS PLAN
AND
WASTE SEGREGATION PROCEDURES

PERMIT ATTACHMENT A.1
NM0890010515-1

ATTACHMENT A
WASTE ANALYSIS PLAN

A.1 INTRODUCTION

This Permit Attachment A addresses the waste analysis and waste segregation procedures ~~implemented~~ implemented by Los Alamos National Laboratory (the Laboratory). Only the sampling and analysis procedures for RCRA- ~~controled~~controlled hazardous wastes are discussed here.

A.2 ~~TPYES~~ TYPES OF WASTE GENERATED AT LOS ALAMOS

Hazardous waste generated by Laboratory activities can be considered as three general types: (1) wastes from processing operations, (2) wastes from research and development (R&D) activities, and (3) high explosive (HE) waste. Each of these general types has unique characteristics. Processing wastes typically are significant volumes of material that contain a very limited number of contaminants. R&D wastes, however, are typically lesser volumes of a variety of laboratory reagents, chemicals, solvents and other general laboratory waste. The composition and concentration of contaminants in a given process waste is generally uniform unless modifications to the process are made. Conversely, the waste species from R&D activities continually vary depending on the activities of the rapidly changing R&D efforts at the Laboratory. HE wastes consist of a narrow assemblage of chemicals, the concentrations of which may vary. The chemical assemblage, however, remains fairly constant.

The Laboratory has developed procedures for the identification and segregation of hazardous wastes. When a waste is identified as hazardous, it is diverted to the appropriate method of storage, treatment or disposal based on its characteristics as determined by the Waste Analysis Plan.

Presented below is a description of the types of wastes generated, treated, and stored at the Laboratory and those disposed of at off-site permitted facilities. The wastes are divided according to process or facility activities which generate the wastes.

A.2.1 Wastes from Basic and Applied Chemistry R&D Programs

Primary Laboratory sites for basic and applies chemistry R&D include the Chemistry and Metallurgy Research Building (TA-3-29), the Radiochemistry Laboratory (TA-48), the Sigma Building (TA-3-66), and the Health Research Laboratory (TA-43). Typical nonradioactive chemical wastes consist of large quantities of partly empty small containers of laboratory reagents, solvents, test samples, and other laboratory wastes. Up to several hundred waste types consisting of relatively small quantities of different acids, bases, organics, inorganics, reactive metals and other chemicals require disposal. These R&D wastes represent nearly all of the waste species included in Permit Attachment G.

A.2.2 Surface Finishing Process Wastes

The Electrochemistry Section of the ~~MST-7~~MST-6 Materials Technology: ~~Polymers and Coatings Group,~~ Metallurgy Group located at TA-3-66 generates plating solutions containing heavy metals. Some of the wastes also contain cyanides. These plating solutions are coded as toxic and reactive wastes D007, D008, D011, F007, and F009. The Print Circuit Board Shop ~~of the MEC-10 Electronic Manufacturing and~~

~~Technician Resources Group,~~ located at TA-3-40 generates primarily acid/base wastes heavily contaminated with copper. This shop generates plating solutions contaminated with lead and mercury. These wastes are coded as D002, D008, and D009, respectively. The Fabrication Section of the ~~M-7~~DX-10 Detonation Systems Group, located at TA-22-91, generates copper contaminated ferric chloride etching waste that is corrosive. It is coded D002.

A.2.3 Isotope Separation Wastes

~~The Isotope and Structural Chemistry Group, INC-4 generates~~ Research Groups generate 7N nitric acid and 14N sulfuric acid wastes that are hazardous because of their corrosive characteristic (D002). Based on knowledge of the waste generating process, it has been determined that these wastes do not contain heavy metals.

A.2.4 Shops Department Wastes

The Main Shops Department, Building TA-3-39, houses most of the machine shop capabilities at the Laboratory. Waste materials from machining operations are segregated by the metal they contain when generated. ~~when generated.~~ (For example, there are containers for aluminum chips and turnings.) Some machining operations generate waste lithium metal and lithium hydride, both of which are hazardous because of their reactivity (D003). These materials, when generated, are known and are not commingled with other metal wastes. The Main Shops Department also generates waste nonhalogenated solvents (F003) and halogenated degreasers (F001) and solvents (F002).

A.2.5 Explosives Wastes

High explosive (HE) waste is generated by the ~~Dynamic Testing (M)~~ Dynamic Experimentation (DX)and ~~Design Engineering (WX)~~ Engineering Sciences and Applications (ESA) Divisions in the course of processing and testing various HE materials. Processing includes pressing, machining, and casting HE. Waste occurs as discrete pieces of HE, as well as chips, machine cuttings, and powder. Solid HE may include off-specification or old explosives, as well as scrap pieces of HE from processing operations. The chips, cuttings, and powder are usually in the form of waterborne suspensions, collected in specially designed accumulating/settling sump tanks. Spent carbon (K045) from the TA-16 wastewater treatment unit is generated approximately twice a year. Wastes also consist of materials contaminated with HE; these may include paper, oil, solvents, wood, machine tools, fixtures, etc. HE-contaminated equipment, tools, and other large items are considered reactive, D003. HE-contaminated oil may also contain listed solvents, F001, F002, F003, and/or F005, as well as exceeds TCLP levels for barium, (D005). Chemically, the predominant wastes consist of HMX (High Melting Explosives), RDX (cyclonite), TNT (2,4,6 trinitrotoluene), PETN (pentaerythriotol tetranitrate), ammonium nitrate, barium nitrate, TATB (triaminotrinitrobenzene), nitrocellulose, tetryl, nitroguanidine, and various plastic binders. Nearly all the HE waste substances are ignitable (D001) or reactive (D003) and barium nitrate is a TCLP waste (D005). Residues from HE waste are generated by flashing or burning HE waste at TA-16. These residues are typically present in the uppermost layer of sand that covers the burn pad. The sand from the two pads used to burn pieces of explosives is considered hazardous because of its barium content (D005).

A.2.6 Maintenance Activity Wastes

The Laboratory's ~~Engineering~~ Facilities, Security and Safeguards Division and support maintenance contractor, JCI, generate a variety of wastes in the course of performing maintenance work. Hazardous wastes range from residual pesticides and herbicides (e.g. D0~~01~~12and D0~~16~~14) to paints/thinners (e.g. D001 and D008~~, F003~~). Classification of these wastes can generally be performed by process knowledge and the use of Material Safety Data Sheets (MSDS~~'~~s).

A.2.7 Chemically Contaminated Equipment

In addition to the wastes noted above, various laboratory items that contain chemical residues or are otherwise chemically contaminated may be considered hazardous waste. Empty process tanks are typical contaminated items. Empty drums and containers meet the requirements of HWMR-6 Part 2, Section 261.7 and are therefore not considered hazardous waste. Generation of this type of hazardous waste occurs throughout the Laboratory facilities and produces a wide variety of waste types.

A.2.8 Waste Treatment Residues

Treatment operations at the Laboratory generate solid hazardous waste. These residues include the barium contaminated sand from the explosives burning operations~~, ash from the incinerator, and sludge from the chemical treatment operations~~. The classification and volume of the waste varies with the waste that was treated.

A.3 WASTE ANALYSIS AND HANDLING PROCEDURES FOR STORAGE

This section specifies the procedures for the identification and handling of hazardous waste for storage at the Laboratory. The decision process is summarized in Table A-1.

A.3.1 Waste Identification

When chemical substances are declared to be in excess, the originating group completes Form 1541 (Figure A-1) to request disposal ~~a Chemical Waste Disposal Request (Form 10-3A, Part A, Figure A-1)~~and sends the form to the Chemical and Mixed Waste Management Group (CST~~-7~~-5). The request lists the chemical waste the generating group needs to dispose of the quantity and physical form of the wastes, and other pertinent information such as the condition of the containers. Material Safety Data Sheets (MSDSs) and existing analytical data may also be available and attached.

Using 49 CFR § 172.101, the CST~~-7~~-5 staff assigns each chemical waste item (bottle, contain~~rt~~er, ~~ect.~~etc.) the appropriate DOT Hazard Class. This assignment and chemical characteristics determine the compatibility of one waste item with another waste item.

Additional information assigned during this review includes EPA hazardous waste codes and transportation information. The completed request form, container marking, and MSDS/analytical data serve as the waste analysis record for the waste to be stored per the following segregation schemes.

A.3.2 Waste Segregation

To prevent adverse interactions of incompatible chemical wastes and to facilitate recycling or treatment of wastes, chemical wastes will be segregated into the following general categories:

- Flammables, such as organic solvents (e.g. acetone, benzene, and toluene);
- Corrosive acidic wastes, including organic and mineral acids;
- Corrosive caustic wastes;
- Oxidizers, such as perchloric or chromic acid, and nonacidic oxidizers, such as permanganates and chlorates;
- Reactive metals and compounds, such as sodium, lithium hydride, and phosphorous trichloride; and
- Non-~~DOT~~RCRA regulated wastes (e.g. nonreactive metals, salts, neutral compounds, ~~cyanide or sulfide compounds,~~ and poisons)

Utilizing the DOT Hazard Class assigned to the container and Table A-2, an area for storage of the waste is assigned. The organics and oxidizers have subcategories of segregation that will be followed for packaging/compositing of wastes to ensure that potential incompatibles are not combined together.

A.4 WASTE ANALYSIS AND HANDLING PROCEDURES FOR TREATMENT AND ~~DISPSOAL~~ DISPOSAL

The Land Disposal Restrictions (LDRs) require that hazardous waste be treated to specified levels or with a specified technology prior to land disposal. The analysis procedures used to determine the LDR treatment standards that are applicable to the waste are described in this section. The decision process for analysis, handling, treatment, and/or disposal is summarized in Table A-1.

Several terms used throughout this section require further explanation.

- LDR is land disposal restricted. When used in this section it refers to all waste currently regulated under 40 CFR Part 268.
- TCLP metals refers to those eight metals regulated under the TCLP characteristic.
- KOP refers to knowledge of process. In the case of original containers of materials, the information from the Chemical Disposal Request Form, as described earlier, is the KOP documentation. All other waste is documented by previous analyses or information provided by the generator.
- Lab pack waste refers to waste containers that have been packed with ~~absorbants~~ absorbents in "lab pack" containers for safe handling and storage. All containers less than 5 gallons must be lab packed.

— Commercial chemical waste refers to chemical substances still in their original containers that have been declared a hazardous waste.

— References to the use of a ~~Coliwasa~~ COLIWASA sampler also includes the use of ~~Coliwasa~~COLIWASA-type sampling instruments

A.4.1 Organic Waste

Organic waste is divided into four processing categories: uncomposited chemical lab pack waste, drummed waste, composited commercial chemical waste, and composited drummed waste. The following discussions treat each as a unique analysis entity.

A.4.1.1 Uncomposited Lab Pack Waste

These wastes are those, that due to their toxicity or their physical (solid) state, will not be composited but will be packaged in lab pack containers with absorbent. Compatible inorganic and organic wastes are packaged together in these lab pack containers. The entire container is then incinerated. The Laboratory's incinerator cannot generally receive such a package, therefore, most of this waste is and will be shipped off site~~offsite~~. The packaging list of bottles and cans in the lab pack container serves as the analytical record. This listing is sufficient to allow the identification of any and all LDR waste.

A.4.1.2 Drummed Waste

There are very few ongoing operations at the Laboratory that generate an organic process waste. As a result, each drum of this waste is virtually a unique entity. The exception would be those cases where we know more than one drum of waste came from the same place, e.g. 400 gallons of oil drained from the same machine reservoir. The drums are all sampled using a COLIWASA ~~Coliwasa~~ sampler if liquid or a core sampler if solid. Because this waste is destined for incineration, the following parameters are tested for: pH, ~~ash content,~~ viscosity, heat value, TCLP metals, total organic halogen, total organic chlorine, sulfur, and chemical composition. This latter will identify approximately ninety-five percent of the substances that are present in the waste. Availability of documented KOP will determine if the organic trace analyses need to be performed. Documentation or analyses will identify the presence/absence of organic LDR compounds~~, trichlorofluoromethane, bromoform, dichlorodifluoromethane and ethylene dibromide. These latter four compounds are only necessary if the waste is to be incinerated~~ on site~~onsite~~. The test methods are listed in Table A-3.

Throughout the year, containers of organic waste mixtures, smaller than a 55-gallon drum, are generated in the many laboratories of LANL. The generator maintains a list of the substances placed in these containers. This allows CST-~~7~~-5 personnel to confirm compatibility of these wastes before they are composited into 55-gallon or larger containers. When the composite receptacle is full, the waste is analyzed as described above for any large container of organic waste.

Solid organic waste is sampled using a core sampler or a grab sampler if the material can not be penetrated by a core sampler. Analytical parameters, frequencies, and test methods would be the same as those outlined above for any large container of waste. Debris that is organically contaminated is analyzed per Section A.4.8.

A.4.1.3 Composited Commercial Chemical Waste

Composited commercial chemical wastes are those bottles and cans of liquid waste that have been combined for the purpose of incineration. Compatibility is ensured by following the procedures in Section A.3.1 and A.3.2. Since all chemicals in a composite drum are known entities, the list of chemicals and their quantity serves as the primary analysis record. This listing is sufficient to allow the identification of any and all LDR waste. When the drum is full, it is sampled with a COLIWASA~~Coliwasa~~ sampler. Since chemical composition is known, only the physical parameters need to be calculated or analyzed for. If any physical characteristics can not be calculated due to the variety of substances placed in the drum, the sample is analyzed for that parameter. Therefore, analysis or calculation would provide pH, flashpoint, ~~ash content,~~ viscosity, heat value, total organic halogens, and total organic chlorine. The methods used for these analyses are specified in Table A-3. This will be done for each container of composited waste since each container is unique.~~ Calculated parameters for waste to be incinerated on site~~onsite~~ will be verified according to the schedule in Permit Module V, C.2.~~

~~A.4.1.4 Composited Drummed Waste~~

~~Composited drummed waste are those drums of waste for which the analytical data on pH, flashpoint, ash content, viscosity, heat value, total organic halogens, and total organic chlorine already exists. These wastes are combined in either the TA-54, Area L storage tanks or the liquid feed tanks at the incinerator for the purposes of off-site shipment or on-site incineration. Compatibility is ensured by following the procedures in Sections A.3.1 and A.3.2. Chemical and physical parameters can be calculated from the existing data. If at any time calculations of physical parameters, such as heat value, is~~are~~ inadequate, those identified analyses will be redone. The calculations will be performed on each unique tank of waste. Calculated parameters for waste to be incinerated on site will be verified according to the schedule in Permit Module V, C.2.~~

A.4.2 Corrosive Acid Waste

Corrosive acid waste is handled in two primary processing categories: commercial chemical and process waste. The following discussions treat each as a unique analysis entity.

A.4.2.1 ~~Waste~~ Commercial Chemical Waste

This waste stream consists of unused acids in original containers. The labels on the containers and MSDSs continue to serve as the primary analytical record. Those acids that can be reused by another component of the Laboratory are redistributed for use as a commercial product. Those that can not be reused are treated by elementary neutralization. This occurs primarily at the TA-50 Liquid Waste Treatment Plant but could occur throughout LANL in individual laboratories.

A.4.2.2 Process Waste

There are three categories of process waste: nonroutine nonmetallic waste, nonroutine metallic waste, and routine waste. Each is discussed separately. Documented KOP will negate the concern for the presence of LDR organic compounds. Therefore, references to LDR in this section refers only to inorganic constituents.

Nonroutine nonmetallic waste is periodically generated throughout the Laboratory. This waste will be analyzed for pH, the TCLP metals, nickel and thallium. This allows confirmation of the presence/absence of LDR material. The test methods employed are listed in Table A-3. Sampling is performed using a COLIWASA ~~coliwasa~~ sampler. Because this is defined as a nonroutine waste stream, every unique drum or batch will be sampled.

Nonroutine metallic waste is generated primarily by the Laboratory's electroplating operations. At the time of generation, these wastes are identified by the generator as containing heavy metals. The generator may also provide the approximate metal concentration, if the information is available. This waste will be analyzed for pH, TCLP metals, nickel and thallium. This allows confirmation of the presence of LDR material and establishes the parameters that are analyzed for at the completion of treatment. The test methods employed are listed in Table A-3. Sampling is performed using a ~~coliwasa~~COLIWASA sampler. Because this is defined as a nonroutine waste stream, every unique drum or batch will be sampled.

There are five routinely generated acidic waste streams at the Laboratory: nonmetallic nitric acid, nonmetallic sulfuric acid, nonmetallic acid stream, metallic ferric chloride, and metallic ammonium persulfate. Each of these waste streams has a confirmed basis for RCRA regulation that establishes the parameters of concern for treatment. All three of the nonmetallic acid waste streams are routinely analyzed for pH. The metallic ferric chloride is analyzed for pH, chromium, silver, lead, and copper. The metallic ammonium persulfate is analyzed for pH, lead, and mercury. Annually, all of these streams are all reevaluated for pH, all TCLP metals, nickel, and thallium. This confirms that the waste has not changed in composition and identifies the LDR components. Sampling is conducted with a ~~coliwasa~~COLIWASA sampler. All test methods are listed in Table A-3.

If a nonroutine waste stream becomes a routine waste or a new waste stream is identified, these wastes will be characterized following the procedures described in the above paragraph. Routine testing parameters will be established and reverified on an annual basis.

A.4.3 Corrosive Caustic Waste

Corrosive caustic waste is divided into two processing categories: commercial chemical waste and process waste. The following discussions treat each as a unique entity for analysis.

A.4.3.1 Commercial Chemical Waste

This waste stream consists of caustic products (bases) in their original containers. The labels on the containers and MSDSs serve as the primary analytical record. Those bases that can be reused by another component of the Laboratory are redistributed for use as a commercial product. Those that can not be reused are generally treated by elementary neutralization. This occurs primarily at the TA-50 Liquid Waste Treatment Plant but could occur throughout LANL in individual laboratories.

A.4.3.2 Process Waste

There are three categories of process waste: nonroutine nonmetallic waste, nonroutine metallic waste, and routine waste. Each is discussed separately. Documented KOP will negate the concern for organic LDR compounds. Therefore, references to LDR in this section refers only to inorganic constituents.

Nonroutine nonmetallic waste is periodically generated throughout the Laboratory. This waste will be analyzed for pH, the TCLP metals, nickel and thallium. This allows confirmation of the presence of LDR material. The test methods employed are listed in Table A-3. Sampling is performed using a ~~coliwasa~~COLIWASA sampler. Because this is defined as a nonroutine waste stream, every unique drum or batch will be sampled.

Nonroutine metallic waste is generated primarily by the Laboratory's electroplating operations. At the time of generation, these wastes are identified by the generator as containing heavy metals. This waste will be analyzed for pH, ~~EP toxic~~TCLP metals, nickel, thallium, and cyanide. This procedure allows confirmation of the presence of LDR material and establishes the parameters that are analyzed for at the completion of treatment. The test methods employed are listed in Table A-3. Sampling is performed using a ~~coliwasa~~COLIWASA sampler. Because this is defined as a nonroutine waste stream, every unique drum or batch will be sampled.

There are three routinely generated corrosive base process waste streams at Los Alamos: ammonium etchant, "Replenisher" solution, and "Cuposit." The Replenisher and Cuposit are trade names. The ammonium etchant is analyzed for pH, copper, and lead. The Replenisher is analyzed for pH and lead. The Cuposit is analyzed for pH and mercury. Annually, these waste streams are all reevaluated for pH, all TCLP metals, nickel, and thallium. This allows confirmation of the presence of LDR substances and that the waste has not changed in composition. Sampling is performed with a ~~coliwasa~~COLIWASA sampler. Test methods used are listed in Table A-3.

If a nonroutine waste stream becomes a routine waste stream or a new waste stream is identified, these wastes will be characterized following the procedures described in the above paragraphs. Routine testing parameters will be established and reverified on an annual basis.

A.4.4 Oxidizer Waste

Oxidizer waste is divided into two processing categories: acid waste and uncomposited lab pack waste. Acid oxidizer waste is handled according to the procedures described Section A.4.2.

Oxidizer lab pack ~~waste~~wastes are not composited due to the high fire risk of doing so. These wastes are packaged in lab pack containers with absorbent. The entire container is then incinerated. ~~The Laboratory's incinerator cannot generally receive such a package; therefore, most of t~~This waste is and will be shipped off site~~offsite~~. The packing list of bottles and cans in the lab pack container serves as the analytical record. This listing is sufficient to allow the identification of any and all LDR waste.

A.4.5 Reactive Wastes

Reactive waste has only two processing categories: uncomposited lab pack waste and routine process waste. (Explosives waste is treated as a separate category of waste and is discussed in Section A.4.7.) The following discussions treat each as a unique analysis entity.

A.4.5.1 Uncomposited Lab Pack Waste

Reactive lab pack wastes are not composited due to the high fire and explosion risk of doing so. They are packaged in lab pack containers with absorbent. The entire container is then incinerated. T~~he Laboratory's~~

~~incinerator cannot generally receive such a package; therefore, most of t~~his waste is and will be shipped off site. The packing list of bottles and cans in the lab pack container serves as the analytical record. This listing is sufficient to allow the identification of any and all LDR waste.

A.4.5.2 Process Waste

The only ongoing operation at the Laboratory that generates a reactive process waste is the machining ~~operations~~operation. Periodically, the machinists are required to work with lithium hydride and to a lesser degree lithium metal. This results in drums of lithium hydride dust and lithium chips, respectively. Process knowledge serves as the analytical record for this waste stream.

If large quantities of reactive waste should be produced elsewhere in the Laboratory, documented process knowledge would also be used as the analytical record.

A.4.6 Inorganic Wastes

Inorganic wastes ~~is~~ are divided into two processing categories: uncomposited commercial chemical waste and process waste. The following discussions treat each as a unique analysis entity.

A.4.6.1 Uncomposited ~~Uncommposited~~ Commercial Chemical Waste

These wastes are generally solid material and therefore do not lend themselves to compositing. They will be packaged in lab pack containers with absorbent. Organic and inorganic wastes that are compatible are lab packed together. The entire container is then usually destined for off-site~~offsite~~ land disposal. The packing list of bottles and cans in the lab pack container serves as the analytical record. This listing is sufficient to allow the identification of any and all LDR waste.

A.4.6.2 Process Waste

Four categories of inorganic process waste exist: liquid waste, primary metal waste, nonroutine solid waste, and routine solid waste. Inorganic liquid waste is generally acidic or basic and is thus treated under the scenarios described in Sections A.4.2 and A.4.3.

Process knowledge is considered adequate for the further treatment/disposal/recycle of waste streams such as lead and mercury.

Nonroutine solid waste is periodically generated throughout the Laboratory. This waste will be analyzed for TCLP metals, nickel and thallium. This allows confirmation of the presence of LDR material. The absence of organics will be established by either documented KOP or analysis. The test methods employed are listed in Table A-3. Sampling is performed using a core sampler if possible or a grab sampler if it is not possible to penetrate the waste with a core sampler. Because this is defined as a nonroutine waste stream, every unique drum or batch will be sampled.

There is one routinely generated inorganic solid waste at the Laboratory~~:~~. It is the barium contaminated sand from the explosives burning operation. Barium is the only established parameter of concern for treatment and therefore is the only parameter routinely analyzed for. Annually, a sample will be analyzed for the other TCLP metals. Sampling is conducted with a core sampler. Test methods are listed in Table A-3.

If a nonroutine waste stream becomes a routine waste stream or a new waste stream is identified, these wastes will be characterized following the procedures described in the above paragraph. Routine testing parameters will be established and reverified on an annual basis.

A.4.7 Explosives Waste

Due to the limited number of areas producing explosives waste and the safety problems associated with analyzing explosives waste, process knowledge of the waste sent for treatment by open burning or open detonation is the waste analysis record. Table A-4 lists the various explosives used at the Laboratory. Open burning/open detonation is conducted under interim status according to HWMR-5 Part VI, Section 265.282.

A.4.8 Contaminated Solid Waste

The waste included in this category is generally classified as debris. Contaminated soil would be addressed under the respective chemical category as outlined in the above sections. The contaminant of concern is known for all waste in this category but the substrate can not be readily analyzed. Therefore, until the item in question is cleaned it is treated as a hazardous waste. The types of waste covered by this provision would be tanks and rags.

A.4.9 Waste Treatment Residuals

Waste treatment residuals are the liquid and solid waste streams resulting from the treatment of ~~a~~ hazardous wastes. ~~There are currently four types of residual waste streams: the treated liquid and precipitate from chemical treatment operations at either TA-50 or -54 and the scrubber water and ash from the incinerator.~~ Barium contaminated sand is also a treatment residue but because it receives further chemical treatment it is discussed in Section A.4.6.2.

~~The liquid from chemical treatment operations is tested to insure that (a) treatment is complete and (b) remaining chemical concentrations are within the discharge guidelines established under the NPDES permit for the TA-50 radioactive liquid waste treatment system. Sections A.4.2 and A.4.3 discuss the procedures used to establish those parameters that would be tested for at the conclusion of treatment. If documented KOP can not exclude the presence of F-listed solvents, then each batch of treatment supernate will be tested for the compounds listed in 40 CFR § 261.3.(a).2.iv.A and B. Samples from the Batch Waste Treatment Unit are taken from a sampling loop. Samples from the treatment tanks at TA-54 will be taken by either a COLIWASAcoliwasa or grab sample. Test methods used are provided in Table A-3. The scrubber water from the incinerator will always be within the discharge guidelines established under the NPDES permit for the TA-50 radioactive liquid waste treatment system thereby negating chemical analysis. The scrubber will be analyzed annually to verify this.~~

~~Solids from the chemical treatment operations and the ash from the incinerator are tested for the TCLP metals that were found to be present before treatment. As necessary, these wastes are then cemented or otherwise solidified. The solidified matrix may again be sampled by removing a sample from the mixture before curing. After curing, it is tested for the same TCLP metals. Assuming there are no listed materials present, this would allow a determination to be made as to whether the waste remained a hazardous waste or not. This procedure would be followed for each batch of solids requiring processing.~~

A.4.10 Unknown Material

Occasionally, chemicals of an unknown nature require disposal. These wastes are handled on a case-by-case basis. The individual waste may be tentatively characterized by knowledge of the operations and activities that were performed in the specific area in which the waste was generated. This information is used to restrict the choices of initial waste analysis to a small population of chemicals.

For purposes of managing unknown wastes a small volume is defined at the Laboratory as less than one liquid gallon (or approximately four liters). The rationale for the small volume designation is that this is the minimum quantity of sample that is needed to analyze the waste. At and below this volume limitation the sample is entirely consumed in the analytical procedure. Small volumes of unknown wastes are analyzed for pH, flashpoint, and reactivity. This allows the material to be categorized for further handling.

Volumes greater than one gallon or four liters of a single unknown waste require a more detailed analytical scheme. These wastes are tested for reactivity, corrosivity, ignitability, TCLP metals, and any other analyses indicated by the initial data gathered on the material. Sufficient detail must be reported to allow the assignment of the proper EPA hazardous waste code~~ Number~~ to the waste. All test methods used are outlined in Table A-3.

A.5 VERIFICATION ANALYSES

Knowledge of process is used to identify the waste streams; however, the hazardous constituents must be verified using specified analytical procedures at specified intervals. This section describes the verification process implemented~~implementated~~ by the Laboratory~~,~~.

A.5.1 Knowledge of Process

One in each one hundred Knowledge of Process (KOP) determinations based on a list compiled by the generator as wastes are accumulated in a compositing container will be verified by quantitative chemical analysis. Factory sealed containers and original containers redistributed for use within the facility will not be included in this analysis. Detection of hazardous constituents above one percent by volume, not recorded in the KOP documentation, or variations in concentration greater than

twenty five percent from the estimate $-\frac{C_{meas} - C_{est}}{C_{est}} \cdot 100 \geq 25$

shall be cause for rejection of the KOP and shall require an investigation into the cause. A written record of the investigation shall be retained with the facility record. Any individual who twice fails to properly document KOP constituents shall be permanently prohibited from KOP certification. An entry to this effect shall be made in the facility record.

Unused commercial chemicals in original containers that have been declared a hazardous waste accepted by an off-site~~off-site~~ disposal or treatment facility need not be verified unless rejected by the off-site~~off-site~~ treatment facility.

A.5.2 Annual Verification

All routinely generated waste streams that have documented waste profiles will be analyzed annually to verify that they have not changed. Any information that indicates a change in a process that ~~which~~ generates a waste that may affect the waste, shall cause the waste to be analyzed not later than the next time the waste is generated. All such analyses shall be recorded in the facility record.

TABLE A-1
WASTE STREAMS, ANALYTICAL PARAMETERS, AND RATIONALE

Waste Stream	Analytical Parameters	Rationale Reference
Organic Waste		
- Uncomposited lab pack	Packing list	A.4.1.1
- Drummed	pH, TCLP ~~EP~~toxic metals, TOX, TOC, ~~ash content,~~ viscosity, heat value, sulfur, chemical composition	A.4.1.2
- Composited lab packs and drums	List of chemicals, pH, flashpoint, ~~ash content,~~ viscosity, heat value, TOX, TOC	A.4.1.3, A.4.1.4
Corrosive Acid		
- Lab pack	pH, as necessary	A.4.2.1
- Nonroutine, nonmetallic process waste	pH, ~~EP~~TCLP toxic metals, nickel, thallium	A.4.2.2
- Nonroutine, metallic process waste	pH, ~~EP~~TCLP toxic meals, nickel, thallium	A.4.2.2
- Routine nonmetallic process waste	pH	A.4.2.2
- Ferric chloride	pH, chromium, silver, lead, copper	A.4.2.2
- Ammonium persulfate	pH, lead, mercury	A.4.2.2
Corrosive Base		
- Lab pack	pH, as necessary	A.4.3.1
- Nonroutine nonmetallic process waste	pH, ~~EP~~TCLP toxic metals, nickel, thallium	A.4.3.2
- Nonroutine metallic process waste	pH, ~~EP~~TCLP toxic metals, nickel, thallium	A.4.3.2

TABLE A-1
WASTE STREAMS, ANALYTICAL PARAMETERS, AND RATIONALE
(continued)

Waste Stream	Analytical Parameters	Rationale Reference
- Ammonium etchant	pH, copper, lead	A.4.3.2
- "Replenisher"	pH, lead	A.4.3.2
- "Cuposit"	pH, mercury	A.4.3.2
Oxidizer - Lab packs	Packing list	A.4.4
Reactive - Lab packs	Packing list	A.4.5.1
- Process Waste	Knowledge of process	A.4.5.2
Inorganic - Lab pack	Packing list	A.4.6.1
- Primary Metals	Knowledge of process	A.4.6.2
- Nonroutine Solid	~~EP~~TCLP toxic metals, nickel, thallium	A.4.6.2
- Barium Sand	Barium	A.4.6.2

TABLE A-1
WASTE STREAMS, ANALYTICAL PARAMETERS, AND RATIONALE
(continued)

Waste Stream	Analytical Parameters	Rationale Reference
Explosives	Knowledge of process	A.4.7
Contaminated Debris	Knowledge of process	A.4.8
Waste Treatment Residues		
~~- Chemical Treatment Liquids/Solids~~	Previously established parameters	A.4.9
~~- Incinerator Ash~~	~~Previously established parameters~~	~~A.4.9~~
~~- Incinerator Scrubber Water~~	~~Knowledge of process~~	~~A.4.9~~
Unknowns		
- Small Volume (<1 gal.)	pH, flashpoint, reactivity	A.4.10
- Large Volume	All parameters necessary to identify waste completely	A.4.10

TABLE A-2
PACKAGING SEGREGATION SCHEME

Storage Category	Packaging Category	~~RGW~~RGN
Organics (1)	A	4, 5, 9, 13, 14, 16, 17, 19, 26, 29, 31, 32, 101
	B	6, 7, 8, 27, 28
	C	12, 20
	D	34, 18
Oxidizers (2)	A	2
	B	104
	C	30
Acids (3)	N/A	1, 3
Bases (4)	N/A	10, 11, 33, 105
Reactives (5)	N/A	21, 22, 25, 102, 107 - ALL STORED INDIVIDUALLY - NO COMBINING ALLOWED
Nonreactive Metals (6)	N/A	11, 15, 23, 24, 33 - 11 and 33 would only be allowed in lab pack, solid quantities
Others		The following must be evaluated on a case-by case basis to determine which of the above categories is appropriate: 25, 102, 103.

TABLE A-3
WASTE ANALYSIS PARAMETERS AND TEST METHODS

Parameter	Test Method	Reference[1]
Ignitability	Pensky-Martens Closed-Cup Method	(L) SW1010 (L) ASTM D93-80
Reactivity	Numerous methods and tests[2]	(L,S) SW Section 2.1.3
pH	Electrometric	(L) SW9040
EP Toxicity	EP Toxicity Extraction[3] ~~and Graphite Furnace AA Spectoscopy~~	(L,S) SW1310
Toxicity Characteristic Leaching Procedure (TCLP)	Toxicity Characteristic Leaching Procedure	(L,S) SW1311
Arsenic		(L) SW7060
Barium		(L) SW7081, SW7080
Cadmium		(L) SW7131, SW7130
Chromium		(L) SW7191, SW7190
Lead		(L) SW7421, SW7420
Selenium		(L) SW7740
Silver		(L) SW7761, SW7760
Mercury	~~EP Toxicity Extraction[3] and~~ Manual Cold Vapor Technique	~~(L) SW1310~~ (L) SW7470 (S) SW7474

TABLE A-3
WASTE ANALYSIS PARAMETERS AND TEST METHODS
(continued)

Parameter	Test Method	Reference[1]
~~Toxicity Characteristic Leaching Procedure (TCLP)~~		~~(L,S) 40 CFR Part 268, Appendix 1~~
Organochlorine Pesticides	~~EP Toxicity Extraction[3] and~~ Gas Chromatography	(L) SW8080
Chlorinated Herbicides		(L) SW8150
Chemical Composition	95% organic composition by GC/FID	(L) SW8100
Trace Organic Analysis	Any of the following:	
	Volatile organic compounds-GC/MS	(L) SW8240
	Semivolatile organic compounds-GC/MS	
	- Packed column	(L) SW8250
	- Capillary column	(L) SW8270
Heat Value	Bomb calorimeter	(L) A006, ASTM D240
Organic Chlorine	Halide titration of combustion residue	(L,S) A004, ASTM D2361
Ash Content	Residue after combustion in muffle furnace	(L) A001, ASTM D482 (S) A001, ASTM D3147

TABLE A-3
WASTE ANALYSIS PARAMETERS AND TEST METHODS
(continued)

Parameter	Test Method	Reference[1]
Cyanide-Free and Total	Distillation and colorimetric (UV)	(L) SW9012
Chrome	Colorimetric method for hexavalent chromium	(L) SW7196
Sulfide	Colorimetric titration	(L) SW9030
Total Metals	Digestion and inductively coupled plasma method	SW3020
Arsenic		(L) SW6010
Barium		(L) SW6010
Beryllium		(L) SW6010
Cadmium		(L) SW6010
Chromium		(L) SW6010
Lead		(L) SW6010
Nickel		(L) SW6010
Selenium		(L) SW6010
Silver		(L) SW6010
Thallium		(L) SW6010
Zinc		(L) SW6010
Mercury	Manual Cold Vapor Technique	(L) SW7470 (S) SW7471
Free Liquids	Paint Filter Liquids Test.	(S) SW9095

[1] "A" refers to Sampling and Analysis Methods for Hazardous Waste Combustion, EPA-600/8-84-002, February 1984.
"ASTM" refers to American Society for Testing Material Standards.
"SW" refers to Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, 3rd Edition, EPA, November 1986.
"L" refers to liquid waste.
"S" refers to solid waste.

[2] Methods for cyanide and sulfide gas generation are pending. SW-846 methods will be used when they become available. Methods recommended by the EPA will be used in the interim.

[3] If TCLP ~~EP Toxicity and other~~ analyses do not permit identification of an unknown chemical waste, digested metal samples (per SW3020) will be analyzed for the metals noted.

TABLE A-4
ESTABLISHED EXPLOSIVES AT TA-16
NOMINAL COMPOSITIONS

Name or Code	Composition
A1 AMFO	Ammonium~~Amonium~~ nitrate/fuel oil/aluminum power
AN	Ammonium nitrate
AMFO	Ammonium nitrate/fuel oil
Baratol	76 wt% Barium nitrate/24 wt% TNT
BDNPA	Bis(dinitropropyl) acetal
BDNPF	Bis(dinitropropyl) formal
Black powder	74 wt% Potassium nitrate/15.6 wt% charcoal/10.4 wt% sulfur
Boracitol	60 wt% Boric acid/40 wt% TNT
BTX	5,7-Dinitro-1-picrylbenzotriazole
Composition A-3	91 wt% RDX/9 wt% beeswax
Composition A-4	97 wt% RDX/3 wt% beeswax
Composition A-5	98.5 wt% RDX/1.5 wt% beeswax
Composition B and B-3	60 wt% RDX/40 wt% TNT
Composition C-3	88 wt% RDX/12 wt% wax
Composition C-4	91 wt% RDX/2.1 wt% polyisobutylene/1.6 wt% motor oil/5.3 wt % de(2-ethylhexyl) sebacate
Cyclotol, 75/25	75 wt% RDX/25 wt% TNT
Cyclotol, 70/30	70 wt% RDX/30 wt% TNT
DATB	Diaminotrinitrobenzene
DBA-1[a]	AN/$NaNO_3$/TNT/H_2O/thickener

TABLE A-4
ESTABLISHED EXPLOSIVES AT TA-16
NOMINAL COMPOSITIONS
(continued)

Name or Code	Composition
Datasheet C	63 wt% PETN/8 wt% NC/29 wt% elastomeric binder
Datasheet D	75 wt% PETN/25 wt% elastomeric binder
	NOTE: Although this material may be red in color, it is an explosive and not an inert material.
DINGU	Dinitroglycoluril
DNPA	2,2-Dinitropropyl acrylate polymer
DNT	Dinitrotoluene
EDC-8[b]	76 wt% PETN/24 wt% Silicone rubber, MS 2420
EDC-28[c]	94 wt% RDX/6 wt% FPC 461
EDC-32[d]	85 wt% HMX/15 wt% Viton A
EDC-37[e]	91 wt% HMX/1 wt% nitrocellulose/8 wt% K-10 liquid
EDC-38[f]	94.5 wt% HMX/3.5 wt% K-10 Liquid/2 wt% Polyurethane
HBX-1	40 wt% RDX/38 wt% TNT/17 wt% Al/5 wt% Wax/0.5 wt% $CaCL_2$
High Energy Propellants[g]	Solid propellants generally used in missile systems
HMX	Cyclotetramethylenetetranitramine
HNS	Hexanitrostilbene~~Hezanitrostilbene~~
K-10[h]	65.3 wt% dinitroethylbenzene/34.7 wt% trinitroethylbenzene
LX-04	85 wt% HMX/15 wt% Viton A
LX-07	90 wt% HMX/10 wt% Viton A

TABLE A-4
ESTABLISHED EXPLOSIVES AT TA-16
NOMINAL COMPOSITIONS
(continued)

Name or Code	Composition
LX-14	95.5 wt% HMX/4.5 wt% Estane 5702 F-1
Methane/oxygen[h]	Explosive mixtures of methane and oxygen gases
NC	Nitrocellulose, cellulose nitrate
Nitromethane	Nitromethane
NQ	Nitroquanidine
NTO	1,2,4-nitro-triazole-5-one
Octol	75 wt% HMX/25 wt% TNT
PBX-9001	90 wt% RDX/8.5 wt% polystyrene~~wt%polystyrene~~ / 1.5 wt% dioctyl phthalate
PBX-9007	90 wt% RDX/0.4 wt% polystyrene~~wt%polystyrene~~ / 0.5 wt% dioctyl phthalate/0.4 wt% resin
PBX-9010	90 wt% RDX/10 wt% Kel-F 3700 elastomer
PBX-9011	90 wt% HMX/10 wt% Estane 5703 F-1
PBX-9205	92 wt% RDX/6 wt% polystyrene/2 wt% dioctyl phthalate
PBX-9206	92 wt% HMX/8 wt% Kel-F 3700 elastomer
PBX-9401	94.2 wt% RDX/3.6 wt% polystyrene/2.2 wt% trioctyl phosphate
PBX-9404	94 wt% HMX/3 wt% nitrocellulose/3 wt% chloroethyl phosphate
PBX-9405	94 wt% RDX/3 wt% nitrocellulose/3 wt% chloroethyl phosphate
PBX-9407	94 wt% RDX/6 wt% Exon 461
PBX-9501	95 wt% HMX/2.5 wt% Estane/2.5 wt% BDNPA/F
PBX-9502	95 wt% TATB/5 wt% Kel-F 800

TABLE A-4
ESTABLISHED EXPLOSIVES AT TA-16
NOMINAL COMPOSITIONS
(continued)

Name or Code	Composition
PBX-9503	80 wt% TATB (Class 2)/15 wt% HMX (Class 2)/5 wt% Kel-F 800
PBIW-113	88 wt% HMX/12 wt% rubber/plasticizer binder
Pentolite	50 wt% PETN/50 wt% TNT
PETN	Pentaerythritol tetranitrate
Picric Acid	Du Pont 85 wt% pure
PYX	2,6-Bis(picrylamino)-3,5-dinitropyridine
RDX	Cyclonite, cyclotrimethylenetrinitramine
Smokeless Powder (Single Base)	Standard military grades. Single or multi-perforated ~~multi-perforated~~ grains of colloided nitrocellulose. Stablizers, placticizers, inorganic nitrates, and other modifying agents may also be present.
Smokeless Powder (Double Base)	Standard military grades. Single or multi-perforated~~multi-perforated~~ grains of colloided nitrocellulose containing nitroglycerine or nitroglycol. Stabilizers, plasticizers, inorganic nitrates, and other modifying agents may also be present.
STRATABLAST C[a]	Slurry blasting explosive
TAGN[h]	Triaminoguanidine nitrate
TAL-1005E[a]	Slurry blasting explosive
TATB	Triaminotrinitrobenzene
Tetryl	2,4,6-Trinitrophenylmethylnitramine
TNS	Trinitrostilbene
TNT	Trinitrotoluene

TABLE A-4
ESTABLISHED EXPLOSIVES AT TA-16
NOMINAL COMPOSITIONS
(continued)

Name or Code	Composition
TNT/NC	80 wt% TNT/20 wt% NC
Tritonal	80 wt% TNT/20 wt% aluminum powder
XTX-8003	80 wt% Recrystallized PETN/20 wt% Sylgard 182
XTX-8004	80 wt% RDX/20 wt% Sylgard 182

[a] For transportation only to and from DX ~~M~~ and ESA ~~WX~~ Division Groups~~GRoups~~ and storage by Group~~group~~ ESA-3~~WX-3~~.
[b] EDC-8 is the United Kingdom's version of XTX-8003.
[c] EDC-28 is the United Kingdom's version of PBX-9407.
[d] EDC-32 is the United Kingdom's version of LX-04.
[e] For shipping, storage, and experimental evaluation of quantities less than 5 g and for assembly of finished charges into test devices only.
[f] For shipping, storage, and analytical evaluation of molding powder and assembly of finished pieces into test devices.
[g] After approval by the Explosives Development Committee.
[h] For shipping, storage, and experimental evaluations on less than 5-g quantities.

FIGURE A-1

~~CHEMICAL~~ WASTE DISPOSAL REQUEST FORM

Los Alamos
National Laboratory

Chemical Waste Disposal Request

This form is used to request disposal of chemical and radioactive wastes. Mail completed form to Waste Services Group at MS J579

Waste Services Use Only

Account Information | Name (Print) | Telephone | Z Number | Date

Item Id	Waste Profile Number	Process ID	Shipping Container Information					Waste Information					Description
			Type	Volume	Unit	Tare Weight	Unit	Volume	Unit	Weight	Unit		

Container Types
01 - Bulk (unpackaged)
02 - Metal Drum
03 - Fiber or Plastic Drum
04 - Plastic Bottle or Container
05 - Glass Bottle or Container
06 - Plastic Bag
07 - Fiber or Plastic Box
08 - Wooden Box
09 - Metal Box
10 - Portable Tank
11 - Cylinder
12 - Bread Cask
13 - Other (Specify in Description)

Units for Volume
G - Gallons
L - Liters
F - Cubic Feet
M - Cubic Meters
O - Fluid Ounce
P - Pint
Q - Quart

Units for Weight
P - Pound
K - Kilograms
G - Grams
O - Ounce
T - Tons

Waste Accumulation *(Check all that apply)*
☐ < 90 Day Storage Area (Start Date: _____)
☐ Satellite Storage Area (Approximate Volume: _____)
☐ Rad Dumpster No: _____
☐ Security Area

TA
Building
Room

CERTIFICATION STATEMENT: To the best of my knowledge, 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.

Printed Name | Signature | Z Number | Date

Form 1541 (03/95)

FIGURE A-1

~~CHEMICAL~~ WASTE DISPOSAL REQUEST FORM
(continued)

Item Id	C/NC	Health Physics Information: Container Surface (mrem/hr)	Health Physics Information: 1 Meter Dose (mrem/hr)	Package Surface Contamination (DPM/100 sq cm): Alpha	Package Surface Contamination (DPM/100 sq cm): Beta-Gamma	Radionuclide	Amount	Unit	Uncertainty
							E		E
							E		E
							E		E
							E		E
							E		E
							E		E
							E		E
							E		E
							E		E
							E		E
							E		E
							E		E
							E		E
							E		E
							E		E
							E		E
							E		E
							E		E
							E		E
							E		E
							E		E
							E		E
							E		E
							E		E
							E		E

C - Compactible NC - Non-compactible

Units for Activity: C - Curie M - Grams L - Curies/liter

EPA's Chemical Compatibility Chart

EPA-600/2-80-076 April 1980
A METHOD FOR DETERMINING THE COMPATIBILITY OF CHEMICAL MIXTURES

Please Note: This chart is intended as an indication of some of the hazards that can be expected on mixing chemical wastes. Because of the differing activities of the thousands of compounds that may be encountered, it is not possible to make any chart definitive and all inclusive. It cannot be assumed to ensure compatibility of wastes because wastes are not classified as hazardous on the chart, nor do any blanks necessarily mean that the mixture cannot result in a hazard occurring. Detailed instructions as to hazards involved in handling and disposing of any given waste should be obtained from the originator of the waste.

CODE	CONSEQUENCE
H	Heat Generation
F	Fire
G	Innocuous and non-flammable gas generation
GT	Toxic Gas formation
GF	Flammable Gas formation
E	Explosion
P	Violent Polymerization
S	Solubilization of toxic substance
U	May be hazardous, but Unknown

#	REACTIVITY GROUP NAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	101	102	103	104	105	106	107
1	Acids, Mineral, Non-oxidizing	1																																								
2	Acids, Mineral, Oxidizing		2																																							
3	Acids, Organic		G H	3																																						
4	Alcohols and Glycols	H	H F	H P	4																																					
5	Aldehydes	H P	H F	H P		5																																				
6	Amides	H	H GT				6																																			
7	Amines, Aliphatic and Aromatic	H	H GT	H		H		7																																		
8	Azo Compounds, Diazo Compounds and Hydrazines	H G	H GT	H G	H G	H			8																																	
9	Carbamates	H G	H GT						G H	9																																
10	Caustics	H	H	H		H				H G	10																															
11	Cyanides	GT GF	GT GF	GT GF					G			11																														
12	Dithiocarbamates	H,F GF	H,F GF	H,GT GF		GF GT		U	H G				12																													
13	Esters	H	H F						H G		H			13																												
14	Ethers	H	H F												14																											
15	Fluorides, Inorganic	GT	GT	GT												15																										
16	Hydrocarbons, Aromatic		H F														16																									
17	Halogenated Organics	H GT	H,F GT					H GT	H G		H GF	H						17																								
18	Isocyanates	H G	H,F GT	G	H P			P	H G		H,P G	H G	U						18																							
19	Ketones	H	H F						H G		H	H								19																						
20	Mercaptans and Other Organic Sulfides	GT GF	H,F GT						H G									H	H	H	20																					
21	Metals, Alkali and Alkaline Earth, Elemental	H,F GF	H,F GF	H,F GF	H,F GF	H,F GF	GF H	GF H	GF H	GF H	GF H	GF H	GF,H	GT	GF H			H E	GF H	GF H	GF H	21																				
22	Metals, Other Elemental & Alloys as Powders, Vapors, or Sponges	H,F GF	H,F GF	G F					H,F GT	U	GF H							H E	GF H		H,F GF		22																			
23	Metals, Other Elemental & Alloys as Sheets, Rods, Drums, etc.	H,F GF	H,F GF						H,F G									H F						23																		
24	Metals and Metal Compounds, Toxic	S	S	S			S	S			S														24																	
25	Nitrides	GF HF	H,F E	H GF	H,E GF	GF H			U	H G	U	GF H	GF	H				GF H	U	GF H	GF H	E				25																
26	Nitriles	H,GT GF	H,F GT	H							U											H P			S	GF H	26															
27	Nitro Compounds, Organic		H,F GT			H					H E											H,E GF				H,E GF		27														
28	Hydrocarbons, Aliphatic, Unsaturated	H	H F			H																	H E						28													
29	Hydrocarbons, Aliphatic, Saturated		H F																											29												
30	Peroxides and Hydroperoxides, Organic	H G	H E		H F	H G		H GT	H,F E	H,F GT		H,E GT	H,F	GT				H E	H E	E	H,F GT	H E	H G		H G	H,E GF	H,P GT		H P		30										
31	Phenols and Cresols	H	H F						H G										H P			GF H				GF H					H	31									
32	Organophosphates, Phosphothioates, Phosphodithioates	H GT GT	H						U		H E											H									U		32									
33	Sulfides, Inorganic	GF	HF GF	GT		H			E										H												H GT			33								
34	Epoxides	H P	H P	H P	H P	U		H P	H P		H P	H P	U								H P	H P	H P		H P	H P					H P	H P	U	H P	34							
101	Combustible and Flammable Materials, Miscellaneous	H G	H,F GT																			H,F G				H,F GF					H,F GT					101						
102	Explosives	H E P	H E P	H E P					H E P		H E P	P			H E							H E P	H E P	H E P	E P	E P					H E P	H E P		H E P	H E	H E	102					
103	Polymerizable Compounds	H	H	H					H P		H	H	U									H	H	H	H	H					H	H		H			H E	103					
104	Oxidizing Agents, Strong	H GT		H GT	H F	H F	H,F GT	H,F GT	H E	H,F GT		H,E GT	H,F	GT	H F	H F		H F	H GT	H,F GT	H GT	H,F E	H,F E	H F		H,F E	H,F GT	H E	H F	H F	H G	H F	H,F GT	H,F GT	H G	H,F E	H,F GT	104			
105	Reducing Agents, Strong	H	H,F	H	H,F	H,F	H	H G				H GT	H	F			H,F E	H E	H GF	H GF	H GF					H GF	H E				H E	H H	H,F GF	H,F GT		H	H GF	H E	H,F GF	H,F E	105		
106	Water and Mixtures Containing Water	H	H						G										H G			H GF	H GF		S	H GF								GT GF							GF GT	106	
107	Water Reactive Substances	<---EXTREMELY REACTIVE! DO NOT MIX WITH ANY CHEMICAL OR WASTE MATERIAL! EXTREMELY REACTIVE!--->																																								107

FIGURE A-2
HAZARDOUS WASTE COMPATIBILITY CHART

WASTE ANALYSIS PLAN

PERMIT ATTACHMENT A.2
NM0890010515-1

WASTE ANALYSIS PLAN FOR TRANSURANIC MIXED WASTE

LIST OF DEFINITIONS

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

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

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

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

Homogeneous waste - Waste that is of uniform composition.

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

Mixed waste - Waste that has both a hazardous waste component (see definition) and a radioactive waste component.

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

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

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

Radioactive Solid Waste Disposal Code - A waste identification system used exclusively at LANL to categorize TRU and TRU mixed waste forms generated by various on-site facilities.

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

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

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

LIST OF DEFINITIONS
(Continued)

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

TRUPACT-II Content (TRUCON) Code - A waste identification system developed by DOE to provide a consistent waste description for all TRU and TRU mixed waste generated throughout all of DOE's facilities. These codes are intended to assist DOE in establishing the characteristics of TRU and TRU mixed waste to be certified for transportation to the Waste Isolation Pilot Plant.

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

LIST OF REGULATORY REFERENCES AND CORRESPONDING WASTE ANALYSIS PLAN LOCATION

Error! Bookmark not defined.RCRA[a] Regulatory Reference 20 NMAC 4.1[b], Subparts V, VIII, and IX	Description of Requirement	Location in the Waste Analysis Plan
264.13(a)(1)	Analysis information adequate to meet 20 NMAC 4.1, Subparts V and VIII, Parts 264 and 268, revised November 1, 1995, storage requirements	A.2.2 and A.2.3
264.13(a)(2)	Waste analysis data	A.2.3.2
264.13(a)(3)	Repeat analysis	A.2.3.1, A.2.5, and A.2.5.2
264.13(a)(4)	Inspection and analysis after each movement of hazardous waste received from off-site	Not applicable (NA)
264.13(b)	Written waste analysis plan	Entire plan
264.13(b)(1)	Parameters and rationale for selection	A.2.2.1 and A.2.2.2 and Table A.2-3
264.13(b)(2)	Test methods	A.2.3, A.2.3.3, A.2.3.3.1, A.2.3.3.2, A.2.3.3.3, A.2.4, and Tables A.2-3 and A.2-4
264.13(b)(3)	Representative sample collection method	A.2.3.3, A.2.3.3.3, A.2.3.3.4, and A.2.3.3.5
264.13(b)(4)	Frequency for review or repeat of initial analysis	A.2.3.1, A.2.5.1, and A.2.5.2
264.13(b)(5)	Waste analysis information to be provided to off-site facilities	A.2.3.1, A.2.3.2, and Figure A.2-1
264.13(b)(6)	Additional waste analysis requirements	A.2.6
264.13(b)(7)	Surface impoundments exempted under 20 NMAC 4.1, Subpart VIII, 268.4(a), revised November 1, 1995	NA
264.13(c)	Inspection and analysis procedures for off-site	NA

Refer to footnotes at end of table.

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

Error! Bookmark not defined.RCRA[a] Regulatory Reference 20 NMAC 4.1[b], Subparts V, VIII, and IX	Description of Requirement	Location in the Waste Analysis Plan
	facilities	
264.13(c)(1)	Procedures for identification of each movement of waste at off-site facilities	NA
264.13(c)(2)	Sampling method for the waste to be identified at off-site facilities	NA
264.13(c)(3)	For off-site landfills: procedures to determine whether a biodegradable sorbent has been added to containers	NA
268.7(a)	Determination of whether waste is restricted from land disposal	A.2.6.3
268.7(b)	Testing requirements for treatment facilities	NA
268.7(b)(1)	Testing of treatment residues or extract of waste with concentration-based treatment standards specified in 20 NMAC 4.1, Subpart VIII, 268.41, revised November 1, 1995	A.2.6.3
268.7(b)(2)	Testing of treatment residues pursuant to 20 NMAC 4.1, Subpart VIII, 268.32, revised November 1, 1995	NA
268.7(b)(3)	Testing of treatment residues of waste with concentration-based treatment standards specified in 20 NMAC 4.1, Subpart VIII, 268.43, revised November 1, 1995	A.2.6.3
268.7(b)(4)	Notice requirements	A.2.6.3 and Figure A.2-2
268.7(b)(5)	Certification of compliance with 20 NMAC 4.1, Subpart VIII, Part 268, revised November 1, 1995	A.2.6.3
268.7(b)(6)	Notice and certification requirements for treatment facilities that ship treatment residues to a different treatment, storage, or disposal (TSD) facility	NA

Refer to footnotes at end of table.

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

Error! Bookmark not defined.RCRA[a] Regulatory Reference 20 NMAC 4.1[b], Subparts V, VIII, and IX	Description of Requirement	Location in the Waste Analysis Plan
268.7(b)(7)	Notice requirement for recycling facilities using materials in a manner constituting disposal	NA
268.7(c)(1)	Recordkeeping requirements for land disposal facilities	NA
268.7(c)(2)	Testing requirements for land disposal facilities	NA
268.7(d)(1)	Notification requirements for excluded debris (i.e., pursuant to 20 NMAC 4.1, Subpart II, 261.3, revised November 1, 1995)	NA
268.7(d)(2)	Updated notification requirements for debris	NA
268.7(d)(3)	Documentation and certification requirements for debris excluded under 20 NMAC 4.1, Subpart II, 261.3(e)(1), revised November 1, 1995	NA
270.14(b)(2)	Chemical and physical analyses	A.2.2.1, A.2.3, A.2.3.1, A.2.3.2, A.2.3.3, A.2.3.3.1, A.2.3.3.2, A.2.3.3.3, Figure A.2-1, and Tables A.2-3 and A.2-4

Refer to footnotes at end of table.

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

[a] Resource Conservation and Recovery Act

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

ATTACHMENT A.2
WASTE ANALYSIS PLAN FOR TRANSURANIC MIXED WASTE

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

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

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

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

A.2.1 FACILITY DESCRIPTION

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

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

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

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

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

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

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

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

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

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

Tables A.2-1 and A.2-2 are organized in this hierarchical fashion, from the most general waste stream categorization scheme to the most specific waste stream identification system. As shown in Table A.2-1, the matrix parameter codes are the most general categorization scheme for TRU mixed waste. Each matrix parameter code includes specific IDCs, and each IDC in turn may include a number of TRUCON and RSWD codes. Each IDC, TRUCON code, and RSWD code in LANL's TRU mixed waste inventory is

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

A.2.1.1.1 LANL IDCs

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

IDC 001

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

IDC 002

IDC 002 waste is concreted (cemented) aqueous waste, which consists of caustic sludge stabilized with Portland cement to form a noncorrosive solid monolith. The sludge is a residue from the treatment of blended acidic and caustic aqueous liquid radioactive waste with calcium hydroxide, ferric sulfate, and a flocculation aid. This treatment produces a thin sludge (approximately 25 percent solids) that is always alkaline and is compatible with Portland cement. Final cemented waste monoliths are produced by tumbling 55-gallon steel drums containing empirically determined quantities of sludge, Portland cement, vermiculite, and sodium silicate.

IDC 003

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

IDC 004

Combustible waste (e.g., paper, rags, plastic, rubber) comprises IDC 004, including plastic-based and

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

IDC 005 and Subgroups

IDC 005 waste consists of the following subgroups:

IDC 005

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

IDC 005(LG)

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

IDC 005(LM)

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

IDC 005(P1)

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

IDC 005(P2G)

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

IDC 005(P2S)

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

IDC 006

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

A.2.1.1.2 LANL TRUCON Codes

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

TRUCON Code LA 111A

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

TRUCON Code LA 211A

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

TRUCON Code LA 111B

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

TRUCON Code LA 211B

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

TRUCON Code LA 114A

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

TRUCON Code LA 115A

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

TRUCON Code LA 116A

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

TRUCON Code LA 116B

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

TRUCON Code LA 116C

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

TRUCON Code LA 116D

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

TRUCON Code LA 116E

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

TRUCON Code LA 117A

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

TRUCON Code LA 117B

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

TRUCON Code LA 117C

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

TRUCON Code LA 117D

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

TRUCON Code LA 117

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

TRUCON Code LA 117F

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

TRUCON Code LA 117G

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

TRUCON Code LA 118A

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

TRUCON Code LA 119A

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

TRUCON Code LA 123A

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

TRUCON Code LA 123B

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

TRUCON Code LA 124A

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

TRUCON Code LA 125A

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

TRUCON Code LA 126A

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

A.2.1.1.3 LANL RSWD Codes

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

LANL RSWD Code A10

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

LANL RSWD Code A14

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

LANL RSWD Code A15

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

LANL RSWD Code A16

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

LANL RSWD Code A17

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

LANL RSWD Code A18

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

LANL RSWD Code A19

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

LANL RSWD Code A24

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

LANL RSWD Code A25

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

LANL RSWD Code A26

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

LANL RSWD Code A27

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

LANL RSWD Code A28

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

LANL RSWD Code A29

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

LANL RSWD Code A30

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

LANL RSWD Code A31

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

LANL RSWD Code A36

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

LANL RSWD Code A40

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

LANL RSWD Code A46

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

LANL RSWD Code A47

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

LANL RSWD Code A50

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

LANL RSWD Code A52

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

LANL RSWD Code A55

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

LANL RSWD Code A60

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

LANL RSWD Code A61

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

LANL RSWD Code A75

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

LANL RSWD Code A76

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

LANL RSWD Code A80

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

LANL RSWD Code A90

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

LANL RSWD Code A95

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

A.2.1.2 Description of TRU Mixed Waste Management Units

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

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

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

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

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

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

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

A.2.2 WASTE ANALYSIS PARAMETERS

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

A.2.2.1 Proposed Analytical Parameters and Characterization Methods

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

- Physical waste form characterization through real-time radiography (RTR) and visual examination to verify the absence of free liquids

- Headspace gas sampling to determine the presence of volatile organic compounds (VOC) in container headspace

- Hazardous constituent sampling to determine the presence and concentrations of:

  - RCRA-regulated metals
  - RCRA-regulated VOCs
  - RCRA-regulated semivolatile organic compounds (SVOC)

A.2.2.2 Criteria and Rationale for Parameter Selection

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

A.2.3 CHARACTERIZATION OF TRU MIXED WASTE

The characterization of TRU mixed waste managed at LANL can be divided into general approaches based on when the waste was generated and the differences involved in sampling the waste. Generally, the distinction is made between legacy, existing, and future TRU mixed waste to define the quality of

information available on the waste and the subsequent need for additional sampling and analysis. A secondary distinction between heterogeneous and homogeneous waste, as reflected in the matrix parameter codes, is made to determine the availability or appropriateness of sampling procedures.

As provided in the List of Definitions, *legacy* TRU mixed waste is waste generated before the LANL Waste Profile Form (WPF) was implemented in May 1991 (see Section A.2.3.1). Legacy TRU mixed waste has been characterized with qualitative assessments to evaluate the presence or absence of hazardous constituents. These assessments include examining past records and databases, conducting interviews with waste generators, and observing and evaluating similar waste-generating processes. *Existing (or currently generated)* TRU mixed waste (i.e., waste generated since May 1991) is characterized using LANL's WPF. *Future* TRU mixed waste will be characterized using both LANL's WPF and a certification program (see Section A.2.3.2).

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

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

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

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

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

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

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

A.2.3.1 Waste Profiling System

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

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

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

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

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

A.2.3.2 Acceptable Knowledge

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

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

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

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

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

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

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

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

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

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

- Waste packaging logs.

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

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

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

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

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

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

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

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

- Sampling and analysis data from comparable waste streams.

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

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

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

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

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

A.2.3.3 Sampling and Analysis for TRU Mixed Waste

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

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

A.2.3.3.1 Real-Time Radiography

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

A.2.3.3.2 Visual Examination

Waste contents of select TRU mixed waste containers will be visually examined to confirm the RTR results. This visual examination will also verify aspects of acceptable knowledge amenable to visual confirmation. For example, the visual examination will verify the physical characteristics of the waste and the associated matrix parameter code (i.e., Matrix Parameter Code 3000, 4000, or 5000). In addition, the visual examination will verify the presence of certain hazardous constituents, such as lead in lead bricks or lead-lined gloves. These types of visual confirmations will further verify or refute the overall acceptable knowledge used to characterize the waste stream.

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

A.2.3.3.3 Headspace Gas Sampling and Analysis

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

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

The drum headspace (i.e., the space directly under the drum lid) will be sampled when filters are inserted into unvented drums. All previously unvented drums will be sampled for flammable gases, and a statistically selected subset of these drums will be sampled for selected VOCs in order to assure that health and safety criteria for safe storage of these drums are met. The statistical basis for selection of drums to be sampled is described in Section A.2.3.3.5. Headspace gas sampling and analysis also serves to confirm the presence of RCRA-regulated hazardous constituents. Headspace gas sampling will not be relied upon to prove the absence of a hazardous constituent in a waste.

The precision, accuracy, and representativeness of these headspace gas samples will be evaluated for adherence to the program's QA objectives through analysis of field QC samples and adherence to QC practices.

In order to meet the proposed characterization requirements in the WIPP QAPP (DOE, 1994), the headspace of previously vented drums in retrievable storage will be sampled and analyzed as the drums are characterized for shipment to WIPP. The sampling of vented drums may include samples from inner layers of confinement (55-gallon polyethylene bag headspace and innermost layers of confinement headspace) for a statistically selected subset of drums undergoing visual examination.

Analytical methods for the determination of VOCs in the headspace of TRU mixed waste containers must meet technical performance criteria, be consistent with regulatory guidance, and be compatible with the operational constraints associated with the analysis of actinide-contaminated materials. Methods for the collection of headspace gases are based on "Test Methods for Evaluating Solid Waste" (SW-846) (EPA, 1992) and on the "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air" (EPA, 1988). DOE has modified the EPA methods to accommodate the characteristics of TRU mixed waste headspace gas samples. These methods include SA 010 and SA 011 (DOE, 1994).

A.2.3.3.4 Solid Waste Sampling and Analysis

The following describes the proposed methods for collecting samples of homogeneous TRU mixed waste classified as solid process residues or soils. Sampling protocol is based on sampling methods similar to those approved by EPA for solid waste and soil sampling in SW-846 (EPA, 1992); in "Standard Practice for Thin-Walled Tube Sampling of Soils" (American Society for Testing and Materials [ASTM], 1983); and in "Standard Practice for Sampling Waste and Soils for Volatile Organic Compounds" (ASTM, 1991). These methods are designed to ensure that representative waste samples are consistently collected and transferred to the responsible laboratory in a manner that maintains sample integrity. The statistical basis for sampling is described in Section A.2.3.3.5.

The TRU mixed waste classified as solid process residues or soils is packaged in either 55-gallon drums or in smaller containers within 55-gallon drums. Drums may contain TRU mixed waste within a 55-gallon polyethylene bag or may consist of up to 20 or more small containers within a 55-gallon polyethylene bag. For drums selected for sampling that contain multiple small containers, one of the small containers will be randomly selected for sampling. Waste parameters for which solid process residues and soils may be analyzed are listed in Table A.2-3.

To accomplish sampling of these wastes, the techniques described below have been developed for sample and subsample collection. The sampling techniques are designed to obtain a representative sample from the container (e.g., 55-gallon drum, 1-gallon polyethylene bottle) and the subsampling techniques are designed to obtain a representative subsample from the sample. Subsampling is conducted to provide laboratories the minimum amount of required sample, thus minimizing the quantity of investigation-derived waste.

The methods used to collect samples of TRU mixed waste classified as solid process residues and soils from 55-gallon drums and smaller containers must be such that the samples are representative of the waste from which they were taken. For 55-gallon drums containing solid process residues and soils, a sample must be collected as a core that is representative of the waste along the entire depth of the waste in the drum.

Sample Core Collection

Coring tools must be used to collect cores of solid process residues and soils from 55-gallon drums and smaller containers in a manner that minimizes disturbance to the core. A rotational coring tool (i.e., a tool that is rotated longitudinally), similar to a drill bit, must be used to cut, lift the waste cuttings, and collect a core sample from containers of waste. For solid process residues and soils that are relatively soft, nonrotational coring tools may be used in lieu of a rotational coring tool.

Rotational coring tools (i.e., lightweight augers) and nonrotational coring tools (i.e., thin-walled samplers) have each been tested for their ability to collect a vertical core of simulated solidified waste contained in 55-gallon drums and 1-gallon polyethylene bottles, as described in "Idaho National Engineering Laboratory

Simulated Solidified Transuranic Waste Sampling Program" (EG&G, 1994). The rotational coring tool used at the INEL has demonstrated core recoveries greater than 75 percent for soft simulated wastes and greater than 94 percent for hard simulated waste. The sampling tool has been designed to minimize the transfer of frictional heat to the core, thereby minimizing potential loss of VOCs (DOE, 1994). The nonrotational coring tool has demonstrated core recoveries greater than 88 percent for soft simulated wastes. LANL will use coring tools similar to those developed at the INEL.

Subsample Collection

To obtain representative subsamples, subsampling of the sample core is required. Subsampling must be conducted as soon as possible after sample core collection to minimize the loss of VOCs. If a substantial delay (e.g., several minutes) is expected between sample core collection and subsampling, the sample core must remain in the sleeve and the sleeve must be capped at each end. Subsamples for VOCs must be collected prior to extruding the sample core from the sleeve. The sampling location must be randomly selected along the long axis of the sleeve and access to the waste must be gained by making a perpendicular cut through the sleeve and the waste it contains.

A.2.3.3.5 Statistical Approach for Headspace Gas and Solid Waste Sampling

A statistical approach will be used to select containers for headspace gas sampling. The same approach will be used for solid waste sampling and analysis of legacy and existing solid process residue and soil waste streams. This approach relies on the premise that the waste containers have been separated into waste streams on the basis of process knowledge and, thus, represent populations that contain similar waste. Drums are first segregated into waste streams based on existing characterization information. An initial number of drums is selected from each waste stream for sampling and analysis. For waste streams consisting of ten drums or more, ten drums are selected at random for sampling. For waste streams consisting of ten drums or less, each drum is sampled. For waste streams with less than three drums, a total of three samples is taken. The analytical results from the initial round of sampling are used to calculate upper and lower confidence limits for the mean concentrations of RCRA-regulated constituents. Those limits are compared to the RTLs for the constituents. If a hazardous waste determination cannot be made based on the results from the initial round of sampling, an additional number of drums is selected. The number of additional drums for the second round of sampling depends on the variance of the analytical results from the first round. Drums are sampled to a maximum of all of the drums in the waste stream or 40 drums, whichever is smaller.

The objective is to classify specific waste streams as hazardous or nonhazardous by determining the average, or mean, and associated variance of the concentration of RCRA-hazardous constituents in the waste stream. Confidence limits for the mean concentration will be used in comparisons to RCRA regulatory limits so that a predetermined level of confidence can be associated with the decision on whether a waste stream is hazardous for a RCRA characteristic. Waste containers within each waste stream and sample locations within each container will be randomly selected to ensure that the analytical results provide an unbiased estimate of the true mean contaminant concentration for each waste stream.

A.2.3.4 Sample Handling, Preservation, and Storage

Table A.2-5 presents SW-846 requirements regarding sample containers, preservation techniques, and holding times associated with sample collection. Adherence to these requirements will occur to ensure that sampling and analysis meet quality objectives for data.

A.2.4 ANALYTICAL LABORATORY SELECTION AND ANALYTICAL METHODS

Analytical laboratories at LANL and/or approved subcontractor laboratories will perform all of the detailed qualitative and quantitative chemical analyses specified in Table A.2-4 of this WAP. These laboratories must have:

- The capability of handling radioactive material/waste
- A documented comprehensive QA/QC program
- Technical analytical expertise
- A document control/records management plan
- The capability to perform data reduction, validation, and reporting.

The selection and development of analytical testing methods for LANL TRU mixed waste streams were based on the following considerations:

- The physical form of the waste
- Analytes of interest
- Required detection limits (e.g., regulatory thresholds)
- Information requirements (e.g., verify compliance with LDR treatment standards, waste classification).

Collectively, these factors contributed to the selection of the analytical methods specified in Table A.2-4. Qualified analytical laboratories at LANL and/or approved subcontractor laboratories that meet the above criteria will analyze TRU mixed waste samples for RCRA-regulated hazardous constituents (VOCs, SVOCs, and metals) and characteristics according to SW-846 or documented and approved equivalent methods.

A.2.5 VERIFICATION ANALYSIS FOR TRU MIXED WASTE

Analysis may be performed to verify the accuracy of the initial waste characterization, to verify that applicable treatment standards have been met, when there is a change in a waste-generating process, when the generator requests a review, or when analytical results indicate a change in a waste stream. Verification analysis for TRU mixed waste will be conducted at LANL's or an approved subcontractor's laboratory facilities. All verification analyses will be conducted in conformance with appropriate EPA-approved methods. The type of verification analysis that will be performed to obtain waste characterization information depends upon the matrix parameter code of the waste stream and whether the waste is existing or future TRU mixed waste. Verification analysis methodologies for these different types of waste are presented below.

A.2.5.1 Verification of Existing TRU Mixed Waste

Characterization for existing homogeneous TRU mixed waste streams (Matrix Parameter Codes 3000 and 4000) will not require verification, because the statistical basis for initial characterization provides statistical confidence in determining whether a waste is hazardous as defined by RCRA. Process knowledge documentation applicable to existing heterogeneous TRU mixed waste streams (Matrix Parameter Code 5000) will be qualitatively verified by RTR of waste containers (see Section A.2.3.3.1), visual

examination of the contents of select waste containers (see Section A.2.3.3.2), and headspace gas sampling while venting (see Section A.2.3.3.3).

A.2.5.2 Verification of Future TRU Mixed Waste

Future homogeneous TRU mixed waste streams that have been characterized using LANL's WPF and a certification program will undergo verification sampling and analysis at a frequency of at least 1 in 100 waste streams per year. This verification will be used to support waste characterization information provided on the WPF, as well as the certification program, for the waste stream. Analytical results that show regulated constituents present at concentrations outside the ranges documented on the WPF are cause for rejection of the WPF and will require investigation and recharacterization of the waste stream. The recharacterization will include sampling and analysis sufficient to establish the range of regulated constituents potentially present in the waste stream.

Future heterogeneous TRU mixed waste streams will undergo qualitative verification of acceptable knowledge through RTR, visual examination, and headspace gas sampling, as described in Section A.2.5.1. Both homogeneous and heterogeneous waste streams will undergo qualitative verification through review of documentation supporting waste characterization as part of a certification program.

A.2.6 SPECIAL PROCEDURAL REQUIREMENTS

Additional waste management requirements specific to ignitable, reactive, and incompatible wastes, as well as compliance with LDR, are described below.

A.2.6.1 Procedures for Ignitable and Reactive Wastes

When ignitable or reactive waste streams are stored at LANL, specific waste management procedures for ignitable and reactive waste will be followed pursuant to 20 NMAC 4.1, Subpart V, 264.17, revised November 1, 1995. At a minimum, ignitable and reactive wastes will be separated during storage.

A.2.6.2 Procedures for Incompatible Wastes

Pursuant to 20 NMAC 4.1 Subpart V, 264.17, revised November 1, 1995, specific waste management procedures for incompatible wastes are described as follows. Incompatible wastes are kept separated during storage. Waste containers holding potentially incompatible free liquids will be stored on self-containment pallets to maintain separation. Because incompatible wastes are and will be separated and potentially incompatible free liquids will be stored on self-containment pallets, any potential for release and reaction with other wastes or materials is and will be minimized.

A.2.6.3 Procedures to Ensure Compliance with LDR Requirements

In accordance with LDR requirements, waste to be shipped off site may need to be analyzed to determine whether it meets the applicable LDR treatment standards in 20 NMAC 4.1, Subpart VIII, Part 268, Subpart D, revised November 1, 1995. If (1) it is known whether the wastes meet applicable LDR treatment standards based on acceptable knowledge or (2) waste will be transported to a RCRA-permitted waste management facility operating in conformance with a no-migration determination, then sampling and analysis to certify LDR compliance is not necessary for affected waste. Sampling and analysis will be conducted in accordance with 20 NMAC 4.1, Subpart VIII, Part 268, revised November 1, 1995, only to certify that the waste meets LDR treatment standards. Each waste for which a treatment standard has been

established will be evaluated for the applicable parameters in 20 NMAC 4.1, Subpart VIII, Part 268, Subpart D, revised November 1, 1995. All analytical results completed in support of LDR requirements will be retained within the facility operating record. LDR determinations will be documented on LANL's Land Disposal Restrictions Notification Form (Figure A.2-2).

TABLE A.2-1
CROSS REFERENCE OF MATRIX PARAMETER CODES AND WASTE IDENTIFICATION CODES

Matrix Parameter[a] Code/ Description	Item Description Codes (IDCs)	Matrix Category (Waste Description)	TRUPACT-II Content and Radioactive Solid Waste Disposal Codes	Waste Descriptions
3000-Solid Process Residues	002	Stabilized aqueous waste	LA 111A/211A	Concreted/cemented aqueous waste
			A76	Cement paste
	003	Stabilized aqueous waste	LA 111B/211B	Dewatered sludge
			A75	Chemical treatment sludge
	005(P2S)	Waste salts	LA 124A	Transuranic (TRU) waste salts
			A27	Nitrated solid crystallized residues
			A28	Chloride salts
			A29	Hydroxide cake
	006	Solidified inorganic process solids	LA 114A	Solidified inorganic process solids
			A24	Cemented/immobilized residues/powders
			A26	Evaporator bottoms/salts
	006	Solidified organic process solids	LA 126A	Solidified organic process solids
			A24	Cemented/immobilized residues/powders
			A25	Leached process residues
			A26	Evaporator bottoms/salts
			A29	Hydroxide cake
			A46	Reaction process crucibles and oxide residues
4000-Soils	None	Contaminated soil	A90	Contaminated soil
5000-Debris Wastes	001	Mixed metal scrap and incidental combustibles	LA 125A	Incidental combustibles and mixed metal scrap
			A30	Property-numbered (PN) equipment

TABLE A.2-1
CROSS REFERENCE OF MATRIX PARAMETER CODES AND WASTE IDENTIFICATION CODES
(continued)

Matrix Parameter[a] Code/ Description	Item Description Codes (IDCs)	Matrix Category (Waste Description)	TRUPACT-II Content and Radioactive Solid Waste Disposal Codes	Waste Descriptions
			A31	Non-PN equipment
			A36	Noncombustible building debris
			A55	Filter media
	004	Combustible waste	LA 116A-E	Combustible waste
			A14	Combustible decontamination waste
			A15	Cellulosics (e.g., paper, wood)
			A16	Plastics
			A17	Rubber materials
			A18	Combined paper/plastics/rubber
			A19	Combined noncombustible trash
			A40	Combustible hot cell waste
			A60	Other combustibles
	005	High-efficiency particulate air (HEPA) filters	LA 119A	HEPA filters
			A55	Filter media
	005(LG)	Glass waste	LA 118A	TRU glass waste
			A47	Slag and porcelain
			A95	Glass waste
5000-Debris Wastes (Continued)	005(LM)	Metal waste	LA 117A-G	TRU noncombustible/ metal waste
			A50	Metal crucibles, scrap, dies
			A52	Scrap metal

Refer to footnotes at end of table.

TABLE A.2-1
CROSS REFERENCE OF MATRIX PARAMETER CODES AND WASTE IDENTIFICATION CODES
(continued)

		A61	Other noncombustibles
		A80	Irradiation sources
005(P1)	Leaded-rubber and metal waste	LA 123A-B	TRU leaded-rubber and TRU metal waste
		A61	Other noncombustibles
005(P2G)	Graphite waste	LA 115A	TRU graphite waste
		A10	Graphite solids

[a] Information in this column was extracted from the U.S. Department of Energy (DOE), 1994, "TRU Waste Characterization Quality Assurance Program Plan," *CAO-94-1010*, Rev. B, Draft, Carlsbad Area Office, Carlsbad, New Mexico.

TABLE A.2-2
TRANSURANIC MIXED WASTE CHARACTERIZATION MATRIX[a]

Item Description Codes (IDC)	Waste Description	TRUPACT-II Content (TRUCON) Codes	Process Generating the Waste/Technical Area (TA)	Radioactive Solid Waste Disposal (RSWD) Codes/Waste Description	Basis for Hazardous Waste Designation (knowledge and/or testing)	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents in the Waste	Regulatory Limits[c] (milligrams per liter)
001	Mixed metal scrap and incidental combustibles	LA 125A	Metal equipment from decommissioning (e.g., gloveboxes, process equipment, ductwork); small volumes of combustibles from decommissioning in TA-3, TA-21, TA-39, TA-49, and TA-55, and sectioning, and packaging in TA-50-69.	A30 - Property-numbered (PN) equipment A31 - Non-PN Equipment A36 - Non-combustible building debris A55 - Filter media	Knowledge[d]	D006 D008	Cadmium Lead	1.0 5.0
002	Stabilized aqueous waste	LA 111A LA 211A	Effluent from plutonium (Pu) processing operations in TA-21 and TA-55, treated in TA-50-1 to produce the resulting concreted monolith	A76 - Cement paste	Knowledge[d]	D004 D006 D007 D008 D009 None None	Arsenic Cadmium Chromium Lead Mercury Barium hydroxide Beryllium hydroxide	5.0 1.0 5.0 5.0 0.2 None None
003	Stabilized aqueous waste	LA 111B LA 211B	Sludge from Pu processing in TA-55 is chemically treated and mixed with dry concrete in TA-50-1	A75 - Chemical treatment sludge	Knowledge[d]	D004 D006 D007 D008 D009 D010 D011	Arsenic Cadmium Chromium Lead Mercury Selenium Silver	5.0 1.0 5.0 5.0 0.2 1.0 5.0

Refer to footnotes at end of table.

TABLE A.2-2
TRANSURANIC MIXED WASTE CHARACTERIZATION MATRIX[a]
(continued)

Item Description Codes (IDC)	Waste Description	TRUPACT-II Content (TRUCON) Codes	Process Generating the Waste/Technical Area (TA)	Radioactive Solid Waste Disposal (RSWD) Codes/Waste Description	Basis for Hazardous Waste Designation (knowledge and/or testing)	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents in the Waste	Regulatory Limits[c] (milligrams per liter)
						D019	Carbon tetrachloride	0.5
						D021	Chlorobenzene	100.0
						D022	Chloroform	6.0
						F002	Spent halogenated solvents	Not Applicable (NA)
						F004 F005	Spent nonhalogenated solvents Acetone	NA
						None	Barium chloride	None
						None	Barium hydroxide	None
						None	Beryllium	None
						None	Beryllium hydroxide	None
						None	Di-n-octyl-phthalate	None
						None	Ethanol	None
						None	Methanol	None
						None	Methylene chloride	None
						None	n-Butyl alcohol	None
						None	Nickel	None
						None	Thallium	None
						None	Toluene	None
						None	Xylene	None
						None		None
004	Combustible waste	LA 116A LA 116B	Combustible solids (e.g., paper, rags, plastic,	A14 - Combustible decontamination waste A15 - Cellulosics	Knowledge[d]/	D002 D004	Hydrofluoric acid Arsenic	NA 5.0

Refer to footnotes at end of table.

TABLE A.2-2
TRANSURANIC MIXED WASTE CHARACTERIZATION MATRIX[a]
(continued)

Item Description Codes (IDC)	Waste Description	TRUPACT-II Content (TRUCON) Codes	Process Generating the Waste/Technical Area (TA)	Radioactive Solid Waste Disposal (RSWD) Codes/Waste Description	Basis for Hazardous Waste Designation (knowledge and/or testing)	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents in the Waste	Regulatory Limits[c] (milligrams per liter)
		LA 116C LA 116D LA 116E	rubber) and a small fraction of non-combustibles (e.g., metal scrap) generated from Pu processing and operations in TA-3, TA-21, TA-50, and TA-55	A16 - Plastics A17 - Rubber materials A18 - Combined paper/plastics/rubber A19 - Combined noncombustible trash A40 - Combustible hot cell waste A60 - Other combustibles	Testing[e]	D006 D008 D009 D019 D022 D028 D040 F002 F003 F005 None None None None None None	Cadmium Lead Mercury Carbon tetrachloride Chloroform Dichloroethane Trichloroethylene 1,1,1-Trichloroethane Acetone Toluene Barium chloride Beryllium Beryllium hydroxide Bromobenzene Nickel Tributyl phosphate	1.0 5.0 0.2 0.5 6.0 0.5 0.5 NA NA NA None None None None None None
005	High-efficiency particulate air (HEPA) filters	LA 119A	HEPA filters from exhaust air systems in Pu processing in TA-55	A55 - Filter media	Knowledge[d]	None	None	None
005(LG)	Glass waste	LA 118A	Glass waste (e.g., discarded labware, windows, bottles) with a small fraction of combustibles (e.g.,	A47 - Slag and porcelain A95 - Glass waste	Knowledge[d]/Testing[e]	D002 D008 D009 D019 None	Hydrofluoric acid Lead Mercury Carbon tetrachloride Barium chloride	NA 5.0 0.2 0.5 None

Refer to footnotes at end of table.

TABLE A.2-2
TRANSURANIC MIXED WASTE CHARACTERIZATION MATRIX[a]
(continued)

Item Description Codes (IDC)	Waste Description	TRUPACT-II Content (TRUCON) Codes	Process Generating the Waste/Technical Area (TA)	Radioactive Solid Waste Disposal (RSWD) Codes/Waste Description	Basis for Hazardous Waste Designation (knowledge and/or testing)	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents in the Waste	Regulatory Limits[c] (milligrams per liter)
			plastics) generated from Pu processing in TA-3, TA-21, TA-42, and TA-55			None	Barium hydroxide	None
005(LM)	Metal waste	LA 117A LA 117B LA 117C LA 117D LA 117E LA 117F LA 117G	Metal waste (e.g., motors, pumps, tools, process equipment) with a small fraction of combustible waste (e.g., plastics) generated from Pu processing in TA-3 and TA-55	A50 - Metal crucibles, scrap, dies A52 - Scrap metal A61 - Other noncombustibles A80 - Irradiation sources	Knowledge[d]/ Testing[e]	D002 D008 D019 None None	Hydrofluoric acid Lead Carbon tetrachloride Barium chloride Beryllium	NA 5.0 0.5 None None
005(P1)	Leaded-rubber and metal waste	LA 123A LA 123B	Lead-lined glovebox gloves and metal waste (e.g., motors, tools, discarded metals) generated from Pu processing in TA-55	A61 - Other noncombustibles	Knowledge[d]/Testing[e]	D002 D004 D006 D008 D009 D019 None None None	Hydrofluoric acid Arsenic Cadmium Lead Mercury Carbon tetrachloride Beryllium hydroxide Bromobenzene Nickel	NA 5.0 1.0 5.0 0.2 0.5 None None None
005(P2G)	Graphite waste	LA 115A	Discarded graphite molds, furnace equipment, and a small fraction of	A10 - Graphite solids	Knowledge[d]	D004 D006 D008	Arsenic Cadmium Lead	5.0 1.0 5.0

Refer to footnotes at end of table.

TABLE A.2-2
TRANSURANIC MIXED WASTE CHARACTERIZATION MATRIX[a]
(continued)

Item Description Codes (IDC)	Waste Description	TRUPACT-II Content (TRUCON) Codes	Process Generating the Waste/Technical Area (TA)	Radioactive Solid Waste Disposal (RSWD) Codes/Waste Description	Basis for Hazardous Waste Designation (knowledge and/or testing)	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents in the Waste	Regulatory Limits[c] (milligrams per liter)
			combustible waste generated from Pu processing in TA-55			None None	Beryllium Nickel	None None
005(P2S)	Waste salts	LA 124A	Used chloride salts from pyrochemical processes (e.g., electrorefining, molten salt extraction, salt stripping, fluoride reduction, direct oxide reduction) and a small fraction of combustible waste (e.g., plastic) generated from Pu processing in TA-55	A27 - Nitrated solid crystallized residues A28 - Chloride salts A29 - Hydroxide cake	Knowledge[d]/ Testing[e]	D004 D006 D008 D009 None None	Arsenic Cadmium Lead Mercury Beryllium hydroxide Nickel	5.0 1.0 5.0 0.2 None None
006	Solidified inorganic process solids	LA 114A	Process residue from evaporator bottoms and other discardable solutions, process-leached solids, ash, filter cakes, salts, metal oxides, and fines generated as a result of Pu processing at TA-55-4	A24 - Cemented/immobilized residues/powders A26 - Evaporator bottoms/salts	Knowledge[d]	D002 D004 D006 D007 D008 D009	Hydrofluoric acid Arsenic Cadmium Chromium Lead Mercury	NA 5.0 1.0 5.0 5.0 0.2

Refer to footnotes at end of table.

TABLE A.2-2
TRANSURANIC MIXED WASTE CHARACTERIZATION MATRIX[a]
(continued)

Item Description Codes (IDC)	Waste Description	TRUPACT-II Content (TRUCON) Codes	Process Generating the Waste/Technical Area (TA)	Radioactive Solid Waste Disposal (RSWD) Codes/Waste Description	Basis for Hazardous Waste Designation (knowledge and/or testing)	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents in the Waste	Regulatory Limits[c] (milligrams per liter)
006	Solidified organic process solids	LA 126A	Solidified process residue from evaporator bottoms and other discardable solutions, processed leached solids, ash, filter cake, salts, metal oxide, fines, etc., that are immobilized in gypsum cement, generated from processing operations in TA-55.	A24 - Cemented/immobilized residues/powders A25 - Leached process residues A26 - Evaporator bottoms/salts A29 - Hydroxide cake A46 - Reaction process crucibles and oxide residues	Knowledge[d]	D002	Hydrofluoric acid	NA
						D004	Arsenic	5.0
						D006	Cadmium	1.0
						D007	Chromium	5.0
						D008	Lead	5.0
						D009	Mercury	0.2
						D019	Carbon tetrachloride	0.5
						D021	Chlorobenzene	100.0
						D022	Chloroform	6.0
						D028	Dichloroethane	0.5
						D040	Trichloroethylene	0.5
						F002	1,1,1-Trichloroethane	NA
						None	Acetone	None
						None	Beryllium	None
						None	Bromobenzene	None
						None	Ethanol	None
						None	Methanol	None
						None	Methylene Chloride	None
						None	n-Butyl Alcohol	None
						None	Toluene	None
						None	Xylene	None
None	Contaminated soil	None	Possibly generated by decontamination activities and/or accidental spills in	A90 - Contaminated soil	Knowledge[d]	Unknown	Unknown	Unknown

Refer to footnotes at end of table.

TABLE A.2-2
TRANSURANIC MIXED WASTE CHARACTERIZATION MATRIX[a]
(continued)

	TA-1, TA-3, TA-21, and TA-50

TABLE A.2-2
TRANSURANIC MIXED WASTE CHARACTERIZATION MATRIX[a]
(continued)

[a] This table is based on preliminary information from Los Alamos National Laboratory, 1994, "Draft Transuranic Waste Stream Hazardous Material Characterization Study," Rev. 0, and is subject to change upon further review. Potential EPA Hazardous Waste Numbers shown in this table may vary from those reported in LANL's Part A Permit Application for Mixed Waste (Rev. 2.0), September 1994, which reports the EPA Hazardous Waste Numbers in LANL's waste management database.

[b] U.S. Environmental Protection Agency.

[c] A solid waste exhibits the characteristic of toxicity if the extract from a representative sample of the waste contains any of the contaminants listed at a concentration equal to or greater than the respective value given in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Subpart D, revised November 1, 1995.

[d] Knowledge indicates process knowledge used as the basis for hazardous waste designation.

[e] Testing: In reference to the basis for hazardous waste classification, indicates that sampling and analysis has been performed, but either (1) the documentation is not available or (2) the data exist but are not verifiable.

TABLE A.2-3
PARAMETERS, CHARACTERIZATION METHODS, AND RATIONALE FOR TRANSURANIC MIXED WASTE

Matrix Parameter[a] Code/Description	Waste Description	Analytical Parameters[b]	Characterization Methods	Rationale
3000—Solid Process Residues	– Solidified aqueous waste (e.g., concreted/cemented aqueous waste) – Solidified aqueous waste (e.g., dewatered sludge and chemical treatment sludge) – Solidified inorganic/organic process solids – Waste salts	– Free liquids in waste matrix – Physical form of the waste	– Visual examination – Real-time radiography (RTR) – Acceptable knowledge[c]	– Verify physical waste form – No free liquids allowed
		– Resource Conservation and Recovery Act (RCRA)–regulated metals (see Table A.2-4)	– Sample and analyze statistically selected number of drums in waste stream. (see Table A.2-4)	– Determine toxicity characteristic – Determine concentration of metals
		– Volatile organic compounds (VOC) in container headspace gas	– Gas chromatography/ mass spectrometry – Fourier transform infrared spectrometry – Gas chromatography/ Flame ionization detector	– Qualitative screening to confirm the presence of VOCs
		– VOCs and semivolatile organic compounds (SVOC) (see Table A.2-4)	– Sample and analyze statistically selected number of drums in waste stream. (see Table A.2-4)	– Determine toxicity characteristic – Determine concentration of organics
4000—Soils	– Contaminated soil			
5000—Debris Waste	– Mixed metal scrap and incidental combustibles – Combustible waste – Graphite waste – Metal waste – Glass waste – Leaded-rubber and metal waste – High-efficiency particulate air filters	– Free liquids – Physical form of the waste	– Visual examination – RTR – Acceptable knowledge	– Verify physical waste form – No free liquids allowed
		– RCRA-regulated metals (see Table A.2-4)	– Acceptable knowledge	– Determine compliance with land disposal restriction (LDR) treatment standards, if applicable
		– VOCs in container	– Gas chromatography/	– Qualitative screening to

Refer to footnotes at end of table.

TABLE A.2-3
PARAMETERS, CHARACTERIZATION METHODS, AND RATIONALE FOR TRANSURANIC MIXED WASTE
(continued)

		headspace gas	mass spectrometry – Fourier transform infrared spectrometry – Gas chromatography/ Flame ionization detector	confirm the presence of VOCs
		– VOCs and SVOCs (see Table A.2-4)	– Acceptable knowledge	– Determine compliance with LDR treatment standards, if applicable

[a] Information in this column was extracted from the U.S. Department of Energy (DOE), 1994, "TRU Waste Characterization Quality Assurance Program Plan," *CAO-94-1010*, Rev. B, Draft, Carlsbad Area Office, Carlsbad, New Mexico.

[b] U.S. Department of Energy (DOE), 1992, "RCRA Part B Permit Application for the Waste Isolation Pilot Plant," *DOE/WIPP 91-005*, Rev. 2, U.S. Department of Energy, Carlsbad, New Mexico.

[c] According to U.S. Environmental Protection Agency (EPA), 1994, "Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Wastes - A Guidance Manual," *OSWER 9938.4-03*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C., acceptable knowledge is broadly defined as process knowledge, waste analysis data (e.g., sampling and analysis), and/or facility records of analysis performed.

TABLE A.2-4
SUMMARY OF WASTE CHARACTERIZATION TECHNIQUES FOR TRANSURANIC MIXED WASTE

Parameter[a]	Method Numbers	Test Methods	Rationale
Physical Waste Form		Waste inspection procedures Real-time radiography Visual examination Process knowledge	Identify and verify waste container contents
Volatile Organic Compounds (VOC) in waste matrix and container headspace gas: Acetone n-Butyl alcohol Carbon tetrachloride Chlorobenzene Chloroform Dichloroethane Formaldehyde Methanol Methylene chloride Spent halogenated solvents Spent nonhalogenated solvents Tetrachloroethylene Toluene 1,1,1-Trichloroethane Trichloroethylene Xylenes	ASTM Method D4547-91[b] U.S. EPA/540/4-91/001[c] SW-846 (1311, 8240, 8240A, 8240B, 8260, 8260A)[d], or equivalent methods[e]	Total and/or toxicity characteristic leaching procedure (TCLP) VOC analysis by gas chromatography/ mass spectrometry (GC/MS) Fourier transform infrared spectrometry Flame ionization detector Process knowledge for debris wastes	Determine total and/or TCLP VOC concentrations in samples of solid process residues and soils
Semivolatile Organic Compounds (SVOC) in waste: Cresols Ortho-dichlorobenzene 1,4-Dichlorobenzene 2,4-Dinitrotoluene Hexachloroethane Nitrobenzene Pyridine	SW-846 (1311, 8250, 8250A, 8270A, 8270B)[d], or equivalent methods[e]	Total and/or TCLP SVOC analysis by GC/MS Process knowledge for debris waste	Determine total and/or TCLP SVOC concentrations in samples of solid process residues and soils
Metals in waste: Arsenic Barium Cadmium Chromium Lead Mercury Nickel	SW-846 (3051, 1311, 6010A, 6020, 7060A, 7061A)[d] (3051, 1311, 6010A, 6020, 7080, 7080A, 7081)[d] (3051, 1311, 6010A, 6020, 7130, 7131A)[d] (3051, 1311, 6010A, 6020, 7190, 7191)[d] (3051, 1311, 6010A, 6020, 7420, 7421)[d] (1311, 7471A)[d] (3051, 1311, 6010A, 6020, 7520)[d]	Total and/or TCLP metals analysis Inductively coupled plasma Atomic absorption spectroscopy Cold vapor atomic	Determine total and/or TCLP metals concentrations in samples of solid process residues and soils

Refer to footnotes at end of table.

TABLE A.2-4
SUMMARY OF WASTE CHARACTERIZATION TECHNIQUES FOR TRANSURANIC MIXED WASTE
(continued)

Selenium Silver Thallium	(3051, 1311, 6010A, 6020, 7740, 7741A, 7742)[d] (3051, 1311, 6010A, 6020, 7760A, 7761)[d] (3051, 1311, 6010A, 6020, 7840, 7841)[d], or equivalent methods[e]	absorption spectroscopy Process knowledge for debris wastes	

[a] Information in this column was extracted from the U.S. Department of Energy (DOE), 1992, "RCRA Part B Permit Application for the Waste Isolation Pilot Plant," *DOE/WIPP 91-005*, Rev. 2, U.S. Department of Energy, Carlsbad, New Mexico.

[b] American Society for Testing and Materials (ASTM), 1991, "Standard Practice for Sampling Waste and Soils for Volatile Organic Compounds," *ASTM D4547-91*, Annual Book of ASTM Standards, Philadelphia, Pennsylvania, American Society for Testing and Materials.

[c] U.S. Environmental Protection Agency (EPA), 1991, "Soil Sampling and Analysis for Volatile Organic Compounds," *EPA/540/4-91/001*, Office of Research and Development, U.S. Environmental Protection Agency.

[d] U.S. Environmental Protection Agency (EPA), 1994, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*, Third Edition, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

[e] Equivalent methods, subject to EPA approval, may be substituted.

Los Alamos
National Laboratory

WASTE PROFILE FORM

Account Information

For rapid processing, complete all sections in black or blue ink and mail this form to Waste Services Group at MS J579

Reference Number

Waste Generator's Name (Print)	Znumber	Waste Management Coordinator's Name (Print)	Znumber

Generator's Group	Generator's Telephone	Generator's Mail Stop	Waste Stream Technical Area	Building	Room

Waste Accumulation
Check as many as apply.

- ☐ Satellite accumulation area --> site no.: _____
- ☐ Less than 90 day accumulation area --> site no.: _____
- ☐ Radioactive Materials Management Area (RMMA) --> site no.: _____
- ☐ None of the above

Method of Characterization
Check as many as apply.

- ☐ Acceptable Knowledge (AK)
- ☐ Analysis attached --> sample/request no. _____
- ☐ MSDS attached
- ☐ Request for analysis

Section 1- Chemical and Physical Characteristics

For help in completing this section of the form, call 5-WAST or 5-4000.

Waste Type
Check only one.

- ☐ Unused/unspent chemical
  Check Waste Classes and Associated Documentation Only
- ☐ Process waste/spent chemical
  Complete all of Section 1.

Waste Classes
Check as many as apply.

- ☐ On-going generation
- ☐ One-time generation
- ☐ Radioactive (complete Sec. 2)
- ☐ Non-radioactive
- ☐ Wastewater (complete Sec. 3)
- ☐ Classified/Sensitive

Associated Documentation
Check as many as apply.

- ☐ Process SOP --> no.: ____
- ☐ RMMA OP --> no.: ____
- ☐ WM SOP --> no.: ____
- ☐ Other --> _____
- ☐ None --> describe below

Waste Category
Check as many as apply.

- ☐ Solvent
- ☐ Degreaser
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated hazardous waste residue
- ☐ Explosive process waste
- ☐ Infectious/biological waste
- ☐ Beryllium
- ☐ Asbestos-friable
- ☐ Asbestos-nonfriable
- ☐ Empty containers
- ☐ PCB (<50 ppm)
  - ☐ PCB (50 - 500 ppm)
  - ☐ PCB (> 500 ppm)
  - → id. no. : _____
- ☐ Not applicable --> describe below

Waste Sources
Check as many as apply.

- ☐ Research and development
- ☐ Maintenance
- ☐ Construction
- ☐ Material processing
- ☐ Decon/decom
- ☐ Investigation derived
- ☐ Remediation
- ☐ UST - petroleum
- ☐ UST - non-petroleum
- ☐ Generator treatment
- ☐ Interim/permitted treatment
- ☐ Industrial sludge
- ☐ Sanitary sludge
- ☐ Abatement

Waste Matrix
Check only one.

Gas
- ☐ ≤ 1.5 Atmospheres
- ☐ > 1.5 Atmospheres

Liquid
- ☐ Aqueous
- ☐ Organic
- ☐ Inorganic

Solid
- ☐ Powder/ash
- ☐ Solid
- ☐ Absorbed liquid

Matrix Type
Check only one.

- ☐ Homogeneous
- ☐ Heterogeneous --> describe below

Waste/Process Description

_____
_____
_____
_____
_____
_____
_____

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Page 1 of 4

FIGURE A.2-1

WASTE PROFILE FORM

Section 1- Chemical and Physical Characteristics (continued)

Ignitability (degrees F.)
Check only one.

- ☐ < 73
- ☐ 73-99
- ☐ 100-139
- ☐ 140-200
- ☐ > 200
- ☐ Ignitable solid
- ☐ DOT oxidizer
- ☐ Not ignitable

Corrosivity (pH)
Check only one.

- ☐ ≤ 2.0
- ☐ 2.1-4.0
- ☐ 4.1-6.0
- ☐ 6.1-9.0
- ☐ 9.1-12.4
- ☐ ≥ 12.5
- ☐ Liquid corrosive to steel
- ☐ Not aqueous

Reactivity
Check as many as apply.

- ☐ Unstable
- ☐ Water reactive
- ☐ Pyrophoric
- ☐ Cyanide bearing
- ☐ Sulfide bearing
- ☐ Shock sensitive
- ☐ Explosive - class _____
- ☐ Non-reactive

Boiling Point (degrees F.)
Check only one.

- ☐ ≤ 95
- ☐ > 95
- ☐ Not applicable

Identify presence of contaminants.			Minimum	Maximum	Unit (ppm or % only)	Analytical method
Toxicity Characteristic Metals						
Arsenic	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Barium	☐ None	☐ < 100.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Cadmium	☐ None	☐ < 1.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Chromium	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Lead	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Mercury	☐ None	☐ < 0.2 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Selenium	☐ None	☐ < 1.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Silver	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Toxicity Characteristic Organic Compounds						
Benzene	☐ None	☐ < 0.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Carbon tetrachloride	☐ None	☐ < 0.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Chlorobenzene	☐ None	☐ < 100.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Chloroform	☐ None	☐ < 6.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Cresol	☐ None	☐ < 200.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
1,4-dichlorobenzene	☐ None	☐ < 7.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
1,2-Dichloroethane	☐ None	☐ < 0.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
1,1-Dichloroethylene	☐ None	☐ < 0.7 ppm	_____	to _____	_____	☐ TCLP ☐ Total
2,4-Dinitrotoluene	☐ None	☐ < 0.13 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Hexachlorobenzene	☐ None	☐ < 0.13 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Hexachlorobutadiene	☐ None	☐ < 0.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Hexachloroethane	☐ None	☐ < 3.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Methyl ethyl ketone	☐ None	☐ < 200.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Nitrobenzene	☐ None	☐ < 2.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Pentachlorophenol	☐ None	☐ < 100.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Pyridine	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Perchloroethylene or tetrachloroethylene	☐ None	☐ < 0.7 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Trichloroethylene	☐ None	☐ < 0.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
2,4,5-Trichlorophenol	☐ None	☐ < 400.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
2,4,6-Trichlorophenol	☐ None	☐ < 2.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Vinyl chloride	☐ None	☐ < 0.2 ppm	_____	to _____	_____	☐ TCLP ☐ Total

Additional Chemical Constituents and Contaminants (for hazardous constituents, see AR 10-3, Appendix A)
List all other constituents (including inerts) not identified above and attach any applicable analyses.

Name of constituent	Cas no.(optional)	Minimum	Maximum	Unit (ppm or % only)
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____

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FIGURE A.2-1

WASTE PROFILE FORM
(continued)

Section 2- Radiological Characteristics

For help in completing this section of the form, call 5-WAST or 5-4000.

	Range minimum		Range maximum	Unit (Ci/g or Ci/l)
General				
☐ Alpha	_____	to	_____	_____
☐ Beta	_____	to	_____	_____
☐ Gamma	_____	to	_____	_____
TRU radionuclides				
☐ None present				
☐ Am-241	_____	to	_____	_____
☐ Am-243	_____	to	_____	_____
☐ Cf-249	_____	to	_____	_____
☐ Cf-251	_____	to	_____	_____
☐ Cm-243	_____	to	_____	_____
☐ Cm-245	_____	to	_____	_____
☐ Cm-247	_____	to	_____	_____
☐ Pu-238	_____	to	_____	_____
☐ Pu-239	_____	to	_____	_____
☐ Pu-240	_____	to	_____	_____
☐ Pu-242	_____	to	_____	_____
Fission products				
☐ None present				
☐ Ba-140	_____	to	_____	_____
☐ Ce-144	_____	to	_____	_____
☐ Cs-134	_____	to	_____	_____
☐ Cs-137	_____	to	_____	_____
☐ I-129	_____	to	_____	_____
☐ I-133	_____	to	_____	_____
☐ Kr-85	_____	to	_____	_____
☐ Nb-95	_____	to	_____	_____
☐ Ru-106	_____	to	_____	_____
☐ Sb-125	_____	to	_____	_____
☐ Sr-90	_____	to	_____	_____
☐ Tc-99	_____	to	_____	_____
☐ Zr-93	_____	to	_____	_____
☐ Zr-95	_____	to	_____	_____
Activation products				
☐ None present				
☐ As -74	_____	to	_____	_____
☐ Be-7	_____	to	_____	_____
☐ C-14	_____	to	_____	_____
☐ Co-56	_____	to	_____	_____
☐ Co-57	_____	to	_____	_____
☐ Co-58	_____	to	_____	_____
☐ Co-60	_____	to	_____	_____
☐ Cr-51	_____	to	_____	_____
☐ Eu-152	_____	to	_____	_____
☐ Mn-52	_____	to	_____	_____
☐ Mn-54	_____	to	_____	_____
☐ Nb-94	_____	to	_____	_____
☐ Ni-59	_____	to	_____	_____
☐ Ni-63	_____	to	_____	_____
☐ Rb-83	_____	to	_____	_____
☐ Rb-84	_____	to	_____	_____
☐ Se-75	_____	to	_____	_____
☐ Sr-82	_____	to	_____	_____
☐ Sr-85	_____	to	_____	_____
☐ V-48	_____	to	_____	_____
☐ Y-88	_____	to	_____	_____
☐ Zn-65	_____	to	_____	_____
☐ Zr-88	_____	to	_____	_____

	Range minimum		Range maximum	Unit (Ci/g or Ci/l)
Other				
☐ None present				
☐ Am-242	_____	to	_____	_____
☐ Bi-207	_____	to	_____	_____
☐ Bi-210	_____	to	_____	_____
☐ Cf-250	_____	to	_____	_____
☐ Cf-252	_____	to	_____	_____
☐ Cm-244	_____	to	_____	_____
☐ H-3	_____	to	_____	_____
☐ Pa-231	_____	to	_____	_____
☐ Pb-210	_____	to	_____	_____
☐ Po-210	_____	to	_____	_____
☐ Pu-236	_____	to	_____	_____
☐ Pu-241	_____	to	_____	_____
☐ Ra-226	_____	to	_____	_____
☐ Ra-228	_____	to	_____	_____
☐ Th-230	_____	to	_____	_____
☐ Th-232	_____	to	_____	_____
☐ U-232	_____	to	_____	_____
☐ U-233	_____	to	_____	_____
☐ U-234	_____	to	_____	_____
☐ U-235	_____	to	_____	_____
☐ U-236	_____	to	_____	_____
☐ U-238	_____	to	_____	_____
Add'l radionuclides				
☐ No additional radionuclides present				
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____

Contamination Type: *Check as many as apply.*

☐ Volume Contamination
☐ Surface Contamination

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Page 3 of 4

FIGURE A.2-1

WASTE PROFILE FORM
(continued)

Section 3 - Wastewater Characteristics

For help in completing this section of the form, call 7-4301.

Identify presence of contaminants			Minimum	Maximum	Unit (ppm or % only)	Analytical method	
Aluminum	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP	☐ Total
Boron	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP	☐ Total
Cobalt	☐ None	☐ < 1.0 ppm	_____	to _____	_____	☐ TCLP	☐ Total
Copper	☐ None	☐ < 1.0 ppm	_____	to _____	_____	☐ TCLP	☐ Total
Vanadium	☐ None	☐ < 0.10 ppm	_____	to _____	_____	☐ TCLP	☐ Total
Zinc	☐ None	☐ < 95.4 ppm	_____	to _____	_____	☐ TCLP	☐ Total

Maximum daily flow when discharge occurs: _____ ☐ Gallons ☐ Liters

Average daily flow when discharge occurs: _____ ☐ Gallons ☐ Liters

Estimated number of days per year that discharge will occur: _____

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-50-1: _____ ☐ Gallons ☐ Liters

For TA-55 use only. Wastewater will be discharged through one of the following:

☐ Acid line ☐ Caustic line ☐ Industrial waste line

Section 4 - Additional Information

If additional information is available on the chemical, physical, or radiological character of the waste not covered on this form, provide it below:

WASTE GENERATOR CERTIFICATION: *Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.*

Signature	Date

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FIGURE A.2-1

WASTE PROFILE FORM
(continued)

Los Alamos
National Laboratory

LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

A copy of this form must be attached to each Waste Profile Form and to each Uniform Hazardous Waste Manifest required to transport waste within LANL, pursuant to 40 CFR 268.7(a)(1)

Waste Profile Form No.	Chemical Waste/ Waste Disposal Record No.	Uniform Hazardous Waste Manifest No.	Date of Waste Pickup

Check only one.

☐ Non-wastewater

☐ Wastewater [as defined in 40 CFR 268.2(f)]

NOTIFICATION OF CALIFORNIA LIST APPLICABILITY

Check all that apply.

☐ Liquid hazardous waste containing PCBs at a concentration of ≥50 ppm.

☐ A D001 – D017 liquid waste containing ≥134 mg/L of nickel and/or ≥130 mg/L of thallium.

☐ A D001 – D011 waste containing Halogenated Organic Compounds (HOCs) listed in 40 CFR 268, Appendix III, at ≥1000 ppm.

NOTIFICATION OF "D" CHARACTERISTIC EPA WASTE CODES

Check all that apply.

EPA Waste Code	Waste Description and/or Subcategory (as needed)
☐ D001*	Ignitable characteristic wastes [except for the Section 261.21(a)(1) High TOC Subcategory] that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.
☐ D001	High TOC Ignitable Characteristic Liquids Subcategory based on 40 CFR 261.21(a)(1) - Greater than 10% total organic carbon.
☐ D002*	Corrosive Characteristic Wastes that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.
☐ D003	Reactive Sulfides Subcategory
☐ D003	Reactive Cyanides Subcategory
☐ D003	Water Reactive Subcategory
☐ D003	Other Reactives Subcategory [based on 261.23(a)(1)]
☐ D004	
☐ D005	
☐ D006	Wastes that exhibit the TC for cadmium
☐ D006	Cadmium Containing Batteries Subcategory
☐ D007	
☐ D008	Wastes that exhibit TC for lead
☐ D008	Lead Acid Batteries Subcategory
☐ D008	Radioactive Lead Solids Subcategory
☐ D009	High Mercury-Organic Subcategory (≥260 mg/kg Hg with organics and not incinerator residues)
☐ D009	High Mercury-Inorganic Subcategory (≥260 mg/kg Hg [with inorganics])
☐ D009	Low Mercury Subcategory (<260 mg/kg Hg)
☐ D009	All D009 wastewaters
☐ D009	Elemental mercury contaminated with radioactive materials.
☐ D009	Hydraulic oil contaminated with Mercury Radioactive Materials Subcategory
☐ D010	
☐ D011	

☐ D012*	☐ D020*	☐ D028*	☐ D036*
☐ D013*	☐ D021*	☐ D029*	☐ D037*
☐ D014*	☐ D022*	☐ D030*	☐ D038*
☐ D015*	☐ D023*	☐ D031*	☐ D039*
☐ D016*	☐ D024*	☐ D032*	☐ D040*
☐ D017*	☐ D025*	☐ D033*	☐ D041*
☐ D018*	☐ D026*	☐ D034*	☐ D042*
☐ D019*	☐ D027*	☐ D035*	☐ D043*

*All applicable Underlying Hazardous Constituents in these characteristic wastes must be checked in Table UTS.

NOTIFICATION FOR F001 – F005 SPENT SOLVENT WASTES

Check all that apply.

Spent solvent wastes with the following constituents only.

EPA Waste Code	Constituents in the waste	
☐ F001	☐ Acetone	☐ Isobutyl alcohol
☐ F002	☐ Benzene	☐ Methanol
☐ F003	☐ n-Butyl alcohol	☐ Methylene chloride
☐ F004	☐ Carbon disulfide (wastewater only)	☐ Methyl ethyl ketone
☐ F005	☐ Carbon tetrachloride	☐ Methyl isobutyl ketone
	☐ Chlorobenzene	☐ Nitrobenzene
	☐ o-cresol	☐ Pyridine
	☐ m-cresol	☐ Tetrachloroethylene
	☐ p-cresol	☐ Toluene
	☐ Cresol-mixed isomers (Cresylic acid)	☐ 1,1,1-Trichloroethane
	☐ Cyclohexanone (wastewater only)	☐ 1,1,2-Trichloroethane
	☐ o-Dichlorobenzene	☐ 1,1,2-Trichloro – 1,2,2-trifluoroethane
	☐ Ethyl acetate	☐ Trichloroethylene
	☐ Ethyl benzene	☐ Trichloromonofluoromethane
	☐ Ethyl ether	☐ Xylenes – mixed isomers (o-, m-, p-xylene)

Check all that apply.

EPA Waste Codes	Constituents in the waste
☐ F003	☐ Carbon disulfide
☐ F005	☐ Cyclohexanone
	☐ Methanol

Note: Treatment standards for these constituents apply to F001 – F005 wastes which contain only one, two, or all three of these constituents.

Check only one, if applicable.

EPA Waste Code	Constituents in the waste
☐ F005	☐ Containing 2-nitropropane as the only listed F001 – F005 solvent.
	☐ Containing 2-ethoxyethanol as the only listed F001 – F005 solvent.

NOTIFICATION FOR OTHER "F" WASTES

Check only one, if applicable.

☐ F006
☐ F007
☐ F008
☐ F009
☐ F027

Los Alamos
National Laboratory

LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

NOTIFICATION FOR "P" AND "U" LISTED WASTE CODES

- ☐ P001
- ☐ P002
- ☐ P003
- ☐ P004
- ☐ P005
- ☐ P006
- ☐ P007
- ☐ P008
- ☐ P009
- ☐ P010
- ☐ P011
- ☐ P012
- ☐ P013
- ☐ P014
- ☐ P015
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- ☐ U239
- ☐ U240
- ☐ U243
- ☐ U244
- ☐ U246
- ☐ U247
- ☐ U248
- ☐ U249
- ☐ U328
- ☐ U353
- ☐ U359

TABLE UTS—Universal Treatment Standards

(Check the applicable underlying hazardous constituents for D001, D002, and D012 –D043 characteristic wastes only.)

Regulated constituent—common name

- ☐ Acenaphthylene
- ☐ Acenaphthene
- ☐ Acetone
- ☐ Acetonitrile
- ☐ Acetophenone
- ☐ 2-Acetylaminofluorene
- ☐ Acrolein
- ☐ Acrylamide
- ☐ Acrylonitrile
- ☐ Aldrin
- ☐ 4-Aminobiphenyl
- ☐ Aniline
- ☐ Anthracene
- ☐ Aramite
- ☐ alpha-BHC
- ☐ beta-BHC
- ☐ delta-BHC
- ☐ gamma-BHC
- ☐ Benzene
- ☐ Benz(a)anthracene
- ☐ Benzal chloride
- ☐ Benzo(b)fluoranthene (difficult to distinguish from benzo(k)fluoranthene)
- ☐ Benzo(k)fluoranthene (difficult to distinguish from benzo(b)fluoranthene)
- ☐ Benzo(g,h,i)perylene
- ☐ Benzo(a)pyrene
- ☐ Bromodichloromethane
- ☐ Methyl bromide (Bromomethane)
- ☐ 4-Bromophenyl phenyl ether
- ☐ n-Butyl alcohol
- ☐ Butyl benzyl phthalate
- ☐ 2-sec-Butyl-4,6-dinitrophenol (Dinoseb)
- ☐ Carbon disulfide
- ☐ Carbon tetrachloride
- ☐ Chlordane (alpha and gamma isomers)
- ☐ p-Chloroaniline
- ☐ Chlorobenzene
- ☐ Chlorobenzilate
- ☐ 2-Chloro-1,3-butadiene
- ☐ Chlorodibromomethane
- ☐ Chloroethane
- ☐ bis(2-Chloroethoxy)methane
- ☐ bis(2-Chloroethyl)ether
- ☐ Chloroform
- ☐ bis(2-Chloroisopropyl)ether
- ☐ p-Chloro-m-cresol
- ☐ 2-Chloroethyl vinyl ether
- ☐ Chloromethane (Methyl chloride)
- ☐ 2-Chloronaphthalene
- ☐ 2-Chlorophenol
- ☐ 3-Chloropropylene
- ☐ Chrysene
- ☐ o-Cresol
- ☐ m-Cresol (difficult to distinguish from p-cresol)
- ☐ p-Cresol (difficult to distinguish from m-cresol)
- ☐ Cyclohexanone
- ☐ 1,2-Dibromo-3-chloropropane
- ☐ Ethylene dibromide (1,2-Dibromoethane)
- ☐ Dibromomethane
- ☐ 2,4-D (2,4-Dichlorophenoxyacetic acid)
- ☐ o,p′-DDD
- ☐ p,p′-DDD
- ☐ o,p′-DDE
- ☐ p,p′-DDE
- ☐ o,p′-DDT
- ☐ p,p′-DDT
- ☐ Dibenz(a,h)anthracene
- ☐ Dibenz(a,e)pyrene
- ☐ m-Dichlorobenzene
- ☐ o-Dichlorobenzene
- ☐ p-Dichlorobenzene
- ☐ Dichlorodifluoromethane
- ☐ 1,1-Dichloroethane
- ☐ 1,2-Dichloroethane
- ☐ 1,1-Dichloroethylene
- ☐ trans-1,2-Dichloroethylene
- ☐ 2,4-Dichlorophenol
- ☐ 2,6-Dichlorophenol
- ☐ 1,2-Dichloropropane
- ☐ cis-1,3-Dichloropropylene
- ☐ trans-1,3-Dichloropropylene
- ☐ Dieldrin
- ☐ Diethyl phthalate
- ☐ 2-4,Dimethyl phenol
- ☐ Dimethyl phthalate
- ☐ Di-n-butyl phthalate
- ☐ 1,4-Dinitrobenzene

TABLE UTS—Universal Treatment Standards

(Check the applicable underlying hazardous constituents for D001, D002, and D012 –D043 characteristic wastes only.)

Regulated constituent—common name

- ☐ 4,6-Dinitro-o-cresol
- ☐ 2,4-Dinitrophenol
- ☐ 2,4-Dinitrotoluene
- ☐ 2,6-Dinitrotoluene
- ☐ Di-n-octyl phthalate
- ☐ p-Dimethylaminoazobenzene
- ☐ Di-n-propylnitrosamine
- ☐ 1,4-Dioxane
- ☐ Diphenylamine (difficult to distinguish from diphenylnitrosamine)
- ☐ Diphenylnitrosamine (difficult to distinguish from diphenylamine)
- ☐ 1,2-Diphenylhydrazine
- ☐ Disulfoton
- ☐ Endosulfan I
- ☐ Endosulfan II
- ☐ Endosulfan sulfate
- ☐ Endrin
- ☐ Endrin aldehyde
- ☐ Ethyl acetate
- ☐ Ethyl cyanide (Propanenitrile)
- ☐ Ethyl benzene
- ☐ Ethyl ether
- ☐ bis(2-Ethylhexyl) phthalate
- ☐ Ethyl methacrylate
- ☐ Ethylene oxide
- ☐ Famphur
- ☐ Fluoranthene
- ☐ Fluorene
- ☐ Heptachlor
- ☐ Heptachlor epoxide
- ☐ Hexachlorobenzene
- ☐ Hexachlorobutadiene
- ☐ Hexachlorocyclopentadiene
- ☐ HxCDDs (All Hexachlorodibenzo-p-dioxins)
- ☐ HxCDFs (All Hexachlorodibenzofurans)
- ☐ Hexachloroethane
- ☐ Hexachloropropylene
- ☐ Indeno (1,2,3-c,d) pyrene
- ☐ Iodomethane
- ☐ Isobutyl alcohol
- ☐ Isodrin
- ☐ Isosafrole
- ☐ Kepone
- ☐ Methacrylonitrile
- ☐ Methanol
- ☐ Methapyrilene
- ☐ Methoxychlor
- ☐ 3-Methylcholanthrene
- ☐ 4,4-Methylene bis(2-chloroaniline)
- ☐ Methylene chloride
- ☐ Methyl ethyl ketone
- ☐ Methyl isobutyl ketone
- ☐ Methyl methacrylate
- ☐ Methyl methansulfonate
- ☐ Methyl parathion
- ☐ Naphthalene
- ☐ 2-Naphthylamine
- ☐ o-Nitroaniline
- ☐ p-Nitroaniline
- ☐ Nitrobenzene
- ☐ 5-Nitro-o-toluidine
- ☐ o-Nitrophenol
- ☐ p-Nitrophenol
- ☐ N-Nitrosodiethylamine
- ☐ N-Nitrosodimethylamine
- ☐ N-Nitroso-di-n-butylamine
- ☐ N-Nitrosomethylethylamine
- ☐ N-Nitrosomorpholine
- ☐ N-Nitrosopiperidine
- ☐ N-Nitrosopyrrolidine
- ☐ Parathion
- ☐ Total PCBs (sum of all PCB isomers, or all Aroclors)
- ☐ Pentachlorobenzene
- ☐ PeCDDs (All Pentachlorodibenzo-p-dioxins)
- ☐ PeCDFs (All Pentachlorodibenzofurans)
- ☐ Pentachloroethane
- ☐ Pentachloronitrobenzene
- ☐ Pentachlorophenol
- ☐ Phenacetin
- ☐ Phenanthrene
- ☐ Phenol
- ☐ Phorate
- ☐ Phthalic acid
- ☐ Phthalic anhydride
- ☐ Pronamide
- ☐ Pyrene
- ☐ Pyridine
- ☐ Safrole
- ☐ Silvex (2,4,5-TP)

TABLE UTS—Universal Treatment Standards
(Check the applicable underlying hazardous constituents for D001, D002, and D012 –D043 characteristic wastes only.)

Regulated constituent—common name

- ☐ 2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)
- ☐ 1,2,4,5-Tetrachlorobenzene
- ☐ TCDDs (All Tetrachlorodibenzo-p-dioxins)
- ☐ TCDFs (All Tetrachlorodibenzofurans)
- ☐ 1,1,1,2-Tetrachloroethane
- ☐ 1,1,2,2-Tetrachloroethane
- ☐ Tetrachloroethylene
- ☐ 2,3,4,6-Tetrachlorophenol
- ☐ Toluene
- ☐ Toxaphene
- ☐ Bromoform (Tribromomethane)
- ☐ 1,2,4-Trichlorobenzene
- ☐ 1,1,1-Trichloroethane
- ☐ 1,1,2-Trichloroethane
- ☐ Trichloroethylene
- ☐ Trichloromonofluoromethane
- ☐ 2,4,5-Trichlorophenol
- ☐ 2,4,6-Trichlorophenol
- ☐ 1,2,3-Trichloropropane
- ☐ 1,1,2-Trichloro-1,2,2-trifluoroethane
- ☐ tris-(2,3-Dibromopropyl) phosphate
- ☐ Vinyl chloride
- ☐ Xylenes-mixed isomers (sum of o-, m-, and p-xylene concentrations)
- ☐ Antimony
- ☐ Arsenic
- ☐ Barium
- ☐ Beryllium
- ☐ Cadmium
- ☐ Chromium (Total)
- ☐ Cyanides (Total)[1]
- ☐ Cyanides (Amenable)[1]
- ☐ Fluoride
- ☐ Lead
- ☐ Mercury—Nonwastewater from Retort
- ☐ Mercury—All Others
- ☐ Nickel
- ☐ Selenium
- ☐ Silver
- ☐ Sulfide
- ☐ Thallium
- ☐ Vanadium

[1] Both Cyanides (Total) and Cyanides (Amenable) for nonwastewaters are to be analyzed using Method 9010 or 9012, found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA Publication SW-846, as incorporated by reference in 40 CFR 260.11, with a sample size of 10 grams and a distillation time of one hour and 15 minutes.

NOTIFICATION OF ADDITIONAL TREATMENT STANDARDS

EPA Waste Code	Waste Description and/or Subcategory (if applicable)

WASTE ANALYSIS PLAN

PERMIT ATTACHMENT A.3
NM0890010515-1

WASTE ANALYSIS PLAN FOR LOW-LEVEL SOLID MIXED WASTE

LIST OF DEFINITIONS

Acceptable knowledge - Broadly defined to include process knowledge, waste analysis data, and/or facility records of analysis.

Existing (or currently generated) low-level mixed waste - Low-level mixed waste streams that have been characterized using Los Alamos National Laboratory (LANL)'s Waste Profile Form (WPF) (the WPF has been used since May 1991).

Future low-level mixed waste - Low-level mixed waste streams that will be characterized through the use of both LANL's WPF and a certification program.

Heterogeneous waste - Waste that is of dissimilar or diverse composition.

Homogeneous waste - Waste that is of uniform composition.

Legacy low-level mixed waste - Low-level mixed waste streams generated before the LANL WPF was implemented (i.e., prior to May 1991).

Low-level waste - Waste defined in U.S. Department of Energy (DOE) Order 5820.2A, "Radioactive Waste Management" (DOE, 1988), as "waste that contains radioactivity and is not classified as high-level waste, transuranic waste, spent nuclear fuel, or 11(e)(2) by-product material as defined by this Order. Test specimens of fissionable material irradiated for research and development only, and not for the production of power or plutonium, may be classified as low-level, provided that the concentration of transuranics is less than 100 nanocuries per gram of waste." By-product material, as defined in Section 11(e)(2) of the Atomic Energy Act of 1954, as amended, consists of uranium and thorium mill tailings. Section 11(e)(2) by-product material is not generated at LANL.

Low-level solid mixed waste - Waste that has both a Resource Conservation and Recovery Act (RCRA) hazardous waste component (see definition) and a low-level waste component (see definition).

Process knowledge - Described in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.13(a)(2), revised November 1, 1995, as data developed under Subpart II and existing published or documented data on a specific hazardous waste or on hazardous waste generated from similar processes.

RCRA hazardous waste - The criteria for establishing a waste as a RCRA hazardous waste are provided in 20 NMAC 4.1, Subpart II, revised November 1, 1995. A waste is considered hazardous if it meets the definition of a RCRA solid waste; is not exempted from regulation; and exhibits one or more of the characteristics described in 20 NMAC 4.1, Subpart II, Part 261, Subpart C, revised November 1, 1995, or is listed in 20 NMAC 4.1, Subpart II, Part 261, Subpart D, revised November 1, 1995.

RCRA solid waste - Any waste stream that meets the definition of a "solid waste" as specified in 20 NMAC 4.1, Subpart II, 261.2, revised November 1, 1995.

Solid waste - Any waste stream in a solid physical form. In this document, use of the generic term "solid waste" refers only to the solid physical form and has no additional regulatory meaning.

LIST OF REGULATORY REFERENCES AND CORRESPONDING WASTE ANALYSIS PLAN LOCATION

RCRA[a] Regulatory Reference 20 NMAC 4.1[b], Subparts V, VIII, and IX	Description of Requirement	Location in the Waste Analysis Plan
264.13(a)(1)	Analysis information adequate to meet 20 NMAC 4.1, Subparts V and VIII, Parts 264 and 268, revised November 1, 1995, storage requirements	A.3.2 and A.3.3
264.13(a)(2)	Waste analysis data	A.3.3.2
264.13(a)(3)	Repeat analysis	A.3.3.1, A.3.3.3, A.3.5, and A.3.5.2
264.13(a)(4)	Inspection and analysis after each movement of hazardous waste received from off site	Not applicable (NA)
264.13(b)	Written waste analysis plan	Entire plan
264.13(b)(1)	Parameters and rationale for selection	A.3.2.1 and A.3.2.2
264.13(b)(2)	Test methods	A.3.3, A.3.3.3, A.3.4, and Tables A.3-2 and A.3-3
264.13(b)(3)	Representative sample collection method	A.3.3.3
264.13(b)(4)	Frequency for review or repeat of initial analysis	A.3.3.1, A.3.3.3, A.3.5.1, and A.3.5.2
264.13(b)(5)	Waste analysis information to be provided to off-site facilities	A.3.3.1, A.3.3.2, and Figure A.3-1
264.13(b)(6)	Additional waste analysis requirements	NA
264.13(b)(7)	Surface impoundments exempted under 20 NMAC 4.1, Subpart VIII, 268.4(a), revised November 1, 1995	NA
264.13(c)	Inspection and analysis procedures for off-site facilities	NA
264.13(c)(1)	Procedures for identification of each movement of waste for off-site shipments	NA

Refer to footnotes at end of table.

LIST OF REGULATORY REFERENCES AND CORRESPONDING WASTE ANALYSIS PLAN LOCATION (Continued)

RCRA[a] Regulatory Reference 20 NMAC 4.1[b], Subparts V, VIII, and IX	Description of Requirement	Location in the Waste Analysis Plan
264.13(c)(2)	Sampling method for the waste to be identified for off-site shipments	NA
264.13(c)(3)	For off-site landfills: procedures to determine whether a biodegradable sorbent has been added to containers	NA
268.7(a)	Determination of whether waste is restricted from land disposal	A.3.6.3
268.7(b)	Testing requirements for treatment facilities	NA
268.7(b)(1)	Testing of treatment residues or extract of waste with concentration-based treatment standards specified in 20 NMAC 4.1, Subpart VIII, 268.41, revised November 1, 1995	NA
268.7(b)(2)	Testing of treatment residues pursuant to 20 NMAC 4.1, Subpart VIII, 268.32, revised November 1, 1995	NA
268.7(b)(3)	Testing of treatment residues of waste with concentration-based treatment standards specified in 20 NMAC 4.1, Subpart VIII, 268.43, revised November 1, 1995	A.3.6.3
268.7(b)(4)	Notice requirements	A.3.6.3 and Figure A.3-2
268.7(b)(5)	Certification of compliance with 20 NMAC 4.1, Subpart VIII, Part 268, revised November 1, 1995	A.3.6.3
268.7(b)(6)	Notice and certification requirements for treatment facilities that ship treatment residues to a different treatment, storage, or disposal (TSD) facility	NA
268.7(b)(7)	Notice requirement for recycling facilities using materials in a manner constituting disposal	NA
268.7(c)(1)	Recordkeeping requirements for land disposal facilities	NA
268.7(c)(2)	Testing requirements for land disposal facilities	NA
268.7(d)(1)	Notification requirements for excluded debris (i.e., pursuant to 20 NMAC 4.1, Subpart II, 261.3, revised	NA

Refer to footnotes at end of table.

LIST OF REGULATORY REFERENCES AND CORRESPONDING WASTE ANALYSIS PLAN LOCATION (Continued)

	November 1, 1995)	
268.7(d)(2)	Updated notification requirements for debris	NA
268.7(d)(3)	Documentation and certification requirements for debris excluded under 20 NMAC 4.1, Subpart II, 261.3(e)(1), revised November 1, 1995	NA
270.14(b)(2)	Chemical and physical analyses	A.3.2.1, A.3.3, A.3.3.1, A.3.3.2, A.3.3.3, Figure A.3-1, and Tables A.3-2 and A.3-3

[a] Resource Conservation and Recovery Act

[b] New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), revised November 1, 1995, which adopts, with a few limited exceptions, Title 40 of the Code of Federal Regulations (40 CFR), Parts 260–266, Part 268, and Part 270 (1994). 20 NMAC 4.1, Subpart V, VIII, and IX, revised November 1, 1995, contain equivalent regulations to 40 CFR Parts 264, 268, and 270, respectively.

ATTACHMENT A.3
WASTE ANALYSIS PLAN FOR LOW-LEVEL SOLID MIXED WASTE

This waste analysis plan (WAP) presents information on the chemical and physical nature of low-level mixed waste generated and general low-level mixed waste characterization methods used at Los Alamos National Laboratory (LANL). The waste analysis information contained within this WAP is specific to storage requirements only. Waste analysis plans specific to treatment will be developed and submitted as needed. Waste analysis requirements are specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart IX, 270.14(b)(2), revised November 1, 1995; 20 NMAC 4.1, Subpart V, 264.13, "General Waste Analysis," revised November 1, 1995; and in 20 NMAC 4.1, Subpart VIII, 268.7, "Waste Analysis and Recordkeeping," revised November 1, 1995. The content of this WAP generally follows the guidance provided in "Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Wastes - A Guidance Manual" (U.S. Environmental Protection Agency [EPA], 1994).

Mixed waste contains both a hazardous waste component, as defined and regulated by the Resource Conservation and Recovery Act (RCRA), and a radioactive waste component. This WAP addresses only *low-level solid mixed waste* (as provided in the List of Definitions of this WAP) considered to be nonwastewaters, pursuant to land disposal restriction (LDR) regulations.

For waste characterization purposes, low-level solid mixed waste at LANL has been subdivided into three groups based on the timeframe for generation of the waste: *legacy*, *existing (or currently generated)*, and *future*. These three groups are defined in the List of Definitions.

This low-level solid mixed waste WAP is organized as follows. Section A.3.1 includes a facility description, information on low-level solid mixed waste-generating processes and activities, identification of low-level solid mixed waste managed, and a description of low-level solid mixed waste management units. Section A.3.2 presents waste parameters, including the criteria and rationale for selection. Section A.3.3 provides low-level mixed waste characterization procedures. Section A.3.4 presents laboratory selection and analytical methods. Section A.3.5 provides waste verification requirements. Section A.3.6 addresses special procedural requirements (e.g., for ignitable, reactive, and incompatible waste and for compliance with LDR requirements). Differences in requirements for the characterization of legacy, existing, and future low-level solid mixed waste are described in Section A.3.3 of this WAP.

A.3.1 FACILITY DESCRIPTION

LANL is located in Los Alamos County in north-central New Mexico. It is approximately 60 miles north-northeast of Albuquerque and 25 miles northwest of Santa Fe. LANL, which is divided into 49 technical areas (TA), and the associated residential and commercial areas of Los Alamos County are situated on the Pajarito Plateau. The principal missions of LANL include the research, design, development, and analysis of weapons components for the nation's nuclear arsenal; supporting research programs; energy research and environmental missions; and environmental management programs. LANL is owned by the U.S. Department of Energy (DOE) and is operated jointly by DOE and the University of California.

A.3.1.1 Facility Waste-Generating Processes, Activities, and Identification of Low-Level Solid Mixed Wastes Managed

Low-level solid mixed waste is generated at LANL primarily from research and development activities, processing and recovery operations, decontamination and decommissioning projects, and environmental remediation/restoration activities. Table A.3-1 provides information on potential low-level solid mixed waste at LANL, including brief waste descriptions, waste-generating processes, and waste-generating locations. The characterization basis for hazardous waste designation (i.e., process knowledge and/or analysis), potential EPA Hazardous Waste Number(s), potential hazardous constituents in and/or characteristics of the waste, and regulatory limits are also listed in Table A.3-1. Descriptions of the low-level solid mixed wastes and their waste-generating processes are provided below. These descriptions are extracted primarily from the Federal Facility Compliance Order, Los Alamos National Laboratory, "Site Treatment Plan Background Volume" (October 4, 1995).

A.3.1.1.1 Homogeneous Low-Level Solid Mixed Wastes

Homogeneous (i.e., uniform composition) low-level solid mixed waste streams at LANL are described generally in the following paragraphs.

Dewatered Treatment Sludges
Dewatered treatment sludges are generated during the treatment of radioactive liquid wastes at the TA-50 Radioactive Liquid Waste Treatment Facility. Liquid waste is typically treated with calcium hydroxide and ferric sulfate, then dewatered through a rotary vacuum filter. Perlite is added to the filtrate to aid in settling. The resulting sludge is bulked into 55-gallon drums. Portland cement is added to the drums to absorb most of the residual moisture within the sludge.

Soils with Heavy Metals
Soil waste contaminated with heavy metals is generated during decommissioning and decontamination activities at various locations throughout LANL. Typically, this waste consists of soils contaminated with varying concentrations of lead or other heavy metals resulting from contact with small shapes, typically in the form of small pieces, shot, or pellets.

Environmental Restoration (ER) Soils
ER soils are contaminated with heavy metals and organic compounds and are generated typically from the remediation of spill sites. Some of this waste stream has resulted from decommissioning of reactors.

Inorganic Solid Oxidizers
Many different types of discarded reagent powders and crystalline materials comprise this waste stream. This waste was generated during a LANL-wide effort to eliminate unnecessary and expired chemical inventory. Most of these items are in the original manufacturer's containers, some of which may be hydrated. Many of these containers are unopened but are suspected to have radioactive surface contamination.

A.3.1.1.2 Heterogeneous Low-Level Solid Mixed Wastes

Heterogeneous (i.e., dissimilar or diverse composition) low-level solid mixed waste streams at LANL are described generally in the following paragraphs.

Lead from Surface Decontamination
Lead from surface decontamination consists of contaminated lead shielding used as radiation shielding in radioisotope experiments and other reactor, accelerator, laser, and x-ray applications. The lead may be in

the form of sheets, pigs, bricks, and special shapes. The radioactive material on the surface of the lead may be removable by decontamination and the lead can then be recycled or reused.

Other Lead Waste

Other lead waste consists of activated or inseparable lead, lead wastes - to be determined, lead blankets, and lead requiring sorting. This lead was also used as shielding for radiation, but is not amenable to surface decontamination because the waste is either activated or has a physical form that prevents decontamination. The waste may be in the form of sheets, pigs, bricks, special shapes, shot, shavings, slag, and dross.

Noncombustible Debris

Noncombustible debris typically consists of discarded hazardous and contaminated scrap metals that are generated by the demolition and decommissioning of research laboratories or equipment, including piping and hydraulic fittings from test reactors and test explosives assemblies. Additionally, discarded bricks and glass are generated through dismantling of LANL buildings, including plating shops and machine sheds. The waste may be considered hazardous due to the metal content or by virtue of contamination during use. The waste may be contaminated with residues of cadmium, nickel, cyanide, and uranium.

Combustible Debris

LANL's various machine shops routinely generate rags and combustible debris with heavy metals and organics, some of which may contain residual liquids. Examples include solvents and lubricants, such as WD-40™, that are used in metal-cutting operations. Much of this waste is generated during the processing (e.g., metal-cutting operations) of lead and barium, resulting in heavy metal contamination. Additionally, firing site debris is generated from the detonation of high explosives (HE) and cleanup of firing site debris. The waste consists of mixed fragments of lead and depleted uranium commingled with wood, paper, tape, gloves, and protective clothing.

Organic-Contaminated Noncombustible Solids

This waste stream typically includes absorbed oils, laboratory trash, and discarded equipment. Absorbed oil waste is comprised of bulk drums containing rags or Kimwipes™ and vermiculite or corncob fractions used to absorb many different types of oil from spills and routine maintenance operations. The oil generally originates from vacuum pumps and may be contaminated by mercury, lead, or cadmium. Mercury is a common constituent in the waste stream because of its use at various LANL locations as a vacuum pumping fluid for early vacuum systems. Cadmium contamination may be the result of soldering and brazing-fume-hood operations. Lead contamination is the result of lead turnings contained in cooling oil. Absorbent is routinely added to these waste oils as required by standard operating procedures. Laboratory trash consists of noncombustible solid materials with residual solvent contamination. The laboratory debris includes reagent bottles, broken glassware, and discarded disposable materials (e.g., syringes and drying dishes). Large quantities of chemicals were not placed in this trash; however, residual liquids or powders may have remained on some of the disposed material. Discarded equipment with heavy metals and solvents primarily includes equipment and broken glassware that may have contained residual solvents.

Organic-Contaminated Combustible Solids

This waste stream typically consists of waste similar to the combustible debris, without the debris (e.g., rags, cardboard, protective clothing), and paint-stripper trash. Paint-stripper trash waste is generated mainly at TA-55 in large gloveboxes. Paint is removed periodically from the surfaces in the gloveboxes to control radiological contamination. Methylene chloride is used to soften the paint prior to removal.

Water-Reactive Wastes

Water-reactive wastes consist of reactive metal debris generated through the cleanup of HE firing site debris and from machining and disassembly of test components. This waste stream includes calcium, lithium hydride, lithium hydride contaminated with uranium, lithium metal, and magnesium.

Mercury Wastes - To Be Determined
The mercury-contaminated instruments and equipment waste stream consists of discarded or broken equipment containing liquid mercury. The instruments and equipment include broken thermometers, vacuum tubes from electronics applications, vacuum pumps with residual mercury, and mercury absorbed into a paper or solid matrix. Most of this waste is from cleanup operations and could not effectively be recycled or separated from its containing vessel.

Nonradioactive or Suspect Waste Items to be Surveyed
This waste stream consists of various wastes that are managed as radioactive wastes because they were generated in locations that had a possibility of resulting in radioactive contamination of the waste. The waste will be sampled or surveyed to determine if it is radioactive.

A.3.1.2 Description of Low-Level Solid Mixed Waste Management Units

The permitted low-level solid mixed waste storage units at LANL that are addressed in this WAP include:

- Rooms 35, 36, and 38/38A Container Storage Areas (CSA) at the TA-50-1 Decontamination Facility
- The Waste Characterization, Reduction, and Repackaging Facility Indoor and Outdoor CSAs at TA-50-69
- The Radioassay and Nondestructive Testing Facility High Bay, Low Bay, Loading Dock, and Outdoor CSAs at TA-54 West, Building 38 (TA-54-38).

Information on these units is available in LANL's "RCRA Permit Modification Request, Technical Area 50, Building 1, Rooms 35, 36, and 38/38A Container Storage Areas; Building 69, Waste Characterization, Reduction, and Repackaging Facility Indoor and Outdoor Container Storage Areas; Technical Area 54 West, Building 38, Radioassay and Nondestructive Testing Facility High Bay, Low Bay, Loading Dock, and Outdoor Container Storage Areas," Final Draft, September 1995.

Low-level solid mixed waste storage units and subunits operating under interim status facility standards and addressed in this WAP include:

- A CSA at TA-16-88
- CSAs at TA-21-61
- CSAs at TA-50-37
- The Drum Prep Facility; Storage Sheds 8, 1027, 1028, 1029, and 1041; and Storage Domes 49 and 224 at TA-54, Area G

- CSAs at TA-54, Area L
- CSAs at TA-55
- Storage units at TA-63.

Information on these units is available in LANL's "RCRA Part A Permit Application for Mixed Waste, Revision 2.0" (LANL, 1994).

A.3.2 WASTE ANALYSIS PARAMETERS

A detailed chemical and physical characterization will be performed for low-level solid mixed waste management purposes, as required by RCRA. Waste analysis parameters will be selected to ensure that this characterization will contain all the information necessary to properly treat, store, or dispose of waste in accordance with RCRA general facility standards and LDR requirements. Characterization will be performed by utilizing the procedures described in Section A.3.3.

A.3.2.1 Proposed Analytical Parameters and Characterization Methods

Proposed analytical parameters, characterization methods, and test methods for low-level solid mixed waste at LANL are summarized in Tables A.3-2 and A.3-3. The parameters listed in Table A.3-2 were selected based on acceptable knowledge, as described in Section A.3.3.2, for the various homogeneous and heterogeneous waste forms described in Section A.3.1.1. Table A.3-3 indicates the proposed test methods for generating the data, pursuant to 20 NMAC 4.1, Subpart V, 264.13(b)(2), revised November 1, 1995.

A.3.2.2 Criteria and Rationale for Parameter Selection

Waste analysis parameters selected to characterize low-level solid mixed waste are in conformance with RCRA. These parameters are based on knowledge of raw materials and physical/chemical processes of waste-generating activities, and may be supported by analytical results. The rationale for the selected parameters are identified in Tables A.3-2 and A.3-3.

A.3.3 CHARACTERIZATION OF LOW-LEVEL SOLID MIXED WASTE

Low-level solid mixed waste generated at LANL is divided into general groups based on when the waste was generated and the degree of difficulty involved in sampling the waste. Generally, the distinction is made between legacy, existing, and future low-level solid mixed waste to define the quality of information available on the waste and the subsequent need for additional sampling and analysis. A secondary distinction between heterogeneous and homogeneous waste is made to determine the availability and appropriateness of sampling procedures.

As provided in the List of Definitions, *legacy low-level solid mixed waste* is waste generated prior to implementation of the LANL Waste Profile Form (WPF) in May 1991 (see Section A.3.3.1). *Existing (or currently generated) low-level solid mixed waste* (i.e., waste generated after May 1991) is characterized using LANL's WPF. *Future low-level solid mixed waste* will be characterized using both LANL's WPF and a certification program (see Section A.3.3.2).

Legacy low-level solid mixed waste was reviewed in partial fulfillment of the requirements of the "Federal

Facility Compliance Agreement Regarding Land Disposal Restrictions at the Los Alamos National Laboratory" (EPA, 1994). The waste characterization process outlined in the Federal Facility Compliance Agreement (FFCA) submittal consisted of the following activities: 1) reviewing existing waste data, 2) conducting process knowledge interviews with waste generators, 3) determining if process knowledge information was adequate to characterize the wastes, 4) identifying low-level solid mixed waste containers requiring sampling and analysis, and 5) characterizing the waste in order to assign EPA Hazardous Waste Numbers.

Existing low-level solid mixed waste is characterized using process knowledge, which is provided by individual waste generators on LANL's WPF. If a homogeneous low-level solid mixed waste is found to have insufficient process information available to adequately characterize the waste, sampling and analysis will be performed. (For a detailed description of the WPF, refer to Section A.3.3.1 and to LANL's Administrative Requirement 10-9, "Waste Profile Form.")

Future low-level solid mixed waste will be characterized by utilizing the WPF and a certification program to be implemented. In addition, for waste streams characterized by process knowledge, LANL will implement a documented quality assurance (QA)/quality control (QC) program that will address management of these specific waste streams. For example, the QA/QC program may include procedures for controlling chemical inputs to the waste-generating process as well as procedures for confirming the types of waste placed in different waste containers. These measures will provide knowledge of the types and concentrations of chemical constituents in individual waste streams.

In addition to the distinction among legacy, existing, and future low-level solid mixed waste streams, characterization procedures are constrained by the physical nature of the waste stream (i.e., homogeneous or heterogeneous). Homogeneous low-level solid mixed waste may be characterized for the presence of hazardous constituents (i.e., volatile organic compounds [VOC], semivolatile organic compounds [SVOC], and metals) on the basis of process knowledge and/or sampling and analysis. Homogeneous waste streams may be sampled and analyzed for the toxicity characteristic (TC) contaminants listed in 20 NMAC 4.1, Subpart II, 261.24, revised November 1, 1995. Analytical data will be compared to the TC regulatory levels expressed as total values. These total values will be considered the regulatory threshold limit (RTL) values for the determination of whether a particular waste exhibits a TC. RTL values are obtained by calculating the weight/weight concentration (in the solid) of a TC contaminant that would give the regulatory weight/volume concentration in the toxicity characteristic leaching procedure (TCLP) extract. Because of the difficulty in obtaining representative samples and the lack of appropriate sampling methodology, heterogeneous low-level solid mixed waste will be characterized largely on the basis of process knowledge.

A.3.3.1 Waste Profiling System

In an effort to maintain detailed and accurate waste characterization information, LANL's Chemical Science and Technology (CST) Division utilizes a generator waste-profiling program for existing (i.e., currently generated) waste at LANL. The waste-profiling effort requires each waste generator to provide a detailed written description of the waste on a standardized WPF, Form 1346 (Figure A.3-1). The waste description can be based on generator process knowledge, the use of appropriate Material Safety Data Sheets (MSDS), and/or results of a chemical/physical analysis of the specific waste. By completing the WPF, waste generators supply information that allows for the proper management of low-level solid mixed waste. Specific information that is requested on the WPF includes:

- Point of generation

- Method of characterization
- Waste categories
- Waste description
- Waste origination
- Classification of radioactivity
- Presence of toxic metals and an estimate of concentration
- Presence of organic compounds and an estimate of concentration
- Identification of hazardous constituents
- Identification of hazardous characteristics
- Identification of the radiological characteristics of the waste.

A correctly completed WPF contains sufficient information to allow CST to classify the waste as either non-RCRA-regulated waste, RCRA-regulated solid waste (i.e., regulated under RCRA Subtitle D), RCRA-regulated hazardous (includes mixed) waste (i.e., regulated under RCRA Subtitle C), or radioactive waste. These four waste classifications are each divided into categories that further distinguish specific wastes. These categories are identified on the WPF. By associating a waste with an individual category, CST can properly classify the waste and assign it the appropriate EPA Hazardous Waste Number(s). Ultimately, the waste profile is used by CST Division to determine the proper procedures for managing the waste.

All waste generators must certify, based on their knowledge of the waste, that the information on the WPF is complete and accurate. Knowingly providing false information can result in administrative action by LANL and/or significant civil or criminal penalties, as stipulated by the waste generator's certification statement.

The WPF must be completed prior to any waste treatment, storage, or disposal. Waste generators must provide new profiles when a process change results in a change in waste composition or when a new waste is generated; otherwise, waste stream profiles are reevaluated annually. This annual reevaluation complies with the characterization frequency requirement of 20 NMAC 4.1, Subpart V, 264.13(b)(4), revised November 1, 1995.

A.3.3.2 Acceptable Knowledge

The physical nature of some low-level solid mixed waste forms (e.g., debris, equipment, and instruments) makes the collection of representative samples difficult. This difficulty arises from several factors, some of which include: waste streams that contain disparate elements; disparate elements may need to be segregated into similar forms; large objects cannot be made to fill standard size sample containers; and laboratories may not have the capability to sample large objects (EPA, 1992). Health and safety risks to personnel from exposure to radioactive material also constrain or restrict extensive sampling and analysis of certain low-level solid mixed waste forms. Therefore, acceptable knowledge is a method used to characterize most low-level solid mixed waste forms at LANL. For generation of future low-level solid mixed waste, LANL will implement a certification program to support acceptable knowledge used for waste characterization.

According to EPA guidance, *acceptable knowledge* is broadly defined to include process knowledge, waste analysis data, and/or facility records of analysis (EPA, 1994). *Process knowledge* is described in 20 NMAC 4.1, Subpart V, 264.13(a)(2), revised November 1, 1995, as data developed under 20 NMAC 4.1, Subpart II, revised November 1, 1995, and existing published or documented data on a specific hazardous waste or hazardous waste generated from similar processes. *Waste analysis data* include concentration(s) of RCRA-regulated constituents and/or results of tests for hazardous characteristics. These data are used to determine if wastes are RCRA regulated and to determine their LDR status. *Facility records of analysis* performed

before the effective date of RCRA regulations will be used with caution. These analytical results must be accurate and applicable to the specified waste and should be supplemented with other existing information (e.g., published data). EPA guidance suggests that acceptable knowledge may be appropriate for wastes meeting the following descriptions:

- Wastes containing hazardous constituents from specific processes that are well documented, such as RCRA F-listed and/or K-listed waste code descriptions.

- Wastes consisting of discarded unused commercial chemical products, reagents, or chemicals of known physical and chemical constituents. Several of these fall into the RCRA P-listed and U-listed waste code descriptions.

- Waste (e.g., radioactive mixed waste) containing levels of radioactivity such that health and safety risks to personnel do not justify sampling and analysis due to quantified and documented radiological concerns.

- Wastes containing heterogeneous materials, where the physical nature of the waste does not lend itself to taking a representative sample (e.g., laboratory trash and construction debris with surface contamination) (EPA, 1994).

At LANL, waste generators will obtain, assemble, and prepare the acceptable knowledge documentation available for each waste stream in a separate auditable file or maintain a waste stream reference file that identifies the acceptable knowledge documents and their locations. The acceptable knowledge documentation must be explicitly relevant and traceable to a waste type and must not be merely a list of information sources for a particular operation and/or waste. There are many sources of applicable documentation at LANL that may be used to substantiate acceptable knowledge for a specific waste stream. This documentation includes the following:

- Process design documents (e.g., Title II Design).

- Preliminary and final safety analysis reports, unreviewed safety question determinations, and technical safety requirements.

- Standard operating procedures and detailed operating procedures, which can list the raw materials or reagents, describe the process/experiment that uses the materials, and describe the wastes generated and how the wastes are handled.

- Waste packaging logs.

- Test plans or research project reports that describe the reagents and other raw materials used in an experiment.

- Site databases (e.g., chemical inventory database for Superfund Amendments and Reauthorization Act Title III requirements).

- Information from site personnel (e.g., documented interviews).

- Standard industry practice documents (e.g., vendor information).

- Industry reports on a similar process when there is a clear connection between the LANL process/experiment and the industry's similar process/experiment.

- Previous analytical data relevant to the waste stream, including results from fingerprint analyses, spot checks, or routine waste verification sampling.

- Analytical data from studies of common industry processes that are similar to LANL processes. These data can be used to identify the constituents in a specific "similar" process waste stream and to determine the regulatory status of the waste.

- MSDSs, product labels, and other product package information.

- Sampling and analysis data from comparable waste streams.

- Documented visual inspections to confirm or identify the physical characteristics and packaging of a waste.

- Laboratory notebooks that detail the research processes and raw materials used in an experiment.

Sampling surrogate wastes (e.g., equivalent nonradioactive materials) may also be a means of obtaining acceptable knowledge for characterizing low-level solid mixed wastes. For example, data from the analysis of nonradioactive laboratory wastes may be used to evaluate the characteristics of similar radioactive laboratory waste. Sampling nonradioactive inputs or outputs from processes may also provide data that are useful for characterizing a similar low-level solid mixed waste stream.

A.3.3.3 Sampling and Analysis for Low-Level Solid Mixed Waste

If a homogeneous low-level solid mixed waste is found to have insufficient process information available to adequately characterize the waste, sampling and analysis will be performed. Sampling and analysis can be initiated by the generator or waste management groups through the WPF. To ensure that proper procedures and considerations for sample collection, preservation, and shipping; quality assurance and quality control; and occupational safety and health are followed, personnel involved in sampling and analysis of hazardous waste will comply with LANL-specific protocol consistent with EPA's "Test Methods for Evaluating Solid Waste" (SW-846) (EPA, 1992). Sampling will be conducted utilizing LANL sampling procedures to ensure that a representative sample is collected. Specific information relative to analytical methods is outlined in Table A.3-3.

For purposes of collecting a representative sample of homogeneous waste, the sample must be collected and handled by means that will preserve its original physical form and composition and will prevent contamination or changes in concentration of the parameters to be analyzed (EPA, 1994). The two major approaches used to collect a representative sample are authoritative and random sampling. The following sampling equipment may be used for collection of homogeneous low-level solid mixed waste:

- Surface soil or drummed soil with a spade, scoop, or trowel
- Subsurface soil or drummed soil with a hand auger and thin-walled tube sampler
- Sludge or sediment samples with a scoop
- Bulk material with a grain thief, trier, or scoop.

Real-time radiography (RTR) and/or visual examination may be utilized to confirm the process knowledge used to characterize a low-level solid mixed waste. A brief description of these procedures follows.

RTR is a nondestructive, qualitative, and semiquantitative assay technique that involves x-ray scanning of waste containers to identify and verify, using appropriate equipment and qualified operators, the physical form(s) of waste container contents. If RTR is used, the results of each waste container analyzed will be documented. Any audio/video tapes produced during a container scan will be maintained for a minimum of three years.

Visual examination may be used to verify process knowledge amenable to visual confirmation. For example, visual examination may be used to verify the presence of certain hazardous constituents, such as lead in lead bricks or lead-lined gloves. All visual examinations conducted will be documented and the staff performing the examination will be trained regarding what to look for and how to record observations.

Because legacy and existing low-level solid mixed waste streams have been characterized in partial fulfillment of the FFCA (EPA, 1994), future low-level solid mixed waste that is of similar composition to the characterized low-level solid mixed waste will not be analyzed further unless the waste-generating process changes. Changes in waste-generating processes will be verified through an annual recharacterization evaluation. In addition, if the newly generated waste is of different composition than the stored waste or if waste verification inspections indicate a discrepancy between the waste and its WPF, additional characterization will be performed to recharacterize the waste. For future homogeneous waste, the recharacterization will include sampling and analysis sufficient to establish the range of regulated constituents potentially present in the waste. Both homogeneous and heterogeneous wastes will undergo reevaluation through review of documentation supporting waste characterization activities.

A.3.3.4 Sample Handling, Preservation, and Storage

Table A.3-4 presents requirements specified in SW-846 (EPA, 1992) regarding sample containers, preservation techniques, and holding times associated with sample collection. Adherence to these requirements will occur to ensure that sampling and analysis meet quality objectives for data.

A.3.4 ANALYTICAL LABORATORY SELECTION AND ANALYTICAL METHODS

Analytical laboratories at LANL and/or approved subcontractor laboratories will perform all of the detailed qualitative and quantitative chemical analyses specified in Table A.3-3 of this WAP. These laboratories must have:

- The capability of handling radioactive material/waste
- A documented, comprehensive QA/QC program
- Technical analytical expertise
- A document control/records management plan
- The capability to perform data reduction, validation, and reporting.

The selection and development of analytical testing methods for LANL low-level solid mixed waste streams were based on the following considerations:

- The physical form of the waste

- Analytes of interest
- Required detection limits (e.g., regulatory thresholds)
- Information requirements (e.g., verify compliance with LDR treatment standards, waste classification).

Collectively, these factors contributed to the selection of the analytical methods specified in Table A.3-3. Qualified analytical laboratories at LANL and/or approved subcontractor laboratories that meet the above criteria will analyze low-level solid mixed waste samples for RCRA-regulated hazardous constituents (VOCs, SVOCs, and metals) and characteristics according to SW-846 or documented and approved equivalent methods.

A.3.5 VERIFICATION ANALYSIS FOR LOW-LEVEL SOLID MIXED WASTE

Analysis may be performed to verify the accuracy of the initial waste characterization, to verify that applicable treatment standards have been met, when there is a change in a waste-generating process, when the generator requests a review, or when analytical results indicate a change in a waste stream. Verification analysis for low-level solid mixed waste will be conducted at LANL's or an approved subcontractor's laboratory facilities. All verification analyses will be conducted in conformance with appropriate EPA-approved methods. The type of verification analysis that will be performed to obtain waste characterization information depends upon the physical form of the waste (i.e., homogeneous or heterogeneous) and whether the waste is existing or future low-level solid mixed waste. Verification analysis methodologies for these different types of waste are presented below.

A.3.5.1 Verification of Existing Low-Level Solid Mixed Waste

Characterization for existing homogeneous low-level solid mixed waste streams will not require verification, because the initial characterization provides sufficient information to determine whether a waste is hazardous as defined by RCRA. Process knowledge documentation applicable to existing heterogeneous low-level solid mixed waste streams will be qualitatively verified through visual examination of the contents of select waste containers.

A.3.5.2 Verification of Future Low-Level Solid Mixed Waste

Future homogeneous low-level solid mixed waste streams that have been characterized using LANL's WPF and a certification program will undergo verification sampling and analysis at a frequency of at least 1 in 100 waste streams per year. The selection of waste streams to be analyzed will be random. Factory-sealed product containers and original containers redistributed for use at LANL will not be included in this analysis. Lab-packed chemicals in original containers that have been accepted by an off-site disposal or treatment facility need not be verified unless rejected by the off-site facility. Verification will be used to support waste characterization information provided on the WPF, as well as the certification program, for the waste stream.

Analytical results that show regulated constituents present at concentrations outside of the ranges documented on the WPF are cause for rejection of the WPF and will require investigation. Recharacterization of the waste stream will include sampling and analysis sufficient to establish the range of

regulated constituents potentially present in the waste stream. In addition, any time a process change that affects a waste stream occurs, verification analysis must be repeated to determine the regulatory status of the waste stream.

Future heterogeneous low-level solid mixed waste streams will undergo qualitative verification of acceptable knowledge through visual examination. Both homogeneous and heterogeneous waste streams will undergo qualitative verification through review of documentation supporting waste characterization as part of a certification program.

A.3.6 SPECIAL PROCEDURAL REQUIREMENTS

Additional waste management requirements specific to ignitable, reactive, and incompatible wastes, as well as compliance with LDR, are described below.

A.3.6.1 Procedures for Ignitable and Reactive Wastes

Pursuant to 20 NMAC 4.1, Subpart V, 264.17, revised November 1, 1995, specific waste management methods for ignitable and reactive low-level solid mixed waste are as follows. All low-level solid mixed wastes are in a solid physical form and are segregated from any potential liquid-bearing wastes within each waste management unit. Thus, ignitable and reactive wastes will not likely be released in a form capable of commingling and, therefore, would not react with other wastes or materials.

A.3.6.2 Procedures for Incompatible Wastes

Pursuant to 20 NMAC 4.1, Subpart V, 264.17, revised November 1, 1995, specific waste management methods for incompatible low-level solid mixed wastes are described below. Incompatible wastes are kept segregated during waste management activities. The segregation scheme separates wastes by EPA Hazardous Waste Numbers or by compatibility group schemes. All low-level solid mixed wastes are in a solid physical form; thus, it is not anticipated that incompatible wastes will be capable of commingling and reacting with other wastes or materials.

A.3.6.3 Procedures to Ensure Compliance with LDR Requirements

In accordance with the LDR requirements, waste to be shipped off site may need to be analyzed to determine whether it meets the applicable LDR treatment standards in 20 NMAC 4.1, Subpart VIII, Part 268, Subpart D, revised November 1, 1995. Treatment standards are expressed in two ways: (1) as constituent concentrations in the waste (from either an extract of the waste, as determined by the TCLP, or from the total volume of the waste, referred to as total waste analysis) or (2) as specified treatment technologies. Waste that must meet concentration-based treatment standards prior to shipment off site for disposal will be evaluated to determine if applicable constituent concentration levels have been attained. This will be accomplished by testing the waste or by using acceptable knowledge (EPA, 1994). Testing will be conducted only to certify that a waste meets LDR treatment standards. If a waste meets applicable LDR treatment standards based on acceptable knowledge, then testing to certify LDR compliance is not necessary. All analytical results completed in support of LDR requirements will be retained within the facility operating record.

Wastes resulting from facility operations that exceed applicable LDR treatment standards will be sent to a permitted treatment facility if treatment options are available for low-level solid mixed waste. For off-site

shipment of these wastes, LDR notifications, with information required under 20 NMAC 4.1, Subpart VIII, 268.7, revised November 1, 1995, will be supplied. In addition to the LDR notification, additional data for the waste stream (e.g., WPF, analytical data) may be provided to the designated treatment facility.

Any wastes that are determined through analysis to meet treatment standards as specified in 20 NMAC 4.1, Subpart VIII, Part 268, Subpart D, revised November 1, 1995, will be land disposed in a permitted facility without further treatment. An LDR notification form (Figure A.3-2), including all analytical records to support the notification, will be prepared and will accompany the shipment of waste to the receiving facility.

TABLE A.3-1
DESCRIPTIONS OF LOW-LEVEL SOLID MIXED WASTE AT LOS ALAMOS NATIONAL LABORATORY

Waste Description[a]	Waste Generating Process Description[a]	Technical Areas (TA)[a] Where Waste is Generated	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
Homogeneous Wastes						
Dewatered treatment sludges	Cemented filtered precipitate of hydroxides and sulfates from liquid waste treatment plants	TA-50-1	Knowledge[d] and limited analysis[e]	F001	1,1,1-Trichloroethane Methylene chloride	Not applicable (NA)[f]
Soils with heavy metals	Decomissioning and decontamination activities	TA-2, TA-35, TA-50, TA-53, TA-64	Knowledge[d] and preliminary analysis[e]	D004 D005 D006 D007 D008 D009 D010 D011	Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0
Environmental Restoration (ER) soils	Remediation of ground spill sites	TA-3	Knowledge[d] and analysis	D028 D029 F001 F002	1,2-Dichloroethane 1,1-Dichloroethylene 1,1,1-Trichloroethane 1,1,1-Trichloroethane	0.5 0.7 NA[f] NA[f]
Inorganic solid oxidizers	Various expired or off-specification unused solid reagents (with potential residual liquids) from stockroom cleanouts and decommissioning of research laboratories	TA-2, TA-3, TA-5, TA-16 TA-21, TA-35, TA-43, TA-46, TA-50, TA-59	Knowledge[d]	D001 D003 D005	Ignitability Reactivity Barium	NA[f] NA[f] 100.0
Heterogeneous Wastes						
Lead from surface decontamination	Radiation shielding in radioisotope applications and other reactor, accelerator, laser, and x-ray applications	TA-2, TA-3, TA-21, TA-35, TA-43, TA-46, TA-48 TA-50, TA-52, TA-53, TA-54,	Knowledge[d]	D008	Lead	5.0

Refer to footnotes at end of table.

TABLE A.3-1
DESCRIPTIONS OF LOW-LEVEL SOLID MIXED WASTE AT LOS ALAMOS NATIONAL LABORATORY
(continued)

Waste Description[a]	Waste Generating Process Description[a]	Technical Areas (TA)[a] Where Waste is Generated	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
		TA-55				

Refer to footnotes at end of table.

TABLE A.3-1
DESCRIPTIONS OF LOW-LEVEL SOLID MIXED WASTE AT LOS ALAMOS NATIONAL LABORATORY
(continued)

Heterogeneous Wastes (continued)						
Other lead waste	Activated or inseparable lead and other lead from radiation shielding where the lead is not amenable to decontamination	TA-2, TA-3, TA-8, TA-21, TA-35, TA-36, TA-41, TA-46, TA-48, TA-50, TA-52, TA-53, TA-54, TA-55	Knowledge[d]	D003 D007 D008 D009	Reactivity Chromium Lead Mercury	NA[f] 5.0 5.0 0.2
Noncombustible debris	Materials from demolition and decommissioning of research laboratories or reactor assemblies containing metal fittings and pipes, plus bricks and glass from dismantling buildings	TA-3, TA-16, TA-21, TA-46, TA-48, TA-50, TA-52, TA-53, TA-55	Knowledge[d]	D001 D003 D004 D005 D006 D007 D008 D009 D010 D011	Ignitability Reactivity Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	NA[f] NA[f] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0
Combustible debris	Machine shop and maintenance cleanup materials and rags (with potential residual liquids) and spent solvents, plus firing site debris	TA-3, TA-16, TA-21, TA-46, TA-48, TA-50, TA-54	Knowledge[d]	D001 D003 D005 D006 D007 D008 D009 D011 F001 F002 F003 F005	Ignitability Reactivity Barium Cadmium Chromium Lead Mercury Silver 1,1,1-Trichloroethane 1,1,1-Trichloroethane Spent non-halogenated solvents Spent non-halogenated solvents	NA[f] NA[f] 100.0 1.0 5.0 5.0 0.2 5.0 NA[f] NA[f] NA[f] NA[f]

Refer to footnotes at end of table.

TABLE A.3-1
DESCRIPTIONS OF LOW-LEVEL SOLID MIXED WASTE AT LOS ALAMOS NATIONAL LABORATORY
(continued)

Heterogeneous Wastes (continued)						
Organic-contaminated noncombustible solids	Absorbed oils, laboratory trash, and discarded equipment	TA-3. TA-35, TA-50, TA-54, TA-55, TA-59	Knowledge[d]	D004	Arsenic	5.0
				D005	Barium	100.0
				D006	Cadmium	1.0
				D007	Chromium	5.0
				D008	Lead	5.0
				D009	Mercury	0.2
				D010	Selenium	1.0
				D011	Silver	5.0
				D027	1,4-Dichlorobenzene	7.5
				D030	2,4-Dinitrotoluene	0.13[g]
				D032	Hexachlorobenzene	0.13[g]
				D033	Hexachlorobutadiene	0.5
				D034	Hexachloroethane	3.0
				D042	2,4,6-Trichlorophenol	2.0
				F001	1,1,1-Trichloroethane	NA[f]
					Trichloroethylene	
				F002	Chlorobenzene[h]	NA[f]
					Methylene chloride	
					Tetrachloroethylene[h]	
					Trichloroethylene	
				F004	Cresol[h]	NA[f]
					Nitrobenzene[h]	
				F005	Toluene	NA[f]
					Methyl ethyl ketone[h]	
					Benzene[h]	

Refer to footnotes at end of table.

TABLE A.3-1
DESCRIPTIONS OF LOW-LEVEL SOLID MIXED WASTE AT LOS ALAMOS NATIONAL LABORATORY
(continued)

Heterogeneous Wastes (continued)						
Organic-contaminated combustible solids	Similar to combustible debris plus paint-stripper trash	TA-3, TA-21, TA-35, TA-48, TA-50, TA-51, TA-52, TA-53, TA-54, TA-55,	Knowledge[d]	D001	Ignitability	NA[f]
				D003	Reactivitiy	NA[f]
				D007	Chromium	5.0
				D008	Lead	5.0
				D009	Mercury	0.2
				D030	2,4-Dinitrotoluene	0.13[g]
				D035	Methyl ethyl ketone[h]	
				F001	1,1,1-Trichloroethane	NA[f]
					Carbon tetrachloride	
				F002	1,1,1-Trichloroethane	NA[f]
					Tetrachloroethylene[h]	
					Trichloroethylene	
				F003	Acetone	NA[f]
					Ethyl Acetate	
					Methanol	
					Methyl Isobutyl Ketone	
					Xylene	
				F005	Toluene	NA[f]
					Methyl ethyl ketone[h]	
					Carbon Disulfide	
					Isobutanol	
Water-reactive wastes	Preparative machining and debris cleanup from high-explosives (HE) testing	TA-2, TA-3, TA-15, TA-16, TA-21, TA-36, TA-48, TA-53, TA-54, TA-55	Knowledge[d]	D001	Ignitability	NA[f]
				D003	Reactivity	NA[f]
				D005	Barium	100.0
				F002	1,1,1-Trichloroethane	NA[f]
Mercury wastes - to be determined	Old thermometers, hygrometers, vacuum tubes, and instruments containing unrecovered mercury	TA-3, TA-21, TA-43, TA-46, TA-48, TA-50, TA-53, TA-54, TA-55	Knowledge[d]	D007	Chromium	5.0
				D008	Lead	5.0
				D009	Mercury	0.2
				F001	1,1,1-Trichloroethane	NA[f]

Refer to footnotes at end of table.

TABLE A.3-1
DESCRIPTIONS OF LOW-LEVEL SOLID MIXED WASTE AT LOS ALAMOS NATIONAL LABORATORY
(continued)

Heterogeneous Wastes (continued)						
Nonradioactive or suspect waste items to be surveyed	Various waste managed as radioactive because they were generated in a location that had a possibility of resulting in radioactive contamination	TA-2, TA-3, TA-8, TA-15, TA-21, TA-33, TA-35, TA-36, TA-41, TA-43. TA-48, TA-50, TA-53, TA-54, TA-55, TA-59	Knowledge	D001	Ignitability	NA[f]
				D002	Corrosivity	NA[f]
				D003	Reactivity	NA[f]
				D004	Arsenic	5.0
				D005	Barium	100.0
				D006	Cadmium	1.0
				D007	Chromium	5.0
				D008	Lead	5.0
				D009	Mercury	0.2
				D010	Selenium	1.0
				D011	Silver	5.0
				D018	Benzene	0.5
				D022	Chloroform	6.0
				D038	Pyridine	5.0[g]
				F001	1,1,1-Trichloroethane	NA[f]
				F002	1,1,1-Trichloroethane	NA[f]
					Methyl chloride	
				F003	Acetone	NA[f]
					Ethyl acetate	
					Methanol	
					Methyl isobutyl ketone	
					Xylene	
				F005	Methyl ethyl ketone	NA[f]
					Pyridine	
					Toluene	

Refer to footnotes at end of table.

TABLE A.3-1
DESCRIPTIONS OF LOW-LEVEL SOLID MIXED WASTE AT LOS ALAMOS NATIONAL LABORATORY
(continued)

Heterogeneous Wastes (continued)						
Nonradioactive or suspect waste items to be surveyed (continued)	Various waste managed as radioactive because they were generated in a location that had a possibility of resulting in radioactive contamination	TA-2, TA-3, TA-8, TA-15, TA-21, TA-33, TA-35, TA-36, TA-41, TA-43. TA-48, TA-50, TA-53, TA-54, TA-55, TA-59	Knowledge	P012	Arsenic oxide	NA[f]
				P029	Copper cyanide	NA[f]
				P030	Cyanides, NOS	NA[f]
				P098	Potasium cyanide	NA[f]
				P106	Sodium cyanide	NA[f]
				P113	Thallium oxide	NA[f]
				P120	Vanadium oxide	NA[f]
				U075	Dichlorofluoromethane	NA[f]
				U077	Ethylene dichloride	NA[f]
				U121	Trichlorfluoromethane	NA[f]
				U131	Hexachloroethane	NA[f]
				U144	Acetic acid, lead salt	NA[f]
				U145	Lead phosphate	NA[f]
				U188	Phenol	NA[f]
				U190	Phthalic anhydride	NA[f]
				U204	Selenious acid	NA[f]
				U216	Thallium chloride	NA[f]
				U219	Thiourea	NA[f]
				U226	Methyl chloroform	NA[f]

[a] Denotes information from the Federal Facility Compliance Order, Los Alamos National Laboratory, "Site Treatment Plan Background Document," October 4, 1995. The TAs shown in this table were identified by LANL as waste generation points. Future waste may be generated at additional TAs.

[b] U.S. Environmental Protection Agency.

[c] A solid waste exhibits the characteristic of toxicity if the extract from a representative sample of the waste contains any of the contaminants listed at a concentration equal to or greater than the respective value given in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart II, Part 261, Subpart D, revised November 1, 1995.

[d] Knowledge: indicates process knowledge utilized as the basis for hazardous waste designation.

[e] Limited and/or preliminary analysis: In reference to the basis for hazardous waste classification, indicates that sampling and analysis has been performed but that the data may not be completely documented or that data may exist but may not be verifiable.

[f] Not applicable: Refers to the absence of regulatory limits for ignitable, corrosive, and reactive characteristic wastes and F-, P-, and U-listed wastes.

[g] Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level (20 NMAC 4.1, Subpart II, 261.24, Table 1, revised November 1, 1995).

[h] Process knowledge provided information that these constituents may have been used as solvents. Toxicity characteristic regulatory levels may also apply and will be evaluated.

TABLE A.3-2
PARAMETERS, CHARACTERIZATION METHODS, AND RATIONALE FOR LOW-LEVEL SOLID MIXED WASTE

Waste Description[a]	Analytical Parameter[b]	Characterization Method	Rationale
Homogeneous Wastes			
Dewatered treatment sludges	– Potential volatile organic compounds (VOC) (see Table A.3-3)	– Acceptable knowledge[c] – Sample and analyze randomly selected number of drums in waste stream (see Table A.3-3)	– Determine concentration of organics, if any
Soils with heavy metals	– RCRA-regulated metals (see Table A.3-3)	– Acceptable knowledge[c] – Sample and analyze randomly selected number of drums in waste stream (see Table A.3-3)	– Determine toxicity characteristic
Environmental Restoration (ER) soils	– VOCs	– Acceptable knowledge[c] – Sample and analyze randomly selected number of drums in waste stream (see Table A.3-3)	– Determine presence of F-listed solvents – Determine toxicity characteristic
Inorganic solid oxidizers	– RCRA-regulated metals	– Acceptable knowledge[c] – Sample and analyze randomly selected number of drums in waste stream (see Table A.3-3)	– Determine toxicity characteristic – Determine characteristic for ignitability and reactivity
Heterogeneous Wastes			
Lead from surface decontamination	– RCRA-regulated metals	– Acceptable knowledge[c]	– Determine toxicity characteristic
Other lead waste	– RCRA-regulated metals	– Acceptable knowledge[c]	– Determine characteristic for reactivity – Determine toxicity characteristic
Noncombustible debris	– RCRA-regulated metals	– Acceptable knowledge[c]	– Determine toxicity characteristic – Determine characteristic for ignitability and reactivity
Combustible debris	– RCRA-regulated metals – VOCs	– Acceptable knowledge[c]	– Determine toxicity characteristic – Determine presence of F-listed solvents – Determine characteristic for ignitability and reactivity

Refer to footnotes at end of table.

TABLE A.3-2
PARAMETERS, CHARACTERIZATION METHODS, AND RATIONALE FOR LOW-LEVEL SOLID MIXED WASTE
(continued)

Heterogeneous Wastes (Continued)			
Organic-contaminated noncombustible solids	– RCRA-regulated metals – VOCs	– Acceptable knowledge[c]	– Determine toxicity characteristic – Determine presence of F-listed solvents
Organic-contaminated combustible solids	– RCRA-regulated metals – VOCs	– Acceptable knowledge[c]	– Determine characteristic for ignitability and reactivity – Determine toxicity characteristic – Determine presence of F-listed solvents
Water-reactive wastes	– RCRA-regulated metals – VOCs	– Acceptable knowledge[c]	– Determine toxicity characteristic – Determine characteristic for ignitability and reactivity – Determine presence of F-listed solvents
Mercury wastes - to be determined	– RCRA-regulated metals – VOCs	– Acceptable knowledge[c]	– Determine toxicity characteristic – Determine presence of F-listed solvents
Nonradioactive or suspect waste items to be surveyed	– RCRA-regulated metals – VOCs	– Acceptable knowledge[c]	– Determine toxicity characteristic – Determine presence of F-listed solvents and/or P- or U-listed unused commercial chemical products – Determine characteristic for ignitability, corrosivity, and reactivity

[a] Information contained in this column is from the Federal Facility Compliance Order, Los Alamos National Laboratory, "Site Treatment Plan Background Volume," October 4, 1995.
[b] Parameter selection is based on process knowledge for each waste stream. Additional parameters may be selected for each waste stream as necessary.
[c] According to U.S. Environmental Protection Agency (EPA), 1994, "Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Waste - A Guidance Manual," *OSWER 9938.4-03*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C., acceptable knowledge is broadly defined as process knowledge, waste analysis data (e.g., sampling and analysis), and/or facility records of analysis performed before the effective date of Resource Conservation and Recovery Act regulations.

TABLE A.3-3
SUMMARY OF WASTE CHARACTERIZATION TECHNIQUES FOR LOW-LEVEL SOLID MIXED WASTE

Parameter[a]	Method Numbers	Test Method	Rationale
Volatile organic compounds (VOC) in waste matrix: Benzene Chloroform 1,2-Dichloroethane 1,1-Dichloroethylene Methyl ethyl ketone Methylene chloride Spent halogenated solvents Spent nonhalogenated solvents 1,1,1-Trichloroethane	ASTM Method D4547-91[b] U.S. EPA/540/4-91/001[c] SW-846 (1311, 8240, 8240A, 8240B, 8260, 8260A)[d] or equivalent methods[e]	Total and/or toxicity characteristic leaching procedure (TCLP) VOC analysis by gas chromatography/ mass spectrometry (GC/MS) Process knowledge for heterogeneous wastes	Determine total and/or TCLP VOC concentrations in samples of solid process residues and soils
Semivolatile organic compounds (SVOC) in waste: 1,4-Dichlorobenzene 2,4-Dinitrotoluene Hexachlorobenzene Hexachlorobutadiene Hexachloroethane 2,4,6 Trichlorophenol	SW-846 (1311, 8250, 8250A, 8270A, 8270B)[d] or equivalent methods[e]	Total and/or TCLP SVOC analysis by GC/MS Process knowledge for heterogeneous waste	Determine total and/or TCLP SVOC concentration in samples of solid process residues and soils
Metals in waste: Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	SW-846 (3051, 1311, 6010, 6010A, 6020, 7060, 7060A, 7061A)[d] (3051, 1311, 6010, 6010A, 6020, 7080, 7080A, 7081)[d] (3051, 1311, 6010, 6010A, 6020, 7130, 7131, 7131A)[d] (3051, 1311, 6010, 6010A, 6020, 7190, 7191)[d] (3051, 1311, 6010, 6010A, 6020, 7420, 7421)[d] (1311, 7470, 7470A, 7471, 7471A)[d] (3051, 1311, 6010, 6010A, 6020, 7740, 7741, 7741A, 7742)[d] (3051, 1311, 6010, 6010A, 6020, 7760A, 7761)[d] or equivalent methods[e]	Total and/or TCLP metals analysis Inductively-coupled plasma spectroscopy Atomic absorption spectroscopy Cold vapor atomic absorption spectroscopy Process knowledge for heterogeneous wastes	Determine total and/or TCLP metals concentrations in samples of solid process residues and soils
Reactive Cyanide	SW-846, Test Method to Determine Hydrogen Cyanide Released from Wastes[e]	Colorimetric or titrametric measurement of hydrogen cyanide released from waste following reflux distillation under acidic conditions	Determine concentration of reactive cyanides in waste

[a] Information in this column is from "Report for the Characterization Review of Low-Level Mixed Waste, Final Draft," 1995, Los Alamos National Laboratory, Los Alamos, New Mexico, and its related database.

[b] American Society for Testing and Materials (ASTM), 1991, "Standard Practice for Sampling Waste and Soils for Volatile Organic Compounds," *ASTM D4547-91*, Annual Book of ASTM Standards, Philadelphia, Pennsylvania, American Society for Testing and Materials.

[c] U.S. Environmental Protection Agency (EPA), 1991, "Soil Sampling and Analysis for Volatile Organic Compounds," *EPA/540/4-91/001*, Office of Research and Development,

U.S. Environmental Protection Agency.

[d] U.S. Environmental Protection Agency (EPA), 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*, Third Edition, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

[e] Equivalent methods, subject to EPA approval, may be substituted.

TABLE A.3-4
RECOMMENDED SAMPLE CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES[a]

Analyte Class and Sample Type	Container	Preservative	Holding Time
Volatile Organics			
Concentrated Waste Samples	8-ounce (oz) (240-milliliter [mL]) wide-mouth glass with Teflon™ liner	None.	14 days
Liquid Samples			
No residual chlorine present	2 x 40-mL vials with Teflon™-lined septum caps	Cool to 4 degrees Celsius (°C)[b].	14 days
Residual chlorine present	2 x 40-mL vials with Teflon™-lined septum caps	Collect sample in a 4 oz soil volatile organic analyte (VOA) container that has been pre-preserved with 4 drops of 10 percent sodium thiosulfate. Gently mix sample and transfer to a 40-mL VOA vial. Cool to 4°C.	14 days
Acrolein and acrylonitrile	2 x 40-mL vials with Teflon™-lined septum caps	Adjust to pH[c] of 4–5. Cool to 4°C.	14 days
Soil/Sediments and Sludges	4-oz (120-mL) wide-mouth glass with Teflon™ liner, or wide-mouth glass container sealed with a septum	Cool to 4°C.	14 days

Refer to footnotes at end of table.

TABLE A.3-4
RECOMMENDED SAMPLE CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES[a]
(continued)

Semivolatile Organics/Organochlorine Pesticides and Herbicides			
Concentrated Waste Samples	8-oz (240-mL) wide-mouth glass with Teflon™ liner	None.	Samples must be extracted within 14 days and analyzed within 40 days following extraction.
Soil/Sediments and Sludges	8-oz (240-mL) wide-mouth glass with Teflon™ liner	Cool to 4°C.	Samples must be extracted within 14 days and analyzed within 40 days following extraction.
Metals (except hexavalent chromium and mercury)			
Liquid Samples			
Total	1-liter polyethylene	Add nitric acid to pH of less than 2.	180 days
Chromium VI	500-mL polyethylene	Cool to 4°C.	24 hours
Mercury	500-mL polyethylene	Add nitric acid to pH of less than 2.	28 days
Soil/Sediments and Sludges	500-mL polyethylene	Cool to 4°C.	180 days

[a] U.S. Environmental Protection Agency (EPA), 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*, Third Edition, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.
[b] Adjust to pH (see footnote c) of less than 2 with sulfuric acid, hydrochloric acid, or solid sodium bisulfate.
[c] A term used to describe the hydrogen-ion activity of a system.

Los Alamos
National Laboratory

WASTE PROFILE FORM

Account Information

For rapid processing, complete all sections in black or blue ink and mail this form to Waste Services Group at MS J579

Reference Number

Waste Generator's Name (Print)	Znumber	Waste Management Coordinator's Name (Print)	Znumber

Generator's Group	Generator's Telephone	Generator's Mail Stop	Waste Stream Technical Area	Building	Room

Waste Accumulation
Check as many as apply.

- ☐ Satellite accumulation area --> site no.: _____
- ☐ Less than 90 day accumulation area --> site no.: _____
- ☐ Radioactive Materials Management Area (RMMA) --> site no.: _____
- ☐ None of the above

Method of Characterization
Check as many as apply.

- ☐ Acceptable Knowledge (AK)
- ☐ Analysis attached --> sample/request no. _____
- ☐ MSDS attached
- ☐ Request for analysis

Section 1- Chemical and Physical Characteristics

For help in completing this section of the form, call 5-WAST or 5-4000.

Waste Type
Check only one.

- ☐ Unused/unspent chemical
  Check Waste Classes and Associated Documentation Only
- ☐ Process waste/spent chemical
  Complete all of Section 1.

Waste Classes
Check as many as apply.

- ☐ On-going generation
- ☐ One-time generation
- ☐ Radioactive (complete Sec. 2)
- ☐ Non-radioactive
- ☐ Wastewater (complete Sec. 3)
- ☐ Classified/Sensitive

Associated Documentation
Check as many as apply.

- ☐ Process SOP --> no.: ____
- ☐ RMMA OP --> no.: ____
- ☐ WM SOP --> no.: ____
- ☐ Other --> _____
- ☐ None --> describe below

Waste Category
Check as many as apply.

- ☐ Solvent
- ☐ Degreaser
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated hazardous waste residue
- ☐ Explosive process waste
- ☐ Infectious/biological waste
- ☐ Beryllium
- ☐ Asbestos-friable
- ☐ Asbestos-nonfriable
- ☐ Empty containers
- ☐ PCB (<50 ppm)
  - ☐ PCB (50 - 500 ppm)
  - ☐ PCB (> 500 ppm)
  - → id. no. : _____
- ☐ Not applicable --> describe below

Waste Sources
Check as many as apply.

- ☐ Research and development
- ☐ Maintenance
- ☐ Construction
- ☐ Material processing
- ☐ Decon/decom
- ☐ Investigation derived
- ☐ Remediation
- ☐ UST - petroleum
- ☐ UST - non-petroleum
- ☐ Generator treatment
- ☐ Interim/permitted treatment
- ☐ Industrial sludge
- ☐ Sanitary sludge
- ☐ Abatement

Waste Matrix
Check only one.

Gas
- ☐ ≤ 1.5 Atmospheres
- ☐ > 1.5 Atmospheres

Liquid
- ☐ Aqueous
- ☐ Organic
- ☐ Inorganic

Solid
- ☐ Powder/ash
- ☐ Solid
- ☐ Absorbed liquid

Matrix Type
Check only one.

- ☐ Homogeneous
- ☐ Heterogeneous --> describe below

Waste/Process Description

_____
_____
_____
_____
_____
_____
_____

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FIGURE A.3-1

WASTE PROFILE FORM

Section 1- Chemical and Physical Characteristics (continued)

Ignitability (degrees F.)
Check only one.

- ☐ < 73
- ☐ 73-99
- ☐ 100-139
- ☐ 140-200
- ☐ > 200
- ☐ Ignitable solid
- ☐ DOT oxidizer
- ☐ Not ignitable

Corrosivity (pH)
Check only one.

- ☐ ≤ 2.0
- ☐ 2.1-4.0
- ☐ 4.1-6.0
- ☐ 6.1-9.0
- ☐ 9.1-12.4
- ☐ ≥ 12.5
- ☐ Liquid corrosive to steel
- ☐ Not aqueous

Reactivity
Check as many as apply.

- ☐ Unstable
- ☐ Water reactive
- ☐ Pyrophoric
- ☐ Cyanide bearing
- ☐ Sulfide bearing
- ☐ Shock sensitive
- ☐ Explosive - class _____
- ☐ Non-reactive

Boiling Point (degrees F.)
Check only one.

- ☐ ≤ 95
- ☐ > 95
- ☐ Not applicable

Identify presence of contaminants.			Minimum	Maximum	Unit (ppm or % only)	Analytical method
Toxicity Characteristic Metals						
Arsenic	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Barium	☐ None	☐ < 100.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Cadmium	☐ None	☐ < 1.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Chromium	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Lead	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Mercury	☐ None	☐ < 0.2 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Selenium	☐ None	☐ < 1.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Silver	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Toxicity Characteristic Organic Compounds						
Benzene	☐ None	☐ < 0.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Carbon tetrachloride	☐ None	☐ < 0.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Chlorobenzene	☐ None	< 100.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Chloroform	☐ None	☐ < 6.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Cresol	☐ None	< 200.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
1,4-dichlorobenzene	☐ None	☐ < 7.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
1,2-Dichloroethane	☐ None	☐ < 0.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
1,1-Dichloroethylene	☐ None	☐ < 0.7 ppm	_____	to _____	_____	☐ TCLP ☐ Total
2,4-Dinitrotoluene	☐ None	☐ < 0.13 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Hexachlorobenzene	☐ None	☐ < 0.13 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Hexachlorobutadiene	☐ None	☐ < 0.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Hexachloroethane	☐ None	☐ < 3.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Methyl ethyl ketone	☐ None	< 200.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Nitrobenzene	☐ None	☐ < 2.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Pentachlorophenol	☐ None	< 100.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Pyridine	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Perchloroethylene or tetrachloroethylene	☐ None	☐ < 0.7 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Trichloroethylene	☐ None	☐ < 0.5 ppm	_____	to _____	_____	☐ TCLP ☐ Total
2,4,5-Trichlorophenol	☐ None	☐ < 400.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
2,4,6-Trichlorophenol	☐ None	☐ < 2.0 ppm	_____	to _____	_____	☐ TCLP ☐ Total
Vinyl chloride	☐ None	☐ < 0.2 ppm	_____	to _____	_____	☐ TCLP ☐ Total

Additional Chemical Constituents and Contaminants (for hazardous constituents, see AR 10-3, Appendix A)
List all other constituents (including inerts) not identified above and attach any applicable analyses.

Name of constituent	Cas no.(optional)	Minimum	Maximum	Unit (ppm or % only)
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____
_____	_____	_____	to _____	_____

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FIGURE A.3-1

WASTE PROFILE FORM (continued)

Section 2- Radiological Characteristics

For help in completing this section of the form, call 5-WAST or 5-4000.

	Range minimum		maximum	Unit (Ci/g or Ci/l)
General				
☐ Alpha	_____	to	_____	_____
☐ Beta	_____	to	_____	_____
☐ Gamma	_____	to	_____	_____
TRU radionuclides				
☐ None present				
☐ Am-241	_____	to	_____	_____
☐ Am-243	_____	to	_____	_____
☐ Cf-249	_____	to	_____	_____
☐ Cf-251	_____	to	_____	_____
☐ Cm-243	_____	to	_____	_____
☐ Cm-245	_____	to	_____	_____
☐ Cm-247	_____	to	_____	_____
☐ Pu-238	_____	to	_____	_____
☐ Pu-239	_____	to	_____	_____
☐ Pu-240	_____	to	_____	_____
☐ Pu-242	_____	to	_____	_____
Fission products				
☐ None present				
☐ Ba-140	_____	to	_____	_____
☐ Ce-144	_____	to	_____	_____
☐ Cs-134	_____	to	_____	_____
☐ Cs-137	_____	to	_____	_____
☐ I-129	_____	to	_____	_____
☐ I-133	_____	to	_____	_____
☐ Kr-85	_____	to	_____	_____
☐ Nb-95	_____	to	_____	_____
☐ Ru-106	_____	to	_____	_____
☐ Sb-125	_____	to	_____	_____
☐ Sr-90	_____	to	_____	_____
☐ Tc-99	_____	to	_____	_____
☐ Zr-93	_____	to	_____	_____
☐ Zr-95	_____	to	_____	_____
Activation products				
☐ None present				
☐ As -74	_____	to	_____	_____
☐ Be-7	_____	to	_____	_____
☐ C-14	_____	to	_____	_____
☐ Co-56	_____	to	_____	_____
☐ Co-57	_____	to	_____	_____
☐ Co-58	_____	to	_____	_____
☐ Co-60	_____	to	_____	_____
☐ Cr-51	_____	to	_____	_____
☐ Eu-152	_____	to	_____	_____
☐ Mn-52	_____	to	_____	_____
☐ Mn-54	_____	to	_____	_____
☐ Nb-94	_____	to	_____	_____
☐ Ni-59	_____	to	_____	_____
☐ Ni-63	_____	to	_____	_____
☐ Rb-83	_____	to	_____	_____
☐ Rb-84	_____	to	_____	_____
☐ Se-75	_____	to	_____	_____
☐ Sr-82	_____	to	_____	_____
☐ Sr-85	_____	to	_____	_____
☐ V-48	_____	to	_____	_____
☐ Y-88	_____	to	_____	_____
☐ Zn-65	_____	to	_____	_____
☐ Zr-88	_____	to	_____	_____

	Range minimum		maximum	Unit (Ci/g or Ci/l)
Other				
☐ None present				
☐ Am-242	_____	to	_____	_____
☐ Bi-207	_____	to	_____	_____
☐ Bi-210	_____	to	_____	_____
☐ Cf-250	_____	to	_____	_____
☐ Cf-252	_____	to	_____	_____
☐ Cm-244	_____	to	_____	_____
☐ H-3	_____	to	_____	_____
☐ Pa-231	_____	to	_____	_____
☐ Pb-210	_____	to	_____	_____
☐ Po-210	_____	to	_____	_____
☐ Pu-236	_____	to	_____	_____
☐ Pu-241	_____	to	_____	_____
☐ Ra-226	_____	to	_____	_____
☐ Ra-228	_____	to	_____	_____
☐ Th-230	_____	to	_____	_____
☐ Th-232	_____	to	_____	_____
☐ U-232	_____	to	_____	_____
☐ U-233	_____	to	_____	_____
☐ U-234	_____	to	_____	_____
☐ U-235	_____	to	_____	_____
☐ U-236	_____	to	_____	_____
☐ U-238	_____	to	_____	_____
Add'l radionuclides				
☐ No additional radionuclides present				
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
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_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____
_____	_____	to	_____	_____

Contamination Type: *Check as many as apply.*

☐ Volume Contamination
☐ Surface Contamination

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FIGURE A.3-1

WASTE PROFILE FORM
(continued)

Section 3 - Wastewater Characteristics

For help in completing this section of the form, call 7-4301.

Identify presence of contaminants			Minimum	Maximum	Unit (ppm or % only)	Analytical method	
Aluminum	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP	☐ Total
Boron	☐ None	☐ < 5.0 ppm	_____	to _____	_____	☐ TCLP	☐ Total
Cobalt	☐ None	☐ < 1.0 ppm	_____	to _____	_____	☐ TCLP	☐ Total
Copper	☐ None	☐ < 1.0 ppm	_____	to _____	_____	☐ TCLP	☐ Total
Vanadium	☐ None	☐ < 0.10 ppm	_____	to _____	_____	☐ TCLP	☐ Total
Zinc	☐ None	☐ < 95.4 ppm	_____	to _____	_____	☐ TCLP	☐ Total

Maximum daily flow when discharge occurs: _____ ☐ Gallons ☐ Liters

Average daily flow when discharge occurs: _____ ☐ Gallons ☐ Liters

Estimated number of days per year that discharge will occur: _____

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-50-1: _____ ☐ Gallons ☐ Liters

For TA-55 use only. Wastewater will be discharged through one of the following:

☐ Acid line ☐ Caustic line ☐ Industrial waste line

Section 4 - Additional Information

If additional information is available on the chemical, physical, or radiological character of the waste not covered on this form, provide it below:

WASTE GENERATOR CERTIFICATION: *Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.*

Signature	Date

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FIGURE A.3-1

WASTE PROFILE FORM (continued)

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LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

A copy of this form must be attached to each Waste Profile Form and to each Uniform Hazardous Waste Manifest required to transport waste within LANL, pursuant to 40 CFR 268.7(a)(1)

Waste Profile Form No.	Chemical Waste/ Waste Disposal Record No.	Uniform Hazardous Waste Manifest No.	Date of Waste Pickup

Check only one.

☐ Non-wastewater

☐ Wastewater [as defined in 40 CFR 268.2(f)]

NOTIFICATION OF CALIFORNIA LIST APPLICABILITY

Check all that apply.

☐ Liquid hazardous waste containing PCBs at a concentration of ≥50 ppm.

☐ A D001 – D017 liquid waste containing ≥134 mg/L of nickel and/or ≥130 mg/L of thallium.

☐ A D001 – D011 waste containing Halogenated Organic Compounds (HOCs) listed in 40 CFR 268, Appendix III, at ≥1000 ppm.

NOTIFICATION OF "D" CHARACTERISTIC EPA WASTE CODES

Check all that apply.

EPA Waste Code	Waste Description and/or Subcategory (as needed)
☐ D001*	Ignitable characteristic wastes [except for the Section 261.21(a)(1) High TOC Subcategory] that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.
☐ D001	High TOC Ignitable Characteristic Liquids Subcategory based on 40 CFR 261.21(a)(1) - Greater than 10% total organic carbon.
☐ D002*	Corrosive Characteristic Wastes that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.
☐ D003	Reactive Sulfides Subcategory
☐ D003	Reactive Cyanides Subcategory
☐ D003	Water Reactive Subcategory
☐ D003	Other Reactives Subcategory [based on 261.23(a)(1)]
☐ D004	
☐ D005	
☐ D006	Wastes that exhibit the TC for cadmium
☐ D006	Cadmium Containing Batteries Subcategory
☐ D007	
☐ D008	Wastes that exhibit TC for lead
☐ D008	Lead Acid Batteries Subcategory
☐ D008	Radioactive Lead Solids Subcategory
☐ D009	High Mercury-Organic Subcategory (≥260 mg/kg Hg with organics and not incinerator residues)
☐ D009	High Mercury-Inorganic Subcategory (≥260 mg/kg Hg [with inorganics])
☐ D009	Low Mercury Subcategory (<260 mg/kg Hg)
☐ D009	All D009 wastewaters
☐ D009	Elemental mercury contaminated with radioactive materials.
☐ D009	Hydraulic oil contaminated with Mercury Radioactive Materials Subcategory
☐ D010	
☐ D011	

☐ D012*	☐ D020*	☐ D028*	☐ D036*
☐ D013*	☐ D021*	☐ D029*	☐ D037*
☐ D014*	☐ D022*	☐ D030*	☐ D038*
☐ D015*	☐ D023*	☐ D031*	☐ D039*
☐ D016*	☐ D024*	☐ D032*	☐ D040*
☐ D017*	☐ D025*	☐ D033*	☐ D041*
☐ D018*	☐ D026*	☐ D034*	☐ D042*
☐ D019*	☐ D027*	☐ D035*	☐ D043*

*All applicable Underlying Hazardous Constituents in these characteristic wastes must be checked in Table UTS.

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LAND DISPOSAL RESTRICTIONS
NOTIFICATION FORM

NOTIFICATION FOR F001 – F005 SPENT SOLVENT WASTES

Check all that apply.

Spent solvent wastes with the following constituents only.

EPA Waste Code	Constituents in the waste	
☐ F001	☐ Acetone	☐ Isobutyl alcohol
☐ F002	☐ Benzene	☐ Methanol
☐ F003	☐ n-Butyl alcohol	☐ Methylene chloride
☐ F004	☐ Carbon disulfide (wastewater only)	☐ Methyl ethyl ketone
☐ F005	☐ Carbon tetrachloride	☐ Methyl isobutyl ketone
	☐ Chlorobenzene	☐ Nitrobenzene
	☐ o-cresol	☐ Pyridine
	☐ m-cresol	☐ Tetrachloroethylene
	☐ p-cresol	☐ Toluene
	☐ Cresol-mixed isomers (Cresylic acid)	☐ 1,1,1-Trichloroethane
	☐ Cyclohexanone (wastewater only)	☐ 1,1,2-Trichloroethane
	☐ o-Dichlorobenzene	☐ 1,1,2-Trichloro – 1,2,2-trifluoroethane
	☐ Ethyl acetate	☐ Trichloroethylene
	☐ Ethyl benzene	☐ Trichloromonofluoromethane
	☐ Ethyl ether	☐ Xylenes – mixed isomers (o-, m-, p-xylene)

Check all that apply.

EPA Waste Codes	Constituents in the waste
☐ F003	☐ Carbon disulfide
☐ F005	☐ Cyclohexanone
	☐ Methanol

Note: Treatment standards for these constituents apply to F001 – F005 wastes which contain only one, two, or all three of these constituents.

Check only one, if applicable.

EPA Waste Code	Constituents in the waste
☐ F005	☐ Containing 2-nitropropane as the only listed F001 – F005 solvent.
	☐ Containing 2-ethoxyethanol as the only listed F001 – F005 solvent.

NOTIFICATION FOR OTHER "F" WASTES

Check only one, if applicable.

☐ F006
☐ F007
☐ F008
☐ F009
☐ F027

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LAND DISPOSAL RESTRICTIONS NOTIFICATION FORM

NOTIFICATION FOR "P" AND "U" LISTED WASTE CODES

- ☐ P001
- ☐ P002
- ☐ P003
- ☐ P004
- ☐ P005
- ☐ P006
- ☐ P007
- ☐ P008
- ☐ P009
- ☐ P010
- ☐ P011
- ☐ P012
- ☐ P013
- ☐ P014
- ☐ P015
- ☐ P016
- ☐ P017
- ☐ P018
- ☐ P020
- ☐ P021
- ☐ P022
- ☐ P023
- ☐ P024
- ☐ P026
- ☐ P027
- ☐ P028
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- ☐ P030
- ☐ P031
- ☐ P033
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- ☐ U247
- ☐ U248
- ☐ U249
- ☐ U328
- ☐ U353
- ☐ U359

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National Laboratory

LAND DISPOSAL RESTRICTIONS
NOTIFICATION FORM

TABLE UTS—Universal Treatment Standards

(Check the applicable underlying hazardous constituents for D001, D002, and D012 –D043 characteristic wastes only.)

Regulated constituent—common name

- ☐ Acenaphthylene
- ☐ Acenaphthene
- ☐ Acetone
- ☐ Acetonitrile
- ☐ Acetophenone
- ☐ 2-Acetylaminofluorene
- ☐ Acrolein
- ☐ Acrylamide
- ☐ Acrylonitrile
- ☐ Aldrin
- ☐ 4-Aminobiphenyl
- ☐ Aniline
- ☐ Anthracene
- ☐ Aramite
- ☐ alpha-BHC
- ☐ beta-BHC
- ☐ delta-BHC
- ☐ gamma-BHC
- ☐ Benzene
- ☐ Benz(a)anthracene
- ☐ Benzal chloride
- ☐ Benzo(b)fluoranthene (difficult to distinguish from benzo(k)fluoranthene)
- ☐ Benzo(k)fluoranthene (difficult to distinguish from benzo(b)fluoranthene)
- ☐ Benzo(g,h,i)perylene
- ☐ Benzo(a)pyrene
- ☐ Bromodichloromethane
- ☐ Methyl bromide (Bromomethane)
- ☐ 4-Bromophenyl phenyl ether
- ☐ n-Butyl alcohol
- ☐ Butyl benzyl phthalate
- ☐ 2-sec-Butyl-4,6-dinitrophenol (Dinoseb)
- ☐ Carbon disulfide
- ☐ Carbon tetrachloride
- ☐ Chlordane (alpha and gamma isomers)
- ☐ p-Chloroaniline
- ☐ Chlorobenzene
- ☐ Chlorobenzilate
- ☐ 2-Chloro-1,3-butadiene
- ☐ Chlorodibromomethane
- ☐ Chloroethane
- ☐ bis(2-Chloroethoxy)methane
- ☐ bis(2-Chloroethyl)ether
- ☐ Chloroform
- ☐ bis(2-Chloroisopropyl)ether
- ☐ p-Chloro-m-cresol
- ☐ 2-Chloroethyl vinyl ether
- ☐ Chloromethane (Methyl chloride)
- ☐ 2-Chloronaphthalene
- ☐ 2-Chlorophenol
- ☐ 3-Chloropropylene
- ☐ Chrysene
- ☐ o-Cresol
- ☐ m-Cresol (difficult to distinguish from p-cresol)
- ☐ p-Cresol (difficult to distinguish from m-cresol)
- ☐ Cyclohexanone
- ☐ 1,2-Dibromo-3-chloropropane
- ☐ Ethylene dibromide (1,2-Dibromoethane)
- ☐ Dibromomethane
- ☐ 2,4-D (2,4-Dichlorophenoxyacetic acid)
- ☐ o,p′-DDD
- ☐ p,p′-DDD
- ☐ o,p′-DDE
- ☐ p,p′-DDE
- ☐ o,p′-DDT
- ☐ p,p′-DDT
- ☐ Dibenz(a,h)anthracene
- ☐ Dibenz(a,e)pyrene
- ☐ m-Dichlorobenzene
- ☐ o-Dichlorobenzene
- ☐ p-Dichlorobenzene
- ☐ Dichlorodifluoromethane
- ☐ 1,1-Dichloroethane
- ☐ 1,2-Dichloroethane
- ☐ 1,1-Dichloroethylene
- ☐ trans-1,2-Dichloroethylene
- ☐ 2,4-Dichlorophenol
- ☐ 2,6-Dichlorophenol
- ☐ 1,2-Dichloropropane
- ☐ cis-1,3-Dichloropropylene
- ☐ trans-1,3-Dichloropropylene
- ☐ Dieldrin
- ☐ Diethyl phthalate
- ☐ 2-4,Dimethyl phenol
- ☐ Dimethyl phthalate
- ☐ Di-n-butyl phthalate
- ☐ 1,4-Dinitrobenzene

TABLE UTS—Universal Treatment Standards

(Check the applicable underlying hazardous constituents for D001, D002, and D012 –D043 characteristic wastes only.)

Regulated constituent—common name

- ☐ 4,6-Dinitro-o-cresol
- ☐ 2,4-Dinitrophenol
- ☐ 2,4-Dinitrotoluene
- ☐ 2,6-Dinitrotoluene
- ☐ Di-n-octyl phthalate
- ☐ p-Dimethylaminoazobenzene
- ☐ Di-n-propylnitrosamine
- ☐ 1,4-Dioxane
- ☐ Diphenylamine (difficult to distinguish from diphenylnitrosamine)
- ☐ Diphenylnitrosamine (difficult to distinguish from diphenylamine)
- ☐ 1,2-Diphenylhydrazine
- ☐ Disulfoton
- ☐ Endosulfan I
- ☐ Endosulfan II
- ☐ Endosulfan sulfate
- ☐ Endrin
- ☐ Endrin aldehyde
- ☐ Ethyl acetate
- ☐ Ethyl cyanide (Propanenitrile)
- ☐ Ethyl benzene
- ☐ Ethyl ether
- ☐ bis(2-Ethylhexyl) phthalate
- ☐ Ethyl methacrylate
- ☐ Ethylene oxide
- ☐ Famphur
- ☐ Fluoranthene
- ☐ Fluorene
- ☐ Heptachlor
- ☐ Heptachlor epoxide
- ☐ Hexachlorobenzene
- ☐ Hexachlorobutadiene
- ☐ Hexachlorocyclopentadiene
- ☐ HxCDDs (All Hexachlorodibenzo-p-dioxins)
- ☐ HxCDFs (All Hexachlorodibenzofurans)
- ☐ Hexachloroethane
- ☐ Hexachloropropylene
- ☐ Indeno (1,2,3-c,d) pyrene
- ☐ Iodomethane
- ☐ Isobutyl alcohol
- ☐ Isodrin
- ☐ Isosafrole
- ☐ Kepone
- ☐ Methacrylonitrile
- ☐ Methanol
- ☐ Methapyrilene
- ☐ Methoxychlor
- ☐ 3-Methylcholanthrene
- ☐ 4,4-Methylene bis(2-chloroaniline)
- ☐ Methylene chloride
- ☐ Methyl ethyl ketone
- ☐ Methyl isobutyl ketone
- ☐ Methyl methacrylate
- ☐ Methyl methansulfonate
- ☐ Methyl parathion
- ☐ Naphthalene
- ☐ 2-Naphthylamine
- ☐ o-Nitroaniline
- ☐ p-Nitroaniline
- ☐ Nitrobenzene
- ☐ 5-Nitro-o-toluidine
- ☐ o-Nitrophenol
- ☐ p-Nitrophenol
- ☐ N-Nitrosodiethylamine
- ☐ N-Nitrosodimethylamine
- ☐ N-Nitroso-di-n-butylamine
- ☐ N-Nitrosomethylethylamine
- ☐ N-Nitrosomorpholine
- ☐ N-Nitrosopiperidine
- ☐ N-Nitrosopyrrolidine
- ☐ Parathion
- ☐ Total PCBs (sum of all PCB isomers, or all Aroclors)
- ☐ Pentachlorobenzene
- ☐ PeCDDs (All Pentachlorodibenzo-p-dioxins)
- ☐ PeCDFs (All Pentachlorodibenzofurans)
- ☐ Pentachloroethane
- ☐ Pentachloronitrobenzene
- ☐ Pentachlorophenol
- ☐ Phenacetin
- ☐ Phenanthrene
- ☐ Phenol
- ☐ Phorate
- ☐ Phthalic acid
- ☐ Phthalic anhydride
- ☐ Pronamide
- ☐ Pyrene
- ☐ Pyridine
- ☐ Safrole
- ☐ Silvex (2,4,5-TP)

TABLE UTS—Universal Treatment Standards
(Check the applicable underlying hazardous constituents for D001, D002, and D012 –D043 characteristic wastes only.)

Regulated constituent—common name

- ☐ 2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)
- ☐ 1,2,4,5-Tetrachlorobenzene
- ☐ TCDDs (All Tetrachlorodibenzo-p-dioxins)
- ☐ TCDFs (All Tetrachlorodibenzofurans)
- ☐ 1,1,1,2-Tetrachloroethane
- ☐ 1,1,2,2-Tetrachloroethane
- ☐ Tetrachloroethylene
- ☐ 2,3,4,6-Tetrachlorophenol
- ☐ Toluene
- ☐ Toxaphene
- ☐ Bromoform (Tribromomethane)
- ☐ 1,2,4-Trichlorobenzene
- ☐ 1,1,1-Trichloroethane
- ☐ 1,1,2-Trichloroethane
- ☐ Trichloroethylene
- ☐ Trichloromonofluoromethane
- ☐ 2,4,5-Trichlorophenol
- ☐ 2,4,6-Trichlorophenol
- ☐ 1,2,3-Trichloropropane
- ☐ 1,1,2-Trichloro-1,2,2-trifluoroethane
- ☐ tris-(2,3-Dibromopropyl) phosphate
- ☐ Vinyl chloride
- ☐ Xylenes-mixed isomers (sum of o-, m-, and p-xylene concentrations)
- ☐ Antimony
- ☐ Arsenic
- ☐ Barium
- ☐ Beryllium
- ☐ Cadmium
- ☐ Chromium (Total)
- ☐ Cyanides (Total)[1]
- ☐ Cyanides (Amenable)[1]
- ☐ Fluoride
- ☐ Lead
- ☐ Mercury—Nonwastewater from Retort
- ☐ Mercury—All Others
- ☐ Nickel
- ☐ Selenium
- ☐ Silver
- ☐ Sulfide
- ☐ Thallium
- ☐ Vanadium

[1] Both Cyanides (Total) and Cyanides (Amenable) for nonwastewaters are to be analyzed using Method 9010 or 9012, found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA Publication SW-846, as incorporated by reference in 40 CFR 260.11, with a sample size of 10 grams and a distillation time of one hour and 15 minutes.

NOTIFICATION OF ADDITIONAL TREATMENT STANDARDS

EPA Waste Code	Waste Description and/or Subcategory (if applicable)

INSPECTION PLAN

PERMIT ATTACHMENT B
NM0890010515-1

INSPECTION PLAN
PERMIT ATTACHMENT B
NM 0890010515-1

B.1 TA-50 MODULAR CONTAINER STORAGE BUILDINGS POTENTIAL PROBLEMS

The modular container storage area is routinely inspected for potential problems with safety and emergency equipment, security devices, containers, and container storage facilities. Potential problems are listed on an inspection checklist. Potential problems include containment failure, fire, explosion, exposure, ~~deterioration of the batch waste treatment unit or construction materials,~~ and system leakage.

B.1.1 Frequency and Content of Inspection

The modular container storage units are inspected weekly by visually inspecting containers for waste leakage and for corrosion.

B.1.2 Remedial Action

Leaks from containers in the modular storage buildings will collect in the 500-gallon sump within the unit. In the case of small spills, vermiculite or other compatible absorbent is poured over the spill area and once the liquid is absorbed, it is swept or shoveled into drums or other appropriate containers. For spills involving larger liquid volumes, free liquids are pumped into drums and absorbent is used as above to remove the remaining liquid. Once liquids are removed, the sump is cleaned using appropriate cleaning agents. All expended cleaning material will be considered hazardous waste and handled accordingly.

In the case of exposure, remedial actions include treating the exposed personnel at the ~~HSE-2~~ ESH-2 Medical Facility and determining the cause of exposure by observation, Laboratory records, and/or sampling.

Similar to hazardous waste releases, the extent of damage from fire and explosion is assessed by visual observations, Laboratory records, and if necessary, sampling. Equipment damaged or contaminated by fire, explosion, or spills is identified by visual inspections and sampling, if necessary.

B.2 TA-50 ~~WASTE INCINERATOR AND~~ ROOM 117 STORAGE AREA POTENTIAL PROBLEMS

The ~~waste incinerator system building and~~ Room 117 storage area ~~are~~is routinely inspected for potential problems with safety and emergency equipment, security devices, containers, container storage facilities, and loading and unloading facilities. Inspections of specific equipment and systems are conducted with a frequency appropriate to current operations, as well as appropriate to the equipment and systems. Potential problems include containment failure, fire, explosion, exposure, equipment deterioration or malfunction, and leaks from the incinerator.

B.2.1 Frequency and Content of Inspection

The ~~waste incinerator,~~ storage area, building and emergency equipment are inspected according to the schedule in Table B-1. ~~Standard operating procedures require that process operators "walk through," their operating areas each hour to visually observe, monitor, and record and leaks, spills, malfunctions or other unusual conditions. The walkthrough and remedial actions will be annotated in the operating log.~~

B.2.2 Remedial Action

If any defects, deterioration, damage or hazards are discovered during inspection, appropriate remedial actions including repairs, maintenance and replacement will be completed as soon as practical to preclude further damage and reduce the need for emergency repairs. If a hazard is found imminent or if a hazardous situation already exists, remedial action will be initiated immediately and the unit not reused until corrective action is complete. Any remedial action taken due to an inspection will be noted on the operating log.

Remedial actions in the case of containment failure, fire, explosion, or exposure are identical to the measures at the TA-50 ~~batch waste treatment unit and~~ modular container storage area. See Section B.1.2 above. ~~Should any of these problems occur, the waste incinerator can be shut down at the discretion of the operator. Failure of the HEPA filtration system or wet scrubbers, equipment deterioration or malfunction, or leaks from the waste incinerator will be remedied during and following process shutdown. The process operator will assess the situation and decide upon which shutdown method will be most expeditious and efficient. He will supervise the operating area during the shutdown process.~~

B.2.3 Inspection Logs

General inspections are conducted by the operating group according to checklists associated with the operating log. Results of the inspection (Attachment B-1 ~~Figures B-5 and B-6~~), the inspector's name and title, and date and time of inspection are recorded on the inspection log sheet. A copy is sent for records to ~~HSE-8~~ ESH-19and kept for at least three years after all remedial action is complete. ~~In addition, process operators will fill out process data sheets associated with the operations and every four hours when not feeding wastes. These sheets are record of operating conditions and provide evidence that the operator has checked and is aware of the operating status of the system. The time at which entries are made and the actual instrument reading for each variable will be entered into each checklist. When shutdown occurs, the log will state the nature of the shutdown, the time it occurred, and the suspected cause. Once each shift, the shift supervisor will inspect the facility for malfunctions, deterioration, operator error, and discharges. The time, individual, and results of this inspection will be entered in the log. Prestarting inspection procedures, general inspection checklists and the operating log will be kept with the incinerator system during operations.~~ The waste storage room will be inspected using Figures B-5 and B-6.

B.3 TA-54, AREA L WASTE TRANSFER, PACKAGING AND CONTAINER STORAGE FACILITIES AND TREATMENT TANKS

B.3.1 Potential Problems

Area L is routinely inspected for potential problems with safety and emergency equipment, security devices, containers, container storage facilities, treatment tanks, and loading and unloading facilities. Potential problems are listed on the weekly inspection checklist. The container storage areas will be inspected weekly. The treatment tanks will be inspected weekly and after storms to detect any leakage, free board, damage, overflow, or cracks. In addition, the interior of each treatment tank will be inspected yearly for thin spots or excessive corrosion. Prior to the interior inspection, the treatment tank will be emptied by pumping into drums following standard procedures. After it is empty, any liner is removed and the tank must be thoroughly cleaned and checked to be sure it is free of flammable, toxic and corrosive vapors and materials before entry. If this requires steaming, the tank must be cooled after cleaning and the rinse water checked to be sure it is essentially neutral. Any nearby operations considered hazardous to tank entry are shut down. The atmosphere in the tank must be tested for the presence of combustible or toxic vapors and for oxygen content. A sufficient number of standby personnel must be present to give aid in case of trouble. Protective clothing or equipment may be required in some instances. Potential problems at Area L include containment failure, fire, explosion, and exposure.

B.3.2 Frequency and Content of Inspection

Area L is inspected according to the schedule in Table B-1. In addition, the treatment tank's shell and liner will be inspected annually to ensure that the tanks walls and liner have not experienced damage due to corrosion or erosion. ~~The annual inspection procedure is the same as the triennial inspection outlined for the TA-50 Batch Waste Treatment Unit Tanks in Section B.1.1. above.~~ For the annual inspection, the tank KYNAR (@) lining will be tested for pinholes, cracks, or other failures using a Holiday Detector (@) spark test or equivalent. The Holiday Detector (@) works by sweeping an electrically charged brush over the liner surface. If a pinhole or crack is present, the liner no longer insulates the metal tank shell from the current, and a spark is produced, thus identifying the failed surface. The tank shell and liner wall thickness will also be acoustically analyzed annually to determine the extent of deterioration (ASME NDT Section IX). The acoustic analytic analysis utilizes the travel time or changes of wall thickness. Should the liner wall exhibit considerable (unexpected) thinning, the inspection frequency will be increased. The results of the annual inspection will be maintained in the permanent operating record.

Prior to the interior inspection, the treatment tank is emptied by discharging in the normal manner. After it is empty, the tank must be thoroughly cleaned and checked to be sure it is free of flammable, toxic, and corrosive vapors and materials before entry. If this requires steaming, the tank must be cooled after cleaning and the rinse water checked to be sure it is essentially neutral. Any nearby operations considered hazardous to tank entry are shut down. Respiratory protection shall be used as necessary. Protective clothing or equipment may be required in some instances. A sufficient number of standby men must be present to give aid in case of trouble.

B.3.3 Remedial Action

If any defects, deterioration, damage or hazards are discovered during inspection, appropriate remedial actions including repairs, maintenance and replacement will be completed as soon as practical to preclude further damage and reduce the need for emergency repairs. If a hazard is found imminent or if a hazardous situation already exists, remedial action will be initiated immediately and the unit will be taken out of service until corrective action is complete. Any remedial action taken due to an inspection will be noted on the operating log.

In the case of failure of run-on or run-off control measures, the ~~HSE-7~~ CST-5 Group Leader or his qualified designee will assess the damage by visual observations and sampling and monitoring to determine the type and extent of contamination. Mitigation procedures and repairs, such as sandbagging and building berms, will be instituted immediately. All such action will be entered in the site log.

Remedial action in the case of drum or container failure, fire, explosion, or exposure is handled as described for the TA-50 modular storage unit~~batch waste treatment unit~~. In addition, soil and water samples will be taken down gradient from the release. At the transfer, packaging and storage facilities in Area L, releases from drum or container failure collect ~~In~~ in sumps as well as berms.

If leakage, corrosion, overflow or any other damage is detected in the treatment tanks, the contents will be pumped into a drum or another treatment tank. At least 33 empty drums are always available to hold the maximum amount of liquid in a treatment tank in the unlikely event that the tank is completely full and the contents cannot be pumped into another treatment tank. The portable pumps used for emptying the tank are the same pumps used to draw down the tanks and have adequate capacity to fill 55-gallon drums. The pumps and hose used are compatible with the hazardous wastes they handle and are decontaminated after use by flushing with water. The wash water is handled as hazardous waste. The pumps are located at TA-54, Area L.

B.3.4 Inspection Logs

Each inspection is conducted by the operating groups according to the checklist in the inspection log (Attachment B-1~~ Figures B-7 and B-8~~). Results of the inspection, the inspector's name and title, and date and time of inspection are recorded on the inspection log sheet. A copy is sent to ~~HSE-8~~ ESH-19 for records and kept for at least three years after the completion of all remedial action.

~~B.4 TA-50 CONCRETE CONTAINMENT STRUCTURE~~

~~B.4.1 Potential Problems~~

~~The TA-50 concrete containment structures are routinely inspected for potential problems with safety and emergency equipment, security devices, containers, container storage facilities, and loading/unloading facilities. Potential problems are listed on a weekly checklist and include containment failure, fire, explosion, exposure, equipment deterioration or malfunction and leaks.~~

~~B.4.2 Frequency and Content of Inspection~~

~~The TA-50 Storage and associated equipment are inspected in accordance with the schedule in Table B-1. The weekly inspection looks for leaking containers and for deterioration of containers and the containment system caused by corrosion or other factors. Inspectors will use the checklist in Attachment B-1. Loading/unloading areas will be inspected daily, when used.~~

~~Inspectors will use the checklists in Figures B-3 and B-4. Loading/unloading areas will be inspected daily, when used.~~

~~B.4.3 Remedial action~~

~~If any defects, deterioration, damage, spills or hazards are discovered during inspections, appropriate remedial actions including cleanup, repairs, maintenance and replacement will be completed as soon as practical to preclude further damage and reduce the need for emergency repairs. If an imminent hazard is found or if a hazardous situation already exists, remedial action will be initiated immediately. Any remedial action taken due to an inspection will be noted in the operating log.~~

~~In the case of failure of run-on and run-off control measures, the HSE-7 CST-13Group Leader or his qualified designee will assess the damage by visual observations and sampling and monitoring to determine the type and extent of contamination. Mitigation procedures and repairs, such as sandbagging and building berms, will be instituted immediately. All such action will be entered in the site log.~~

~~Leaks from containers will collect in the individual sump within the unit. In the case of small spills, vermiculite or other compatible absorbent is poured over the spill area and once the liquid is absorbed, it is swept or shoveled into drums or other appropriate containers. For spills involving larger liquid volumes, free liquids are pumped into drums and absorbent is used as above to remove the remaining liquid. Once liquids are removed, the sump is cleaned using appropriate cleaning agents.~~

~~In the case of exposure, remedial actions include treating the exposed personnel at the HSE-2 ESH-2 Medical Facility and determining the cause of exposure by observation, Laboratory records, and/or sampling.~~

~~Similar to hazardous waste releases, the extent of damage from fire and explosion is assessed by visual observations, Laboratory records, and if necessary, sampling.~~

~~Equipment damaged or contaminated by fire, explosion, or spills is identified by visual inspections and sampling, if necessary.~~

~~B.4.4 Inspection Logs~~

~~Each inspection is conducted by the operating group according to the checklist in Attachment B-1Figures B-3 and B-4. Results of the inspection, the inspector's name and title, and date and time of inspection are recorded on the inspection log sheet. A copy is sent for records to HSE-8 ESH-19 and kept for at least three years.~~

B.5 PREPAREDNESS AND PREVENTION REQUIREMENTS

B.5.1 ~~Equipment Requirements~~Internal Communication/Alarm Equipment

The following internal communication/alarm equipment is available at LANL to provide emergency instruction for rapid evacuation and to initiate emergency response:

- Centrex telephone system
- Medium range radio nets (30-60 miles)
- Limited range radio nets (3-10-miles)
- Telephone/radio paging
- Two-way hand held radios
- Emergency central alarm system
- Mechanical central alarm system

~~Since~~ Because this equipment is laboratory-wide, it allows all personnel to ~~get in~~ contact Emergency Managers~~with emergency coordinators~~ in all areas of the laboratory. All hazardous and/or mixed waste handling personnel have immediate access to internal alarms or emergency communication devices.

~~The TA-50 batch waste treatment unit is equipped with telephones, one pull alarm, one automatic thermal alarm, and one automatic smoke alarm. There is an intercom system at each telephone. In the case of an emergency, the nearest source of communication for personnel handling wastes is the intercom/paging systems on each telephone.~~

~~The TA-50 waste incinerator and storage area is equipped with telephones throughout the facility. A radio with microphones at remote locations is available. Other communication/alarm equipment available at this facility includes:~~

- ~~One portable radio~~
- ~~One radio-equipped vehicle telephone paging system~~
- ~~Telephone paging system~~
- ~~Internal telephone communication line~~
- ~~Two-channel work station intercoms for direct communication from process area to offices and labs.~~
- ~~Eleven pull alarms~~
- ~~Two automatic thermal alarms~~

The trailer at Area L is equipped with a telephone. A radio-equipped vehicle is available for use at Area L. In addition, Area L is equipped with an alarm system and intercom to area G for evacuation. These are the nearest communication sources for use in the case of an emergency. Because of the proximity of the ~~TA-50 Storage Pads and~~ modular storage units to other TA-50 facilities and because only contained waste is handled at these facilities, individual emergency equipment is not required.

~~Personnel working at the container storage areas (CSA) in Rooms 35, 36, and 38/38A at TA-50-1 have access to telephones and a fire alarm pull station. The telephones have public address (PA) capabilities. Different alarms sound in case of a fire or evacuation emergency. In addition, fires and evacuations are announced on the building paging system.~~

Personnel working at the Indoor and Outdoor CSAs at TA-50-69 have access to three telephones and two fire alarm pull stations inside the building. The telephones have PA capabilities. Different alarms sound in case of a fire or an evacuation.

Personnel working at the TA-54-38 CSAs have access to three telephones, one emergency telephone, and four fire alarm pull boxes. The three telephones, located on the first floor of the building, have PA capabilities. The emergency telephone is located outside the main entrance. Different alarms sound in case of a fire or an evacuation.

A pole-mounted telephone for communication outside of TA-54, Area G, is located at TA-54-226. Public address (PA) telephones will be located at TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, and Pad 10-~~4~~. The PA system may be used locally to notify personnel of an emergency within TA-54, Area G. When handling waste in these container storage areas, personnel are equipped with cellular telephones and hand-held radios, which may be used to summon assistance in case of an emergency. Fire and heat detection alarm systems and fire alarm pull stations will be located inside TA-54-226, TA-54-229, TA-54-230, TA-54-231, and TA-54-232, and at Pad 10-~~4~~. Different alarms sound in case of a fire or an evacuation.

B.5.2 External Communication/Alarm Equipment

The Laboratory has established external communication capabilities with the Los Alamos Police Department and the Los Alamos Medical Center~~County Hospital~~. The following external communication/alarm equipment is available at LANL:

- Centrex telephone system
- Private telephone lines (if Centrex fails)
- Medium range radio nets (30-60 miles)
- Limited range radio nets (3-10 miles)
- Two national Warning System (NAWAS) ~~S~~stations ~~(NAWAS)~~
- Direct lines from Emergency Operations Centers to KRSN (local radio station)
- Local cable television

- A Community Alert Network

B.5.3 Emergency Equipment

A list of emergency equipment available at LANL, including types of equipment, locations, and contact phone numbers is shown in Permit Attachment D.

Emergency vehicles are inspected quarterly, according to the schedule in Table B-1. Medical supplies include self-contained breathing apparatuses, wheel chairs, manual resuscitation, portable oxygen units, blankets, blood supplies, and medical kits.

B.5.4 Water for Fire Control

The Department of Energy (DOE) is responsible for overall water production, transmission, and storage for the Laboratory and Los Alamos County. Storage capacity is adequate to provide water for fire fighting purposes.

Hydrant flow tests and block valve inspections are performed annually. Pressure regulating valves are inspected and adjusted every 60 days. Flow rates for hydrants are specified by ~~ENG-8~~ FSS-21, an experienced fire protection engineering staff, and are dependent upon site needs, including size of building and presence of sprinkler systems.

B.6 AISLE SPACE REQUIREMENTS

Aisle space between waste containers at all container storage areas is inspected weekly to insure it is adequate to provide access for inspection purposes, and movement of personnel, containers, and equipment.

There are no ramps provided for fork lifts or drum handling equipment at the TA-50 ~~batch treatment and~~ modular container storage ~~areas~~ area. Drums are placed in the container storage using drum slings or hydraulically powered drum tongs on a forklift.

Aisles between rows of drums at the Area L transfer, packaging and storage facilities ~~and at the TA-50 storage pads~~ are maintained at a minimum width of two feet to permit access for inspection and handling. Much of the bermed or curbed areas are ramped to facilitate access of forklifts and drum handling equipment.

When waste volumes necessitate aisle spacing at the ~~TA-50-1, Room 38/38A CSA; the~~ TA-50-69 Outdoor CSA; and the CSAs at TA-54-38, a minimum aisle space of 26 inches is maintained to permit access for inspection and handling. The limited number of containers in the ~~TA-50-1, Rooms 35 and 36 CSAs and the~~ TA-50-69 Indoor CSA does not require aisle spaces. Containers are placed in the storage areas either manually or with hoists, cranes, forklifts, or dollies.A minimum aisle space of 28 inches will be maintained between rows of containers at TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, and Storage Pad 10~~s 2 and 4~~. In addition, 44-inch-wide emergency egress aisles will be located at every 100 feet of dome length. Curbed storage dome areas will be ramped at the entrance to each dome to facilitate access of forklifts and drum handling equipment.

~~B.7 TA-50-1, ROOMS 35, 36, AND 38/38A STORAGE AREAS~~

~~B.7.1 Potential Problems~~

~~The TA-50-1, Rooms 35, 36, and 38/38A CSAs are routinely inspected for various items, including integrity of containers and self-containment systems as well as conditions of safety and emergency equipment, security devices, and loading/unloading areas. Potential problems include leaks, containment failure, and equipment deterioration or malfunction. Identified problems are recorded in Part II of the Inspection Record Form (IRF).~~

~~B.7.2 Frequency and Content of Inspection~~

~~The TA-50-1, Rooms 35, 36, and 38/38A CSAs and associated equipment are inspected in accordance with the schedule in Table B-1. Items inspected daily include structural integrity of containers, condition of self-containment systems, appropriate aisle space and stacking, and conditions of loading/unloading areas. Items inspected weekly include conditions of safety equipment, security devices, emergency equipment, and pallets. Inspectors will use the IRF when conducting daily and weekly inspections.~~

~~B.7.3 Preventive and Remedial Action~~

~~If any defects, deterioration, damage, or potential hazards are discovered during inspections, appropriate corrective measures (e.g., transfer of waste from a defective container to an appropriate container in good condition) will be completed promptly to minimize further damage and prevent the need for emergency response. If a hazardous condition is imminent or has already occurred, remedial actions (including cleanup, repairs, maintenance, and/or replacement) will be completed immediately. Any remedial action taken as a result of an inspection will be recorded in Part II of the IRF.~~

~~In the case of small spills, compatible sorbent is poured over the spill area and once the liquid is sorbed, it is swept or shoveled into appropriate containers. For spills involving larger liquid volumes, free liquids are pumped or HEPA vacuumed into appropriate containers and sorbent is used as above to remove the remaining liquid. Once liquids are removed, the spill area is cleaned using appropriate cleaning agents. All expended cleaning material will be sampled to determine appropriate waste management procedures.~~

~~In the case of exposure, remedial actions include treating exposed personnel at the ESH-2 central medical facility and determining the cause of exposure by observation, Laboratory records, and/or sampling.~~

~~The extent of damage from fire and/or explosion is assessed by visual observations, Laboratory records, and, if necessary, sampling.~~

~~Equipment damaged or contaminated by fire, explosion, or spills is identified by visual inspections and, if necessary, sampling.~~

~~B.7.4 Inspection Logs~~

~~Each inspection is conducted by the operating group responsible for the waste management unit and is recorded on the IRF. The original records are maintained by the operating group in inspection logbooks for~~

~~a minimum of three years. A copy of the IRF is sent weekly to ESH-19 and maintained at ESH-19 for a minimum of three years.~~

B.7 TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, ~~PAD 2,~~ AND PAD 10~~-4~~ STORAGE AREAS

B.7.1 Potential Problems

The container storage areas (CSA) located at TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, ~~Pad 2,~~ and Pad 10~~-4~~ will be routinely inspected for various items, including integrity of containers and self-containment systems as well as conditions of safety and emergency equipment, security devices, and loading/unloading areas. Potential problems may include leaks, containment failure, and equipment deterioration or malfunction. Identified problems will be recorded in Part II of the Inspection Record Form (IRF). The IRF may be revised, as needed.

B.7.2 Frequency and Content of Inspection

CSAs and associated equipment located at TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, ~~Pad 2,~~ and Pad 10~~-4~~ will be inspected in accordance with the schedule in Table B-1. Items to be inspected daily include structural integrity of containers, condition of secondary containment structures, appropriate aisle space and stacking, and conditions of loading/unloading areas. Items to be inspected weekly include conditions of safety equipment, security devices, emergency equipment, and pallets. Inspectors will use the IRF when conducting daily and weekly inspections.

B.7.3 Preventive and Remedial Action

If any defects, deterioration, damage, or potential hazards are discovered during inspections, appropriate corrective measures (e.g., transfer of waste from a defective container to an appropriate container in good condition) will be completed promptly to minimize further damage and prevent the need for emergency response. If a hazardous condition is imminent or has already occurred, remedial actions (including cleanup, repairs, maintenance, and/or replacement) will be completed immediately. Any remedial action taken as a result of an inspection will be recorded in Part II of the IRF.

In the case of small spills, compatible sorbent is poured over the spill area and once the liquid is sorbed, it is swept or shoveled into appropriate containers. For spills involving larger liquid volumes, free liquids are pumped or HEPA vacuumed into appropriate containers and sorbent is used as above to remove the remaining liquid. Once liquids are removed, the spill area is cleaned using appropriate cleaning agents. All expended cleaning material will be sampled to determine appropriate waste management procedures.

In the case of exposure, remedial actions include treating exposed personnel at the ESH-2 central medical facility and determining the cause of exposure by observation, Laboratory records, and/or sampling.

The extent of damage from fire and/or explosion is assessed by visual observations, Laboratory records, and, if necessary, sampling.

Equipment damaged or contaminated by fire, explosion, or spills is identified by visual inspections and, if necessary, sampling.

B.8 TA-50-69 INDOOR AND OUTDOOR STORAGE AREAS

B.8.1 Potential Problems

The TA-50-69 Indoor and Outdoor CSAs are routinely inspected for various items, including integrity of containers and self-containment systems as well as conditions of safety and emergency equipment, security devices, and loading/unloading areas. Potential problems include leaks, containment failure, and equipment deterioration or malfunction. Identified problems are recorded in Part II of the IRF.

B.8.2 Frequency and Content of Inspection

The TA-50-69 Indoor and Outdoor CSAs and associated equipment are inspected in accordance with the schedule in Table B-1. Items inspected daily include structural integrity of containers, condition of self-containment systems, appropriate aisle space and stacking, and conditions of loading/unloading areas. Items inspected weekly include conditions of safety equipment, security devices, emergency equipment, and pallets. Inspectors will use the IRF when conducting daily and weekly inspections.

B.8.3 Preventive and Remedial Action

If any defects, deterioration, damage, or potential hazards are discovered during inspections, appropriate corrective measures (e.g., transfer of waste from a defective container to an appropriate container in good condition) will be completed promptly to minimize further damage and prevent the need for emergency response. If a hazardous condition is imminent or has already occurred, remedial actions (including cleanup, repairs, maintenance, and/or replacement) will be completed immediately. Any remedial action taken as a result of an inspection will be recorded in Part II of the IRF.

In the case of small spills, compatible sorbent is poured over the spill area and once the liquid is sorbed, it is swept or shoveled into appropriate containers. For spills involving larger liquid volumes, free liquids are pumped or HEPA vacuumed into appropriate containers and sorbent is used as above to remove the remaining liquid. Once liquids are removed, the spill area is cleaned using appropriate cleaning agents. All expended cleaning material will be sampled to determine appropriate waste management procedures.

In the case of failure of runoff control measures (e.g., self-containment system failure) at the TA-50-69 Outdoor CSA, damage will be assessed by visual observations and sampling to determine the type and extent of contamination. Mitigation procedures (e.g., sandbagging, placing portable berms) will be instituted immediately.

In the case of exposure, remedial actions include treating exposed personnel at the ESH-2 central medical facility and determining the cause of exposure by observation, Laboratory records, and/or sampling.

The extent of damage from fire and/or explosion is assessed by visual observations, Laboratory records, and, if necessary, sampling.

Equipment damaged or contaminated by fire, explosion, or spills is identified by visual inspections and, if necessary, sampling.

B.8.4 Inspection Logs

Each inspection is conducted by the operating group responsible for the waste management unit and is recorded on the IRF. The original records are maintained by the operating group in inspection logbooks for a minimum of three years. A copy of the IRF is sent weekly to ESH-19 and maintained at ESH-19 for a minimum of three years.

B.9 TA-54-38 STORAGE AREAS

B.9.1 Potential Problems

The TA-54-38 CSAs are routinely inspected for various items, including integrity of containers and self-containment systems as well as conditions of safety and emergency equipment, security devices, and loading/unloading areas. Potential problems include leaks, containment failure, and equipment deterioration or malfunction. Identified problems are recorded in Part II of the IRF.

B.9.2 Frequency and Content of Inspection

The TA-54-38 CSAs and associated equipment are inspected in accordance with the schedule in Table B-1. Items inspected daily include structural integrity of containers, condition of self-containment systems, appropriate aisle space and stacking, and conditions of loading/unloading areas. Items inspected weekly include conditions of safety equipment, security devices, emergency equipment, and pallets. Inspectors will use the IRF when conducting daily and weekly inspections.

B.9.3 Preventive and Remedial Action

If any defects, deterioration, damage, or potential hazards are discovered during inspections, appropriate corrective measures (e.g., transfer of waste from a defective container to an appropriate container in good condition) will be completed promptly to minimize further damage and prevent the need for emergency response. If a hazardous condition is imminent or has already occurred, remedial actions (including cleanup, repairs, maintenance, and/or replacement) will be completed immediately. Any remedial action taken as a result of an inspection will be recorded in Part II of the IRF.

In the case of small spills, compatible sorbent is poured over the spill area and once the liquid is sorbed, it is swept or shoveled into appropriate containers. For spills involving larger liquid volumes, free liquids are pumped or HEPA vacuumed into appropriate containers and sorbent is used as above to remove the remaining liquid. Once liquids are removed, the spill area is cleaned using appropriate cleaning agents. All expended cleaning material will be sampled to determine appropriate waste management procedures.

In the case of failure of runoff control measures (e.g., self-containment system failure) at the TA-54-38 Outdoor CSA, damage will be assessed by visual observations and sampling to determine the type and extent of contamination. Mitigation procedures (e.g., sandbagging, placing portable berms) will be instituted immediately.

In the case of exposure, remedial actions include treating exposed personnel at the ESH-2 central medical facility and determining the cause of exposure by observation, Laboratory records, and/or sampling.

The extent of damage from fire and/or explosion is assessed by visual observations, Laboratory records, and, if necessary, sampling.

Equipment damaged or contaminated by fire, explosion, or spills is identified by visual inspections and, if necessary, sampling.

B.9.4 Inspection Logs

Each inspection is conducted by the operating group responsible for the waste management unit and is recorded on the IRF. The original records are maintained by the operating group in inspection logbooks for a minimum of three years. A copy of the IRF is sent weekly to ESH-19 and maintained at ESH-19 for a minimum of three years.

TABLE B-1
INSPECTION SCHEDULE

MODULAR STORAGE UNITS	
Daily when loading or unloading	Inspection Record Form Boxes 7, 8, 9, 10, 11, 12, 13, 14, 18, 22, and 23~~Figures B-1, B-7~~
Weekly	Inspection Record Form Boxes 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, and 32~~Figures B-2, B-88~~
CONCRETE CONTAINMENT STRUCTURES	
Daily when loading or unloading	Inspection Record Form Boxes 7, 8, 9, 10, 11, 12, and 18~~Figures B-3, B-7~~
Weekly	Inspection Record Form Boxes 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, and 32~~Figures B-4, B-8~~
~~CONTROLLED AIR INCINERATOR~~	
~~Hourly when burning hazardous waste~~	~~Log entry~~
~~Daily when burning hazardous waste~~	~~Figure B-5~~ ~~Inspection Record Form Boxes 7, 8, 22, 33, and 34~~
~~Weekly~~	~~Figure B-6~~ ~~Inspection Record Form Boxes 9, 12, 13, 14, 15, 16, 20, 21, 22, 23, 26, and 32~~
TA-50-37~~C.A.I.~~ STORAGE AREA	
Daily when loading or unloading	Inspection Record Form Boxes 7, 8, 22, 33, and 34~~Figure B-5~~
Weekly	Inspection Record Form Boxes 9, 12, 13, 14, 15, 16, 20, 21, 22, 23, 26, and 32~~Figure B-6~~
WASTE TRANSFER/STORAGE UNIT	
Daily when loading or unloading	Inspection Record Form Boxes 7, 8, 9, 10, 11, 12, and 18~~Figure B-7~~
Weekly	Inspection Record Form Boxes 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, and 32~~Figure B-8~~
SOLID WASTE STORAGE AREA	
Daily when loading or unloading	Inspection Record Form Boxes 7, 8, 9, 10, 11, 12, and 18~~Figure B-7~~

TABLE B-1
INSPECTION SCHEDULE

Weekly	Inspection Record Form Boxes 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, and 32~~Figure B-8~~
TA-54 AREA L WASTE TREATMENT/STORAGE TANKS	
Daily when in use with hazardous waste	Inspection Record Form Boxes 7, 8, 9, 10, 11, 12, and 18~~Figure B-7~~
Weekly	Inspection Record Form Boxes 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, and 32~~Figure B-8~~
Annually	Special Report
After Storms	Special Report
EMERGENCY VEHICLES	
Quarterly	Special Report
FIRE CONTROL SYSTEM	
Annually	Special Report
~~TA-50-1, ROOMS 35, 36, AND 38/38A STORAGE AREAS~~	
~~Daily for areas subject to spills and when new containers of waste are placed in the storage area~~	~~Inspection Record Form (IRF)~~
~~Weekly~~	~~IRF~~
TA-50-69 INDOOR AND OUTDOOR STORAGE AREAS	
Daily for areas subject to spills and when new containers of waste are placed in the storage area	IRF
Weekly	IRF
TA-54-38 STORAGE AREAS	
Daily for areas subject to spills and when new containers of waste are placed in the storage area	IRF
Weekly	IRF
TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, ~~PAD 2,~~ AND PAD 10~~-4~~ STORAGE AREAS	
Daily for areas subject to spills and when new containers of waste are placed in the storage area	Inspection Record Form (IRF)
Weekly	IRF

FACILITY: 50 Batch Plant (Includes sStructures 114, 137, 138, and portaberm)

FACILITY TYPE: T.S. 19____ MONTH/DAY MONTH/DAY
WEEK OF_____ THRU_____

DAILY PARTS I, II, III To be completed every day of operation

PART I. Enter the data in column for day inspected.

DAY	S	M	T	W	TH	F	S
DATE							
TIME							
INSPECTOR							

PART II. Enter condition of item inspected (OK or AR*) in column for day inspected.

ITEM	INSPECTED FOR	S	M	T	W	TH	F	S
**(UN) LOADING AREA TANKS/CONTAINERS	SPILLS AND DETERIORATION							
**CONTAINERS STORAGE	SEGREGATED ACCORDING TO COMPATIBILITY							
**CONTAINERS AND TANKS	CLOSED, LABELED AND DATED							
COMMUNICATION EQUIPMENT	PROPERLY FUNCTIONING							
TANK MONITORING EQUIPMENT	DISCHARGE CONTROLS, TEMP/PRESSURE GAUGES LEVELS (%FULL) (OK?)							
**AREA AROUND TANKS/ CONTAINERS SECONDARY CONTAINMENT	SPILLS, DAMAGE STANDING WATER							
ABOVE GROUND PARTS OF TANK SYSTEM	INTEGRITY, LEAKS CORROSION							

PART III. For any action noted in PART II, describe below: action required, action taken, date.

WEEKLY **To be completed on the first working day of the week.**

INSPECTOR:_____ **DATE:**_____ **TIME:**_____

PART IV. Enter condition of item inspected (OK or AR*) in "condition" column. describe action and date taken in "Action\Date" column.

ITEM	INSPECTED FOR	CONDITION (OK OR AR*)	ACTION AND DATE ACTION TAKEN
STRUCTURAL INTEGRITY OF CONTAINERS/TANKS	DETERIORATION AND LEAKS, TANKS INCLUDES ALL VALVES, PIPE, FLANGES		
COVER/LID OF CONTAINERS	CLOSED AND SECURED		
WARNING SIGNS	POSTED & READABLE (BILINGUAL)		
LABELS	"HAZARDOUS WASTE" PRESENT ON ALL CONTAINERS/TANKS		
ACCUMULATION DATE (<90 DAY STORAGE)	PRESENT ON ALL CONTAINERS/TANKS NONE EXCEED 90 DAYS FROM START		
SECURITY	CONDITION OF GATES/LOCKS		
EMERGENCY EQUIPMENT	FIRE EXTINGUISHERS, EYE WASH, SHOWERS, RESPIRATORS		
SPILL CONTROL EQUIPMENT	PRESENT, GOOD WORKING ORDER		
SITE LIGHTING	FUNCTIONS PROPERLY		
HOOD	FUNCTIONING		

REMARKS:

* Action required ** Includes all associated storage facilities.

For waste removal call HSE-7 at 667-6095 at least 10 working day prior to reaching 90 day storage limit of any container or tank. Request all hazardous waste stored on site be removed at this time. For questions concerning inspections or regulations, contact Tony Grieggs, 5-0451 or Jim White, 5-0677.

cc: Tony Grieggs, HSE-8, MS K490 (Copies only, maintain orginial original for a minimum of three (3) years. Last Revision: April 18, 1989

FACILITY: 50-139, 140

FACILITY TYPE: T.S. 19 MONTH/DAY MONTH/DAY
DAILY PARTS I,II,III-To be completed every day of operation
PART I. Enter the data in column for day inspected.

DAY	S	M	T	W	TH	F	S
DATE							
TIME							
INSPECTOR							

PART II. Enter condition of item inspected (OK or AR*) in column for day inspected.

ITEM	INSPECTED FOR	S	M	T	W	TH	F	S
**(UN) LOADING AREA	SPILLS AND							
TANKS/CONTAINERS	DETERIORATION							
COMMUNICATION	PROPERLY							
EQUIPMENT	FUNCTIONING							
EYE WASH	LEAKS FUNCTIONING							
SAFETY SHOWERS								

PART III. For any action noted in PART II, describe below: action required, action taken, date.

WEEKLY To be completed on the first working day of the week.

INSPECTOR:_____ DATE:_____ TIME:_____

PART IV. Enter condition of item inspected (OK or AR*) in "condition" column. describe action and date taken in "Action/Date" column.

ITEM	INSPECTED FOR	CONDITION (OK OR AR*)	ACTION AND DATE ACTION TAKEN
STRUCTURAL INTEGRITY OF CONTAINERS	DETERIORATION AND LEAKS		
COVER/LID OF CONTAINERS	CLOSED AND SECURED		
WARNING SIGNS	POSTED & READABLE (BILINGUAL)		
LABELS	"HAZARDOUS WASTE" PRESENT ON ALL CONTAINERS/TANKS		
SECURITY	CONDITION OF FENCE/GATES/LOCKS		
SITE LIGHTING	FUNCTIONS PROPERLY		
CONTAINMENT STRUCTURES	INTEGRITY, STANDING WASTE		
	EROSION		
CONTAINER STORAGE	SEGREGATED ACCORDING TO COMPATIBILITY, AISLE SPACE		
FIRE EXTINGUISHERS SPILL CONTROL CGEAR	PRESENT, IN GOOD WORKING ORDER		
HOSE BIB	LEAKS, FUNCTIONING		
ROAD/WORK SURFACES	CRACKS		
WIND SOCK	DAMAGE, FUNCTIONING		
PALLETS	INTEGRITY, DAMAGE		

REMARKS:
*Action required **Includes all associated storage facilities.
For waste removal call HSE-7 at 667-6095 at least 10 working days prior to reaching 90 day storage limit of any container or tank. Request all hazardous waste stored on site be removed at this time. For questions concerning inspections or regulations contact Tony Grieggs, 5-0451 or Jim White, 5-0677.
cc: Tony Grieggs, HSE-8 MS K490 (Copies only, maintain original for a minimum of three (3) years. Last Revision: April 18, 1989

FACILITY: 50-37 (incinerator) includes room 117

FACILITY TYPE: T.S. 19____ MONTH/DAY MONTH/DAY

DAILY PARTS I,II,III To be completed every day of operation

PART I. Enter the data in column for day inspected.

DAY	S	M	T	W	TH	F	S
DATE							
TIME							
INSPECTOR							

PART II. Enter condition of item inspected (OK or AR*) in column for day inspected.

ITEM	INSPECTED FOR	S	M	T	W	TH	F	S
**(UN) LOADING AREA	SPILLS AND DETERIORATION							
TANK BY-PASS	LEAKS, DETERIORATION							
COMMUNICATION EQUIPMENT	PROPERLY FUNCTIONING							
PUMPS, VALVES PIPES	CONDITION LEAKS							
INCINERATOR EQUIP.	DETERIORATION MANLFUNCTION							
TANK DISCHARGE CONTROLS, WASTE FEED CUTOFF (TANK)	ALL OVERFILL & SPILL CONTROL EQUIP. IN GOOD WORKING ORDER							
TANK MONITORING EQUIPMENT	OPERATING PROPERLY							
CONTAINMENT STRUCTURES	INTEGRITY, STANDING WATER CORROSION							

PART III. For any action noted in PART II, describe below: action required, action taken, date.

WEEKLY To be completed on the first working day of the week.

INSPECTOR:_____ DATE:_____ TIME:_____

PART IV. Enter condition of item inspected (OK or AR*) in "condition" column. describe action and date taken in "Action/Date" column.

ITEM	INSPECTED FOR	CONDITION (OK OR AR*)	ACTION AND DATE ACTION TAKEN
STRUCTURAL INTEGRITY OF CONTAINERS/TANKS	DETERIORATION AND LEAKS, TANKS INCLUDES ALL VALVES, PIPES, FLANGES		
TANKS AND CONTAINERS	CLOSED AND SECURED		
AISLE SPACE BETWEEN CONTAINERS	AT LEAST ONE (1) FOOT BETWEEN CONTAINERS		
WARNING SIGNS	POSTED AND READABLE (BILINGUAL)		
LABELS	"HAZARDOUS WASTE" PRESENT ON ALL CONTAINERS/TANKS		
SECURITY	CONDITION OF GATES/LOCKS		
EMERGENCY EQUIPMENT	FIRE EXTINGUISHERS, EYE WASH, SHOWERS, RESPIRATORS		
SITE LIGHTING	FUNCTIONS PROPERLY		
TANK LEVEL ALARM	FUNCTIONING		
PROCESS GLOVES	TEARS, DETERIORATION		
VENTILATION SYSTEM	FUNCTIONING PROPERLY		
SCBA GEAR	DETERIORATION, FUNCTIONING		
PROCESS FLOOR	CRACKS, SPALLING, COATING		
AISLE SPACE	CLEAR		

REMARKS:

*Action required **Includes all associated storage facilities.

For waste removal call HSE-7 at 667-6095 at least 10 working days prior to reaching 90 day storage limit of any container or tank. Request all hazardous waste stored on site be removed at this time. For questions concerning inspections or regulations contact Tony Grieggs, 5-0451 or Jim White, 5-0667.

cc: Tony Grieggs, HSE-8, MS K490 (Copies only, maintain original for a minimum of three (3) years. Last Revision: April 18, 1989

FACILITY: 54 AREA L

FACILITY TYPE: T.S. 19____ MONTH/DAY MONTH/DAY

DAILY PARTS I,II,III To be completed every day of operation

PART I. Enter the data in column for day inspected.

DAY	S	M	T	W	TH	F	S
DATE							
TIME							
INSPECTOR							

PART II. Enter condition of item inspected (OK or AR*) in column for day inspected.

ITEM	INSPECTED FOR	S	M	T	W	TH	F	S
**(UN) LOADING AREA	SPILLS AND							
TANKS/CONTAINERS	DETERIORATION							
COMMUNICATION	PROPERLY							
EQUIPMENT	FUNCTIONING							
TANKS (ALL ABOVE)	DISCHARGE CONTROLS CONDITION,							
GROUND PORTIONS)	LEAKS LEVEL (6 FREEBOARD)							
SURFACE IMPOUNDMENTS	FREEBOARD (2 FT)							
AND CONTAINMENT	SUDDEN DROPS IN LEVEL							
PORTA BERM	LEAKS CONDITION							
RUN ON/OFF CONTROL	INTEGRITY, EROSION PONDING							
EYE WASH	LEAKS FUNCTIONING							
SAFETY SHOWER								

PART III. For any action noted in PART II, describe below: action required, action taken, date.

WEEKLY To be completed on the first working day of the week.

INSPECTOR:_____ DATE:_____ TIME:_____

PART IV. Enter condition of item inspected (OK or AR*) in "condition" column. describe action and date taken in "Action/Date" column.

ITEM	INSPECTED FOR	CONDITION (OK OR AR*)	ACTION AND DATE ACTION TAKEN

~~STRUCTURAL INTEGRITY OF CONTAINERS/TANKS~~	~~DETERIORATION AND LEAKS, TANKS INCLUDES ALL VALVES, PIPES, FLANGES~~
~~COVER/LID OF CONTAINERS~~	~~CLOSED AND SECURED~~
~~WARNING SIGNS~~	~~POSTED & READABLE (BILINGUAL)~~
~~LABELS~~	~~"HAZARDOUS WASTE" PRESENT ON ALL CONTAINERS/TANKS~~
~~ACCUMULATION DATE (<90 DAY STORAGE)~~	~~PRESENT ON ALL CONTAINERS/TANKS NONE EXCEED 90 DAYS FROM START~~
~~RUN ON CONTROL (AREA L, H LANDFILL)~~	~~INTEGRITY, ERROSION PONDING~~
~~COVER INTEGRITY (AREA L, H LANDFILL)~~	~~EROSION, SUBSIDENCE WATER INTRUSION~~
~~SECURITY~~	~~CONDITION OF FENCE/GATES/LOCKS~~
~~SITE LIGHTING~~	~~FUNCTIONS PROPERLY~~
~~CONTAINMENT STRUCTURES~~	~~INTEGRITY, STANDING WATER VEGETATION, EROSION~~
~~CONTAINER STORAGE~~	~~SEGREGATED ACCORDING TO COMPATIBILITY, AISLE SPACE~~
~~HOSE BIB~~	~~LEAKS, FUNCTIONING~~
~~STORAGE SHED~~	~~FLOOR DAMAGE, LIQUID~~
~~ROAD/WORK SURFACES~~	~~CRACKS~~
~~WIND SOCK~~	~~DAMAGE, FUNCTIONING~~
~~SHAFT COVER AND RAIL~~	~~DAMAGE~~
~~PALLETS~~	~~INTEGRITY, DAMAGE~~
~~TREATMENT TANKS~~	~~LEAKS, DAMAGE~~
~~REFRIGERATOR~~	~~DAMAGED CONTAINERS~~
~~SPILL CONTROL FIRE EQUIPMENT~~	~~PRESENT, IN GOOD WORKING ORDER~~

~~**REMARKS:**~~
~~*Action required **Includes all associated storage facilities.~~
~~For waste removal call HSE-7 at 667-6095 at least 10 working days prior to reaching 90 day storage limit of any container or tank. Request all hazardous waste stored on site be removed at this time. For questions sconcerning inspection or regulations, contact Tony Grieggs, 5-0461 or Jim White, 5-0667.~~
~~cc: Tony Grieggs, HSE-8, MS K490 (Copies only, maintain originals for a minimum for three (3) years. Last Revision: April 18,1989~~

ATTACHMENT B-1

Hazardous and Mixed Waste Facility

Inspection Record Form

HAZARDOUS AND MIXED WASTE FACILITY INSPECTION RECORD FORM

[1]FACILITY	[2] <90 DAY, GENERATOR STORAGE TREATMENT, STORAGE, DISPOSAL	[3]START DATE	[4]END DATE
[5] Containers Landfill Surface Impoundment Waste Pile Thermal Treatment Chem/Phys./Bio. Treat. Incinerator Misc. Unit Tank UST Land Treatment Underground Inj.			

PART I - Enter condition of item inspected (OK or AR [action required]) in column for day inspected.

ITEM	INSPECTED FOR	SUN	MON	TUE	WED	THU	FRI	SAT
[6]No use	Check if no waste is present							
[7](Un)loading area tanks/ containers	Spills and deterioration							
[8]Communication equipment (phone/radio/alarms)	Properly functioning							
[9]Tanks (all above ground portions) monitoring data	Discharge controls condition, leaks, level (6 freeboard), corrosion							
[10]Surface impoundments and containment	Freeboard (2 ft) sudden drops in level							
[11]Porta berm	Leaks condition							
[12]Eye wash safety showers	Leaks, functioning							
[13]Structural integrity of containers/tanks, valves, pipes, and flanges	Deterioration and leaks, corrosion, damage							
[14]Cover/lid of containers	Closed and secured							
[15]Warning signs	Posted and readable (bilingual)							
[16]Labels	"HAZARDOUS WASTE" present on all containers/tanks							
[17]Accumulation start date (<90 day storage)	Present on all containers, tanks, none exceed 90 days							
[18]Run on/off control (Area L, G, H, P) landfills, detonation pads	Integrity, erosion, ponding							
[19]Cover integrity (Area L, G, H, P) landfills	Erosion, subsidence water intrusion							
[20]Security	Condition, fence/gates/locks							
[21]Site lighting	Functions properly							

HAZARDOUS AND MIXED WASTE FACILITY INSPECTION RECORD FORM, Continued

ITEM	INSPECTED FOR	SUN	MON	TUE	WED	THU	FRI	SAT
[22]Containment structures	Integrity, standing water, vegetation, erosion							
[23]Management of containers	Segregated according to compatibility, 2 ft aisle space							
[24]Hose bibs, water supply	Leaks, functioning							
[25]Storage Shed (Area L)	Floor damage, liquid							
[26]Road/work surfaces	Cracks/potholes							
[27]Wind sock	Damage, functioning							
[28]Shaft cover and rail	Present, damage							
[29]Pallets	Integrity, damage							
[30]Treatment tanks	Proper operation, leaks							
[31]Refrigerator	Damaged containers							
[32]Spill control, fire, and emergency equipment	Present and in good working order							
[33]Incinerator emergency waste feed cutoff/alarms	Proper operating condition of all shutdown controls							
[34]Incinerator pumps valves, pipes, monitoring controls	Leaks/spills/tampering operating within specifications							
[35]Pressure vessels (S-site)	Deterioration and sand condition							
[36]Oil burn pans (S-site)	Deterioration and leaks							
[37]HE burn pads (S-site)	Deterioration, vegetation, sand condition, erosion							
[38]Radiation safety	Signs, monitoring (ß ^{3}H)							
[39]Date	Date of inspection							
[40]Time	Time of inspection							
[41]Inspector	Initials of inspector							

PART II - For any AR (Action Required) in PART I above, describe below: action required, action taken, date of action. Attach additional sheets if necessary.

[42]INSPECTOR	[43]GROUP	[44]DATE	[45]TIME

Part I

1. FACILITY: Location information including Technical Area (TA), building, and room if applicable. Other location descriptors may be necessary. (e.g., TA-59-3-114 or TA-59-1-S). Dock)

2. <90 Day, Generator Storage should be checked if this location is intended for operation in accordance with generator requirements for storage of hazardous waste for less than 90 days.

   Treatment, Storage, Disposal should be checked if this location is listed in LANL's Hazardous Waste Facility Permit or Part A Application as a permitted or interim status TSD operation.

3. START DATE: The date of the first inspection for the week on that inspection sheet. (Usually the first working day of the week)

4. END DATE: The date of the last inspection for the week on that inspection sheet. (Usually the last working day of the week, however, if handling of hazardous waste occurs during the weekend inspections must be conducted.)

5. Check the appropriate box for the type of operation. Several boxes may be checked if necessary for those locations where inspections are combined on a single sheet. You must have prior approval from ESH-19 to combine inspections for more than one unit.

6. NO USE: May be checked if the unit did not store, treat, dispose, or otherwise handle hazardous waste for the day/week in question. The individual responsible for the inspection must then only complete boxes 39, 40, 41 for that day/week. If any hazardous waste is subsequently placed at the site for any reason, a full inspection must be performed immediately, and every working day thereafter until all waste is properly disposed of.

7. Loading and unloading areas must be inspected daily when in use for signs of damage or deterioration that may lead to an accident or spill. This includes asphalt pads, and areas where containers or tanks are handled or contents thereof are transferred.

8. Communication equipment: Includes all telephones, two-way radios, and alarms for the area being inspected. Consult with ESH-19 to determine what equipment is necessary at any particular location.

9. For tanks systems used for treatment or storage of hazardous waste, all above ground portions of the tank system, including any and all ancillary plumbing, must be inspected daily for signs of leaking, corrosion, deterioration, or improper operation. Tanks must be operated with a minimum freeboard of 6 inches. If the tank system includes discharge controls, overtopping controls, tank level alarms, or other monitoring equipment including leak detection equipment, all controls and relevant data must be checked to ensure they are operating properly and that operation is within design specifications for the system.

10. Surface impoundments must be operated with a minimum of 24 inches (60 cm) of freeboard from the top of the dike or berm to the surface of the waste therein. Inspectors must look for signs of leaks,

deterioration, and erosion of dikes and berms, and any associated plumbing or valves. These could include dying vegetation, guilies and sudden changes in level.

11. For those locations where inflatable "Porta-Berms" are used as secondary containment for tanks and containers of hazardous waste, inspectors must ensure that they are adequately inflated. Inspectors must also check for the presence of liquids in the containment unit which could indicate leaks or spills of hazardous waste. All monitoring and leak detection systems must also be checked.

12. Where required, eye-wash and safety showers must be inspected to ensure proper operating condition. Outside locations must be checked for freezing.

13. All containers and tanks must be checked for structural integrity, leaks, corrosion, or damage. This item includes checking condition of all construction materials, fixtures, seams, and auxiliary equipment. See 9 above.

14. All tanks and containers used for treating or storing hazardous waste must have the cover or lid securely in place. Containers are not considered to be closed unless the lid/cover is fastened in the manner the manufacturer originally intended.

15. Required signs must be readable and prominently posted. TSD facilities and <90 day storage areas must be equipped with bilingual (english/spanish) signs with the legend "DANGER UNAUTHORIZED PERSONNEL KEEP OUT." TSDs must be identified with signs that read "HAZARDOUS WASTE STORAGE AREA." <90 day storage areas must be identified with a sign with the legend "<90 DAY HAZARDOUS WASTE STORAGE AREA."

16. All containers and tanks must be labeled with the words "HAZARDOUS WASTE" and with other words that identify the contents. Mixed waste must also be labeled as "RADIOACTIVE."

17. All containers and tanks of hazardous waste in TSDs or <90 day storage areas must be marked with the accumulation start date. At TSDs, containers without dates must be dated when they arrive at the facility. At <90 day storage areas, containers must be marked with the accumulation start date at the time the container first receives any waste. For <90 day storage areas, no containers may exceed 90 days from accumulation start date to the time they are delivered to a permitted treatment, storage, or disposal unit. Transportation is by CST-5 or its representatives only.

18. Landfills and detonation pads must have run-on and run-off controls inspected wherever present. Leachate collection systems, where present, must also be inspected. Items to be inspected for are proper operating condition, damage, erosion, contaminant migration, ponding, etc. Detonation pads must be inspected for unburned or undetonated explosives, ordnance, and debris.

19. Landfill covers must be inspected at least weekly and after storms for evidence of erosion, subsidence, and water intrusion.

20. Site security must be verified. Items such as fences, gates, locks, etc. should be checked for proper condition and adequacy.

21. Site lighting must be adequate to prevent accidents related to hazardous waste operations and for any other night operations that may take place within the boundaries of the hazardous waste unit.

22. Secondary containment structures for hazardous waste operations must be inspected to verify proper operating condition and to ensure adequate capacity. Structures must also be inspected for the presence of standing water or hazardous waste. For incinerators and certain operations at TA-55, secondary containment includes inspections of gloves and gloveboxes, hoods, and ventilation systems where necessary.

23. All hazardous waste containers holding materials that may be incompatible with any other materials at that location must be separated from those materials by dikes, berms, or other physical barriers to prevent a possible reaction. All containers of hazardous waste must be stored in a manner that ensures a minimum of 2 feet of aisle space between containers. Drums containing free liquids or those holding hazardous waste (excluding mixed wastes) may not be stacked over two high.

24. TSD facilities must have water at adequate volume and pressure for fire protection available. Hose bibs should be inspected for proper operating condition and adequate pressure. Outside water supplies must be checked for freezing.

25. The storage shed at Area L must be inspected for damage, free liquids that might indicate a leak, and chemical compatibility of materials stored therein.

26. Road and work surfaces, process floors, or other work surfaces at TSDs must be inspected for damage or erosion that could lead to a spill or accident, and for adequate secondary containment.

27. Wind socks, where required, at TSDs must be inspected to ensure that they are present and in proper operating condition.

28. Disposal shafts and shafts used for retrievable storage should have their covers securely in place and guard rails must be installed and in good condition.

29. Hazardous waste containers at TSDs and <90 day storage areas must be stored on pallets if they are stored outside without a roof.

30. Hazardous waste treatment tanks must be operated within design specifications and in accordance with SOPs and work plans. Tanks must be inspected for leaks or damage prior to operation.

31. Refrigerators used for storing hazardous waste, or samples thereof, must be inspected for proper operating condition and leaking or damaged containers.

32. Hazardous waste TSDs and <90 day storage areas must have adequate fire and spill control equipment for the types and volumes of waste present. Equipment must be present, in good working order, and appropriate for the material in question.

33. Incinerator waste feed cutoffs, emergency shutdown controls, and associated alarms or warning systems must be inspected for proper operating condition.

34. Incinerators, ancillary plumbing and equipment, and all monitoring controls must be inspected to ensure that they are in proper operating condition, and are being operated within design specifications. Inspectors must also look for evidence of leaks, corrosion, spills, or tampering.

35. Pressure vessels must be inspected for signs of deterioration or damage. Condition of the sand and loading must also be checked to ensure adequacy.

36. Oil burn pans must be inspected for deterioration, damage, or leaks. Inspectors must also inspect for unburned explosives and debris.

37. HE burn pads must be inspected for deterioration, damage, leaks, or vegetation that could catch fire. Condition of the sand must also be checked. Inspectors must also inspect for unburned explosives and debris.

38. Radioactive materials must be properly placarded, labeled, and stored within controlled areas. Containers should be monitored/swiped for outside contamination if suspected and all leaks or spills must be monitored to ensure adequate cleanup.

39. Inspectors will record the date of the current inspection.

40. Inspectors will record the time of the current inspection.

41. Inspectors will initial each daily inspection.

Part II

Inspectors must explain in detail, any deficiency noted above. Items to be included are: type of problem, any action taken, and the date/time of the action. Additional sheets may be attached as necessary.

42. Signature of individual performing inspection.
43. Organization responsible for this location.
44. Date record was signed and completed.
45. Time record was signed and completed.

~~PERMIT ATTACHMENT B~~

~~APPENDIX A~~

~~RESPIRATORY PROTECTION EQUIPMENT PRACTICES FOR THE CHEMICAL BATCH TREATMENT PLANT~~

~~1. INTRODUCTION~~

~~The use of respiratory equipment is necessary for the safety and well-being of Group HSE-7 employees engaged in certain waste treatment operations. Respiratory protection equipment is required where effective engineering controls are not yet feasible or where equipment failures or malfunctions could cause hazardous work environments. The Group HSE-7 Plant Operations Section Respiratory Practices Program is in accordance with ANSI Standard Z88.2-1969, Practices for Respiratory Protection and the respirator training program of Group HSE-5.~~

~~2. SCOPE~~

~~These respiratory protection procedures shall pertain to all Group HSE-7 liquid waste facilities, equipment and operations which may generate potentially hazardous atmospheres involving toxic materials or oxygen deficiencies.~~

~~3. RESPONSIBILITIES~~

~~The Section Leader for Liquid Waste Operations or the Alternate is responsible for assuring that respiratory protection practices are performed in accordance with the respiratory protection practices outlined in this SOP and any incidents involving the use of respiratory equipment must be reported immediately to Group HSE-5.~~

~~HSE-7 personnel shall inspect the self-contained breathing apparatus (SCBA's) periodically; the interval between inspections can be as individually desired, but must not exceed one month. Each inspection must be signed and dated with the breathing air cylinder PSI marked on the inspection sticker. A SCBA inspection form must be completed and sent to HSE-5-MS486. An inspection and donning procedure is available in each SCBA carrying case. SCBA's shall also be inspected after each use. Group HSE-5 shall be notified immediately of any respirator defects, and the SCBA unit shall be replaced. HSE-5 shall also be notified when the SCBA has been used so that the breathing air tank is immediately replaced.~~
~~The HSE-1 HPT shall insure that each respirator user has a current respirator authorization card for the type of respirator that is worn. The HSE-1 HPT shall examine the photo on the respirator authorization card to determine if additional facial hair is present. Additional facial hair voids the respirator authorization card. If this situation occurs, the employee shall not be allowed to wear the respirator or enter any hazardous environment and Group HSE-5 shall be notified immediately to pick up the respirator authorization card.~~

~~Each employee shall comply with all health and safety regulations (verbal or written) and shall report any incident involving the improper utilization of respiratory protective equipment immediately to the supervisor.~~

~~4. MATERIAL, OPERATION AND EQUIPMENT CONTROLS~~

~~Full facepiece air-purifying respirators with high efficiency,v filter are not approved for emergency situations or in environments containing toxic gases/vapors or in oxygen deficient environments (<19.5% oxygen by volume). The respirator and canister shall be suited to the contaminant. If there are any questions, contact Group HSE-5.~~

~~SCBA's are approved for use in oxygen deficient environments and hazardous concentrations of toxic materials. If the environment contains materials which may be readily absorbed through the skin, an impervious suit is also required.~~

~~Possible emergencies would include:~~

~~chemical leaks or spills~~

~~smoke~~

~~emergency entry into a confined space~~

~~The MSA Model 401 utilizes a high pressure portable air tank which provides a high air flow rate to meet breathing demands during extreme exertion. Generally these units supply breathing air for up to 30 minutes of activity and are equipped with an audible alarm to indicate when the breathing supply is low. The air used for SCBA's must meet the strict purity requirements of the Compressed Gas Association Specification G7.1 for Type I, Class D Breathing Air. Group HSE-5 has facilities available for filling these air tanks with air that meets these purity requirements.~~

~~5. PERSONNEL CONTROLS~~

~~Each respirator user shall have completed the comprehensive respirator training program (including quantitative fitting for air-purifying respirators) conducted by Group HSE-5 and have in his/her possession a current respirator authorization card for the type of respiratory equipment that is worn. To prevent accumulation of dirt on the respirator, it should be cleaned after each use with the packets provided at the respirator fitting office. Always inspect air purifying respirators before and after use. Any deterioration shall be reported to the supervisor, and the respirator shall be replaced.~~

PERSONNEL TRAINING

PERMIT ATTACHMENT C
NM0890010515-1

~~PERSONNEL TRAINING~~
~~PERMIT ATTACHMENT C~~
~~NM0890010515-1~~

~~This attachment describes the personnel training program for Los Alamos National Laboratory in accordance with the regulatory requirements of HWMR-6, Part V., Section 264.16. The information presented outlines the personnel training programs at the Laboratory. The primary objective of the program is to prepare persons to safely operate and maintain those areas containing hazardous wastes. This training program applies to all employees of Department of Energy (DOE), University of California (UC), Pan American Worldwide Services (PAWS), and their contractors who regularly work at the facility. The degree of training varies with the duties but all personnel receive as an introduction to the RCRA requirements of this permit a minimum of Sections I and II of the training outline, Figure C-1.~~

~~C.1 OUTLINE OF TRAINING PROGRAM~~

~~C.1.1 Responsibilities~~

~~Figure C-2 presents the organization of Health, Safety, and Environment (HSE) Division. HSE Division handles all waste management activities except for high explosives treatment, which is handled by the WX and M Divisions. Individuals who are directly involved with waste management are in Health, Safety, and Environment Group 7 (HSE-7). PAWS provides trained personnel to assist HSE-7 in waste handling activities. The Environmental Surveillance Group is responsible for RCRA compliance. Personnel in the Occupational Medicine (HSE-2), Safety Group (HSE-3), Industrial Hygiene Group (HSE-5), and Environmental Surveillance Group (HSE-8) are trained in their specialties to provide emergency response support.~~

~~C.2 TRAINING CONTENT, FREQUENCY, AND TECHNIQUES~~

~~The training program instituted at the Laboratory includes a combination of internal training courses, on-the-job training, and courses taught by outside contractors.~~

~~Records of each waste handling individual's formal training are maintained in the HSE Division office. Training records of current employees are kept until closure of the facility. Records of former employees are kept for at least three years from the date the employee last worked at the facility.~~

~~The training outline (Figure C-1) is on file in the HSE Division Office and is available for review by all hazardous waste management and handling personnel, emergency response personnel, and all regulatory agencies. Courses will be reviewed annually and updated as required to maintain currency with RCRA.~~

~~The training coordinator will work with the group leaders of HSE-2, 3, 5, 7, and 8, WX and M Divisions, and PAWS to ensure that all employees receive the proper level of training. All new LANL and PAWS employees will receive training within six months of their date of hire or transfer. Personnel will not work in unsupervised positions until they successfully complete the~~

~~training course.~~

~~C.2.1 Internal Training~~

~~The personnel training courses emphasize the safe handling of hazardous wastes. Program instructors are trained in hazardous waste management procedures and RCRA provisions. The training program is designed to provide training commensurate with the employee's responsibilities. All employees will receive section I and II training, regardless of their duty assignment.~~

~~C.2.2 On-the-Job Training~~

~~All waste handling personnel will participate in on-the-job training programs. These programs are designed to give field demonstrations of Laboratory procedures for hazardous waste handling, inspections, and hazardous waste transportation requirements. Personnel responsible for directing on-the-job training participate in the RCRA provisions course so that they are familiar with hazardous waste management procedures as they related to RCRA.~~

~~C.2.3 External Training~~

~~In addition to internal training, selected personnel will participate in contractor-taught courses. Those personnel who will participate in the external training program are listed herein. These contractor-taught courses will serve to supplement the internal training program.~~

~~C.2.4 Training Coordinator~~

~~The personnel training program is directed by Dr. Thomas C. Gunderson. As Division Leader for the EM Division, Dr. Gunderson is knowledgeable about hazardous waste management facilities and practices and emergency procedures. Dr. Gunderson is responsible for coordinating the internal and external training courses and for assuring that all personnel receive the required training. The training program provides employees with training relevant to their positions within the organization. Supervisors and staff receive training appropriate to their degree of handling hazardous waste (e.g., reporting and other procedures required for compliance). For example, management responsibilities for compliance with RCRA are assigned to the HSE-7 Group Leader, who receives training in RCRA provisions. Material handlers are trained to maintain proper and safe operating procedures and to respond effectively to spills and other emergencies. Duties for each job description are matched to a LANL training course.~~

~~C.3 EMERGENCY RESPONSE TRAINING~~

~~The outside professionals (PAWS and the Protective Force) assist the Incident Commander (IC) as soon as they arrive on the scene of the emergency. These people are trained in their specialties (i.e., heavy equipment operation, traffic control). PAWS personnel are also trained in personal safety. At all times during an emergency, these contractors are under the direct supervision of the HWEC and other trained Laboratory personnel. All actions taken by contractors do not perform activities other than those for which they are trained (heavy equipment operations, constructing~~

~~dikes).~~

~~In order to ensure maximum protection of life and property and to mitigate the consequences of an emergency situation, it is imperative that all HSE personnel, WX and M Division personnel, and PAWS personnel involved in waste handling and emergency response be knowledgeable about appropriate building and operating area emergency procedures. These groups will participate in the Laboratory's formal training program.~~

~~In addition to the Laboratory's formal program, division and group leaders and immediate supervisors are responsible for providing education and training in emergency response procedures. Periodic unannounced emergency drills and exercises are used to familiarize employees with emergency procedures. Training is also provided through prominent instruction displays and through presentations and discussions in safety meetings.~~

~~Each new or transferred employee is indoctrinated by his immediate supervisor regarding the RCRA requirements which apply, the general emergency procedures and those specific procedures related to his work area. Each employee is advised of changes to any emergency procedures and is given an annual review of procedures affecting his work area. The review may be given separately in writing or included in an overall indoctrination. A record of training will be kept in the employee's personnel file.~~

~~Specialized training is given to those employees assigned special functions or specific emergency duties. Emergency response personnel (HSE-2, 5, and 8, the DOE fire Department, Laboratory Emergency Response Coordinators, and Chemical Waste Management Coordinators) participate in the formal Laboratory training program and are required to attend courses on spill response, the RCRA contingency plan and RCRA provisions. All waste handling personnel (HSE-7, WX and M Divisions, and PAWS) also participate in the formal training program in which they are instructed in emergency procedures pertinent to their work area. The emergency procedures instruction in which hazardous waste management and handling personnel and emergency response personnel are required to participate will ensure a coordinated response to hazardous waste emergencies.~~

~~C.4 IMPLEMENTATION OF TRAINING PROGRAM~~

~~The introductory training program is offered at six month intervals, when needed, to ensure that all employees receive training within six months of their date of hire or transfer. Employees will not work in unsupervised positions until they have been trained. Employees transferring within divisions of the facility will receive training as if they were new employees.~~

~~All hazardous waste management and handling personnel must attend annual refresher courses. These courses are intended to update personnel on Laboratory procedures and provide them with an overview of their introductory training.~~

~~In addition, a complete Respirator or self contained breathing apparatus (SCBA) training course is taught annually, where appropriate, and must be successfully completed by hazardous waste handling personnel.~~

~~Group leaders, along with the training coordinator, will ensure that all their personnel participate in the~~

~~introductory and annual training programs.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Group Leader, Waste Management (HSE-7) --- #001~~

~~A. Required Skills:~~

~~· Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~

~~· Good technical knowledge of problems associated with hazardous chemical handling and use.~~

~~· Ability to communicate with a wide variety of personnel, internal and external to the Laboratory.~~

~~· Ability to supervise personnel in proper chemical waste management.~~

~~B. Required Education/Training:~~

~~· Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~

~~· RCRA Provisions~~

~~· Spill Response~~

~~· RCRA Contingency Plan~~

~~· Hazardous Waste Handling and Operations~~

~~C. Duties:~~

~~· Oversee all chemical waste activities~~

~~· Maintain security of waste management facilities.~~

~~· Evaluate performance of Section Leaders~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Deputy Group Leader, Waste Management (HSE-7) -- #002~~

~~A. Required Skills:~~

~~· Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~

~~· Good technical knowledge of problems associated with hazardous chemical handling and use.~~

~~· Ability to communicate with a wide variety of personnel, internal and external to the Laboratory.~~

~~· Ability to supervise personnel in proper chemical waste management.~~

~~B. Required Education/Training:~~

~~· Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~

~~· RCRA Provisions~~

~~· Spill Response~~

~~· RCRA Contingency Plan~~

~~· Hazardous Waste Handling and Operations~~

~~C. Duties:~~

~~· Fulfill duties of group leader as necessary.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Section Leader, Chemical Mixed Waste Operations (HSE-7) - #003~~

~~A. Required Skills:~~

~~· Knowledge of State and Federal Regulations regarding hazardous materials and waste~~

~~· Good technical knowledge of problems associated with hazardous materials handling and use~~

~~· Ability to communicate with a wide variety of personnel, internal and external to the Laboratory.~~

~~· Ability to supervise personnel in proper chemical waste management.~~

~~B. Required Education/Training:~~

~~· Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~

~~· RCRA Provisions~~

~~· Personal Safety~~

~~· Respiratory Protection~~

~~· Hazardous and Mixed Waste Handling and Operations~~

~~· Spill Response~~

~~· Contingency Plan~~

~~· Recordkeeping/Inspections~~

~~· On-Site/Off-Site Transportation~~

~~C. Duties:~~

~~· Oversee the daily collection, packaging, and transport activities of chemical waste technicians.~~

~~· Plan and direct treatment/disposal activities.~~

~~TITLE: Section Leader, Chemical Mixed Waste Operations (HSE-7)… #003 (continued)~~

~~· Review incoming Chemical Waste Disposal Request forms and identify hazards associated with the requests.~~

~~· Interact with waste generators on waste problem solutions (such as identification of unknown waste).~~

~~· Write and update all chemical waste procedures.~~

~~· Maintain operations records for Area L.~~

~~· Assist in on-the-job training for chemical waste handlers.~~

~~· Provide input and personnel to spill responses for hazardous and mixed material/waste as necessary.~~

~~· Evaluate overall performance of technicians and staff annually.~~

~~· Maintain awareness of changes in RCRA regulations and identify necessary improvements.~~

~~· Review and approve hazardous and mixed waste generator SOPs and relevant parameters in facility designs.~~

~~· Review training records and inspection records for completeness and identify any needs · Provide personnel for emergency response.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Section Leader, Low Level Waste Operations (HSE-7) – #004~~

~~A. Required Skills:~~

~~· Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~

~~· Good technical knowledge of problems associated with hazardous chemical handling and use.~~

~~· Ability to communicate with a wide variety of personnel, internal and external to the Laboratory.~~

~~· Ability to supervise personnel in proper chemical waste management.~~

~~B. Required Education/Training:~~

~~· Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~

~~· RCRA Provisions~~

~~· Spill Response~~

~~· RCRA Contingency Plan~~

~~· Emergency Procedures~~

~~C. Duties:~~

~~· Assist Section leader for chemical waste operations as necessary.~~

~~· Interact with waste generators on waste problem solutions (such as identification of unknown waste)~~

~~· Write and update all chemical waste procedures.~~

~~· Assist in on-the-job training for chemical waste handlers.~~

~~· Provide input to spill responses for hazardous material/waste as necessary~~

~~Evaluate overall performance of technicians and staff annually.~~

~~TITLE: Section Leader, Low Level Waste Operations (HSE-7)… #004 (continued)~~

~~· Maintain awareness of change in RCRA regulations and identify necessary improvements.~~

~~· Review and approve hazardous waste generators SOPs and relevant parameters in facility designs.~~

~~· Review training records and inspection records for completeness and identify any needs.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Section Leader, Liquid Waste Operations (HSE-7) --- #005~~

~~A. Required Skills:~~

~~· Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~

~~· Good technical knowledge of problems associated with hazardous chemical handling and use.~~

~~· Ability to communicate with a wide variety of personnel, internal and external to the Laboratory.~~

~~· Ability to supervise personnel in proper chemical waste management.~~

~~B. Required Education/Training:~~

~~· Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~

~~· RCRA Provisions~~

~~· Spill Response~~

~~· RCRA Contingency Plan~~

~~· Emergency Procedures~~

~~C. Duties: · Coordinate Section capabilities to properly receive, store and treat RCRA hazardous waste.~~

~~**RCRA JOB DESCRIPTION**~~

~~TITLE: Section Leader,Technical Support Section (HSE-7) ---#006~~

~~A. Required Skills:~~

~~· Familiarity with State and Federal Regulations regarding RCRA-listed hazardous materials~~

~~· Good technical knowledge of waste incinerator design and operation.~~

~~· Ability to supervise Section personnel in proper handling and incineration of hazardous materials.~~

~~B. Required Education/Training:~~

~~· Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~

~~· RCRA Provisions~~

~~· Personal Safety~~

~~· Spill Response~~

~~· RCRA Contingency Plan~~

~~· On-Site Transportation~~

~~C. Duties:~~

~~· Coordinate Section capabilities to properly receive, accumulate, and incinerate RCRA hazardous waste.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Lead Engineer, Technical Support Section (HSE-7) --- #007~~

~~A. Required Skills:~~

~~· Familiarity with State and Federal Regulations regarding RCRA-listed hazardous materials~~

~~· Thorough understanding of waste incinerator design and operation.~~

~~· Ability to ensure proper collection and archiving of operating data required by incinerator operating permit.~~

~~B. Required Education/Training:~~

~~· Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~

~~· RCRA Provisions~~

~~· Personal Safety~~

~~· Hazardous Waste Handling and Operations~~

~~a. Incineration~~
~~b. Acids/Bases~~
~~c. Organics -General~~
~~d. Inorganics - General~~

~~· Spill Response~~

~~· RCRA Contingency Plan~~

~~· Recordkeeping/Inspections~~

~~· On-Site Transportation~~

~~C. Duties:~~

~~· Lead engineer for design, construction, and maintenance of hazardous waste incinerator.~~

~~· Train Section staff and technicians on handling of hazardous waste, incinerator operation, and data collection.~~

~~· Serve as shift supervisor during incinerator operations.~~

~~**RCRA JOB DESCRIPTION**~~

~~TITLE: Lead Engineer, Technical Support Section (HSE-7) ---#007 (continued)~~

~~· Maintain records of required run data in an auditable form.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Staff Member, Technical Support Section (HSE-7) -- #008~~

~~A. Required Skills:~~

~~· Familiarity with State and Federal Regulations regarding RCRA-listed hazardous materials~~

~~· Good technical knowledge of proper handling of hazardous waste forms.~~

~~· Good technical knowledge of waste incinerator design and operation.~~

~~B. Required Education/Training:~~

~~· Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~

~~· RCRA Provisions~~

~~· Personal Safety~~

~~· Respirator or SCBA~~

~~· Hazardous Waste Handling and Operations~~

~~a. Incineration~~
~~b. Acids/Bases~~
~~c. Organics - General~~
~~d. Inorganics - General~~

~~· Spill Response~~

~~· RCRA Contingency Plan~~

~~· Recordkeeping/Inspections~~

~~C. Duties:~~

~~· Provide engineering support for design, construction, and maintenance of hazardous waste incinerator.~~

~~· Assist in handling of hazardous waste as required by operations.~~

~~· Assist in collection of required run data.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Staff Member, Chemical and Mixed Waste Operations (HSE-7) ---#009~~

~~A. Required Skills:~~

~~· Familiarity with State and Federal Regulations regarding hazardous and mixed materials and waste. · Technical knowledge of problems associated with hazardous and mixed materials handling and use.~~

~~· Ability to communicate with a wide variety of personnel, internal and external to Laboratory.~~

~~· Ability to supervise personnel in proper hazardous and mixed waste management.~~

~~B. Required Education/Training:~~

~~· Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~

~~· RCRA Provisions~~

~~· Personnel Safety~~

~~· Respiratory Protection~~

~~· Hazardous/Mixed Waste Handling and Operations~~

~~· Spill Response~~

~~· Contingency Plan~~

~~· Recordkeeping/Inspections~~

~~· On-Site/Off-Site Transportation~~

~~C. Duties:~~

~~· Oversee the daily collection, packaging, and transport activities of chemical waste technicians.~~

~~· Plan and direct treatment/storage/disposal activities.~~

~~· Review incoming Chemical Waste Disposal Request forms and identify hazards associated with the requests.~~

~~· Interact with waste generators on waste problem solutions (such as the identification of unknown waste).~~

~~TITLE: Staff Member, Chemical and Mixed Waste Operations (HSE-7) #009~~

~~Write and update all chemical waste procedures.~~

~~Maintain operational records for Area L~~

~~Assist in on-the-job training for chemical waste handlers.~~

~~Provide input to spill and emergency responses for hazardous and mixed materials/waste as necessary.~~

~~Maintain awareness of changes in RCRA regulations and identify necessary improvements~~

~~Review and approve hazardous waste generators SOPs and relevant parameters in facility designs.~~

~~Review training records and inspections records for completeness and identify any needs.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Staff Member, Liquid Waste Operations (HSE-7) ---#010~~

~~A. Required Skills:~~

~~· Knowledge of State and Federal Regulations regarding hazardous materials and waste.~~

~~· Technical knowledge of problems associated with hazardous materials handling and use.~~

~~· Ability to communicate with a wide variety of personnel, internal and external to Laboratory.~~

~~· Ability to supervise personnel in proper chemical waste management.~~

~~B. Required Education/Training:~~

~~· Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~

~~· RCRA Provisions~~

~~· Personal Safety~~

~~· Respirator or SCBA~~

~~· Hazardous Waste Handling and Operations~~

~~a. Explosives/Reactives~~
~~b. Acids/Bases~~
~~c. Organics -General~~
~~d. Inorganics - General~~

~~· Spill Response~~

~~· RCRA Contingency Plan~~

~~· Recordkeeping/Inspections~~

~~· On-Site/Off-Site Transportation~~

~~TITLE: Staff Member, Liquid Waste Operations (HSE-7) - #010 (continued)~~

~~C. Duties:~~

~~· Oversee the daily collection, packaging, and transport activities of chemical waste technicians.~~

~~· Plan and direct treatment/disposal activities~~

~~· Interact with waste generators on waste problems solutions (such as the identification of unknown waste).~~

~~· Write and update all chemical waste procedures.~~

~~· Maintain operational records for batch waste treatment system.~~

~~· Assist in on-the-job training for chemical waste handlers.~~

~~· Provide input to spill responses for hazardous materials/waste as necessary.~~

~~· Maintain awareness of changes in RCRA regulations and identify necessary improvements.~~

~~· Review training records and inspections records for completeness and identify any needs.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Staff Member, Technical Support (HSE-7) ---#011~~

~~A. Required Skills:~~

~~· Knowledge of State and Federal Regulations regarding hazardous materials and waste.~~

~~· Technical knowledge of problems associated with hazardous materials handling and use.~~

~~· Ability to communicate with a wide variety of personnel, internal and external to Laboratory.~~

~~· Ability to supervise personnel in proper chemical waste management.~~

~~B. Required Education/Training:~~

~~· Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~

~~· RCRA Provisions~~

~~· Personal Safety~~

~~· Respirator or SCBA~~

~~· Hazardous Waste Handling and Operations~~

~~a. Explosives/Reactives~~
~~b. Acids/Bases~~
~~c. Organics - General~~
~~d. Inorganics - General~~

~~· Spill Response~~

~~· RCRA Contingency Plan~~

~~· Recordkeeping/Inspections~~

~~· On-Site/Off-Site Transportation~~

~~C. Duties:~~

~~· Plan and direct treatment/disposal activities.~~

~~· Interact with waste generators on waste problem solutions (such as the identification of unknown waste).~~

~~TITLE: Staff Member, Technical Support (HSE-7) --#011 (continued)~~

~~· Write and update all chemical waste procedures.~~

~~· Assist in on-the-job training for chemical waste handlers.~~

~~· Provide input to spill responses for hazardous materials/waste as necessary.~~

~~· Maintain awareness of changes in RCRA regulations and identify necessary improvements.~~

~~Review and approve hazardous waste generator's SOPs and relevant parameters in facility designs.~~

~~· Design and construct new treatment processes as needed.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Chemical Technician II, III (EM-7) ---#012~~

~~A. Required Skills~~

~~· Familiarity with State and Federal Regulations regarding hazardous materials and waste. ·~~

~~· Good technical knowledge of problems associated with hazardous and mixed materials handling and use.~~

~~· Oral communication skills for interfacing with waste generators~~

~~B. Required Education/Training:~~

~~· Formal chemistry classes or experience in chemical handling operations.~~

~~· RCRA Provisions~~

~~· Personnel Safety~~

~~· Respiratory Protection~~

~~· Spill Response~~

~~· Contingency Plan~~

~~· Recordkeeping/Inspections~~

~~· On-site Transportation~~

~~· Hazardous Waste Handling and Operations~~

~~C. Duties:~~

~~· Collect hazardous/mixed waste from technical areas in Laboratory.~~

~~· Segregate and/or package waste for storage/treatment/disposal.~~

~~· Transport waste to the storage/treatment area.~~

~~· Chemically treat any waste requiring treatment.~~

~~· Perform required hazardous waste facility inspections.~~

~~· Assist in the recordkeeping of all chemical waste activities.~~

~~TITLE: Chemical Technician II, III (EM-7) – #012 (continued)~~

~~· Assist in spill or emergency response treatment, cleanup, and disposal operations as required.~~

~~· Provide input to updating of operational procedures.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Technician Liaison Specialist IV, Technical Support Section (HSE-7) ---#013~~

~~A. Required Skills~~

~~· Familiarity with State and Federal Regulations regarding RCRA-listed hazardous materials.~~

~~· Technical competence in area of proper handling of hazardous materials.~~

~~· Good technical knowledge of waste incinerator design and operation.~~

~~B. Required Education/Training:~~

~~· RCRA Provisions~~

~~· Personal Safety~~

~~· Respirator or SCBA~~

~~· Hazardous Waste Handling and Operations~~

~~a. Explosives/Reactives b. Acids/Bases c. Organics--General d. Inorganics--General~~

~~· Spill Response~~

~~· RCRA Contingency Plan~~

~~· Recordkeeping/Inspections~~

~~C. Duties:~~

~~· Provide specialized technical support for proper handling of hazardous wastes.~~

~~· Assist in operation of incinerator.~~

~~· Assist in collection of required run data.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Mechanical Technician III/IV, Technical Support Section (HSE-7) --- #014~~

~~A. Required Skills~~

~~· Familiarity with State and Federal Regulations regarding RCRA-listed hazardous materials.~~

~~· Technical competence in area of mechanical equipment design and fabrication.~~

~~· Good technical knowledge of proper handling of hazardous waste forms.~~

~~· Good technical knowledge of waste incinerator design and operation.~~

~~B. Required Education/Training:~~

~~· RCRA Provisions~~

~~· Personal Safety~~

~~· Respirator or SCBA~~

~~· Hazardous Waste Handling and Operations~~

~~a. Explosives/Reactives b. Acids/Bases c. Organics -General d. Inorganics - General~~

~~· Spill Response~~

~~· RCRA Contingency Plan~~

~~· Recordkeeping/Inspections~~

~~C. Duties:~~

~~· Provide specialized technical support for design, construction, and maintenance of hazardous waste incinerator.~~

~~· Assist in handling of hazardous waste.~~

~~· Assist in operation of incinerator.~~

~~· Assist in collection of required run data.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Electronic Technician III, Technical Support Section (HSE-7) ---#015~~

~~A. Required Skills~~

~~· Familiarity with State and Federal Regulations regarding RCRA-listed hazardous materials.~~

~~· Technical competence in area of mechanical equipment design and fabrication.~~

~~· Good technical knowledge of proper handling of hazardous waste forms.~~

~~· Good technical knowledge of waste incinerator design and operation.~~

~~B. Required Education/Training:~~

~~· RCRA Provisions~~

~~· Personal Safety~~

~~· Respirator or SCBA~~

~~· Hazardous Waste Handling and Operations~~

~~a. Explosives/Reactives b. Acids/Bases c. Organics -General d. Inorganics - General~~

~~· Spill Response~~

~~· RCRA Contingency Plan~~

~~· Recordkeeping/Inspections~~

~~C. Duties:~~

~~· Provide specialized technical support for design, construction, and maintenance of hazardous waste incinerator.~~

~~· Assist in handling of hazardous waste.~~

~~· Assist in operation of incinerator.~~

~~· Assist in collection of required run data.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Mechanical Technician II/III (HSE-7) ---#016~~

~~A. Required Skills~~

~~· Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~

~~· Good technical knowledge of problems associated with hazardous materials handling and use. ·~~

~~Oral communication skills for interfacing with waste generators.~~

~~B. Required Education/Training:~~

~~RCRA Provisions~~

~~· Personal Safety · Respirator or SCBA~~

~~· RCRA Contingency Plan~~

~~· Spill Response~~

~~C. Duties: · Assist with chemical waste operations as needed.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Experimental Equipment/Facilities Operator II/III (Area G, HSE-7) ---#017~~

~~A. Required Skills~~

~~· Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~

~~· Good technical knowledge of problems associated with hazardous materials handling and use.~~

~~· Oral communication skills for interfacing with waste generators.~~

~~B. Required Education/Training:~~

~~· RCRA Provisions~~

~~· Personal Safety~~

~~·Respirator or SCBA~~

~~· RCRA Contingency Plan~~

~~· Spill Response~~

~~C. Duties:~~

~~· Assist with chemical waste operations as needed.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Experimental Equipment/Facilities II/III (TA-50, HSE-7) ---#018 Mechanical Technician III~~

~~A. Required Skills:~~

~~· Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~

~~· Good technical knowledge of problems associated with hazardous materials handling and use.~~

~~· Oral communication skills for interfacing with waste generators.~~

~~B. Required Education/Training:~~

~~· Formal chemistry classes or experience in chemical handling operations.~~

~~· RCRA Provisions~~

~~· Personal Safety~~

~~· Respirator or SCBA~~

~~· Spill Response~~

~~· RCRA Contingency Plan~~

~~· Recordkeeping/Inspections~~

~~· On-Site Transportation~~

~~· Hazardous Waste Handling and Operations~~

~~a. Explosives/Reactives b. Acids/Bases c. Organics -General d. Inorganics -General~~

~~C. Duties:~~

~~· Operation of chemical batch treatment plant.~~

~~· Assist in recordkeeping of all chemical waste activities.~~

~~· Perform required hazardous waste facility inspections.~~

~~· Assist in spill response treatment, cleanup, and disposal operations as required.~~

~~· Provide input to updating operational procedures.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Chemical Technician III/Laborer (PAWS) --- #019~~

~~A. Required Skills:~~

~~· Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~

~~· Good technical knowledge of problems associated with hazardous materials handling and use.~~

~~· Oral communication skills for interfacing with waste generators.~~

~~B. Required Education/Training:~~

~~· Formal chemistry classes or experience in chemical handling operations.~~

~~· RCRA Provisions~~

~~· Personal Safety~~

~~· Respirator or SCBA~~

~~· Spill Response~~

~~· RCRA Contingency Plan~~

~~· Recordkeeping/Inspections~~

~~· On-Site Transportation~~

~~· Hazardous Waste Handling and Operations~~

~~a. Explosives/Reactives b. Acids/Bases c. Organics -General d. Inorganics -General~~

~~C. Duties:~~

~~· Collect chemical waste from technical areas in Laboratory.~~

~~· Segregate and/or package for storage/treatment/disposal.~~

~~· Transport waste to the storage/treatment area.~~

~~· Chemically treat any waste requiring treatment.~~

~~TITLE: Chemical Technician III/Laborer (PAWS) – #019 (continued)~~

~~· Perform required hazardous waste facility inspections.~~

~~· Assist in recordkeeping of all chemical waste activities.~~

~~· Assist in spill response treatment, cleanup, and disposal operations as required.~~

~~· Provide input to updating operational procedures.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Technical Supervisor III (M-7) --- #029~~

~~A. Required Skills~~

~~· Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~

~~· Good technical knowledge of problems associated with high explosives (HE) handling and use along with M-7 HE fabrication operations.~~

~~· Familiarity with DOE and Laboratory Safety Regulations and M-7 Sops.~~

~~B. Required Education/Training:~~

~~· RCRA Provisions · Personal Safety ·~~

~~Hazardous Waste Handling and Operations.~~

~~a. Handling of HE waste~~

~~· M-7 Emergency Procedures~~

~~· Recordkeeping/Inspections~~

~~· On-Site Transportation~~

~~C. Duties:~~

~~· Supervise HE fabrication technicians. ·~~

~~Provide on-the-job training for explosives technicians.~~

~~· Responsible for maintenance of operational records.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Section Leader, Decontamination and Decommissioning --- #020~~

~~A. Required Skills~~

~~· Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~

~~· Good technical knowledge of problems associated with hazardous materials handling and use.~~

~~· Ability to communicate with a wide variety of personnel, internal and external to the Laboratory.~~

~~· Ability to supervise personnel in proper chemical waste management.~~

~~B. Required Education/Training:~~

~~· Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~

~~· RCRA Provisions~~

~~· Spill Response~~

~~· RCRA Contingency Plan~~

~~· Emergency Procedures~~

~~C. Duties:~~

~~· Coordinate Section capabilities to properly receive, store, and treat mercury waste.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Health Protection Technician II, III, Decontamination & Decommissioning (HSE-7) - #021~~

~~A. Required Skills~~

~~· Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~

~~· Good technical knowledge of problems associated with hazardous materials handling and use.~~

~~· Oral communication skills for interfacing with waste generators.~~

~~B. Required Education/Training:~~

~~· RCRA Provisions~~

~~· Personal Safety~~

~~· Respirator or SCBA~~

~~· RCRA Contingency Plan ·~~

~~Spill Response~~

~~C. Duties:~~

~~· Store mercury waste~~

~~· Treat mercury waste~~

~~· Maintain documentation on mercury storage and treatment.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Team Leader, Staff Members, Waste Generator Interface (HSE-7) ---#022~~

~~A. Required Skills~~

~~· Knowledge of State and Federal Regulations regarding hazardous materials and waste.~~

~~· Technical knowledge of problems associated with hazardous materials handling and use.~~

~~· Ability to communicate with a wide variety of personnel, internal and external to the Laboratory.~~

~~· Ability to supervise personnel in proper chemical waste management.~~

~~B. Required Education/Training:~~

~~· Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and education.~~

~~· RCRA Provisions~~

~~· Personal Safety~~

~~· Respirator or SCBA~~

~~· Hazardous Waste Handling and Operations~~

~~a. Explosives/Reactives b. Acids/Bases c. Organics -General d. Inorganics - General~~

~~· Spill Response~~

~~· RCRA Contingency Plan~~

~~· Recordkeeping/Inspections~~

~~· On-Site/Off-Site Transportation~~

~~C. Duties:~~

- ~~Work in the field with waste generators on waste segregation, storage, minimization and transportation issues.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Technical Coordinator for Operations (M-DO) ---#023~~

~~A. Required Skills~~

~~· Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~

~~· Good technical knowledge of problems associated with high explosives and handling and use. ·~~

~~Ability to communicate with a wide variety of personnel, internal and external to the Laboratory.~~

~~B. Required Education/Training:~~

~~· RCRA Provisions · Personal Safety~~

~~· Hazardous Waste Handling and Operations~~

~~a. Handling/detonation of HE waste~~

~~· Emergency Procedures~~

~~· RCRA Contingency Plan~~

~~· Recordkeeping/Inspections~~

~~· On-Site Transportation~~

~~C. Duties:~~

~~· General oversight responsibility for M Division's Safety Program and general operation matters.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Testing Technician III (M-1) --- #024~~

~~A. Required Skills~~

~~· Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~

~~· Good technical knowledge of problems associated with high explosives (HE) handling and use.~~

~~B. Required Education/Training:~~

~~· RCRA Provisions · Personal Safety ·~~

~~Hazardous Waste Handling and Operations~~

~~a. Detonation/Burning HE waste~~

~~· M-1 Contingency Plan~~

~~· Recordkeeping/Inspections~~

~~· On-Site Transportation~~

~~C. Duties:~~

~~· Removes waste from storage for disposal at Q-Site firing area.~~

~~· Responsible for small-scale sensitivity evaluation of explosives.~~

~~· Responsible for small-scale performance tests.~~

~~· Directs conventional firing at Q-Site.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Technical Administrative Specialist (M-1) - - #025~~

~~A. Required Skills~~

~~· Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~

~~· Good technical knowledge of problems associated with high explosives (HE) handling and use.~~

~~B. Required Education/Training:~~

~~· RCRA Provisions · Personal Safety~~

~~· Hazardous Waste Handling and Operations~~

~~a. Handling/Detonation/Burning HE waste~~

~~· M-1 Emergency Procedures~~

~~· Recordkeeping/Inspections~~

~~· On-Site Transportation~~

~~C. Duties:~~

~~· Responsible for site maintenance at TA-9 and TA-14.~~

~~Supervise TA-9 explosives area. · Develop processing on new materials.~~

~~· Coordinate production, assembly and delivery of HE.~~

~~· Supervise new equipment installation. · Supervise HE shop scheduling.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Remote Site Supervisor III (M-6) --- #026~~

~~A. Required Skills~~

~~· Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~

~~· Good technical knowledge of problems associated with high explosives (HE) handling and use.~~

~~B. Required Education/Training:~~

~~· RCRA Provisions · Personal Safety~~

~~· Hazardous Waste Handling and Operations~~

~~a. Handling/Detonation HE waste~~

~~· M-6 Emergency Procedures~~

~~· Recordkeeping/Inspections~~

~~· On-Site Transportation~~

~~C. Duties:~~

~~· Schedules shots at M-6 firing sites. ·~~

~~· Performs maintenance at firing sites.~~

~~· Insures adequate safety measures of firing point operations. ·~~

~~· Supervise operations at the M-6 general purpose firing site. ·~~

~~· Responsible for maintenance of operational records.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Mechanical Technician II (M-6) --- #027~~

~~A. Required Skills~~

~~· Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~

~~· Good technical knowledge of problems associated with high explosives (HE) handling and use.~~

~~B. Required Education/Training: ·~~

~~· RCRA Provisions ·~~

~~Personal Safety ·~~

~~Hazardous Waste Handling and Operations~~

~~a. Handling/Detonation HE waste~~

~~· M-6 Emergency Procedures~~

~~· Recordkeeping/Inspections~~

~~· On-Site Transportation~~

~~C. Duties:~~

~~· Assemble and fire explosive shots.~~

~~· Assist firing point crew during shots.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Technical Supervisor IV (M-7) ---#028~~

~~A. Required Skills~~

~~Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~

~~· Good knowledge of problems associated with high explosives handling and use. ·~~

~~Strong electronics background.~~

~~B. Required Education/Training:~~

~~· RCRA Provisions · Personal Safety~~

~~Hazardous Waste Handling and Operations of HE waste~~

~~· M-7 Emergency Procedures · Recordkeeping/Inspections~~

~~· On-Site Transportation~~

~~C. Duties~~

~~· Supervise HE Test Firing technicians.~~

~~· Provide on-the-job training for explosives technicians.~~

~~· Responsible for maintenance of operational records.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Group Committee Chairman (M-7) --- #030~~

~~A. Required Skills~~

~~· Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~

~~· Good technical knowledge of problems associated with high explosives (HE) handling and use.~~

~~· Familiarity with DOE and Laboratory Safety Regulations.~~

~~B. Required Education/Training:~~

~~· RCRA Provisions~~

~~· Personal Safety~~

~~Hazardous Waste Handling and Operations~~

~~a. Handling of HE waste~~

~~· M-7 Emergency Procedures~~

~~· Recordkeeping/Inspections~~

~~· On-Site Transportation~~

~~C. Duties:~~

~~· Aid the group leader in implementing Laboratory Safety Program.~~

~~· Inform the group of changes in policy, new programs/services offered by the Laboratory.~~

~~· Assure proper records are kept as required by Federal, State and Laboratory Regulations.~~

~~· Aid Supervisors in training personnel in safety.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Safety Officer (M-8) ---#031~~

~~A. Required Skills~~

~~· Familiarity with State and Federal Regulations regarding hazardous materials and waste. ·~~

~~Knowledge of problems associated with high explosives (HE) handling and use.~~

~~B. Required Education/Training:~~

~~· RCRA Provisions · Personal Safety ·~~

~~Hazardous Waste Handling and Operations~~

~~a. Handling of HE waste~~

~~· M-8 Emergency Procedures~~

~~· Recordkeeping/Inspections~~

~~· Respirator or SCBA~~

~~C. Duties ·~~

~~Participate in writing SOPs for group operations. ·~~

~~Maintains files of SOPs.~~

~~Arranges Health and Safety Training for group personnel. ·~~

~~Conducts necessary inspections of M-8 facilities. ·~~

~~Assures group operations on compliance with Laboratory Health and Safety Manual.~~

~~· Assures group operations in accordance with approved SOPs.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Firing Operations Supervisor (M-8) --- #032~~

~~A. Required Skills~~

~~· Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~

~~· Good knowledge of problems associated with high explosives (HE) handling and use.~~

~~B. Required Education/Training: ·~~

~~RCRA Provisions · Personal Safety~~

~~Hazardous Waste Handling and Operations~~

~~a. Handling/Detonation of HE waste~~

~~· M-8 Emergency Procedures~~

~~· On-Site Transportation~~

~~C.Duties ·~~

~~D. Supervise firing section facilities & personnel in the following areas:~~

~~a. Directs and coordinates destruction of HE waste at M-8's firing sites.~~

~~b. Receiving explosives deliveries.~~

~~c. Assembling shots.~~

~~d. Shot set up at firing site.~~

~~e. Setting up the diagnostics, e.g., rotating mirror smear camera.~~

~~f. Firing the shot.~~

~~g. Collecting the data.~~

~~h. Supervise the safety of facilities and personnel.~~

~~i. Supervise and help train new technicians.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Disposal Operations Materials Technician (WX-3) ---#033~~

~~A. Required Skills~~

~~· Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~

~~· Good technical knowledge of problems associated with high explosives (HE) handling and disposal.~~

~~· Knowledge of specific group SOPs and procedures for disposal operations.~~

~~· Competence in disposal operations.~~

~~B. Required Education/Training:~~

~~Personnel assigned to the Disposal Crew are trained on the job.~~

~~Most come to the job from other technical positions in WX-3 and are well grounded in explosives safety.~~

~~They have knowledge of relevant SOPs and their competence in the disposal operations is recorded by the Supervisor.~~

~~They attend monthly meetings and participate in safety training. · RCRA Provisions · Personal Safety · Hazardous Waste Handling and Operations~~

~~a. Detonation/Burning HE waste~~

~~· WX-3 Contingency Plan~~

~~· Recordkeeping/Inspections~~

~~· On-Site Transportation~~

~~C. Duties:~~

~~· Participates in the operations of a truck-mounted vacuum tank for the removal of sump waste.~~

~~· Prepares HE Waste for burning.~~

~~Uses squibs and firing circuitry to start burning operations.~~

~~· Responsible for preparing HE waste for burning.~~

~~· Responsible to supervisor for problems concerning efficiency, safety, and maintenance of the operation.~~

~~Charged with practicing good housekeeping for the proper level of cleanliness of the facilities and equipment.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Disposal Operations Supervisor (WX-3) --- #034~~

~~A. Required Skills~~

~~· Familiarity with State and Federal Regulations regarding hazardous materials and waste. ·~~

~~Good technical knowledge of problems associated with high explosives (HE) handling and disposal. ·~~

~~Thorough knowledge and understanding of specific group SOPs, safety manuals, and procedures for disposal operations.~~

~~Directs activities of two technicians in the pickup, transportation, and disposal of HE contaminated flammable waste from all areas involving WX-3 operations and other Laboratory Groups.~~

~~· Responsible for the safety of all personnel engaged in disposal activities.~~

~~· Responsible for the training of personnel in the handling, transportation, and destroying of wastes, with emphasis on the precautions necessary for individual and crew protection.~~

~~Schedules the activities to have all explosive or contaminated waste removed from the facilities for disposal at the Burning Ground. · Oversees sump cleaning activities to assure a safe, effective operation and inspects all sumps regularly.~~

~~· Understands and enforces security regulations concerning classified scrap.~~

~~· Responsible for the cleanliness and maintenance of all facilities and equipment involved in disposal activities.~~

~~B. Required Education/Training:~~

~~The Disposal Supervisor must have a thorough understanding of the SOPs based on the procedures developed over decades of experience in handling, transporting, and using explosives at TA-16. He must also have a thorough understanding of the regulations stated in both the U.S. Army's Materials Development and Readiness Command Manual 385-100 and DOE Safety Manual. The Supervisor is an individual promoted to this position based on his demonstrated experience and knowledge of disposal activities, explosives in general, and safety practices in explosive operations.~~

~~· RCRA Provisions~~

~~· Personal Safety~~

~~**RCRA JOB DESCRIPTION**~~

~~TITLE: Disposal Operations Supervisor (WX-3) --- #034 (continued) · Hazardous Waste Handling and Operations~~

~~a. Detonation/Burning HE waste~~

~~· WX-3 Contingency Plan~~

~~· Recordkeeping/Inspections~~

~~· On-Site Transportation~~

~~C. Duties:~~

~~· Responsible for the operations of a truck-mounted vacuum truck for the removal of sump waste. ·~~

~~Works with the crew in preparing HE waste for burning.~~

~~Custody of the firing apparatus. · Responsible to supervisor for problems concerning efficiency, safety, and maintenance of the disposal operation. ·~~

~~Maintains facilities and equipment by requesting maintenance support and conducts safety checks of the Burning Ground.~~

~~· Evaluates personnel and assures compliance with security regulations.~~

~~· Assures personnel comply with RCRA regulations.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Plant Engineering Specialist TEC IV (WX-12) --- #035~~

~~A. Required Skills · Demonstrated technical and administrative proficiency in plant operation in maintenance. · Good technical knowledge of problems associated with high explosives (HE) handling and disposal.~~

~~B. Required Education/Training:~~

~~· RCRA Provisions~~

~~· Spill Response/Contingency Plan~~

~~· Personal Safety~~

~~· Detonation/Burning HE waste~~

~~· Emergency Procedures~~

~~· Recordkeeping/Inspections~~

~~· On-Site Transportation~~

~~C. Duties:~~

~~· Investigate all proposed actions involving the physical plant and equipment to assure that the results will be compatible with the operational requirements and plant of the operating division.~~

~~· Track, monitor, and expedite operations involving contractor and off-site personnel that affect the area, buildings, facilities, and equipment.~~

~~· Serve as construction coordinator and maintenance inspector.~~

~~· Ensure the operations of contractor and off-site personnel are safe, compatible with existing facilities and operations, and minimize impact on the work of division personnel.~~

~~Function as certifying agent, which involves inspection and testing for explosives contamination of items leaving the explosives area and many items to be transferred within the explosives area.~~
~~Provide direct supervision of all craft work related to vacuum systems, dust collectors, and other equipment that may be internally contaminated with high explosives~~
~~Supervision of jobs in progress to assure that job requirements are met, including timely completion of jobs, adherence to S-Site safety rules, and procedures, and prompt resolution of problems.~~

~~Provide safety leadership at S-Site, including recommendation of changes to existing safety rules and procedures affecting contractor and off-site personnel work in the area.~~

~~**RCRA JOB DESCRIPTION**~~

~~TITLE: Staff Member, Technical Support Section (HSE-7) ---#040 (continued)~~

~~· Serve as shift supervisor during incinerator operations. · Collect records of required run data.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Certifying Agent (WX-12) ---#036~~

~~A. Required Skills · Familiarity with State and Federal Regulations regarding hazardous materials and waste. · Good technical knowledge of problems associated with high explosives (HE) handling and~~

~~disposal. · Knowledgeable of specific group SOPs and procedures for disposal operations. · Competence in verification by visual inspection or application of appropriate tests that equipment~~

~~or materials leaving TA-16 are free of explosives.~~
~~· Certifies equipment or materials for general use with no qualifications.~~

~~B. Required Education/Training:~~

~~The Certifier is trained on the job by senior personnel.~~

~~· Qualified Certifiers are senior technicians knowledgeable in explosives safety and explosives used in specific facilities.~~

~~Required Courses:~~

~~· RCRA Provisions~~

~~· Personal Safety~~

~~· Hazardous Waste Handling and Operations~~

~~a. Detonation/Burning HE waste~~

~~· WX-12 Contingency Plan~~

~~· Recordkeeping/Inspections~~

~~· On-Site Transportation~~

~~C. Duties:~~

~~· Completely remove high explosives from contaminated equipment and materials.~~

~~· Certify the equipment and materials for general use with no qualifications.~~

~~· Responsible to supervisor for problems concerning efficiency, safety, and maintenance of the operation.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Plant Engineering Specialist TEC IV (WX-12) ---#037~~

~~A. Required Skills~~

~~· Demonstrated technical and administrative proficiency in maintenance of plant operation.~~

~~· Good technical knowledge of problems associated with high explosives handling and use.~~

~~B. Required Education/Training:~~

~~· RCRA Provisions~~

~~· Spill Response/Contingency Plan~~

~~· Personal Safety · Detonation/Burning HE~~

~~· Emergency Procedures~~

~~· Recordkeeping/Inspections~~

~~· On-Site Transportation~~

~~C. Duties:~~

~~· Investigate all proposed actions involving the physical plant and equipment to assure that the results will be compatible with the operational requirements and plant of the operating division.~~

~~· Track, monitor, and expedite operations involving contractor and off-site personnel that affect the area, buildings, facilities, and equipment.~~

~~· Serve as construction coordinator and maintenance inspector.~~

~~· Ensure that operations of contractor and off-site personnel are safe, compatible with existing facilities and operations, and minimize impact on the work of division personnel.~~

~~· Function as certifying agent, which involves inspection and testing for explosives, contamination of items leaving the explosives area and many items to be transferred within the explosives area.~~

~~· Provide direct supervision of all craft work related to vacuum systems, dust collectors, and other equipment that may be internally contaminated with high explosives.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Emergency Manager/Hazardous Material Response Team ---#038~~

~~A. Required Skills:~~

~~· Familiarity with State and Federal Regulations regarding hazardous and mixed materials and waste.~~

~~· Good technical knowledge of problems associated with hazardous chemical handling and use.~~

~~· Ability to communicate with a wide variety of personnel, internal and external to the Laboratory.~~

~~· Ability to supervise personnel in hazardous and mixed waste emergency situation.~~

~~B. Required Education/Training:~~

~~· RCRA Provisions~~

~~· OSHA Provisions~~

~~· Spill Response~~

~~· Contingency Plan~~

~~· Emergency Response~~

~~C. Duties:~~

~~· Act as Incident Commander in the event of a RCRA emergency situation.~~

~~· Maintain awareness of RCRA regulations with respect to local operations.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Chemical Waste Management Coordinator - #039~~

~~A. Required Skills:~~

~~· Knowledge of State and Federal Regulations regarding hazardous materials and waste.~~

~~· Knowledge of Laboratory requirements for hazardous material and waste management.~~

~~· Ability to instruct personnel in proper chemical waste management.~~

~~B. Required Education/Training:~~

~~· RCRA Provisions~~

~~· Spill Response~~

~~· Contingency Plan~~

~~C. Duties:~~

~~· Oversee local waste activities.~~

~~· Instruct fellow personnel in Laboratory waste disposal requirements.~~

~~· Provide input to spill responses for hazardous materials/waste as necessary.~~

~~· Maintain awareness of RCRA regulations with respect to local operations.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: Staff Member, Technical Support Section (HSE-7) ---#040~~

~~A. Required Skills:~~

~~· Familiarity with State and Federal Regulations regarding RCRA-listed hazardous materials.~~

~~· Good understanding of waste incinerator design and operation.~~

~~· Ability to train and supervise other Section members as required by operations.~~

~~B. Required Education/Training:~~

~~· Minimum of a bachelor's degree in chemistry/chemical engineering or an equivalent combination of experience and engineering.~~

~~· RCRA Provisions~~

~~· Personal Safety~~

~~· Respirator or SCBA~~

~~· Hazardous Waste Handling and Operations~~

~~a. Incineration~~

~~b. Acids/Bases~~

~~c. Organics -General~~

~~d. Inorganics - General~~

~~· Spill Response~~

~~· RCRA Contingency Plan~~

~~· Recordkeeping/Inspections~~

~~C. Duties:~~

~~· Assist in training of Section staff and technicians in handling of hazardous wastes, incinerator operations, and data collection.~~

~~· Supervise handling of hazardous wastes as required by operations.~~

~~RCRA JOB DESCRIPTION~~

~~TITLE: High Explosives Technician (M-1) --- #041~~

~~A. Required Skills:~~

~~· Familiarity with State and Federal Regulations regarding hazardous materials and waste.~~

~~· Good technical knowledge of problems associated with high explosives handling and use.~~

~~B. Required Education/Training:~~

~~· RCRA Provisions~~

~~· Personal Safety~~

~~· Detonation/burning HE~~

~~· Emergency procedures~~

~~· Recordkeeping/inspection~~

~~· On-Site transportation of explosives~~

~~C. Duties:~~

~~· Remove waste from satellite storage for disposal at TA-14 detonation/burning site.~~

~~· Small-scale sensitivity testing of explosives. · Small-scale evaluation of explosives performance.~~

~~RCRA JOB DESCRIPTION TABLE~~

~~Name~~	~~Number~~	~~Title~~	~~Group~~
~~A. Drypolcher~~	~~001~~	~~Group Leader, Waste Management~~	~~EM-7~~
~~R. Garde~~	~~002~~	~~Deputy Group Leader, Waste Management~~	~~EM-7~~
~~A. Gustavsson~~	~~003~~	~~Section Leader, Chemical and Mixed Waste Operations~~	~~EM-7~~
~~J. Harper~~	~~004~~	~~Section Leader, Low-Level Waste Operations~~	~~EM-7~~
~~S. Hanson~~	~~005~~	~~Acting Section Leader, Liquid Waste Operations~~	~~EM-7~~
~~S. Zygmunt~~	~~006~~	~~Section Leader, Technical Support Section~~	~~EM-7~~
~~Vacant~~	~~008~~	~~Staff Member, Technical Support Section~~	~~EM-7~~
~~A. Montonya~~	~~009~~	~~Staff Member, Chemical and Mixed Waste Operations~~	~~EM-7~~
~~E. Lopez~~	~~009~~	~~Staff Member, Chemical and Mixed Waste Operations~~	~~EM-7~~
~~F. Vigil~~	~~009~~	~~Staff Member, Chemical and Mixed Waste Operations~~	~~EM-7~~
~~N. Sauer~~	~~009~~	~~Staff Member, Chemical and Mixed Waste Operations~~	~~EM-7~~
~~J. Kelly~~	~~009~~	~~Staff Member, Chemical and Mixed Waste Operations~~	~~EM-7~~
~~W.R. Velasquez~~	~~012~~	~~Environmental Technician~~	~~EM-7~~
~~E. Velasquez~~	~~012~~	~~Environmental Technician~~	~~EM-7~~
~~B. Romero~~	~~012~~	~~Environmental Technician~~	~~EM-7~~
~~J. Armijo~~	~~012~~	~~Environmental Technician~~	~~EM-7~~
~~M. Martinez~~	~~012~~	~~Environmental Technician~~	~~EM-7~~
~~S. Martinez~~	~~012~~	~~Environmental Technician~~	~~EM-7~~
~~T. Martinez~~	~~012~~	~~Environmental Technician~~	~~EM-7~~
~~J. Gonzales~~	~~012~~	~~Environmental Technician~~	~~EM-7~~

~~**RCRA JOB DESCRIPTION TABLE**~~

~~(continued)~~

~~Name~~	~~Number~~	~~Title~~	~~Group~~
~~L. Esquibel~~	~~012~~	~~Environmental Technician~~	~~EM-7~~
~~L. Hupke~~	~~012~~	~~Environmental Technician~~	~~EM-7~~
~~D. Melton~~	~~014~~	~~Mechanical Technician, Technical Support~~	~~EM-7~~
~~R. Powers~~	~~014~~	~~Mechanical Technician, Technical Support~~	~~EM-7~~
~~J.F. Rutten~~	~~014~~	~~Mechanical Technician, Technical Support~~	~~EM-7~~
~~J. Mendez~~	~~015~~	~~Electronic Technician III, Technical Support~~	~~EM-7~~
~~Vacancy~~	~~015~~	~~Electronic Technician III, Technical Support~~	~~EM-7~~
~~C. Villareal~~	~~017~~	~~Experimental Equipment/Facilities Operator II/III (Area G)~~	~~EM-7~~
~~R. Roybal~~	~~017~~	~~Experimental Equipment/Facilities Operator II/III (Area G)~~	~~EM-7~~
~~R. Spencer~~	~~017~~	~~Experimental Equipment/Facilities Operator II/III (Area G)~~	~~EM-7~~
~~B. Smith~~	~~017~~	~~Experimental Equipment/Facilities Operator II/III (Area G)~~	~~EM-7~~
~~M. Martinez~~	~~017~~	~~Experimental Equipment/Facilities Operator II/III (Area G)~~	~~EM-7~~
~~D. Moss~~	~~018~~	~~Experimental Equipment/Facilities Operator II/III (TA-50)~~	~~EM-7~~
~~D. Salazar~~	~~018~~	~~Experimental Equipment/Facilities Operator II/III (TA-50)~~	~~EM-7~~
~~R. Reyonlds~~	~~018~~	~~Experimental Equipment/Facilities Operator II/III (TA-50)~~	~~EM-7~~
~~G. Royer~~	~~018~~	~~Experimental Equipment/Facilities Operator II/III (TA-50)~~	
~~E. Montoya~~	~~019~~	~~Chemical Technician III/Laborer~~	~~JCI~~
~~Vacant~~	~~020~~	~~Section Leader, Decontamination and Decomissioning~~	~~EM-7~~
~~M. Romero, Supervisor~~	~~021~~	~~Health Protection Technician II/III~~	~~EM-7~~
~~M. Sanchez~~	~~021~~	~~Health Protection Technician II/III~~	~~EM-7~~
~~Vacancy~~	~~022~~	~~Member, Waste Generator Interface~~	~~EM-7~~
~~F.M. Jackson~~	~~023~~	~~Technical Coordinator for Operations~~	~~M-DO~~

~~RCRA JOB DESCRIPTION TABLE~~

~~(continued)~~

~~Name~~	~~Number~~	~~Title~~	~~Group~~
~~S. Hildner~~	~~024~~	~~Testing Technician III~~	~~M-1~~
~~C.C. Maxwell~~	~~025~~	~~Technical Administrative Specialist~~	~~M-1~~
~~A.D. Bonner~~	~~026~~	~~Remote Site Supervisor~~	~~M-6~~
~~D.T. Torres~~	~~027~~	~~Mechanical Technician II~~	~~M-6~~
~~W. Patterson~~	~~028~~	~~Technical Supervisor IV~~	~~M-7~~
~~S. Trujillo~~	~~029~~	~~Technical Supervisor III~~	~~M-7~~
~~L.W. Creamer~~	~~030~~	~~Group Safety Committee Chairman~~	~~M-7~~
~~C.M. Montoya~~	~~031~~	~~Safety Officer~~	~~M-8~~
~~C.M. Montoya~~	~~032~~	~~Firing Operations Supervisor~~	~~M-8~~
~~J. Maestas~~	~~033~~	~~Disposal Operations Materials Technician~~	~~WX-3~~
~~S. Ortiz~~	~~033~~	~~Disposal Operations Materials Technician~~	~~WX-3~~
~~J. Gallegos~~	~~033~~	~~Disposal Operations Materials Tecnician~~	~~WX-3~~
~~R. Garcia~~	~~033~~	~~Disposal Operations Materials Technician~~	~~WX-3~~
~~A. Montano~~	~~033~~	~~Disposal Operations Materials Technician~~	~~WX-3~~
~~P. Velarde~~	~~034~~	~~Disposal Operations Materials Technician~~	~~WX-3~~
~~B. McCormick~~	~~035~~	~~Plant Engineering Specialist Technician IV~~	~~WX-12~~
~~B. McCormick~~	~~036~~	~~Certifying Agent~~	~~WX-12~~
~~J. Martinez~~	~~036~~	~~Certifying Agent~~	~~WX-12~~
~~D. Sharpless~~	~~037~~	~~Plant Engineering Specialist Technician IV~~	~~WX-12~~
~~Z. Macbain~~	~~038~~	~~Emergency Manager/HAZ MAT Team~~	~~EMO~~
~~F. Pearce~~	~~038~~	~~Emergency Manager/HAZ MAT Team~~	~~EMO~~
~~J. Griffiths~~	~~038~~	~~Emergency Manager/HAZ MAT Team~~	~~EMO~~
~~D. Winston~~	~~038~~	~~Emergency Manager/HAZ MAT Team~~	~~EMO~~

~~RCRA JOB DESCRIPTION TABLE~~
~~(continued)~~

~~D. Seitz~~	~~038~~	~~Emergency Manager/HAZ MAT Team~~	~~EMO~~
~~G. Bequett~~	~~038~~	~~Emergency Manager/HAZ MAT Team~~	~~EMO~~
~~T. Hower~~	~~038~~	~~Emergency Manager/HAZ MAT Team~~	~~HS-5~~
~~D. Volz~~	~~038~~	~~Emergency Manager/HAZ MAT Team~~	~~HS-5~~
~~T. Montoya~~	~~038~~	~~Emergency Manager/HAZ MAT Team~~	~~HS-5~~

~~FIGURE C-1~~

~~OUTLINE OF LOS ALAMOS NATIONAL LABORATORY TRAINING PROGRAM~~

~~IC - internal classroom instruction~~
~~EC - external classroom instruction~~
~~OJT - on-the-job training~~

~~I. RCRA PROVISIONS~~

~~A. Legislation (Federal/State) - (IC, EC) introductory with annual update.~~

~~Brief overview of legislative mandates.~~

~~B. Regulations (Federal/State) - introductory with annual update.~~
~~1.Overview of 40 CFR 260-265 (N.M. Hazardous Waste Regs. Parts I & II)~~
~~2.Overview of DOT shipping regulations.~~
~~3.Familiarization with Los Alamos National Laboratory emergency response, recordkeeping.~~

~~II. PERSONNEL HEALTH AND SAFETY~~

~~A. Familiarization with Standard Operating Safety Guidelines (IC)~~

~~B. Safe Handling of Chemicals (EC)~~
~~1.1. Explosive/fire hazards, chemical burns, chemical compatibility~~
~~2.2. Eye/skin hazards and protection~~
~~3.3. Respiratory hazards and protection~~

~~C. First Aid (IC) introductory, triennial recertification~~

~~D. CPR (IC) introductory, annual recertification~~

~~E. Use of H&S equipment~~
~~1.1. Safety showers, eyewashers~~
~~2.2. Fire extinguishers~~
~~3.3. Alarm system~~
~~4.4. Communication system~~

~~FIGURE C-1~~
~~OUTLINE OF LOS ALAMOS NATIONAL LABORATOROY'S TRAINING PROGRAM~~
~~(continued)~~

~~III. RESPIRATOR~~

~~A. Air-Purifying Devices (IC) introductory, annual~~

~~1. Use~~
~~a. Operation of device~~
~~b. Changing of filters~~
~~c. Donning and taking off equipment~~
~~d. Safety features~~

~~1. Care and cleaning~~
~~2. Inspection~~
~~3. Fitting~~

~~B. Self-Contained Breathing Apparatus (IC) introductory, annual~~

~~1. Use~~
~~a. Operation of device~~
~~b. Changing compressed air bottles~~
~~c. Donning and taking off equipment~~
~~d. Safety features~~

~~1. Care and cleaning~~
~~2. Inspection~~
~~3. Fitting~~

~~IV. HAZARDOUS WASTE HANDLING AND OPERATIONS~~

~~A. Controlled Air Incineration (OJT) introductory with annual update~~

~~1. Familiarization of SOP~~
~~2. Familiarization of Operating Manual~~
~~3. Supervised Operation of Facility~~
~~4. Emergency Shutdown Procedures~~
~~5. Evacuation Procedures~~
~~6. Accidental Release Procedure~~
~~7. Familiarization with Emergency Equipment Use, Inspection, Repair, etc.~~
~~8. Use of Communication/Alarm System~~

~~FIGURE C-1~~

~~OUTLINE OF LOS ALAMOS NATIONAL LABORATOROY'S TRAINING PROGRAM (continued)~~

~~B. Detonation/Burning HE (OJT) introductory with annual update~~

~~1. Familiarization of SOP~~
~~2. Supervised Operation of Facility~~
~~3. Emergency Shutdown Procedures~~
~~4. Accidental Release Procedure~~
~~5. Familiarization with Emergency Equipment Use, Inspection, Repair, etc.~~
~~6. Use of Communication/Alarm System~~

~~D. Non-HE Reactives, Corrosives, Ignitables, Toxics~~

~~1. Chemical Hazards and Reactions (EC)~~
~~2. Emergency Procedures (OJT)~~
~~3. Accidental Release Procedures (OJT)~~
~~4. Emergency Equipment~~
~~5. Communication/Alarm System~~

~~V. RECORDKEEPING/INSPECTIONS (IC, EC, OJT) introductory~~

~~A. Use of Manifest System (on-site)~~

~~B. Operating Records~~

~~C. Reporting~~

~~D. Inspections~~

~~1. Facility~~
~~2. Operating Equipment~~
~~3. Safety/Emergency Equipment~~
~~4. Security System~~

~~VI. TRANSPORTATION (OJT) introductory~~

~~A. On-Site~~
~~1. Packaging~~
~~2. Placarding/labeling~~
~~3. Manifesting/recordkeeping~~
~~4. Internal Procedures~~
~~5. Waste Segregation~~

~~**FIGURE C-1**~~

~~**OUTLINE OF LOS ALAMOS NATIONAL LABORATOROY'S TRAINING PROGRAM (continued)**~~

~~B. Off-Site~~
~~1.1. Packaging~~
~~2.2. Placarding/labeling~~
~~3.3. Manifesting/recordkeeping~~
~~4.4. Internal Procedures~~
~~5.5. Waste Segregation~~

~~Supervisors and staff receive training appropriate to their degree of handling hazardous waste (e.g., reporting and other procedures required for compliance). Material handlers are trained in the hands-on aspects such as maintenance of operating records, plant operation, and response to spills or other emergencies.~~

none

ATTACHMENT C
PERSONNEL TRAINING

This attachment describes the personnel training program for Los Alamos National Laboratory (LANL) in accordance with the regulatory requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.16, "Personnel Training," revised November 1, 1995. The information presented outlines the personnel training program at LANL. The primary objective of the training program is to prepare persons to operate and maintain safely those areas managing hazardous and/or mixed waste in accordance with 20 NMAC 4.1, Subpart V, revised November 1, 1995. This training program applies to all employees of the U.S. Department of Energy, the University of California, and any of their subcontractors who work regularly at LANL and who handle or generate hazardous and/or mixed waste. The degree of training varies with the job duties. However, all personnel who may handle or generate hazardous and/or mixed waste receive an introduction to RCRA.

C.1 HAZARDOUS AND MIXED WASTE MANAGEMENT/RESPONSIBILITIES

Waste management groups within the Chemical Science and Technology Division (CST) and the Hazardous and Solid Waste Group (ESH-19) are responsible for most waste management activities at LANL. Waste management activities associated with high-explosive waste treatment are handled by the Engineering Sciences and Applications Division (ESA) and the Dynamic Experimentation Division (DX). The Nuclear Materials Technology Division (NMT) is responsible for waste management activities at Technical Area 55. With the noted exceptions, CST waste management groups are responsible for all day-to-day operational aspects of waste management. ESH-19 is responsible for providing waste management regulatory guidance to CST personnel and to waste generators at LANL.

Other LANL groups and various support personnel assist in waste management activities and provide support to ESH-19 and CST. Johnson Controls World Services Inc. (JCI) provides trained personnel to assist CST in waste-handling activities. Personnel in the Health Physics Operations Group (ESH-1), Occupational Medicine Group (ESH-2), Industrial Hygiene and Safety Group (ESH-5), Occurrence Investigation Group (ESH-7), Hazardous Materials Response Group (ESH-10), Air Quality Group (ESH-17), Water Quality and Hydrology Group (ESH-18), Environmental Assessments and Resource Evaluations Group (ESH-20), and personnel in ESH-19 are trained in their specialities to provide emergency response support. Protection Technology Los Alamos (PTLA) is responsible for LANL security, traffic control, and site access control.

The Emergency Management and Response (EM&R) Office provides emergency planning and response at LANL and has the overall responsibility for LANL's Emergency Management Plan (EMP) training. The Environment, Safety, and Health (ESH) Division Training Group (ESH-13) is responsible for developing and delivering LANL-wide Environment, Safety, and Health (ES&H) training. Environmental courses are designed with substantial input from ESH-19, the CST waste management groups, and others, as appropriate.

C.2 TRAINING CONTENT, FREQUENCY, AND TECHNIQUES

The training program instituted at LANL includes a combination of LANL-wide courses (received internally or through external vendors and usually classroom-based), facility-specific training (developed and delivered within a particular facility), and on-the-job training (OJT) (performance-based courses that focus primarily on procedures performed by individual workers). Each of these types of training is described briefly in Sections C.2.1 through C.2.3. All LANL, JCI, and PTLA employees will receive the appropriate level of training within six months of their date of hire or transfer. Personnel will not work in unsupervised positions until they successfully complete the appropriate level of training for their positions and responsibilities.

Records of LANL-wide training currently sponsored or administered by ESH-13 are entered by that group into the Employee Development System (EDS), the official LANL training database. These records document that the required training has been successfully completed by the worker. Training records of former workers are kept for at least three years from the date last worked at the facility. It is required that records documenting successful completion of facility-specific, on-the-job, or externally provided training be entered into the EDS by sponsoring organizations. Group or section training personnel or document control custodians will maintain, at a minimum, hard copies of training records for currently employed workers until the facility closes.

Table C-1 summarizes the components of the LANL-wide training program as administered through ESH-13. This table includes a listing of the relevant training courses, a summary of topics, and a designation of the relevant courses for each job category. Categories of workers summarized in Table C-1 include hazardous/mixed waste workers, managers and supervisors of hazardous/mixed waste workers, emergency responders, and uncontrolled area potential release site workers. Table C-2 summarizes the components of facility-specific training and OJT that workers must receive. Each training element was designed to ensure that every worker involved in hazardous and/or mixed waste operations is properly trained in procedures relevant to the positions in which they are employed. Tracking the completion of training is possible through the EDS training plans.

The responsibilities of the worker categories summarized in Table C-1 are presented herein. Hazardous/mixed waste workers are responsible for handling and/or managing hazardous/mixed wastes and assisting in spill and emergency response activities, as required. Managers and supervisors of hazardous/mixed waste workers are directly responsible for day-to-day operations related to waste management activities and ensuring that personnel safety and training requirements are met. Emergency responders are trained emergency response personnel (e.g., ESH-10) that respond to emergencies (e.g., spills, fires, explosions) involving hazardous and/or mixed wastes that provide support for emergency response activities. Uncontrolled area potential release site workers conduct investigations and remedial activities at potential release sites and are responsible for proper waste management from generation to disposal, including waste characterization, treatment, and storage.

Training materials of LANL-wide training courses are on file in the ES&H Training Center and are available for review by all hazardous/mixed waste management and handling personnel, emergency response personnel, and regulatory agencies. Course content will be reviewed annually and updated as required to remain current with RCRA regulations. Alternative forms of training (e.g., paper-based self-study courses, computer-based training) may be taken to meet specific training requirements. Such alternate forms of training must be approved by ESH-13 personnel and

determined to be equivalent in content to more traditional classroom-based training courses. Files listing the requisite skills, education, and training for workers who handle hazardous and/or mixed waste and the duties and responsibilities for each job description, as well as the name of each worker filling a job description, are maintained, as required by 20 NMAC 4.1, Subpart V, 264.16(d)(2), revised November 1, 1995. This information is located in the EDS as well as maintained at the facility by the group or section document control custodian.

C.2.1 LANL-Wide Training

The RCRA Personnel Training course provides an overview of RCRA regulations and emphasizes compliance with the RCRA requirements that apply to job-related activities, such as the safe handling of hazardous and mixed waste. Program instructors are trained in hazardous and mixed waste management programs and procedures and in RCRA provisions. The course is designed to provide training that is appropriate for the worker's responsibilities. ESH-13, with guidance from ESH-19, provides an annual refresher of applicable RCRA requirements. Personnel who handle hazardous/mixed waste and/or clean up spills or releases of hazardous/mixed waste and the managers and supervisors of these workers receive instruction on appropriate topics listed in Table C-1. In addition, personnel responsible for requisitioning the transport, treatment, or storage of hazardous and/or mixed waste receive supplemental training, as necessary, as listed in Table C-1. Training is typically provided by LANL training instructors or by external vendors knowledgeable about a particular subject.

C.2.2 Facility-Specific Training

All waste-handling personnel will participate in facility-specific training at their work locations. Table C-2 addresses program requirements that ensure that hazardous and mixed waste management and handling personnel know the specific requirements for their facilities and are able to respond effectively to emergencies. Personnel will become familiar with emergency and monitoring equipment use, inspection, repair, and replacement at their facility. In addition, they will receive instruction on contingency plan contents and implementation (as they apply to their facility) including, but not limited to, communications or alarm systems, response to fires and explosions at their facility, and key parameters for automatic waste-feed cutoff systems and shutdown of facility operations.

C.2.3 On-the-Job Training

Performance-based OJT is developed in conformance with LANL standards. Supervisors or other experts who can evaluate worker proficiency provide training appropriate for the procedures required of each function-specific position. To become proficient in hazardous and/or mixed waste procedures, workers receive this performance-based training, as necessary.

OJT topics include implementing facility-specific procedures, maintaining operating records, fulfilling reporting requirements, and conducting inspections specific to the facility. Workers whose duties include packaging and transportation support receive training on packaging, labeling, recordkeeping, and waste segregation for transportation within their facility. Emergency responders receive facility-specific training regarding emergency response and shutdown procedures at the facility to which they are assigned.

C.2.4 Training Coordinator

The ESH-13 Group Leader directs the LANL-wide ES&H training program. The Group Leader is trained in the operation of hazardous and mixed waste management facilities, waste management practices, and emergency procedures and is responsible for coordinating training courses. Line managers are responsible for ensuring that personnel under their supervision receive necessary training.

C.3 EMERGENCY TRAINING

If called upon by the EM&R Office, additional non-LANL emergency response personnel (e.g., JCI, PTLA) may assist the LANL Emergency Manager at the scene of a hazardous or mixed waste emergency. These professionals are trained in their specialties (e.g., heavy equipment operation, hazardous material cleanups, traffic control, security). JCI personnel are also trained in personal safety. At all times during an emergency, these workers are under the direct supervision of the Incident Commander in the Unified Command or the designated Crisis Manager, as appropriate. A more detailed discussion of emergency procedures, personnel, and equipment is provided in Permit Attachment D.

To ensure maximum protection of life and property and to mitigate the consequences of an emergency situation, facility personnel involved in waste handling and emergency response must be knowledgeable about appropriate building and operating area emergency procedures. These workers receive training in facility-specific emergency procedures or participate in the LANL-wide emergency training program. Group leaders and immediate supervisors are responsible for ensuring that education and training in facility-specific emergency procedures are provided to all personnel under their supervision. Training in facility-specific emergency procedures is given by the operating group. Periodic announced and unannounced emergency drills and exercises are used to familiarize workers with emergency procedures. Training is also provided to workers through prominent instructional displays and through presentations and discussions in safety meetings.

Each new or transferred worker is indoctrinated by an immediate supervisor regarding the general and specific emergency procedures related to the work area. The immediate supervisor also advises each worker of changes to any emergency procedures and provides an annual refresher of procedures affecting the work area. The organization that develops and delivers facility-specific training maintains these training records.

Specialized training is given to personnel assigned special functions or specific emergency duties. Emergency response personnel are required to attend courses on implementation of the RCRA contingency plan, spill response, and Occupational Safety and Health Administration (OSHA) emergency response provisions. The EM&R Office provides training related to implementing LANL's EMP. All waste management and handling personnel participate in a training program in which they are instructed in emergency procedures pertinent to their work areas. The operating group provides this site-specific instruction.

C.4 IMPLEMENTATION OF TRAINING PROGRAMS

General Employee Training (GET), an ES&H orientation course, is given on the first day of employment to all new employees. GET is also required of contract workers and visitors who work on site at LANL for ten or more consecutive days. GET includes, but is not limited to, ES&H policy, OSHA rights and regulations, industrial safety, waste minimization, general radiation

protection, industrial hygiene, emergency management, and fire protection. Personnel who will handle or be associated with hazardous waste are required to take the hazard communications and waste generator training courses. All workers who will handle or be associated with mixed waste also receive courses in hazard communications and waste generator training as well as radiation worker protection. Workers will not work without direct supervision or at a new position until they have been trained.

The Waste Generation Overview training course provides hazardous and mixed waste generators with information needed to identify wastes that are subject to RCRA regulations in 20 NMAC 4.1, Subpart II, revised November 1, 1995. The training defines hazardous waste and hazardous constituents (including hazardous components in mixed waste) and addresses how to identify hazardous waste and hazardous constituents. A second course, Waste Documentation Forms, focuses on documenting characterized waste according to RCRA and LANL requirements. Both training courses inform hazardous and mixed waste generators of their responsibilities and requirements and supports the documentation of process knowledge, which generators may use to characterize hazardous and mixed waste. All workers who handle hazardous and/or mixed waste are required to have RCRA Personnel Training, and those who work at treatment, storage, or disposal units are required to have Hazardous Waste Operations and Emergency Response (HAZWOPER) Occasional Site Worker training.

All hazardous and mixed waste management and handling personnel must attend annual refresher courses. These courses are intended to update personnel on LANL procedures and changes in RCRA provisions and to provide them with an overview of their introductory training. Line managers and group leaders will ensure that personnel participate in the appropriate introductory and annual training courses.

TABLE C-1
LOS ALAMOS NATIONAL LABORATORY-WIDE TRAINING PROGRAM

COURSES[a]	**Hazardous/Mixed Waste Worker**	**Manager/Supervisor of Hazardous/Mixed Waste Workers**	**Emergency Responder**	**Uncontrolled Area Potential Release Site Worker**
Criticality Safety Training (presents nuclear theory, criticality reactions, characteristics, exposure protection principles, and criticality prevention measures)	*[b]	*	*	*
General Employee Training (includes familiarization with standard operating safety guidelines)	X[c]	X	X	X
Hazard Communication Introduction (includes information on explosion/fire hazards, chemical burns, chemical compatibility, eye/skin hazards and protection, respiratory hazards and protection)	X	X	X	X
HAZWOPER[d]: First Responder (Operations Level) (provides an overview of hazardous materials emergency response including recognition and identification of hazardous materials and associated risks, required actions, and relationships with other emergency responders)			X	
HAZWOPER: General Site Worker (provides general information on hazardous waste operations and emergency response for general site workers engaged in corrective action, remediation, or decontamination and decommissioning activities)				X
HAZWOPER: Occasional Site Worker (provides general information on hazardous waste operations and emergency response for occasional and regular site workers)	X	X		

TABLE C-1
LOS ALAMOS NATIONAL LABORATORY-WIDE TRAINING PROGRAM
(continued)

COURSES[a]	Hazardous/Mixed Waste Worker	Manager/Supervisor of Hazardous/Mixed Waste Workers	Emergency Responder	Uncontrolled Area Potential Release Site Worker
HAZWOPER: Refresher for General Site Workers (provides general information on hazardous waste operations to general site workers)				X
HAZWOPER: Refresher for TSD[e] Workers (provides general information on hazardous waste operations to TSD workers)	X	X		
OSHA[f] Rights and Responsibilities (provides general information on worker's rights in relation to OSHA)	X	X	X	X
RCRA[g] Personnel Training (includes an overview of Code of Federal Regulations Title 40, Parts 260-265, 268; New Mexico Administrative Code, Title 20, Chapter 4, Part 1, revised November 1, 1995; Department of Transportation shipping regulations; internal and external protocol for facility inspections; operating equipment, communication systems, security systems; contingency plan; and emergency equipment use, inspection, and repair)	X	X	*	*
RCRA Refresher Training (includes regulatory and legislative updates, occurrence reports and lessons learned, audit findings, modification/review of the contingency plan; provides required retraining)	X	X	*	*
Refresher General Employee Radiological Training (provides refresher general radiological training)	X	X	X	X
Radiological Worker I and II Training (requires recertification every two years)	*	*	X	X

TABLE C-1
LOS ALAMOS NATIONAL LABORATORY-WIDE TRAINING PROGRAM
(continued)

COURSES[a]	Hazardous/Mixed Waste Worker	Manager/Supervisor of Hazardous/Mixed Waste Workers	Emergency Responder	Uncontrolled Area Potential Release Site Worker
Refresher Radiological Worker I and II Training (provides refresher radiological training)	*	*	X	X
Waste Generation Overview (includes waste management regulations and policies, definition of hazardous waste, waste minimization, cycle of waste management at Los Alamos National Laboratory, storage and disposal)	X	X	X	X
Waste Management Coordinator Requirements (provides training on waste management to coordinators)	*	*		*
Cardiopulmonary Resuscitation: Adult (requires annual recertification)	*	*	*	*
First Aid: Standard (requires recertification every three years)	*	*	*	*
Health Physics Checklist Indoctrination (provides health physics information to new workers)	*	*	X	X
HMPT[h] Training - General (includes introduction to HMPT regulations, identification and segregation of hazardous materials, packaging, placarding/labeling, manifesting/recordkeeping)	*	*		
Lockout/Tagout (provides information on lockout/tagout procedures and policy)	*	*	*	*
Respirators: Air-Purifying (provides required annual retraining for operation and inspection of device, changing filters, donning and doffing)	*	*	X	*

TABLE C-1
LOS ALAMOS NATIONAL LABORATORY-WIDE TRAINING PROGRAM
(continued)

COURSES[a]	Hazardous/Mixed Waste Worker	Manager/Supervisor of Hazardous/Mixed Waste Workers	Emergency Responder	Uncontrolled Area Potential Release Site Worker
Respirators: Self-Contained Breathing Apparatus (provides required annual retraining for operation and inspection, changing compressed air bottles, donning and doffing, safety features, care and cleaning, fitting)	*	*	X	*
Waste Documentation Forms (includes use of Waste Profile Form, use of waste disposal forms, use of manifest system, as applicable)	*	*		*

[a] Additional training courses (not listed in this attachment) may also be taken by personnel depending on the types of hazards (e.g., chemical) associated with a particular job description.
[b] * indicates that a course may be required for specific job tasks and/or work areas.
[c] X indicates a required course.
[d] HAZWOPER = Hazardous waste operations and emergency response
[e] TSD = Treatment, storage, and disposal
[f] OSHA = Occupational Safety and Health Act
[g] RCRA = Resource Conservation and Recovery Act
[h] HMPT = Hazardous materials packaging and transportation

TABLE C-2
FACILITY-SPECIFIC AND ON-THE-JOB TRAINING FOR HAZARDOUS AND MIXED WASTE HANDLING OPERATIONS

The following categories of facilities will provide facility-specific training for all workers and on-the-job training on procedures directly applicable to an individual's work assignment:

- Treatment units
- ~~Incinerators~~
- Open burning and explosives detonation areas
- Container and tank storage areas
- Other categories, as necessary.

Facility-specific training will include the following topics:

- Supervised operation of the facility
- Emergency shutdown and evacuation procedures
- Accidental release and spill response procedures
- Familiarization with emergency equipment use, inspection, and repair
- Use of communication/alarm system
- Contingency plan training
- Operations manual specific to the facility
- Specialized equipment at the facility
- Information about the particular chemical and radioactive hazards present at the facility.

On-the-job training will consist of training individuals to be familiar with and use the standard operating procedures that apply to their jobs.

CONTINGENCY PLAN
PERMIT ATTACHMENT D
NM0890010515-1

ATTACHMENT D

HAZARDOUS WASTE FACILITY CONTINGENCY PLAN

~~D.1 INTRODUCTION~~

~~The Los Alamos National Laboratory and the resident communities of Los Alamos and White Rock are located in north central New Mexico on the Pajarito Plateau, situated west of the Rio Grande on the eastern slopes of the Jemez Mountains. The Laboratory site covers about 111 km^2 (27,500 acres) in and adjacent to Los Alamos County and includes 32 active Technical Areas (TAs) (Figure D-1).~~

~~The principal mission of the Laboratory is the design and development of weapons for the nation's nuclear arsenal; however, considerable research and development (R&D) is directed toward the development of advanced technology. In executing its research mission, the Laboratory produces hazardous wastes in small quantities, the nature of which varies with changes in the research projects conducted. The potential exists for hazardous waste generation to occur at virtually all of the technical areas.~~

~~Overall responsibility for Hazardous Waste Management is with the HSE-7 Waste Management Group in the Health, Safety and Environment (HSE) Division (Figure D-2). Generators of hazardous wastes are responsible for proper identification, segregation, and documentation of their wastes. Except for HE wastes, packaging, transportation, and final disposition of hazardous wastes are the responsibility of HSE-7 Chemical Waste Operations.~~

~~HE wastes are handled by Dynamic Testing (M) and Design Engineering (WX) Division groups whose central purpose is the design and testing of explosives. Activities within HSE-7 include liquid waste treatment, hazardous chemical waste packaging, transport, treatment, and disposal.~~

~~The Laboratory maintains its own response forces to handle emergencies. Emergency resources available to the Laboratory include the Fire Department, the contracted services of the Mason-Hanger Protective Force (security), Pan Am World Services (PAWS) (maintenance), Los Alamos Medical Center, internal laboratory services including medical facilities, and minor external assistance from the Los Alamos County Police.~~

~~D.1.1 Hazardous Wastes~~

~~The hazardous wastes generated by the Laboratory activities can be considered as three types:~~

~~Wastes from research and development;~~
~~Wastes from process operations; and~~
~~High explosive wastes (HE).~~

~~In addition to the wastes noted above, various laboratory items that contain chemical residues or are otherwise chemically contaminated are considered hazardous waste.~~

~~D.1.2 Hazardous Waste Units~~

~~The safe handling, treatment, and/or storage of hazardous wastes is the responsibility of HSE-7. Daily operations involving hazardous wastes are performed by Solid Waste Operations. HE wastes are an exception, their treatment being the responsibility of M and WX Divisions. HSE-7 is only responsible for residuals from HE treatment when these residuals are determined to be hazardous wastes.~~

~~Hazardous Waste Units currently in operation are summarized in Table D-1. The locations of the units are shown as the shaded areas on Figure D-1. The flow plan for hazardous wastes within the Laboratory is shown in Figure D-3~~

~~D.2 HAZARDOUS WASTE EMERGENCY RESPONSE RESOURCES~~

~~The Laboratory maintains its own response resources to handle emergencies. Interaction with outside agencies is limited for security reasons and because it is impractical to train these agencies to cope with the technical diversity of the Laboratory's operations such that they could safely contribute in an emergency. Response resources include personnel, emergency equipment, and communication systems.~~

~~D.2.1 Response Groups~~

~~The emergency response groups available to the laboratory include the Fire Department, the contracted services of the Mason hanger Protective Force (security), Pan Am World Services (PAWS) (maintenance), Los Alamos Medical Center, internal Laboratory services including medical facilities, and minor external assistance from the Los Alamos County Police. The services offered by these response groups are itemized on Table D-2 and discussed briefly in the following. Each of the emergency response groups retains a current copy of the HWF Contingency Plan.~~

~~D.2.1.1 Medical Facilities~~

~~The Laboratory maintains its own medical facility, HSE-2 Occupational Medicine, to handle job-related injuries and to monitor employee health. Medical facilities include a staff of six physicians, two physician assistants, ten nurses, six x-ray technicians, and two laboratory technicians.~~

~~HSE-2 is supported by HSE-5, Industrial Hygiene. HSE-5 can provide exposure and treatment information via telephone access to Chemtrec and the National Library of Medicine, and via computer access to TOXLINE, CHEMLINE, and Toxicity Data Bank.~~

~~Those cases which cannot be handled by HSE-2 would be forwarded to the Los Alamos County Hospital, where the Laboratory maintains a fully equipped decontamination room. The HSE-2 staff meets with the hospital's emergency staff monthly to go over procedures. In the event that a case is sent to the hospital, staff from HSE-2 provide assistance at the hospital.~~

~~1.D.2.1.2 HSE-3 Safety~~
~~2.D.2.1.3 HSE-5 Industrial Hygiene~~

~~HSE-3 reviews and approves fire protection procedures. They may assist in process shutdown and evacuation.~~

~~In addition to medical support, HSE-5 provides site field testing to determine the nature (nonradiological) and extent of contamination, provide information on current handling of chemicals, and specify protective clothing and equipment.~~

~~D.2.1.4 HSE-7 Waste Management~~

~~Provides cleanup operations and proper treatment and disposal of hazardous materials and supervises emergency response operations. Since HSE-7 normally handles hazardous waste, the group is highly trained and equipped. This group represents the nucleus of the hazardous waste emergency response.~~

~~D.2.1.5 HSE-8 Environmental Surveillance~~

~~Provides field surveys of soils, water, air and biota to determine environmental effects of exposure. The group includes expertise in geohydrology and meteorology.~~

~~D.2.1.6 Fire Department~~

~~The Fire Department provides fire protection for the Laboratory as well as the communities of Los Alamos and White Rock. The department includes 98 personnel.~~

~~In case of an emergency within the Laboratory, the Fire Department puts itself under the direction of the Laboratory response team. The Fire Department personnel make regular tours of the Laboratory facilities to detect and discuss hazards associated with individual facilities and are instructed in hazardous material handling and emergency procedures. They are aware of the hazardous waste practices at the Laboratory, and are well equipped to handle any credible emergency situation.~~

~~D.2.1.7 Mason & Hanger Protective Force (Pro-Force)~~

~~The Pro-Force consists of more than 300 personnel who are responsible for Laboratory security. the security force is provided by Mason & Hanger, Silas Mason, under contract to the Laboratory.~~

~~During an emergency, the Pro-Force activities include maintenance of security, direction of traffic within the Laboratory, and control of access to the emergency site. The Pro-Force maintains the necessary equipment to perform these functions such as crowd equipment, patrol cars, etc.~~

~~D.2.1.8 PAWS~~

~~PAWS provides a maintenance support force on contract to the Laboratory. This support force is under the Laboratory's direction in an emergency. PAWS conducts inspections of Laboratory equipment, maintains equipment, and participates in emergency cleanup.~~
~~D.2.1.9 Los Alamos County Police~~

~~In keeping with the principle of handling emergencies internally, the Los Alamos County Police have only a minimal interaction with the laboratory in an emergency. That interaction is limited to traffic control on DOE roads with public access. The limits of interaction are included in a signed agreement, a copy of which is included as an attachment to this document. There are no agreements with other agencies.~~

~~D.2.1.10 WX and M Division Personnel~~

~~Personnel in WX and M Divisions are trained to safely handle and dispose of highly reactive materials (High Explosives). Any spill or uncontrolled release of material at the burning grounds (TA-14 and-16) or the detonation pads (TAs 14,15,36, and 39) will be cleaned up by personnel from these divisions. The~~

~~fire Department may be called to respond if a burn or detonation results in an uncontrolled fire.~~

~~D.2.1.11 Operational Management Group I (Emergency Management)~~

~~This group provides a 24-hour duty officer, called the Laboratory Emergency Duty Officer (LEDO), to respond to all credible emergencies, including hazardous materials releases. The LEDO is the On-Scene Commander (OSC) for all emergencies, including releases of hazardous materials when an On-Scene Control Group (OSCG) is formed. Emergency Management maintains the Emergency Operations Center (EOC) in operational ready status should the center be required.~~

~~D.2.2 Emergency Equipment~~

~~A list of emergency equipment for use at the laboratory and the location of this equipment can be found in Table D-3. The equipment immediately available for use is located at TA-54, Area L, the TA-50 batch treatment system and modular container storage buildings, the TA-50 waste incinerator and Room 117 storage, the TA-16 incinerator, and the TA-50 storage pads.~~

~~In addition, PAWS, the Fire Department, and HSE-2 maintain emergency equipment. Major emergency facilities are shown in Figure D-4.~~

~~D.2.3 Communications~~

~~Effective emergency response at Los Alamos National laboratory requires an efficient communication system which will integrate all personnel into the emergency response procedure.~~

~~There are two central alarm systems (CAS) at the Laboratory; an emergency CAS and a mechanical CAS. The emergency CAS is activated by:~~

~~Telephone communication (9-911)~~
~~Automatic Fire Alarms~~
~~Manual Pull Alarms~~
~~Computer Interface (to warn of critical events or loss of confinement at selected facilities)~~
~~Break-in Security Radio Communications~~

~~The emergency CAS is located in the central control room in Building 440 at TA-3. The control room is manned 24 hours a day and is equipped with telephones, medium and short range radios, direct line telephones, a National Warning System (NAWAS) station, and an emergency power system. The fire alarm board at the control room gives the location of automatic and pull fire alarms.~~

~~The maintenance CAS board, located in Building 223 at TA-3, is manned by PAWS personnel 245 hours a day. The maintenance CAS board interfaces with computers which monitor critical equipment throughout the Laboratory. Activation of an alarm triggers a call-out procedure to provide maintenance personnel and management supervision to correct the malfunction. The maintenance CAS does not directly trigger an emergency response.~~

~~Internal communication systems at the Laboratory include:~~

~~Centrex telephone system~~
~~Medium range radio nets (30-60 miles)~~
~~Limited range radio nets (3-10 miles)~~
~~Telephone/radio paging~~
~~Two-way hand held radios~~

~~Off-site communications with Federal,state, county and other agencies are maintained by the following:~~

~~Centrex telephone system~~
~~Private telephone lines (if Centrex fails)~~
~~Medium range radio nets (30-6- miles)~~
~~Limited range radio nets (3-10 miles)~~
~~Two National Warning system Stations (NAWAS)~~
~~Direct line to KRSN (local radio station)~~
~~470-2657- telephone to Santa Fe switchboard~~

~~All alarm systems and internal and external communication systems are available for use by all employees.~~

~~Activation of the emergency CAS automatically alerts the Fire Department, the Mason Hanger Pro-Force, and the CAS dispatcher. For hazardous waste emergencies, the CAS dispatcher notifies the Emergency Preparedness Office Deputy Officer (EPODO) who notifies upper management of the problem.~~

~~HSE-7 has access to all communications systems including a short wave radio base station located at TA-50-4. During normal working hours, communications to support response groups can be handled by HSE-7. During off hours, the EPODO uses the CAS Dispatcher to contact support groups.~~

~~D.3 NONSUDDEN RELEASES~~

~~Nonsudden releases include those incidences which, if uncontrolled, impact the environment over a long period of time. Such incidences include minor leaks of containers, loss of integrity of secondary containment, incomplete treatment, and leachate migration from disposal areas.~~

~~D.3.1 Responsibility~~

~~Correction of nonsudden release shall be the responsibility of the operating group and can be handled with normal maintenance and management procedures. Correction methods for nonsudden releases that have resulted in environmental contamination shall be coordinated with the New Mexico Environmental Improvement Division (NMEID).~~

~~D.3.2 Credible Nonsudden Releases~~

~~Not all failures can be predicted. In general, the response to nonsudden release will (1) contain the release, (2) correct the cause of the release, and (3) clean up any release to a level that protects health and the environment.~~
~~D.3.3 Nonsudden Release Surveillance~~

~~In addition to routine inspection and site-specific sampling and testing, the Laboratory maintains an area-wide environmental monitoring network maintained by HSE-8. Routine monitoring for radiation, radioactive materials, and chemical substances on the Laboratory site helps to fulfill the Laboratory's policy to protect the general public, employees, and the environment.~~

~~Monitoring and sampling locations for various types of measurements are organized into three main groups. Regional monitoring stations are located within the five counties surrounding Los Alamos County. They are placed up to 80 kilometers (50 miles) from the Laboratory, and serve to determine background conditions. Perimeter stations are located within approximately four kilometers (2.5 miles) of the Laboratory boundary, and document conditions in residential areas surrounding the Laboratory. On-site stations are within the Laboratory boundary, and most are accessible only to employees during work hours.~~

~~The types of routine surveillance conducted at these stations includes radiation measurements and collection of air particulates, waters, soils, sediments, and foodstuffs for subsequent analysis.~~

~~Additional samples are collected to gain information about particular events such as major runoff events and nonroutine releases. Data are used for comparison with standards, background radiation levels, and dose calculations.~~

~~D.4 SUDDEN RELEASES~~

~~This section deals with incidents involving sudden release such as spills, fires, or explosions which pose a significant threat to human health or the environment and includes the release of hazardous materials and hazardous wastes. Hazardous materials are chemical substances that become a regulated waste as the result of the incident and can include hazardous raw materials that are spilled, products of combustion, and products of uncontrolled reactions.~~

~~D.4.1 Hazardous Waste Emergency Coordination~~

~~The EPODO is responsible for coordinating all emergency response measures involving sudden releases of hazardous wastes with the exception of the open burning and open detonation units at TA-14, 15, 16, 36 and 39. HE waste handling is the responsibility of M and WX divisions, who have developed Standard Operating Procedures (SOPs) based on safe handling practices designed to eliminate the risk of fire and explosions. Unplanned detonation or combustion of HE renders the HE waste nontoxic. In some cases, residuals contain barium. Cleanup of barium contaminated areas due to unplanned detonations shall be coordinated with the EPODO. The EPODO can be reached during working hours by contacting the Emergency Management Office (7-6211) or the CAS dispatcher during off-hours (Table D-4).~~

~~The EPODO shall respond to all incidents involving the release of hazardous wastes including spills, fires, or explosions; assess the possible hazards to human health or the environment; and use whatever response group or emergency equipment needed to control and contain the wastes.~~

~~D.4.2 HWF Emergency Contingency Plan~~

~~This section defines the guideline used to initiate the HWF Emergency Contingency Plan and the resulting actions taken.~~

~~D.4.2.1 Guidelines for Implementation~~

~~The decision to implement the HWF Emergency Contingency Plan depends upon whether or not an imminent or actual incident could threaten human health or the environment. The following guidelines shall be sued by the EPODO in making the decision whether or not to institute the HWF Emergency Contingency Plan.~~

~~The HWF Emergency Contingency Plan could be implemented in the following situations involving hazardous wastes or hazardous materials:~~

~~Spills~~

~~A hazardous waste or hazardous material spill cannot be contained with secondary containment or application of absorbents;~~

~~Precipitation threatens to move spilled material off-site;~~

~~A hazardous waste or hazardous material spill causes the release of flammable material, creating a fire or explosion hazard;~~

~~A hazardous waste or hazardous material spill results in toxic fumes which threaten human health; or~~

~~An earthquake or other natural disaster threatens containment integrity.~~

~~Explosions~~

~~An unplanned explosion involving hazardous wastes occurred (except at TA-14, 15, 16, 36, and 39); or~~

~~An imminent danger exists that an explosion involving hazardous wastes or hazardous material could occur.~~

~~Fires~~

~~Any fire involving hazardous wastes or hazardous material (except planned burning of HE waste); or~~

~~Any building, grass, forest, nonhazardous waste fire that threatens to ignite hazardous wastes.~~

~~D.4.2.2 Emergency Notification~~

~~Immediately upon discovery of an imminent or actual incident involving hazardous wastes or hazardous materials, the EPODO will be notified first. In the case of fire involving hazardous wastes or hazardous materials, this is superseded by the Laboratory fire alarm system. A fire is reported by dialing 9-911, activation of automatic alarms, or activation of a fire pull box. All fire alarms simultaneously alert the CAS Dispatcher, the Fire Department, and the Mason and Hanger pro-Force. For fire involving hazardous wastes, hazardous materials, or hazardous waste units, the CAS Dispatcher shall contact the~~

~~EPODO (Figure D-5). Orange 1 signs on building which contain HE are a warning to fire fighters not to approach or enter the building without obtaining information from WX or M Division personnel about the nature and location of HE materials in the building.~~

~~During off-hours, all incidents involving hazardous wastes or hazardous materials shall be reported to the CAS Dispatcher, who will contact eh on-call EPODO.~~

~~The EPODO shall proceed to the incident and assess the nature of the problem. On an as-needed basis, the EPODO shall contact response groups directly or instruct the CAS Dispatcher to contact them or contact the HSE-Duty Officer (HSE-DO) who will notify the appropriate HSE groups. Table D-2 shows the assistance available from each emergency response group. The EPODO will use this list as criteria to determine which groups to contact in an emergency.~~

~~Each response group maintains an on-call person and/or a call-down procedure to answer emergencies. Because the initial observer may not be able to recognize the involvement of hazardous materials, the EPODO shall be notified of any incident as described in Section D.4.1. The EPODO shall use whatever means available including the assistance of other response groups, computer data searches, and sampling to determine if a hazardous waste is generated. HSE-5 and HSE-8 have the expertise to determine the nature and extent of contamination, the chemicals involved in the incident, and the characteristics of the hazardous waste.~~

~~D.4.2.3 EPODO Actions~~

~~Upon notification of an incident, the EPODO shall:~~

1. ~~Proceed directly to the site;~~
2. ~~Assess the nature of the incident, and quantities and types of hazardous wastes or hazardous materials involved; and~~
3. ~~Based on the guidelines in Section D.4.2.1 of the Contingency Plan, determine if implementation of the HWF Emergency Contingency Plan is warranted.~~

~~Upon the decision to implement the HWF Emergency Contingency Plan, the EPODO shall perform, in this order, the following actions:~~

1. ~~Assess the hazards to human health and the environment including both direct and indirect effects such as generation of toxic, irritating, or asphyxiating gases, hazards of runoff of fire water or treatment chemicals. The EPODO will use the guidelines in Section D.4.2.1 to assess the hazards to human health and the environment. If any of the criteria under Section D.4.2.1 are met, evacuation of the immediate area will be initiated.~~
2. ~~Determine if evacuation of the local area is advisable, and if so, immediately notify appropriate response groups and/or the Los Alamos County Police.~~
3. ~~Notify required response personnel and DOE LAAO by phone, radio, or through the CAS Dispatcher in the case of a spill or incident other than fire. In the case of fire, since the fire fighters have already responded, he shall confirm that the Fire Department Officer-in-Charge is aware of the hazardous waste or hazardous materials involvement and the special hazards associated with the wastes.~~
4. ~~Warn the remaining personnel of imminent or actual hazards using the radio and/or the PA system.~~
5. ~~DOE LAAO through the Emergency Management office will notify the New Mexico Environmental Improvement Division (505) 827-9329, and the National Response Center (800)~~

~~424-8802, reporting:~~
~~- Name and telephone number of the reporter~~
~~- Name and address of the facility~~
~~- Time and type of incident~~
~~- Name and quantity of materials involved, to the extent known~~
~~- The extent of injuries, if any~~
~~- The possible hazards to human health or the environment outside the facility.~~

~~6. Advise the response groups as needed to minimize personnel exposure and expedite control; and~~
~~7. For the Batch Treatment Plant and Controlled Air Incinerator, where the emergency stops operations, HSE-7 personnel must monitor for leaks, pressure buildup, gas generation or equipment ruptures. The instruments that are monitored during the shutdown and what they are monitored for are shown on Table D-5 for the Batch Treatment Plant and Table D-6 for the incinerator.~~

~~Once control of the emergency is established, the EPODO shall:~~

~~1.Arrange for site cleanup;~~
~~2.Provide for treating, storing, or disposing of recovered wastes, contaminated soil or contaminated surface waters;~~
~~3.Provide for decontamination of equipment as needed;~~
~~4.Replace and/or repair equipment as needed;~~
~~5.Conduct testing as needed to verify successful cleanup;~~
~~6.Within 15 days of the incident, submit to the Regional Administrator and Environmental Improvement Division the report described in Section D.10.~~

~~D.5 SPECIFIC EMERGENCY RESPONSE PROCEDURES FOR HAZARDOUS WASTE~~

~~UNITS The following section summarizes the guidelines for handling emergencies.~~

~~D.5.1 Chemical Spills~~

~~Hazardous wastes are handled and stored in small containers, lab packs, 55-gal. drums, and dumpster tanks. The individual volumes handled are small. Handling of hazardous materials may involve truckload quantities of material such as solvents, fuels, acids, and bases.~~

~~The general steps in handling hazardous wastes are:~~

~~Containment including spreading of absorbents or forming of temporary dikes;~~

~~Waste pickup and packaging in sound containers; and~~

~~Decontamination followed by testing to assure adequate clean-up.~~

~~The emergency preparedness procedures related to flammable organic solvent spills call for stabilization of the spilled material with the organic solvent spill kit. Other chemical spills are to be stabilized using the acid and caustic spill kits or by the addition of absorbents such as vermiculite. Personnel protective equipment will be worn during spill control and cleanup. The stabilized material will be treated as hazardous waste. Runoff which might occur from spills outside containment areas during precipitation must be contained and handled as a hazardous waste unless analyzed and found to be nonhazardous.~~

~~Temporary dikes can be constructed to contain runoff.~~

~~D.5.1.1 Spill Control Procedures~~

~~Vermiculite or Pell-O-Cell will be used to control all chemical spills except hydrofluoric acid spills. Vermiculite and Pell-O-Cell are compatible will all chemicals except fluorine and hydrofluoric acid. Hydrofluoric acid is generally only handled in very small volumes, in small containers, so that a spill would be limited to a very small volume (less than one gallon). A hydrofluoric acid spill will be neutralized by carefully adding calcium hydroxide or other caustic to the spill. After an excess of caustic has been added and the reaction has ceased, the resulting solution will be cleaned up using vermiculite. Vermiculite and caustic are stored at all the TSD units at the Laboratory.~~

~~DOT approved drums will be used to collect all spilled material and contaminated absorbent. There are many drums of this type, located at all treatment and storage facilities at the laboratory. For corrosives, the drums will be lined with polyethylene drum liners. The list of emergency equipment (Table D-3) shows the equipment available at each area to be used to control a spill. The ultimate disposition of any contaminated absorbent or waste material will be decided by HSE-7 according to permit conditions and RCRA standards. The material will be temporarily stored at TA-54, Area L.~~
~~Decontamination will be accomplished at the spill site. After the spilled material has been absorbed by vermiculite or Pell-O-Cell, the material will be drummed. If the spill occurs on a cemented area, water or an appropriate solvent will be used to clean the area and this liquid will be absorbed onto vermiculite or Pell-O-Cell and drummed. A composite sample will be taken of the material used to absorb the final waste water. No contamination should be present in this sample. If contamination is present, the procedure will be repeated (i.e. clean the area and collect and analyze a composite sample). The composite sample will be taken from a drum using a thief or trier as specified in SW-846.~~

~~If the spill occurs on soil, any free liquid present will be adsorbed onto vermiculite and the resulting material will be drummed. The contaminated soil will be dug up and drummed. For a spill of less than one gallon, the visibly contaminated dirt plus a sufficient amount of dirt around the spill site will be dug up. For a spill of more than one gallon, the contaminated dirt plus the perimeter dirt will be drummed and a sample taken of the perimeter dirt using the same method as discussed for the vermiculite sample.~~

~~There will be no sampling for a spill in a sealed storage area. Once all visible signs of contamination have been removed, it will be simple to verify any remaining contamination because the floors are sealed with epoxy. In addition, sealed storage areas have secondary containment structures that will control potential spills. At closure, if there is any residual contamination, it will be removed.~~

~~If a spill is from a known source, the waste will be analyzed for materials present in that container. Analytical procedures specified in Table D-7 will be used. If the spill is from an unknown source, the chemical composition will be determined by using the parameters and test methods specified in Table D-7.~~

~~D.5.2 Fire~~

~~Depending on the size of the fire and fuel source, portable ABC fire extinguishers may be used to put out fires. However, the Laboratory is discouraging the use of portable fire extinguishers by employees and encouraging the immediate evacuation and notification of the Fire Department. The person fighting the fire must wear appropriate protective equipment. If the fire spreads or increases in intensity, all personnel should evacuate to an upwind point at least 100 yards away from the fire. For any fire involving~~

~~hazardous waste, the EPODO must be contacted immediately, and he will alert all necessary emergency management personnel. The Fire Department is automatically alerted when the CAS is activated. The EPODO should remain near the site, but at a safe distance, so he can advise the personnel responding to the fire of the known hazards. The EPODO is familiar with RCRA provisions, spill response, and emergency actions and therefore, is qualified to advise firefighting personnel of the potential hazards involved. Upon arrival at a fire, the Fire Department Officer-in-Charge will be in command of fire fighting. He will accept and evaluate the advice of Los Alamos personnel and emergency management organization members, but he will retain the responsibility to select the fire fighting methods and tactics. The EPODO will be in overall control of the Laboratory's emergency response efforts until the emergency is terminated.~~

~~D.5.3 Explosion~~

~~In the case of explosions, all personnel will immediately evacuate the area. Any injured personnel will be immediately transported to the Medical Department for treatment. The EPODO must be contacted immediately upon activation of the CAS, and they he must alert all necessary emergency response personnel. The Fire Department is notified automatically upon CAS activation. The EPODO will remain near the site, but at a safe distance, so he can advise the personnel responding to the explosion of the known hazards.~~

~~Upon arrival at the site, the Fire Department Officer-in-Charge will be in command of fire fighting. He will accept and evaluate the advice of Los Alamos personnel and emergency management organization members, but he retains the responsibility to select the fire fighting methods and tactics. The EPODO will be in overall control of the laboratory's emergency response efforts until the emergency is terminated.~~

~~D.5.4 Exposure~~

~~Chemical material in the eye or on the skin will be washed either with the entire contents of the portable eye wash station or for at least 15 minutes. The eyelids will be held open during washing. The injured person will then be quickly transported to the Medical Department for evaluation. If possible, the chemical material involved in the injury will be ascertained and the information given to the Medical Department.~~

~~Other potential chemical exposures will necessitate evacuation. If anyone notices any of the following conditions:~~

~~Irritation of the eyes, breathing passages or skin;~~
~~Difficulty in breathing; or~~
~~Nausea, light-headedness, vertigo, or blurred vision~~

~~The affected person will be transferred to the Medical Department and the HSE-5 Group representative will attempt to ascertain what, if any, chemical exposure occurred and what corrective measure is appropriate.~~

~~D.5.5 Flood~~

~~The U. S. Army Corps of Engineers has documented that Los Alamos National Laboratory's waste~~

~~management facilities are not located within the 100-year floodplain. This documentation has been included as an attachment to this document.~~

~~D.6 EVACUATION~~

~~A facility will be evacuated upon the voice command of "evacuate the area," or upon the sounding of the evacuation alarm, or upon the fire alarm.~~

~~D.6.1 Evacuation Plan~~

~~Emergency situations may warrant the shutdown and evacuation of an area(s) or building(s) in order to protect personnel and property, to anticipate the emergency condition, or to enhance the appropriate response. Table D-8 shows the criteria for evacuation, persons responsible for initiating evacuations, and reentry conditions.~~

~~To initiate building evacuation, the evacuation alarm is sounded and/or the public address system is used. The evacuation alarm, which is more suitable for evacuation of the whole facility, is a steady, continuous, audible signal. This alarm cannot be silenced and reset by site personnel. The Fire Alarm Maintenance Section at 667-4027 and the Fire Department Platoon Chief at 667-7026 can silence and reset the alarm.~~

~~To evacuate a portion of the building, the public address system is more appropriate. The PA system will notify the occupants of the area to be evacuated, and additionally, will advise personnel in the rest of the facility of the existence of a problem in that specific area.~~

~~Upon initiation of an evacuation, either via the PA or evacuation alarm, all personnel are to leave the specified area and go to the muster area, turning off all equipment that could contribute to the hazard if left unattended.~~

~~In the event of an evacuation of only a portion of the building, one of the out buildings, or outlying work areas, the Group Leader will designate a control point at the closest and/or the most convenient location. This area will be outside the affected area and will serve as a muster point and provide control of the affected area to prevent further spread of the hazard.~~

~~Sweep Team personnel will remain in the area for a visual inspection of all the affected work areas, laboratories, and offices. At least two persons will do the sweep to insure that if an injured person is found or if a single person is fighting a small fire, turning off equipment or activating fire suppression systems, one sweep team member can give assistance while the other reports to the muster area or control point to obtain additional aid. If the building is evacuated during normal working hours, the secretary will remove the personnel attendance roster that is posted near the secretary's desk, take it to the muster area, call roll, and report the personnel accounting to the Group Leader. During second or third shift operations, the lead engineer will be responsible for evacuation and roll call. The evacuation procedure follows:~~

~~Group Leader determines cause and probable extent of hazard;~~

~~Group Leader will sound the evacuation alarm or make an announcement on the PA system;~~

~~Group Leader will designate an assembly area if other than muster area;~~

~~Group Leader will notify the on-call EPODO;~~

~~Personnel will shut down equipment that might contribute to the hazard;~~

~~Personnel will activate fire suppression systems;~~

~~Personnel will not remain in affected area except to assist injured personnel;~~

~~Personnel will report to the muster area or designated control point;~~

~~Roll call (general evacuation) or personnel accounting (partial evacuation); and~~

~~Building or Area sweep by assigned personnel.~~

~~For a small scale evacuation, the Group Leader takes control. For a large-scale evacuation, the CAS will be activated, the EPODO will be notified and will be responsible for the evacuation.~~

~~D.6.2 Process Shutdown~~

~~Personnel are instructed to shut down equipment prior to evacuating a building unless an immediate building evacuation is announced. To ensure efficient shutdown, training and exercises in process shutdown are required. In the case of an immediate evacuation, a selected team may shutdown designated equipment in an evacuated area. The team will be equipped with the proper equipment, clothing and breathing apparatus. If present, HSE-1, HSE-3, and HSE-5 will provide advice and assistance. Process shutdown procedures only apply to the TA-50 batch treatment system and waste incinerator and the TA-16 Industrial Incinerator. Process shutdown procedures are as follows.~~
~~D.6.2.1 TA-50 Batch Treatment System~~

~~The Batch Treatment System will be operated in accordance with current Standard Operating Procedures. If a fire or evacuation alarm sounds during the operation of the Batch Treatment System, the operating crew sill initiate a process shutdown. Because the process is a batch treatment, cessation of treatment is adequate to bring the process to a safe condition. In general, the process shutdown should include the following:~~

~~Shutdown of treatment chemical feeds;~~

~~Shutdown of the waste pump discontinuing waste transfer or circulation;~~

~~Shutdown of steam/hot water to the reactor jacket, if any;~~

~~Shutdown cooling water only if there is a risk of contamination of the water with waste (continued cooling removes residual heat from the system); and~~

~~Allow the reactor mixer to operate unless its operation poses a unique hazard (operation helps remove heat and prevents stratification).~~

This attachment presents contingency measures for hazardous and mixed waste units at Los Alamos National Laboratory (LANL). The contingency plan is intended to meet the requirements specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, Part 264, Subpart D, revised November 1, 1995, "Contingency Plan and Emergency Procedures," for Resource

Conservation and Recovery Act (RCRA) treatment, storage, or disposal (TSD) facilities. In addition, this document is consistent with the LANL Emergency Management Plan (EMP) (LANL, 1993), prepared by the LANL Emergency Management and Response (EM&R) Office. The provisions of this plan will be carried out immediately to minimize hazards whenever there is a fire, explosion, or release of hazardous or mixed waste or hazardous or mixed waste constituents that could threaten human health or the environment [20 NMAC 4.1, Subpart V, 264.51(b), revised November 1, 1995].

D.1 HAZARDOUS AND MIXED WASTE EMERGENCY RESPONSE RESOURCES

The primary resources for management of emergency incidents at LANL reside within the EM&R Office, which is part of the Facilities, Security, and Safeguards (FSS) Division. During an emergency situation, line management (i.e., the Group Leader of the affected area) works with the Duty Emergency Manager from the EM&R Office (FSS-20). The Emergency Manager has primary responsibility for managing emergency response operations, making appropriate notifications, activating the emergency response organizations, and proceeding to the scene. The Emergency Manager has authority to assume the role of Incident Commander (IC) during an emergency and typically assumes full responsibility for management of the emergency response operations at the scene. If an emergency can be resolved primarily by site-specific emergency response personnel, the Emergency Manager may choose not to assume command of the emergency response but will remain on standby in case additional response resources are needed. In these situations, site-specific management personnel (e.g., Group Leaders, Deputy Group Leaders) form a facility command and designate a Facility Incident Commander (FIC). Site-Specific emergency response personnel would then report directly to the FIC. Figure D-1 depicts the structure of a facility command.

Additional LANL resources that may provide assistance in an emergency include personnel from the Environment, Safety, and Health (ESH) Division and the Chemical Science and Technology (CST) Division at LANL. These groups are discussed in Sections D.1.2, D.1.3, and D.1.6.

Contracted services and other agencies are also available for assistance during emergencies. These are discussed in Section D.1.5 and include the contracted services of Protection Technology Los Alamos (PTLA) for security, Johnson Controls World Services Inc. (JCI) for facility maintenance, and the Los Alamos County Fire Department (LACFD). Other outside response agencies are discussed in Section D.1.7 and include the Los Alamos County Police Department (LACPD) and the Los Alamos Medical Center (LAMC). The LACPD and the LAMC each provide assistance under a memorandum of understanding (MOU).

Emergency response protocol at LANL is currently being modified to be consistent with the National Interagency Incident Management System (NIIMS). The NIIMS is a national standard that provides consistency in terminology/methodology and allows for an integrated emergency response both locally and nationally, if necessary.

The IC (e.g., the Duty Emergency Manager, the FIC) coordinates all groups and agencies responding to the emergency and personnel operating at the scene in what is called the Unified Command (UC). If the FIC is in charge during an emergency and the Emergency Manager decides that additional resources are needed and assumes the position of IC, then the facility command formed by the FIC becomes the Facility Branch of the UC. The emergency response structure at LANL, as shown on Figure D-2, is designed to expand and collapse to include the response groups/agencies needed to address any particular emergency.

The IC may appoint and utilize a network of support personnel to assess, plan for, and mitigate emergencies. These personnel include a Safety Officer, a Public Information Officer, and a Liaison Officer than report directly to the IC and are responsible for issues related to safety, information, and the interaction of various

groups associated with the overall emergency. Also reporting directly to the IC are an Operations Chief, a Logistics Chief, a Plans Chief, and an Administrative Chief. The Operations Chief oversees the Fire Branch, the Emergency Medical Services Branch, and the Facility Branch and is responsible for the actual emergency response. The Logistics Chief is responsible for providing support personnel and equipment necessary for the emergency response. The Plans Chief is responsible for planning the active mitigation and recovery for the emergency and the Administrative Chief is responsible for keeping records of expenditures. In some instances, one person may be assigned more than one of these positions. During an emergency at LANL, assistance may be provided to the IC and the IC's appointees by a large variety of response groups/agencies. The responsibilities and/or assistance available from the various response groups/agencies are listed in Table D-1 and discussed briefly in Sections D.1.2 through D.1.7

Each of the emergency response groups/agencies and the appropriate facility operators will retain a current copy of this contingency plan. The Hazardous and Solid Waste Group (ESH-19) is responsible for the controlled distribution of the contingency plan.

D.1.1 Emergency Management and Response Office

The Director of LANL has delegated the authority and responsibility for administering and implementing LANL's emergency management program to the FSS Division, which includes the EM&R Office. The EM&R Office coordinates and issues LANL's EMP and provides response coordination for emergencies. The EM&R Office also provides a 24-hour Duty Emergency Manager to respond to emergencies, including hazardous and mixed waste releases. The LANL Emergency Manager is the functional equivalent of the RCRA Emergency Coordinator (20 NMAC 4.1, Subpart V, 264.55, revised November 1, 1995). The EM&R Office maintains an Emergency Operations Center (EOC) in a ready condition should a center be required. The primary EOC is located at Technical Area (TA) 59, Building 1 (TA-59-1). An alternate EOC is located at TA-49-113. Should an EOC be activated during an emergency, all other emergency personnel including the IC and the entire facility or Unified Command fall under the control and direction of the EOC.

EM&R Office personnel designated as Emergency Managers are listed in Table D-2. Assignment as the Duty (i.e., primary) Emergency Manager is rotated. The Duty Emergency Manager can be reached by contacting the EM&R Office (667-6211 during working hours, 667-7080 after working hours) or the Central Alarm Station (CAS) operator (911).

The Duty Emergency Manager will respond to emergency incidents involving the release of hazardous or mixed waste to the environment, including spills, fires, and explosions. With input from the appropriate LANL groups (e.g., ESH, CST, and site groups), the Duty Emergency Manager will initially assess the possible hazards to human health or the environment and, if assuming incident command, will use whatever response personnel and/or emergency equipment necessary in order to control and contain the waste, as necessary. In the event of an emergency, the Emergency Manager becomes the IC with full responsibility for field activities (including logistics, planning, and operations or establishing these positions within the UC). The exception to this is when on-site personnel can adequately address the emergency and maintain incident command internally. At the scene of the emergency, the IC will assemble a UC consisting of the senior person from each responding organization, functional specialists, and the Duty Emergency Manager (if not the IC). Additional technical or management representation may be integrated into the emergency response, as needed. The UC will receive direction from the IC and the members of the UC will work together to mitigate emergency situations.

The Duty Emergency Manager responding to an emergency will have access to a copy of the appropriate building emergency plan(s) (BEP) relating to the area in which the incident is occurring. These plans are maintained by the EM&R Office at TA-59 as well as located on site for use by emergency response

personnel. The various response groups will obtain specific information relating to the facilities involved (including the layout of all affected buildings; the location of evacuation routes, equipment, and personnel; properties of the materials/wastes managed at the facility; and the hazards associated with these materials/wastes) from the BEP(s) and other site-specific information.

D.1.2 Hazardous Materials Response Group

The Hazardous Materials (HAZMAT) Team is comprised of personnel from the Hazardous Materials Response Group (ESH-10). The HAZMAT Team is responsible for the aggressive mitigation of chemical, radiological, hazardous waste, and mixed waste emergencies, including field decontamination of responders and response equipment. The HAZMAT Team may provide the LACFD with limited field decontamination support for victims. The HAZMAT Team is capable of providing a contamination-control station at the scene of a hazardous material incident to process people working in a contaminated area and is prepared to perform decontamination of personnel. LANL standards require that the HAZMAT Team meet the training criteria for emergency response personnel specified in the Code of Federal Regulations, Title 29 (29 CFR), Subparts 1910.120(q)(6)(iii), (iv), and (v). The HAZMAT Team acts as part of the UC reporting through the HAZMAT Group Supervisor (HMGS). The LANL HMGS coordinates the HAZMAT Team and radiological field monitoring activities.

During an emergency response, ESH-10 may also provide site field monitoring to determine the nature and extent of contamination, provide information on correct handling of chemicals, make recommendations on protective clothing and equipment, and provide exposure and treatment information to responders. To operate effectively, ESH-10 may obtain resources from other ESH groups, such as the Health Physics Operations Group (ESH-1) and the Industrial Hygiene and Safety Group (ESH-5).

D.1.3 CST and ESH Response Groups

At the scene, the IC coordinates representatives and technical advisors from the CST and ESH groups. In addition to their post-emergency duties, the groups discussed below may also be responsible for on-scene emergency operations such as planning. Depending on the type of emergency and the associated hazards, an individual from the most relevant group in the ESH Division will assume the position of the Environmental Safety and Health Advisor, will provide technical support, and will ensure LANL compliance with applicable federal, state, and local regulations.

D.1.3.1 Chemical Science and Technology Division

Waste management groups within CST Division are responsible for initial response actions at hazardous and mixed waste treatment and storage units at TA-21, TA-50, and TA-54. These groups also provide guidance on proper treatment, storage, and transportation of hazardous and mixed waste.

D.1.3.2 Air Quality Group

The Air Quality Group (ESH-17) provides field surveys of air to determine potential environmental effects of exposure after an emergency. In addition, ESH-17 provides expertise in meteorology to establish potential short- and long-term environmental effects of emergency conditions.

D.1.3.3 Water Quality and Hydrology Group

After an emergency, the Water Quality and Hydrology Group (ESH-18) provides sampling of water to determine potential environmental effects of an emergency and performs assessments for reporting

requirements. ESH-18 also provides expertise in hydrogeology to establish potential short- and long-term environmental effects of emergency conditions.

D.1.3.4 Hazardous and Solid Waste Group

ESH-19 provides guidance on regulatory requirements to other groups. After an emergency, ESH-19 provides field sampling (e.g., of soil, surface water runoff, and sediments) to determine potential environmental effects of exposure.

D.1.3.5 Environmental Assessments and Resource Evaluations Group

The Environmental Assessments and Resource Evaluations Group (ESH-20) provides field surveys of biota to determine potential environmental effects of exposure after an emergency.

D.1.4 Other LANL Response Resources

Appropriate personnel from the Nuclear Materials Technology Division (NMT) have been trained in emergency procedures. If an emergency occurs at TA-55, NMT personnel are responsible for monitoring for leaks, pressure buildup, gas generation, and/or equipment ruptures. Dynamic Experimentation Division (DX) personnel are responsible for the hazardous and mixed waste treatment units (i.e., open burning/open detonation units) at TA-14, TA-15, TA-36, and TA-39. Appropriate DX personnel responsible for these units are trained in emergency procedures and may provide information and/or assistance during emergencies involving high-explosive waste. Engineering Science and Applications Division (ESA) personnel are responsible for treatment and storage units at TA-16. Appropriate ESA personnel are also trained in emergency procedures and may provide information and/or assistance during emergencies involving units at TA-16.

D.1.5 Contracted Response Groups

Contracted response groups report to the Crisis Manager in the UC if the EOC is activated. In a smaller emergency, the EOC is not activated and the contracted response groups report directly to the IC. If the IC deems it necessary, the IC may designate an Operations Chief to aid in the coordination and direction of these groups.

D.1.5.1 Protection Technology Los Alamos

PTLA is responsible for LANL security, which is provided by PTLA under contract to LANL. During an emergency, PTLA activities include maintaining security, directing traffic within LANL, and controlling access to the emergency scene. PTLA maintains the necessary equipment (such as crowd-control equipment and patrol vehicles) to perform these functions. In addition, the CAS at TA-64-1 is manned by PTLA personnel 24 hours a day.

D.1.5.2 Johnson Controls World Services Inc.

JCI provides a maintenance support force under contract to LANL. This support force is under LANL's direction in an emergency. JCI conducts inspections of LANL equipment, maintains equipment, and participates in post-emergency cleanup under the direction of a Recovery Manager designated by the IC. The Utilities Control Center (UCC) at TA-3-223 is maintained by JCI personnel 24 hours a day.

D.1.5.3 Los Alamos County Fire Department

The LACFD provides fire protection and ambulance coverage for the residential communities of Los Alamos and White Rock and for LANL. In the case of an emergency within LANL, the LACFD coordinates fire suppression and Emergency Medical Services (EMS) efforts, while the IC retains overall responsibility for the emergency response effort. The U.S. Department of Energy (DOE) requires that LACFD personnel meet the training criteria for emergency response personnel specified in 29 CFR 1910.120(q)(6)(i) and (ii). A contract has been established between the DOE and the Incorporated County of Los Alamos.

D.1.6 LANL Support Groups

D.1.6.1 Health Physics Operations Group

ESH-1 provides field personnel to perform routine site evaluation and monitoring to determine the nature and extent of radiological contamination. ESH-1 also provides routine guidance on radiological decontamination. Field personnel conduct these activities under the supervision of certified health physicists. In addition, this group augments the assessment and monitoring functions of the HAZMAT Team.

D.1.6.2 Occupational Medicine Group

LANL maintains its own medical facility operated by the Occupational Medicine Group (ESH-2). ESH-2 provides appropriate medical treatment for occupation-related illnesses and injuries and monitors employees to assess the effectiveness of health protection programs. In addition to promoting early identification and prevention of illnesses or injuries that may arise from exposures to hazardous or radioactive materials, ESH-2 maintains documented records of the health status of employees and related occupational medicine activities.

Although ESH-2 is not routinely involved with on-scene emergency response, the group maintains a central medical facility with a fully equipped emergency room and decontamination facilities at TA-3, Building 409 (SM-409). The location of this and other emergency facilities is shown on Figure D-3. Medical staff at SM-409 includes physicians, physician's assistants, registered nurses, x-ray technicians, and clinical laboratory technicians. All full-time physicians and nurses receive radiation accident training.

ESH-2 also maintains access to a software program called the TOMES™ system at the central medical facility in SM-409. This extensive database provides the clinical staff with timely exposure and treatment information. ESH-2 is supported by ESH-5, as described below.

D.1.6.3 Industrial Hygiene and Safety Group

ESH-5 provides support to ESH-2 with its ability to obtain additional exposure and treatment information via telephone access to the National Library of Medicine's TOXLINE™ and CHEMLINE™, the Toxicity Databank files POISONDEX™ and TOMESPLUS™ (Micromedics), and the CC/INFO™ database files on Material Safety Data Sheets. In addition, ESH-5 maintains access to the National Institute of Occupational Safety and Health Technical Information Center and the Registry of Toxic Effects of Chemical Substances. During routine operations, ESH-5 performs site evaluations and field testing to determine the nature and extent of chemical contamination and specifies protective clothing and equipment.

D.1.6.4 Occurrence Investigation Group

The Occurrence Investigation Group (ESH-7) is responsible for the Occurrences Reporting and Processing System at LANL and has the lead in reporting the occurrence of an on-site emergency. ESH-7 is in part responsible for tracking follow-up corrective actions. ESH-7 personnel assist the facility manager in investigating the occurrence, determining the causal factors, identifying the appropriate corrective actions, and assisting in the preparation of reports documenting the occurrence to DOE. This group tracks the target and actual completion dates for all corrective actions associated with an emergency and maintains the information in an on-site database.

D.1.7 Outside Response Agencies

During an emergency, outside response agencies report directly to the IC. The IC may designate an Operations Chief to aid in coordinating and directing the groups responding to an emergency.

D.1.7.1 Los Alamos County Police Department

The LACPD has only minimal interaction with LANL in an on-site emergency. This interaction is limited to traffic control on DOE roads with public access and to criminal investigations. An MOU for mutual aid assistance has been established between the DOE and the Incorporated County of Los Alamos.

D.1.7.2 Los Alamos Medical Center

LANL maintains a fully equipped decontamination room adjacent to the emergency room at LAMC. In the event that a case is sent to LAMC, support for the emergency room staff is provided by ESH-2 medical personnel. ESH-1, ESH-5, and ESH-10 personnel also provide assistance to the emergency room staff. This assistance is coordinated through the EM&R Office. An MOU has been established between the DOE Los Alamos Area Office (DOE/LAAO) and LAMC.

D.2 EMERGENCY EQUIPMENT AND COMMUNICATIONS

D.2.1 Emergency Equipment

20 NMAC 4.1, Subpart V, Part 264, Subpart D, revised November 1, 1995, requires a listing of all emergency response equipment available that can be used in the event of an emergency. Appendix D-1 lists all emergency equipment available at or near the waste management units addressed in this permit and in LANL's HAZMAT vehicles and trailers. Appendix D-1 also includes a list of supplemental emergency equipment maintained by JCI, the LACFD, and ESH-2. The locations of emergency facilities are shown on Figure D-3.

D.2.2 Emergency Communications

Effective emergency response at LANL requires an efficient communication system that will integrate required personnel into the emergency response. The initial phase of an emergency will involve a small number of individuals at the affected area and notification of the Duty Emergency Manager. For small scale emergencies, local communication equipment/systems will be utilized. When responding to hazardous or mixed waste emergencies, the EM&R Office provides communications between response units and emergency organizations.

D.2.2.1 Emergency Central Alarm Station

The LANL emergency CAS is located at TA-64-1. This station is manned by PTLA personnel 24 hours a day and is equipped with telephones (including direct-line telephones), medium- and short-range radios, a National Warning System (NAWAS) station, and an emergency power system. The fire alarm board at the control room gives the location of automatic and manual fire alarm equipment. The CAS receives alarms from several sources and, in turn, notifies the Duty Emergency Manager of a hazardous or mixed waste emergency. Sources include:

- Telephone communication (911)
- Automatic fire alarms
- Manual pull alarms
- Computer interface (to warn of critical events at selected facilities)
- Security alarms
- Radio communications.

Upon receipt of an alarm, the CAS operator then notifies the LACFD and the Duty Emergency Manager. The Emergency Manager, the HMGS, the EOC communicator, and/or the CAS operator may request emergency response groups to respond. Should the LANL 911 system fail, the Los Alamos County System, located at the LACPD Station, will be used to activate emergency response groups.

D.2.2.2 Utilities Control Center

JCI personnel maintain the UCC at TA-3-223. This facility is maintained 24 hours a day. Alarms at this facility are connected to LANL experiments, equipment, and/or buildings to record outages and hazardous conditions. Any conditions that activate these alarms will be reported immediately to building management or to the CAS operator for notification and response.

D.2.2.3 Additional Communication Systems

Internal communication systems at LANL include:

- The Centrex telephone system

- A telephone paging system

- A variety of FM VHF simplex repeater and trunked radio systems, including:
  - Multiple base stations
  - Mobile and hand-held units
  - Links to New Mexico public safety agencies

- A UHF radio system, including:
  - Multiple antenna sites
  - Mobile and base units
  - Links with the LACPD, the LACFD, and the State Medical System

- A 400-megahertz trunked radio system that includes a link with the LACFD

- Transmission and reception (through EOC) for:

- Secure telephone
- Secure fax
- Secure still video

- Access to all radio systems outlined above (through EOC).

Off-site communications with federal, state, tribal, county, and other agencies are available through the following:

- A Centrex telephone system
- Private telephone lines (if Centrex fails)
- Two NAWAS stations
- A link to KRSN radio (local radio station)
- The local cable television
- A Community Alert Network.

The LANL EOC, maintained by the EM&R Office, operates radio systems on key LANL and off-site channels. Emergency personnel responding to on-site incidents have the benefit of wide-area radio coverage using EOC facilities. After hours, the Duty Emergency Manager is responsible for activating whatever support personnel, equipment, or services are needed.

D.3 CONTINGENCY PLAN IMPLEMENTATION

The following sections discuss guidelines used to implement this contingency plan, for emergency notifications, and for Emergency Manager actions in various types of emergencies.

D.3.1 Guidelines For Implementation

The decision to implement this contingency plan depends upon whether an imminent or actual incident involving a release of hazardous or mixed waste to the environment could threaten human health or the environment. The Duty Emergency Manager will use the guidelines listed below to decide whether to implement this plan.

This contingency plan will be implemented immediately in the following situations involving releases or potential releases of hazardous or mixed waste:

- Spills:
  - If a hazardous or mixed waste spill cannot be contained with secondary containment or application of sorbents.
  - If precipitation threatens to move spilled material off site.
  - If a hazardous or mixed waste spill causes the release of flammable material, creating a fire or explosion hazard.
  - If a hazardous or mixed waste spill results in toxic fumes that threaten human health.
  - If an earthquake or other natural disaster threatens containment integrity.

- Explosions:
  - If an unplanned explosion involving hazardous or mixed waste occurs (except at TA-14, TA-15, TA-16, TA-36, and TA-39).
  - If an imminent danger of an explosion involving hazardous or mixed waste exists.
- Fires:
  - If a fire involving hazardous or mixed waste occurs (except planned burning of HE waste).
  - If any building, grass, forest, or nonhazardous waste fire exists that threatens to volatilize or ignite hazardous or mixed waste.

D.3.2 Emergency Notification

During working hours, immediately upon discovery of an imminent or actual incident involving hazardous or mixed waste, on-site personnel will notify line management and the EM&R Office. During nonworking hours, personnel will report all incidents involving hazardous or mixed waste to the Duty Emergency Manager or the CAS operator. In the case of fire involving hazardous or mixed waste, notification of these individuals is superseded by the LANL fire alarm system. A fire is reported by dialing 911 (from telephone exchanges 667 and 665) or 667-7080 (from all exchanges), activating automatic alarms, or activating a fire alarm pull box. All fire alarms alert the CAS operator, the LACFD, and PTLA. In case of a fire involving hazardous or mixed waste or a hazardous or mixed waste unit, the CAS operator will contact the Duty Emergency Manager.

Upon recognition of a hazardous or mixed waste emergency, the first arriving emergency-trained person will become the temporary IC. Once the EM&R Office is notified of the emergency, the Duty Emergency Manager will proceed to the scene and be briefed by the temporary IC, building/area personnel, and/or other emergency units/teams. The Emergency Manager may then assume the position of IC. If necessary, the IC may recommend that the EOC be activated and that the necessary members of the emergency management team be determined. The IC will form a UC and contact the HMGS. The HMGS will notify the appropriate emergency response groups. The IC may determine from the list of response groups described in Table D-1 which groups to contact in an emergency. Each response group maintains an on-call person and/or a call-down procedure to respond to emergencies.

The EM&R Office will be notified of any potential hazardous or mixed waste emergency (e.g., spills, fires, explosions). The IC and the HMGS will use whatever means are available (including the assistance of other response groups, computer data searches, and sampling) to determine if a hazardous or mixed waste is being or has been generated and/or released. ESH-10, ESH-19, and waste management groups within CST Division have the expertise to determine the nature and extent of contamination and the characteristics of the hazardous or mixed waste involved.

D.3.3 Emergency Manager Actions

Upon notification of an incident, the Duty Emergency Manager may:

- Proceed directly to the scene.
- Call the HMGS.

- Assess the nature of the incident (e.g., through communication with the temporary IC).

- Assume incident command.

- Make an initial assessment of the incident and, in conjunction with the UC, obtain resources to determine the source, quantities, and types of hazardous or mixed waste involved and the areal extent of any released materials.

- Based on the guidelines in Section D.3.1 of this plan, determine if implementation of this contingency plan is warranted.

- Recommend activation of the EOC, if necessary.

Upon deciding to implement this contingency plan, the IC will, when appropriate:

- Assess the hazards to human health and the environment, including both direct and indirect effects, such as generation of toxic, irritating, or asphyxiating gases and/or hazards of runoff of water or chemicals used for fire suppression. An individual designated by the IC will use the guidelines in Section D.3.1 to assess the hazards to human health and the environment. If any of the criteria under Section D.3.1 are met and if the responsible Group Leader or designee has not already accomplished evacuation of the area, the IC will initiate evacuation of the immediate area.

- Determine if evacuation of the local area is advisable and, if so, immediately notify appropriate response groups and the LACPD, if appropriate. The IC may activate one or more of the following community alert mechanisms: the Community Alert (telephone) Network, the KRSN radio remote input system, or the cable television capture system.

- Notify required response personnel and DOE/LAAO. In the case of fire, the IC will confirm that the LACFD Senior Officer at the scene is aware of the special hazards associated with hazardous or mixed waste.

- Warn the remaining on-scene and response personnel of imminent or actual hazards using internal radio communication systems or the public address (PA) system. A radio/PA system at key facilities throughout LANL may be used for emergency notification.

- In emergency situations, the appropriate ESH representative will notify the New Mexico Environment Department (NMED) at (505) 827-9329 and the National Response Center at (800) 424-8802, reporting:
  - The name and telephone number of the ESH representative
  - The name and address of the facility
  - The time and type of incident
  - The name and quantity of material involved, to the extent known
  - The extent of injuries, if any
  - The possible hazards to human health or the environment outside the facility.

- Advise the response groups of hazards in order to minimize personnel exposure and expedite mitigation.

- When an emergency occurs at hazardous or mixed waste treatment units, ensure that CST waste management personnel or, in the case of TA-55, the NMT emergency response personnel monitor

for leaks, pressure buildup, gas generation, or equipment ruptures. ~~The instruments monitored at the incinerator and what they are monitored for are listed in Table D-3.~~

Once control of the emergency is established, the IC will take all reasonable measures to minimize the occurrence, recurrence, or spread of fires, explosions, or releases. In addition, the IC will delegate cleanup and decontamination responsibilities to include:

- Arranging for site cleanup.
- Providing for proper handling of recovered waste, contaminated soil, or contaminated surface/ground water.
- Providing for decontamination of equipment, as needed.
- Arranging for replacement and/or repair of equipment, as needed.
- Ensuring that testing is conducted to verify successful cleanup.

Within 15 days of the incident, DOE/LAAO will submit a report to the Secretary, NMED. The contents of this report will be generated by several LANL groups responding to the emergency, as detailed in Section D.12.

D.4 SPILLS

Sudden releases include spills of hazardous or mixed waste that pose a significant threat to human health or the environment. Spill incidents resulting in a sudden release of hazardous or mixed waste that presents a potential threat to human health or the environment, as listed in Section D.3.1, require implementation of this contingency plan.

Hazardous and mixed wastes are stored on site in a variety of containers including, but not limited to, 55-gallon drums, lab packs, tanks, fiberglass-reinforced plywood boxes, standard waste boxes, and small laboratory bottles. Volumes of hazardous or mixed waste stored or treated will vary from unit to unit. The general steps in handling hazardous and/or mixed waste spills are as follows:

- Isolate the immediate area and deny entry to all unauthorized personnel
- Contain the spill by spreading sorbents or forming temporary dikes to prevent further migration (performed by properly trained personnel, if safe)
- Monitor the spill area and sample the spilled waste and contaminated media
- Package the waste and contaminated media in sound containers
- Decontaminate the area and all involved equipment and personnel (follow by testing to assure adequate cleanup)
- Remove the waste and contaminated media (performed by appropriate waste management personnel).

The IC will determine the steps to be taken for spill mitigation. If initial mitigation of the spill is necessary and can be accomplished safely before the Emergency Manager arrives, a qualified member of the affected area's operating group will serve as the temporary IC.

The emergency preparedness procedures related to flammable organic solvent spills require stabilization of the spilled material with an organic solvent spill kit. Other chemical spills are to be stabilized using acid and caustic spill kits or by the addition of sorbents. During spill control and cleanup, all personnel will wear personal protective equipment (PPE). ESH-5 will conduct monitoring to ensure that chemical exposure is minimized. ESH-1 will conduct health physics monitoring whenever mixed waste is involved to ensure that radiation exposure is also minimized. The stabilized material may be treated as hazardous or mixed waste, depending on the components present. Runoff from spills of listed hazardous or mixed waste that have migrated outside waste storage and/or treatment areas must be contained and managed as hazardous or mixed waste, as appropriate. If the spill was from a characteristic hazardous or mixed waste and if analysis shows that the runoff does not exhibit the characteristic (i.e., ignitability, corrosivity, reactivity, and/or toxicity), then the runoff need not be managed as characteristic waste. Temporary dikes may be constructed to contain runoff.

D.4.1 Spill Control Procedures

When a flammable organic solvent spill, a highly acidic spill, or a highly caustic spill has been stabilized with the contents of an organic solvent spill kit, an acid spill kit, or a caustic spill kit, respectively, the resulting material may be sorbed using a nonbiodegradable sorbent. Nonbiodegradable sorbent can be used to control spills if it is known to be compatible with the spilled material. Approved drums or packaging will be used to collect all spilled material and contaminated sorbent. For corrosives, the drums will be lined with polyethylene drum liners. Appendix D-1 lists emergency equipment available for spill control at each waste management unit addressed in this permit. Appropriate waste management personnel will determine the ultimate disposition of any contaminated sorbent or waste material, according to RCRA regulatory requirements.

D.4.2 Decontamination Verification

Decontamination will be accomplished at the spill site. After the spilled material has been sorbed, the material will be containerized. If the spill occurs on a cemented or asphaltic concrete area, water or an appropriate solvent will be used to clean the area. Liquids (i.e., spilled material and cleaning water or solvents used to clean a spill) will be sorbed with a compatible, nonbiodegradable sorbent and will be containerized. If a spill is from an identifiable source, then the spilled material will be analyzed for the hazardous waste constituents known to be components of the waste managed at that unit. The appropriate analytical method(s) given in Table D-4 will be utilized. If the spill is from other than an identifiable source, then the spilled material will be analyzed for all of the parameters listed in Table D-4. All personnel conducting decontamination verification will wear PPE. ESH-1 will conduct health physics monitoring whenever mixed waste is involved to ensure that radiation exposure is minimized. Any hazardous or mixed waste collected from decontamination activities will be handled appropriately.

In order to establish baseline data, a sample of decontamination water or solvent and nonbiodegradable sorbent material will be taken prior to the start of the decontamination effort. A sample of the material used to sorb the final wash water will then be taken. No hazardous waste constituents should be present in this sample at levels above those found in the baseline data. If the sample exhibits any of the characteristics of a hazardous waste as defined in 20 NMAC 4.1, Subpart II, Part 261, Subpart C, revised November 1, 1995, or if a hazardous constituent listed in 20 NMAC 4.1, Subpart II, Part 261, Appendix VIII, revised November 1,

1995 (and not detected in the baseline data), is present above established health-based levels, the decontamination procedure will be repeated. An alternative demonstration of decontamination may be proposed and justified to NMED, who will evaluate the proposed alternative in accordance with the standards and guidance then in effect. If the proposed alternative is accepted, decontamination levels will meet the levels approved by NMED. Each sample will be collected with an appropriate sampling device (e.g., thief or trier) as specified in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA, 1992).

If the spill occurs on soil, any free liquid present will be sorbed with a compatible nonbiodegradable sorbent, and the resulting material will be containerized. For such a spill, all contaminated soil will be excavated and containerized. ESH-5 will conduct industrial hygiene monitoring, and if mixed waste is involved, ESH-1 will conduct health physics monitoring to minimize exposure during soil removal operations. To establish comparative background data, one or more samples will be collected from an unaffected area near the spill site. The spill site will then be characterized, and the data will be compared to the background data to ensure that all contaminated material has been removed.

If a spill occurs in an area with sealed floors, verification sampling will be performed after decontamination. Swipe samples or other types of sampling appropriate for the contaminant will be collected at random in the area and analyzed. For a spill that occurs in an area that does not have sealed floors, random samples of the floor material, such as concrete chips, will be collected and analyzed for decontamination verification. Contaminated floor material will be removed if the level of contamination remains above that detected in the background data after repeated decontamination attempts. If a spill occurs on asphaltic concrete, the asphaltic concrete will be decontaminated, and a sample of the final wash water and/or the material used to sorb the final wash water will be collected and analyzed for decontamination verification. Contaminated asphaltic concrete that cannot be decontaminated will be removed.

D.5 EXPLOSION

Explosions and resultant releases may result in a significant threat to human health or the environment. The potential exists for hazardous or mixed waste to be released during an explosion. Implementation of this contingency plan is required whenever a sudden release that cannot be contained or that presents a threat to human health or the environment occurs as a result of an explosion.

In the case of an explosion at LANL, all personnel will immediately evacuate the area. Any injured personnel will be decontaminated at the site, if required and if time allows. An LACFD ambulance will transport these personnel to the ESH-2 facility or to LAMC for treatment. If an injury is severe and requires immediate medical evacuation, the injured person will be wrapped to contain contamination, if necessary. In the case of an actual or potential explosion, on-site personnel will contact the EM&R Office immediately so that the Emergency Manager can ensure that all necessary emergency response personnel are alerted. The LACFD is notified automatically upon central alarm system activation. The Emergency Manager assumes incident command and will remain near but at a safe distance from the site in order to inform personnel responding to the explosion of the known hazards.

If a fire results from an explosion, the LACFD Senior Officer will, upon arrival at the scene, evaluate all available information and determine the appropriate firefighting methods and tactics. The LACFD Senior Officer will direct firefighting operations under the general direction of the IC.

D.6 FIRE

Fires and resultant releases of hazardous or mixed waste may result in a significant threat to human health or the environment. Implementation of this contingency plan is required whenever a fire incident results in a sudden release of hazardous or mixed waste that cannot be contained or that presents a threat to human health or the environment.

Depending on the size of the fire and the fuel source, portable fire extinguishers may be used. However, LANL policy does not encourage the use of portable fire extinguishers by employees unless properly trained. Instead, LANL policy encourages immediate evacuation of the area and notification of the LACFD. For any fire, including a fire that involves hazardous or mixed waste, the responsible Group Leader and the EM&R Office must be contacted immediately. The Emergency Manager will alert the LACFD and all other necessary emergency response personnel. If the fire spreads or increases in intensity, all personnel must evacuate to an area designated by the responsible Group Leader, Group Leader designee, or Emergency Manager. The Emergency Manager assumes incident command and will remain near the scene to advise personnel responding to the fire of the known hazards.

Upon arrival at the scene, the LACFD Senior Officer will evaluate all available information and determine the appropriate firefighting methods and tactics. The LACFD Senior Officer will direct firefighting operations under the general direction of the IC.

D.7 UNPLANNED NONSUDDEN RELEASES

Nonsudden releases include those incidents that, if uncontrolled, impact the environment over a long period of time. Such incidents include minor leaks from containers, loss of secondary containment integrity, and incomplete treatment.

D.7.1 Responsibility

The operating group is responsible for correction of a nonsudden release from a hazardous or mixed waste unit if the correction can be performed safely with normal maintenance and management procedures. Personnel from the EM&R Office may provide assistance in mitigating releases. Any correction methods for nonsudden releases that have resulted in an impact to the environment will be coordinated with the NMED.

D.7.2 Nonsudden Releases

Not all failures can be predicted. In general, the response to a nonsudden release will be (1) to contain the release, (2) to correct the cause of the release, and (3) to clean up any release to a level that protects human health and the environment.

The operating group will conduct regularly scheduled inspections to detect failure of containment at the hazardous and mixed waste units addressed in this permit. Inspections of these units will be conducted to ensure that containers and tanks are not leaking. In addition, the operating group will inspect the secondary containment systems regularly to ensure that the integrity of the containment systems has not deteriorated. If an inspection reveals that containers or tanks are leaking or that secondary containment has deteriorated, operating group personnel will ensure that maintenance or replacement of containment is performed, as appropriate.

D.7.3 Nonsudden Release Surveillance

In addition to routine inspection and site-specific sampling and testing, LANL has established an areawide environmental monitoring network maintained by ESH. Monitoring and sampling locations for various types of measurements are organized into three main groups. Regional monitoring stations located within the five counties surrounding Los Alamos County are placed up to 80 kilometers (50 miles) from LANL. These stations serve to determine background conditions. Perimeter stations, located within approximately 4 kilometers (2.5 miles) of the LANL boundary, document conditions in residential areas surrounding LANL. On-site stations, most of which are accessible only to employees during normal working hours, are within the LANL boundary.

Routine surveillance conducted at these stations includes measuring radiation and collecting samples of air particulates, surface waters, ground waters, soil, sediment, and foodstuffs for subsequent analysis. Additional samples provide information about particular events, such as major runoff events and nonroutine releases. Data from these efforts are used for comparison with standards, for background levels, and for radiation dose calculations.

D.8 EXPOSURE TO HAZARDOUS OR MIXED WASTE

If a person is exposed to hazardous or mixed waste, the affected person, a co-worker, or line management will notify the EM&R Office. Appropriate first aid should be administered immediately. An EM&R Office representative will notify ESH-10 directly, as soon as possible, so that exposure levels and decontamination requirements can be established. The injured person will then be quickly transported to the ESH-2 medical facility or to LAMC for evaluation. If possible, the material involved in the injury will be ascertained and the information given to the medical staff.

Other potential exposures will necessitate evacuation of the area, if appropriate, or under any of the following conditions:

- Irritation of the eyes, breathing passages, or skin
- Difficulty in breathing
- Nausea, lightheadedness, vertigo, or blurred vision.

The affected person will be transferred to the ESH-2 medical facility or to LAMC. An ESH-1, ESH-5, or ESH-10 representative will attempt to ascertain what, if any, exposure occurred and what corrective measure is appropriate.

D.9 EVACUATION

A facility will be evacuated upon the voice command to evacuate the area or upon the sounding of the evacuation or fire alarm.

D.9.1 Emergency Process Shutdown Prior To Evacuation

Personnel are instructed to shut down equipment prior to evacuating a building unless an immediate building evacuation is announced or signaled. To ensure efficient shutdown, training and exercises addressing the shutdown process are performed. In the case of an immediate evacuation, a selected team may shut down designated equipment in an evacuated area. The team will be equipped with the proper equipment, clothing, and breathing apparatus. If they are on location, ESH-1, ESH-5, and/or ESH-10 will provide advice and assistance. Process-shutdown procedures apply mainly to hazardous or mixed waste treatment units only. ~~Process-shutdown procedures are described below.~~

~~D.6.2.2~~D.9.1.1 ~~TA-50 Waste Incinerator~~

~~If a fire or evacuation alarm sounds during the operation of the controlled air incineration process, the operating crew will initiate a process shutdown in accordance with the current operating instructions. Three logic sequences are provided to shut down the process in a safe and orderly manner.~~

> ~~Controlled Shutdown - Initiated when there is potential for significant damage to minor process components. This is also the normal shutdown mode at the completion of a run. When controlled shutdown is initiated, feeding of waste to the incinerator is stopped and a programmable set-point generator is activated that directs remote set-point inputs to the temperature controllers, causing a gradual decrease in chamber temperatures. Switches internal to the set-point generator cause an orderly-timed shutdown of process components.~~
>
> ~~Fast Shutdown - Initiated for conditions that could likely result in loss of containment or damage to major process components. Waste feeding is stopped. Following a two-minute timed interval following the last feeding of solid waste (immediate, if feeding liquid waste), the upper and lower chamber burners are shut down and the system valves and dampers are positioned so as to maintain a negative pressure in the system while minimizing flow through the system. Snuffing steam is introduced into the lower chamber. The two-minute delay when feeding solid waste allows for the ignition of pyrolltic gases formed immediately after feeding.~~
>
> ~~Scram Shutdown -Initiated at the discretion of an operator. The chain of events are identical to the fast shutdown except that the sequence is not delayed when feeding solid waste. Scram buttons are located at the incinerator and in the control room.~~

~~The last two shutdown modes are potentially destructive to the incinerator refractory and are initiated only when the consequences of not shutting down are greater than the consequences to the incinerator during a scram or fast shutdown. It is the responsibility of the operating personnel and the process lead engineer to assess any situation and initiate the proper process shutdown sequence.~~

~~D.6.2.3~~D.9.1.2 ~~Industrial Incinerator~~

~~If a fire or evacuation alarm sounds during the operation of the TA-16 Industrial Incinerator, the operating crew will initiate a process shutdown. The TA-16 incinerator is equipped with automatic and manual controls for shutdown of burners. Burners may be shut down manually by tripping a single switch. Automatic shutdown of the burners will occur on occurrence of a power failure, limit failure, or flame failure.~~

~~D.7 SALVAGE AND CLEANUP~~

~~The affected area will be surveyed by appropriate representatives from HSE Groups before salvage, cleanup and return to normal operations. Visual inspections of the affected area will be supplemented by sampling to determine whether cleanup is complete. After determination of any existing hazards from toxic or hazardous gases or fumes, electrical hazards, or other unsafe conditions, personnel or selected teams, equipped with proper breathing apparatus and protective clothing, will reenter the are to perform designated tasks to affect decontamination, repairs, and salvage to allow the return to normal operations. After an emergency, the EPODO will:~~

~~Provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion. Contaminated material will be treated as a hazardous waste and temporarily stored at one of the permitted hazardous waste storage areas at the laboratory. HSE-7 will be responsible for determining the final disposition of the waste. This determination will be made in compliance with the permit and RCRA standards.~~

~~Remain at the site to ensure that no waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed.~~

~~Ensure that emergency equipment is cleaned and fit for its intended use before operations are resumed. Equipment will be visually inspected and sampled to determine the type and degree of contamination and appropriate cleanup measures will be used.~~

~~Prior to resuming operations, appropriate local authorities will be notified that cleanup procedures are completed and emergency equipment is cleaned and fit for its intended use.~~

~~Damage assessment and recovery shall be performed within the reporting and investigative requirements of DOE Order 5484.1. The EPODO has general responsibility for coordinating post-emergency actions, particularly during the time period immediately after the emergency. Such actions include cleanup operations, repair of vital equipment, or interim hazard-removing operations (such as demolition of unstable walls). The services of the affected operational organizations, HSE Division, the PAWS, and other on-site talent will also be utilized to estimate cleanup costs and operational impact. The EPODO declares the end of the emergency; an Incident Report is filled out, and the Group Leader and his staff review emergency actions.~~

~~D.8 POST-EMERGENCY ASSESSMENT~~

~~When the emergency is over, the causes of the emergency and the effectiveness of the response are investigated, in order that future emergencies may either be prevented, or that the response to them amy be more effective. Following each event requiring the implementation of the HWF Contingency Plan, the EPODO shall meet with representatives of all response functions to determine the adequacy of the response.~~

~~D.9 EMERGENCY RECORDS~~

~~The details of any incident that requires implementation of the HWF Emergency Contingency Plan must be noted in that unit's log book. This record must include the time, date, and full description of the incident.~~

~~D.10 EMERGENCY REPORTS~~

~~Any emergency that requires implementation of the HWF Emergency Contingency Plan will be reported in writing within 15 days to the EPA Regional Administrator and to the New Mexico Environmental Improvement Division (EID).~~

~~The report shall include the following date:~~

~~Name, address, and phone number of owner or operator;~~

~~Name, address and phone number of the facility;~~

~~Date, time, and type of incident (e.g. fire, explosion, spill);~~

~~Name of material involved;~~

~~Quantity of material involved;~~

~~Extent of injuries (if any);~~

~~Assessment of actual or potential hazards to human health or the environment;~~

~~Estimated quantity and disposition of material recovered from the incident.~~

~~D.11 CONTINGENCY PLAN AMENDMENT~~

~~The Contingency Plan shall be reviewed by EPODO, HSE-7, and HSE-8 and immediately amended if determined to be inadequate to handle nonsudden and sudden releases, and whenever:~~

~~The HWF permit is revised;~~

~~There is significant change in the design or operation of the HWF (i.e., waste quantities handled, handling techniques, or final disposition);~~

~~The list of emergency coordinators changes;~~

~~The list of emergency equipment significantly changes;~~

~~Operating experience, drills, or technical review demonstrates the plan is inappropriate;~~

~~Actual implementation of the plan demonstrates inadequacies.~~

~~The Contingency Plan shall have a cover sheet noting the date of the last amendment. Amendments shall be issued to all HWF Contingency Plan holders and shall include a cover letter that describes the plan changes and rationale for those changes.~~

D.9.2 Evacuation Plan

Emergency situations may warrant the shutdown and evacuation of areas or buildings in order to protect personnel and property, to anticipate the emergency condition, or to enhance the appropriate response. Table D-5 lists the criteria for evacuation, persons responsible for initiating evacuations, and reentry conditions.

To initiate the evacuation of a building/area, the evacuation or fire alarm is sounded and/or the PA system may be used. Evacuation alarms cannot be silenced and reset by site personnel. Only the Fire Alarm Maintenance Section at 667-4027 and the LACFD Battalion Chief at 667-7026 can silence and reset alarms. To evacuate a portion of a building or area, use of the PA system may be more appropriate. The PA system

will notify the occupants of the area to be evacuated and will advise personnel throughout the building of the existence of a problem in a specific area. Once evacuation has been initiated and if conditions allow, personnel will turn off all equipment that could contribute to the hazard if left unattended. All personnel will then proceed from the affected area to the assembly/muster area.

In the event of the evacuation of a building, an outbuilding, or an outlying work area, the responsible Group Leader or designee will establish a control point at the closest safe location (e.g., considering wind direction). The designated area will be outside the affected area and will serve as an assembly/muster area where the Group Leader or designee can oversee evacuation operations and work to prevent further spread of the hazard.

As personnel exit an affected building/area, a primary sweep of the building/area will be performed to ensure that all personnel have evacuated. If the building/area is evacuated, a Group Leader designee will take attendance at the assembly/muster area and report personnel accountability to the IC. The evacuation procedure follows:

- Person discovering the accident or emergency will call 911 and ensure that line management and the EM&R Office are notified.

- Site-specific BEPs and/or emergency action procedures will be followed concerning evacuation, sweep, personnel accountability, and equipment shutdown procedures.

For a small-scale evacuation, a responsible on-site person may direct the evacuation. For a large-scale evacuation, the central alarm system may be activated. The EM&R Office will be notified immediately and will dispatch the Duty Emergency Manager. A responsible on-site person may begin the evacuation process until the Duty Emergency Manager arrives at the scene to assume that responsibility.

D.10 SALVAGE AND CLEANUP

Appropriate representatives from the ESH groups will survey the affected area before salvage and cleanup begin. They will conduct visual inspections and sampling of the affected area to determine whether cleanup is complete. If gases or fumes, electrical or radiological problems, or other conditions present a hazardous situation, personnel or selected teams equipped with proper breathing apparatus and protective clothing will reenter the area to perform designated decontamination tasks, repairs, and salvage to allow the return to normal operations. After an emergency, the IC will turn the operation over to the Recovery Manager, who will:

- Provide for proper handling of recovered waste, contaminated soil or surface water, or any other material that results from a spill, fire, or explosion. Contaminated material will be managed appropriately and temporarily stored at one of the hazardous or mixed waste storage areas at LANL. Waste management personnel will be responsible for determining the final disposition of the waste. This determination will be made in compliance with RCRA TSD standards.

- Arrange to monitor for damage or improper operation of the unit and associated equipment as a result of the emergency or of plant shutdown in response to the emergency.

- Arrange for site cleanup procedures to be completed and ensure that no waste that may be incompatible with the released material is treated or stored in the same area.

- Ensure that emergency equipment is cleaned, decontaminated, and fit for its intended use before operations are resumed. Equipment will be inspected visually and then sampled, if necessary, to determine the type and degree of contamination and to determine appropriate cleanup measures.

The Recovery Manager is the functional equivalent of the RCRA Emergency Coordinator for post-emergency actions.

Prior to resuming operations, facility management will verify that the previously mentioned tasks have been performed. The owner/operator (DOE/LAAO) will notify appropriate state and local authorities that cleanup procedures are completed and that emergency equipment is clean and fit for its intended use.

The IC assumes the coordination of post-emergency actions (particularly during the time period immediately following the emergency) until a Recovery Manager is appointed. The Recovery Manager then assumes this coordination role. The post-emergency actions include cleanup operations, repairing vital equipment, or interim hazard-removal operations (such as arranging for the demolition of unstable walls). The services of the affected operational organizations, ESH groups, JCI, and other on-site resources will also be used to estimate cleanup costs and operational impact.

D.11 POST-EMERGENCY ASSESSMENT

When the emergency is over, the cause of the emergency and the effectiveness of the response are investigated in an effort to prevent future emergencies and to facilitate more effective responses to them. Following each event requiring the implementation of this contingency plan, the EM&R Office will schedule and conduct a critique with representatives from all response groups, from representatives in the building/area in which the emergency occurred, and from LANL management to determine the adequacy of the response.

D.12 EMERGENCY RESPONSE RECORDS AND REPORTS

Any emergency that requires implementation of the contingency plan will be documented by the Group Leader or designee responsible for the hazardous or mixed waste unit, and reported in writing within 15 days to the NMED. The incident report, submitted by DOE/LAAO, will include the following data:

- Name, address, and phone number of owner or operator
- Name, address, and phone number of the facility
- Date, time, and type of incident (e.g. fire, explosion, spill)
- Name of material(s) involved
- Quantity of material(s) involved
- Extent of injuries (if any)
- Assessment of actual or potential hazards to human health or the environment
- Estimated quantity and disposition of material recovered from the incident.

Various LANL personnel responding to the emergency will record the details of any incident requiring implementation of this plan. The CAS operator, the EOC communicator, the Emergency Manager, and/or the Group Leader or designee responsible for the hazardous or mixed waste management area in which the emergency occurred will record the date, time, location of the incident, wastes/materials involved, injuries (if any), property damage (if any), and a detailed description of the incident. This information will be maintained in the facility operating record. ESH-7 will supply information concerning any follow-up actions. Appropriate LANL personnel will provide details regarding the removal and disposition of hazardous and mixed wastes associated with the emergency.

D.13 CONTINGENCY PLAN AMENDMENT

This contingency plan will be reviewed periodically by the EM&R Office, waste management groups, and ESH-19 and, if necessary, will be reviewed as appropriate by ESH-10. The plan will be amended immediately if determined to be inadequate to handle releases (spills, explosions, and/or fires), and whenever:

- The facility permit is revised
- There is significant change in the design or operation of the facility (e.g., quantities of waste handled and handling techniques) that increases the likelihood of an emergency and requires changes in emergency response
- The list of Emergency Managers changes
- The list of emergency equipment changes significantly.

This plan is a controlled document distributed by ESH-19. Amendments to this contingency plan will be distinguished by the revision number and date of revision noted in the upper right corner of each page. Amendments will be issued to all contingency plan holders and will include a cover letter that describes the plan changes and the rationale for those changes.

~~**FIGURE D-1**~~
~~**LOS ALAMOS TECHNICAL AREAS**~~

~~**FIGURE D-2**~~
~~**HEALTH, SAFETY, AND ENVIRONMENT**~~
~~**DIVISION ORGANIZATION CHART**~~

~~**FIGURE D-3**~~

~~**SCHEMATIC DIAGRAM OF LOS ALAMOS HAZARDOUS WASTE MANAGEMENT ACTIVITIES**~~

~~**FIGURE D-4**~~

~~**EMERGENCY FAICILITIES**~~

~~**FIGURE D-5**~~

~~**HAZARDOUS WASTE EMERGENCY NOTIFICATION STRUCTURE**~~

~~TABLE D-1~~

~~SUMMARY OF HAZARDOUS WASTE UNITS~~
~~LOS ALAMOS NATIONAL LABORATORY~~

~~Technical Area and Building or Area Designation~~	~~Wastes Handled~~	~~Activity Description~~
~~TA-14, 15, 16, 36, and 39~~	~~High explosives (HE)~~	~~Open burning/open detonation units used to react waste HE and HE-contaminated material~~
~~TA-50-01~~	~~Electrochemistry wastes Isotope separation wastes~~	~~Chemical batch treatment by neutralization, metal precipitation, and cyanide destruction~~
~~TA-50 Modular Storage Units~~	~~Shops department wastes Wastes from Basic and Applied Chemistry R&D programs Electrochemistry wastes Isotope separation wastes~~	~~Storage of wastes prior to treatment, incineration~~
~~TA-50-37~~	~~Combustible liquids and solids, including chlorinated and fluorinated hydrocarbons, and carcinogenic materials~~	~~Waste incineration with flue gas treatment~~
~~TA-37-50 Room 117 Storage Area~~	~~Combustible liquids and solids, including chlorinated and fluorinated hydrocarbons, and carcinogenic materials~~	~~Storage/Staging area for incinerator~~
~~TA-50 Storage Pads~~	~~Shops department wastes Wastes from Basic and Applied Chemistry R&D programs~~	~~Waste storage prior to treatment, incineration, or shipment off-site.~~
~~TA-54, Area L~~	~~Shops department wastes Wastes from Basic and Applied chemistry R&D programs~~	~~Wastes are segregated and stored prior to treatment, incineration, recycling, or shipment off-site~~

~~TABLE D-2~~
~~HAZARDOUS WASTE EMERGENCY RESPONSE GROUPS~~

~~Laboratory Controlled Response Group~~	~~Emergency Telephone~~	~~Assistance Available~~
~~HSE-2 Occupational Medicine~~	~~667-7878 (8 am - 5 pm) 988-0539 (off-duty hours)~~	~~Emergency medical treatment~~
~~HSE-3 Safety~~		~~Reviews and approves fire protection procedures. May assist in process shutdown and evacuation.~~
~~HSE-5 Industrial Hygiene~~		~~Site evaluation - field testing to determine the nature and extent of contamination (nonradiological).~~
		~~Specify protective clothing and equipment.~~
		~~Information services regarding hazards of wastes and treatment for exposure.~~
~~HSE-7 Waste Management~~		~~Hazardous waste cleanup, handling, treatment, and disposal.~~
~~HSE-8 Environmental Surveillance~~		~~Field surveys to determine spread of contamination and adequacy of clean up.~~
		~~Meteorological information.~~
		~~Geohydrologic support.~~
~~HSE-9 Health and Environmental Chemistry~~		~~Chemical analytical services.~~
~~Fire Department~~	~~9-911~~	~~Firefighting personnel and equipment.~~
		~~Ambulance and paramedic service.~~
~~Mason & Hanger Protective Force (Pro Force)~~	~~667-4437~~	~~Traffic Control~~
~~Pan Am World Services~~	~~667-6196~~	~~Maintenance personnel and equipment~~

~~TABLE D-2~~
~~HAZARDOUS WASTE EMERGENCY RESPONSE GROUPS~~
~~(continued)~~

~~Laboratory Controlled Response Group~~	~~Emergency Telephone~~	~~Assistance Available~~
~~Non-Laboratory Controlled~~		
~~Los Alamos County Police~~	~~662-4176~~	~~Traffic control on DOE roads with public access.~~
~~Los Alamos Medical Center[a]~~	~~662-4201~~	~~Medical Services~~

~~[a]Medical services related to hazardous wastes injuries provided under the direction of HSE-2.~~

~~**TABLE D-3**~~

~~**EMERGENCY EQUIPMENT AT THE BURNING GROUND AND THE OPEN DETONATION PADS, TAs 14, 15, 16, 36, AND 39**~~

~~Fire Control Equipment~~

~~Fire Extinguisher in each vehicle used to transport HE material~~
~~Fire Extinguisher in each control bunker~~

~~Description of General Capabilities:~~

~~These are portable units of approximately 9 to 15 pounds capacity used in wet chemical laboratory applications. May be used by any employee in case of fire. Fire extinguishers are never used to put out controlled fires at the burning grounds.~~

~~Communication Equipment~~

~~Telephones~~
~~Two-way radios~~

~~Description of General Capabilities:~~

~~Telephones for internal communication at the Laboratory and off-site communication with federal, state, county, and other agencies are available. A Centrex telephone system and a private telephone line (if Centrex fails) are available for use by all employees.~~

~~Located in each control bunker, in the control building at the burning ground, and at the waste water treatment facility at the burning ground. Radios allow communication between each vehicle.~~

~~TABLE D-3~~
~~(continued)~~

~~EMERGENCY EQUIPMENT AT THE TA-50 CHEMICAL WASTE INCINERATOR AND ROOM 117 STORAGE AREA~~

~~Fire Control Equipment~~

~~13 fire extinguishers (9C-CO; 4-A-water)~~

~~Description of General Capabilities:~~
~~These are portable units of approximately 9 to 15 pounds capacity used in wet chemical laboratory applications. May be used by any employee in the event of fire.~~

~~Manually operated fire alarm may be activated by any employee in the event of fire to notify Central Alarm Station.~~

~~The sprinkler system is an automatic system which delivers a maximum of 200 psi of water spray through shower heads placed at locations which maximize fire suppression range capability. In the event of fire, this system should function automatically, requiring no manual assistance.~~

~~Halon Extinguishing Systems are indicated to supplement automatic sprinkler systems which protect high value equipment, or suppress special hazardous operations or occupancies.~~

~~Location:~~

- ~~1 Mechanical Equipment Room 111~~
- ~~2 High Bay Room 112~~
- ~~2 High Bay Room 114~~
- ~~1 South of Library and Conference Room~~
- ~~1 Chemistry Laboratory Room 107~~
- ~~1 Process Engineering Laboratory Room 209~~
- ~~1 Office Area Room 202~~
- ~~1 Room 21~~
- ~~1 Room 117~~

~~11 Fire Alarm Pull Boxes connected to the CAS~~
~~Location:~~
~~1 Mechanical Equipment Room 111~~
~~1 High Bay Room 112~~
~~2 South of Library and Conference Room~~
~~2 High Bay Room 114~~
~~1 East of women's changing room~~
~~1 Process Engineering Laboratory~~
~~1 Office Area Room 202~~
~~2 Room 21~~

~~TABLE D-3~~
~~(continued)~~

~~EMERGENCY EQUIPMENT AT THE TA-50 CHEMICAL WASTE INCINERATOR AND ROOM 117 STORAGE AREA~~

~~Automatic thermal alarm on inlet and exhaust of ventilation system~~
~~Automatic thermal sprinkler system throughout offices~~
~~4 Fire Hydrants~~
~~Location:~~
~~1 Northeast corner of Building 84~~
~~1 West of Building 69~~
~~1 Northeast of Building 37~~
~~Halon Extinguishing System, manual and ultraviolet in Room 115~~

~~Communication Equipment~~

~~Telephones throughout building with building-wide paging system~~

~~Description of General Capabilities:~~
~~Telephones for internal communication at the Laboratory and off-site communication with federal, state, county and other agencies are available. A Centrex telephone system and a private telephone line (if Centrex fails) are available for use by all employees.~~

~~Radio located in Room 202~~

~~Spill Control Equipment~~

~~Absorbent kept onsite~~
~~PCB room is bermed to handle all liquids stored~~
~~Have Spill Prevention and Containment Plan~~

~~Description of General Capabilities Containment is designed to handle all liquids stored. Absorbent is used in the event of a small spill.~~

~~**TABLE D-3**~~
~~**(continued)**~~

~~**EMERGENCY EQUIPMENT AT THE TA-50 CHEMICAL WASTE INCINERATOR AND ROOM 117 STORAGE AREA**~~

~~Decontamination Equipment~~

~~Showers~~
~~Emergency eye wash~~

~~Description of General Capabilities Safety showers and eye washes are used by personnel who receive a chemical splash to skin or eyes. Specific material safety data sheets for the chemical should be obtained prior to working with the chemical to determine if the application of water is indicated for decontamination.~~

~~**TABLE D-3**~~
~~**(continued)**~~

~~EMERGENCY EQUIPMENT - HSE-7 CONTROLLED~~

~~Spill Control Equipment: Located at TA-54, Area G~~

~~Heavy equipment available for emergencies may include~~

~~2 scrapers~~
~~1 bulldozer~~
~~1 tractor (front end loader)~~
~~Shovels~~
~~Absorbents (vermiculite) in combustibles storage shed~~

~~Description of General Capabilities: The following pieces of heavy equipment will be used in the event of large spills. Small spills will be absorbed with absorbent.~~

~~Decontamination Equipment~~

~~Small decontamination pit for heavy equipment~~
~~Showers (MD-11)~~

~~Other~~

~~Change room with protective clothing (MD-11)~~
~~2-3 dozen respirators (particulates) (MD-11)~~

~~2 self-contained, portable air masks (MD-11)~~
~~2 emergency generators, portable~~
~~3 vehicles are available for evacuation of personnel:~~
~~2 sanfu~~
~~2 Jeep (with emergency equipment, e.g., coveralls, booties, tape, rope)~~

~~**TABLE D-3**~~
~~**(continued)**~~

~~EMERGENCY EQUIPMENT AT TA-54, AREA L~~

~~Fire Control Equipment~~
~~1 fire hydrant located 30 feet south of site entrance to site~~
~~1 CO fire extinguisher located inside trailer at west end of site (B, C)~~
~~1 CO fire extinguisher located inside storage shed (B, C)~~
~~1 freeze-proof faucet located immediately east of shed~~

~~Description of General Capabilities: These are portable units of approximately 9 to 15 pounds capacity used in wet chemical laboratory applications. May be used by any employee in the event of fire.~~

~~Spill Control Equipment~~
~~Shovels~~
~~Oversized drums~~
~~Absorbent inside storage shed~~
~~Heavy equipment from Area G available for any emergencies at Area L~~
~~Bermed storage area~~

~~Description of General Capabilities: The following pieces of heavy equipment will be used in the event of large spills. Small spills will be absorbed with absorbent.~~

~~Communications Equipment 2-way radios are available to all personnel when in area 2-way radios are in all vehicles used for moving hazardous waste Telephone located inside trailer~~

~~Description of General Capabilities External and internal Laboratory communications which may be used in emergency situations are listed.~~

~~**TABLE D-3**~~
~~**(continued)**~~

~~EMERGENCY EQUIPMENT AT TA-54, AREA L~~

~~Decontamination Equipment 1 emergency shower and eye wash located immediately east of shed~~

~~Description of General Capabilities: Safety showers and eye washes are used by personnel who receive a chemical splash to skin or eyes. Specific material safety data sheets for the chemical should be obtained prior to working with the chemical to determine if the application of water is indicated for decontamination.~~
~~Other~~
~~2 self-contained, portable air masks located inside trailer~~

~~TABLE D-3~~
~~(continued)~~

~~SUPPLEMENTARY EMERGENCY EQUIPMENT~~

~~PAN AM WORLD SERVICES (667-6196)~~

~~Equipment~~	~~Number~~
~~A. Transportation~~	
~~1. Pickups, 1/2 through 3/4 ton~~	~~183~~
~~2. Trucks, 1 through 3 ton~~	~~25~~
~~3. Powerwagon (E-2078) with welder (PN-3-30256) mounted on vehicle, CC-135~~	~~1~~
~~4. Buses (11-passenger)~~	~~2~~
~~5. Stationwagons~~	~~11~~
~~6. Vans, panels and carryalls~~	~~24~~
~~B. Special Equipment~~	
~~1. Road grader, Champion, self-propelled blade, with radio~~	~~1~~
~~2. Grader, John Deere, self-propelled, with radio~~	~~1~~
~~3. Loaders, bucket, Melroe, Bobcat, 1/3 cubic yards~~	~~3~~
~~4. Loader, bucket, Michigan, 2-3/4 cubic yards~~	~~1~~
~~5. Loader, Fiat-Ellis, 3 cubic yards~~	~~1~~
~~6. Loader, bucket, Michigan, 2-1/2 cubic yards~~	~~1~~
~~7. Loader, bucket, Michigan, 3-1/4 cubic yards~~	~~1~~
~~8. Loader, bucket, Yale, 3 cubic yards, with radio~~	~~1~~
~~9. Loader, bucket, backhoe, International, 1-1/2 cubic yards~~	~~1~~
~~10. Loaders, bucket, backhoe, Case, 7/8 cubic yards~~	~~2~~
~~11. Loader, backhoe, Ford, 1 cubic yard~~	~~1~~
~~12. Snowplows, Bombardier, with blade~~	~~2~~

~~TABLE D-3~~
~~(continued)~~

~~SUPPLEMENTARY EMERGENCY EQUIPMENT~~

~~PAN AM WORLD SERVICES (667-6196)~~

~~Equipment~~	~~Number~~
~~B. Special Equipment (continued)~~	~~1~~
~~13. Bulldozer, D-8, Crawler~~	
~~14. Bulldozers, TD-25, International~~	~~2~~
~~15. Scraper, Terex, self-propelled~~	~~1~~
~~16. Scraper, Fiat-Ellis, self-propelled~~	~~1~~
~~17. Scraper, 280, rubber-tired, with radio~~	~~1~~
~~18. Semitrailers~~	~~5~~
~~19. Lights, camp (electrical, plant, portable, 1000 to 5000 watts)~~	~~4~~
~~20. Power saws (approximate)~~	~~14~~
~~21. Flusher, street, 3000-gallon Truck, tanker, 500-gallon, International~~	~~1~~
~~22. Mobile transceivers (2-way, KOB-753)~~	~~64~~
~~23. Mobile transceivers (2-way, fire network)~~	~~7~~
~~24. Handsets (2-way)~~	~~8~~
~~25. Pageboys (1-way)~~	~~235~~
~~26. Welders, mounted on trailers and trucks~~	~~32~~
~~27. Fire tools (hand) (approximate)~~	~~150~~
~~C. Supplies~~	
~~1. Food~~	
~~Box lunches~~	~~150~~

~~TABLE D-3~~
~~(continued)~~

~~SUPPLEMENTARY EMERGENCY EQUIPMENT~~

~~PAN AM WORLD SERVICES (667-6196)~~

~~Equipment~~	~~Number~~
~~D. Other Supplies~~	
~~1.Bedding~~	
~~Blankets~~	~~60~~
~~Bedrolls (disposable) (from U.S. Forest Service an Santa Fe)~~	~~50~~
~~2.Butane gas (25-gallon tanks)~~	~~4~~
~~3.Fuel and lubricants~~	
~~4.Miscellaneous Supplies~~	

~~**TABLE D-3**~~
~~**(continued)**~~

~~SUPPLEMENTARY EMERGENCY EQUIPMENT~~

~~PAN AM WORLD SERVICES (667-6196)~~

~~Manpower~~	~~Number~~
~~A. Fire Bosses~~	
~~1. Crew bosses~~	~~3~~
~~2. Straw bosses~~	~~12~~
~~B. Service Bosses~~	
~~1. Transportation boss~~	~~1~~
~~C. Specialists~~	
~~1. Cat bosses~~	~~2~~
~~2. Bulldozer operators~~	~~14~~
~~3. Clerks~~	~~10~~
~~4. Dispatchers~~	~~3~~
~~5. Mechanics~~	~~17~~
~~6. Power saw operators~~	~~8~~
~~7. Radio and telephone operators~~	~~10~~
~~8. Truck drivers~~	~~13~~
~~9. Tool sharpeners~~	~~4~~
~~D. Firefighters~~	
~~1. Organized crews (approximately 8 men per crew)~~	~~14 crews~~

~~**TABLE D-3**~~
~~**(continued)**~~

~~**EMERGENCY EQUIPMENT AT THE FIRE DEPARTMENT (9-911)**~~

~~Manpower~~	~~Number~~
~~1000-gallons-per minute pumper trucks~~	~~8~~
~~Minipumper trucks~~	~~5~~
~~1500-gallon tank trucks~~	~~5~~
~~Modular ambulances~~	~~4~~
~~Rescue vehicle~~	~~1~~
~~Self-contained breathing apparati~~	~~69~~
~~Various firefighting equipment~~	
~~Emergency Medical Technician (EMT) medical equipment~~	
~~Personnel with 81 hours of MTA training~~	~~98~~
~~75-foot elevated platform~~	~~1~~

~~TABLE D-3~~
~~(continued)~~

~~EMERGENCY RESOURCES AT THE MEDICAL FACILITY (HSE-2)~~
~~(677-7878) 8 AM — 5 PM~~
~~(988-0539) OFF-DUTY HOURS~~

~~Manpower~~

~~6 (2 casual) physicians~~
~~2 physician's assistant~~
~~10 (1 part-time) nurses~~
~~3 (2 casual) x-ray technicians~~
~~2 laboratory technicians~~
~~Special Equipment - Portable~~
~~1 radio base station (HSE-Div. net, being installed)~~
~~3 walkie talkies (HSE-Div. net)~~
~~1 portable cardiac monitor and defibrillator~~
~~1 crash cart - emergency equipment~~
~~1 portable physicians bag - drugs~~
~~1 portable suction unit~~
~~5 portable stretchers~~
~~1 ambulance stretcher with straps~~
~~6 wheel chairs~~
~~1 manual resuscitator~~
~~6 portable oxygen units~~
~~Several intravenous holders and solutions~~
~~6 otoscope/ophthalmoscope sets~~
~~1 portable sphygmomanometer~~
~~10 stethoscopes~~
~~Many contamination apparel~~
~~1 eye irrigation system~~
~~Many inflatable limb traction splints~~
~~3 industrial first aid kits~~
~~Many extrication and cervical collars~~
~~Many crutches and canes~~
~~Many suture sets~~

~~Supplies~~
~~Bedding and pillows~~
~~Rescue blankets~~
~~Burn blankets~~
~~Multitrauma dressing and bandages~~
~~Thermal/icing pouches~~

~~**TABLE D-3**~~
~~**(continued)**~~

~~**EMERGENCY RESOURCES AT THE MEDICAL FACILITY (HSE-2)**~~
~~**(677-7878) 8 AM — 5 PM**~~
~~**(988-0539) OFF-DUTY HOURS**~~

~~Special Facilities - Nonportable~~

~~Completely equipped medical clinic with emergency lighting system, x-ray machine, and ambulance entrance. Contamination showers, protective clothing, and wound counters. Suction unit, electrocardiograph (12 lead), pulse rate monitor/recorder, primary response trauma kits are included.~~

~~Transportation~~

~~1970 Plymouth Sedan~~

~~TABLE D-4~~

~~HAZARDOUS WASTE EMERGENCY COORDINATORS~~

~~(To be notified in succession)~~

~~Primary Coordinators~~	~~Laboratory Telephone~~	~~Home Telephone~~	~~.Home Address~~
~~1. Donald Winston~~ ~~Emergency Management~~	~~7-6211~~	~~662-2453~~	~~450 Navajo Road~~ ~~Los Alamos, NM~~
~~2. James F. Griffin~~ ~~Emergency Management Coordinator~~	~~7-6211~~	~~662-5436~~	~~1057 Cedro Court~~ ~~Los Alamos, NM~~
~~3. Z. Edward MacBain~~ ~~Emergency Management Coordinator~~	~~7-6211~~	~~662-6211~~	~~1856 Cooper Place~~ ~~Los Alamos, NM~~
~~4. James S. Griffiths~~ ~~Emergency Management Coordinator~~	~~7-6211~~	~~662-9155~~	~~190 Manhattan Loop~~ ~~Los Alamos, NM~~

~~TABLE D-5~~
~~ITEMS MONITORED AT THE BATCH TREATMENT PLANT DURING EMERGENCY SHUTDOWN~~

~~Item~~	~~Monitored For~~
~~Piping/Valves~~	~~Leaks, damage, poor seals~~
~~Gauges~~	~~Acceptable range~~

~~TABLE D-6~~
~~ITEMS MONITORED AT THE WASTE INCINERATOR DURING EMERGENCY SHUTDOWN~~

~~Item~~	~~Monitored For~~
~~Incinerator/Equipment~~	~~Functioning~~
~~Pumps, valves, pipes~~	~~Leaks~~
~~Tank by-pass~~	~~Leaks~~
~~Emergency waste feed cutoff system~~	~~Functioning~~
~~HEPA Filtration System~~	~~Functioning~~
~~Radiation~~	~~Levels~~

~~TABLE D-7~~
~~WASTE ANALYSIS PARAMETERS AND TEST METHODS~~

~~Parameter~~	~~Test Method~~	~~Reference[1]~~
~~Ignitability~~	~~Pensky-Martens Closed-Cup Method~~	~~(L) SW1010~~ ~~(L) ASTM D93-80~~
~~Reactivity~~	~~Numerous methods and tests[2]~~	~~(L,S) SW Section 2.1.3~~
~~pH~~	~~Electrometric~~	~~(L) SW9040~~
~~EP Toxicity~~	~~EP Toxicity Extraction[3]~~	~~(L,S) SW1310~~
~~Toxicity Characteristic Leaching Procedure (TCLP)~~	~~Toxicity Characteristic Leaching Procedure~~	~~(L,S) SW1311~~
~~Arsenic~~		~~(L) SW7060~~
~~Barium~~		~~(L) SW7081, SW7080~~
~~Cadmium~~		~~(L) SW7131, SW7130~~
~~Chromium~~		~~(L) SW7191, SW7190~~
~~Lead~~		~~(L) SW7421, SW7420~~
~~Selenium~~		~~(L) SW7740~~
~~Silver~~		~~(L) SW7761, SW7760~~
~~Mercury~~	~~Manual Cold Vapor Technique~~	~~(L) SW7470~~ ~~(S) SW7474~~

~~TABLE D-7~~
~~WASTE ANALYSIS PARAMETERS AND TEST METHODS~~
~~(continued)~~

~~Parameter~~	~~Test Method~~	~~Reference[1]~~
~~Organochlorine Pesticides~~	~~Gas Chromatography~~	~~(L) SW8080~~
~~Chlorinated Herbicides~~		~~(L) SW8150~~
~~Chemical Composition~~	~~95% organic composition by GC/FID~~	~~(L) SW8100~~
~~Trace Organic Analysis~~	~~Any of the following:~~	
	~~Volatile organic compounds-GC/MS~~	~~(L) SW8240~~
	~~Semivolatile organic compounds-GC/MS~~	
	~~Packed column~~	~~(L) SW8250~~
	~~Capillary column~~	~~(L) SW8270~~
~~Heat Value~~	~~Bomb calorimeter~~	~~(L) A006, ASTM D240~~
~~Organic Chlorine~~	~~Halide titration of combustion residue~~	~~(L,S) A004, ASTM D2361~~
~~Ash Content~~	~~Residue after combustion in muffle furnace~~	~~(L) A001, ASTM D482~~ ~~(S) A001, ASTM D3147~~

~~TABLE D-7~~
~~WASTE ANALYSIS PARAMETERS AND TEST METHODS~~
~~(continued)~~

~~Parameter~~	~~Test Method~~	~~Reference[1]~~
~~Cyanide-Free and Total~~	~~Distillation and colorimetric (UV)~~	~~(L) SW9012~~
~~Chrome~~	~~Colorimetric method for hexavalent chromium~~	~~(L) SW7196~~
~~Sulfide~~	~~Colorimetric titration~~	~~(L) SW9030~~
~~Total Metals~~	~~Digestion and inductively coupled plasma method~~	~~SW3020~~
~~Arsenic~~		~~(L) SW6010~~
~~Barium~~		~~(L) SW6010~~
~~Beryllium~~		~~(L) SW6010~~
~~Cadmium~~		~~(L) SW6010~~
~~Chromium~~		~~(L) SW6010~~
~~Lead~~		~~(L) SW6010~~
~~Nickel~~		~~(L) SW6010~~
~~Selenium~~		~~(L) SW6010~~
~~Silver~~		~~(L) SW6010~~
~~Thallium~~		~~(L) SW6010~~
~~Zinc~~		~~(L) SW6010~~
~~Mercury~~	~~Manual Cold Vapor Technique~~	~~(L) SW7470~~ ~~(S) SW7471~~
~~Free Liquids~~	~~Paint Filter Liquids Test.~~	~~(S) SW9095~~

~~[1] "A" refers to Sampling and Analysis Methods for Hazardous Waste Combustion, EPA-600/8-84-002, February 1984.~~
~~"ASTM" refers to American Society for Testing Material Standards.~~
~~"SW" refers to Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, 3rd Edition, EPA, November 1986.~~
~~"L" refers to liquid waste.~~
~~"S" refers to solid waste.~~
~~[2] Methods for cyanide and sulfide gas generation are pending. SW-846 methods will be used when they become available. Methods recommended by the EPA will be used in the interim.~~
~~[3] If TCLP analyses do not permit identification of an unknown chemical waste, digested metal samples (per SW3020) will be analyzed for the metals noted.~~

~~TABLE D-8~~
~~EVACUATION DETERMINATION AND REENTRY~~

~~Reason for Evacuation~~	~~Determination Made By~~	~~Reentry Conditions~~
~~Fire~~	~~Fire or Evacuation alarm, Group Leader, Alternate, Lead Engineer, Senior Staff Member present, or HWEC~~	~~Following survey by the Chief Fire Officer, HSE-1 and/or HSE-5, and R&D Supervision~~
~~Explosion~~	~~Same as above~~	~~Same as above plus HSE-3~~
~~Loss of Ventilation~~	~~Group Leader, Alternate, Senior Staff Member, Lead Engineer, or Senior Technician~~	~~Following survey by HSE-1, and/or HSE-5, and R&D Supervison~~
~~Loss of Electric Power~~	~~Same as above~~	~~Same as above~~
~~Extensive Contamination~~	~~Same as above or HSE-1 Representative~~	~~Same as above~~
~~Airbone Contamination~~	~~Same as above or Rad Monitor~~	~~Same as above~~
~~Excape or Release of Toxic or Hazaardous Gas or Fumes~~	~~Group Leader, Alternate, Senior Staff Member, Lead Engineer, Senior Technician, or HWEC~~	~~Same as above plus HSE-5~~
~~Bomb Threat~~	~~HSE-3 or Protective Force Representative, R&D Section Leader, Alternate, Senior Staff Member or Lead Engineer~~	~~Following determination by HSE-___ or Protective Force Representative (illegible handwrritten note)~~

TABLE D-1
RESPONSE GROUPS AND AGENCIES AVAILABLE TO THE EMERGENCY MANAGEMENT AND RESPONSE OFFICE FOR GUIDANCE AND/OR EMERGENCY ASSISTANCE

LANL[a]-Controlled Response Group	Telephone	Responsibilities
CST, Chemical Science and Technology Division	667-7579 667-6095	Provides guidance on proper treatment, storage, and off-site shipment of hazardous and mixed waste.
ESH-1, Health Physics Operations	667-5296	Provides routine guidance on radiological decontamination. Provides routine site evaluation and monitoring to determine the nature and extent of contamination (radiological).
ESH-2, Occupational Medicine	667-7251	Provides emergency medical treatment.
ESH-5, Industrial Hygiene and Safety	667-4644	Provides guidance on industrial hygiene equipment and on operational safety.
	665-4427	Provides routine site evaluation/support field testing to determine the nature and extent of contamination (chemical).
ESH-7, Occurrence Investigation	667-0598	Reports occurrences and tracks follow-up actions.
ESH-10, Hazardous Materials Response	665-5237	Provides emergency site evaluation/field monitoring (chemical and radiological). Specifies protective clothing and equipment. Dispatches Hazardous Materials Response Team. Provides support for chemical, radiological, hazardous, and mixed waste incidents and decontamination of responders and response equipment.

TABLE D-1
RESPONSE GROUPS AND AGENCIES AVAILABLE TO THE EMERGENCY MANAGEMENT AND RESPONSE OFFICE FOR GUIDANCE AND/OR EMERGENCY ASSISTANCE
(continued)

LANL[a]-Controlled Response Group	Telephone	Responsibilities
ESH-17, Air Quality	665-8855	Provides information on meteorological conditions.
ESH-18, Water Quality and Hydrology	665-0453	Provides information on hydrologic conditions.
ESH-19, Hazardous and Solid Waste	667-0666	Provides guidance on regulatory requirements. Conducts field surveys to determine spread of contamination and adequacy of cleanup.
ESH-20, Environmental Assessments and Resource Evaluations	667-0730	Provides information on biotic conditions.
NMT, Nuclear Materials Technology Division	667-2556	Provides initial emergency site evaluations at Technical Area (TA) 55 and conducts activities related to the prevention, notification, and control of emergencies at TA-55. In the event of an emergency at TA-55, monitors for leaks, pressure buildup, gas generation, or equipment ruptures, if necessary. Maintains and operates TA-55 Emergency Response Team.
ESA, Engineering Science and Applications Division	667-4136	Provides information and/or assistance during emergencies involving units at TA-16.
DX, Dynamic Experimentation Division	667-5653	Provides information and/or assistance during emergencies involving units at TA-14, TA-15, TA-36, and TA-39.

TABLE D-1
RESPONSE GROUPS AND AGENCIES AVAILABLE TO THE EMERGENCY MANAGEMENT AND RESPONSE OFFICE FOR GUIDANCE AND/OR EMERGENCY ASSISTANCE
(continued)

LANL[a]-Controlled Response Group	Telephone	Responsibilities
PTLA, Protection Technology Los Alamos	667-4437	Provides traffic control, security.
JCI, Johnson Controls World Services Inc.	667-6191	Dispatches maintenance personnel and equipment. Assists in waste cleanup under direction of Recovery Manager.

TABLE D-1
RESPONSE GROUPS AND AGENCIES AVAILABLE TO THE EMERGENCY MANAGEMENT AND RESPONSE OFFICE FOR GUIDANCE AND/OR EMERGENCY ASSISTANCE
(continued)

Non-LANL[a]-Controlled Response Group	Telephone	Responsibilities
Los Alamos County Fire Department	667-7080 9-911	Dispatches firefighting personnel, equipment, and Emergency Medical Services.
Los Alamos County Police Department	662-8222	Provides traffic control on public access roads.
Los Alamos Medical Center[b]	662-4201 662-2455	Provides medical services. Provides and maintains Emergency Room.

[a] Los Alamos National Laboratory.
[b] Medical services related to hazardous and mixed waste injuries are provided under the direction of ESH-2.

TABLE D-2
EMERGENCY MANAGEMENT AND RESPONSE OFFICE
EMERGENCY MANAGERS[a]

Emergency Managers[b]	Laboratory Telephone	Home Telephone	Home Address
Gary W. Bequette	667-6211	662-5636	1781 37th St., Los Alamos, NM
Cheryl S. Bequette	667-6211	662-5636	1781 37th St., Los Alamos, NM
George Van Tiem	667-6211	662-4623	197 El Viento St., Los Alamos, NM
Ed Nettles	667-6211	662-5690	1461 Oakwood Lp., Los Alamos, NM
Eugene Darling	667-6211	662-2521	1860 Camino Redondo, Los Alamos, NM
Douglas Tuggle	667-6211	672-1231	117 Grand Canyon Drive, White Rock, NM

[a] To ensure immediate response, the Emergency Manager may be reached at the Emergency Management and Response Office (667-6211 or after hours, 667-7080).
[b] Assignments as the designated (i.e., primary) Emergency Manager are rotated. A current schedule is maintained at the Emergency Management and Response Office (667-6211 or after hours, 667-7080) and at the Central Alarm Station (911).

~~TABLE D-3~~
~~ITEMS MONITORED AT THE WASTE INCINERATOR~~
~~DURING EMERGENCY SHUTDOWN~~

~~Item~~	~~Monitored For~~
~~Incinerator/Equipment~~	~~Functioning~~
~~Pumps, valves, pipes~~	~~Leaks~~
~~Tank by-pass~~	~~Leaks~~
~~Emergency waste feed cutoff system~~	~~Functioning~~
~~HEPA Filtration System~~	~~Functioning~~
~~Radiation~~	~~Levels~~

TABLE D-4
WASTE ANALYSIS PARAMETERS AND TEST METHODS[a]

Parameter	Test Method	Reference[b]
Ignitability	Pensky-Martens closed-cup method	(L) SW1010
		(L) ASTM D93-80
Reactivity	Test method to determine hydrogen cyanide released from waste	(L, S) HCN Test Method, Section 7.3
	Test method to determine hydrogen sulfide released from waste	(L, S) H_2S Test Method, Section 7.3
Corrosivity	Electrometric (pH of aqueous solution)	(L) SW9040B
Toxicity characteristic:	Toxicity characteristic leaching procedure (TCLP) extraction	(L, S) SW1311
Metals:	Graphite furnace atomic absorption (AA) spectroscopy, gaseous hydride AA, or direct aspiration AA	
Arsenic		(L, S) SW7060A, SW7061A
Barium		(L, S) SW7080A, SW7081
Cadmium		(L, S) SW7130, SW7131A
Chromium		(L, S) SW7190, SW7191
Lead		(L, S) SW7420, SW7421
Selenium		(L, S) SW7740, SW7741A
Silver		(L, S) SW7760A, SW7761
Mercury	Manual cold-vapor technique	(L) SW7470A, (S) SW7471A
Volatile organics	Gas chromatography(GC)/mass spectrometry (MS)	(L, S) SW8240B
	GC/MS capillary column technique	(L, S) SW8260A

Refer to footnotes at end of table.

TABLE D-4
WASTE ANALYSIS PARAMETERS AND TEST METHODS[a]
(continued)

Parameter	Test Method	Reference[b]
Semivolatile organics	GC/MS	(L, S) SW8250A
	GC/MS capillary column technique	(L, S) SW8270B
Organochlorine pesticides	TCLP extraction and GC	(L, S) SW8080A
Chlorinated herbicides		(L, S) SW8150B
Heat value	Bomb calorimeter	(L) A006, ASTM D240
Organic chloride	Halide titration of combustion residue	(L, S) A004, ASTM D2361
Ash content	Residue after combustion in muffle furnace	(L) A001, ASTM D482 (S) A001, ASTM D3174
Cyanide, free and total	Distillation and colorimetric ultraviolet	(L, S) SW9010A, SW9012
Total chromium	Colorimetric method for hexavalent chromium	(L, S) SW7196A
Sulfide	Colorimetric titration	(L, S) SW9030A

Refer to footnotes at end of table.

TABLE D-4
WASTE ANALYSIS PARAMETERS AND TEST METHODS[a]
(continued)

Parameter	Test Method	Reference[b]
Total metals[c]:	Acid digestion	(L) SW3010A, (S) SW3050A
	Inductively coupled plasma atomic emission spectroscopy	(L, S) SW6010A
Arsenic		(L, S) SW6010A
Barium		(L, S) SW6010A
Beryllium		(L, S) SW6010A
Cadmium		(L, S) SW6010A
Chromium		(L, S) SW6010A
Lead		(L, S) SW6010A
Nickel		(L, S) SW6010A
Selenium		(L, S) SW6010A
Silver		(L, S) SW6010A
Thallium		(L, S) SW6010A
Zinc		(L, S) SW6010A
Mercury	Manual cold-vapor technique	(L) SW7470A
		(S) SW7471A
Free liquids	Paint Filter Liquids Test	(L, S) SW9095

Refer to footnotes at end of table.

TABLE D-4
WASTE ANALYSIS PARAMETERS AND TEST METHODS[a]
(continued)

[a] At Los Alamos National Laboratory, current analytical capabilities include limited analyses of mixed waste samples. These analyses include gross alpha, beta, and gamma screening.
[b] "A" (e.g., A006) refers to U.S. Environmental Protection Agency, 1984, "Sampling and Analysis Methods for Hazardous Waste Combustion," *EPA-600/8-84-002*.
"ASTM" refers to American Society for Testing and Materials standards.
"SW" refers to U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
(L) refers to liquid waste.
(S) refers to solid waste.
[c] See also atomic absorption methods.

TABLE D-5
EVACUATION DETERMINATION AND REENTRY CONDITIONS

Reason for Evacuation	Evacuation Determination Made by	Reentry Conditions[a]
Fire	Fire or evacuation alarm, Group Leader or alternate, Lead Engineer, Senior Staff Member present, Senior Technician, or Emergency Manager	Following survey by the Chief Fire Officer, ESH-1[b], ESH-5[c], and/or ESH-10[d], and R&D[e] supervision
Explosion	Same as above	Same as above
Loss of ventilation	Group Leader or alternate, Senior Staff Member, Lead Engineer, or Senior Technician	Following survey by ESH-1 and/or ESH-5, and R&D supervision
Loss of electric power	Same as above	Same as above
Extensive contamination	Same as above or ESH-1 Representative	Same as above or ESH-10
Airborne contamination	Same as above or Radiation Monitor	Same as above or ESH-10
Escape or release of toxic or hazardous gas or fumes	Group Leader or alternate, Senior Staff Member, Lead Engineer, Senior Technician, or Emergency Manager	Same as above plus ESH-5 or ESH-10
Bomb or bomb threat	EM&R[f] or PTLA[g] representative, R&D Section Leader or alternate, Senior Staff Member, or Lead Engineer	Following determination by the Emergency Manager or HDT[h] Leader

[a] All reentries are authorized by the Incident Commander.
[b] "ESH-1" refers to the Health Physics Operations Group.
[c] "ESH-5" refers to the Industrial Hygiene and Safety Group.
[d] "ESH-10" refers to the Hazardous Materials Response Group.
[e] "R&D" refers to the Research and Development Section.
[f] "EM&R" refers to the Emergency Management and Response Office.
[g] "PTLA" refers to Protection Technology Los Alamos.
[h] "HDT" refers to the Hazardous Devices Team.

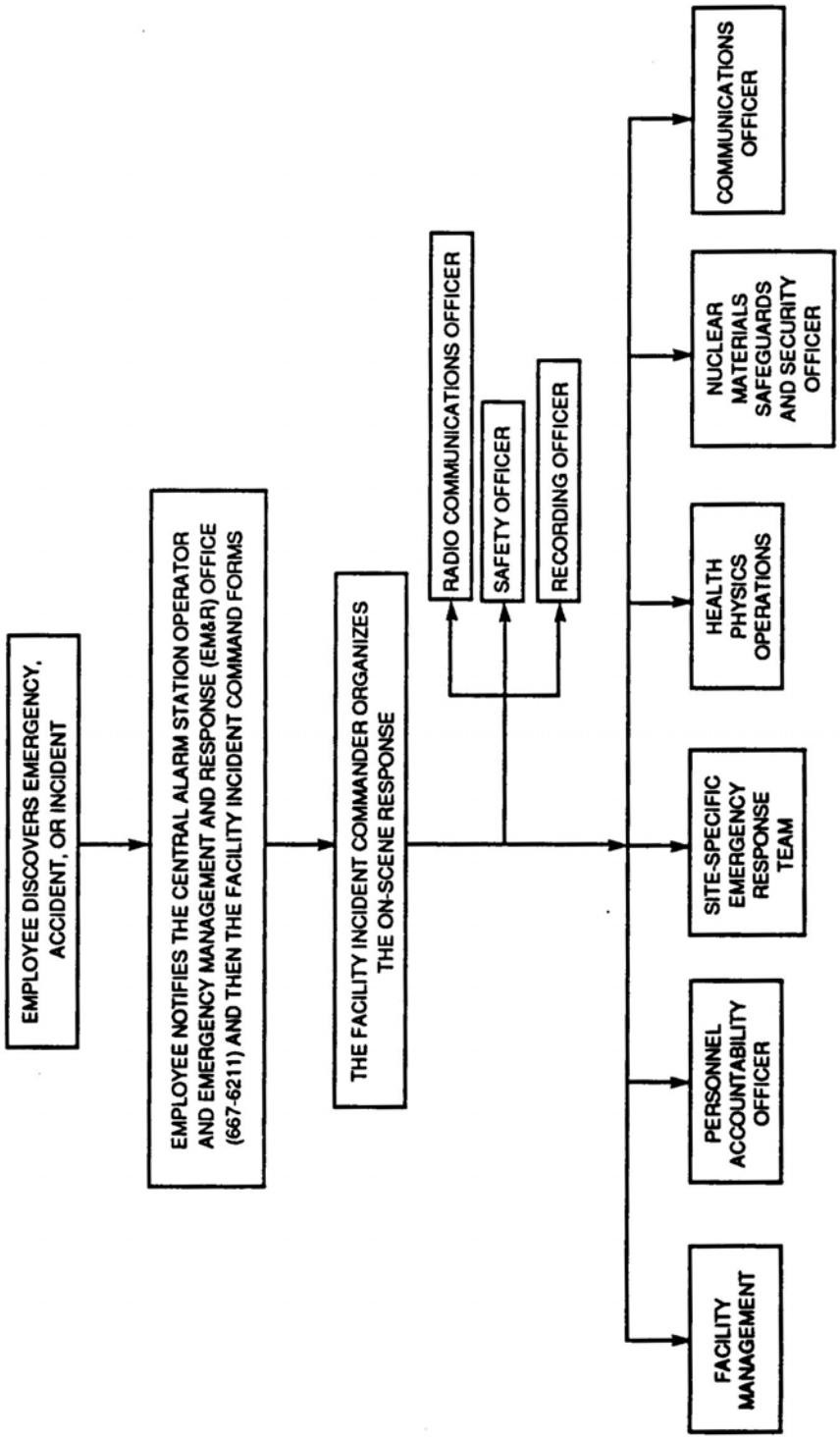

FIGURE D-1
EMERGENCY NOTIFICATION STRUCTURE FOR SITE-SPECIFIC EMERGENCY RESPONSES

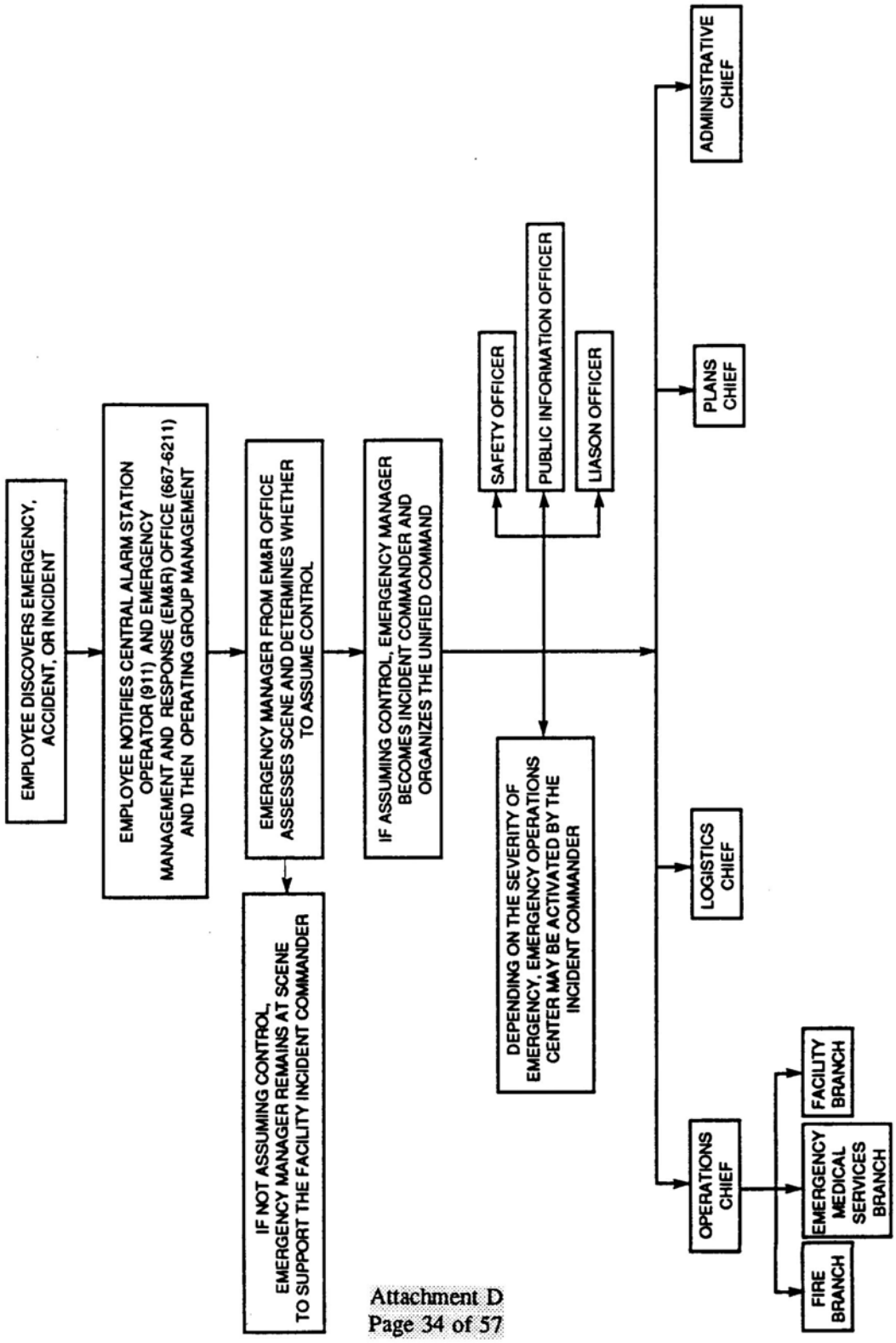

FIGURE D-2
GENERAL HAZARDOUS AND MIXED WASTE EMERGENCY NOTIFICATION STRUCTURE

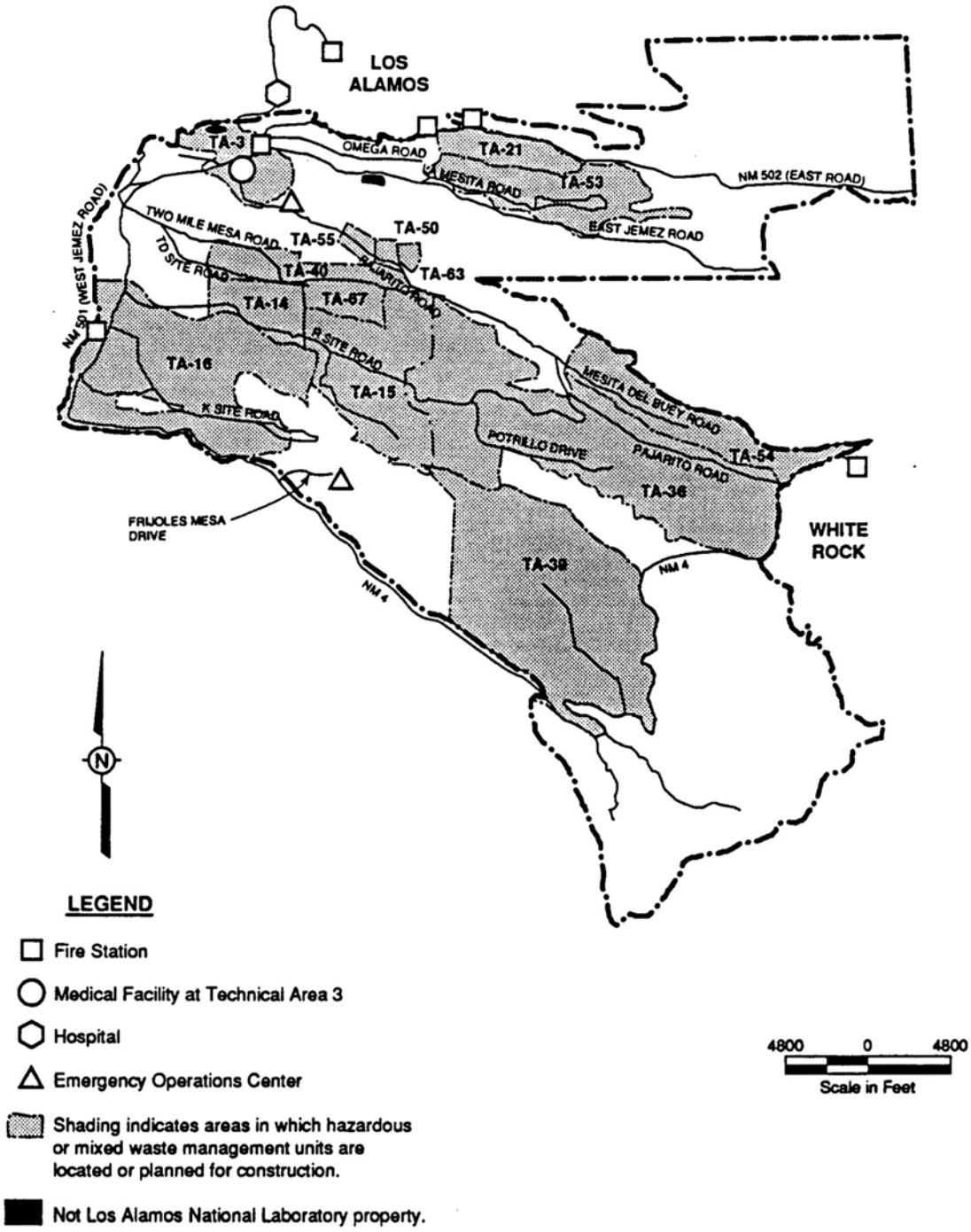

FIGURE D-3

EMERGENCY FACILITIES

APPENDIX D-1
Emergency Equipment

APPENDIX D-1
EMERGENCY EQUIPMENT

Hazardous Materials (HAZMAT) Vehicles and Associated Emergency Equipment:

Hazardous Materials (HAZMAT) vehicles and trailers are located at Technical Area (TA) 64, Building 39 (TA-64-39). They are available to the Environment, Safety, and Health (ESH) Division Hazardous Materials Response Group (ESH-10) for emergency response to all of the TAs at Los Alamos National Laboratory (LANL). ESH-10 is responsible for maintaining the supplies of appropriate emergency equipment in each vehicle and trailer.

The HAZMAT vehicles and trailers are equipped with safety and emergency equipment, personal protective clothing, and other supplies, which may include, but are not limited to: assorted personal protective equipment, T-shirts, and gloves; safety goggles and glasses; boots and booties; face shields; totally encapsulating suits and boots; Level A and B suits; flash suits; self-contained breathing apparatus (SCBA) and SCBA bottles; hazardous chemical reference books and other reference materials; shovels; siphon pumps; assorted spill kits and sorbents; chemical burn and neutralizing solutions; two-way radios, cellular phones, and communication equipment; bottles of leak detector; leak repair kits; emergency repair packs; HAZMAT bags; gas detectors and chemical detectors; respirators and cartridges; radiological equipment; sponges and cleaners; warning signs and barricade tape; traffic control barriers; flashlights; cameras and film; knives; portable power supplies; warning and signal horns; harnesses and belts; portable emergency oxygen; decontamination equipment; sampling equipment; and assorted tools, tape, and other supplies.

APPENDIX D-1
EMERGENCY EQUIPMENT

EMERGENCY EQUIPMENT AT THE BURNING GROUND AND THE OPEN DETONATION PADS, TAs 14, 15, 16, 36, AND 39

Fire Control Equipment

Fire Extinguisher in each vehicle used to transport HE material
Fire Extinguisher in each control bunker

Description of General Capabilities:

These are portable units of approximately 9 to 15 pounds capacity used in wet chemical laboratory applications. May be used by any employee in case of fire. Fire extinguishers are never used to put out controlled fires at the burning grounds.

Communication Equipment

Telephones
Two-way radios

Description of General Capabilities:

Telephones for internal communication at the Laboratory and off-site communication with federal, state, county, and other agencies are available. A Centrex telephone system and a private telephone line (if Centrex fails) are available for use by all employees.

Located in each control bunker, in the control building at the burning ground, and at the waste water treatment facility at the burning ground. Radios allow communication between each vehicle.

APPENDIX D-1
(continued)

EMERGENCY EQUIPMENT AT THE TA-50 ~~CHEMICAL WASTE INCINERATOR AND~~
ROOM 117 STORAGE AREA

Fire Control Equipment

13 fire extinguishers (9C-CO; 4 A-water)

Description of General Capabilities:
These are portable units of approximately 9 to 15 pounds capacity used in wet chemical laboratory applications. May be used by any employee in the event of fire.

Manually operated fire alarm may be activated by any employee in the event of fire to notify Central Alarm Station.

The sprinkler system is an automatic system which delivers a maximum of 200 psi of water spray through shower heads placed at locations which maximize fire suppression range capability. In the event of fire, this system should function automatically, requiring no manual assistance.

Halon Extinguishing Systems are indicated to supplement automatic sprinkler systems which protect high value equipment, or suppress special hazardous operations or occupancies.

Location:
~~1 Mechanical Equipment Room 111~~
~~2 High Bay Room 112~~
~~2 High Bay Room 114~~
~~1 South of Library and Conference Room~~
~~1 Chemistry Laboratory Room 107~~
~~1 Process Engineering Laboratory Room 209~~
~~1 Office Area Room 202~~
~~1 Room 21~~
1 Room 117

11 Fire Alarm Pull Boxes connected to the CAS
Location:
1 Mechanical Equipment Room 111
1 High Bay Room 112
2 South of Library and Conference Room
2 High Bay Room 114

APPENDIX D-1
(continued)

EMERGENCY EQUIPMENT AT THE TA-50 ~~CHEMICAL WASTE INCINERATOR AND~~
ROOM 117 STORAGE AREA

1	East of women's changing room
1	Process Engineering Laboratory
1	Office Area Room 202
2	Room 21

Automatic thermal alarm on inlet and exhaust of ventilation system
Automatic thermal sprinkler system throughout offices

4 Fire Hydrants
Location:
1 Northeast corner of Building 84
1 West of Building 69
1 Northeast of Building 37
~~Halon Extinguishing System, manual and ultraviolet in Room 115~~

Communication Equipment

Telephones throughout building with building-wide paging system

Description of General Capabilities:
Telephones for internal communication at the Laboratory and off-site communication with federal, state, county and other agencies are available. A Centrex telephone system and a private telephone line (if Centrex fails) are available for use by all employees.

Radio located in Room 202

Spill Control Equipment

Absorbent kept onsite
PCB room is bermed to handle all liquids stored
Have Spill Prevention and Containment Plan

Description of General Capabilities
Containment is designed to handle all liquids stored. Absorbent is used in the event of a small spill.

Decontamination Equipment

Showers
Emergency eye wash

Description of General Capabilities
Safety showers and eye washes are used by personnel who receive a chemical splash to skin or eyes. Specific material safety data sheets for the chemical should be obtained prior to working with the chemical to determine if the application of water is indicated for decontamination.

APPENDIX D-1
(continued)

EMERGENCY EQUIPMENT - HSE-7 CONTROLLED

Spill Control Equipment: Located at TA-54, Area G

Heavy equipment available for emergencies may include

2 scrapers
1 bulldozer
1 tractor (front end loader)
Shovels
Absorbents (vermiculite) in combustibles storage shed

Description of General Capabilities:

The following pieces of heavy equipment will be used in the event of large spills. Small spills will be absorbed with absorbent.

Decontamination Equipment

Small decontamination pit for heavy equipment
Showers (MD-11)

Other

Change room with protective clothing (MD-11)
2-3 dozen respirators (particulates) (MD-11)
2 self-contained, portable air masks (MD-11)
2 emergency generators, portable
3 vehicles are available for evacuation of personnel:
2 sanfu
2 Jeep (with emergency equipment, e.g., coveralls, booties, tape, rope)

APPENDIX D-1
(continued)
EMERGENCY EQUIPMENT AT TA-54, AREA L

Fire Control Equipment
1 fire hydrant located 30 feet south of site entrance to site
1 CO fire extinguisher located inside trailer at west end of site (B, C)
1 CO fire extinguisher located inside storage shed (B, C)
1 freeze-proof faucet located immediately east of shed

Description of General Capabilities:
These are portable units of approximately 9 to 15 pounds capacity used in wet chemical laboratory applications. May be used by any employee in the event of fire.

Spill Control Equipment
Shovels
Oversized drums
Absorbent inside storage shed
Heavy equipment from Area G available for any emergencies at Area L
Bermed storage area

Description of General Capabilities:
The following pieces of heavy equipment will be used in the event of large spills. Small spills will be absorbed with absorbent.

Communications Equipment
2-way radios are available to all personnel when in area
2-way radios are in all vehicles used for moving hazardous waste
Telephone located inside trailer

Description of General Capabilities
External and internal Laboratory communications which may be used in emergency situations are listed.

Decontamination Equipment
1 emergency shower and eye wash located immediately east of shed

Description of General Capabilities:
Safety showers and eye washes are used by personnel who receive a chemical splash to skin or eyes. Specific material safety data sheets for the chemical should be obtained prior to working with the chemical to determine if the application of water is indicated for decontamination.

Other

2 self-contained, portable air masks located inside trailer

APPENDIX D-1
EMERGENCY EQUIPMENT

~~TA-50~~

~~Emergency equipment at TA-50-1, Decontamination Facility, Rooms 35, 36, and 38/38A:~~

~~FIRE CONTROL EQUIPMENT:~~

~~Two fire extinguishers~~

~~Locations:~~
~~1 Halon in Room 35.~~
~~1 BC in Room 36.~~

~~Description of General Capabilities:~~
~~These portable, manually operated units are available for use by technicians and/or firefighters.~~

~~There is a fire alarm pull station located in Room 49 that may be used by personnel working in Rooms 35, 36, and 38/38A.~~
~~A fire suppression sprinkler system is located in Rooms 35 and 36. The sprinkler system is heat activated.~~

~~Description of General Capabilities:~~
~~Fire alarms may be activated by any employee in the event of a fire to notify the Central Alarm Station (CAS).~~

~~A fire hydrant is located outdoors approximately 15 feet from the southeast corner of Room 34B, which is adjacent to Room 36.~~

~~SPILL CONTROL EQUIPMENT:~~

~~One wall-mounted chemical spill center is located in Room 35. It contains sorbent pillows, safety glasses, and gloves. Personnel working in Rooms 36 and 38/38A have access to the spill center in Room 35.~~

~~COMMUNICATION EQUIPMENT:~~

~~Telephones with public address (PA) capabilities are located in Rooms 34 and 35A. Personnel working in Rooms 35, 36, and 38/38A may use these phones to summon assistance in case of an emergency. When working in the container storage areas, the buddy system will be employed.~~
~~Fires and evacuations are announced via the building paging system.~~
~~The fire alarm is a double slow whoop sound.~~
~~The evacuation alarm is a high-pitched wailing sound.~~

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

~~**Emergency equipment at TA-50-1, Decontamination Facility, Rooms 35, 36, and 38/38A, (Continued):**~~

~~Description of General Capabilities:~~
~~Telephones with PA capabilities for internal and external communication are available for use by any employee. Fire and evacuation alarms are activated in the event of a fire or in case an evacuation is required.~~

~~DECONTAMINATION EQUIPMENT:~~

~~Safety showers are located in Rooms 35, 36, and 38/38A.~~
~~Eyewashes are located in Rooms 35 and 36. Personnel working in Room 38/38A have access to the eyewash in Room 36.~~
~~Material Safety Data Sheets (MSDS) are located in Rooms 34B and 49.~~

~~Description of General Capabilities:~~
~~Safety showers and eyewashes are used by personnel who receive a chemical splash to the skin or to the eyes. Specific MSDS for the chemical(s) being managed should be obtained prior to working with hazardous or mixed waste to determine if the application of water is indicated for decontamination.~~

~~PERSONAL PROTECTIVE EQUIPMENT:~~

~~Coveralls, gloves, and steel-toed shoes will be worn while working in Room 35. Coveralls, respirators, steel-toed shoes, gloves, and booties will be worn while working in Room 36. While working in Room 38/38A, lab coats and steel-toed shoes will be worn.~~

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

TA-50

Emergency equipment at TA-50-69, the Waste Characterization, Reduction, and Repackaging Facility (WCRRF):

FIRE CONTROL EQUIPMENT:

Two carbon dioxide fire extinguishers are located in the WCRRF.
A fire extinguisher is located within 20 feet of the WCRRF Outdoor Container Storage Area (CSA).

Description of General Capabilities:
These portable, manually operated units are available for use by technicians and/or firefighters.

Two fire alarm pull stations are located in the WCRRF. Personnel working at the WCRRF Outdoor CSA may use the pull stations in the WCRRF in the event of a fire.
A wet-pipe sprinkler system is located in the WCRRF and in the large glovebox in the WCRRF. The sprinkler system is heat activated.

Description of General Capabilities:
Fire alarms may be activated by any employee in the event of a fire to notify the CAS.

A fire hydrant is located approximately 55 feet west of the WCRRF.

SPILL CONTROL EQUIPMENT:

Spill control kits are located in the WCRRF and at the WCRRF Outdoor CSA.

COMMUNICATION EQUIPMENT:

Three telephones with PA capabilities are located in the WCRRF. The PA system can be heard at the WCRRF Outdoor CSA. Personnel working at the WCRRF Outdoor CSA may use the telephones in the WCRRF. When working at the CSAs, the buddy system will be employed.
The fire alarm is a pulsing sound.
The evacuation alarm is a wailing sound that can be heard throughout the WCRRF and at the WCRRF Outdoor CSA.
Continuous air monitors are connected to a computer system in the vehicle airlock entrance of the WCRRF.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Emergency equipment at TA-50-69, the Waste Characterization, Reduction, and Repackaging Facility (WCRRF), (Continued):

Description of General Capabilities:
Telephones with PA capabilities for internal and external communication are available for use by any employee. Fire and evacuation alarms are activated in the event of a fire or in case an evacuation is required.

DECONTAMINATION EQUIPMENT:

A safety shower is located in the main room of the WCRRF, and a personnel shower is located adjacent to the change room in the WCRRF.
An eyewash is located in the main room of the WCRRF.
The safety shower and eyewash in the WCRRF may be used by personnel working at the WCRRF Outdoor CSA.
MSDS are located in the WCRRF.

Description of General Capabilities:
Safety showers and eyewashes are used by personnel who receive a chemical splash to the skin or to the eyes. Specific MSDS for the chemical(s) being managed should be obtained prior to working with hazardous or mixed waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT:

Protective clothing (Level D with thermoluminescent dosimeters [TLD]) will be worn when working at the WCRRF Outdoor CSA. Inside the WCRRF, workers wear anti-C coveralls, surgical gloves, booties, and respirators when unpackaging a waste item, cutting open a waste box, and during large bag-out efforts. Workers wear surgeon's gloves, lab coats, booties, and TLDs while working through enclosure gloves. Workers inside the enclosure airlock must wear anti-C coveralls, surgical gloves, booties, TLDs, and respirators. Workers inside the cutting enclosure wear at least two layers of anti-C coveralls, surgical gloves, booties, TLDs, and air-purifying respirators with supplied breathing air. Every visitor wears an anti-C lab coat, a TLD, safety glasses, and booties.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

TA-54 West

Emergency equipment at TA-54-38, the Radioassay and Nondestructive Testing (RANT) Facility:

FIRE CONTROL EQUIPMENT:

Five fire extinguishers

Locations:
4 Halon fire extinguishers are located inside TA-54-38; 2 in the high bay and 2 in the low bay.
1 Halon fire extinguisher is located at the Outdoor CSA.

Description of General Capabilities:
These portable, manually operated units are available for use by technicians and/or firefighters.

Four fire alarm pull boxes are located inside TA-54-38; 1 in the main entrance, 2 in the high bay near each fire extinguisher, and 1 in the low bay near the exit to the loading dock.

A dry-pipe sprinkler system is located throughout TA-54-38, including the loading dock area. The dry pipe sprinkler system is heat activated in the high bay and at the loading dock. It is smoke activated in the low bay.

Description of General Capabilities:
Fire alarms may be activated by any employee in the event of a fire to notify the CAS.

One fire hydrant is located approximately 220 feet west of TA-54-38 near the entrance to TA-54 West.

Three freeze-proof faucets are located on the northwest, southwest, and southeast sides of TA-54-38. A wall hydrant is located on the northwest side of the building.

SPILL CONTROL EQUIPMENT:

A mobile response kit is located at TA-54-38. The kit includes sorbent socks, pillows, and sheets; goggles; and large plastic bags.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Emergency equipment at TA-54-38, the Radioassay and Nondestructive Testing (RANT) Facility, (Continued):

COMMUNICATION EQUIPMENT:

Three telephones with PA capabilities are located on the first floor of TA-54-38; 1 in the high bay, 1 in the low bay, and 1 outside the main entrance. An emergency telephone is also located outside the main entrance .
The fire alarm is a double slow whoop sound.
The evacuation alarm is a high-pitched wailing sound that can be heard throughout TA-54-38 and TA-54-34.

Description of General Capabilities:
Telephones with PA capabilities for internal and external communication are available for use by any employee. Fire and evacuation alarms are activated in the event of a fire or in case an evacuation is required.

DECONTAMINATION EQUIPMENT:

Two safety showers and two eyewashes are located at TA-54-38; 1 of each is located in the high bay and 1 of each is located on the loading dock.
MSDS are located at the TA-54-38 muster area (approximately 120 feet northwest of TA-54-38) and in the TA-54-38 main entry area.

Description of General Capabilities:
Safety showers and eyewashes are used by personnel who receive a chemical splash to the skin or to the eyes. Specific MSDS for the chemical(s) being managed should be obtained prior to working with hazardous or mixed waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT:

Gloves and steel-toed shoes will be worn when working in the container storage areas. Coveralls may also be worn. Special crane equipment operators will wear hard hats when moving waste containers in the high bay.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

TA-54

Emergency equipment at TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, ~~Pad 2,~~ and Pad 10~~-4~~:

FIRE CONTROL EQUIPMENT:

Fire extinguishers will be located in TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, and within 300 feet of Pad 10~~-2 and Pad 4~~.

Description of General Capabilities:
These portable, manually operated units are available for use by technicians and/or firefighters.

Fire and heat detection alarm systems and fire alarm pull stations will be located within structures at TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, and at Pad 10~~-4~~. Dry-pipe sprinkler systems will be installed in TA-54-226 and TA-54-229.

Description of General Capabilities:
Fire alarms may be activated by any employee in the event of a fire to notify the Central Alarm Station. The sprinkler systems will automatically activate in the event of a fire.

Five fire hydrants will be located in the vicinity of the container storage areas.

Description of General Capabilities:
The fire hydrants will supply water at adequate volume and pressure (i.e., approximately 800 gallons per minute and 90 pounds per square inch) to satisfy the requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart V, 264.32, revised November 1, 1995.

SPILL CONTROL EQUIPMENT:

A 6-inch asphaltic concrete curb will be installed around the interior floor perimeter of TA-54-226, TA-54-229, TA-54-230, TA-54-231, and TA-54-232 to contain any potential liquids from fire-suppression activities. Pads 2 and 4 are surrounded by a 6-inch-high, 6-inch-wide curb to contain any potential liquids from precipitation. Spill control kits will be located near the main entrance to each structure. TA-54-230 is lined with high-density polyethylene and has an emergency secondary containment system.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Emergency equipment at TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, ~~Pad 2,~~ and Pad 10~~-4~~ (Continued):

COMMUNICATION EQUIPMENT:

A pole-mounted telephone for communication outside of TA-54, Area G, is located at TA-54-226. Public address (PA) capabilities will be located at TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, and Pad 10~~–4~~. The PA system may be used locally to notify personnel of an emergency within TA-54, Area G. When handling waste in these container storage areas, personnel are provided with cellular telephones and hand-held radios capable of summoning assistance from the EM&R Office in case of an emergency and the buddy system is employed.

Fires and evacuations are announced via the building paging system.
The fire alarm is a double slow whoop sound.
The evacuation alarm is a high-pitched wailing sound.

Description of General Capabilities:
PA telephones may be used for internal communication and are available for use by any employee. External telephones may be used to notify LANL support agencies outside of Area G and are also available for use by any employee. Fire and evacuation alarms are activated in the event of a fire or in case of an evacuation. When activated, the fire alarm notifies the Central Alarm Station.

DECONTAMINATION EQUIPMENT:

A trailer equipped with a change room and showers will be available onsite during retrieval, characterization, and drum venting operations. Portable eyewash stations will also be available onsite during these operations.
Material Safety Data Sheets (MSDS) are available at TA-54-2, TA-54-11, TA-54-22; in Storage Domes 48 (TA-54-48), 49 (TA-54-49), and 153 (TA-54-153); and in the Drum Prep Facility (TA-54-33). They will also be available in Storage Domes 224 (TA-54-224) and 283 (TA-54-283).

Description of General Capabilities:
Showers and eyewashes are used by personnel who receive chemical exposure to the skin or to the eyes. Specific MSDS for the chemical(s) being managed should be obtained prior to working with mixed waste to determine if the application of water is indicated for decontamination.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Emergency equipment at TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, ~~Pad 2,~~ and Pad 10~~-4~~ (Continued):

PERSONAL PROTECTIVE EQUIPMENT:

Appropriate personal protective equipment (specified in a Health & Safety Plan) will be worn during retrieval, characterization, and drum venting operations at TA-54-226, ~~Pad 2,~~ and Pad 10~~-4~~. Personnel involved in waste handling at TA-54-229, TA-54-230, TA-54-231, and TA-54-232 will be required to wear protective coveralls and steel-toed shoes. Hard hats and gloves will be worn as prescribed in the Health & Safety Plan. Protective clothing and respirators are available in TA-54-157.

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Supplemental emergency equipment and personnel available from the Los Alamos County Fire Department (9-911):

Engine companies - 1,250 gallons per minute
  Engines 1, 3, 4, 5, 6, 10, and 40
Engine 50 (Reserve) - 1,000 gallons per minute
Mini-pumpers
  MT-1, -3, -4, and -5
Modular ambulances
  3 First line - M1, M3, M4
  1 Reserve Unit - M10
Rescue vehicles
  1 First Line
  1 Newly Purchased
Crash-Fire-Rescue (CFR) units
  CFR 6
  CFR 60 (small, fast attack unit)
SCBA units
SCBA air tanks
105-foot tower ladder with pump - 1,500 gallons per minute
Personnel with 120 hours Emergency Medical Technician training
Personnel with Advanced Life Support training
Water tankers
  T-1 = 1,500 gallons
  T-3 = 2,500 gallons
  T-4 = 3,000 gallons
  T-5 = 2,500 gallons
  T-50 = 1,500 gallons

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Supplementary emergency equipment and personnel available from Johnson Controls World Services Inc. (667-6191):

TRANSPORTATION:

Pickups, 1/2 through 3/4 ton
Trucks, 1 through 3 ton
Vans, panels, and carryalls

SPECIAL EQUIPMENT:

Road grader, Cat, self-propelled blade, with radio
Grader, John Deere, self-propelled, with radio
Loaders, bucket, Melroe, Bobcat, 1/3 cubic yards
Loader, bucket, Cat, 2-3/4 cubic yards, with radio
Loader, Fiat-Allis, 3 cubic yards
Loader, bucket, Cat, 2-1/2 cubic yards
Loader, bucket, Cat, 3-1/4 cubic yards
Loader, bucket, Yale, 3 cubic yards, with radio
Loader, bucket, backhoe, Case, 1-1/2 cubic yards
Loaders, bucket, backhoe, Case, 7/8 cubic yards
Loader, backhoe, Ford, 1 cubic yard
Loader, bucket, backhoe, JCB, 7/8 cubic yards
Snowplows, Bombardier, with blade
Bulldozer, D-8, Crawler
Bulldozers, TD-25, International
Scraper, Terex, self-propelled
Scraper, Fiat-Allis, self-propelled
Bulldozer, 280, rubber-tired, with radio
Semitrailers
Chain saws
Flusher, street, 3,000-gallon truck, tanker, 500-gallon, FMC
Mobile transceivers (2-way, KOB-753)
Generators
Handsets (2-way)
Pageboys (1-way)
Welders, mounted on trailers and trucks

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Supplementary emergency equipment and personnel available from Johnson Controls World Services Inc. (667-6191), (continued):

PERSONNEL:

- Heavy equipment operators
- Clerks
- Dispatchers
- Mechanics
- Power saw operators
- Radio and telephone operators
- Truck drivers

OTHER EQUIPMENT:

- Portable toilets
- Light bank set 2/3 kilowatt generator
- Hand-held two-way radios
- 6" x 8" landscape timbers
- 15-ton dump truck
- 8-ton dump truck
- Fuel truck 3,000 gallons (diesel)
- Service truck (petroleum, oil, lubricant)
- Combination fuel truck (392 gallons diesel) (392 gallons gasoline)

SNOW REMOVAL EQUIPMENT:

- Truck-mounted snow plows
- Motor graders w/wing plow attachment
- Truck-mounted sand/salt spreaders
- Sand/salt spreader/plow
- Front end loaders
- Rubber-tired bulldozer
- Farm tractors w/blade attachments
- Skid steer loaders
- Rubber tracked bombardiers
- Hand-operated snow blowers
- Road-configured snow blower
- Wheel Horses w/blade attachments

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Supplementary emergency equipment and personnel available from Johnson Controls World Services Inc. (667-6191), (continued):

SNOW REMOVAL PERSONNEL:

Laborers
Teamsters
Operators
Mechanics
Supervisors

SPILL RESPONSE EQUIPMENT:

Spill trailer
Material storage shed
Submersible pump
Acid/caustic pump
Wet/vacuums
Vacuum

SPILL RESPONSE MATERIAL:

Sorbent sheets
Zorball (sacks)
55-gallon barrel w/bung
55-gallon barrel w/o bung
3" x 96" spill booms
Sand bags
Gallon ND-165 degreaser
White mop heads w/handles

PERSONNEL:

Teamsters
Operators
Laborers
Supervisors

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Supplementary emergency equipment and personnel available from Johnson Controls World Services Inc. (667-6191), (continued):

UTILITIES EQUIPMENT:

- Line truck (digger derrick)
- Basket truck
- Backhoe
- Boom truck
- Dump truck
- Sewage trucks
- Potable water truck
- Trailer-mounted generator 110 volt
- Truck-mounted welders
- Thawing machine

UTILITIES PERSONNEL:

- Operators
- Pipefitters
- Laborers

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Emergency equipment and personnel at the Central Medical Facility, Occupational Medicine Group (ESH-2) (667-7251):

At TA-3 (SM-409) Central Clinic:

PERSONNEL:

Physicians
Physician's Assistants
Nurses
X-ray Technicians
Clinical Laboratory Technicians
Clinical Testing Technicians

SPECIAL EQUIPMENT-PORTABLE:

Multichannel emergency receiver-base station
Two-way radio on the State Med Net,
the LANL Emergency Management channel, and the LANL Health-Safety Net
Cardiac monitors and defibrillators
Crash cart emergency equipment with E-tank oxygen (O_2)
Portable physicians' bag with medications
Portable suction unit
Portable stretchers (ambulance, gurney, folding)
Wheelchairs
O_2 tanks
Manual resuscitators
Intravenous (IV) stands
IV solutions
Otoscope/ophthalmoscopes
Portable sphygmomanometers
Stethoscopes
Anticontamination apparel
Eye irritation solution
Industrial first-aid kits
Extrication and cervical collars, crutches, canes
Suture sets
Protective apparel
Morgan lends and irrigation sets
Decontamination equipment (portable)

APPENDIX D-1
EMERGENCY EQUIPMENT
(continued)

Emergency equipment and personnel at the Central Medical Facility, ESH-2 (667-7251) (continued):

At TA-3 (SM-409) Central Clinic (continued):

SUPPLIES-GENERAL:

Bedding/pillows
Rescue blankets
Burn blankets
Thermal/icing pouches
Multitrauma dressings, surgical and first aid supplies
Disposable ice bags

SPECIAL FACILITIES - NONPORTABLE:

Completely equipped emergency room with ambulance entrance
Emergency lighting system
Complete X-ray suite
Protective clothing and wound counters
12-lead electrocardiograph
Fully equipped crash cart with Life Pak, intubation equipment, emergency medications, etc.
Fully equipped decontamination room at Los Alamos Medical Center (LAMC) adjacent to the LAMC emergency room

TRANSPORTATION:

Full ambulance service is available within minutes to the central facility.

COMMUNICATION:

Base station on State Medical Net and Los Alamos County Fire Department trunked radio system.

~~**CLOSURE PLAN**~~
~~**PERMIT ATTACHMENT E.1**~~
~~**NM 0890010515-1**~~

~~CLOSURE PLAN~~
~~PERMIT ATTACHMENT E.1~~
~~NM 0890010515-1~~

~~E.1 TECHNICAL AREA 16 INDUSTRIAL INCINERATOR~~

~~The industrial incinerator is located outdoors in the northeastern part of TA-16 (Figure E.1.1) and is equipped for combustion of potentially high explosive (HE) contaminated trash and machine oils. The incinerator consists of a primary combustion chamber, a secondary combustion chamber, and a settling chamber. Both primary and secondary chambers are equipped with gas/oil-fired burners supplied by small volumes of waste oil and propane. The outer shell is fabricated from hot-rolled carbon steel and is mounted on a four-inch thick concrete pad.~~

~~E.1.1 Estimate of Maximum Waste in Treatment of Storage~~

~~Potentially HE contaminated wastes are not stored at this site, but are held in short-term storage (less than 90 days) at the generation point and moved to the site just before a scheduled incineration. The maximum waste in treatment at one time is 810 pounds.~~

~~E.1.2 Description of Waste Handled~~

~~The industrial incinerator will be used to burn trash from TA-16 which is potentially HE contaminated. This trash consists of a mixture of highly combustible waste such as paper, cardboard cartons, wood boxes and combustible floor sweepings from industrial activities. The mixture may contain up to ten percent by weight of plastic bags, coated paper, laminated paper, treated corrugated cardboard, oily rags, and plastic or rubber scraps. The incinerator is also equipped to burn potentially HE contaminated hydraulic oil, tramp oil, and ignitable solvents from machining operations at TA-16.~~

~~E.1.3 Closure Procedure and Decontamination~~

~~E.1.3.1 Partial Closure~~

~~No partial closure of this unit is expected to occur. Any requirement for decontamination to perform maintenance, without total removal of the unit, is not considered closure.~~

~~E.1.3.2 Final Closure~~

~~Personnel involved in sampling and decontamination will wear rubber gloves, safety glasses, and coveralls. Personnel involved in dust generating activities, such as digging and filling drums, will wear dust masks to prevent inhalation of contaminated dust. The Laboratory's Industrial Hygiene and Safety Group, HSE-5 ESH-5, will review the site survey analytical data and recommend additional protective clothing if necessary.~~

~~All remaining wastes will be incinerated before shutting down the industrial incinerator. If for some reason it is not possible to incinerate all the waste on the site, the waste will be sent offsite off site to a permitted facility. When all the waste inventory has been properly treated or disposed of, the site will be decontaminated as follows: First, the entire incineration system, including the two combustion chambers and the settling chamber will be scraped and brushed clean to remove any solid residue. All residue will be placed in 55-gallon drums and transferred to TA-54, Area L for sampling, analysis and appropriate disposal. The incinerator will be wrapped in plastic and sealed with tape, then transported to the HE decontamination slab at TA-16-400. Decontamination of the incinerator at TA-16-400 will follow the procedures below.~~

~~Small equipment used to pick up soil, ash, or other residues will be scraped and brushed clean, and the accumulated dust will be placed in drums for sampling, analysis and transport to Area L. The equipment will be wrapped in sheet plastic and sealed with tape, then transported to the HE decontamination slab at TA-16-400.~~

~~The decontamination pad at TA-16-400 is used to wash down equipment used in handling HE. The cleaning water is collected in a sump and then hauled to the TA-16 burn pad area with a vacuum truck. At the burn pads, the water is filtered in two sand filters, the filtered residual is burned, and the filtered water discharged under a NPDES permit. Residues from the filter have been tested and are regulated under RCRA. The equipment will be decontaminated by disassembling and scrubbing with detergent and water wash. Testing for decontamination of equipment will be conducted for the regulated constituents potentially present. Washing with detergent is adequate for safe handling as the primary hazard is due to the HE.~~

~~The concrete pad underlying the incinerator will be scraped, swept, or brushed clean, and the resulting residue placed in 55-gallon drums. The drums will be transferred to TA-54, Area L for appropriate sampling, analysis and off-site disposal. A small trench will be dug around the concrete pad, with a sump at the lowest point. The trench and sump will be lined with sheet plastic. The pad will then be scrubbed with a warm Liquinox (@) or Alconox (@) solution in water. The run-off from the pad, collected in the sump, will be bailed into drums, sampled and transported to TA-54, Area L where the solution will be stored, sampled, analyzed and shipped offsite off site for disposal. Section E.1.6. describes sampling procedures for this water. The washing will be repeated until decontamination is demonstrated. The clean pads will be treated as a nonregulated waste and left in place, or if removed, the resulting rubble used as landfill.~~

~~Successful decontamination is defined as:~~

~~1. No detectable hazardous constituents in the final sample, or~~

~~2. Detectable hazardous constituents in the final sample are equal to or less than, at the 0.01 confidence interval, to their concentration in the unused washwater or background sample.~~

~~An alternative demonstration of decontamination may be proposed and justified at the time of closure as circumstances indicate. The Director Secretary will evaluate the proposed alternative in accordance with the standards and guidance then in effect and, if approved, incorporate by permit modification the alternative into the closure plan.~~

~~E.1.4 Closure Schedule~~

~~The year of closure is 2100. Closure will observe the schedule provided in Table E.1.1. The contract for equipment disassembly is expected to exceed $100,000. Because laboratory policy requires that work be put out to bid, 90 days are required to solicit and process the bids. The selection of a contractor will be made before closure begins. Closure is estimated to take 180 days.~~

~~E.1.5 Closure Certification~~

~~An independent registered professional engineer and the Permittee shall witness the closure and ensure that the closure follows this plan. Upon completion of closure, the engineer and the DOE shall prepare a letter certifying that the facility has been closed in accordance with this plan. The letter shall be dated and signed by each party, stamped by the registered engineer, and the original copy submitted by the DOE to the Director of NMEID Secretary of NMED. One copy shall be maintained at the DOE office and one copy maintained by the HSE-8 Regulatory Compliance Section ESH-19 Hazardous and Solid Waste Group.~~

~~E.1.6 Sampling and Analytical Procedure~~

~~The following section defines procedures and methods for sampling, analysis and documentation applicable to closure plans. While the procedures and method are specific, any applicable procedure or method given in SW-846 may be used if conditions or experience shows the alternate method to be more appropriate. All analytical procedures actually used will be annotated in the final closure report. Disposable samplers may be used.~~

~~Samples will be taken, placed in bottles, sealed, tagged, and immediately packed in vermiculite, sawdust, or, if refrigeration is required, an insulated container with ice. One sample for every ten samples will be either duplicated or split. The duplicated or split sample will be identified by a code so that its source is not available to the analytical laboratory, but analytical results can be compared to its twin.~~

~~Sample containers appropriate for the requested analyses will be used for all samples. Sampling will be conducted in accordance with procedures given in *Samplers and Sampling Procedures for Hazardous Waste Streams*, EPA-600/2-80-0 1-8 and/or SW-846.~~

~~E.3.6.1 E.1.6.1 Soil and Solid Residues Sampling~~

~~Under normal circumstances the following soil sampling information will be inapplicable. Should however, spills occur outside the modular unit, sampling of the area will be required to verify that no hazardous constituents remain upon closure. The sampling procedures outlined below are used to determine the amount of hazardous material deposited on a particular area of land, or to determine the leaching rate of the material, or determine the residue level on the soil. Adequate preparation ensures that proper sampling is accomplished.~~

~~Surface soil samples will be collected with a trowel or scoop. To sample below 3 in. (8 cm), samples will be collected with a Veihmeyer soil sampler. Drums of solid residues will be sampled with a core sampler or Veihmeyer soil sampler. Drums not capable of being sampled will be assumed to be hazardous waste.~~

~~E.3.6.1.1 E.1.6.1.1 Cleaning of sampler~~

~~It is important to clean the samplers after each site is sampled. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a warm Liquinox(@) or Alconox(@) solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air dried or wiped dry. Prevention of cross contamination is of particular importance in these samples.~~

~~E.1.6.1.2 Sampling procedures~~

~~Trowel or Scoop~~

- ~~Take small, equal portions of sample from the surface or near the surface of the material to be sampled.~~
- ~~Combine the samples in a glass container.~~
- ~~Cap the container, attach a label and seal, record in field log book, and complete the sample analysis request sheet and chain-of-custody record.~~

~~Veihmeyer Sampler~~

- ~~Assemble the sampler by screwing in the tip and drive head on the sampling tube.~~
- ~~Insert the tapered handle (drive guide) of the drive hammer through the drive head.~~
- ~~Place the sampler in a perpendicular position on the material to be sampled.~~
- ~~With the left hand holding the tube, drive the sampler into the ground/material to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube further than the tip of the hammer's drive guide.~~
- ~~Record the length of the tube that penetrated the material.~~
- ~~Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.~~
- ~~Rotate the sampler at least two revolutions to shear off the sample at the bottom.~~
- ~~Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.~~
- ~~Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a pullerjack and grip.~~
- ~~Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.~~

- ~~Store the core sample in a 1,000 or 2,000 ml (1 qt or 1/2 gal) sample container.~~

- ~~Label the sample, affix the seals, record in the field log book, complete the sample analysis request sheet and chain-of-custody record, and deliver the samples to the laboratory for analysis.~~

~~E.1.6.2 Liquid Sampling~~

~~A coliwasa COLIWASA sampler or similar device will be used to sample water solutions in order to determine background parameters before washing the area; it will also be used to sample the dirty wash water used in cleaning equipment. The recommended model of the coliwasa COLIWASA is shown in Figure E.1.2., the main parts consisting of the sampling tube, the closure-locking mechanism, and the closure system.~~

~~As an alternative to the coliwasa COLIWASA, glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of as a hazardous waste after each sample is collected, thus eliminating the potential for cross contamination.~~

~~E.1.6.2.1 Cleaning of sampler~~

~~The sampler must be clean before use. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The used sampler must be washed with a warm detergent solution (Liquinox (@) or Alconox(@)), rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the coliwasa COLIWASA is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Using this ramrod and fiber reinforced paper towels, the coliwasa COLIWASA tube may be quickly cleaned. Improper cleaning of sample equipment will cause cross contamination of samples. Prevention of contamination is of particular importance in these samples. Clean samplers should be stored in polyethylene plastic tubes or bags in a clean and protected area.~~

~~E.1.6.2.2 Sampling procedures~~

- ~~Assemble the coliwasa COLIWASA sampler.~~

- ~~Make sure that the coliwasa COLIWASA sampler is clean.~~

- ~~Check to make sure the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.~~

- ~~Wear necessary protective clothing and gear and observe required sampling precautions.~~

- ~~Put the sampler in the open position by placing the stopper rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.~~

- ~~Slowly lower the COLIWASA coliwasa sampler into the liquid at a rate that permits the levels of the liquid inside and outside the sampler tube to be about the same. If the level of the liquid~~

~~in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a nonrepresentative sample.~~

- ~~When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.~~

- ~~Slowly withdraw the sampler from the container with one hand while wiping the sampler tube with a disposable cloth with the other hand.~~

- ~~Carefully discharge the sample into a glass container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block while the lower end of the sampler is positioned in the glass container.~~

- ~~Cap the glass container, attach a label and seal, record in the field log book, and complete the sample analysis request sheet and chain-of-custody record.~~

- ~~Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.~~

~~E.1.6.3 Sample Handling and Documentation~~

~~Soil and liquid samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and a sample analysis request form.~~

~~The sample container must be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. An example of a sample seal is shown in Figure E.1.3.~~

~~The sample label is necessary to prevent misidentification of samples and shall include, if applicable, the grid number referenced to positions staked on the site perimeter. The "field information" in the case of soil sampling, shall include observations such as the soil texture and surface appearance, ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling. An example of a sample label is shown in Figure E.1.4.~~

~~The chain-of-custody form is necessary to trace sample possession from the time of collection and must accompany every sample. This record becomes especially important when the sample is to be introduced as evidence in litigation. This is a two-page record with the original accompanying shipment and the "copy" retained by the Laboratory. An example of this form is shown in Figure E.1.5.~~

~~A separate closure sampling field log book will be kept and will contain all information pertinent to field surveys and sampling. The log book shall have bound and consecutively numbered pages in 8-1/2 by 11-inch format. Minimum entries include:~~

~~a. Purpose of sample (routine sampling, special sampling);~~

~~b. Location of sampling (coordinates referenced to staked field points, if soil sample);~~

~~c. Name and address of person making log entry;~~

~~d. Type of process producing waste;~~

~~e. Number and volume of samples;~~

~~f. Description of each sampling location, sampling methodology, equipment used, etc.;~~

~~g. Date and time of sample collection;~~

~~h. Sample destination and transporter's name (name of laboratory, UPS, etc.);~~

~~i. Map or photograph of the sampling site, if any;~~

~~j. Field observations (ambient temperature, sky conditions, past 24-hour precipitation, etc.);~~

~~k. Field measurements, if any (pH, flammability, conductivity, explosivity, etc.);~~

~~l. Collector's sample identification number(s); and~~

~~m. Signature of person responsible for the log entry.~~

~~Sampling situations vary widely. No general rule can be given as to the extent of information that must be entered in the log book. A good rule, however, is to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.~~

~~The sample shipment and chain-of-custody record is accompanied by a sample analysis request sheet. The request sheet has two parts: field and laboratory. The field portion of this form must be completed by the person collecting the sample and include most of the pertinent information noted in the log book. The laboratory portion is intended to be completed by the laboratory personnel when the sample is received.~~

~~E.1.7 Quality Assurance/Quality Control~~

~~The Permittee shall designate a qualified individual or individuals to independently oversee the closure activities and report directly to senior management on the quality of the performance of this closure. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed, and review the analysis reports for accuracy and adequacy. A written QA/QC plan prepared in accordance with SW-846 guidance shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the adequacy of the analysis showing decontamination. See the closure activities and report directly to senior management on the quality of the performance of this closure. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed and~~

~~review the analysis reports for accuracy and adequacy. A written QA/QC plan prepared in accordance with SW-846 guidance shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the adequacy of the analysis showing decontamination.~~

~~E.1.8 Final Closure Report~~

~~Upon completion of the closure activities, the Permittee shall submit a Final Closure Report to the Director Secretary. The report shall document the final closure and contain, at a minimum, the following:~~

~~A. The certification described in paragraph E.1.5.~~

~~B. Any variance from the approved activities and the reason for the variance.~~

~~C. A tabular summary of all sampling results, showing:~~

~~1. Sample identification;~~
~~2. Sampling location;~~
~~3. The datum reported;~~
~~4. Detection limit for each datum;~~
~~5. A measure of analytical precision (e.g. uncertainty, range, variance);~~
~~6. Identification of analytical procedure; and~~
~~7. Identification of analytical laboratory.~~

~~D. A QA/QC statement on the adequacy of the analyses and the decontamination demonstration.~~

~~E. The location of the file of supporting documentation:~~

~~1. Field log books;~~
~~2. Laboratory sample analysis reports;~~
~~3. The QA/QC documentation; and~~
~~4. Chain of custody records.~~

~~F. Disposal location of all regulated and non-regulated residues.~~

~~G. A certification of accuracy of the report.~~

~~TABLE E.1.1.~~
~~CLOSURE SCHEDULE~~

~~Activity~~	~~Maximum Time Required~~
~~Notify EID NMED of the closure~~	~~90 days~~
~~Let contract request for proposals~~	~~90 days~~
~~Receive proposals~~	~~30 days~~
~~Select and award contract~~	~~10 days~~
~~Begin closure activities~~	~~Day 0~~
~~Treatment of final wastes~~	~~Day 30~~
~~Residue removal from incinerator~~	~~Day 40~~
~~Internal/external wash down~~	~~Day 50~~
~~Incinerator disassembly~~	~~Day 75~~
~~Incinerator component decontamination~~	~~Day 125~~
~~Residue removal from concrete pad~~	~~Day 135~~
~~Concrete pad wash down~~	~~Day 140~~
~~Final clean up~~	~~Day 160~~
~~Decontamination verification~~	~~Day 180~~
~~Submittal of final report EID to NMED~~	~~Day 210~~

~~NOTE: The calendar days given above are completion dates for each activity. In some cases more than one activity may occur simultaneously.~~

~~TABLE E.1.2.~~
~~ANALYTICAL PARAMETERS~~

~~Metals~~	~~Organics~~	~~Other~~
~~Barium~~	~~Halogenated volatile organics~~	~~Ignitability~~
~~Cadmium~~	~~Nonhalogenated volatile organics~~	~~Reactivity~~
~~Selenium~~	~~Acid-extractable semivolatile organics~~	~~pH~~
~~Lead~~	~~Base-neutral extractable semivolatile organics~~	
~~Mercury~~	~~Phenols~~	
~~Beryllium~~		

~~NOTE: Analytical methods are taken from *Test Methods for Evaluating Solid Waste*, EPA-SW-846, and may be superseded by more current methods from SW-846 or alternate EPA-approved methods.~~

~~Metals may be analyzed for total content. Any metal whose total concentration exceeds the standard for Extraction Procedure Toxicity~~ the toxicity characteristic ~~shall be analyzed by Extraction Procedure Toxicity procedures.~~ the Toxicity Characteristic Leaching Procedure ~~the Toxicity Characteristic Leaching Procedure. Both data shall be reported in the final report.~~

~~**TABLE E.1.3**~~
~~**SAMPLING SUMMARY**~~

~~Material Sampled~~	~~Metals~~	~~Organics~~	~~Other~~
~~Solid residues from combustion and settling chambers~~[a]	~~X~~	~~X~~	~~X~~
~~Solid residues from the concrete pad~~[a]	~~X~~	~~X~~	~~X~~
~~Small equipment decontamination residues~~[a]	~~X~~	~~X~~	
~~Decontamination washwater before use~~		~~X~~	
~~Decontamination washwater after use~~		~~X~~	

~~NOTE: Sampling parameters as given in Table E.1.2.~~

[a]~~These residues may be composited before sampling.~~

~~**FIGURE E.1.1 - BURNING AREA MAP**~~

~~**FIGURE E-1.2 - COMPOSITE LIQUID WASTE SAMPLER (COLIWASA)**~~

FIGURE E 1.3
EXAMPLE OF SAMPLE SEAL

OFFICIAL SAMPLE SEAL

Collected by _____ Collector's sample No. _____
(Signature)

Date Collected _____ Time Collected _____

Place Collected _____

_____

_____

FIGURE E 1.4
EXAMPLE OF SAMPLE LABEL

OFFICIAL SAMPLE LABEL

Collector _____ Collector's Sample No. _____

Place of Collection _____

_____

Date Sampled _____ Time Sampled _____

Field Information _____

_____

_____

~~FIGURE E 1.5~~
~~CHAIN OF CUSTODY RECORD~~
~~Hazardous Materials~~
~~Collector's Sample No.____~~

~~Location of Sampling: Producer Hauler~~
~~Disposal Site Other: _____~~

~~Company's Name_____ Telephone (____)_____~~

~~Address_____~~
~~Number Street City State Zip~~

~~Collector's Name_____ Telephone (____)_____~~

~~Date Sampled_____ Time Sampled_____ hours~~

~~Type of Process Producing Waste_____~~

~~Waste Type Code_____ Other_____~~

~~Field Information_____~~

~~Sample Allocation:~~

~~1. _____~~
~~(Name of Organization)~~

~~2. _____~~
~~(Name of Organization)~~

~~3. _____~~
~~(Name of Organization)~~

~~Chain of Possession:~~

~~1. _____ _____ _____~~
~~Signature Title Inclusive Dates~~

~~2. _____ _____ _____~~
~~Signature Title Inclusive Dates~~

~~3. _____ _____ _____~~
~~Signature Title Inclusive Dates~~

MODIFIED

CLOSURE PLAN
PERMIT ATTACHMENT E.3
NM 0890010515-1

CLOSURE PLAN
PERMIT ATTACHMENT E.3
NM 0890010515-1

E.3 MODULAR STORAGE UNITS

Some containerized wastes are stored in prefabricated modular storage buildings at various locations in TA-50 and TA-54, Area L. See Figures E.3.1 and E.3.2. These storage units are self-contained and are equipped with chemical resistant walls to provide separation of incompatible wastes, a corrosion resistant fiberglass floor grating, and a polypropylene building sump liner.

E.3.1 Estimate of Maximum Waste in Storage

Each storage unit can store a maximum of thirty 55 gallons drums or a total of 1650 gallons of liquid wastes. The maximum total inventory of waste in storage at any time in the TA-50-114 CSU is 1,210 gallons.

E.3.2 Description of Waste Handled

Three waste streams compose the bulk of the waste stored in the modular units at TA-50, although the system is flexible enough to allow storage of other wastes that may be generated through new Laboratory projects. These streams are an acid/base waste that contains copper, chromate plating waste, and waste cyanide plating solutions. These structures may also be used to store any regulated waste while awaiting ~~lab-packing~~ lab packing.

The modular units at TA-54, Area L will be used primarily for the storage of ~~labpacked~~ lab-packed waste. Since six separate cells are available for storage, there may be up to six different categories of waste stored there while waiting treatment or disposal.

The modular unit at TA-54, Area L (TA-54-36) will be used primarily for:

(1) sorting, surveying, and decontaminating certain wastes currently in storage and labeled “suspect mixed waste.”, and;

(2) staging, inspecting, sampling, and analyzing specific mixed waste streams for which commercial treatment and/or disposal is currently available.

E.3.3 Closure Procedures and Decontamination

E.3.3.1 Partial Closure

Partial closure would consist of closure of one unit or more, while leaving other units in service. In such an event, the following procedures would apply to the unit(s) to be closed.

E.3.3.2 Unit Closure

Personnel involved in disassembly and handling of equipment will wear protective equipment, including: acid/solvent-resistant coveralls, head protection, neoprene coated gloves and boots. Wrists and ankles are to be taped to protect against upward and inward splash. As a minimum protection, face shields will be worn. Full face respirators will be used if specified by the Laboratory's Industrial Hygiene and Safety Group, ~~HSE-5~~ ~~ESH-5~~HSR-5, following a field inspection.

The inside of the unit will be scrubbed and rinsed with a warm solution of Liquinox(@) or Alconox(@) in water. The cleaning solutions will accumulate in the internal sumps and will be pumped into drums with a small manually operated drum pump. Samples of this solution will be taken from the drum to verify decontamination. Washdown will be repeated until decontamination is verified. The drummed liquid will be transported to TA-54, Area L for sampling, analysis and off site treatment and/or disposal.

The unit will be disassembled by removing all removable walls, grates etc. and then visually inspected. Any residual matter found will be scraped or brushed off the area where the residue occurred, then washed and rinsed. Dry residues will be placed in drums for transport to TA-54, Area L, for storage, sampling and analysis prior to off site disposal at a permitted facility. Liquids from washing and rinsing will be placed in approved Department of Transportation (DOT) containers and transported to TA-54, Area L for sampling, analysis and off site disposal. Cleaned pieces will be removed from the unit and handled as ~~a~~ an unregulated waste or reassembled into the unit after decontamination is verified.

Spills occurring during disassembly will be contained in the unit and will be picked up with mops. No decontamination of container handling equipment is anticipated during closure because the wastes are inside containers and no contact is expected between wastes and handling equipment. If ~~breeching~~ breaching of any container of hazardous waste or hazardous material occurs, all contaminated equipment will be decontaminated by washing with appropriate cleaning solutions. Spills occurring outside the unit will be picked up with absorbent material such as vermiculite or commercial absorbent. The absorbed material will be swept up, placed in a DOT approved container and disposed of as hazardous waste. The area will be mopped or flushed with Liquinox(@) or Alconox(@) solution, the wash water picked up with absorbent material as above and placed in a container for disposal as a hazardous waste. Each container may be sampled and analyzed for hazardous constituents as listed in HWMR-5, Part II, Appendix VIII. Containers not containing hazardous constituents may be handled as unregulated waste.

Units emplaced over impervious surfaces, concrete or asphalt, need not have the surface sampled for spill residues from past handling practices. Units emplaced over absorbent surfaces will have a minimum of three soil samples to a depth of six inches taken in the area of each access door. The samples will be separately analyzed for the parameters in Table E.3.2. If contamination is discovered, a three foot grid centered on the locus of contaminated points will be sited and samples taken and analyzed to determine the extent of contamination. Analyses for this investigation can be made for the constituent(s) found in the initial survey. All contaminated soil to a depth of six inches will be removed and disposed of at a permitted facility.

Protective clothing, coveralls, face shields, and boots worn during the wash down will be rinsed in clean water while the items are within the unit. The rinse water will be handled with the dirty water from the external wash down. Following internal and external decontamination, the unit will be considered free from regulated wastes if the ~~washwaters~~ wash waters do not show any contamination from the constituents listed in Table E.3.2. Protective clothing will be worn by personnel disassembling the unit. The protective clothing and tools used during disassembly will be washed with detergent and water. The wash ~~waster~~ water will be collected and analyzed. If the wash water is nonhazardous, the water will be discharged to the industrial waste water sewer. If the wash water contains hazardous constituents, it will be transported off site

to a permitted disposal facility. Mops and rags used for cleanup will be placed in drums for transport to Area L, for ultimate off site disposal at a permitted facility. Nondisposable tools, equipment, etc. which come in contact with the dirty wash water will be decontaminated.

E.3.4 Decontamination Verification

Before the first wash down, two samples will be taken of the clean Liquinox(@) or Alconox(@) solution in water and analyzed for the constituents listed in table E.3.2.

One additional clean solution sample will be taken for each additional washdown event. These analytical results provide background data for decontamination verification.

Dirty washdown solutions will also be analyzed for the constituents listed in Table E.3.2. Analytical procedures will conform to methods found in SW-846. Equipment will be considered to be contaminated if the used wash solutions show a significant increase in the listed constituents over the clean wash solution.

The constituents listed in Table E.3.2. include regulated constituents normally stored in the units. A scan for volatile and semivolatile organics is performed to ensure that solvents commonly used within the Laboratory have not contaminated the unit.

Successful decontamination is defined as:

1. No detectable hazardous constituents in the final sample, or

2. Detectable hazardous constituents in the final sample are equal to or less than, at the 0.01 confidence level, their concentration in the unused wash water or background sample.

An alternative demonstration of decontamination may be proposed and justified at the time of closure as circumstances indicate. The ~~Director~~ Secretary will evaluate the proposed alternative in accordance with the standards and guidance then in effect and, if approved, incorporate by permit modification the alternative into the closure plan.

E.3.5 Closure Schedule

The year of closure for the modular storage units is 2003 for TA-50-114 and 2100 for the various units located at TA-54, Area L. Closure will observe the schedule given in Table E.3.1.

The contract for closure activities is expected to exceed $100,000. Because Laboratory policy requires that the work be put out for bid, 90 days are required to solicit and process the bids. The selection of a contractor will be made before closure begins. Closure is estimated to take 180 days.

E.3.6 Closure Certification

An independent registered professional engineer and the Permittee shall witness the closure and ensure that the closure follows this plan. Upon completion of closure, the engineer and the DOE shall prepare a letter certifying that the facility has been closed in accordance with this plan. The letter shall be dated and signed by each party, stamped by the registered engineer, and the original copy submitted by the DOE to the ~~Director of NMEID~~ Secretary of NMED. One copy shall be maintained at the DOE office and one copy maintained by the ~~HSE-8 Regulatory Compliance Section~~ ~~ESH-19 Hazardous and Solid Waste Group~~ Risk Reduction and Environmental Stewardship Division's Solid Waste Regulatory Compliance Group.

E.3.7 Sampling and Analytical Procedure

The following section defines procedures and methods for sampling, analysis and documentation applicable to closure plans. While the procedures and method are specific, any applicable procedure or method given in SW-846 may be used if conditions or experience shows the alternate method to be more appropriate. All analytical procedures actually used will be annotated in the final closure report. Disposable samplers may be used.

Samples will be taken, placed in bottles, sealed, tagged, and immediately packed in vermiculite, sawdust, or, if refrigeration is required, an insulated container with ice. One sample for every ten samples will be either duplicated or split. The duplicated or split sample will be identified by a code so that its source is not available to the analytical laboratory, but analytical results can be compared to its twin.

Sample containers appropriate for the requested analyses will be used for all samples. Sampling will be conducted in accordance with procedures given in *Samplers and Sampling Procedures for Hazardous Waste Streams*, EPA 600/2-80-0 1 8 and/or SW-846.

E.3.7.1 Soil and Solid Residues Sampling

Under normal circumstances the following soil sampling information will be inapplicable. Should however, spills occur outside the modular unit, sampling of the area will be required to verify that no hazardous constituents remain upon closure. The sampling procedures outlined below are used to determine the amount of hazardous material deposited on a particular area of land, or to determine the leaching rate of the material, or determine the residue level on the soil. Adequate preparation ensures that proper sampling is accomplished.

Surface soil samples will be collected with a trowel or scoop. To sample below 3 in. (8 cm), samples will be collected with a Veihmeyer soil sampler. Drums of solid residues will be sampled with a core sampler or Veihmeyer soil sampler. Drums not capable of being sampled will be assumed to be hazardous waste.

E.3.7.1.1 Cleaning of sampler

It is important to clean the samplers after each site is sampled. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a warm Liquinox(@) or Alconox(@) solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. Prevention of cross contamination is of particular importance in these samples.

E.3.7.1.2 Sampling procedures ~~trowel or scoop~~

Trowel or Scoop

- Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
- Combine the samples in a glass container.
- Cap the container, attach a label and seal, record in field log book, and complete the sample analysis request sheet and chain-of-custody record.

Veihmeyer Sampler

- Assemble the sampler by screwing in the tip and drive head on the sampling tube.
- Insert the tapered handle (drive guide) of the drive hammer through the drive head.
- Place the sampler in a perpendicular position on the material to be sampled.
- With the left hand holding the tube, drive the sampler into the material to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube further than the tip of the hammer's drive guide.
- Record the length of the tube that penetrated the material.
- Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.
- Rotate the sampler at least two revolutions to shear off the sample at the bottom.
- Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.
- Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a pullerjack and grip.
- Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.
- Store the core sample in a 1,000 or 2,000 ml (1 qt or 1/2 gal) sample container.
- Label the sample, affix the seals, record in the field log book, complete the sample analysis request sheet and chain-of-custody record, and deliver the samples to the laboratory for analysis.

E.3.7.2 Liquid Sampling

A ~~Coliwasa~~ COLIWASA sampler or similar device will be used to sample water solutions in order to determine background parameters before washing the area; it will also be used to sample the dirty wash water used in cleaning equipment. The recommended model of the ~~Coliwasa~~ COLIWASA is shown in Figure E.3.3, the main parts consisting of the sampling tube, the closure-locking mechanism, and the closure system. As an alternative to the ~~Coliwasa~~ COLIWASA, glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of as hazardous waste after each sample is collected, thus eliminating the potential for cross contamination.

E.3.7.2.1 Cleaning of sampler

The sampler must be clean before use. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The used sampler must be washed with a warm detergent solution (Liquinox(@) or Alconox(@)), rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the ~~Coliwasa~~ COLIWASA is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Using the ramrod and fiber reinforced paper towels, the ~~Coliwasa~~ COLIWASA tube may be quickly cleaned. Improper cleaning of sample equipment will cause cross contamination of samples. Prevention of contamination is of particular importance in these samples. Clean samplers should be stored in polyethylene plastic tubes or bags in a clean ~~an~~ and protected area.

E.3.7.2.2 Sampling procedures

- Assemble the COLIWASA ~~Coliwasa~~ sampler.
- Make sure that the ~~Coliwasa~~ COLIWASA sampler is clean.
- Check to make sure the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.
- Wear necessary protective clothing and gear and observe required sampling precautions.
- Put the sampler in the open position by placing the stopper rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.
- Slowly lower the ~~Coliwasa~~ COLIWASA sampler into the liquid at a rate that permits the levels of the Liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a nonrepresentative sample.
- When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.
- Slowly withdraw the sampler from the container with one hand while wiping the sampler tube with a disposable cloth with the other hand.
- Carefully discharge the sample into a glass container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block while the lower end of the sampler is positioned in the glass container.
- Cap the glass container, attach a label and seal, record in the field log book, and complete the sample analysis request sheet and chain-of-custody record.
- Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.

E.3.7.3 Sample Handling and Documentation

Soil and liquid samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and a sample analysis request form.

The sample container must be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. An example of a sample seal is shown in Figure E.3.4.

The sample label is necessary to prevent misidentification of samples and shall include, if applicable, the grid number referenced to positions staked on the site perimeter. The "field information" in the case of soil sampling, shall include observations such as the soil texture and surface appearance, ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling. An example of a sample label is shown in Figure E.3.5.

The chain-of-custody form is necessary to trace sample possession from the time of collection and must accompany every sample. This record becomes especially important when the sample is to be introduced as evidence in litigation. This is a two-page record with the original accompanying shipment and the "copy" retained by the Laboratory. An example of this form is shown in Figure E.3.6.

A separate closure sampling field log book will be kept and will contain all information pertinent to field surveys and sampling. The log book shall have bound and consecutively numbered pages in 8-1/2 by 11-inch format. Minimum entries include:

a. Purpose of sample (routine sampling, special sampling);

b. Location of sampling (coordinates referenced to staked field points, if soil sample);

c. Name and address of person making log entry;

d. Type of process producing waste;

e. Number and volume of sample;

f. Description of each sampling location, sampling methodology, equipment used, etc.;

g. Date and time of sample collection;

h. Sample destination and transporter's name (name of laboratory, UPS, etc);

i. Map or photograph of the sampling site, if any;

j. Field observations (ambient temperature, sky conditions, past 24-hour precipitation, etc);

k. Field measurements, if any (pH, flammability, conductivity, explosivity, etc);

l. Collector's sample identification number(s); and

m. Signature of person responsible for the log entry.

Sampling situations vary widely. No general rule can be given as to the extent of information that must be entered in the log book. A good rule, however, is to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

The sample shipment and chain-of-custody record is accompanied by a sample analysis request sheet. The request sheet has two parts: field and laboratory. The field portion of this form must be completely by the person collecting the sample and include most of the pertinent information noted in the log book. The laboratory portion is intended to be completed by the laboratory personnel when the sample is received.

E.3.8 Quality Assurance/Quality Control

The Permittee shall designate a qualified individual or individuals to independently oversee the closure activities and report directly to senior management on the quality of the performance of this closure. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed and review the analysis reports for accuracy and adequacy. A written QA/QC plan in accordance with SW-846 guidance shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the adequacy of the analysis showing decontamination.

E.3.9 Final Closure Report

Upon completion of the closure activities, the Permittee shall submit a Final Closure Report to the ~~Director~~ Secretary. The report shall document the final closure and contain, at a minimum, the following:

A. The certification described in paragraph E.3.6.

B. Any variance from the approved activities and the reason for the variance.

C. A tabular summary of all sampling results, showing:

1. Sample identification,

2. Sampling location,

3. The datum reported,

4. Detection limit for each datum,

5. A measure of analytical precision (e.g. uncertainty, range, variance),

6. Identification of analytical procedure, and

7. Identification of analytical laboratory.

D. A QA/QC statement on the adequacy of the analyses and the decontamination determination.

E. The location of the file of supporting documentation:

1. Field log books,

2. Laboratory sample analysis reports,

3. The QA/QC documentation, and

4. Chain of custody records.

F. Disposal location of all regulated and nonregulated residues.

G. A certification of accuracy of the report.

TABLE E.3.1.
CLOSURE SCHEDULE

Activity	Maximum Time Required
Notify ~~EID~~ NMED of closure	-90 Days
Advertise for proposals	-90 Days
Receive proposals	-30 Days
Select contractor and award contract	-10 Days
Begin closure activities	Day 0
Internal wash down complete	Day 30
External wash down complete	Day 50
Unit ~~disassemblyas~~disassembly, as required	Day 80
Floor wash down	Day 100
Final clean up	Day 120
Decontamination verification	Day 150
Submit final report to ~~EID~~ NMED	Day 180

NOTES: The calendar days given above are completion dates for each activity. In some cases more than one activity may occur simultaneously.

This schedule is applicable to either partial or final closure.

TABLE E.3.2.
ANALYTICAL PARAMETERS

Metals	Organics	Other
Arsenic	Halogenated volatile organics	Cyanides
Barium	Nonhalogenated volatile organics	Ignitability
Cadmium	Acid-extractable semivolatile organics	Reactivity
Selenium	Base-neutral extractable semivolatile organics	pH
Lead	Phenols	
Mercury	Organochlorine pesticides	
Nickel	Chlorinated herbicides	
Beryllium		
Chromium		
Silver		

NOTES: Analytical methods are taken from *Test Methods for Evaluating Solid Waste*, EPA SW-846, and may be superseded by more current methods from SW-846 or alternate EPA-approved methods.

Metals may be analyzed for total content. Any metal whose total concentration exceeds the standard for the toxicity characteristic ~~Extraction Procedure Toxicity~~ shall be analyzed by the Toxicity Characteristic Leaching Procedure~~Extraction Procedure Toxicity procedures~~. Both data shall be reported in the final report.

TABLE E.3.3.
SAMPLING SUMMARY

Material Sampled	Metals	Organics	Other
Soil sampling[a]	X	X	X
Solid wastes & residues	X	X	X
~~Washwater~~ Wash water before use	X	X	X
~~Washwater~~ Wash water after use	X	X	X
Protective clothing ~~washwater~~ wash water		X	

NOTES: Analytical parameters are given in Table E.3.2.

[a]For units placed over permeable surfaces.

FIGURE E.3.1
LOCATION OF TA-50 CHEMICAL WASTE INCINERATOR MAP

FIGURE E.3.3
COMPOSITE LIQUID WASTE SAMPLER (COLIWASA)

FIGURE E.3.4
EXAMPLE OF SAMPLE SEAL

OFFICIAL SAMPLE SEAL

Collected by _____ Collector's sample No._____
(Signature)

Date Collected_____ Time Collected_____

Place Collected_____

_____

_____

FIGURE E.3.5
EXAMPLE OF SAMPLE LABEL

OFFICIAL SAMPLE LABEL

Collector_____ Collector's Sample No._____

Place of Collection_____

_____

Date Sampled_____ Time Sampled _____

Field Information_____

_____

_____

FIGURE E.3.6
EXAMPLE CHAIN OF CUSTODY RECORD
Hazardous Materials
Collector's Sample No.____

Location of Sampling: Producer Hauler
Disposal Site Other: _____

Company's Name_____ Telephone (___)_____

Address_____
Number Street City State Zip

Collector's Name_____ Telephone (___)_____

Date Sampled_____ Time Sampled_____ hou

Type of Process Producing Waste_____

Waste Type Code_____ Other_____

Field Information_____

_____

Sample Allocation:

1. _____
(Name of Organization)

2. _____
(Name of Organization)

3. _____
(Name of Organization)

Chain of Possession:

1. _____ _____ _____
Signature Title Inclusive Dates

2. _____ _____ _____
Signature Title Inclusive Dates

3. _____ _____ _____
Signature Title Inclusive Dates

FIGURE E.3.2
TA-54 AREA L MAP

~~**CLOSURE PLAN**~~
~~**PERMIT ATTACHMENT E.4.**~~
~~**NM 0890010515-1**~~

~~CLOSURE PLAN~~
~~PERMIT ATTACHMENT E.4.~~
~~NM 0890010515-1~~

~~E.4 CHEMICAL WASTE INCINERATOR~~

~~The waste incinerator is located in Building 37 at Technical Area 50 (Figure E.5.1.). The controlled-air incinerator is rated at a nominal 45 kilograms per hour waste feed throughput. The incinerator is currently permitted to burn PCB-contaminated liquid materials and radioactive wastes. Modifications to the incinerator include additions of liquid waste tanks and solid waste feed preparation lines, a gravity ash removal system, a high-efficiency off-gas cleanup system, and backup utility systems. Standard combustion equipment has been modified to permit effective incineration of waste in solid, liquid, slurry, or gaseous form. Particular attention has been given to engineering for proper waste containment with an emphasis on radioactivity.~~

~~E.4.1 Estimate of Maximum Waste in Storage and Treatment~~

~~The maximum inventory of hazardous wastes stored and treated at any one time in the TA-50 waste incinerator is estimated at 8 cubic meters (2200 gallons).~~

~~E.4.2 Description of Waste Handled~~

~~The incinerator and the flue gas treatment systems are capable of combusting a variety of hazardous wastes, including chemical waste, mixed waste, low-level radioactive wastes and transuranic wastes. The Laboratory wastes are a mixture of liquid and solid hazardous wastes composed of various organic solvents and liquids, as well as chemically contaminated paper, wood, and plastics. The liquids can contain either characteristic or listed wastes containing HWMR-5, Part II, Appendix VIII constituents. The incinerator burns all HWMR-5, Part II, Appendix VIII constituents with an incinerability ranking equal to or better than carbon tetrachloride.~~

~~E.4.3 Closure Procedure~~

~~E.4.3.1. Partial Closure~~

~~No partial closure of this unit is expected to occur. Any requirement for decontamination to perform maintenance, without total removal of the unit, is not considered closure. Components removed and replaced will be decontaminated or disposed of as regulated waste.~~

~~E.4.3.2. Final Closure~~

~~All remaining wastes will be incinerated before shutting down the incinerator. If for some reason it is not possible to incinerate all the waste on the site, the waste will be sent to a permitted off-site treatment or disposal facility.~~

~~Upon the decision to close the facility, the equipment and building will be surveyed to determine the nature and levels of both radioactive and hazardous chemical contamination. Using the Laboratory guidelines and~~

~~procedures, a decommissioning document will be prepared describing in detail the methods and procedures for decontamination, demolition, packaging, and disposal. All materials generated from decontamination and demolition will be treated as radioactive or mixed waste and disposed of in accordance with appropriate regulations. A copy of the final decommissioning document will be provided to the EID NMED upon publishing.~~

~~When all the waste inventory has been properly disposed of, the unit will be decontaminated as follows: First, the entire incineration system (incinerator, all relevant lines and pumps, and the air pollution control system) will be disassembled and inspected. Those components amenable to decontamination will be cleaned by washing with Liquinox(@) or Alconox(@) solution in water, followed by a thorough steam cleaning. The spent cleaning solution will be collected and analyzed for hazardous constituents. If no constituents are detected, these components will be deemed decontaminated and released for reuse or disposal. If constituents are detected, further cleaning will be repeated until decontamination is verified. Those components not amenable to decontamination, the two incinerator chambers, including all attached refractory and residual solid residue, will be sealed and sent to a designated radioactive mixed waste disposal facility. The manner of disposal will depend on any residual radionuclide contamination as well as any residual hazardous waste contamination. All radioactive components will be decontaminated to the extent practicable and disposed of according to appropriate Department of Energy orders.~~

~~Personnel involved in decontaminating the incinerator will wear protective equipment, including, acid/solvent-resistant coveralls, head protection, neoprene-coated gloves, and boots, boots. Wrists and ankles are to be taped to protect against upward and inward splash. As a minimum protection, face shields will be worn. Full face respirators will be used if specified by the Laboratory's Industrial Hygiene and Safety Group, HSE-5 ESH-5, following a field inspection.~~

~~The protective clothing and tools used during the wash down will be cleaned with detergent and water. The wash waster water will be collected and analyzed. If the wash water is non-hazardous, the water will be discharged to the industrial waste water sewer. If the wash water contains hazardous constituents, it will be treated on-site or transported off-site to a permitted facility. Mops and rags used for clean-up will be placed in drums for transport to Area L, with ultimate off-site disposal at a permitted facility.~~

~~E.4.4 Decontamination Verification~~

~~Before the first wash down, two samples will be taken of the clean Liquinox(@) or Alconox(@) solution in water and analyzed for the constituents listed in Table E.4.2.~~

~~One additional clean wash solution sample will be taken for each additional washdown event. These analytical results provide background data for decontamination verification.~~

~~Dirty wash-down solutions will be analyzed for the constituents listed in Table E.4.2. Analytical procedures will conform to methods found in SW-846. Equipment will be considered to be contaminated if the dirty wash solutions show a significant increase in the listed constituents over the clean wash solution.~~

~~The constituents listed in Table E.4.2. include regulated constituents normally treated in the unit. A scan for volatile and semivolatile organics is performed to ensure that solvents commonly used within the Laboratory have not contaminated the unit.~~

~~Successful decontamination is defined as:~~

1. ~~No detectable hazardous constituents in the final sample, or~~

2. ~~Detectable hazardous constituents in the final sample are equal to or less than, at the 0.01 confidence level, their concentration in the unused washwater wash water or background sample.~~

~~An alternative demonstration of decontamination may be proposed and justified at the time of closure as circumstances indicate. The Director Secretary will evaluate the proposed alternative in accordance with the standards and guidance then in effect and, if approved, incorporate by permit modification the alternative into the closure plan.~~

~~E.4.5 Closure Schedule~~

~~Characterization of the final delivery of hazardous waste may require up to 30 days. An estimated 60 days will be required to schedule and process the final wastes on hand. Once the chemical decontamination is completed the incinerator will be surveyed for radioactive contamination in preparation for decommissioning.~~

~~The survey of the incinerator facilities to determine the nature and level of radioactive contamination and to prepare the decommissioning document is estimated to take one year. Decommissioning and final disposal are estimated to take up to one year.~~

~~The year of closure for the TA-50-37 incinerator is 2100. Closure will observe the schedule given in Table E.4.1.~~

~~E.4.6 Closure Certification~~

~~An independent registered professional engineer and the Permittee shall witness the closure and ensure that the closure follows this plan. Upon completion of closure, the engineer and the DOE shall prepare a letter certifying that the facility has been closed in accordance with this plan. The letter shall be dated and signed by each party, stamped by the registered engineer, and the original copy submitted by the DOE to the Director of NMEID Secretary of NMED. One copy shall be maintained at the DOE office and one copy maintained by the HSE-8 Regulatory Compliance Section ESH-19 Hazardous and Solid Waste Group.~~

~~E.4.7 Sampling and Analytical Procedure~~

~~The following section defines procedures and methods for sampling, analysis and documentation applicable to closure plans. While the procedures and method are specific, any applicable procedure or method given in SW-846 may be used if conditions or experience shows the alternate method to be more appropriate. All analytical procedures actually used will be annotated in the final closure report. Disposable samplers may be used.~~

~~Samples will be taken, placed in bottles, sealed, tagged, and immediately packed in vermiculite, sawdust, or, if refrigeration is required, an insulated container with ice. One sample for every ten samples will be either duplicated or split. The duplicated or split sample will be identified by a code so that its source is not available to the analytical laboratory, but analytical results can be compared to its twin.~~

~~Sample containers appropriate for the requested analyses will be used for all samples. Sampling will be conducted in accordance with procedures given in *Samplers and Sampling Procedures for Hazardous Waste Streams*, EPA 600/2-80-018 and/or SW 846.~~

~~E.4.7.1 Solid Residues Sampling~~

~~Under normal circumstances the following soil sampling information is inapplicable. Should, however, spills occur outside the building, sampling of the area will be required to verify that no hazardous constituents remain upon closure. The sampling procedures outlined below are used to determine the amount of hazardous material deposited on a particular area of land, or to determine the leaching rate of the material, or determine the residue level on the soil. Adequate preparation ensures that proper sampling is accomplished.~~

~~Surface soil samples will be collected with a trowel or scoop. To sample below 3 in. (8 cm), samples will be collected with a Veihmeyer soil sampler. Drums of solid residues will be sampled with a core sampler or Veihmeyer sampler. Drums unable to be sampled will be assumed to be hazardous waste.~~

~~E.4.7.1.1 Cleaning of sampler~~

~~It is important to clean the samplers after each site is sampled. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a warm Liquinox(@) or Alconox(@) solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped.~~

~~E.4.7.1.2 Sampling procedures trowel or scoop~~

~~Trowel or Scoop~~

- ~~Take small, equal portions of sample from the surface or near the surface of the material to be sampled.~~
- ~~Combine the samples in a glass container.~~
- ~~Cap the container, attach a label and seal, record in field log book, and complete the sample analysis request sheet and chain-of-custody record.~~

~~Veihmeyer Sampler~~

- ~~Assemble the sampler by screwing in the tip and drive head on the sampling tube.~~
- ~~Insert the tapered handle (drive guide) of the drive hammer through the drive head.~~
- ~~Place the sampler in a perpendicular position on the material to be sampled.~~
- ~~With the left hand holding the tube, drive the sampler into the material to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube further farther than the tip of the hammer's drive guide.~~
- ~~Record the length of the tube that penetrated the material.~~
- ~~Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.~~
- ~~Rotate the sampler at least two revolutions to shear off the sample at the bottom.~~
- ~~Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.~~
- ~~Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a pullerjack and grip.~~
- ~~Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.~~
- ~~Store the core sample in a 1,000 or 2,000 ml (1 qt or 1/2 gal) sample container.~~
- ~~Label the sample, affix the seals, record in the field log book, complete the sample analysis request sheet and chain-of-custody record, and deliver the samples to the laboratory for analysis.~~

~~E.4.8.2~~ ~~E.4.7.2~~ ~~Liquid Sampling~~

~~A coliwasa~~ ~~COLIWASA~~ ~~sampler or similar device will be used to sample water solutions in order to determine background parameters before washing the area; it will also be used to sample the dirty wash water used in cleaning equipment. The recommended model of the coliwasa~~ ~~COLIWASA~~ ~~is shown in Figure E.4.2, the main parts consisting of the sampling tube, the closure-locking mechanism, and the closure system. As an alternative to the coliwasa~~ ~~COLIWASA~~~~, glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of as hazardous waste after each sample is collected, thus eliminating the potential for cross-contamination.~~

~~E.4.8.2.1 E.4.7.2.1 Cleaning of sampler~~

~~The sampler must be clean before use. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The used sampler must be washed with a warm detergent solution (Liquinox(@) or Alconox(@)), rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the coliwasa COLIWASA is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Using this ramrod and fiber-reinforced paper towels, the COLIWASAcoliwasa tube may be quickly cleaned. Improper cleaning of sample equipment will cause cross-contamination of samples. Prevention of contamination is of particular importance in these samples. Clean samples should be stored in polyethylene plastic tubes or bags in a clean and protected area.~~

~~E.4.8.2.2 E.4.7.2.2 Sampling procedures~~

- ~~Assemble the coliwasa COLIWASA sampler.~~
- ~~Make sure that the coliwasa COLIWASA sampler is clean.~~
- ~~Check to make sure the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.~~
- ~~Wear necessary protective clothing and gear and observe required sampling precautions.~~
- ~~Put the sampler in the open position by placing the stopper rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.~~
- ~~Slowly lower the coliwasa COLIWASA sampler into the liquid at a rate that permits the levels of the Liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a non-representative sample.~~
- ~~When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.~~
- ~~Slowly withdraw the sampler from the container with one hand while wiping the sampler tube with a disposable cloth with the other hand.~~
- ~~Carefully discharge the sample into a glass container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block while the lower end of the sampler is positioned in the glass container.~~
- ~~Cap the glass container, attach a label and seal, record in the field log book, and complete the sample analysis request sheet and chain-of-custody record.~~

- ~~Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on-site or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.~~

~~E.4.8.3~~ E.4.7.3 ~~Sample Handling and Documentation~~

~~Soil and liquid samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and a sample analysis request form.~~

~~The sample container must be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. An example of a sample seal is shown in Figure E.4.3.~~

~~The sample label is necessary to prevent misidentification of samples and shall include, if applicable, the grid number referenced to positions staked on the site perimeter. The field information in the case of soil sampling, shall include observations such as the soil texture and surface appearance, ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling. An example of a sample label is shown in Figure E.4.4.~~

~~The chain-of-custody form is necessary to trace sample possession from the time of collection and must accompany every sample. This record becomes especially important when the sample is to be introduced as evidence in litigation. This is a two-page record with the original accompanying shipment and the copy retained by the Laboratory. An example of this form is shown in Figure E.4.5.~~

~~A separate closure sampling field log book will be kept and will contain all information pertinent to field surveys and sampling. The log book shall have bound and consecutively numbered pages in 8-1/12~~½ ~~by 11-inch format.~~

~~Minimum entries include:~~

~~a. Purpose of sample (routine sampling, special sampling);~~

~~b. Location of sampling (coordinates referenced to staked field points, if soil sample);~~

~~c. Name and address of person making log entry;~~

~~d. Type of process producing waste;~~

~~e. Number and volume of sample;~~

~~f. Description of each sampling location, sampling methodology, equipment used, etc.;~~

~~g. Date and time of sample collection;~~

~~h. Sample destination and transporter's name (name of laboratory, UPS, etc);~~

~~i. Map or photograph of the sampling site, if any;~~

~~j. Field observations (ambient temperature, sky conditions, past 24-hour precipitation, etc);~~

~~k. Field measurements, if any (pH, flammability, conductivity, explosivity, etc);~~

~~l. Collector's sample identification number(s);~~

~~m. Signature of person responsible for the log entry.~~

~~Sampling situations vary widely. No general rule can be given as to the extent of information that must be entered in the log book. A good rule, however, is to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.~~

~~The sample shipment and chain-of-custody record is accompanied by a sample analysis request sheet. The request sheet has two parts: field and laboratory. The field portion of this form must be completely by the person collecting the sample and include most of the pertinent information noted in the log book. The laboratory portion is intended to be completed by the laboratory personnel when the sample is received.~~

~~E.4.9 E.4.8 Quality Assurance/Quality Control~~

~~The Permittee shall designate a qualified individual or individuals to independently oversee the closure activities and report directly to senior management on the quality of the performance of this closure. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed and review the analysis reports for accuracy and adequacy. A written QA/QC plan in accordance with SW-846 guidance shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the adequacy of the analysis showing decontamination.~~

~~E.4.10 E.4.9 Final Closure Report~~

~~Upon completion of the closure activities, the Permittee shall submit a Final Closure Report to the Director Secretary. The report shall document the final closure and contain, at a minimum, the following:~~

~~A. The certification described in paragraph E.3.6E.4.6.~~

~~B. Any variance from the approved activities and the reason for the variance.~~

~~C. A tabular summary of all sampling results, showing:~~

~~1. Sample identification,~~

~~2. Sampling location,~~

~~3. The datum reported,~~

~~4. Detection limit for each datum,~~

~~5. A measure of analytical precision (e.g. uncertainty, range, variance),~~

~~6. Identification of analytical procedure, and~~

~~7. Identification of analytical laboratory.~~

~~D. A QA/QC statement on the adequacy of the analyses and the decontamination determination.~~

~~E. The location of the file of supporting documentation:~~

~~1. Field log books,~~

~~2. Laboratory sample analysis reports,~~

~~3. The QA/QC documentation, and~~

~~4. Chain of custody records.~~

~~F. Disposal location of all regulated and nonregulated residues.~~

~~G. A certification of accuracy of the report.~~

~~TABLE E.4.1.~~
~~CLOSURE SCHEDULE~~

~~Activity~~	~~Maximum Time Required~~
~~Preclosure~~	
~~Make decision to close~~	~~-380 Days~~
~~Characterize waste on hand~~	~~-360~~
~~Notify the EID NMED~~	~~-360~~
~~Complete final incineration~~	~~-330~~
~~Survey the building for radioactivity~~	~~-320~~
~~Prepare preliminary decommissioning document~~	~~-150~~
~~Prepare final decommissioning document~~	~~-100~~
~~Let contract request for proposals~~	~~-90~~
~~Receive proposals~~	~~-30~~
~~Select contractor and award contract~~	~~-10~~
~~Closure~~	
~~Begin closure activities~~	~~Day 0~~
~~Unit disassembly as required~~	~~Day 180~~
~~Internal washdown complete~~	~~Day 210~~
~~External washdown complete~~	~~Day 220~~
~~Floor washdown~~	~~Day 230~~
~~Final cleanup~~	~~Day 260~~
~~Decontamination verification~~	~~Day 310~~
~~Submit final report to EID NMED~~	~~Day 360~~

~~NOTE: The calendar days given above are completion dates for each activity. In some cases more than one activity may occur simultaneously.~~

~~TABLE E.4.2.~~
~~ANALYTICAL PARAMETERS AND METHODS~~

~~Metals~~	~~Organics~~	~~Other~~
~~Arsenic~~	~~Halogenated volatile organics~~	~~Cyanides~~
~~Barium~~	~~Nonhalogenated volatile organics~~	~~Ignitability~~
~~Cadmium~~	~~Acid-extractable semivolatile organics~~	~~Reactivity~~
~~Selenium~~	~~Base-neutral extractable semivolatile organics~~	~~pH~~
~~Lead~~	~~Phenols~~	
~~Mercury~~	~~Organochloride pesticides~~	
~~Berylium~~ Beryllium	~~Chlorinated herbicides~~	
~~Chromium~~		
~~Silver~~		
~~Nickel~~		

~~NOTES: Analytical methods are taken from *Test Methods for Evaluating Solid Waste*, EPA-SW-846, and may be superseded by more current methods from SW-846 or alternate EPA-approved methods.~~

~~Metals may be analyzed for total content. Any metal whose total concentration exceeds the standard for Extraction Procedure Toxicity~~ the toxicity characteristic ~~shall be analyzed by Extraction Procedure Toxicity procedures~~ the Toxicity Characteristic Leaching Procedure~~. Both data shall be reported in the final report.~~

~~TABLE E.4.3.~~
~~SAMPLING SUMMARY~~

~~Material Sampled~~	~~Metals~~	~~Organics~~	~~Other~~
~~Washwater Wash water before use~~	~~X~~	~~X~~	~~X~~
~~Washwater Wash water after use~~	~~X~~	~~X~~	~~X~~
~~Solid wastes & residues~~	~~X~~	~~X~~	~~X~~
~~Protective clothing washwater wash water~~		~~X~~	

~~NOTE: Analytical parameters are given in Table E.4.2.~~

~~**FIGURE E.4.1.**~~

~~**LOCATION OF TA-50**~~
~~**CHEMICAL WASTE INCINERATOR AND CONTAINER STORAGE UNITS**~~

~~**FIGURE E.4.2.**~~

~~**COMPOSITE LIQUID WASTE SAMPLER (COLIWASA)**~~

~~FIGURE E.4.3~~
~~EXAMPLE OF SAMPLE SEAL~~

~~OFFICIAL SAMPLE SEAL~~

~~Collected by _____ Collector's sample No._____~~
~~(Signature)~~

~~Date Collected_____ Time Collected_____~~

~~Place Collected_____~~

_____

_____

~~FIGURE E.3.4~~
~~EXAMPLE OF SAMPLE LABEL~~

~~OFFICIAL SAMPLE LABEL~~

~~Collector_____ Collector's Sample No._____~~

~~Place of Collection_____~~

_____

~~Date Sampled_____ Time Sampled _____~~

~~Field Information_____~~

_____

_____

FIGURE E.3.5
CHAIN OF CUSTODY RECORD
Hazardous Materials
Collector's Sample No.____

Location of Sampling: Producer Hauler
Disposal Site Other: _____

Company's Name_____ Telephone (____)_____

Address_____
Number Street City State Zip

Collector's Name_____ Telephone (____)_____

Date Sampled_____ Time Sampled_____ hours

Type of Process Producing Waste_____

Waste Type Code_____ Other_____

Field Information_____

Sample Allocation:

1. _____
(Name of Organization)

2. _____
(Name of Organization)

3. _____
(Name of Organization)

Chain of Possession:

1. _____ _____ _____
Signature Title Inclusive Dates

2. _____ _____ _____
Signature Title Inclusive Dates

3. _____ _____ _____
Signature Title Inclusive Dates

AMENDED
CLOSURE PLAN

ATTACHMENT E.4
DISMANTLEMENT REVISION

AMENDED CLOSURE PLAN
PERMIT ATTACHMENT E.4.
DISMANTLEMENT REVISION
NM 0890010515-1

E.4 Chemical Waste Incinerator

The chemical waste incinerator [Controlled Air Incinerator (CAI)] is located in Building 37 at Technical Area 50 (Figure E.4.1) of the Los Alamos National Laboratory (LANL). The original CAI was installed in 1977 and first operated in 1978. The CAI and associated systems were originally research and development (R&D) tools used to prove the viability of incineration as a treatment method for TRU waste. R&D testing ceased in 1987 so that modifications (upgrades) to the system, identified during the initial phase of operation, could be performed. RCRA trial burns were conducted just prior to the cessation of R&D activities. Between 1978 and 1987 a total of 36 campaigns had been completed at the CAI.

LANL received its Hazardous Waste Facility Permit on November 8, 1989 and activities after that date have been in accordance with its permit. Hazardous wastes currently in storage at LANL pursuant to LANL's Hazardous Waste Facility Permit are being managed through shipment off site for treatment and disposal.

The CAI is rated at a nominal 45 kilograms per hour waste feed throughput. The CAI is currently authorized to incinerate Toxic Substance Control Act (TSCA) regulated waste and permitted to incinerate Resource Conservation and Recovery Act (RCRA) regulated waste.

The incinerator was upgraded prior to permit issuance in November 1989 to add liquid waste tanks, solid waste feed preparation lines, a gravity ash removal system, a high-efficiency off-gas cleanup system, and backup utility systems. The combustion chamber was modified to permit effective incineration of waste in solid, liquid, slurry, or gaseous form. Particular attention continues to be given to engineering for proper containment of radioactivity.

CAI system modifications and upgrades since permit issuance were intended to replace equipment due to normal wear or to upgrade existing equipment for routine operations. Upgrades focused on increased component life, increased corrosion resistance, and improved electronics. Modifications for these changes to the CAI were submitted on June 1995 to NMED for its review and approval.

A review of the feed summary data for the CAI indicates that between May 1978 and March 1987, a total of 36 campaigns had been

completed. The feed summary data indicate that the CAI was not used to burn listed wastes. Characteristic waste was included in Run 23. Run 23, March 1987 included ignitable (D001) waste scintillation fluids absorbed by corn cob fractions. The scintillation fluids meet the definition of characteristic as defined at 40 CFR 261 Subpart C *Identification of Characteristic Waste*. The CAI campaigns included equipment checks, treatability studies, efficiency studies, incineration of PCB contaminated materials under TSCA, a RCRA trial burn, and burns of transuranic (TRU) wastes. Eight of the 36 CAI campaigns involved radioactive components. A comprehensive feed summary is provided in Appendix 1.

This closure plan is limited to CAI components to demonstrate closure. This closure plan does not include the building utilities, the building structure, or the waste storage areas located within TA-50, Building 37. Closure activities will be conducted concurrent with the dismantlement and removal of the CAI from the site. During RCRA and TSCA closure, CAI components (i.e., combustion chambers, exhaust ducts, quenching tower, absorption tower, high efficiency particulate air [HEPA] filters, carbon bed adsorber, exhaust stack, ash removal system, liquid waste feed system, and gloveboxes) will be sampled and surveyed to identify the presence of radiological and hazardous contamination. Decontamination activities will be conducted to support reuse and reclamation to the extent practicable. Materials that cannot be reused or reclaimed and wastes generated from decontamination will be characterized using sample results and waste analysis. The refractory used in the incinerator contains chromium, a characteristic hazardous waste for toxicity. The incinerator refractory, if disposed, will be sampled and managed in accordance with the results of sampling and survey analysis. If the waste is determined to contain hazardous constituents it will be disposed of in a RCRA permitted treatment, storage, or disposal facility (TSDF).

E.4.1 Estimate of Maximum Waste in Storage and Treatment

No hazardous wastes are currently in storage for treatment at the CAI. Therefore, the CAI will have no inventory of hazardous waste at the time of closure.

E.4.2 Description of Waste Handled

The CAI and the exhaust gas treatment systems are capable of combusting a variety of wastes, including RCRA-regulated hazardous waste, mixed waste, TSCA-regulated PCB waste, low-level radioactive waste, and TRU waste. The hazardous and mixed waste feeds initially intended for treatment at the CAI included a mixture of

liquid and solid hazardous wastes composed of various organic solvents and liquids, as well as chemically-contaminated paper, wood, and plastics. As stated earlier in this plan, these hazardous waste streams are being treated at off-site commercial facilities. Mixed wastes are planned to be treated on-site in other units or at other alternative commercial and internal facilities with capacity to treat and dispose of mixed wastes. The CAI was permitted to burn all HWMR-5, Part II, Appendix VIII constituents with an incinerability ranking equal to or better than carbon tetrachloride (for the CAI, the incinerability ranking is based on organics with a heat capacity greater than carbon tetrachloride).

A review of feed summary data indicates that the CAI was not used to burn any RCRA-regulated wastes that contain HWMR-5, Part II, Appendix VIII constituents. However, as stated previously, Run 23 contained waste scintillation fluids that meet the definition of characteristic waste. Appendix 1 summarizes the feed summary data, the run date, feed description, and basis for regulatory status of the feed material.

E.4.3 Closure Procedure

LANL will conduct RCRA closure of the CAI based on the documentation that no RCRA-regulated listed wastes were treated in the unit and that the ignitable characteristics of Run 23 were treated through incineration as specified at 40 CFR Part 268 Appendix VI. To ensure that closure of the CAI is protective of both human health and the environment, LANL will conduct sampling of the CAI, as described in Section E.4.4 of this closure plan, to verify that no HWMR-5, Part II, Appendix VIII hazardous constituents are present.

Radiological surveys will also be conducted to ensure that the requirements of U.S. Department of Energy (DOE) Orders 5400.5 "Radiation Protection of the Public and the Environment" and 5820.2A "Radioactive Waste Management" are met. TSCA closure activities of the CAI will be conducted concurrent with dismantlement, removal, and RCRA closure.

E.4.3.1 Partial Closure

Partial RCRA closure of the CAI is not being pursued. The CAI is to be closed as a RCRA unit including, but not limited to, the combustion chambers, all waste feed, exhaust, filter, and residue management components.

E.4.3.2 Final Closure

This section describes closure of the CAI. At the beginning of closure, the CAI will be surveyed for radioactive contamination to determine radiological boundaries and personal protective equipment (PPE) requirements. Once radiological boundaries are established, swipe samples will be taken and analyzed to verify the absence of hazardous constituent contamination. Verification will consist of sampling the principal CAI components throughout the system that have been in contact with material feeds, residues, or secondary wastes. If RCRA hazardous contamination is found, components amenable to decontamination will be cleaned with detergent solution and/or steam cleaning. The spent cleaning solution will be collected and analyzed for hazardous constituents. If no constituents are detected statistically above background, these components will be deemed decontaminated and can then be reused or disposed of as waste. If components are not amenable to decontamination, they will be managed as newly generated hazardous, toxic, or mixed waste, as indicated through waste analysis, in accordance with Laboratory procedure. All radioactive components will be decontaminated to the extent practicable and disposed of according to appropriate DOE Orders. Sampling procedures are described below in Section E.4.8 of this closure plan. Samples will be analyzed for the hazardous constituents listed in Table E.4-2.

Analytical results will be used to verify the absence of hazardous constituents in the CAI components or qualify the regulatory status of CAI waste. These analytical results along with the documentation of CAI closure activities will be used to validate

E.4.3.3 Amendment of the Closure Plan

If it is necessary to amend this closure plan, LANL will submit a written notification of, or request for, a permit modification describing any change in operation or unit design that could affect the closure plan. The written notification or request will include a copy of the amended closure plan for approval by the NMED. LANL will submit a written notification of, or a request for, a permit modification to authorize a change in the approved plan if either of the following occur:

1. There are changes in operating plans, unit design, or waste types treated that affect the closure plan

2. Unexpected events occur during closure that require modification of the approved closure plan

LANL will submit a written request for a permit modification with a copy of the amended closure plan no later than 60 days after an

occurrence of an unexpected event that affects the closure plan. If the unexpected event occurs during closure, the permit modification will be requested within 30 days of the occurrence. If the Secretary of the NMED requests a modification of the closure plan during closure, a closure plan modified in accordance with the request will be submitted within 30 days of notification.

E.4.4 Verification of No Contamination

Sampling for verification will be based on a biased sampling plan. Sample locations will be determined using engineering judgement and knowledge of the CAI system layout and past operation to obtain samples from principal treatment components with the highest likelihood for contamination (Figure E.4-5). Additionally, a minimum of one sample will be collected from an area with a low probability of contamination as a check on the biased sampling location data. This should provide a conservative data base from which a determination that RCRA constituents are absent can be made.

Multiple samples from selected locations will be acquired to provide adequate statistical data control. The samples to be collected from each location, as well as the specific location and sampling method, will be specified in the QA/QC plan. Initial sampling locations are listed below:

- Solid Waste feed — Sampling of the solid waste feed glovebox
- Liquid waste feed — Sampling of the liquid waste feed tanks
- Quenching tower — Sampling of the quenching tower
- Adsorption tower — Sampling of the adsorption tower
- HEPA filters — Sampling of the outlet from the HEPA filter back
- Activated carbon adsorber — Sampling of the inside housing of the activated adsorber
- Exhaust stack — Sampling of the inside of the exhaust stack

- Ash Removal System Sampling of the gravity ash dropout hopper

- Combustion Chamber Sampling of the combustion chamber

The constituents listed in Table E.4-2 include regulated constituents which were expected to be treated in the unit. A scan for volatile and semivolatile organics will be performed to ensure that solvents commonly used at LANL have not contaminated the unit. Two field blanks will be prepared and analyzed for the constituents listed in Table E.4-2. Analytical results from field blanks and control samples of the solid waste feed glovebox will provide background data for verification of the absence of contamination. The glovebox was chosen as a control location because the component has never been used for managing wastes. Analytical procedures will conform to U.S. EPA SW-846 methods. CAI components will be considered to be contaminated if verification samples show a statistically significant increase in the listed constituents over the field blank and control samples.

LANL will carefully review all operational and sampling analytical data to provide for a determination of whether there has been a release external to the incinerator. If a release has occurred, the appropriate decontamination and verification sampling will be done by LANL. Such sampling would include the structures within the building, building floors, etc., plus environmental media (e.g. soils) if it should be so indicated. All sampling and analysis plans, which are not addressed procedurally in this Closure Plan, are subject to the approval of NMED.

Absence of hazardous contamination will be verified if:

1. No hazardous constituents are detected in samples from the CAI locations, or

2. Hazardous constituents detected in samples from the CAI locations are equal to or less than, at the 0.01 confidence level, their concentration in the unused wash water field blank or background sample.

E.4.5 Verification of Decontamination

Sampling will be used to verify the success of decontamination activities used during CAI closure. Before decontaminating a CAI component, two samples will be taken of the clean wash solution and analyzed for the constituents listed in Table E.4-2 of this attachment. These analytical results will provide background data for decontamination verification.

Dirty wash-down solutions will be analyzed for the constituents listed in Table E.4-2. Analytical procedures will conform to the methods found in SW-846. Components will be considered contaminated if the dirty wash solutions show a significant increase in the listed constituents over the clean wash solution.

Successful decontamination for each component is defined as one of the following:

1. No detectable hazardous constituents in the final sample.

2. Detectable hazardous constituents in the final sample are equal to or less than, at the 0.01 confidence level, their concentration in the unused wash water or background sample.

An alternative demonstration of decontamination may be proposed and justified at the time of closure as circumstances indicate. The Secretary will evaluate the proposed alternative in accordance with the standards and guidance in effect and, if approved, incorporate, by permit modification, the alternative into the closure plan.

E.4.6 Closure Schedule

Closure activities will be conducted in accordance with an approved closure plan. The year of closure for the CAI is estimated to be 1996. The closure schedule is provided in Table E.4-1. Federal Acquisition Regulations require competitive procurement in obtaining contract support for this type of effort, therefore contracts will be secured before closure begins. The closure activities described in this plan are estimated to take 250 days.

In the event that closure or closure activities cannot be completed at the CAI within 250 days of notification of closure to the New Mexico Environment Department (NMED), LANL will notify the Secretary of the NMED in accordance with extension requirements.

E.4.7 Closure Certification

An independent registered professional engineer and the Permittee or his representative shall witness the closure and ensure that the closure follows this plan. Upon completion of closure, the engineer and the DOE shall prepare a letter certifying that the facility has been closed in accordance with this plan. The letter shall be dated and signed by each party, stamped by the registered professional engineer, and the original copy submitted by the DOE to the Secretary of NMED. One copy shall be maintained at the DOE office and one copy maintained by LANL.

E.4.8 Sampling and Analytical Procedures

This section describes the procedures and methods used for sampling and analysis. While the procedures and methods are specific, any applicable procedure or method given in the current update of *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (SW-846) may be used if conditions or experience shows the alternate method to be more appropriate. All analytical procedures actually used will be annotated in the final closure report.

Samples will be taken, placed in bottles, sealed, tagged, and immediately packed in vermiculite, sawdust, or, if refrigeration is required, an insulated container with ice. Sample containers appropriate for the requested analyses will be used for all samples. Requirements for sample containers, preservation, and holding times are summarized in Tables E.4-3 and E.4-4. Disposable sampling equipment may be used.

Personal protective clothing and respirator protection will be worn at all times as identified by LANL's Industrial Hygiene and Safety Group and in the approved Radiological Work Permit. Sampling activities will be conducted in a manner to ensure that worker exposure levels are maintained as low as reasonably achievable (ALARA).

E.4.8.1 Analytical Procedures

All sample analyses will be conducted using methods prescribed in the current update of SW-846, including those for quality assurance/quality control (QA/QC). Target detection limits, analytical methods, and instrumentation for metals, organics, and miscellaneous analyses are listed in Tables E.4-5, E.4-6, and E.4-7.

E.4.8.2 Field and Laboratory Quality Assurance Quality Control

QC activities will include collection of the following samples: trip blanks, duplicate or split samples, field blanks, and equipment rinsate blanks. QC samples are described in this section and summarized in Table E.4-8. QC samples will be analyzed for the same parameters as the verification samples (Table E.4-1). QC samples will be assigned unique identification numbers (similar to verification sample numbers) that do not indicate to the laboratory that the samples are for QA/QC purposes.

A trip blank will be prepared whenever samples are collected for volatile organic compounds analysis. The trip blank is a sample container filled with organic-free deionized water. The filled container is taken to the sampling site in the cooler or sample

carrier, remains unopened, and is shipped to the analytical laboratory along with the samples. One trip blank will be included per cooler or sample carrier.

One sample for every ten samples will be either duplicated or split. The duplicated or split sample will be identified by a code so that its source is not available to the analytical laboratory, but analytical results can be compared to its twin.

Blank samples collected will include field blanks and equipment rinsate blanks. A field blank is a sample collected to assess the ambient conditions at the sampling site. The field blank for verification of no contamination is a swipe prepared in the laboratory that will be opened to the ambient conditions of the site, removed with sampling tongs, and replaced into the sampling container. A field blank for decontamination verification is a sample of organic-free deionized water poured into a sample container under normal sampling conditions. Frequency of blank samples will be 1 in 20 samples. If fewer than 20 samples are collected, at least one blank sample will be collected. An equipment rinsate blank is collected to assess the cleanliness of the sampling equipment. The sampling equipment is cleaned according to the procedures described below in Section E.4.8.3, then organic-free deionized water is poured over the decontaminated equipment's sampling surface and collected in a sample container.

Instrument calibration and maintenance are field activities subject to QC procedures. Field equipment requiring calibration will be calibrated and maintained using the manufacturer's instructions and appropriate standard operating procedures.

LANL will ensure that the on-site or contract analytical laboratory operates under a quality assurance program plan (QAPP) which meets the requirements in the current update of SW-846. QC procedures in the analytical laboratory are guided by their QAPP. In order to assess the quality of the analytical data, the analytical laboratory is required to run QC samples to establish accuracy and precision. Laboratory QC procedures are summarized in Table E.4-9.

E.4.8.3 Cleaning of Sampling Equipment

To prevent cross-contamination of samples, sampling equipment will be cleaned prior to each use with a warm soap solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped. A disposable sampler may be presumed clean if still in a factory sealed wrapper.

E.4.8.4 Refractory Sampling

All collectable treatment residues have been removed from the CAI and therefore the only sampling of solids will be of the refractory lining in the combustion chamber. The refractory lining is a porous material that is imbedded with ash and is not amenable for removal using incinerator operating procedures. A representative sample of the refractory material will be obtained as follows:

1. Use a clean brush to scrub small, equal portions of material from the surface of the refractory lining at several locations along the bottom of the chamber.

2. Combine the material in the container until the gram volume of sample required for the analysis is obtained.

3. Cap the sample container and attach a label and seal.

4. Record sampling information in the field log book as described in Section E.4.8.

5. Complete the sample analysis request form and chain-of-custody record.

E.4.8.5 Swipe Sampling

Swipe samples will be taken to identify hazardous constituent contamination on CAI components. Samples will be collected by swiping areas of components identified in Section E.4.4 that have the greatest likelihood for contamination (e.g., stains, seams, basins). Swipe samples will be conducted as follows:

1. Use a standardized template [10 centimeters (cm) x 10 cm] to delineate the area of sampling.

2. Use a gauze pad or glass wool of known size and weight, saturated with the appropriate solvent (e.g., organic-free deionized water, hexane, acetone) for the swiping medium. The gauze, or glass wool, will be prepared in the laboratory with the analyte designation noted on the label prior to entry to the field.

3. Store the swiping medium in sealed glass vials until it is used for the swipe test.

4. Perform the swipe very quickly after air exposure to avoid losing the solvent medium.

5. Place swipes into sample containers immediately upon completion of the swipe.

6. Close, label, and seal the sample container to ensure the integrity of the sample.

7. Record sampling information in the field log book as described in Section E.4.9.

8. Complete a LANL sample analysis request form and a chain-of-custody record for each sample.

E.4.8.6 Liquid Sampling

To determine whether CAI components have been successfully decontaminated, wash water used in the decontamination process will be sampled to identify the presence or absence of contamination. Waste water generated from such decontamination activities will be managed in accordance with applicable regulations. Wash water solutions will be sampled before use to determine background parameters; dirty wash water used in cleaning components will also be sampled in order to identify any hazardous constituent contamination. Samples will be collected by spraying wash solution onto areas of the components identified in Section E.4.8 that have the greatest likelihood for contamination (e.g., bends, horizontal surfaces, seams, basins). Brushes may be used to help dislodge particulate and laminated residues from the surfaces of the sampling area. Washed areas will be rinsed and all waters collected using vacuum or manual pumps. The volume of wash water collected will be recorded in the log book. Wash waters will be transferred to sampling containers using glass tubes to obtain representative samples as follows:

1. Spray wash solution onto areas of the sampling location that have the greatest likelihood for contamination (e.g., bends, horizontal surfaces, seams, basins, etc.).

2. If areas of slag, ash, or lacquer remain after spraying, use a sampling brush to dislodge the material.

3. Use vacuum or pump to collect washwaters from the sampling location. Use caution not to allow washwaters to migrate from the sampling area.

4. Ensure that sampling equipment is present (glass tube with stopper, sample container, laboratory wipe, pen, etc.). Ensure that the stopper provides a tight closure.

5. Slowly lower the glass tube into the liquid at a rate that permits the levels of the liquid inside and outside the glass tube to be about the same. If the level of the liquid in the glass tube is lower than that outside the glass tube, the sampling rate is too fast and will result in a nonrepresentative sample.

6. When the glass tube hits the bottom of the liquid container, push the stopper in to close the glass tube.

7. Slowly withdraw the glass tube from the container with one hand while wiping the glass tube with a disposable cloth with the other hand.

8. Carefully discharge the sample into a sample container by slowly opening the glass tube. This is done by slowly pulling the stopper from the glass tube while the lower end of the sampler is positioned in the sample container.

9. Cap the sample container and attach a label and seal.

10. Record sampling information in the field log book as described in Section E.4.9.

11. Complete the sample analysis request form and chain-of-custody record.

E.4.9 Sample Handling and Documentation

Samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and a sample analysis request form.

The sample container will be sealed with a gummed paper seal attached to the container in such a way that the seal will be broken in order to open the container. The seal and sample label will be completed with a waterproof pen. An example of a sample seal is shown in Figure E.4.2.

The sample label is necessary to prevent misidentification of samples and shall include, if applicable, the sample location number referenced to CAI components. The site information will include information necessary to identify the area sampled within the component specified (e.g., sump basin of the quenching tower). An example of a sample label is shown in Figure E.4.3.

The chain-of-custody record is necessary to trace sample possession from the time of collection and will accompany every sample. This

chain-of-custody record consists of two pages with the original accompanying the shipment and the copy retained by LANL. An example of this form is shown in Figure E.4.4.

A separate closure sampling log book will be kept and will contain all information pertinent to closure surveys and sampling. The log book shall have bound and consecutively numbered pages in an 8-1/2 by 11-inch format.

Minimum entries shall include:

a. Purpose of sample (closure sampling)

b. Location of sampling (component name and location)

c. Name and address of person making log entry

d. Type of sampling process

e. Number and volume of sample

f. Description of each sampling location, sampling methodology, equipment used, etc.

g. Date and time of sample collection

h. Sample destination and transporter's name (name of laboratory, United Parcel Service, etc.)

i. Diagram or photograph of the sampling location, if any

j. Field observations (radiological status, break in utility service, etc.)

k. Field measurements, if any (pH, flammability, conductivity, explosivity, etc)

l. Collector's sample identification number(s)

m. Signature of person responsible for the log entry

Sampling situations vary widely. No specific rule can be given as to the extent of information that will be entered in the log book. Sufficient information will be recorded so that the sampling situation can be reconstructed without relying on the collector's memory.

The sample shipment and chain-of-custody record is accompanied by a sample analysis request form. The sample analysis request form

has two portions: field and laboratory. The field portion of this form will be completed by the person collecting the sample and include most of the pertinent information noted in the log book. The laboratory portion will be completed by the laboratory personnel when the sample is received.

E.4.10 Quality Assurance/Quality Control

The Permittee shall designate a qualified individual or individuals to independently oversee the closure activities and report directly to LANL management on the quality of the performance of this closure. This individual will personally observe a portion of the key activities, ensure that sample blanks are obtained, and review the analytical reports for accuracy and adequacy. A written QA/QC plan in accordance with SW-846 guidance shall be prepared and followed, with variations from the QA/QC plan documented and explained. The designated individual shall prepare a written statement for the final closure report commenting on the adequacy of the analysis verifying closure.

E.4.11 Final Closure Report

Upon completion of the closure activities, the Permittee shall submit a final closure report certified by a New Mexico independent reegistered professional engineer to the Secretary of NMED. The report shall document the final closure and contain, at a minimum, the following:

a. The certification described in paragraph E.4.6

b. Any variance from the approved activities and the reason for the variance

c. A tabular summary of all sampling results (including QC sample results), showing:

   1. Sample identification
   2. Sampling location
   3. The datum reported
   4. Detection limit for each datum
   5. A measure of analytical precision (e.g. uncertainty, range, variance)
   6. Identification of analytical procedure
   7. Identification of analytical laboratory

d. A QA/QC statement on the adequacy of the analyses and the decontamination determination

e. The location of the file of supporting documentation:

1. Log books
2. Laboratory sample analysis reports
3. The QA/QC documentation
4. Chain of custody records

f. Disposal location of all regulated and nonregulated residues

g. A certification of accuracy of the report

TABLE E.4-1

Closure Schedule
Controlled Air Incinerator[a]

Activity	Maximum Time Required[b]
Preclosure Let contract request for proposals	-70
Receive proposals	-40
Select contractor and award contract	-10
Closure Begin closure activities	Day 0
Survey CAI external components, associated external subsystems, for radiological contamination	Day 30
Obtain samples for RCRA hazardous waste constituents and submit for analysis	Day 75
Receive sample analysis	Day 105
Obtain additional samples (if necessary)	Day 135
Receive sample analysis (if necessary)	Day 180
Obtain certification of closure	Day 240
Submit final closure report to NMED	Day 250

[a]Assumes RCRA closure; no incineration of RCRA hazardous wastes or hazardous constituents; and sample
and analysis of the CAI and associated external subsystems.
[b]The schedule above indicated calendar days from the beginning of closure by which activities will be completed.
Some activities may be conducted simultaneously.

TABLE E.4-2

Analytical Parameters for CAI

Concentration of Metals	Organics	Other
Arsenic Barium Beryllium Cadmium Chromium Lead Mercury Nickel Selenium Silver Thallium	Halogenated volatile organics Nonhalogenated volatile organics Acid-extractable semivolatile organics Base-neutral extractable semivolatile organics	Cyanides Ignitability Corrosivity/pH

Metals will be analyzed for total content.

Any metal whose total concentration nears, equals, or exceeds the standard for the Toxicity Characteristic Leaching Procedure (TCLP) will be analyzed using TCLP methods. All data will be provided in the final closure report.

Analytical methods will follow those provided in "Test Methods for Evaluating Solid Waste," U.S. Environmental Protection Agency (EPA) SW-846, and may be superseded by more current methods from SW-846 or alternate EPA-approved methods.

TABLE E.4-3

Sample Containers, Preservation, and Holding Times for Liquid Samples

Analyte Group	Container	Preservative	Holding Time
Target compound volatile organics	2 x 40 ml G[e] septa vials	HCl[b], Cool 4°C	14 days from field collection to determinative analysis
Target compound semivolatile organics	2 x 1 liter AG[a] (teflon lined caps)	Cool 4°C[1]	7 days from field collection to preparative extraction 40 days from preparative extraction to determinative analysis
Target analyte metals (except mercury)	1 liter P[c] or G[e]	HNO_3[d] to pH < 2	180 days from field collection to determinative analysis
Mercury	1 liter P[c] or G[e]	HNO_3 to pH < 2 Cool 4°C	28 days from field collection to determinative analysis
Cyanides	P[c] or G[e]	NaOH[f] to pH ≥ 12 Cool 4°C[2,3]	14 days from field collection to sample preparation
Corrosivity/pH	1 liter P[c] or G[e]	N/A	As soon as possible for pH
Ignitability	1 liter P[c] or G[e]	N/A	

[a]AG = Amber glass
[b]HCl = Hydrochloric acid (if no residual chlorine is present, adjust the pH < 2 with HCl, H_2SO_4 or $NaHSO_4$, if residual chlorine is present, add sodium thiosulfate [4 drops of 10 percent solution]).
[c]P = Polyethylene
[d]HNO_3 = Nitric acid
[e]G = Glass
[f]NaOH = Sodium hydroxide, 50 percent

[1]If residual chlorine is present, add 3 ml of 10 percent sodium thiosulfate per gallon.
[2]Determination of presence of oxidizing agents and treatment thereof to be performed as per SW-846 Method 9010A.
[3]Detergents and surfactants, if a problem, can be extracted as described in SW-846 Method 9010A.

Source: SW-846, Update I and Update II

TABLE E.4-4

Sample Containers, Preservation, and Holding Times for Refractory Samples

Analyte Group	Container	Preservative	Holding Time
Target compound volatile organics	8 oz WM[a]-G[b] Septum-sealed	Cool 4°C	14 days from field collection to determinative analysis or TCLP extraction 14 days from TCLP extraction to determinative analysis
Target compound semivolatile organics	2 x 120 ml WM[a]-G[b] Teflon-lined cap	Cool 4°C	14 days from field collection to TCLP extraction 7 days from field collection or TCLP extraction to preparative extraction 40 days from preparative extraction to determinative analysis
Target analyte metals (except mercury)	8 oz WM[a]-G[b] or P[c]	Cool 4°C HNO_3[d]	180 days from field collection to determinative analysis or TCLP extraction 180 days from TCLP extraction to determinative analysis
Mercury	1 liter P[c] or WM[a]-G[b]	HNO_3[d] to pH < 2	28 days from field collection to determinative analysis or TCLP extraction 28 days from TCLP extraction to determinative analysis
Cyanides	G[b] or P[c]	Cool 4°C[1]	14 days from field collection to sample preparation

[a]WM = Wide-mouth
[b]G = Glass
[c]P = Polyethylene
[d]HNO_3 = Nitric acid - Preservative not added until after TCLP extraction. Preservative added to the extract.

[1]Solid may be extracted prior to analysis by SW-846 Method 9013.

Source: SW-846, Update I and Update II

TABLE E.4-5

Target Detection Limits, Analytical Methods, and Instrumentation for Metals Analysis

Analyte	Target Detection[a] Limit (μg/L)	EPA SW-846 Analytical Method	Instrumentation[b]
Arsenic	10	6010A, 7060A	ICP, GFAA
Barium	200	6010A, 7080A, 7081	ICP, FLAA, GFAA
Beryllium	5	6010A, 7090, 7091	ICP, FLAA, GFAA
Cadmium	2	6010A, 7030, 7131A	ICP, FLAA, GFAA
Chromium	10	6010A, 7190, 7191	ICP, FLAA, GFAA
Lead	5	6010A, 7420, 7421	ICP, FLAA, GFAA
Mercury	0.2	7470A	CVAA
Nickel	40	6010A, 7520	ICP, FLAA
Selenium	5	6010A, 7740	ICP, GFAA
Silver	10	6010A, 7760A, 7761	ICP, FLAA, GFAA
Thallium	10	6010A, 7840, 7841	ICP, FLAA, GFAA

[a]Detection limits listed are for drinking water. Actual detection limits may be higher depending on sample composition and matrix type.
[b]ICP - Inductively Coupled Plasma Emission Spectroscopy
GFAA - Graphite Furnace Atomic Absorption Spectroscopy
FLAA - Flame Atomic Absorption Spectroscopy
CVAA - Cold Vapor Atomic Absorption Spectroscopy

TABLE E.4-6

Target Detection Limits[a], Analytical Methods, and Instrumentation for Organics Analysis

Analyte (Group)	Regulatory Limits	EPA SW-846 Analytical Method	Instrumentation[b]
Target Compound List Volatiles + 10 Tentatively Identified Compounds (TICs)	10 µg/L water 10-120 µg/kg solids	8240B, or 8260A	GC/MS
Target Compound List Semivolatiles + 20 TICs	10 µg/L water 330-50,000 µg/kg solids	8250A, or 8270B	GC/MS

[a]Detection limits expressed as practical quantitation limits.
[b]GC/MS = Gas chromatography/mass spectrometry

NOTE: µg/L and mg/L used for liquid samples and TCLP extracts.
µg/kg and mg/kg used for residues.
Use the most appropriate for the magnitude of the number.

TABLE E.4-7

Analytical References
for Miscellaneous Methods

Analyte/Property	EPA SW-846 Analytical Method
Cyanides	9010A
Corrosivity/pH	9040B or 9045C and 1110
Ignitability	1020A or 1010
TCLP[1]	1311

[1]Toxicity Characterization Leaching Procedure is to be utilized for the analysis of refractory samples.

TABLE E.4-8

Summary of Field Quality Control Samples

QC Sample Type	QC Sample Matrix	Applicable Analysis	Frequency	Purpose	Acceptance Criteria	Corrective[a] Action
Trip Blank	Water	Volatiles	One set (2) per shipping cooler containing samples	Monitor possible sample contamination in field	-[b]	Advisory—no action required
Field Blank	Water	Volatiles, Semivolatiles, Metals	One sample per sampling event (can prepare and hold pending sample results)	Monitor field sample contamination/ air contamination	-[b]	Advisory—no action required
Field Duplicate	Refractory/ Water	Volatiles, Semivolatiles, Metals, TCLP	One for every 20 samples or 5 percent minimum	Documents precision of sampling process	Analytical method criteria, if applicable	Advisory—no action required
Equipment Rinsate Blank	Wash water	Volatiles, Semivolatiles, Metals	One sample per day (can prepare and hold pending sample results)	Monitor decontaminatio n effectiveness and sample cross contamination	-[b]	Advisory—no action required

[a]EPA Functional Guidelines for Data Validation may apply.
[b]For volatiles and semivolatiles analysis, if blank shows detectable levels of any common laboratory contaminant (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.
Source: SW-846, Update I and Update II

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TABLE E.4-9a

Summary of Laboratory Quality Control Procedures
by Analytical Method

Target Compound Volatile Organics

EPA SW-846 Analytical Method	Quality Control Check	Frequency	Acceptance Criteria	Corrective Action
8240B or 8260A	Instrument performance: mass calibration/ion abundance pattern	Every 12 hours of analysis time or every batch	Per method	Repeat until acceptance criteria satisfied
	Initial calibration: instrument sensitivity and linearity of response	Five concentration levels; after any instrument performance failure; check prior to sample analysis	Meet SPCCs[a] and CCCs[b] criteria per method	Repeat calibration
	Continuing calibration	Every 12 hours of analysis time or every batch	Meet SPCCs and CCCs criteria per method	Determine problem, correct and reanalyze a continuing calibration or recalibrate.
	Internal standards	Added to all calibration standards, field samples, QC[c] samples, and blanks	Extracted ion current profile (EICP)[a]; Δ -50% to +100% Retention time shifts < 0.50 minutes[e]	Correct malfunction; reanalyze sample per method criteria
	Method blank	Every 12 hours of analysis time or every batch	< 5 times quantitation limit for methylene chloride, acetone, 2-butanone; all other compounds ≤ quantitation limit	Determine source of contamination and document corrective action; reanalyze samples
	Matrix spike and matrix spike duplicate	Each analytical batch	Per method	Prepare and analyze QC reference standard per method

TABLE E.4-9a

Summary of Laboratory Quality Control Procedures
by Analytical Method

Target Compound Volatile Organics
(Continued)

EPA SW-846 Analytical Method	Quality Control Check	Frequency	Acceptance Criteria	Corrective Action
8240B or 8260A (Continued)	System monitoring compounds (surrogate compounds)	Every calibration standard, method blank, QC sample, field sample, matrix spike, matrix spike duplicate	Per method and matrix	Check instrument and calculations; reanalyze per method criteria

[a]SPCC = System performance check compounds
[b]CCC = Calibration check compounds
[c]QC = Quality control
[d]EICP = Extracted ion current profile
[e]This criteria applies to the internal standards but is only evaluated for the continuing calibration check.

SOURCE: SW-846, Update I and Update II

TABLE E.4-9b

Summary of Laboratory Quality Control Procedures
by Analytical Method

Target Compound Semivolatile Organics

EPA SW-846 Analytical Method	Quality Control Check	Frequency	Acceptance Criteria	Corrective Action
8250A or 8270B	Instrument performance: mass calibration/ion abundance pattern	Every 12 hours of analysis time or every batch	Per method	Repeat until acceptance criteria satisfied
	Initial calibration: instrument sensitivity and linearity of response	Five concentration levels; after any performance failure; check prior to sample analysis	Meet criteria for SPCCs[a] and CCCs[b] per method	Repeat calibration
	Continuing calibration	Every 12 hours of analysis time or every batch	Meet criteria for SPCCs and CCCs per method	Determine problem, correct and analyze another continuing calibration, or repeat calibration
	Internal standards	Added to all calibration standards, field samples, QC[c] samples, and blanks	EICP[d] Δ -50% to +100% Retention time shifts < 0.50 minutes[e]	Correct malfunction: reanalyze sample per method criteria
	Method blank	Each batch of samples of similar matrix and concentration level, or each extraction batch	< 5 times quantitation limit for phthalate esters; all other compounds ≤ quantitation limit	Determine source of contamination; document corrective action; reextract and reanalyze samples
	Matrix spike and matrix spike duplicate	Each analytical batch	Per method	Prepare and analyze QC reference standard per method

TABLE E.4-9b

Summary of Laboratory Quality Control Procedures
by Analytical Method

Target Compound Semivolatile Organics
(Continued)

EPA SW-846 Analytical Method	Quality Control Check	Frequency	Acceptance Criteria	Corrective Action
8250A or 8270B (Continued)	System monitoring compounds (surrogate compounds)	Each field sample, blank, QC sample, and calibration standard	Matrix specific per method limits	Check instrument and calculations; reextract and reanalyze per method criteria

[a]SPCC = System performance check compounds
[b]CCC = Calibration check compounds
[c]QC = Quality control
[d]EICP = Extracted ion current profile
[e]This criteria applies to the internal standards but is only evaluated for the continuing calibration check.

SOURCE: SW-846, Update I and Update II

TABLE E.4-9c
Summary of Laboratory Quality Control Procedures
by Analytical Method

Metals Except Mercury

EPA SW-846 Analytical Method	Quality Control Check	Frequency	Acceptance Criteria	Corrective Action
6010A	Initial Calibration	Daily (3 standards)		
	Calibration Verification	Daily after initial calibration	± 5% of initial	Recalibrate
	Continuing Calibration	Every 10 samples and end of the analytical run	± 10% of expected value	Recalibrate
	Calibration Blank	Every 10 samples, at end of analytical run, and at initial calibration	± 3 SD of mean blank values	Repeat, average result, or recalibrate
	Reagent Blank (also called preparation blank)	One per preparation sample batch	< CRQL[a]	Redigest and reanalyze
	Instrument Check Standard	Every 10 samples	± 10% of expected value	Fluid problem, reanalyze previous samples
	Interference Check Standard	Beginning and end of analytical run	± 20% of true value	Correct problem
	Serial Dilution	One per field batch per matrix	± 10% of original determination	Flag data
	Replicates/Duplicates	One per analytical run	Per method or contract requirements	Flag data
	Matrix Spike	Per method and contract requirements	± 25% of known value	Flag data

TABLE E.4-9c

Summary of Laboratory Quality Control Procedures
by Analytical Method

Metals Except Mercury
(Continued)

EPA SW-846 Analytical Method	Quality Control Check	Frequency	Acceptance Criteria	Corrective Action
6010A (Continued)	Spiked replicate	Per method or contract requirements	± 20% of actual value	Flag data

[a]CRQL = Contract required quantitation limit

SOURCE: SW-846, Update I and Update II

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TABLE E.4-9d

Summary of Laboratory Quality Control Procedures
by Analytical Method

Metals

EPA SW-846 Analytical Method	Quality Control Check	Frequency	Acceptance Criteria	Corrective Action
All 7000 and 7000A Methods	Initial Calibration	Daily (3 standards)		
	Calibration Verification	Daily after initial calibration	± 10% of true value	Recalibrate
	Continuing Calibration	Every 10 Samples	± 20% or true value	Recalibrate and reanalyze samples
	Calibration Blanks	Every 10 samples, at end of analytical run, and initial calibration	± 3 SD of mean blank values	Repeat, average, recalibrate if necessary
	Reagent Blank (also called preparation blank)	One per preparation sample batch	< CRQL[a]	Redigest and reanalyze
	Laboratory Control Sample (LCS)	One per analytical batch	± 20% of true value	Correct problem, redigest, and reanalyze all samples from last LCS
	Interference Check Standard	One per analytical batch	± 10% difference between undiluted and 5X diluted per method	Per method
	Matrix Spike	Every analytical batch	Per method	Flag data
	Serial Dilution	One per field batch per matrix	± 10% of original determination	Flag data

TABLE E.4-9d

Summary of Laboratory Quality Control Procedures
by Analytical Method

Metals
(Continued)

EPA SW-846 Analytical Method	Quality Control Check	Frequency	Acceptance Criteria	Corrective Action
All 7000 and 7000A Methods (Continued)	Matrix Spike Duplicate	Every analytical batch	RPD[b] < 20%	Flag data
	Method of Standard Additions	When needed for problem matrices	Per method	Per method

[a]CRQL = Contract required quantitation limit
[b]RPD = Relative percent difference

SOURCE: SW-846, Update I and Update II

TABLE E.4-9a

Summary of Laboratory Quality Control Procedures
by Analytical Method

TCLP

EPA SW-846 Analytical Method	Quality Control Check	Frequency	Acceptance Criteria	Corrective Action
1311	Extraction fluid blank	Every 20 extractions conducted in an extraction vessel	Per analytical method	Per analytical method
	Matrix	Each analytical batch	Per analytical method	Per analytical method

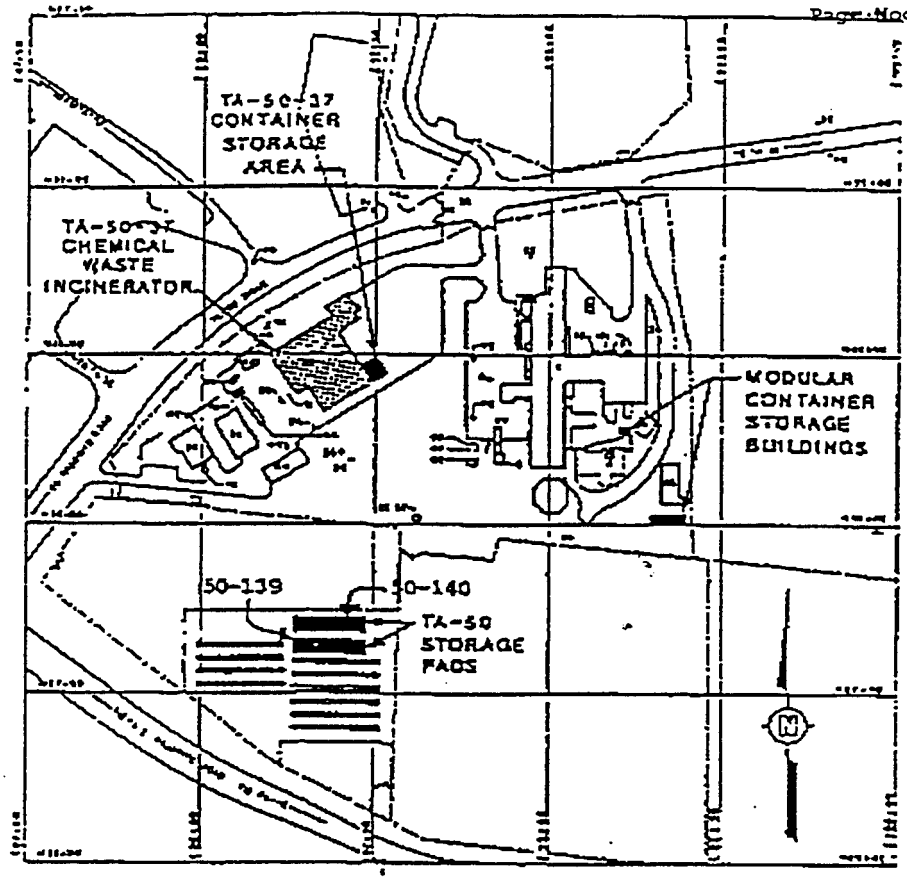

FIGURE 4

LOCATIONS OF TA-50
CHEMICAL WASTE INCINERATOR
AND CONTAINER STORAGE
UNITS

PREPARED FOR

LOS ALAMOS
NATIONAL LABORATORY
LOS ALAMOS, NEW MEXICO

INTERNATIONAL
TECHNOLOGY
CORPORATION

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FIGURE E.4-1

Locations of TA-50 Chemical Waste Incinerator
and Container Storage Units

OFFICIAL SAMPLE SEAL

Collected by_____ Collector's Sample No._____
(Signature)

Date Collected_____ Time Collected_____

Place Collected_____

FIGURE E.4-2

Example of Sample Seal

OFFICIAL SAMPLE LABEL

Collected_____ Collector's Sample No._____

Place of Collection_____

Date Sampled_____ Time Sampled_____

FIGURE E.4-3

Example of Sample Label

Hazardous Materials
Collector's Sample No._____

Location of Sampling: ____Producer ____Hauler
____Disposal Site
____Other:_____

_____

Company's Name_____ Telephone(__)_____

Address_____
number street city state zip

Collector's Name_____ Telephone(__)_____

Date Sampled_____ Time Sampled_____hours

Type of Process Producing Waste_____

Waste Type Code_____ Other_____

F i e l d
Information_____

_____

_____

Sample Allocation:

1. _____
name of organization

2. _____
name of organization

3. _____
name of organization

Chain of Possession

1. _____ _____ _____
signature title inclusive dates

2. _____ _____ _____
signature title inclusive dates

FIGURE E.4-4

Chain of Custody Record

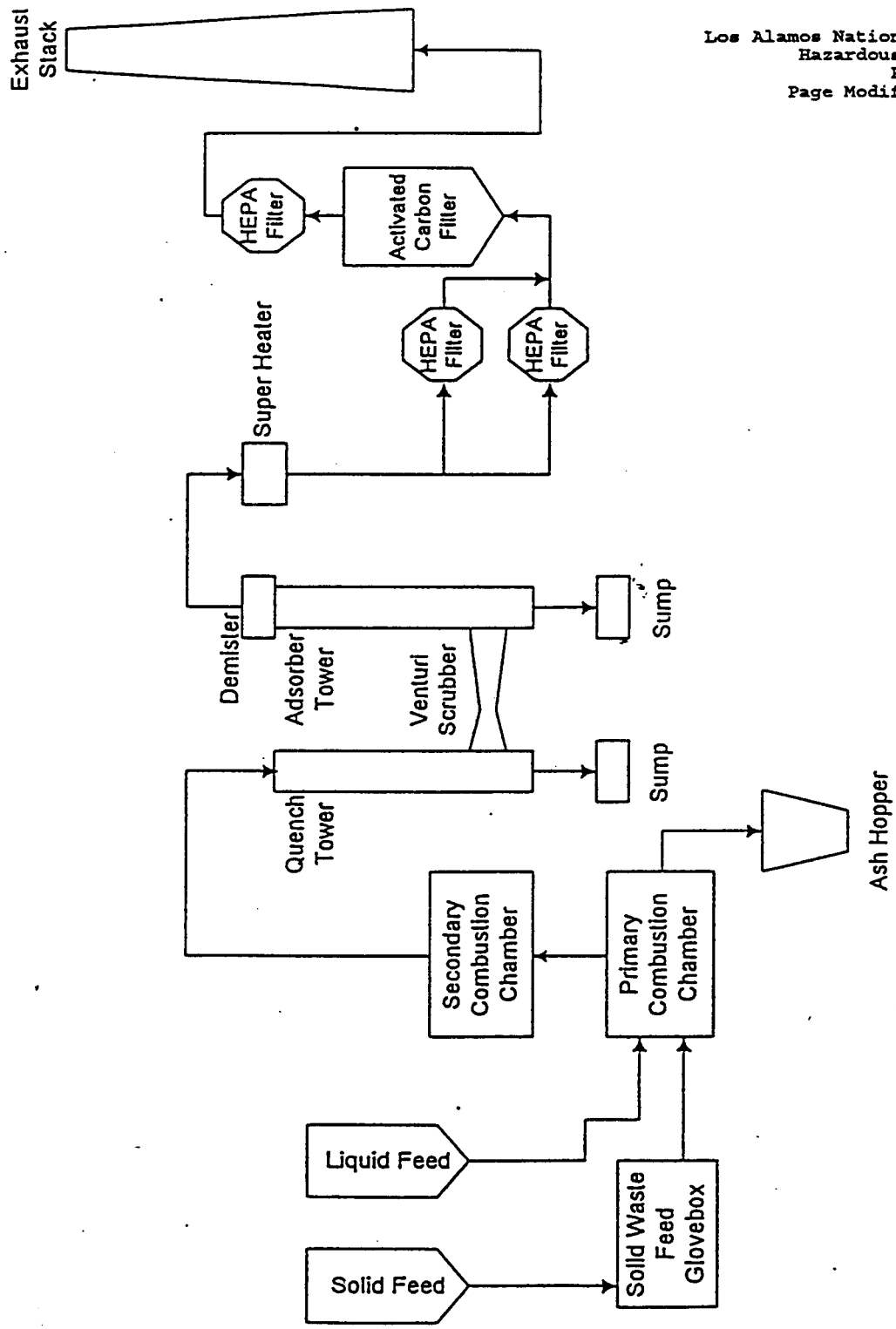

Figure E.4-5
Principal Treatment Components
of the Controlled Air Incinerator

MODIFIED

CLOSURE PLAN
PERMIT ATTACHMENT E.5
NM 0980010515-1

CLOSURE PLAN
PERMIT ATTACHMENT E.5
NM 0980010515-1

E.5 CHEMICAL WASTE INCINERATOR CONTAINER STORAGE AREA

Contained wastes to be incinerated are stored in Room 117 of Building 37, TA-50 (Figure E.5.1). The storage area has a concrete floor with a grated false floor sixteen inches above the concrete. The concrete is coated with Semstone (@). Liquid and solid contained compatible wastes are stored in the area. The waste containers are predominately 55-gallon drums and 330-gallon polyethylene containers, all meeting Department of Transportation (DOT) specifications. Solid wastes may be stored in boxes.

~~E.5.2~~ E.5.1 Estimate of Maximum Waste in Storage and Treatment

The maximum inventory of hazardous wastes stored at the TA-50 waste incinerator is estimated at 13 cubic meters (solid wastes plus 3630 gallons of liquids).

~~E.5.3~~ E.5.2 Description of Waste Handled

The Laboratory wastes are a mixture of liquid and solid hazardous wastes composed of various organic solvents and liquids as well as chemically contaminated paper, wood, and plastics. The liquids can contain either ignitable or listed wastes containing HWMR-5, Part II, Appendix VIII constituents. The incinerator is fed all HWMR-5, Part II, Appendix VIII constituents with an incinerability ranking equal to or better than carbon tetrachloride.

~~E.5.4~~ E.5.3 Closure Procedure

~~E.5.4.1~~ E.5.3.1 Partial Closure

Partial closure of this unit is not expected to occur.

~~E.5.4.2~~ E.5.3.2 Final Closure

Personnel involved in ~~decontaiminating~~ decontaminating the storage area will wear protective equipment, including, acid/solvent resistant coveralls, head protection, ~~neoprene-coated~~ neoprene-coated gloves, and ~~boots,~~ boots. Wrists and ankles are to be taped to protect against upward and inward splash. As a minimum protection, face shields will be worn. Full face respirators or other protective equipment will be used if specified by the Laboratory's Industrial Hygiene and Safety Group, ~~HSE-5~~ ~~ESH-5~~HSR-5, following a field inspection.

All remaining wastes will be incinerated before closing the storage area. If for some reason it is not possible to incinerate all the waste on the site, the waste will be sent to a designated off site treatment or disposal facility.

Following removal of all ~~sotred~~ stored waste, the floor and grate of Room 117 will be washed and rinsed with a warm Liquinox(@) and Alconox(@) solution in water. The wash water will be picked up and put into approved DOT containers using a drum pump, rags and/or mops, wringing the excess water into an

approved DOT container. This water will be sampled to demonstrate decontamination and transferred to TA-54, Area L for sampling, analysis and off site disposal at a permitted facility.

The protective clothing and tools used during the wash down will be cleaned with detergent and water. The wash water will be collected and analyzed. If the wash water is not hazardous, the water will be discharged to the industrial waste water sewer. If the wash water contains hazardous constituents, it will be treated on site or ~~transpoted~~ transported off site to a permitted facility. Mops and rags used for clean up will be placed in approved DOT containers for transport to TA-54, Area L, for sampling, analysis, storage and off site disposal at a permitted facility.

~~E.5.5~~ E.5.4 Decontamination Verification

Before the first wash down, two samples will be taken of the clean Liquinox(@) or Alconox(@) solution in water and analyzed for the constituents listed in Table E.5.2. One additional clean solution sample will be taken for each additional wash down event. These analytical results provide background data for decontamination verification.

Dirty wash down solutions will also be analyzed for the constituents listed in Table E.5.2. Analytical procedures will conform to methods found in SW 846. Equipment will be considered to be contaminated if the used wash solutions show a significant increase in the listed constituents over the clean wash solution.

Successful decontamination is defined as:

1. No detectable hazardous constituents in the final sample, or

2. Detectable hazardous constituents in the final sample are equal to or less than, at the 0.01 confidence level, their concentration in the unused wash water or background sample.

An alternative demonstration of decontamination may be proposed and justified at the time of closure as circumstances indicate. The ~~Director~~ Secretary will evaluate the proposed alternative in accordance with the standards and guidance then in effect and, if approved, incorporate by permit modification the alternative into the closure plan.

~~E.5.6~~ E.5.5 Closure Schedule

Characterization of the final delivery of hazardous waste may require up to 30 days. An estimated 60 days will be required to schedule and process the final wastes received. The year of closure for the TA-50-37 container storage area is ~~2100~~2003. Closure will observe the schedule given in Table E.5.1.

~~E.5.7~~ E.5.6 Closure Certification

An independent registered professional engineer and the ~~Permitee~~ Permittee shall witness the closure and ensure that the closure follows this plan. Upon completion of closure, the engineer and the DOE shall prepare a letter certifying that the facility has been closed in accordance with this plan. The letter shall be dated and signed by each party, stamped by the registered engineer, and the ~~orignial~~ original copy submitted by the DOE to the ~~Director of NMEID~~ Secretary of NMED. One copy shall be maintained at the DOE office and one copy maintained by ~~the HSE-8 Regulatory Compliance Section~~ ~~the ESH-19 Hazardous and~~

~~Solid Waste Group~~ Risk Reduction and Environmental Stewardship Division's Solid Waste Regulatory Compliance Group.

~~E.5.8~~ E.5.7 Sampling and Analytical Procedure

The following section defines procedures and methods for sampling, analysis and documentation applicable to closure plans. While the procedures and method are specific, any applicable procedure or method given in SW-846 may be used if conditions or experience ~~shows~~ show the alternate method to be more appropriate. Disposable samplers may be used.

Sample containers appropriate for the requested analyses will be used for all samples. Sampling will be conducted in accordance with procedures given in Samplers and Sampling Procedures for Hazardous Waste Streams, EPA 600/2-80-018 and/or SW-846.

Samples will be taken, placed in bottles, sealed, tagged, and immediately packed in vermiculite, sawdust, or, if refrigeration is required, an insulated container with ice. One sample for every ten samples will be either duplicated or split. The duplicated or split sample will be identified by a code so that its source is not available to the analytical laboratory, but analytical results can be compared to its twin.

~~E.5.8.1~~ E.5.7.1 Soil and Solid Residue Sampling

Under normal circumstances soil sampling will be inapplicable. If, however, a spill should occur outside the building, sufficient sampling and analysis will be required to ensure that hazardous constituents do not remain after closure. The sampling procedures outlined below are used to determine the amount of hazardous material deposited on a particular area of land, or to determine the leaching rate of the material, or determine the residue level on the soil. Adequate preparation ensures that proper sampling is accomplished.

Units emplaced over impervious surfaces, concrete or asphalt, need not be sampled for spill residues from past handling practices. Units emplaced over absorbent surfaces such as soil will have a minimum of three soil samples to a depth of six inches taken in the area of each access door. The samples will be separately analyzed for the parameters in Table ~~E.3.2~~ E.5.2. If contamination is discovered, a three foot grid centered on the locus of contaminated points will be sited and samples taken and analyzed to determine the extent of contamination. Analyses for this investigation can be made for the constituent(s) found in the initial survey. All contaminated soils shall be removed.

Surface soil samples will be collected with a trowel or scoop. To sample below 3 in. (8 cm), samples will be collected ~~wiht~~ with a Veihmeyer soil sampler. Solid residues in drums will also be sampled with a core sampler or Veihmeyer sampler. Drums not able to be sampled will be assumed to be hazardous waste.

~~E.5.8.1.1~~ E.5.7.1.1 Cleaning of sampler

It is important to clean the samplers after each site is sampled. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a warm Liquinox(@)~~ot~~ or Alconox(@) solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and ~~sir~~ air-dried or wiped dry. Prevention of cross contamination is of particular importance in these samples.

~~E.5.8.1.2~~ E.5.7.1.2 Sampling procedures

Trowel or Scoop

- Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
- Combine the samples in a glass container.
- Cap the container, attach a label and seal, record in field log book, and complete the sample analysis request sheet and chain-of-custody record.

Veihmeyer Sampler

- Assemble the sampler by screwing in the tip and drive head on the sampling tube.
- Insert the tapered handle (drive guide) of the drive hammer through the drive head.
- Place the sampler in a perpendicular position on the material to be sampled.
- With the left hand holding the tube, drive the sampler into the material to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube ~~further~~ farther than the tip of the hammer's drive guide.
- Record the length of the tube that penetrated the material.
- Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.
- Rotate the sampler at least two revolutions to shear off the sample at the bottom.
- Lower the sampler handle (hammer) until it just clears the two ear-like ~~protusions~~ protrusions on the drive head and rotate about 90 degrees.
- Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a pullerjack and grip.

- Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.

- Store the core sample in a 1,000 or 2,000 ml (1 qt or 1/2 gal) sample container.

- Label the sample, affix the seals, record in the field log book, complete the sample analysis request sheet and chain-of-custody record, and deliver the samples to the laboratory for analysis.

~~E.5.8.2~~ E.5.7.2 Liquid Sampling

A ~~coliwasa~~COLIWASA sampler or similar device will be used to sample water solutions in order to determine background parameters before washing the area; it will also be used to sample the dirty wash water ~~useed~~ used in cleaning equipment. The recommended model of the ~~coliwasa~~COLIWASA is shown in Figure E.5.2, the main parts consisting of the sampling tube, the closure-locking mechanism, and the closure system. As an alternative to the ~~coliwasa~~ COLIWASA, glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of as hazardous waste after each sample is collected, thus eliminating the potential for cross contamination.

~~E.8.8.2.1~~ E.5.7.2.1 Cleaning of sampler

The sampler must be clean before use. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The used sampler must be washed with a warm detergent solution (Liquinox(@) or Alconox(@)), rinsed several times with tap water, rinsed with distilled water, drained of excess water, and ~~sir~~ air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the ~~coliwasa~~ COLIWASA is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Using the ramrod and fiber reinforced paper towels, the ~~coliwasa~~ COLIWASA tube may be quickly cleaned. Improper cleaning of sample equipment will cause cross contamination of samples. Prevention of contamination is of particular importance in these samples. Clean samplers should be stored in polyethylene plastic tubes or bags in a clean ~~an~~ and protected area.

~~E.5.8.2.2.~~ E.5.7.2.2 Sampling procedures

- Assemble the ~~coliwasa~~ COLIWASA sampler.

- Make sure that the ~~coliwasa~~ COLIWASA sampler is clean.

- Check to make sure the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.

- Wear necessary protective clothing and gear and observe required sampling precautions.

- Put the sampler in the open position by placing the stopper rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.

- Slowly lower the ~~coliwasa~~ COLIWASA sampler into the liquid at a rate that permits the levels of the ~~Liquid~~ liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a non-representative sample.

- When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.

- Slowly withdraw the sampler from the container with one hand while wiping the sampler tube with a disposable cloth with the other hand.

- Carefully discharge the sample into a glass container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block while the lower end of the sampler is positioned in the glass container.

- Cap the glass container, attach a label and seal, record in the field log book, and complete the sample analysis request sheet and chain-of-custody record.

- Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in ~~jplastic~~ plastic bags for subsequent disposal.

~~E.5.8.3~~ E.5.7.3 Sample Handling and Documentation

Soil and liquid samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and a sample analysis request form.

The sample container must be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. An example of a sample label is shown in Figure E.5.4.

The chain-of-custody form is necessary to trace sample possession from the time of collection and must accompany every sample. This record becomes especially ~~imprtant~~ important when the sample is to be introduced as evidence in litigation. This is a two page record with the original accompanying the ~~shipmemnt~~ shipment and the "copy" retained by the Laboratory. An example of this form is shown in Figure E.5.5.

A separate closure sampling field log book will be kept and will contain all information pertinent to field surveys and sampling. The log book shall have bound and consecutively numbered pages in 8-½~~I/1~~ by 11-inch format. Minimum entries include:

a. Purpose of sample (routine sampling, special sampling);

b. Location of sampling (coordinates referenced to staked field points, if soil sample);

c. Name and address of person making log entry;

d. Type of process producing waste;

e. Number and volume of sample;

f. Description of each sampling location, sampling methodology, equipment used, etc;

g. Date and time of sample collection;

h. Sample destination and transporter's name (name of laboratory, UPS, etc);

i. Map or photograph of the ~~smapling~~ sampling site, if any;

j. Field observations (ambient temperature, sky conditions, past 24-hour precipitation, etc);

k. Field measurements, if any (pH, flammability, conductivity, explosivity, etc);

l. Collector's sample identification number(s); and

m. Signature of person responsible for the log entry.

Sampling situations vary widely. No general rule can be given as to the extent of information that must be entered in the log book. A good rule, however, is to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

The sample shipment and chain-of-custody record is accompanied by a sample analysis request sheet. The request sheet has two parts: field and laboratory. The field portion of this form must be ~~completely~~ completed by the person collecting the sample and include most of the pertinent information noted in the log book. The laboratory portion is intended to be ~~completyed~~ completed by the laboratory personnel when the sample is received.

~~E.5.9~~ E.5.8 Quality Assurance/Quality Control

The ~~Permitee~~ Permittee shall designate a qualified individual or individuals to independently oversee the closure activities and report directly to senior management on the quality of the performance of this closure. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed and review the analysis reports for accuracy and adequacy. A written QA/QC plan shall be prepared and ~~follwoed~~ followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the adequacy of the analysis showing decontamination.

~~E.5.10~~ E.5.9 Final Closure Report

Upon completion of the closure activities, the ~~Permitee shal~~ Permittee shall submit a Final Closure Report to the ~~Director~~ Secretary. The report shall document the final closure and contain, at a minimum, the following:

A. The certification described in paragraph ~~E.5.7~~ E.5.6.

B. Any variance from the approved activities and the reason for the variance.

C. A tabular summary of all sampling results, showing:

1. Sample identification,
2. Sampling location,
3. The datum reported,
4. Detection limit for each datum,
5. A measure of analytical precision (e.g. uncertainty, range, variance),
6. Identification of analytical procedure, and
7. Identification of analytical laboratory.

D. A QA/QC statement on the adequacy of the analyses and decontamination demonstration.

E. The location of the file of supporting documentation:

1. Field log books,
2. Laboratory sample analysis reports,
3. The QA/QC documentation, and
4. Chain of custody records.

F. Disposal location of all regulated and unregulated residues.

G. A certification of accuracy of the report.

TABLE E.5.1.
CLOSURE SCHEDULE

Activity	Maximum Time Required
Notify ~~EID~~ NMED of the closure	-90 Days
Advertise for proposals	-90 Days
Receive proposals	-30 Days
Select contractor and award contract	-10 Days
Begin closure activities	Day 0
Characterize remaining wastes	Day 30
Complete incineration of wastes	Day 60
Removal of wastes	Day 60
Floor wash down	Day 75
Analyze samples	Day 120
Final clean up	Day 130
Decontamination verification	Day 150
Submit final report to ~~EID~~ NMED	Day 180

NOTE: The schedule above indicates calendar days from the beginning by which activities will be completed. Some activities may be conducted simultaneously.

TABLE E.5.2.
ANALYTICAL PARAMETERS

Metals	Organics	Other
Arsenic	Halogenated volatile organics	Cyanides
Barium	Nonhalogenated volatile organics	Ignitability
Cadmium	Acid-extractable semivolatile organics	Reactivity
Selenium	Base-neutral extractable semivolatile organics	pH
Lead	Phenols	
Mercury	Organochlorine pesticides	
~~Berylium~~ Beryllium	~~Chloronated~~ Chlorinated herbicides	
Chromium		
Silver		
Nickel		

NOTES: Analytical methods are taken from *Test Methods for Evaluating Solid Waste*, EPA SW-846, and may be superseded by more current methods from SW-846 or alternate EPA-approved methods.

Metals may be analyzed for total content. Any metal whose total concentration exceeds the standard for the toxicity characteristic ~~Extraction Procedure Toxicity~~ shall be analyzed by the Toxicity Characteristic Leaching Procedure~~Extraction Procedure Toxicity procedures~~. Both data shall be reported in the final report.

TABLE E.5.3
SAMPLING SUMMARY

Material Sampled	Metals	Organics	Other
Wash water before use	X	X	X
Wash water after use	X	X	X
Protective clothing wash water		X	
Soil samples[a]	X	X	X

NOTE: Analytical parameters are given in Table E.5.2.

[a]As required. See paragraph E.5.8.1.

FIGURE E.5.1
LOCATIONS OF TA-50 CHEMICAL WASTE INCINERATOR AND CONTAINER STORAGE UNITS

FIGURE E.5.2
COMPOSITE LIQUID WASTE SAMPLER (COLIWASA)

FIGURE E.5.3
EXAMPLE OF SAMPLE SEAL

OFFICIAL SAMPLE SEAL

Collected by _____ Collector's sample No._____
(Signature)

Date Collected_____ Time Collected_____

Place Collected_____

_____

_____

FIGURE ~~E 5.4~~ E.5.4
EXAMPLE OF SAMPLE LABEL

OFFICIAL SAMPLE LABEL

Collector_____ Collector's Sample No._____

Place of Collection_____

_____

Date Sampled_____ Time Sampled _____

Field Information_____

_____

_____

FIGURE ~~E-5.5~~ E.5.5
EXAMPLE CHAIN OF CUSTODY RECORD
Hazardous Materials
Collector's Sample No.____

Location of Sampling: Producer Hauler
Disposal Site Other: _____

Company's Name_____ Telephone (___)_____

Address_____
Number Street City State Zip

Collector's Name_____ Telephone (___)_____

Date Sampled_____ Time Sampled_____ hours

Type of Process Producing Waste_____

Waste Type Code_____ Other_____

Field Information_____

_____

Sample Allocation:

1. _____
(Name of Organization)

2. _____
(Name of Organization)

3. _____
(Name of Organization)

Chain of Possession:

1. _____ _____ _____
Signature Title Inclusive Dates

2. _____ _____ _____
Signature Title Inclusive Dates

3. _____ _____ _____
Signature Title Inclusive Dates

CLOSURE PLAN
PERMIT ATTACHMENT E.6
NM 0890010515-1

CLOSURE PLAN
PERMIT ATTACHMENT E.6
NM 0890010515-1

E.6 CLOSURE FOR TA-54 AREA L HAZARDOUS WASTE TRANSFER/STORAGE UNIT

E.6.1 TA-54 Area L Description

The storage unit consists of a single-story transfer/storage building, Facility Number 54-31, encompassing 196 square feet. Liquid wastes are segregated into compatible types and placed upon one of the three fiberglass grates inside the building. This closure plan applies to the transfer/storage unit only.

The remainder of TA-54 Area L consists of liquid waste storage and treatment tanks, a roofed concrete containment structure, two modular storage units and specified areas within the fenced portions of Area L for storage of solid containerized waste. These areas are used for the accumulation, packaging, and storage of waste containers, which are generated throughout the laboratory and delivered to Area L routinely. Wastes in small containers are stored in the modular units before being put into lab-packs. Wastes suitable for recycling are consolidated into drums, and any damaged or leaking drums are repackaged into larger drums in this area. Solid containerized wastes are stored in cleared areas within the fenced portions of Area L. Four treatment storage tanks are also located at Area L. They are used to neutralize, oxidize, and evaporate waste. The tanks are located on a bermed concrete pad. Each of these units has a separate closure plan.

E.6.2 Estimate of Maximum Waste in Storage and Treatment

The maximum amount of waste stored in the transfer/storage building at Area L is 440 gallons. Small quantities in excess of this amount may be temporarily present on any one day while actively being handled.

E.6.3 Description of Waste Handled

A wide variety of wastes generated throughout the Laboratory are brought to Area L, including wastes from basic and applied chemistry R & D programs (small quantities of different acids, bases, organics, inorganics and reactive materials from transfer, accumulation, or storage sites), ~~transfer/storages),~~ processing wastes (sludge resulting from treatment ~~either~~ at Area L ~~or at TA-50-1 Batch Treatment Plant~~), and chemically contaminated equipment, to be stored, recycled, treated or packed for off site disposal at a permitted facility. Any characteristic or listed waste used at the laboratory could have been handled at one time in the transfer/storage unit.

E.6.4 Partial Closure

No partial closure of the transfer/storage unit is anticipated.

E.6.5 Closure Procedure

Before decontamination, all wastes in storage will either be treated on site or disposed of off site. Given the diversity of wastes handled, it is not possible to estimate the exact wastes on hand at the initiation of closure and, therefore, the final disposition of the wastes. In general, recyclable wastes will be reused internally or recycled to users off site. Permitted wastes will be burned at the permitted incinerator at TA-50-37. Any wastes compatible with permitted treatment at the TA-50-1 Batch Waste Treatment Unit or the TA-54, Area L treatment tanks will be so treated. The remaining wastes will be transported off site to a permitted disposal facility. If on site treatment is not possible due to prior closure of the permitted units, off site disposal will occur.

Following removal of the wastes, the transfer/storage building will be decontaminated by washing with Liquinox(@) or Alconox(@) in water. The resulting used wash solution will be placed in approved DOT containers, sampled, analyzed and transported off site to a permitted treatment or disposal facility.

E.6.5.1 Waste Removal

The waste on site at the start of closure includes wastes in all size containers, from vials and ampules to 55-gallon drums. Contained wastes will be handled with hand trucks or forklifts as necessary. Trucks of adequate size will be used to move packed wastes to off site treatment or disposal facilities, and a forklift is suitable for loading the trucks or to move wastes to the treatment tanks at Area L. All wastes shipped off site will be in approved Department of Transportation (DOT) containers and manifested in accordance with the facility permit. All waste transporters will have an EPA identification number in accordance with ~~HWMR-S~~ HWMR-5, Part IV, Section 263.11.

E.6.5.2 Decontamination

All floor and wall surfaces, as well as any equipment present, will be washed down using a solution of Liquinox(@) or Alconox(@) in warm water. Areas will be scraped or brushed clean as necessary to remove any residues. The floor is sloped to sumps, and wash water will flow into them. The water in each sump will be tested using the sampling and analytical procedures described in section E.6.9. Afterwards, the water will be removed from each sump with a vacuum truck or pumped into drums with a hand pump, sampled, analyzed and transported off site for treatment or disposal. This washing procedure will be repeated until decontamination of the cells is demonstrated by testing of the wash water. Following decontamination, the building and equipment will be handled as nonregulated waste. The inside of the vacuum truck, if used, will be rinsed when its service is complete and the rinse water will be placed in approved DOT containers for off site treatment or disposal. Every effort will be made to minimize the volume of wash and rinse water generated by decontamination.

E.6.5.3 Soil Decontamination

Soil sampling will be conducted as described in Section E.6.9. to determine if hazardous wastes have been tracked outside of contaminated areas.~~, as described in section E.6.9.~~ After the building is decontaminated, it will be removed and three soil samples, one under each sump, will be collected. Three soil samples will be taken at each edge of the asphalt apron around the transfer/storage building. Each will be made up of cores six inches deep taken six inches off the asphalt edge and equally spaced to cover each edge.

If contamination is found in any of these samples, the limits of the sampling area will be expanded by establishing a three foot sampling grid around a single contamination point, or centered on the area defined by the locus of multiple contamination points, to determine the outside perimeter of the contamination. Sampling will be continued until the extent of contamination is determined. Background samples will be taken in the same manner as the initial closure soil survey.

Once the limits of the contaminated area are determined, the contaminated soil will then be removed to a depth of 6 inches and handled as a regulated waste. The adequacy of decontamination is determined by additional sampling. Sampling, analysis, and documentation procedures are detailed in section E.6.9. In order to demonstrate final decontamination, soil samples will be analyzed for all ~~HWMR-S~~ HWMR-5, Part V, Section 264, Appendix IX constituents. Analysis and quality assurance/quality control will follow methods defined in SW-846.

~~E.6.5.5~~ E.6.5.4 Personnel Protection

Personnel who are washing equipment will wear rubber gloves, neoprene acid/solvent resistant coveralls, rubber boots, and a face ~~shied~~ shield. The Laboratory's Industrial Hygiene and Safety Group (ESH-5~~HSE-5~~) will review the site survey analytical data and may recommend additional protective clothing.

~~E.6.5.6~~ E.6.5.5 Equipment Decontamination

Shovels, drum trucks and other equipment used for decontamination will be scraped and brushed to remove residue, and the residue collected will be placed in drums for disposal off site at a permitted facility. The equipment will be placed on a 30 mil plastic sheet that is bermed to contain liquids and pressure washed with water and detergent. Large equipment such as backhoes and forklifts will also be washed. Testing will be performed on this water to determine if decontamination is adequate. Washing is considered adequate to decontaminate the equipment. The wash water will be placed in the treatment tanks to evaporate and the plastic lining and residue will be packed in DOT approved containers for off site disposal at a permitted facility. If evaporation is not an available treatment, the wastes will be packed and shipped off site for treatment and disposal.

E.6.6 Decontamination Verification

A minimum of two samples of the clean Liquinox(@) or Alconox(@) solution will be sampled as background for wash water and, along with the wash water samples, analyzed for the constituents listed in HWMR-5, Part V, Section 264, Appendix IX. Successful decontamination is defined as:

1. No detectable hazardous constituents in the final sample, or

2. Detectable hazardous constituents in the final sample are equal to or less than, at the 0.01 confidence level, their concentration in the unused wash water or background sample. Hazardous constituents detected in the background sample will invalidate that sample as true background unless adequate explanation of their source is provided.

An alternative demonstration of decontamination may be proposed and justified at the time of closure as circumstances indicate. The Secretary ~~Director~~ will evaluate the proposed alternative in accordance with the

standards and guidance then in effect and, if approved, incorporate by permit modification the alternative into the closure plan.

E.6.7 Closure Schedule

The year of closure is 2100. Contracting and closure activities will observe the schedule given in Table E.6.1. Closure is estimated to take 340 days. Soil sampling and the decontamination contractor selection may be completed before closure begins. Several of the closure steps may occur simultaneously.

Contracts for analytical work and, if necessary, soil removal are expected to exceed $100,000. The Laboratory is required by policy to put the work out for bid, and ninety days are required to solicit and process the bids. The location of the site is prone to snow cover in the winter months. The closure may be delayed until the site is free of snow and the ground is thawed adequately to allow the soil sampling and other closure operations. The schedule includes a weather factor to allow for this delay.

E.6.8 Closure Certification

An independent, registered professional engineer and the Permittee shall witness the closure and ensure that the closure follows this plan. Upon completion of closure, the engineer and the DOE shall prepare a letter certifying that the facility has been closed in accordance with this plan. The letter shall be dated and signed by each party, stamped by the registered engineer, and the original copy submitted by the DOE to the ~~Director of the NMEID~~ Secretary of NMED. One copy shall be maintained at the DOE office and one copy maintained by the ~~HSE-8 Regulatory Compliance Section~~ ESH-19 Hazardous and Solid Waste Group.

E.6.9 Sampling and Analytical Procedure

The following section defines procedures and methods for sampling, analysis and documentation applicable to closure plans. While the procedures and method are specific, any applicable procedure or method given in SW-846 or other EPA approved procedure may be used if conditions or experience ~~shows~~ show the alternate method to be more appropriate. Disposable samplers may be used.

Sample containers appropriate for the requested analyses will be used for all samples. Sampling will be conducted in accordance with procedures given in *Samplers and Sampling Procedures for Hazardous Waste Streams*, EPA 600/2-80-018 and/or SW-846.

Samples will be taken, placed in bottles, sealed, tagged, and immediately packed in vermiculite, sawdust, or, if refrigeration is required, an insulated container with ice. One sample for every ten samples will be either duplicated or split. The duplicated or split sample will be identified by a code so that its source is not available to the analytical laboratory, but analytical results can be compared to its twin.

E.6.9.1 Soil and Solid Residues Sampling

The sampling procedures outlined below are used to determine the amount of hazardous material deposited on a particular area of land, or to determine the leaching rate of the material, or determine the residue level on the soil. Adequate preparation ensures that proper sampling is accomplished.

Surface soil samples will be collected with a trowel or scoop. To sample below 3 in. (8 cm), samples will be collected with a Veihmeyer soil sampler. Drums of solid residues will be sampled with a core sampler or Veihmeyer soil sampler. Drums not capable of being sampled will be assumed to be reactive hazardous waste.

E.6.9.1.1 Cleaning of sampler

It is important to clean the samplers after each site is sampled. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a warm Liquinox(@) or Alconox(@) solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. Prevention of cross contamination is of particular importance in these samples.

E.6.9.1.2 Sampling procedures

Trowel or Scoop

- Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
- Combine the samples in a glass container.
- Cap the container, attach a label and seal, record in the field log book, and complete the sample analysis request sheet and chain-of-custody record.

Veihmeyer Sampler

- Assemble the sampler by screwing in the tip and drive head on the sampling tube.
- Insert the tapered handle (drive guide) of the drive hammer through the drive head.
- Place the sampler in a perpendicular position on the material to be sampled.
- With the left hand holding the tube, drive the sampler into the material to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube ~~further~~ farther than the tip of the hammer's drive guide.
- Record the length of the tube that penetrated the material.
- Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.

- Rotate the sampler at least two revolutions to shear off the sample at the bottom.
- Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.
- Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a pullerjack and grip.
- Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.
- Store the core sample in a 1,000 or 2,000 ml (1 qt or 1/2 gal) sample container.
- Label the sample, affix the seals, record in the field log book, complete the sample analysis request sheet and chain-of-custody record, and deliver the samples to the laboratory for analysis.

E.6.9.2 Liquid Sampling

A ~~coliwasa~~ COLIWASA sampler or similar device will be used to sample water solutions in order to determine background parameters before washing the area; it will also be used to sample the dirty wash water used in cleaning equipment. The recommended model of the ~~coliwasa~~ COLIWASA is shown in Figure E.6.2., the main parts consisting of the sampling tube, the closure-locking mechanism, and the closure system. As an alternative to the ~~coliwasa~~ COLIWASA , glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of as hazardous waste after each sample is collected, thus eliminating the potential for cross contamination.

E.6.9.2.1 Cleaning of sampler

The sampler must be clean before use. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The used sampler must be washed with a warm detergent solution (Liquinox(@) or Alconox(@)), rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the ~~coliwasa~~ COLIWASA is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Using this ramrod and fiber reinforced paper towels, the ~~coliwasa~~ COLIWASA tube may be quickly cleaned. Improper cleaning of sample equipment will cause cross contamination of samples. Prevention of contamination is of particular importance in these samples. Clean samplers should be stored in polyethylene plastic tubes or bags in a clean and protected area.

E.6.9.2.2 Sampling procedures

- Assemble the ~~coliwasa~~ COLIWASA sampler.
- Make sure that the ~~coliwasa~~ COLIWASA sampler is clean.

- Check to make sure the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.

- Wear necessary protective clothing and gear and observe required sampling precautions.

- Put the sampler in the open position by placing the stopper rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.

- Slowly lower the ~~coliwasa~~ COLIWASA sampler into the liquid at a rate that permits the levels of the ~~Liquid~~ liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a nonrepresentative sample.

- When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.

- Slowly withdraw the sampler from the container with one hand while wiping the sampler tube with a disposable cloth with the other hand.

- Carefully discharge the sample into a glass container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block while the lower end of the sampler is positioned in the glass container.

- Cap the glass container, attach a label and seal, record in the field log book, and complete the sample analysis request sheet and chain-of-custody record.

- Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site or ~~storethe~~ store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.

E.6.9.3 Sample Handling and Documentation

Soil and liquid samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and a sample analysis request form.

The sample container must be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. An example of a sample seal is shown in Figure E.6.3.

The sample label is necessary to prevent misidentification of samples and shall include, if applicable, the grid number referenced to positions staked on the site perimeter. The "field information" in the case of soil sampling, shall include observations such as the soil texture and surface appearance, ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling. An example of a sample label is shown in Figure E.6.4.

The chain-of-custody form is necessary to trace sample possession from the time of collection and must accompany every sample. This record becomes especially important when the sample is to be introduced as evidence in litigation. This is a two page record with the original ~~accopanying~~ accompanying shipment and the "copy" retained by the Laboratory. An example of this form is shown in Figure E.6.5.

A separate ~~seperate~~ closure sampling field log book will be kept and will contain all information pertinent to field surveys and sampling. The log book shall have bound and consecutively numbered pages in 8-½ ~~I/1~~ by 11-inch format. Minimum ~~entires~~ entries include:

a. Purpose of sample (routine sampling, special sampling);

b. Location of sampling (coordinates referenced to staked field points, if soil sample);

c. Name and business address of person making log entry;

d. Type of process producing waste;

e. Number and volume of sample;

f. ~~Descrioption~~ Description of each ~~smapling~~ sampling location, sampling methodology, equipment used, etc.;

g. Date and time of sample collection;

h. Sample destination and transporter's name (name of laboratory, UPS, etc.);

i. Map or photograph of the sampling site, if any;

j. Field observations (ambient temperature, sky conditions, past 24-hour precipitation, etc.);

k. Field measurements, if any (pH, flammability, conductivity, explosivity, etc.);

l. Collector's sample identification number(s); and

m. Signature of person responsible for the log entry.

Sampling situations vary widely. No general rule can be given as to the extent of information that must be entered in the log book. A good rule, however, is to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

The sample shipment and chain-of-custody record is accompanied by a sample analysis request sheet. ~~(Figure E.8.8).~~ The request sheet has two parts: field and laboratory. The field portion of this form must be ~~completely~~ completed by the person collecting the sample and include most of the pertinent information noted in the log book. The laboratory portion is intended to be completed by the laboratory personnel when the sample is received.

E.6.10 Quality Assurance/Quality Control

The ~~Permitee~~ Permittee shall designate a qualified individual or individuals to independently oversee the closure activities and report directly to senior management on the quality of the performance of this closure. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed and review the analysis reports for accuracy and adequacy. A written QA/QC plan prepared in accordance ~~wiht~~ with SW-846 guidance shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the adequacy of the analysis showing decontamination.

E.6.11 Final Closure Report

Upon completion of the closure activities, the ~~Permitee~~ Permittee shall submit a Final Closure Report to the ~~Director~~ Secretary. The report shall document the final closure and contain, at a minimum, the following:

A. The certification described in ~~p[aragraph~~ paragraph E.6.8.

B. Any variance from the approved activities and the reason for the variance.

C. A tabular summary of all sampling results, showing:

1. Sample identification,
2. Sampling location,
3. The datum reported,
4. Detection limit for each datum,
5. A measure of analytical precision (e.g. uncertainty, range, variance),
6. Identification of analytical procedure, and
7. Identification of analytical laboratory.

D. A QA/QC statement on the adequacy of the analyses and decontamination demonstration.

E. The location of the file of supporting documentation:

1. Field log books,
2. Laboratory sample analysis reports,
3. The QA/QC documentation, and
4. Chain of custody records.

F. Disposal location of all regulated and unregulated residues.

G. A certification of accuracy of the report.

TABLE ~~E.5.1.~~ E.6.1.
CLOSURE SCHEDULE

Activity	Maximum Time Required
Notify ~~EID~~ NMED of the closure	-90 Days
Let contract request for proposals	-90 Days
Receive proposals	-30 Days
Select and award contract	-10 Days
Begin closure activities	Day 0
Disposal of final wastes	Day 60
Internal/external washdown	Day 70
Equipment disassembly	Day 95
Individual component decontamination	Day 105
Residue removal from concrete pad/floor	Day 125
Floor decontamination	Day 140
Final building clean up and removal	Day 160
Initial soil sampling and analysis	Day 190
Expanded sampling and analysis (contingency)	Day 210
Contaminated soil removal	Day 250
Resample and analysis	Day 285
Decontamination verification	Day 310
Final closure report submitted to ~~EID~~ NMED	Day 340

NOTE: The calendar days given above are completion dates for each activity. In some cases more than one activity may occur simultaneously.

TABLE E.6.2.
ANALYTICAL PARAMETERS

Metals	Organics	Other
Arsenic	Halogenated volatile organics	Cyanides
Barium	Nonhalogenated volatile organics	pH
Cadmium	Acid-extractable semivolatile organics	
Chromium	Base-neutral extractable semivolatile organics	
Lead	Organochorine pesticides	
Mercury	~~Chloronated~~ Chlorinated herbicides	
Selenium	Phenols	
Silver		
Nickel		
~~Berylium~~ Beryllium		

NOTES: Analytical methods are taken from *Test Methods for Evaluating Solid Waste*, EPA SW-846, and may be superseded by more current methods from SW-846 or alternate EPA-approved methods.

Metals may be analyzed for total content. Any metal whose total concentration exceeds the standard for the toxicity characteristic~~Extraction Procedure Toxicity~~ shall be analyzed by the Toxicity Characteristic Leaching Procedure~~Extraction Procedure Toxicity procedures~~. Both data shall be reported in the final report.

TABLE E.6.3
SAMPLING SUMMARY

Material Sampled	Metals	Organics	Other
Washdown solutions before use	X	X	X
Washdown solutions after use	X	X	X
Soils background	X	X	X
Soil samples	X	X	X
Final decontamination samples	[a]	[a]	[a]

NOTES: Analytical parameters are given in Table E.6.2.

[a]Parameters given in HWMR-5, Part V, Section ~~2654~~ 264, Appendix IX

FIGURE E.6.2
COMPOSITE LIQUID WASTE SAMPLER (COLIWASA)

FIGURE E.6.3
EXAMPLE OF SAMPLE SEAL

OFFICIAL SAMPLE SEAL

Collected by _____ Collector's sample No._____
(Signature)

Date Collected_____ Time Collected_____

Place Collected_____

_____

_____

FIGURE E.6.4
EXAMPLE OF SAMPLE LABEL

OFFICIAL SAMPLE LABEL

Collector_____ Collector's Sample No._____

Place of Collection_____

_____

Date Sampled_____ Time Sampled _____

Field Information_____

_____

_____

FIGURE E.6.5
CHAIN OF CUSTODY RECORD
Hazardous Materials
Collector's Sample No.____

Location of Sampling: Producer Hauler
Disposal Site Other: _____

Company's Name_____ Telephone (___)_____

Address_____
Number Street City State Zip

Collector's Name_____ Telephone (___)_____

Date Sampled_____ Time Sampled_____ hours

Type of Process Producing Waste_____

Waste Type Code_____ Other_____

Field Information_____

_____

Sample Allocation:

1. _____
(Name of Organization)

2. _____
(Name of Organization)

3. _____
(Name of Organization)

Chain of Possession:

1. _____ _____ _____
Signature Title Inclusive Dates

2. _____ _____ _____
Signature Title Inclusive Dates

3. _____ _____ _____
Signature Title Inclusive Dates

FIGURE E.6.1
TA-54 AREA L WASTE MANAGEMENT UNITS

CLOSURE PLAN
PERMIT ATTACHMENT E.7
NM0890010515-1

CLOSURE PLAN
PERMIT ATTACHMENT E.7
NM0890010515-1

E.7 STORAGE CONCRETE CONTAINMENT UNITS

E.7.1 Description

There are two units used to store hazardous chemical waste ~~labpacks~~ lab packs in 55-gallon drums and other DOT-approved storage containers. ~~meeting DOT specifications,~~ at TA-50 and one at TA-54, Area L. Each unit consists of a roofed ~~concrete~~ concrete containment structure encompassing 1,596 square feet. The wastes are segregated into compatible waste types upon arrival at the unit and placed within one of the six storage cells. Wastes are stored in 55-gallon drums, 220-gallon polyethylene containers or 330-gallon polyethylene containers. All containers meet DOT specifications. Two units are located south of Building TA-50-37 (Figure E.7.1) and the other is at TA-54, Area L (Figure E.7.2).

E.7.2 Estimate of Maximum Waste in Storage

The maximum amount of waste in storage at any one unit is 65 cubic meters (17,220 gallons).

E.7.3 Description of Waste Handled

A wide variety of wastes generated throughout the Laboratory are stored at the units, including wastes from basic and applied chemistry R & D programs (small quantities of different acids, bases, organics, inorganics, and reactive metals), processing waste (sludge resulting from treatment at TA-50-1 Batch Treatment Plant), and chemically contaminated equipment packed for off site disposal at a permitted facility. Any characteristic or listed waste used at the laboratory may be ~~sotred~~ stored at any unit. The units at TA-50 normally store only characteristic waste code D002 and listed wastes F001 through F009, but may store any regulated waste generated by the Laboratory.

E.7.4 Closure

E.7.4.1 Partial Closure

Partial closure would consist of one unit while leaving the other units in service. In such an event, the following procedures would apply to the unit to be closed.

E.7.4.2 Closure Procedure

Personnel involved in decontaminating the unit will wear protective equipment, including, acid/solvent resistant coveralls, head protection, neoprene-coated gloves, and ~~boots,~~ boots.. Wrists and ankles are to be taped to protect against upward and inward splash. As a minimum protection, face shields will be worn. Full face respirators or other protective equipment will be used if specified by the Laboratory's Industrial Hygiene and Safety Group, ~~HSE-5~~ (ESH-5), following a field inspection. Before decontamination, all wastes in storage will either be treated or shipped off site for disposal at a permitted facility. Given the diversity of wastes handled, it is not possible to estimate the exact wastes on hand at the initiation of closure and, therefore, the final disposition of the wastes. In general, recyclable wastes will be reused internally or

~~frecycled~~ recycled to users off site. Organic wastes will be burned at the permitted Incinerator at TA-50-37. Any wastes compatible with permitted treatment at ~~the TA-50-1 Batch Waste Treatment Unit or~~ the TA-54, Area L treatment tanks will be so treated. The remaining wastes will be transported off site to a permitted facility.

Following removal of the wastes on site at the start of closure, the storage unit will be decontaminated by washing with Liquinox(@) and Alconox(@) in water. Wash water is expected to be contained within the curbed area and collect in the sump. If spills occur outside the curbed area, the spilled materials will be absorbed on suitable material, collected and placed in containers. The area affected by the spill will be included in the final cleanup determination. The resulting wash solutions will be placed in approved DOT containers, and ~~tken~~ taken to TA-54, Area L for sampling~~,~~ and analysis, and shipped off site for treatment or disposal at a permitted facility. The protective clothing and tools used during the wash down will be cleaned with detergent and water. The wash ~~waster~~ water will be collected and analyzed. If the wash water is not hazardous, the water will be discharged to the industrial waste water sewer. If the wash water contains hazardous constituents, it will be treated on site or transported off site to a permitted facility. Spill residues, sludges, mops and rags used for clean-up will be placed in containers for transport to Area L, with ultimate off site disposal at a permitted facility.

E.7.4.3 Soil Decontamination

Soil sampling will be conducted to determine if hazardous wastes have been tracked outside of contaminated areas, as described in section E.7.8. After the building is decontaminated, three soil samples will be collected along each short edge of the asphalt apron around the building and ten along each long side. Each will be made up of cores six inches deep taken six inches off the asphalt edge and equally spaced to cover each edge.

If contamination is found in any of these samples, the limits of the sampling area will be expanded by establishing a three foot sampling grid around a single contamination point, or centered on the area defined by the locus of multiple contamination points, to determine the outside perimeter of the contamination. Sampling will be continued until the extent of the contamination is determined. Background samples will be taken from an uncontaminated area up-gradient from and unaffected by the waste management activity, in the same manner as the initial closure soil survey.

Once the limits of the contaminated area are determined, the contaminated soil will then be removed to a depth of 6 inches and handled as regulated waste. The adequacy of decontamination is determined by additional sampling. Sampling, analysis, and documentation procedures are detailed in section E.6.9. In order to demonstrate final decontamination, soil samples will be analyzed for all HWMR-5, Part V, Section 264, Appendix IX constituents. Analysis and quality assurance/quality control will follow methods defined in SW-846.

E.7.5 Decontamination Verification

Before the first wash down, two samples will be taken of the clean Liquinox(@) or Alconox(@) solution in water and analyzed for the constituents listed in Table E.7.2. The constituents listed in Table E.7.2 include regulated constituents normally ~~sotred~~ stored at the unit.

One additional clean solution sample ~~fwill~~ will be taken for each additional washdown event. These analytical results provide background data for decontamination verification.

Used washdown solutions will be analyzed for the constituents listed in Table E.7.2. Analytical procedures will conform to methods found in SW-846. The constituents listed in Table E.7.2. include regulated constituents normally stored in the units. A scan for volatile and semivolatile organics is performed to ensure that solvents commonly used within the Laboratory have not contaminated the unit.

Successful decontamination is defined as:

1. No detectable hazardous constituents in the final sample, or

2. Detectable hazardous constituents in the final sample are equal to or less than, at the 0.01 confidence level, their concentration in the unused ~~washwater~~ wash water or background sample.

An alternative demonstration of decontamination may be proposed and justified at the time of closure as circumstances indicate. The ~~Director~~ Secretary will evaluate the proposed alternative in accordance with the standards and guidance then in effect and, if approved, incorporate by permit modification the alternative into the closure plan.

E.7.6 Closure Schedule

The year of closure for either unit is 2100. Closure will observe the schedule given in Table E.7.1. Closure is expected to take 270 days.

E.7.7 Closure Certification

An independent registered professional engineer and the ~~Permitee~~ Permittee shall witness the closure and ensure that the closure follows this plan. Upon completion of closure, the engineer and the DOE shall prepare a letter certifying that the facility has been closed in accordance with this plan. The letter shall be dated and signed by each party, stamped by the registered engineer, and the original copy submitted by the DOE to the ~~Director of NMEID~~ Secretary of NMED. One copy shall be maintained at the DOE office and one copy maintained by ~~the HSE-8 Regulatory Compliance Section~~ the ESH-19 Hazardous and Solid Waste Group .

~~E.5.8~~ E.7.8 Sampling and Analytical Procedure

The following section defines procedures and methods for sampling, analysis and documentation applicable to closure plans. While the procedures and method are specific, any applicable procedure or method given in SW-846 may be used if conditions or experience shows the alternate method to be more appropriate. Disposable samplers may be used.

Samples will be taken, placed in bottles, sealed, tagged, and immediately packed in vermiculite, sawdust, or, if refrigeration is required, an insulated container with ice.

One sample for every ten samples will be either duplicated or split. The duplicated or split sample will be identified by a code so that its source is not available to the analytical laboratory, but analytical results can be compared to its twin.

Sample ~~Containers~~ containers appropriate for the requested analyses will be used for all samples. Sampling will be conducted in accordance with procedures given in *Samplers and Sampling Procedures for Hazardous Waste Streams*, EPA 600/2-80-018 and/or SW-846.

E.7.8.1 Soil and Solid Residues Sampling

The sampling procedures outlined below are used to determine the amount of hazardous material deposited on a particular area of land, or to determine the leaching rate of the material, or determine the residue level on the soil. Adequate preparation ensures that proper sampling is accomplished.

Surface soil samples will be collected with a trowel or scoop. To sample below 3 in. (8 cm), samples will be collected with a Veihmeyer soil sampler. Drums not capable of being sampled will be assumed to be hazardous waste.

E.7.8.1.1 Cleaning of Sampler

It is important to clean the samplers after each site is sampled. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a warm Liquinox(@) or Alconox(@) solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and ~~sir~~ air-dried or wiped dry. Prevention of cross contamination is of particular importance in these samples.

E.7.8.1.2 Sampling Procedures

Trowel or Scoop

- Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
- Combine the samples in a glass container.
- Cap the container, attach a label and seal, record in field log book, and complete the sample analysis request sheet and chain-of-custody record.

Veihmeyer Sampler

- Assemble the sampler by screwing in the tip and drive head on the sampling tube.
- Insert the tapered handle (drive guide) of the drive hammer through the drive head.
- Place the sampler in a perpendicular position on the material to be sampled.

- With the left hand holding the tube, drive the sampler into the material to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube ~~further~~ farther than the tip of the hammer's drive guide.

- Record the length of the tube that penetrated the material.

- Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.

- Rotate the sampler at least two revolutions to shear off the sample bottom. ~~handle (hammer) until it just clears the two ear-like protusions on the drive head and rotate about 90 degrees.~~

- Lower the sampler handle (hammer) until it just clears the two ear-like ~~protusions~~ protrusions on the drive head and rotate about 90 degrees.

- Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a pullerjack and grip.

- Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.

- Store the core sample in a 1,000 or 2,000 ml (1 qt or 1/2 gal) sample container.

- Label the sample, affix the seals, record in the field log book, complete the sample analysis request sheet and chain-of-custody record, and deliver the samples to the laboratory for analysis.

E.7.8.2 Liquid Sampling

A ~~coliwasa~~ COLIWASA sampler or similar device will be used to sample water solutions in order to determine background parameters before washing the area; it will also be used to sample the dirty wash water ~~useed~~ used in cleaning equipment. The recommended model of the ~~coliwasa~~ COLIWASA is shown in Figure ~~E.7.2~~ E.7.3, the main parts consisting of the sampling tube, the closure-locking mechanism, and the closure system. As an alternative to the ~~coliwasa~~ COLIWASA, glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of as hazardous waste after each sample is collected, thus eliminating the potential for cross contamination.

~~E.7.7.2.1~~ E.7.8.2.1 Cleaning of sampler

The sampler must be clean before use. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The used sampler must be washed with a warm detergent solution (Liquinox(@) or Alconox(@)), rinsed several times with tap water, rinsed with distilled water, drained of excess water, and ~~sir~~ air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the ~~coliwasa~~ COLIWASA is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Using the ramrod and fiber reinforced paper towels, the ~~coliwasa~~ COLIWASA tube may be quickly cleaned. Improper cleaning of sample equipment will cause cross contamination of samples. Prevention of

contamination is of particular importance in these samples. Clean samplers should be stored in polyethylene plastic tubes or bags in a clean ~~an~~ and protected area.

~~E.7.8.2.1~~ E.7.8.2.2 Sampling procedures

- Assemble the ~~coliwasa~~ COLIWASA sampler.
- Make sure that the ~~coliwasa~~ COLIWASA sampler is clean.
- Check to make sure the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.
- Wear necessary protective clothing and gear and observe required sampling precautions.
- Put the sampler in the open position by placing the stopper rod handle in the T-position and pushing the rod ~~own~~ down until the handle sits against the sampler's locking block.
- Slowly lower the ~~coliwasa~~ COLIWASA ~~COLIWASA~~ sampler into the liquid at a rate that permits the levels of the Liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a non-representative sample.
- When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.
- Slowly withdraw the sampler from the container with one hand while wiping the sampler tube with a disposable cloth with the other hand.
- Carefully discharge the sample into a glass container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block while the lower end of the sampler is positioned in the glass container.
- Cap the glass container, attach a label and seal, record in the field log book, and complete the sample analysis request sheet and chain-of-custody record.
- Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in ~~jplastic~~ plastic bags for subsequent disposal.

E.7.8.3 Sample Handling and Documentation

Soil and liquid samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and a sample analysis request form.

The sample container must be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. An example of a sample ~~label~~ seal is shown in Figure E.7.4.

The sample label is necessary to prevent misidentification of samples and shall include, if applicable, the grid number referenced to positions staked on the site perimeter. The "field information" in the case of soil sampling, shall include observations such as the soil texture and surface appearance, ~~ambnient~~ ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling. An example of a sample label is shown in Figure E.7.5.

The chain-of-custody form is necessary to trace sample possession from the time of collection and must accompany every sample. This record becomes especially ~~imprtant~~ important when the sample is to be introduced as evidence in litigation. This is a two page record with the original accompanying ~~shipmemnt~~ the shipment and the "copy" retained by the Laboratory. An example of this form is shown in Figure E.7.6.

A separate closure sampling field log book will be kept and will contain all information pertinent to field surveys and sampling. The log book shall have bound and consecutively numbered pages in 8-½ ~~1/1~~ by 11-inch format. Minimum entries include:

a. Purpose of sample (routine sampling, special sampling);

b. Location of sampling (coordinates referenced to staked field points, if soil sample);

c. Name and address of person making log entry;

d. Type of process producing waste;

e. Number and volume of sample;

f. Description of each sampling location, sampling methodology, equipment used, etc;

g. Date and time of sample collection;

h. Sample destination and transporter's name (name of laboratory, UPS, etc);

i. Map or photograph of the ~~smapling~~ sampling site, if any;

j. Field observations (ambient temperature, sky conditions, past 24-hour precipitation, etc);

k. Field measurements, if any (pH, flammability, conductivity, explosivity, etc);

l. Collector's sample identification number(s); and

m. Signature of person responsible for the log entry.

Sampling situations vary widely. No general rule can be given as to the extent of information that must be entered in the log book. A good rule, however, is to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

The sample shipment and chain-of-custody record is accompanied by a sample analysis request sheet. The request sheet has two parts: field and laboratory. The field portion of this form must be ~~completely~~ completed by the person collecting the sample and include most of the pertinent information noted in the log book. The laboratory portion is intended to be ~~completyed~~ completed by the laboratory personnel when the sample is received.

E.7.9 Quality Assurance/Quality Control

The ~~Permitee~~ Permittee shall designate a qualified individual or individuals to independently oversee the closure activities and report directly to senior management on the quality of the performance of this closure. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed and review the analysis reports for accuracy and adequacy. A written QA/QC plan shall be prepared and ~~follwoed~~ followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the adequacy of the analysis showing decontamination.

E.7.10 Final Closure Report

Upon completion of the closure activities, the ~~Permitee shal~~ Permittee shall submit a Final Closure Report to the ~~Director~~ Secretary. The report shall document the final closure and contain, at a minimum, the following:

A. The certification described in paragraph E.7.7.

B. Any variance from the approved activities and the reason for the variance.

C. A tabular summary of all sampling results, showing:

1. Sample identification,

2. Sampling location,

3. The datum reported,

4. Detection limit for each datum,

5. A measure of analytical precision (e.g. uncertainty, range, variance),

6. Identification of analytical procedure, and

7. Identification of analytical laboratory.

D. A QA/QC statement on the adequacy of the analyses and decontamination demonstration.

E. The location of the file of supporting documentation:

1. Field log books,

2. Laboratory sample analysis reports,

3. The QA/QC documentation, and

4. Chain of custody records.

F. Disposal location of all regulated and unregulated residues.

G. A certification of accuracy of the report.

TABLE E.7.1.
CLOSURE SCHEDULE

Activity	Maximum Time Required
Notify ~~EID~~ NMED of the closure	-90 Days
Advertise for proposals	-90 Days
Receive proposals	-30 Days
Select contractor and award contract	-10 Days
Begin closure activities	Day 0
Removal of wastes	Day 60
Wash down complete	Day 80
Sampling of wash water	Day 90
Soil sampling and analysis	Day 120
Soil removal	Day 160
Soil sampling and analysis	Day 190
Final clean up	Day 210
Decontamination verification	Day 240
Submit final report to ~~EID~~ NMED	Day 270

NOTES: The calendar days given above are completion dates for each activity. In some cases more than one activity may occur simultaneously.

This schedule applies equally to partial closure and final closure.

TABLE E.7.2.
ANALYTICAL PARAMETERS

Total Metals	Organics	Other
Arsenic	Halogenated volatile organics	Cyanides
Barium	Nonhalogenated volatile organics	Ignitability
Cadmium	Acid-extractable semivolatile organics	Reactivity
Selenium	Base-neutral extractable semivolatile organics	pH
Lead	Phenols	
Mercury	Organochloride pesticides	
~~Berylium~~ Beryllium	~~Chloronated~~ Chlorinated herbicides	
Chromium		
Silver		
Nickel		

NOTES: Analytical methods are taken from *Test Methods for Evaluating Solid Waste*, EPA SW-846, and may be superseded by more current methods from SW-846 or alternate EPA-approved methods.

Metals may be analyzed for total content. Any metal whose total concentration exceeds the standard for the toxicity characteristic~~Extraction Procedure Toxicity~~ shall be analyzed by the Toxicity Characteristic Leaching Procedure~~Extraction Procedure Toxicity procedures~~. Both data shall be reported in the final report.

TABLE E.7.3
SAMPLING SUMMARY

Material Sampled	Metals	Organics	Other
Washdown solutions before use	X	X	X
Washdown solutions after use	X	X	X
Soils background	X	X	X
Soil samples	X	X	X
Final decontamination samples	[a]	[a]	[a]

NOTES: Analytical parameters are given in Table E.7.2.

[a]Parameters given in HWMR-5, Part V, Section 264, Appendix IX

FIGURE ~~E 7.1~~ E.7.1
LOCATIONS OF TA-50 CHEMICAL WASTE INCINERATOR AND CONTAINER STORAGE UNITS

FIGURE E.7.3
COMPOSITE LIQUID WASTE SAMPLER (COLIWASA)

FIGURE ~~E-7.4~~ E.7.4
EXAMPLE OF SAMPLE SEAL

OFFICIAL SAMPLE SEAL

Collected by _____ Collector's sample No._____
(Signature)

Date Collected_____ Time Collected_____

Place Collected_____

_____

_____

FIGURE ~~E-7.5~~ E.7.5
EXAMPLE OF SAMPLE LABEL

OFFICIAL SAMPLE LABEL

Collector_____ Collector's Sample No._____

Place of Collection_____

_____

Date Sampled_____ Time Sampled _____

Field Information_____

_____

_____

FIGURE ~~E-7.6~~ E.7.6
CHAIN OF CUSTODY RECORD
Hazardous Materials
Collector's Sample No.____

Location of Sampling: Producer Hauler
Disposal Site Other: _____

Company's Name_____ Telephone (___)_____

Address_____
Number Street City State Zip

Collector's Name_____ Telephone (___)_____

Date Sampled_____ Time Sampled_____ hours

Type of Process Producing Waste_____

Waste Type Code_____ Other_____

Field Information_____

_____

Sample Allocation:

1. _____
(Name of Organization)

2. _____
(Name of Organization)

3. _____
(Name of Organization)

Chain of Possession:

1. _____ _____ _____
Signature Title Inclusive Dates

2. _____ _____ _____
Signature Title Inclusive Dates

3. _____ _____ _____
Signature Title Inclusive Dates

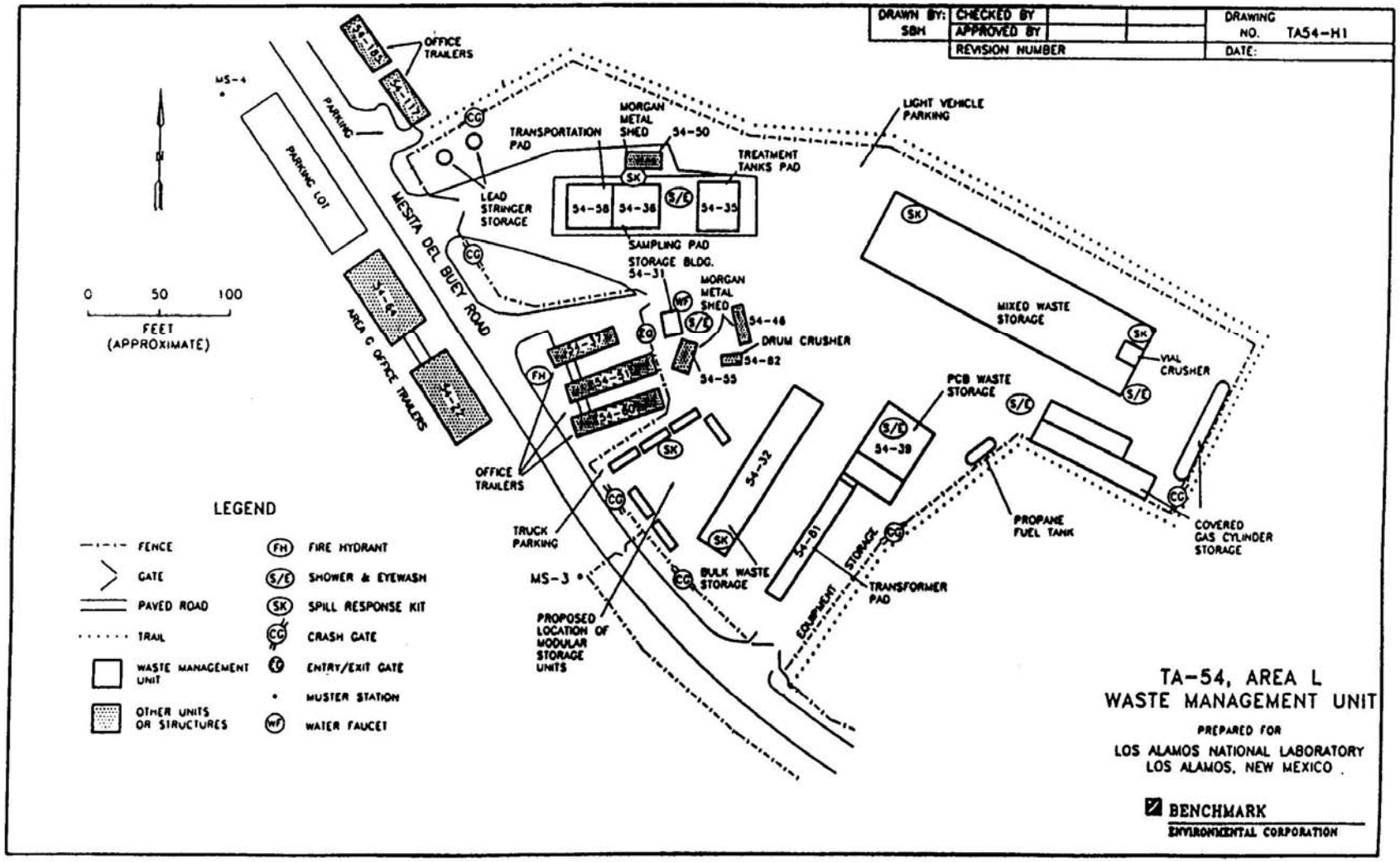

FIGURE ~~E 7.2~~ E.7.2
TA-54 AREA L WASTE MANAGEMENT UNITS

CLOSURE PLAN
PARTIAL CLOSURE
PERMIT ATTACHMENT E.8
NM 0890010515-1

CLOSURE PLAN
PARTIAL CLOSURE
PERMIT ATTACHMENT E.8
NM 0890010515-1

E.8 PARTIAL CLOSURE FOR TA-54 AREA L HAZARDOUS WASTE TREATMENT/STORAGE TANKS

E.8.1 Unit Description

Two 1,660-gallon, 10-gauge steel treatment/storage tanks ~~are~~ located at Area L will be closed. They are lined with plastic (except when treating reactive wastes) and used to neutralize, oxidize, and evaporate waste. The tanks are located on a bermed concrete pad. (Figure E.8.1) This closure plan addresses only the two tanks indicated (Figure E.8.2).

The remainder of TA-54, Area L storage units consist of a single-story metal transfer/storage building, a roofed concrete storage pad, six transportable storage buildings and specified areas within the fenced portions of Area L for storage of solid containerized waste. These areas are used for the accumulation, packing, and storage of waste containers, which are generated throughout the ~~laboratory~~ Laboratory and delivered to the facility routinely. Liquid wastes are segregated into compatible types and placed inside the transfer/storage building or within one of the storage cells of the roofed concrete pad. Wastes in small containers are put into one of the transportable storage buildings or the transfer/storage building for placing into lab packs. Wastes suitable for recycling are consolidated into drums, and any damaged or leaking drums are repacked into larger drums in this area. Solid containerized wastes are stored on pallets, or otherwise elevated four inches, in cleared areas within the fenced portions of Area L.

E.8.2 Estimate of Maximum Waste in Storage and Treatment

The maximum amount of waste that could be stored in the tanks is 3,320 gallons if the tanks were filled with no freeboard. The expected maximum volume of waste is 2,860 gallons.

E.8.3 Description of Waste Handled

The ~~wastes~~ waste treated or stored normally ~~at~~ in the tanks is barium-contaminated sand~~are ammonium bifluoride and lithium hydride~~. Occasionally plating bath treatment residues from treating F003, F004, F005 and F006 wastes are also treated here. Potentially, any wastes or clean up wastes amenable to evaporation or chemical treatment may be treated in the tanks. Therefore, any waste generated at the laboratory potentially has, or could be, treated or stored in the tanks.

E.8.4 Partial Closure

Partial closure will consist of closing two of the existing four tanks. All portions of this plan addressing tank decontamination shall apply to the closing of two tanks.

E.8.5 Closure Procedure

Cleanup and closure will be done in sequential order, culminating in the disposal of any residues or contaminated material by shipment off site to a permitted facility. Before decontamination, all wastes in storage will either be treated on site or disposed of off site. Given the diversity of wastes handled, it is not possible to estimate the exact wastes on hand at the initiation of closure and, therefore, the final disposition of the wastes. In general, recyclable wastes will be reused internally or recycled to users off site. Permitted wastes will be burned at the permitted incinerator at TA-50-37. Any wastes compatible with permitted on-site treatment ~~at the TA-50-1 Batch Waste Treatment Unit~~ will be so treated. The remaining wastes will be transported off site to a permitted disposal facility. If ~~on site~~ on-site treatment is not possible due to prior closure of the permitted units, ~~off site~~ off-site disposal will occur.

E.8.5.1 Waste Removal

The waste of concern at the start of closure consist of liquids and residues in the treatment tanks. Following removal of the tank liners and residual wastes, the tanks will be decontaminated. The wash water will be removed, placed in drums, sampled, analyzed and transported off site to a permitted facility for treatment or disposal. All wastes shipped off site will be manifested in accordance with the facility permit. All waste transporters will have an EPA identification number in accordance with ~~HWMR-S~~ HWMR-5, Part IV, Section 263.11.

E.8.5.2 Storage/Treatment Decontamination

Following removal of the two tank liners and residual wastes, the two tanks will be decontaminated by scraping and washing with Liquinox(@) or Alconox(@) in water. The wash water will be removed, placed in drums, sampled, analyzed and transported off site to a permitted facility for treatment or disposal. The ~~tank~~ tanks will be then be scraped and brushed to remove residue and the residue will be collected and placed in drums. The tanks will be removed and the concrete pad on which the two treatment tanks are placed will be washed with a Liquinox(@) or Alconox(@) solution in water. The wash water will be contained with the curbed concrete pad, collected, sampled, and analyzed. If the wash water is not hazardous or requires only neutralization, it will be removed with a vacuum truck and transported to an industrial sewer which drains to the facility industrial wastewater treatment plant at TA-50-1. If the water contains hazardous constituents, it will be removed, placed in drums and transported off site to a permitted facility for treatment or disposal. Wash-down of the two tanks and pad will be repeated until decontamination is demonstrated.

E.8.5.3 Soil Decontamination

Partial closure of this unit will result in the removal of two of the existing four tanks, with the remaining two tanks continuing in service. Therefore, soil sampling, as described in section E.8.9, will be conducted to determine if hazardous wastes have been tracked outside of contaminated areas at the time of final closure of this unit. When final closure is initiated ~~eight~~ eight soil samples will be collected around the edge of the bermed concrete pad beneath the treatment tanks as shown in Figure E.8.2. Each sample will be made up of six inch deep cores taken six inches off the edge and equally spaced to cover each edge. Soil and sediment samples will be analyzed for Table E.8.2 parameters. Analysis and quality assurance/quality control will follow methods defined in SW-846.

If the sample survey indicates that there are no contaminated soil areas, no further soil decontamination action will be taken at the site. If contamination is found in any of these samples, the limits of the sampling area will be expanded by establishing a three foot sampling grid around a single contamination point, or centered on the area defined by the locus of multiple contamination points, to determine the outside perimeter of the contamination. Sampling will be continued until the extent of contamination is determined. Background samples will be taken in the same manner as the initial closure soil survey.

Once the limits of the contaminated area are determined, the contaminated soil will then be removed to a depth of 6 inches and handled as a regulated waste. Contaminated soil will be placed in drums or sealed in dump trucks for off site disposal at a permitted facility. The adequacy of decontamination is determined by additional sampling. Sampling, analysis, and documentation procedures are detailed in section E.8.9. In order to demonstrate final decontamination, soil samples will be analyzed for all Table E.8.2 parameters. Analysis and quality assurance/quality control will follow methods defined in SW-846.

E.8.5.4 Personnel Protection

Personnel who are washing equipment will wear rubber gloves, neoprene acid/solvent resistant coveralls, rubber boots, and a face shield. The Laboratory's Industrial Hygiene and Safety Group ~~(HR-5)~~ (ESH-5) will review the site survey analytical data and recommend additional protective clothing if necessary.

E.8.5.5 Equipment Decontamination

Shovels, drum trucks and other equipment used for decontamination will be scraped and brushed to remove residue, and the residue collected will be placed in drums for disposal off site at a permitted facility. The equipment will be placed on a 30 mil plastic sheet that is bermed to contain liquids and pressure washed with water and detergent. Large equipment such as backhoes and forklifts will also be washed. Testing will be performed on this water to determine if decontamination is adequate. Washing is considered adequate to decontaminate the equipment. The wash water will be allowed to evaporate and the plastic and residue will be packed in drums for off site disposal at a permitted facility.

E.8.6 Decontamination Verification

E.8.6.1. Wash water Decontamination Verification

A minimum of two samples of the clean Liquinox(@) or Alconox(@) solution will be sampled as background for wash water and, along with the wash water samples, analyzed for the constituents listed in Table E.8.2. Successful decontamination is defined as:

1. No detectable hazardous constituents in the final sample, or

2. Detectable hazardous constituents in the final sample are equal to or less than, at the 0.01 confidence level, their concentration in the unused ~~washwater~~ wash water or background sample. Hazardous

constituents detected in the background sample will invalidate that sample as true background unless adequate explanation of their source is provided.

An alternative demonstration of decontamination may be proposed and justified at the time of closure as circumstances indicate. The Secretary will evaluate the proposed alternative in accordance with the standards and guidance then in effect and, if approved, incorporate by permit modification the alternative into the closure plan.

E.8.6.2 Soil Decontamination

The ~~Criteria~~ criteria for determining contaminated soil are the same as discussed in Section E.8.6.1. Regulated constituent concentrations will be compared to background concentrations. Soils containing levels of contamination above the background will be considered contaminated and removed as hazardous waste.

Decontamination of the site soil will be demonstrated by additional sampling. Because removal of contaminated soil will leave an exposed surface, the disturbed surface will be resampled in the same places used to define the contaminated area. Analysis and the determination of contamination is as previously discussed, and reanalysis will be conducted only for those constituents that caused the area to be determined contaminated.

E.8.7 Closure Schedule

The year of closure is 1994. Soil survey, contracting and closure activities will observe the schedule given in Table E.8.1. Some soil sampling and the decontamination contractor selection will be completed before closure begins. Because several of the closure steps will occur simultaneously, closure is estimated to take 210 days.

Contracts for analytical work and, if necessary, soil removal are expected to exceed $100,000. The Laboratory is required by policy to put the work out for bid, and ninety days are required to solicit and process the bids. The location of the site is prone to snow cover in the winter months. The closure may be delayed until the site is free of snow and the ground is thawed adequately to allow the soil sampling and other closure operations. The schedule includes a weather factor to allow for this delay.

E.8.8 Closure Certification

An independent, registered professional engineer and the Permittee shall witness closure of the two tanks and ensure that the closure follows this plan. Upon completion of closure, the engineer and the DOE shall prepare a letter certifying that the two tanks have been closed in accordance with this plan. The letter shall be dated and signed by each party, stamped by the registered engineer, and the original copy submitted by the DOE to the Secretary of the NMED. One copy shall be maintained at the DOE office and one copy maintained by ~~the ES-8 Regulatory Compliance Section~~ the ESH-19 Hazardous and Solid Waste Group.

E.8.9 Sampling and Analytical Procedure

The following section defines procedures and methods for sampling, analysis and documentation applicable to closure plans. While the procedures and method are specific, any applicable procedure or method given in SW-846 or other EPA approved procedure may be used if conditions or experience ~~shows~~ show the alternate method to be more appropriate. Disposable samplers may be used.

Sample containers appropriate for the requested analyses will be used for all samples. Sampling will be conducted in accordance with procedures given in *Samplers and Sampling Procedures for Hazardous Waste Streams*, EPA 600/2-80-018 and/or SW-846. Samples will be taken, placed in bottles, sealed, tagged, and immediately packed in vermiculite, sawdust, or, if refrigeration is required, an insulated container with ice. One sample for every ten samples will be either duplicated or split. The duplicated or split sample will be identified by a code so that its source is not available to the analytical laboratory, but analytical results can be compared to its twin.

E.8.9.1 Soil and Solid Residues Sampling

The sampling procedures outlined below are used to determine the amount of hazardous material deposited on a particular area of land, or to determine the leaching rate of the material, or determine the residue level on the soil. Adequate preparation ensures that proper sampling is accomplished.

Surface soil samples will be collected with a trowel or scoop. To sample below 3 in. (8 cm), samples will be collected with a Veihmeyer soil sampler. Drums of solid residues will be sampled with a core sampler or Veihmeyer soil sampler. Drums not capable of being sampled will be assumed to be reactive hazardous waste.

E.8.9.1.1 Cleaning of sampler

It is important to clean the samplers after each site is sampled. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a warm Liquinox(@) or Alconox(@) solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. Prevention of cross contamination is of particular importance in these samples.

E.8.9.1.2 Sampling procedures ~~trowel or scoop~~

Trowel or Scoop

- Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
- Combine the samples in a glass container.
- Cap the container, attach a label and seal, record in field log book, and complete the sample analysis request sheet and chain-of-custody record.

Veihmeyer Sampler

- Assemble the sampler by screwing in the tip and drive head on the sampling tube.
- Insert the tapered handle (drive guide) of the drive hammer through the drive head.
- Place the sampler in a perpendicular position on the material to be sampled.
- With the left hand holding the tube, drive the sampler into the material to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube ~~further~~ farther than the tip of the hammer's drive guide.
- Record the length of the tube that penetrated the material.
- Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.
- Rotate the sampler at least two revolutions to shear off the sample at the bottom.
- Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.
- Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a pullerjack and grip.
- Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.
- Store the core sample in a 1,000 or 2,000 ml (1 qt or 1/2 gal) sample container.
- Label the sample, affix the seals, record in the field log book, complete the sample analysis request sheet and chain-of-custody record, and deliver the samples to the laboratory for analysis.

E.8.9.2 Liquid Sampling

A ~~coliwasa~~ COLIWASA sampler or similar device will be used to sample water solutions in order to determine background parameters before washing the area; it will also be used to sample the dirty wash water used in cleaning equipment. The recommended model of the ~~coliwasa~~ COLIWASA is shown in Figure E.8.3., the main parts consisting of the sampling tube, the closure-locking mechanism, and the closure system. As an alternative to the ~~coliwasa~~ COLIWASA, glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of as hazardous waste after each sample is collected, thus eliminating the potential for cross contamination.

E.8.9.2.1 Cleaning of sampler

The sampler must be clean before use. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The used sampler must be washed with a warm detergent solution (Liquinox(@) or Alconox(@)), rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the ~~coliwasa~~ COLIWASA is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Using this ramrod and fiber reinforced paper towels, the ~~coliwasa~~ COLIWASA tube may be quickly cleaned. Improper cleaning of sample equipment will cause cross contamination of samples. Prevention of contamination is of particular importance in these samples. Clean samplers should be stored in polyethylene plastic tubes or bags in a clean and protected area.

E.8.9.2.2 Sampling procedures

- Assemble the ~~coliwasa~~ COLIWASA sampler.
- Make sure that the ~~coliwasa~~ COLIWASA sampler is clean.
- Check to make sure the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.
- Wear necessary protective clothing and gear and observe required sampling precautions.
- Put the sampler in the open position by placing the stopper rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.
- Slowly lower the ~~coliwasa~~ COLIWASA sampler into the liquid at a rate that permits the levels of the ~~Liquid~~ liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a nonrepresentative sample.
- When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.
- Slowly withdraw the sampler from the container with one hand while wiping the sampler tube with a disposable cloth with the other hand.
- Carefully discharge the sample into a glass container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block while the lower end of the sampler is positioned in the glass container.
- Cap the glass container, attach a label and seal, record in the field log book, and complete the sample analysis request sheet and chain-of-custody record.

- Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.

E.8.9.3 Sample Handling and Documentation

Soil and liquid samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and a sample analysis request form.

The sample container must be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. An example of a sample seal is shown in Figure E.8.4.

The sample label is necessary to prevent misidentification of samples and shall include, if applicable, the grid number referenced to positions staked on the site perimeter. The "field information" in the case of soil sampling, shall include observations such as the soil texture and surface appearance, ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling. An example of a sample label is shown in Figure E.8.5.

The chain-of-custody form is necessary to trace sample possession from the time of collection and must accompany every sample. This record becomes especially important when the sample is to be introduced as evidence in litigation. This is a two page record with the original accompanying shipment and the "copy" retained by the Laboratory. An example of this form is shown in Figure E.8.6.

A separate closure sampling field log book will be kept and will contain all information pertinent to field surveys and sampling. The log book shall have bound and consecutively numbered pages in 8-1/2 by 11-inch format. Minimum entries include:

a. Purpose of sample (routine sampling, special sampling);

b. Location of sampling (coordinates referenced to staked field points, if soil sample);

c. Name and business address of person making log entry;

d. Type of process producing waste;

e. Number and volume of sample;

f. Description of each sampling location, sampling methodology, equipment used, etc.;

g. Date and time of sample collection;

h. Sample destination and transporter's name (name of laboratory, UPS, etc.);

i. Map or photograph of the sampling site, if any;

j. Field observations (ambient temperature, sky conditions, past 24-hour precipitation, etc.);

k. Field measurements, if any (pH, flammability, conductivity, explosivity, etc.);

l. Collector's sample identification number(s); and

m. Signature of person responsible for the log entry.

Sampling situations vary widely. No general rule can be given as to the extent of information that must be entered in the log book. A good rule, however, is to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

The sample shipment and chain-of-custody record is accompanied by a sample analysis request sheet. The request sheet has two parts: field and laboratory. The field portion of this form must be ~~completely~~ completed by the person collecting the sample and include most of the pertinent information noted in the log book. The laboratory portion is intended to be completed by the laboratory personnel when the sample is received.

E.8.10 Quality Assurance/Quality Control

The Permittee shall designate a qualified individual or individuals to independently oversee the closure activities and report directly to senior management on the quality of the performance of this closure. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed and review the analysis reports for accuracy and adequacy. A written QA/QC plan prepared in accordance with SW-846 guidance shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the adequacy of the analysis showing decontamination.

E.8.11 Final Closure Report

Upon completion of the closure activities, the Permittee shall submit a Final Closure Report to the Secretary. The report shall document the final closure and contain, at a minimum, the following:

A. The certification described in paragraph E.8.8.

B. Any variance from the approved activities and the reason for the variance.

C. A tabular summary of all sampling results, showing:

1. Sample identification,

2. Sampling location,

3. The datum reported,

4. Detection limit for each datum,

5. A measure of analytical precision (e.g. uncertainty, range, variance),

6. Identification of analytical procedure, and

7. Identification of analytical laboratory.

D. QA/QC statement on the adequacy of the analyses and the decontamination demonstration.

E. The location of the file of supporting documentation:

1. Field log books,

2. Laboratory sample analysis reports,

3. The QA/QC documentation, and

4. Chain of custody records.

F. Disposal location of all regulated and non-regulated residues.

G. A certification of accuracy of the report.

TABLE E.8.1
CLOSURE SCHEDULE

Activity	Maximum Time Required
Preclosure Activities	
Notify NMED of the closure	-45 days
Conduct first soil sampling survey	-30 days
Analyze first soil samples	-20 days
Conduct second soil survey if needed	-10 days
Analyze second soil set of soil samples	
Closure Activities	
Begin Closure	Day 0
Analyze first soil samples	Day 30
Conduct second soil samples survey, if needed	Day 45
Treat or remove final wastes	Day 50
Analyze second soil samples, if needed	Day 65
Evaporate waste water from treatment tanks	Day 90
Soil decontamination, if necessary	Day 105
Remove soil	Day 130
Dispose of tanks and residue	Day 140
Weather delay contingency	Day 175
Conduct verification samples	Day 200
Analyze samples	Day 200
Submit final report to NMED	Day 210

NOTES: Many of the above steps may be taken concurrently, and the total closure period will not exceed 360 calendar days.

The calendar days given above are completion dates for each activity. In ~~Some~~ some cases more than one activity may occur simultaneously.

This schedule applies to both partial and final closure.

TABLE E.8.2.
ANALYTICAL PARAMETERS

Metals	Organics	Other
Arsenic	Halogenated volatile organics	Cyanides
Barium	Nonhalogenated volatile organics	pH
Cadmium	Acid-extractable semivolatile organics	
Chromium	Base-neutral extractable	
Lead	semivolatile organics	
Mercury		
Selenium		
Silver		
Nickel		
~~Berylium~~ Beryllium		

NOTES: Analytical methods are taken from *Test Methods for Evaluating Solid Waste*, EPA SW-846, and may be superseded by more current methods from SW-846 or alternate EPA-approved methods.

Metals may be analyzed for total content. Any metal whose total concentration exceeds the standard for Toxic Characteristic Leaching Procedure (TCLP) shall be analyzed by using ~~(TCLP)~~ TCLP procedures. Both data shall be reported in the final report.

TABLE E.8.3
SAMPLING SUMMARY

Material Sampled	Metals	Organics	Other
Washdown solutions before use	X	X	X
Washdown solutions after use	X	X	X
Soils background	X	X	X
Soil samples	X	X	X
Final decontamination samples	X	X	X

NOTES: Analytical parameters are given in Table E.8.2.

FIGURE E.8.1
TA-54 AREA L WASTE MANAGEMENT UNITS

FIGURE E.8.2
TA-54 AREA L TREATMENT TANKS SAMPLE LOCATIONS

FIGURE E.8.3
COMPOSITE LIQUID WASTE SAMPLER (COLIWASA)

FIGURE E.8.4
EXAMPLE OF SAMPLE SEAL

OFFICIAL SAMPLE SEAL

Collected by _____ Collector's sample No._____
(Signature)

Date Collected_____ Time Collected_____

Place Collected_____

_____

_____

FIGURE E.8.5
EXAMPLE OF SAMPLE LABEL

OFFICIAL SAMPLE LABEL

Collector_____ Collector's Sample No._____

Place of Collection_____

_____

Date Sampled_____ Time Sampled _____

Field Information_____

_____

_____

FIGURE E.8.6
CHAIN OF CUSTODY RECORD
Hazardous Materials
Collector's Sample No.____

Location of Sampling: Producer Hauler
Disposal Site Other: _____

Company's Name_____ Telephone (___)_____

Address_____
Number Street City State Zip

Collector's Name_____ Telephone (___)_____

Date Sampled_____ Time Sampled_____ hours

Type of Process Producing Waste_____

Waste Type Code_____ Other_____

Field Information_____

_____

Sample Allocation:

1. _____
(Name of Organization)

2. _____
(Name of Organization)

3. _____
(Name of Organization)

Chain of Possession:

1. _____ _____ _____
Signature Title Inclusive Dates

2. _____ _____ _____
Signature Title Inclusive Dates

3. _____ _____ _____
Signature Title Inclusive Dates

State of New Mexico
ENVIRONMENT DEPARTMENT
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Telephone (505) 428-2500
Fax (505) 428-2567
www.nmenv.state.nm.us

BILL RICHARDSON
GOVERNOR

RON CURRY
SECRETARY

DERRITH WATCHMAN-MOORE
DEPUTY SECRETARY

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

December 3, 2003

G. Pete Nanos
Director
Los Alamos National Laboratory
P.O. Box 1663, MS A100
Los Alamos, NM 87544

Ralph Erickson
Manager
Los Alamos Site Office
Department of Energy
528 35th Street
Los Alamos, NM 87544

SUBJECT: REQUEST FOR CLASS 1 RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) PERMIT MODIFICATION ON ATTACHMENT E.8; CLOSURE PLAN PARTIAL CLOSURE FOR TA-54 AREA L HAZARDOUS WASTE TREATMENT/STORAGE TANKS
LOS ALAMOS NATIONAL LABORATORY EPA ID# NM0890010515-1
HWB-LANL-02-030

Dear Mssrs. Nanos and Erickson:

This letter is in response to the above-referenced letter submitted by the U.S. Department of Energy and the University of California (Permittees) to the New Mexico Environment Department (NMED), dated September 30, 2003. NMED finds that two of the four requested modifications are appropriate and denies two of the four requested modifications.

In the September 30 letter, Permittees request that NMED approve modifications to the Closure Plan for two treatment tanks at Technical Area (TA)-54 Area L. The Closure Plan is Attachment E.8 to the Los Alamos National Laboratory RCRA Permit (Permit), with prior modifications dated February 7, 1994. The Permittees request that NMED approve the Closure Plan modifications as a Class 1 modification to the Permit, pursuant to 20.4.1.900 NMAC (incorporating 40 C.F.R. § 270.42(a)).

The September 30 letter lists four requested modifications. NMED finds those numbered three and four to be appropriate as Class 1 modifications, with prior written approval of NMED, in compliance with 20.4.1.900 NMAC (incorporating 40 C.F.R. § 270.42, Appendix I.D.1.d. Changes in procedures for decontamination of facility equipment or structures).

Requested modification number three deletes from the Closure Plan decontamination of the tanks by washwater and collection of the washwater for analysis. The tanks were instead recycled as scrap metal, and the unused liners were disposed of as non-hazardous waste. 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.197(a)) allows removal or decontamination of hazardous waste residues, contaminated containment system components, and structures and equipment contaminated with waste, and management of them as hazardous waste. Requested modification number four replaces Coliwasa or glass tube collection of Pad TA-54-35 decontamination washwater with collection of the washwater in mops, buckets, funnels, or five-gallon carboys.

NMED disapproves requested modification number one. Requested modification number one reflects a misunderstanding on the part of Permittees regarding the distinction between hazardous waste determinations for waste management purposes and assessment of releases of hazardous waste, hazardous residues, and hazardous constituents at closure of a hazardous waste management unit for protection of human health and the environment. Requested modification number one would delete volatile organic compounds, semi-volatile organic compounds, cyanides, and pH sample analytes because they are not indicative of RCRA regulated material treated or stored in the tanks. Barium sands hazardous waste and ammonium biflouride rinsewater was treated in the tanks, and the sands were treated with sulfuric acid. Ammonium biflouride in solution is caustic. According to the Closure Certification Report, dated December 1996, for the first two tanks closed at this site in 1994, high levels of volatile organic compounds and semi-volatile organic compounds were detected from the tank debris and liners at closure of the first two tanks.

Permittees are required to remove or decontaminate releases of hazardous waste, hazardous waste residues, and hazardous constituents, including contaminated soils, at closure of a tank system, in compliance with 20.4.1.500 NMAC (incorporating 40 C.F.R. §§ 264.111, 264.112(b)(4), and 264.197(a)). The September 30 letter states that "Sampling conducted during the closure of the first two waste treatment/storage tanks in 1994 included all of the analytes outlined in Table E.8.2 of which none of the analytical resulted in a hazardous waste determination. Therefore, sampling conducted on the remaining two waste treatment/storage tanks in 2002 included only RCRA Total Metals constituents to confirm 1994 acceptable knowledge results."

A hazardous waste determination is necessary to determine how to properly manage waste

generated at closure but is not appropriate to assess releases from the tanks. In order to assess releases of hazardous waste, hazardous waste residues, and hazardous constituents, including contaminated soils, at closure of the tanks, Permittees must determine nature and extent of hazardous constituent contamination using human health and ecological risk based cleanup standards, and not only assess releases of hazardous waste from the unit. Toxicity Characteristic Leaching Procedure analytical results are not appropriate for assessment of releases at closure of a hazardous waste management unit.

NMED disapproves requested modification number two. Requested modification number two would delete soil sampling from the Closure Plan. Permittees' justification for the deletion is that soil sampling is only required at "final closure of the unit," and the concrete pad under the tanks will continue to be used as a container storage unit after closure of the tanks. The September 30 letter states that "[c]ollection of soil samples was driven by and based upon final and not partial closure of the unit. DOE/UC intends to retain the pad for use as a container storage area for the future."

Under New Mexico Hazardous Waste Management Regulations, at 20.4.1.100 NMAC (incorporating 40 C.F.R. § 260.10), partial and final closure apply to a facility and not to an individual hazardous waste management unit. Final closure is defined as closure of all hazardous waste management units at a hazardous waste management facility. Partial closure is defined as closure of an individual hazardous waste management unit while other hazardous waste management units at a facility continue to operate. Under 20.4.1 NMAC, there is no partial or final closure of a single unit.

Permittees must comply with all applicable closure requirements at closure of any hazardous waste management unit. At closure of a tank system, Permittees must remove or decontaminate all contaminated soils, in compliance with 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.197(a)). In order to remove or decontaminate contaminated soils, Permittees must determine the nature and extent of releases of hazardous waste, hazardous waste residues, and hazardous constituents to surrounding soil from the tank system. The requirement to assess and remediate releases is not delayed because the same location may be used for a different hazardous waste management activity. The potential for releases and potential constituents released are different for these treatment tanks than for containers of other hazardous wastes stored with secondary containment for containers holding wastes containing free liquids.

NMED may approve requested modifications numbered one and two, the deletion of release investigation analytes and soil sampling from the Closure Plan, as a Class 3 permit modification, if Permittees can document that there were no releases from the treatment tanks. Permittees do not address in the September 30 letter the issue of whether or not there were releases from the tanks. Documentation of no releases acceptable to NMED includes documentation of the

condition of the tanks and the concrete pad indicating no releases, a history of no releases, and absence of other evidence of releases such as soil or concrete staining.

NMED requires that the Permittees submit a revised modification request and revised Closure Plan addressing the above concerns.

If you have any questions or need additional information please contact Carl Will of my staff at 505-428-2542.

Sincerely,

John E. Kieling
Manager
Permits Management Program

JEK:ctw

cc: S. Martin, NMED HWB
C. Will, NMED HWB
L. King, EPA Region 6 (6PD-N)
J. Ellvinger, LANL RRES-SWRC, MS K490
G. Bacigalupa, LANL RRES-SWRC, MS K490
G. Turner, DOE LASO, MS A316

File: Reading and LANL TA-54

Department of Energy
National Nuclear Security Administration
Los Alamos Site Office
Los Alamos, New **Mexico** 87544

SEP 30 2003

Mr. Carl Will, RCRA Permits Management Program
Hazardous & Radioactive Materials Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303

Dear Mr. Will:

Subject: Request for Class 1 Resource Conservation and Recovery Act (RCRA) Permit Modification on Attachment E.8; Closure Plan Partial Closure for TA-54 Area L Hazardous Waste Treatment/Storage Tanks Permit Attachment E.8 EPA ID# NM 0890010515-1

The objective of this letter is to request a Class 1 RCRA Permit Modification to Attachment E.8 of the Department of Energy/University of California (DOEIUC) Hazardous Waste Facility Permit (HWFP). Originally, Attachment E.8 outlined closure procedures for four waste treatmendstorage tanks located at Los Alamos National Laboratory (LANL) TA-54, Area L. This attachment was modified on January 1995 for the closure of two of the four waste treatment/storage tanks. DOE/UC want to close the final two waste treatment/storage tanks remaining at TA-54, Area L and are requesting this modification to Attachment E.8 for that purpose.

CLOSURE PLANS

Partial closure activities were conducted on two of the waste treatment/storage tanks September 12 through 14, 1994. These activities were performed in accordance with the Closure Plan Partial Closure Permit Attachment E.8 EPA ID# NM 0890010515-1. Closure sampling activities were conducted on the two remaining waste treatmendstorage tanks located at TA-54, Area L from July 30,2002 through September 7,2002 in accordance with Los Alamos National Laboratory Technical Area 54, Area L Closure Plan for Hazardous Waste Treatment/Storage Tanks EPA ID# NM 0890010515-1, (LA-UR-02-4740) transmitted to the New Mexico Environment Department (NMED) August 19,2002.

CLOSURE PLAN MODIFICATIONS

Modifications in the closure procedures for the two remaining waste treatmennt/storage tanks from the approved procedures identified in Attachment E.8 were kept to a minimum. Closure activities conducted from July 30,2002 through September 7,2002 incorporate a total of four modifications:

1. Attachment E.8, Table E.8.2 calls for the sampling of RCRA total metals, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), cyanides, and pH. The operating record identifies that barium contaminated sand was the only RCRA regulated material treated or stored within the tanks. The two waste treatment/storage tanks were

used to treat ammonium bifluoride rinse water from the time they were installed in approximately 1985 until about 1987. Although ammonium bifluoride in solution is caustic, the ammonium bifluoride rinse water treated within the tanks did not meet the RCRA definition for corrosivity therefore, the rinse water was not regulated by RCRA as a hazardous waste. No organics or cyanides were treated in the tanks. Sampling conducted during the closure of the first two waste treatment/storage tanks in 1994 included all of the analytes outlined in Table E.8.2 of which none of the analytical resulted in a hazardous waste determination. Therefore, sampling conducted on the remaining two waste treatment/storage tanks in 2002 included only RCRA Total Metals constituents to confirm 1994 acceptable knowledge results.

2 Attachment E.8, Section E.8.5.3 (Soil Decontamination) calls for the collection of eight soil samples around the edge of the bermed concrete pad beneath the waste treatment/storage tanks, the collection of background soil samples and the collection of soil samples to define extent of contamination at time of final closure. Soil samples were not collected. The closure plan, originally written for complete facility closure, prescribed several closure activities (e.g., soil sampling and pad decontamination) that were intended to be completed at the time of final closure of the unit. Collection of soil samples was driven by and based upon final and not partial closure of the unit. DOE/UC intends to retain the pad for use as a container storage area for the future.

3. Attachment E.8, Section E.8.5.2 (Storage/Treatment Decontamination) calls for the decontamination of the tanks and collection of wash water (i.e., decontamination water) for analyses from the tanks. The tanks were free of observable barium sand treatment residue during 2002 closure activities and had not been used since the closure of the first two treatment tanks in 1995. The tank liners that were in the bottom of the tanks were not used in any waste treatment or storage. The tank liners were new, folded in the bottom of the tanks, and were documented as never having been used in the treatment or storage of waste. They were disposed of as non-hazardous waste in a municipal landfill. They were therefore, not included in the closure activities. Even though the original tank liners were determined to be non-hazardous, they were shipped to an off-site RCRA permitted disposal facility and were disposed of during the closure of the first two of the four treatment tanks. It was also determined that the tanks were no longer required therefore, the facility decided to cut them in half, sample and analyze the debris generated from the cutting of the two tanks. Based upon the resultant analyses, (Non-RCRA) the tank halves were shipped off-site for scrap metal recycling.

4. Attachment E.8, Section E.8.9.2 (Liquid Sampling) calls for the use of a Coliwasa or similar device (i.e., glass tubes) for collection of water solutions. Clean and decontamination wash water samples collected prior and after the decontamination of Pad TA-54-35 during 2002 closure activities were not collected utilizing a Coliwasa. Clean and decontamination wash water solutions were initially generated and collected utilizing a mop, bucket, funnel, carboy, or a combination of all four. Wash water samples were collected by combining the used wash water into five-gallon carboys via a funnel as necessary. The carboys were then agitated to insure homogeneity of waste water and associated constituents and samples were then poured into the sample containers via a funnel.

DOE/UC have reviewed 20.4.1 NMAC incorporating 40 CFR 270.42. This section states that changes to the closure procedures, for the waste treatment/storage tanks, to achieve closure are Class 1 permit modifications with prior approval from NMED. DOE/UC requests that these Class 1 permit modifications be approved by NMED. DOE/UC will issue the requisite public notice to those parties identified on the facility mailing list upon approval of the above modifications by NMED.

If you have any comments or questions regarding the information presented in this letter, please contact either Gene Turner, DOE, at (505) 667-5794 or Jack Ellvinger, UC, at (505) 667-0633.

Sincerely,

Robert A. Gall
for Joseph C. Vozella
Assistant Manager
Office of Facility Operations

OFO:1GT:021

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CLOSURE PLAN
PERMIT ATTACHMENT E.9
NM 0890010515-1

CLOSURE PLAN
PERMIT ATTACHMENT E.9
NM 0890010515-1

E.9 CLOSURE FOR TA-54 AREA L SOLIDIFIED HAZARDOUS WASTE STORAGE UNIT

The storage unit is a specified area within the fenced portion of Technical Area 54, Area L, used for storage of solidified packaged waste. (Figure E.9.1.) Approximately 60 percent of the area within the perimeter fence is designated for solidified waste storage. Solid contained wastes are stored on pallets, or otherwise elevated four inches, in cleared areas within the fenced portions of Area L. This closure plan applies only to this area.

Other storage units at Area L consist of a single story metal building, a roofed concrete containment structure, two transportable storage units, and two ~~four treatment / storage~~ treatment/storage tanks. These units are used for the accumulation, packaging, and storage of waste containers, which are generated throughout the ~~laboratory~~ Laboratory and delivered to Area L routinely. Liquid wastes are segregated into compatible types and placed inside the transportable storage units , the metal building or within one of the six storage cells of the concrete containment structure. Wastes suitable for recycling are consolidated into drums, and any damaged or leaking drums are repackaged into larger drums in this area. Four tanks are located at Area L. They are used to neutralize, oxidize, and evaporate waste. The tanks are located on a bermed concrete pad.

E.9.1 Estimate of Maximum Waste in Storage and Treatment

No more than 3,600 55-gallon containers of solidified wastes will be stored within the fenced area at Area L.

E.9.2 Description of Waste Handled

A wide variety of wastes generated throughout the Laboratory are brought to Area L, including wastes from basic and applied chemistry R & D programs (small quantities of different acids, bases, organics, inorganics and reactive metals), processing wastes (sludge resulting from treatment ~~either~~ at Area L ~~or at TA-50-1 Batch Treatment Unit~~), and chemically contaminated equipment, to be stored, recycled, treated or packed for off site disposal at a permitted facility.

E.9.3 Closure Procedures

E.9.3.1 Partial Closure

Partial closure would be the change in use of a portion of the designated area from solidified storage to another use such as a new building. Should this occur, all portions of this plan shall apply to the closing area.

E.9.3.2 Closure Procedure

Cleanup and closure will be done in sequential order, culminating in the disposal of any residues or contaminated material by shipment off site to a permitted facility. Before decontamination, all wastes in storage will either be treated on site or disposed of off site. Given the diversity of wastes handled, it is not possible to estimate the exact wastes on hand at the initiation of closure and, therefore, the final disposition of the wastes. In general, recyclable wastes will be reused internally or recycled to users off site. Permitted wastes will be burned at the permitted incinerator at TA-50-37. Any wastes compatible with permitted treatment at ~~the TA-50-1 Batch Waste Treatment Unit or~~ the TA-54, Area L treatment tanks will be so treated. The remaining wastes will be transported off site to a permitted disposal facility. If on site treatment is not possible due to prior closure of the permitted units, off site disposal will occur.

E.9.3.3 Waste Removal

The waste on site at the start of closure will be only packaged solidified wastes. Contained wastes will be handled with hand trucks or forklifts. Trucks of adequate size will be used to move contained wastes to off site treatment or disposal facilities. All wastes shipped off site will be manifested in accordance with the facility permit. All waste transporters will have an EPA identification number in accordance with HWMR-5, amended 1989, Part IV, section 263.11.

E.9.4 Soil Decontamination

Soil sampling, as described in E.9.9, will be conducted to determine if hazardous wastes have been tracked outside of containment areas. A sampling survey of the entire contained ~~soilid~~ solid waste storage area within the TA-54, Area L fence will be conducted using a grid with 10 foot centers to determine the area of possible contamination. The survey will be performed by collecting a sample from the surface to six inches below ground surface at each grid point. Additional samples will be collected from areas with visible contamination (i.e., soil discoloration). If the initial surface grid sample analysis indicates contamination, additional sampling at the same points at one foot depth will be performed to determine the depth of contamination. If contamination is determined on the surface, additional sampling will be conducted by reducing the grid distance by one-half and taking additional surface samples, ~~dictating~~ dictated by terrain, until the contaminated area is defined. If contamination is found at the outside grid samples, the limits of the grid will be expanded to determine the outside perimeter of contamination, to include areas outside of the perimeter fence and at the discharge point of the run off ditch. The contaminated soil will then be removed and handled as a regulated waste. The adequacy of decontamination is determined by additional sampling. Sampling, analysis, and documentation procedures are detailed in section E.9.9.

Soil and sediment samples will be analyzed for all HWMR-5, amended 1989, Part V, Appendix IX constituents. Analysis and quality assurance/quality control will follow methods defined in SW-846. The approach to soil decontamination depends on the extent of contamination determined by the sampling. If the sample survey indicates that there are no contaminated soil areas, no further soil decontamination action will be taken at the site. If the soil is contaminated, it will be placed in drums or sealed in dump trucks for off site disposal at a permitted facility.

E.9.5 Personnel Protection

Personnel who are washing equipment will wear rubber gloves, neoprene acid/solvent resistant coveralls, rubber boots, and a face ~~shied~~ shield. The Laboratory's Industrial Hygiene and Safety Group ~~(HSE-5)~~ (ESH-5) will review the site survey analytical data and recommend additional protective clothing if necessary.

E.9.6 Equipment Decontamination

Shovels, drum trucks and other equipment used for decontamination will be scraped and brushed to remove residue, and the residue collected will be placed in drums for disposal off site at a permitted facility. The equipment will be placed on a plastic sheet that is bermed to contain liquids and washed with water and detergent. Large equipment such as backhoes and forklifts will also be washed. Testing will be performed on this water to determine if decontamination is adequate. Washing ~~to~~ is considered adequate to decontaminate the equipment. The wash water will be allowed to evaporate in the permitted evaporation tanks and the plastic and residue will be packed in drums for off site disposal at a permitted facility.

E.9.6.1 Decontamination Verification

Samples of soil and decontamination wash water will be analyzed for the constituents in HWMR-5, amended 1989,~~,~~ Part V, Section 264, Appendix IX. Soils containing levels of contamination above the background will be considered contaminated and removed as hazardous waste.

Decontamination of the site soil will be demonstrated by additional sampling. Because removal of contaminated soil will leave an exposed surface, the disturbed surface will be resampled in the same places used to define the contaminated area. Analysis and the determination of contamination is as previously discussed, and reanalysis will be conducted only for those constituents that caused the area to be determined contaminated.

A minimum of two samples of the clean Liquinox(@) or Alconox(@) solution will be sampled as background for wash water and, along with the wash water samples, analyzed for the constituents listed in HWMR-5, amended 1989,~~,~~ Part V, Section 264, Appendix IX.

Successful decontamination is defined as:

1. No detectable hazardous constituents in the final sample, or

2. Detectable hazardous constituents in the final sample are equal to or less than, at the 0.01 confidence level, their concentration in the unused ~~washwater~~ wash water or background sample.

An alternative demonstration of decontamination may be proposed and justified at the time of closure as circumstances indicate. The ~~Director~~ Secretary will evaluate the proposed alternative in accordance with the standards and guidance then in effect and, if approved, incorporate by permit modification the alternative into the closure plan.

E.9.7 Closure Schedule

The year of closure is 2100. Soil survey, contracting and closure activities will observe the schedule given in Table E.9.1.

Soil sampling and the decontamination contractor selection may be completed before closure begins. Closure is estimated to take 340 days.

Contracts for analytical work and, if necessary, soil removal are expected to exceed $100,000. The Laboratory is required by policy to put the work out for bid, and ninety days are required to solicit and process the bids. The location of the site is prone to snow cover in the winter months. The closure may be delayed until the site is free of snow and the ground is thawed adequately to allow the soil sampling and other closure operations. The schedule includes a weather factor to allow for this delay.

E.9.8 Closure Certification

An independent registered professional engineer and the owner/operator of the facility shall witness the closure and ensure that the closure follows this plan. Upon completion of closure, the engineer and the DOE shall prepare a letter certifying that the facility has been closed accordingly. The letter shall be dated and signed by each party and stamped by the registered engineer, and the original copy shall be submitted by the DOE to the ~~Director of the NMEID~~ Secretary of NMED. One copy shall be maintained at the DOE offices and one copy maintained by ~~the HSE-8 Regulatory Compliance Section~~ the ESH-19 Hazardous and Solid Waste Group.

E.9.9 Sampling and Analytical Procedure

The following section defines procedures and methods for sampling, analysis and documentation applicable to closure plans. While the procedures and method are specific, any applicable procedure or method given in SW-846 or other EPA approved procedure may be used if conditions or experience shows the alternate method to be more appropriate. Disposable samplers may be used.

Containers appropriate for the analyses requested will be used. Sampling will be conducted in accordance with procedures given in *Samplers and Sampling Procedures for Hazardous Waste Streams*, EPA 600/2-80-018 and/or SW-846.

Samples will be taken, placed in bottles, sealed, tagged, and immediately packed in vermiculite, sawdust, or, if refrigeration is required, an insulated container with ice. One sample for every ten samples will be either duplicated or split. The duplicated or split sample will be identified by a code so that its source is not available to the analytical laboratory, but analytical results can be compared to its twin.

E.9.9.1 Soil Sampling

The sampling procedures outlined below are used to determine the amount of hazardous material deposited on a particular area of land, or to determine the leaching rate of the material, or determine the residue level on the soil. Adequate preparation ensures that proper sampling is accomplished.

Surface soil samples will be collected with a trowel or scoop. To sample below 3 in. (8 cm), samples will be collected with a Veihmeyer soil sampler.

~~E.8.9.1.1~~ E.9.9.1.1 Cleaning of sampler

It is important to clean the samplers after each site is sampled. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a warm Liquinox(@) or Alconox(@) solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. Prevention of cross contamination is of particular importance in these samples.

E.9.9.1.2 Sampling procedures

Trowel or Scoop

- Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
- Combine the samples in a glass container.
- Cap the container, attach a label and seal, record in field log book, and complete the sample analysis request sheet and chain-of-custody record.

Veihmeyer Sampler

- Assemble the sampler by screwing in the tip and drive head on the sampling tube.
- Insert the tapered handle (drive guide) of the drive hammer through the drive head.
- Place the sampler in a perpendicular position on the material to be sampled.
- With the left hand holding the tube, drive the sampler into the material to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube ~~further~~ farther than the tip of the hammer's drive guide.
- Record the length of the tube that penetrated the material.
- Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.
- Rotate the sampler at least two revolutions to shear off the sample at the bottom.
- Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.
- Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a pullerjack and grip.

- Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.

- Store the core sample in a 1,000 or 2,000 ml (1 qt or 1/2 gal) sample container.

- Label the sample, affix the seals, record in the field log book, complete the sample analysis request sheet and chain-of-custody record, and deliver the samples to the laboratory for analysis.

E.9.9.2 Liquid Sampling

A ~~coliwasa~~ COLIWASA sampler or similar device will be used to sample water solutions in order to determine background parameters before washing the area; it will also be used to sample the dirty wash water used in cleaning equipment. The recommended model of the ~~coliwasa~~ COLIWASA is shown in Figure ~~E.8.3.~~ E.9.2., the main parts consisting of the sampling tube, the closure-locking mechanism, and the closure system. As an alternative to the ~~coliwasa~~ COLIWASA, glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of as hazardous waste after each sample is collected, thus eliminating the potential for cross contamination.

~~E.9.8.2.1~~ E.9.9.2.1 Cleaning of sampler

The sampler must be clean before use. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The used sampler must be washed with a warm detergent solution (Liquinox(@) or Alconox(@)), rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the ~~coliwasa~~ COLIWASA ~~COLIWASA~~ is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Using this ramrod and fiber reinforced paper towels, the ~~coliwasa~~ COLIWASA ~~COLIWASA~~ tube may be quickly cleaned. Improper cleaning of sample equipment will cause cross contamination of samples. Prevention of contamination is of particular importance in these samples. Clean samplers should be stored in polyethylene plastic tubes or bags in a clean and protected area.

E.9.9.2.2 Sampling procedures

- Assemble the ~~coliwasa~~ COLIWASA sampler.

- Make sure that the ~~coliwasa~~ COLIWASA sampler is clean.

- Check to make sure the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.

- Wear necessary protective clothing and gear and observe required sampling precautions.

- Put the sampler in the open position by placing the stopper rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.

- Slowly lower the ~~coliwasa~~ COLIWASA sampler into the liquid at a rate that permits the levels of the ~~Liquid~~ liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a nonrepresentative sample.

- When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.

- Slowly withdraw the sampler from the container with one hand while wiping the sampler tube with a disposable cloth with the other hand.

- Carefully discharge the sample into a glass container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block while the lower end of the sampler is positioned in the glass container.

- Cap the glass container, attach a label and seal, record in the field log book, and complete the sample analysis request sheet and chain-of-custody record.

- Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.

E.9.9.3 Sample Handling and Documentation

Soil and liquid samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and a sample analysis request form.

The sample container must be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. An example of a sample seal is shown in Figure ~~E.8.4.~~ E.9.3.

The sample label is necessary to prevent misidentification of samples and shall include, if applicable, the grid number referenced to positions staked on the site perimeter. The "field information" in the case of soil sampling, shall include observations such as the soil texture and surface appearance, ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling. An example of a sample label is shown in Figure E.9.4.

The chain-of-custody form is necessary to trace sample possession from the time of collection and must accompany every sample. This record becomes especially important when the sample is to be introduced as evidence in litigation. This is a two page record with the original accompanying shipment and the "copy" retained by the Laboratory. An example of this form is shown in Figure E.9.5.

A separate closure sampling field log book will be kept and will contain all information pertinent to field surveys and sampling. The log book shall have bound and consecutively numbered pages in 8-1/2 by 11-inch format. Minimum entries include:

a. Purpose of sample (routine sampling, special sampling);

b. Location of sampling (coordinates referenced to staked field points, if soil sample);

c. Name and business address of person making log entry;

d. Type of process producing waste;

e. Number and volume of sample;

f. Description of each sampling location, sampling methodology, equipment used, etc.;

g. Date and time of sample collection;

h. Sample destination and transporter's name (name of laboratory, UPS, etc.);

i. Map or photograph of the sampling site, if any;

j. Field observations (ambient temperature, sky conditions, past 24-hour precipitation, etc.);

k. Field measurements, if any (pH, flammability, conductivity, explosivity, etc.);

l. Collector's sample identification number(s);

m. Signature of person responsible for the log entry.

Sampling situations vary widely. No general rule can be given as to the extent of information that must be entered in the log book. A good rule, however, is to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

The sample shipment and chain-of-custody record is accompanied by a sample analysis request sheet. The request sheet has two parts: field and laboratory. The field portion of this form must be ~~completely~~ completed by the person collecting the sample and include most of the pertinent information noted in the log book. The laboratory portion is intended to be completed by the laboratory personnel when the sample is received.

E.9.10 Quality Assurance/Quality Control

The Permittee shall designate a qualified individual or individuals to independently oversee the closure activities and report directly to senior management on the quality of the performance of this closure. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed and review the analysis reports for accuracy and adequacy. A written QA/QC plan prepared in accordance with SW-846 guidance shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the adequacy of the analysis showing decontamination.

E.9.11 Final Closure Report

Upon completion of the closure activities, the Permittee shall submit a Final Closure Report to the ~~Director~~ Secretary. The report shall document the final closure and contain, at a minimum, the following:

A. The certification described in paragraph E.9.8.

B. Any variance from the approved activities and the reason for the variance.

C. A tabular summary of all sampling results, showing:

1. Sample identification,
2. Sampling location,
3. The datum reported,
4. Detection limit for each datum,
5. A measure of analytical precision (e.g. uncertainty, range, variance),
6. Identification of analytical procedure, and
7. Identification of analytical laboratory.

D. A QA/QC statement on the adequacy of the analyses and the decontamination demonstration.

E. The location of the file of supporting documentation:

1. Field log books,
2. Laboratory sample analysis reports,
3. The QA/QC documentation, and
4. Chain of custody records.

F. Disposal location of all regulated and non-regulated residues.

G. A certification of accuracy of the report.

TABLE E.9.1
CLOSURE SCHEDULE

Activity	Maximum Time Required
Preclosure Activities	
Notify the ~~EID~~ NMED of closure	-90 days
Advertise contract request for proposals	-90 days
Receive ~~proposalsl~~ proposals sampling survey	-20 days
Award contract	-10 days
Closure Activities	
Begin Closure	Day 0
Analyze first soil samples	Day 60
Conduct second soil samples survey, if needed	Day 90
Treat or remove final wastes	Day 90
Analyze second soil samples, if needed	Day 120
Contract for soil decontamination	Day 210
Remove soil	Day 240
Conduct verification samples	Day 270
Analyze samples	Day 310
Submit final report to ~~EID~~ NMED	Day 340

NOTES: The calendar days above are completion dates for each activity. In some cases more than one activity may be taken concurrently.

This schedule applies to both partial and final closure.

TABLE E.9.2.
ANALYTICAL PARAMETERS

Metals	Organics	Other
Arsenic	Halogenated volatile organics	Cyanides
Barium	Nonhalogenated volatile organics	pH
Cadmium	Acid-extractable semivolatile organics	
Chromium	Base-neutral extractable semivolatile organics	
Lead	Organochlorine pesticides	
Mercury	~~Chloronated~~ Chlorinated ~~Chlorinated~~ herbicides	
Selenium	Phenols	
Silver		
Nickel		
~~Berylium~~ Beryllium		

NOTES: Analytical methods are taken from *Test Methods for Evaluating Solid Waste*, EPA SW-846, and may be superseded by more current methods from SW-846 or alternate EPA-approved methods.

Metals may be analyzed for total content. Any metal whose total concentration exceeds the standard for the toxicity characteristic ~~Extraction Procedure Toxicity~~ shall be analyzed by the Toxicity Characteristic Leaching Procedure~~Extraction Procedure Toxicity procedures~~. Both data shall be reported in the final report.

TABLE E.9.3
SAMPLING SUMMARY

Material Sampled	Metals	Organics	Other
Washdown solutions before use	X	X	X
Washdown solutions after use	X	X	X
Soils background	X	X	X
Soil samples	X	X	X
Final decontamination samples	a	a	a

NOTES: Analytical parameters are given in Table E.9.2.

[a]Parameters given in HWMR-5, Part V, Section 264, Appendix IX

FIGURE E.9.2
COMPOSITE LIQUID WASTE SAMPLER (COLIWASA)

FIGURE E.9.3
EXAMPLE OF SAMPLE SEAL

OFFICIAL SAMPLE SEAL

Collected by _____ Collector's sample No._____
(Signature)

Date Collected_____ Time Collected_____

Place Collected_____

_____

_____

FIGURE E.9.4
EXAMPLE OF SAMPLE LABEL

OFFICIAL SAMPLE LABEL

Collector_____ Collector's Sample No._____

Place of Collection_____

_____

Date Sampled_____ Time Sampled _____

Field Information_____

_____

_____

FIGURE E.9.5
CHAIN OF CUSTODY RECORD
Hazardous Materials
Collector's Sample No.____

Location of Sampling: Producer Hauler
Disposal Site Other: _____

Company's Name_____ Telephone (___)_____

Address_____
Number Street City State Zip

Collector's Name_____ Telephone (___)_____

Date Sampled_____ Time Sampled_____ hours

Type of Process Producing Waste_____

Waste Type Code_____ Other_____

Field Information_____

_____

Sample Allocation:

1. _____
(Name of Organization)

2. _____
(Name of Organization)

3. _____
(Name of Organization)

Chain of Possession:

1. _____ _____ _____
Signature Title Inclusive Dates

2. _____ _____ _____
Signature Title Inclusive Dates

3. _____ _____ _____
Signature Title Inclusive Dates

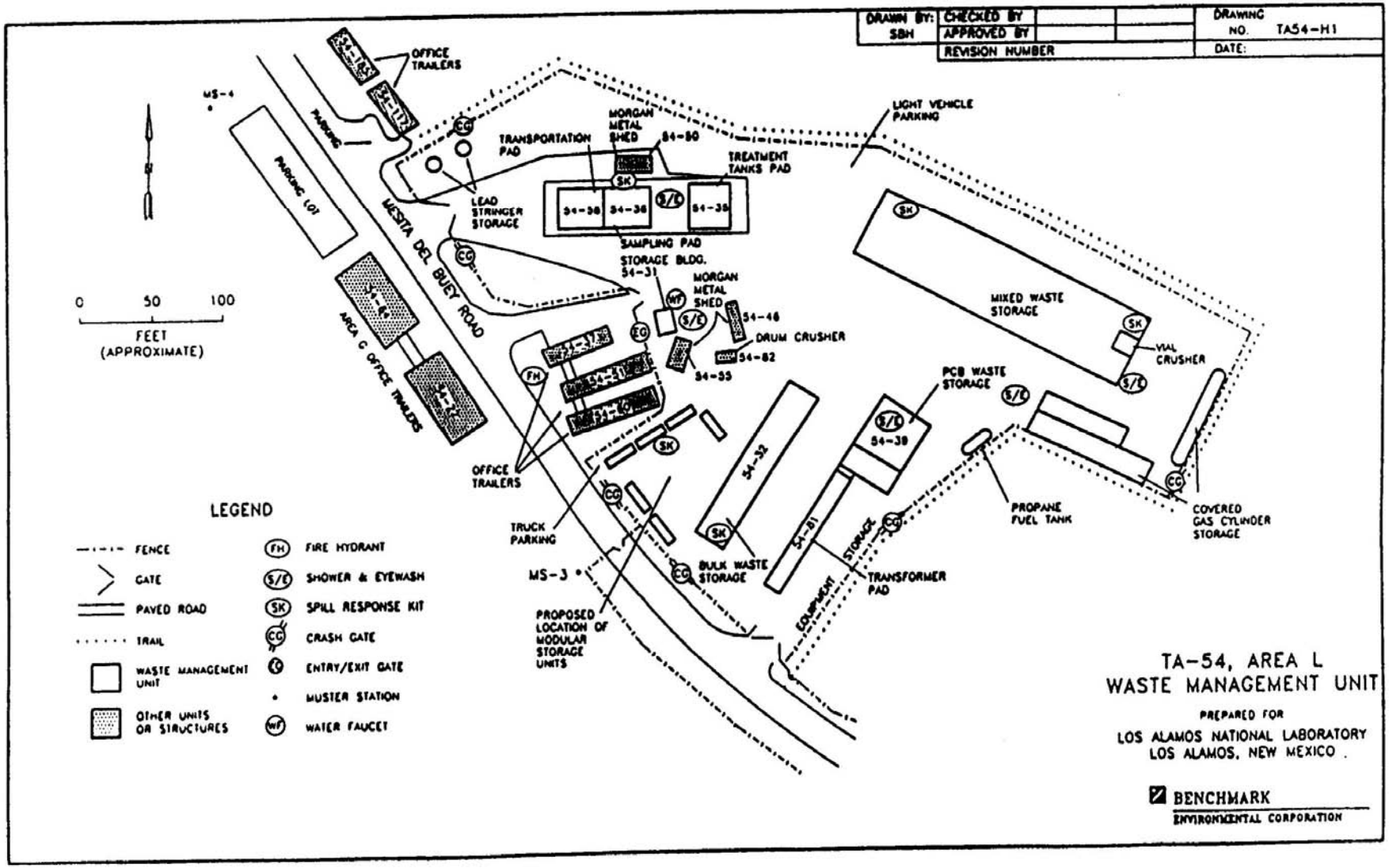


FIGURE E.9.1
TA-54 AREA L WASTE MANAGEMENT UNITS

~~CLOSURE PLAN~~
~~PERMIT ATTACHMENT E.10~~
~~NM 0890010515-1~~

~~CLOSURE PLAN~~
~~PERMIT ATTACHMENT E.10~~
~~NM0890010515-1~~

~~E.10 TECHNICAL AREA 50, BUILDING 1, DECONTAMINATION FACILITY, ROOMS 35, 36, AND 38/38A CONTAINER STORAGE AREAS~~

~~The container storage areas (CSA) addressed in this closure plan include the Rooms 35, 36, and 38/38A CSAs at the Technical Area 50, Building 1 (TA-50-1), Decontamination Facility (Figure E.10-1). The CSAs, located in the basement of the southern portion of TA-50-1, are used to store transuranic (TRU) mixed waste, low-level mixed waste, and hazardous waste.~~

~~Waste drums and boxes of various sizes and standard waste boxes are stored in the Rooms 35 and 38/38A CSAs prior to waste characterization activities. The Room 35 CSA, which consists of Room 35, is approximately 20 feet (ft) wide and 40 ft long. The floor is concrete overlain with linoleum tile. The Room 38/38A CSA consists of Rooms 38 and 38A, which together measure approximately 10 ft wide and 24 ft long. The floor is concrete and painted with epoxy paint. A 33-inch (in) by 39-in blind sump located roughly in the center of Room 38 has been locked out and epoxy painted.~~

~~The Room 36 CSA stores gloveboxes, fiberglass-reinforced plywood (FRP) boxes, and other containers. The Room 36 CSA, which consists of Room 36, is approximately 20 ft wide and 32 ft long. The floor is concrete and painted with epoxy paint. The floor slopes gently toward two recessed cadaver tanks and a central floor drain, which are both connected to the Radioactive Liquid Waste Treatment Facility at TA-50-1.~~

~~E.10.1 Estimate of Maximum Waste in Storage~~

~~The maximum inventory of waste in storage at any time at the TA-50-1 Decontamination Facility, Rooms 35, 36, and 38/38A CSAs is estimated at 1,000 gallons and 15 cubic yards (the largest anticipated FRP box bearing a waste glovebox to be managed in Room 36). A breakdown of the maximum inventories for each of these areas is as follows:~~

- ~~Room 35 - 250 gallons~~
- ~~Room 36 - 15 cubic yards~~
- ~~Room 38/38A - 750 gallons~~

~~E.10.2 Description of Waste~~

~~TRU mixed waste stored in the TA-50-1 Decontamination Facility, Rooms 35, 36, and 38/38A CSAs is generated during research activities, processing and recovery operations, and decontamination and decommissioning operations primarily at TA-3, TA-21, TA-50, and TA-55. Low-level mixed waste stored is generated during research activities, processing and recovery operations, decontamination and decommissioning operations, and environmental remediation/restoration activities at various TAs throughout Los Alamos National Laboratory (LANL). These wastes are classified as mixed wastes because Resource Conservation and Recovery Act (RCRA) characteristic and/or listed wastes are or may be present~~

~~in the waste, along with a radioactive component. Hazardous wastes generated throughout LANL and stored at these CSAs are generated primarily from research and development activities, processing and recovery operations, decontamination and decommissioning projects, and environmental remediation/restoration activities.~~

~~E.10.3 Closure Procedure and Decontamination~~

~~E.10.3.1 Partial Closure~~

~~Partial closure would consist of closing one or more of the RCRA-regulated waste management units or subunits at the LANL facility, while leaving the other RCRA-regulated waste management units at LANL in service. In the event of a partial closure, the following procedures would apply to the unit(s) being closed.~~

~~E.10.3.2 Unit Closure~~

~~To the extent possible, all contaminated structures and equipment at the CSAs addressed in this closure plan will be decontaminated. Structures, equipment, and media that cannot be decontaminated will be containerized and managed in compliance with appropriate regulations. All sampling conducted during closure and decontamination will be done in accordance with quality assurance/quality control (QA/QC) procedures (see Section E.10.7).~~

~~Before proceeding with any closure activities, the CSAs will be surveyed for radiological contamination. Personal protective equipment (PPE) and monitoring requirements will be determined by LANL's Health Physics Operations (ESH-1) and Industrial Hygiene and Safety (ESH-5) Groups following a field inspection. Radiation and chemical monitoring will occur throughout closure activities. If any contamination is found, the contaminated materials, equipment, and/or structures will be decontaminated (if possible) or containerized and taken to an approved storage location at LANL appropriate for the waste type.~~

~~Personnel involved in closure activities will wear appropriate PPE, specified by ESH-1 and ESH-5, and will follow good hygiene practices to protect employees from exposure to hazardous and/or mixed waste. The level of PPE that will be required will depend upon the levels of radiological and/or chemical contamination that are detected, if any. If ESH-1 and ESH-5 surveys do not indicate detectable contamination levels, minimum PPE requirements will consist of coveralls, steel-toed boots, and safety glasses or face shields. If an overhead danger is present, a hard hat will be worn. All workers involved in closure activities will be required to have training and medical monitoring. Contaminated PPE will either be decontaminated or managed in compliance with appropriate regulations.~~

~~All wastes will be removed from the CSA scheduled to be closed prior to the initiation of closure activities. Containers will be removed from each storage area primarily with forklifts. Small containers may be handled manually or with dollies. All containers will be placed onto flatbed trucks or trailers for transport. Any glovebox components remaining in Room 36 will be handled similarly. All appropriate shipping papers will accompany the wastes during transport. Containers holding RCRA-regulated wastes will be moved to an approved on-site facility or permitted off-site treatment and/or disposal facility.~~

~~Before decontamination activities begin, samples of the clean water and detergent (wash water) solution squeezed from mops and/or sponges prior to use will be collected for analysis of the parameters listed in Table E.10-1. The analytical results from these samples will be used to provide a baseline for decontamination verification.~~

~~Prior to decontamination of the main surfaces of the CSA, any portable equipment to be removed from the area will be wiped down with wash water solution. This may include equipment such as self-containment pallets, wooden pallets, and miscellaneous equipment. Portable berms will be used to provide containment for the used wash water. After the washdown process, the used wash water will be collected, transferred to containers, sampled, and analyzed for the parameters in Table E.10-1. If the used wash water is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise the used wash water will be managed at an appropriate on-site facility. If sampling and analysis indicate that radioactive and/or hazardous constituents are present, the wash cycles and analyses will continue until the equipment has been decontaminated or the decision is made to manage it appropriately as contaminated waste. This material may be transported to and stored at other waste management facilities to facilitate the closure process.~~

~~The walls, floors, and remaining equipment in the CSA rooms will then be wiped down with wash water solution. Portable berms will be used to collect and provide containment for the used wash water. After the washdown process, the used wash water will be collected, stored in containers at the site, sampled, and analyzed for the parameters in Table E.10-1. If the used wash water is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise, the used wash water will be managed at an appropriate on-site facility, depending on the regulated constituents present. If sampling and analysis indicate that hazardous and/or radioactive constituents are present, the wash cycles and analyses will continue until the area has been decontaminated or the decision is made to segregate contaminated portions of the storage area for subsequent management as contaminated waste. Decontamination verification is discussed further in Section E.10.3.3.~~

~~Under normal circumstances, the following soil sampling information will not be applicable because the CSAs are located inside a building with an impervious floor. However, if soil sampling is deemed necessary based on analytical evidence and the operational history of the unit, sampling of the area will be performed to verify that no hazardous constituents remain upon closure as a result of container storage. A grid will be sited over the area to be sampled, boreholes will be drilled through the floor material, and soil samples will be collected and analyzed to determine the horizontal and vertical extent of contamination.~~

~~Prior to use, all decontamination equipment will be rinsed with distilled water. Decontamination equipment rinsate blanks will be collected and analyzed in accordance with QA/QC procedures (see Section E.10.7). Reusable protective clothing, tools, and equipment used during closure activities will be cleaned with a wash water solution and scraped as necessary to remove any residue. Residue, disposable equipment, and reusable equipment that cannot be decontaminated will be containerized and managed appropriately at an approved on-site facility, depending on the regulated constituents present. Used wash water will be collected and analyzed for the parameters listed in Table E.10-1. If the used wash water is nonhazardous and nonradioactive, the water will be managed appropriately in accordance with LANL policy. Otherwise, it will be managed at an appropriate on-site facility, depending on the regulated constituents present.~~

~~E.10.3.3 Decontamination Verification~~

~~Sufficient sampling and analysis will be required to demonstrate that hazardous or mixed waste residue is not present at the site after closure. Two samples of clean wash water solution squeezed from mops and/or sponges prior to use will be collected before initial washdown of the CSAs. The samples will be analyzed for parameters listed in Table E.10-1 to provide baseline data for decontamination verification. Analytical procedures will conform to methods found in the most current version of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846). Used washdown solutions will also be analyzed for the parameters listed in Table E.10-1. Washdown solutions will be considered contaminated if the used wash water solution shows a significant increase (i.e., determined using statistical methods defined in SW-846) in the analytical parameters over the clean wash water solution. If subsequent washdowns are deemed necessary, an additional sample of clean wash water solution squeezed from mops and/or sponges prior to use will be taken for each additional washdown event.~~

~~Existing background soil data for TA-50 may also be used to demonstrate that hazardous or mixed waste residue resulting from storage activities is not present at the site after closure. A comparison of closure sampling data to existing background soil data will be used to establish the source of any hazardous waste or constituents present in the soil if further excavation of the underlying foundation or soil is found to be necessary. If the data comparison indicates that contamination is from container storage activities, additional contaminated soil excavations will be performed until at least one of the decontamination criteria has been met successfully.~~

~~Successful decontamination meets one of the following criteria:~~

- ~~No detectable hazardous waste or constituents from container storage activities are found in the final sample.~~
- ~~Detectable hazardous waste or constituents from container storage activities in the final sample are removed to statistically significant levels based on baseline concentrations in the clean wash water or established background soil data.~~
- ~~Detectable hazardous waste or constituents from container storage activities in the final sample are at or below levels negotiated with the New Mexico Environment Department (NMED).~~
- ~~Detectable hazardous waste or constituent concentrations from container storage activities do not significantly decrease after several washdowns. In such an event, hazardous constituents will be allowed to remain that pose an acceptable risk as mutually agreed upon with NMED.~~

~~E.10.4 Closure Schedule~~

~~Closure will not commence until all of the wastes have been removed from the CSA scheduled to be closed. Closure activities will begin in accordance with the approved closure plan, as required by the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.113(a), revised November 1, 1995, within 90 days after final receipt of waste at the CSA. This timeframe will be met as long as facilities are available for treatment and/or disposal of these wastes. In the event that closure activities cannot be completed at the CSA within 90 days, LANL will notify the Secretary of the NMED in accordance with the extension requirements cited in 20 NMAC 4.1, Subpart V, 264.113(a), revised~~

~~November 1, 1995. Closure activities and reporting requirements will be completed within 180 days of the receipt of the final volume of waste at the waste management area to be closed. Closure will be conducted in accordance with the schedule presented in Table E.10-2. In the event that closure of a CSA is prevented from proceeding according to schedule, LANL will notify the Secretary of the NMED in accordance with extension request requirements in 20 NMAC 4.1, Subpart V, 264.113(b), revised November 1, 1995. In addition, the demonstrations in 20 NMAC 4.1, Subpart V, 264.113(a)(1) and (b)(1), revised November 1, 1995, will be made in accordance with 20 NMAC 4.1, Subpart V, 264.113(c), revised November 1, 1995.~~

~~E.10.5 Closure Certification~~

~~Within 60 days after completion of closure activities for each of the CSAs, the U.S. Department of Energy (DOE) will submit to the Secretary of the NMED, via certified mail, a certification that the area has been closed in accordance with the specifications of the closure plan. The certification will be attested to by an independent, registered professional engineer and will be signed by the appropriate DOE and LANL officials, in accordance with 20 NMAC 4.1, Subpart V, 264.115, revised November 1, 1995. Documentation supporting the independent registered engineer's certification will be furnished to the Secretary of the NMED with the original certification. A copy of the certification and supporting documentation shall be maintained by both the DOE/Los Alamos Area Office and LANL's Hazardous and Solid Waste Group.~~

~~E.10.6 Sampling and Analytical Procedures~~

~~The following sections describe procedures and methods for sampling, analysis, and documentation applicable to closure activities. While the procedures and methods are specific, other applicable procedures or methods given in SW-846 may be used if conditions or experience show the alternate method to be more appropriate. All sampling and analytical procedures actually used will be annotated in the final closure report. Sampling will be conducted in accordance with procedures given in SW-846 (for hazardous components) and LANL's Inorganic Trace Analysis Group (CST-9) procedures (for radiological analysis).~~

~~E.10.6.1 Soil Sampling~~

~~Soil samples will be collected only if evidence is found that hazardous constituents have migrated from the CSAs discussed in this closure plan. The soil samples will only then be collected to determine if contaminants have migrated from the CSAs and, if so, to determine the horizontal and vertical extent of such migration.~~

~~E.10.6.1.1 Cleaning of Samplers~~

~~To prevent cross contamination, it is important to clean the samplers after each sample is collected. An unused, disposable sampler may be presumed clean if still in a factory-sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a detergent and water solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry.~~

~~E.10.6.1.2 Sampling Procedures~~

~~The sampling procedures outlined below will be used to obtain samples to determine the amount of RCRA~~

~~constituents in soil associated with the units undergoing closure. Soil samples will be collected from the 6-inch depth with a trowel or scoop or with a Veihmeyer soil sampler. Sampling procedures will be performed as follows:~~

- ~~Trowel or Scoop~~
  - ~~Take small, equal portions of sample from the surface or near the surface of the material to be sampled.~~
  - ~~Combine the samples in a container appropriate for the required analysis.~~
  - ~~Cap the container, attach a label and seal, and preserve as required (see Table E.10-3). Record in the field logbook, and complete the sample analysis request sheet and chain-of-custody form. Deliver the samples to CST-9 for radiological screening and to the laboratory for analysis.~~

- ~~Veihmeyer Sampler~~
  - ~~Assemble the sampler by screwing in the tip and drive head on the sampling tube.~~
  - ~~Insert the tapered handle (drive guide) of the drive hammer through the drive head.~~
  - ~~Place the sampler in a perpendicular position on the soil to be sampled.~~
  - ~~With the left hand holding the tube, drive the sampler into the soil to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube further than the tip of the hammer's drive guide.~~
  - ~~Record the length of the tube that penetrated the material.~~
  - ~~Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.~~
  - ~~Rotate the sampler at least two revolutions to shear off the sample at the bottom.~~
  - ~~Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.~~
  - ~~Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a puller jack and grip.~~
  - ~~Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.~~
  - ~~Store the sample in an appropriate sample container.~~

- ~~Label the sample, affix the seals, preserve as required (see Table E.10-3), record in the field logbook, complete the sample analysis request sheet and chain-of-custody form, and deliver the samples to CST-9 for radiological screening and to the laboratory for analysis.~~

~~E.10.6.2 Liquid Sampling~~

~~A coliwasa or similar device will be used to sample unused wash water solutions before decontamination begins in order to determine baseline parameters. It will also be used to sample the wash water used in cleaning structures and equipment. As an alternative to the coliwasa, glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of appropriately after each sample is collected, thus eliminating the potential for cross contamination.~~

~~E.10.6.2.1 Cleaning of Samplers~~

~~The sampler must be clean before use. An unused, disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. Samplers will be washed with a detergent and water solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air dried or wiped dry. A necessary piece of equipment for cleaning the tube of the coliwasa is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Improper cleaning of sampling equipment will cause cross contamination of samples. Clean samplers should be stored in clean polyethylene plastic tubes or bags in a clean and protected area.~~

~~E.10.6.2.2 Sampling Procedure~~

~~Liquid sampling with a coliwasa will be performed as follows:~~

- ~~Ensure that the coliwasa is clean.~~
- ~~Assemble the coliwasa.~~
- ~~Check that the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.~~
- ~~Wear necessary protective clothing and gear, and observe required sampling precautions.~~
- ~~Put the sampler in the open position by placing the stopper rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.~~
- ~~Slowly lower the coliwasa into the liquid at a rate that permits the level of the liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a nonrepresentative sample.~~
- ~~When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by~~

~~turning the T-handle until it is upright and one end rests tightly on the locking block.~~

- ~~Slowly withdraw the sampler from the container with one hand, while wiping the sampler tube with a disposable cloth with the other hand.~~

- ~~Carefully discharge the sample into a sample container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block, while the lower end of the sampler is positioned in the sample container.~~

- ~~Preserve as required (see Table E.10-4), cap the container, attach a label and seal, place immediately in an insulated container with ice (if required), record in the field logbook, and complete the sample analysis request sheet and chain-of-custody form.~~

- ~~Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site, or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.~~

~~E.10.6.3 Sample Handling and Documentation~~

~~Samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and sample analysis request form. The chain-of-custody form is necessary to trace sample possession from the time of collection to the time of analysis and must accompany every sample. The original record accompanies shipment. The copy is retained by LANL. If samples are analyzed at LANL, the original will be maintained by LANL. The request for analysis form has two parts: field and laboratory. The field portion of this form must be completed by the person collecting the sample and include most of the pertinent information noted in the logbook. The laboratory portion is intended to be completed by the analytical laboratory personnel when the sample is received. The analytical laboratory retains the original record and sends a copy to LANL.~~

~~Sample containers appropriate for the requested analyses will be used for all samples. Sample containers, preservation, and holding times will conform to those specified in SW-846 for the corresponding analyses. Samples will be collected, placed in bottles, sealed, and tagged. Sample container surfaces will be screened for radiological contamination and decontaminated, if necessary. Sample containers will then be immediately packed in vermiculite, sawdust, or if refrigeration is required, an insulated container with ice. Recommended sample containers, preservation, and holding times are presented in Tables E.10-3 and E.10-4.~~

~~The sample container must be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. A sample label is necessary to prevent misidentification of samples and should include, if applicable, the grid number referenced to positions staked on the site perimeter. The sample label must be completed to include the project name, sample number, collection date/time, collector's name, sample location, sample media description, preservative, and analysis requested. In the case of soil sampling, field information shall include observations such as the soil texture and surface appearance, ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling.~~

~~A field logbook will be kept and will contain all information pertinent to field surveys and sampling. The logbook shall have bound and consecutively numbered pages in 8 1/2 - by 11 inch format. Minimum entries should include:~~

- ~~Purpose of sample (routine sampling, special sampling)~~
- ~~Location of sampling (coordinates referenced to staked field points, if soil sample)~~
- ~~Name and business address of person making log entry~~
- ~~Type of process producing waste~~
- ~~Number and volume of sample~~
- ~~Description of each sampling location, sampling methodology, equipment used, etc.~~
- ~~Date and time of sample collection~~
- ~~Sample destination and transporter's name (e.g., name of laboratory, United Parcel Service, etc.)~~
- ~~Map or photograph of the sampling site, if any~~
- ~~Field observations, if applicable (e.g., ambient temperature, sky conditions, past 24 hour precipitation)~~
- ~~Field measurements, if applicable (e.g., pH, conductivity)~~
- ~~Collector's sample identification number(s)~~
- ~~Signature of person responsible for the log entry.~~

~~Because sampling situations vary widely, no specific rule can be given as to the extent of information that must be entered in the logbook. It is recommended, however, to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.~~

~~E.10.7 Quality Assurance/Quality Control~~

~~A qualified individual or individuals shall be designated to independently oversee the closure activities and to report directly to senior management on the quality of the closure performance. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed, and review the analysis reports for accuracy and adequacy. A written QA/QC plan prepared in accordance with SW-846 guidance shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the level of decontamination verification achieved.~~

~~E.10.8 Closure Report~~

~~Upon completion of the closure activities for each CSA addressed in this closure plan, a closure report shall be submitted to the Secretary of the NMED. The report shall document the closure and contain, at a minimum, the following:~~

- ~~The certification described in Section E.10.5~~

- ~~Any variance from the approved activities and the reason for the variance~~

- ~~A tabular summary of all sampling results, showing:~~
  - ~~Sample identification~~
  - ~~Sampling location~~
  - ~~The datum reported~~
  - ~~Detection limit for each datum~~
  - ~~A measure of analytical precision (e.g., uncertainty, range, variance)~~
  - ~~Identification of analytical procedure~~
  - ~~Identification of analytical laboratory.~~

- ~~A QA/QC statement on analytical data validation and decontamination verification~~

- ~~The location of the file of supporting documentation, including:~~
  - ~~Field logbooks~~
  - ~~Laboratory sample analysis reports~~
  - ~~QA/QC documentation~~
  - ~~Chain-of-custody forms.~~

- ~~Disposition location of RCRA-regulated closure materials~~

- ~~A certification of accuracy of the report.~~

~~TABLE E.10-1~~
~~ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 50, BUILDING 1 (TA-50-1), DECONTAMINATION FACILITY CONTAINER STORAGE AREAS~~

~~Parameter~~	~~Test Method~~	~~Reference[b]~~
~~Ignitability~~	~~Pensky-Martens closed-cup method~~	~~(L) SW1010~~ ~~(L) ASTM D93-80~~
~~Reactivity~~	~~Test method to determine hydrogen cyanide released from waste~~	~~(L, S) HCN Test Method, Section 7.3~~
	~~Test method to determine hydrogen sulfide released from waste~~	~~(L, S) H_2S Test Method, Section 7.3~~
~~Corrosivity~~	~~Electrometric (pH of aqueous solution)~~	~~(L) SW9040B~~
~~Toxicity characteristic~~	~~Toxicity characteristic leaching procedure (TCLP) extraction~~	~~(L, S) SW1311~~
~~Metals:~~	~~Graphite furnace atomic absorption (AA) spectroscopy, gaseous hydride AA, or direct aspiration AA~~	
~~Arsenic~~		~~(L, S) SW7060A, SW7061A~~
~~Barium~~		~~(L, S) SW7080A, SW7081~~
~~Cadmium~~		~~(L, S) SW7130, SW7131A~~
~~Chromium~~		~~(L, S) SW7190, SW7191~~
~~Lead~~		~~(L, S) SW7420, SW7421~~

Refer to footnotes at end of attachment.

~~Selenium~~		~~(L, S) SW7740, SW7741A~~
~~Silver~~		~~(L, S) SW7760A, SW7761~~
~~Mercury~~	~~Manual cold-vapor technique~~	~~(L)SW7470A, (S) SW7471A~~

~~TABLE E.10-1~~
~~ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 50, BUILDING 1 (TA-50-1), DECONTAMINATION FACILITY CONTAINER STORAGE AREAS~~
~~(continued)~~

~~Parameter~~	~~Test Method~~	~~Reference[b]~~
~~Volatile organics~~	~~Gas chromatography (GC)/mass spectrometry (MS)~~	~~(L, S) SW8240B~~
	~~GC/MS capillary column technique~~	~~(L, S) SW8260A~~
~~Semivolatile organics~~	~~GC/MS~~	~~(L, S) SW8250A~~
	~~GC/MS capillary column technique~~	~~(L, S) SW8270B~~
~~Organochlorine pesticides~~	~~TCLP extraction and GC~~	~~(L, S) SW8080A~~
~~Chlorinated herbicides~~		~~(L, S) SW8150B~~
~~Total metals[e]~~	~~Acid digestion~~	~~(L) SW3010A, (S) SW3050A~~
	~~Inductively coupled plasma atomic emission spectroscopy~~	~~(L, S) SW6010A~~

Refer to footnotes at end of attachment.

~~Arsenic~~	~~(L, S) SW6010A~~
~~Barium~~	~~(L, S) SW6010A~~
~~Beryllium~~	~~(L, S) SW6010A~~
~~Cadmium~~	~~(L, S) SW6010A~~
~~Chromium~~	~~(L, S) SW6010A~~
~~Lead~~	~~(L, S) SW6010A~~
~~Nickel~~	~~(L, S) SW6010A~~

Refer to footnotes at end of attachment.

TABLE E.10-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 50, BUILDING 1 (TA-50-1), DECONTAMINATION FACILITY CONTAINER STORAGE AREAS
(continued)

Parameter	Test Method	Reference[b]
Selenium		(L, S) SW6010A
Silver		(L, S) SW6010A
Thallium		(L, S) SW6010A
Zinc		(L, S) SW6010A
Mercury	Manual cold-vapor technique	(L) SW7470A (S) SW7471A
Free liquids	Paint Filter Liquids Test	(L, S) SW9095

[a] At Los Alamos National Laboratory, current analytical capabilities include limited analyses of mixed waste samples. These analyses include, but are not limited to, gross alpha, beta, and gamma screening.
[b] "ASTM" refers to American Society for Testing and Materials standards.
"SW" refers to U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
(L) refers to liquid waste.
(S) refers to solid waste.
[c] See also atomic absorption methods.

~~TABLE E.10-2~~
~~SCHEDULE FOR CLOSURE ACTIVITIES AT THE TECHNICAL AREA 50, BUILDING 1 (TA-50-1), DECONTAMINATION FACILITY CONTAINER STORAGE AREAS~~

~~Activity~~	~~Maximum Time Required[a]~~
~~Let contract request for proposals~~	~~90 Days~~
~~Notify the New Mexico Environment Department (NMED)~~	~~45 Days~~
~~Receive proposals~~	~~30 Days~~
~~Select contractor and award contract~~	~~10 Days~~
~~Collect background samples~~	~~5 Days~~
~~Final receipt of waste~~	~~Day 0~~
~~Begin closure activities (perform washdown of structures)~~	~~Day 10~~
~~Perform initial sampling of the waste management area~~	~~Day 15~~
~~Analyze samples~~	~~Day 45~~
~~Perform additional washdown (if necessary)~~	~~Day 50~~
~~Perform additional sampling (if necessary)~~	~~Day 60~~
~~Analyze samples (if necessary)~~	~~Day 90~~
~~Perform pad washdown and sampling~~	~~Day 100~~
~~Analyze samples~~	~~Day 130~~
~~Perform final cleanup (e.g., removal of decontaminated equipment and decontamination wastes)~~	~~Day 130~~
~~Verify decontamination~~	~~Day 140~~
~~Submit final report to NMED~~	~~Day 180~~

~~[a] The schedule above indicates calendar days from the beginning by which activities will be completed. Some activities may be conducted simultaneously.~~

~~TABLE E.10-3~~
~~SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES~~
~~FOR SEDIMENT/SOIL/SLUDGE SAMPLES~~

~~Analyte Group~~	~~Container~~	~~Preservative~~	~~Holding Time[a]~~
~~Target compound volatile organics[b]~~	~~8 ounce (oz.) WM[c] G[d]~~	~~Cool 4°Celsius (C)~~	~~14 days from field collection to toxicity characteristic leaching procedure (TCLP) extraction~~ ~~14 days from preparative extraction to determinative analysis~~
~~Target compound semivolatile organics[b]~~	~~2 x 120 milliliter (ml) G vial Teflon™-lined cap~~	~~Cool 4°C~~	~~14 days from field collection to TCLP extraction~~ ~~7 days from TCLP extraction to preparative extraction~~ ~~40 days from preparative extraction to determinative analysis~~
~~Target analyte metals[b] (except mercury)~~	~~8 oz. WM G~~	~~Cool 4°C~~	~~180 days from field collection to TCLP extraction~~ ~~180 days from preparative extraction to determinative analysis~~
~~Mercury~~	~~1 liter P[e]~~	~~HNO_3[f] to pH <2~~	~~28 days from field collection to TCLP extraction~~ ~~28 days from preparative extraction to determinative analysis~~
~~Radioactivity screening~~	~~120 ml G vial~~	~~None~~	~~Analyze upon receipt~~

~~[a] Holding time information was taken from the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Appendix II, revised November 1, 1995.~~
~~[b] Target compound volatile and semivolatile organics and target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.~~
~~[c] WM = Wide mouth~~
~~[d] G = Glass~~
~~[e] P = Polyethylene~~
~~[f] HNO_3 = Nitric acid~~

~~TABLE E.10-4~~
~~SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES~~
~~FOR LIQUID SAMPLES~~

~~Analyte Group~~	~~Container~~	~~Preservative~~	~~Holding Time[a]~~
~~Target compound volatile organics[b]~~	~~2 x 40 milliliter (ml) AG[c] septa vials~~	~~HCl[d], Cool 4°Celsius (C)~~	~~14 days from field collection to toxicity characteristic leaching procedure (TCLP) extraction 14 days from preparative extraction to determinative analysis~~
~~Target compound semivolatile organics[b]~~	~~2 x 1 liter AG~~	~~Cool 4°C~~	~~14 days from field collection to TCLP extraction 7 days from TCLP extraction to preparative extraction 40 days from preparative extraction to determinative analysis~~
~~Target analyte metals[b] (except mercury)~~	~~1 liter P[e]~~	~~HNO_3[f] to pH <2~~	~~180 days from field collection to TCLP extraction 180 days from preparative extraction to determinate analysis~~
~~Mercury~~	~~500 ml P~~	~~HNO_3 to pH <2~~	~~28 days from field collection to TCLP extraction 28 days from preparative extraction to determinative analysis~~
~~Radioactivity screening~~	~~40 ml G[g] vial, no septa~~	~~None~~	~~Analyze upon receipt~~

~~[a] Holding time information was taken from the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Appendix II, revised November 1, 1995.~~
~~[b] Target compound volatile and semivolatile organics and target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846.*~~
~~[c] AG = Amber glass~~
~~[d] HCl = Hydrochloric acid~~
~~[e] P = Polyethylene~~
~~[f] HNO_3 = Nitric acid~~
~~[g] G = Glass~~

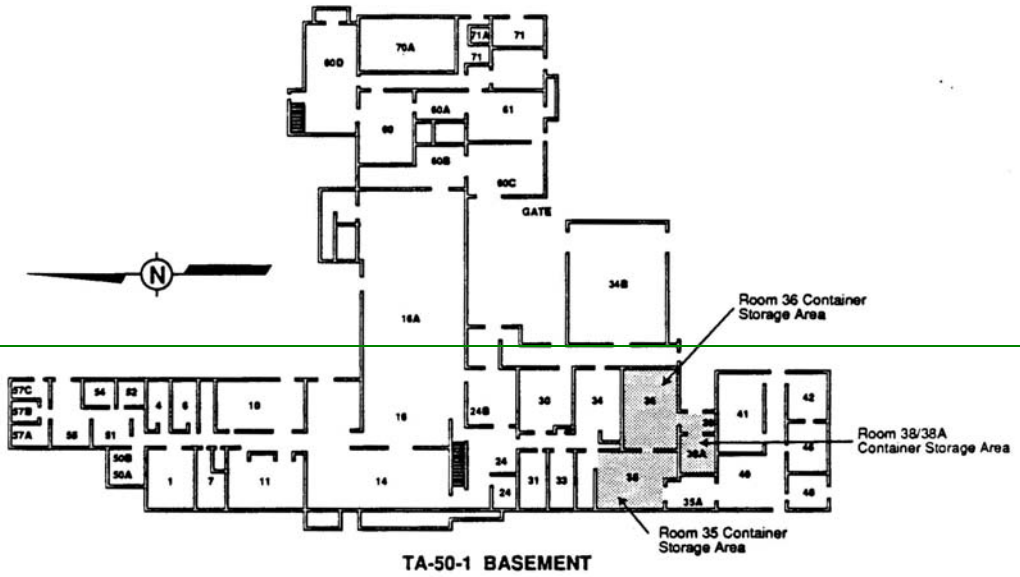


FIGURE E.10-1

TECHNICAL AREA (TA) 50, BUILDING 1, DECONTAMINATION FACILITY, ROOMS 35, 36, AND 38/38A CONTAINER STORAGE AREAS

CLOSURE PLAN
PERMIT ATTACHMENT E.10
NM 0890010515-1

CLOSURE PLAN
PERMIT ATTACHMENT E.10
NM0890010515-1

E.10 TECHNICAL AREA 54, AREA G, CONTAINER STORAGE AREAS TA-54-226, -229, -230, -231, -232, ~~PAD 2,~~ AND PAD 10~~-4~~

The container storage areas (CSA) addressed in this closure plan include TA-54-226, -229, -230, -231, -232, ~~Pad 2~~ and Pad 10~~-4~~ at Technical Area (TA) 54, Area G. These CSAs are located at the east end of Area G and will be used to store containerized transuranic (TRU) mixed waste retrieved from under earthen cover. The existing asphalt pad at TA-54-226 is approximately 43 feet wide and 300 feet long. A 6- to 8-inch-high asphalt berm surrounds the perimeter of the pad. Once all of the drums are retrieved for characterization and subsequent drum venting operations, the existing pad will either be retrofitted or replaced to fit the dome currently covering the pad. The dome is 88 feet, 7 inches wide and 286 feet long, with a maximum design capacity of 970,000 gallons. Pad~~s 2 and 4 are~~ 10 is also constructed of asphalt~~ and have the same dimensions and perimeter berm as TA-54-226~~. TA-54-229, -230, -231, and -232 are being constructed on an approximately 275 feet wide by 570 feet long asphalt pad, which is gently sloped (from 1 to 1.5 percent). TA-54-230 will store containers of potential liquid-bearing TRU mixed waste whereas TA-54-229, -231, and -232 will be used solely to store solid TRU mixed waste. TA-54-229, -230, -231, and -232, are 88 feet, 7 inches wide and 246 feet long, with a maximum design storage capacity of 790,000 gallons each.

E.10.1 Estimate of Maximum Waste in Storage

The maximum total inventory of waste in storage at any time at the CSAs mentioned above is estimated at 5,530,045 gallons. A breakdown of the maximum inventories for each of these areas is as follows:

- TA-54-226 - 970,000 gallons
- TA-54-229 - 790,000 gallons
- TA-54-230 - 790,000 gallons
- TA-54-231 - 790,000 gallons
- TA-54-232 - 790,000 gallons
- ~~Pad 2 - 430,045 gallons~~
- Pad 10~~-4~~ - 970,000 gallons

E.10.2 Description of Waste

TRU mixed waste stored in the TA-54, Area G, CSAs mentioned above was generated during research activities, processing and recovery operations, and decontamination and decommissioning operations primarily at TA-3, TA-21, TA-50, and TA-55. These wastes are classified as mixed wastes because Resource Conservation and Recovery Act (RCRA) characteristic and/or listed wastes[1] are or may be present in the waste, along with a radioactive component.

[1]Use of the terms, "RCRA characteristic and/or listed waste" or "RCRA constituents" refers to hazardous wastes or hazardous constituents as defined in 20 NMAC 4.1, Subpart II, Part 261, revised November 1, 1995.

E.10.3 Closure Procedure and Decontamination

E.10.3.1 Partial Closure

Partial closure would consist of closing one or more of the regulated hazardous/mixed waste management units or subunits at the LANL facility, while leaving the other regulated hazardous/mixed waste management units at LANL in service. In the event of a partial closure, the following procedures would apply to the unit(s) being closed.

E.10.3.2 Unit Closure

To the extent possible, all contaminated structures and equipment at the CSAs addressed in this closure plan will be decontaminated. Structures, equipment, and media that cannot be decontaminated will be containerized and managed in compliance with appropriate regulations. All sampling conducted during closure and decontamination will be done in accordance with quality assurance/quality control (QA/QC) procedures (see Section E.10.7).

Before proceeding with any closure activities, the CSAs will be surveyed for radiological contamination. Personal protective equipment (PPE) and monitoring requirements will be determined by LANL's Health Physics Operations (ESH-1) and Industrial Hygiene and Safety (ESH-5) Groups following a field inspection. Radiation and chemical monitoring will occur throughout closure activities. If any contamination is found, the contaminated materials, equipment, and/or structures will be decontaminated (if possible) or containerized and taken to an approved storage location at LANL appropriate for the waste type.

Personnel involved in closure activities will wear appropriate PPE, specified by ESH-1 and ESH-5, and will follow good hygiene practices to protect employees from exposure to hazardous and/or mixed waste. The level of PPE that will be required will depend upon the levels of radiological and/or chemical contamination that are detected, if any. If ESH-1 and ESH-5 surveys do not indicate detectable contamination levels, minimum PPE requirements will consist of coveralls, steel-toed boots, and safety glasses or face shields. If an overhead danger is present, a hard hat will be worn. All workers involved in closure activities will be required to have training and medical monitoring. Contaminated PPE will either be decontaminated or managed in compliance with appropriate regulations.

All wastes will be removed from the CSA scheduled to be closed prior to the initiation of closure activities. Containers will be removed from each storage area primarily with forklifts. Small containers may be handled manually or with dollies. All containers will be placed onto flatbed trucks or trailers for transport. All appropriate shipping papers will accompany the wastes during transport. Containers holding regulated hazardous/mixed wastes will be moved to an approved on-site facility or permitted off-site disposal facility.

Before decontamination activities begin, samples of the clean water and detergent (wash water) solution squeezed from mops and/or sponges prior to use will be collected for analysis of the parameters listed in Table E.10-1. The analytical results from these samples will be used to provide a baseline for decontamination verification.

Prior to decontamination of a dome, any portable equipment to be removed from the area will be wiped down with wash water solution. This may include items such as wooden pallets and miscellaneous equipment. The dome walls will be wiped down with mops and sponges to minimize the amount of liquid waste generated as a result of decontamination activities. A portable berm will be used to collect used wash water from the dome walls. The berm will be placed along the exterior perimeter of the dome so that wash water collects between the portable berm and the curb surrounding the dome's interior perimeter. After the washdown process, the used wash water will be collected, transferred to containers, sampled, and analyzed for the parameters in Table E.10-1. If the used wash water is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise the used wash water will be managed at an appropriate on-site facility. Used wash water samples may exhibit anomalously high levels of organic compounds due to leaching of the dome walls during washdown. If this is the case, record reviews (e.g., manufacturer's specifications, material safety data sheets [MSDS]) and additional analyses may be performed to determine if leaching of organics from dome walls contributed to the organic compound concentration in used wash water. If this additional evaluation confirms the dome walls as the source of contamination, baseline concentrations of clean washwater will be adjusted accordingly. If sampling and analysis indicate that radioactive and/or hazardous constituents are present, which are not attributed to leaching of organics from dome walls, the wash cycles and analyses will continue until the structure or equipment has been decontaminated or the decision is made to manage it appropriately as contaminated waste. This material may be transported to and stored at other waste management facilities to facilitate the closure process.

The same procedure will be used to decontaminate asphalt pads/floors. Before the first washdown, two samples of the clean washdown solution will be collected and analyzed for the parameters listed in Table E.10.1 to provide a baseline for decontamination verification. Portable berms will be used to collect and provide containment for the used wash water. After the washdown process, the used wash water will be collected, stored in containers at the site, sampled, and analyzed for the parameters in Table E.10-1. If the used wash water is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise, the used wash water will be managed at an appropriate on-site facility, depending on the regulated constituents present. Each asphalt pad may undergo up to two wash cycles. If decontamination verification cannot be demonstrated after two wash cycles, the asphalt pads will be removed from the site and managed as appropriate for the waste type. Used wash water samples may exhibit anomalously high levels of organic compounds due to leaching of the asphalt pads during washdown. If this is the case, record reviews (e.g. manufacturer's specifications, MSDS) and additional analyses may be performed to determine if leaching of organics from asphalt pads contributed to the organic compound concentration in used wash water. If this additional evaluation confirms the asphalt pad as the source of contamination, baseline concentrations for clean washwater will be adjusted accordingly. Decontamination verification is discussed further in Section E.10.3.3.

Soil sampling will also be conducted to determine if contaminants have migrated from the container storage areas. Prior to the initiation of closure activities, a background soil sample will be collected near each storage dome or pad and analyzed for the parameters listed in E.10-1. After dome and asphalt pad washdown activities are completed, discrete soil samples will be collected from the soil surrounding the asphalt pads. Samples will be collected 6 inches off the asphalt edge to a depth of 6 inches and equally spaced to cover the edge. Samples will be analyzed for the parameters in Table E.10-1. Due to the presence of disposal pits beneath the storage areas, there is a potential for subsurface contamination from these underlying units. If contamination is found in any of the soil samples as a result of the container storage

subunits, the contaminated soil will be removed to levels equal to or less than concentrations in background soil samples from the site or below levels agreed upon with the New Mexico Environment Department (NMED). If the contamination cannot be attributed to the storage activities, it will be addressed when the site undergoes corrective activities pursuant to conditions in Module VIII of this permit.

Prior to use, all decontamination equipment will be rinsed with distilled water. Decontamination equipment rinsate blanks will be collected and analyzed in accordance with QA/QC procedures (see Section E.10.7). Reusable protective clothing, tools, and equipment used during closure activities will be cleaned with a wash water solution and scraped as necessary to remove any residue. Residue, disposable equipment, and reusable equipment that cannot be decontaminated will be containerized and managed appropriately at an approved on-site facility, depending on the regulated constituents present. Used wash water will be collected and analyzed for the parameters listed in Table E.10-1. If the used wash water is nonhazardous and nonradioactive, the water will be managed appropriately in accordance with LANL policy. Otherwise, it will be managed at an appropriate on-site facility, depending on the regulated constituents present.

E.10.3.3 Decontamination Verification

Sufficient sampling and analysis will be required to demonstrate that hazardous or mixed waste residue is not present at the site after closure. Two samples of clean wash water solution squeezed from mops and/or sponges prior to use will be collected before initial washdown of the CSAs. The samples will be analyzed for parameters listed in Table E.10-1 to provide baseline data for decontamination verification. Analytical procedures will conform to methods found in the most current version of "Test Methods for Evaluating Solid Waste," Physical/Chemical Methods (SW-846). Used washdown solutions will also be analyzed for the parameters listed in Table E.10-1. Washdown solutions will be considered contaminated if the used wash water solution shows a significant increase (i.e., determined using statistical methods defined in SW-846) in the analytical parameters over the clean wash water solution. If subsequent washdowns are deemed necessary, an additional sample of clean wash water solution squeezed from mops and/or sponges prior to use will be taken for each additional washdown event.

Successful decontamination meets one of the following criteria:

- No detectable hazardous waste or constituents from container storage activities are found in the final sample.
- Detectable hazardous waste or constituents from container storage activities in the final sample are removed to statistically significant levels based on baseline concentrations in the clean wash water or established background soil data.
- Detectable hazardous waste or constituents from container storage activities in the final sample are at or below levels agreed upon with the New Mexico Environment Department (NMED).
- Detectable hazardous waste or constituent concentrations from container storage activities do not significantly decrease after several washdowns.

E.10.4 Closure Schedule

Closure will not commence until all of the wastes have been removed from the CSA scheduled to be closed. Closure activities will begin in accordance with the approved closure plan, as required by the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.113(a), revised November 1, 1995, within 90 days after final receipt of waste at the CSA. This timeframe will be met as long as facilities are available for disposal of these wastes. In the event that waste removal activities cannot be completed at the CSA within 90 days, LANL will notify the Secretary of the NMED in accordance with the extension requirements cited in 20 NMAC 4.1, Subpart V, 264.113(a), revised November 1, 1995. Closure activities and reporting requirements will be completed within 180 days of the receipt of the final volume of waste at the waste management area to be closed. Closure will be conducted in accordance with the schedule presented in Table E.10-2. In the event that closure of a CSA is prevented from proceeding according to schedule, LANL will notify the Secretary of the NMED in accordance with extension request requirements in 20 NMAC 4.1, Subpart V, 264.113(b), revised November 1, 1995. In addition, the demonstrations in 20 NMAC 4.1, Subpart V, 264.113(a)(1) and (b)(1), revised November 1, 1995, will be made in accordance with 20 NMAC 4.1, Subpart V, 264.113(c), revised November 1, 1995.

E.10.5 Closure Certification

Within 60 days after completion of closure activities for each of the CSAs, the U.S. Department of Energy (DOE) will submit to the Secretary of the NMED, via certified mail, a certification that the area has been closed in accordance with the specifications of the closure plan. The certification will be attested to by an independent, registered professional engineer and will be signed by the appropriate DOE and LANL officials, in accordance with 20 NMAC 4.1, Subpart V, 264.115, revised November 1, 1995. Documentation supporting the independent registered engineer's certification will be furnished to the Secretary of the NMED with the original certification. A copy of the certification and supporting documentation shall be maintained by both the DOE/Los Alamos Area Office and LANL's Hazardous and Solid Waste Group.

E.10.6 Sampling and Analytical Procedures

The following sections describe procedures and methods for sampling, analysis, and documentation applicable to closure activities. While the procedures and methods are specific, other applicable procedures or methods given in SW-846 may be used if conditions or experience show the alternate method to be more appropriate. All sampling and analytical procedures actually used will be annotated in the final closure report. Sampling will be conducted in accordance with procedures given in SW-846 (for hazardous components) and LANL's Inorganic Trace Analysis Group (CST-9) procedures (for radiological analysis).

E.10.6.1 Soil Sampling

Soil samples will be collected at the CSAs at TA-54, Area G, to determine if contaminants have migrated from the CSAs and, if so, to determine the horizontal and vertical extent of such migration.

E.10.6.1.1 Cleaning of Samplers

To prevent cross contamination, it is important to clean the samplers after each sample is collected. An unused, disposable sampler may be presumed clean if still in a factory-sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a detergent and water solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry.

E.10.6.1.2 Sampling Procedures

The sampling procedures outlined below will be used to obtain samples to determine the amount of RCRA constituents,[2] if any, in soil associated with the units undergoing closure. Soil samples will be collected from the 6-inch depth with a trowel or scoop or with a Veihmeyer soil sampler. Sampling procedures will be performed as follows:

- Trowel or Scoop
  - Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
  - Combine the samples in a container appropriate for the required analysis.
  - Cap the container, attach a label and seal, and preserve as required (see Table E.10-3). Record in the field logbook, and complete the sample analysis request sheet and chain-of-custody form. Deliver the samples to CST-9 for radiological screening and to the laboratory for analysis.
- Veihmeyer Sampler
  - Assemble the sampler by screwing in the tip and drive head on the sampling tube.
  - Insert the tapered handle (drive guide) of the drive hammer through the drive head.
  - Place the sampler in a perpendicular position on the soil to be sampled.
  - With the left hand holding the tube, drive the sampler into the soil to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube further than the tip of the hammer's drive guide.
  - Record the length of the tube that penetrated the material.

[2]Refer to Footnote 1.

- Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.

- Rotate the sampler at least two revolutions to shear off the sample at the bottom.

- Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.

- Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a puller jack and grip.

- Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.

- Store the sample in an appropriate sample container.

- Label the sample, affix the seals, preserve as required (see Table E.10-3), record in the field logbook, complete the sample analysis request sheet and chain-of-custody form, and deliver the samples to CST-9 for radiological screening and to the laboratory for analysis.

E.10.6.2 Liquid Sampling

A coliwasa or similar device will be used to sample unused wash water solutions before decontamination begins in order to determine baseline parameters. It will also be used to sample the wash water used in cleaning structures and equipment. As an alternative to the coliwasa, glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of appropriately after each sample is collected, thus eliminating the potential for cross contamination.

E.10.6.2.1 Cleaning of Samplers

The sampler must be clean before use. An unused, disposable sampler may be presumed clean if still in a factory-sealed wrapper. Unsealed samplers will be cleaned prior to use. Samplers will be washed with a detergent and water solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the coliwasa is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Improper cleaning of sampling equipment will cause cross contamination of samples. Clean samplers should be stored in clean polyethylene plastic tubes or bags in a clean and protected area.

E.10.6.2.2 Sampling Procedure

Liquid sampling with a coliwasa will be performed as follows:

- Ensure that the coliwasa is clean.

- Assemble the coliwasa.
- Check that the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.
- Wear necessary protective clothing and gear, and observe required sampling precautions.
- Put the sampler in the open position by placing the stopper-rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.
- Slowly lower the coliwasa into the liquid at a rate that permits the level of the liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a nonrepresentative sample.
- When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.
- Slowly withdraw the sampler from the container with one hand, while wiping the sampler tube with a disposable cloth with the other hand.
- Carefully discharge the sample into a sample container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block, while the lower end of the sampler is positioned in the sample container.
- Preserve as required (see Table E.10-4), cap the container, attach a label and seal, place immediately in an insulated container with ice (if required), record in the field logbook, and complete the sample analysis request sheet and chain-of-custody form.
- Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site, or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.

E.10.6.3 Sample Handling and Documentation

Samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and sample analysis request form. The chain-of-custody form is necessary to trace sample possession from the time of collection to the time of analysis and must accompany every sample. The original record accompanies shipment. The copy is retained by LANL. If samples are analyzed at LANL, the original will be maintained by LANL. The request for analysis form has two parts: field and laboratory. The field portion of this form must be completed by the person collecting the sample and must include most of the pertinent information noted in the logbook. The laboratory portion is intended to be completed by the analytical laboratory personnel when the sample is received. The analytical laboratory retains the original record and sends a copy to

LANL.

Sample containers appropriate for the requested analyses will be used for all samples. Sample containers, preservation, and holding times will conform to those specified in SW-846 for the corresponding analyses. Samples will be collected, placed in bottles, sealed, and tagged. Sample container surfaces will be screened for radiological contamination and decontaminated, if necessary. Sample containers will then be immediately packed in vermiculite, sawdust, or if refrigeration is required, an insulated container with ice. Recommended sample containers, preservation, and holding times are presented in Tables E.10-3 and E.10-4.

The sample container must be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. A sample label is necessary to prevent misidentification of samples and should include, if applicable, the grid number referenced to positions staked on the site perimeter. The sample label must be completed to include the project name, sample number, collection date/time, collector's name, sample location, sample media description, preservative, and analysis requested. In the case of soil sampling, field information shall include observations such as the soil texture and surface appearance, ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling.

A field logbook will be kept and will contain all information pertinent to field surveys and sampling. The logbook shall have bound and consecutively numbered pages in 8 1/2 - by 11 inch format. Minimum entries should include:

- Purpose of sample (routine sampling, special sampling)
- Location of sampling (coordinates referenced to staked field points, if soil sample)
- Name and business address of person making log entry
- Type of process producing waste
- Number and volume of sample
- Description of each sampling location, sampling methodology, equipment used, etc.
- Date and time of sample collection
- Sample destination and transporter's name (e.g., name of laboratory, United Parcel Service, etc.)
- Map or photograph of the sampling site, if any
- Field observations, if applicable (e.g., ambient temperature, sky conditions, past 24-hour precipitation)
- Field measurements, if applicable (e.g., pH, conductivity)

- Collector's sample identification number(s)

- Signature of person responsible for the log entry.

Because sampling situations vary widely, no specific rule can be given as to the extent of information that must be entered in the logbook. It is recommended, however, to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

E.10.7 Quality Assurance/Quality Control

A qualified individual or individuals shall be designated to independently oversee the closure activities and to report directly to senior management on the quality of the closure performance. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed, and review the analysis reports for accuracy and adequacy. A written QA/QC plan prepared in accordance with SW-846 guidance shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the level of decontamination verification achieved.

E.10.8 Closure Report

Upon completion of the closure activities for each CSA addressed in this closure plan, a closure report shall be submitted to the Secretary of the NMED. The report shall document the closure and contain, at a minimum, the following:

- The certification described in Section E.10.5

- Any variance from the approved activities and the reason for the variance

- A tabular summary of all sampling results, showing:
  - Sample identification
  - Sampling location
  - The datum reported
  - Detection limit for each datum
  - A measure of analytical precision (e.g., uncertainty, range, variance)
  - Identification of analytical procedure
  - Identification of analytical laboratory.

- A QA/QC statement on analytical data validation and decontamination verification

- The location of the file of supporting documentation, including:
  - Field logbooks
  - Laboratory sample analysis reports
  - QA/QC documentation
  - Chain-of-custody forms.

- Disposition location of regulated closure materials

- A certification of accuracy of the report.

TABLE E.10-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 54, AREA G, CONTAINER STORAGE AREAS

Parameter	Test Method	Reference[b]
Ignitability	Pensky-Martens closed-cup method	(L) SW1010 (L) ASTM D93-80
Corrosivity	Electrometric (pH of aqueous solution)	(L) SW9040B
Toxicity characteristic	Toxicity characteristic leaching procedure (TCLP) extraction	(L, S) SW1311
Metals:	Graphite furnace atomic absorption (AA) spectroscopy, gaseous hydride AA, or direct aspiration AA	
Arsenic		(L, S) SW7060A, SW7061A
Barium		(L, S) SW7080A, SW7081
Cadmium		(L, S) SW7130, SW7131A
Chromium		(L, S) SW7190, SW7191
Lead		(L, S) SW7420, SW7421
Selenium		(L, S) SW7740, SW7741A
Silver		(L, S) SW7760A, SW7761
Mercury	Manual cold-vapor technique	(L)SW7470A, (S) SW7471A
Volatile organics	Gas chromatography (GC)/mass spectrometry (MS)	(L, S) SW8240B
	GC/MS capillary column technique	(L, S) SW8260A

Refer to footnotes at end of table.

Refer to footnotes at end of table.

TABLE E.10-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 54, AREA G, CONTAINER STORAGE AREAS
(continued)

Parameter	Test Method	Reference[b]
Semivolatile organics	GC/MS	(L, S) SW8250A
	GC/MS capillary column technique	(L, S) SW8270B
Total metals[c]	Acid digestion	(L) SW3010A, (S) SW3050A
	Inductively coupled plasma atomic emission spectroscopy	(L, S) SW6010A
Arsenic		(L, S) SW6010A
Barium		(L, S) SW6010A
Beryllium		(L, S) SW6010A
Cadmium		(L, S) SW6010A
Chromium		(L, S) SW6010A
Lead		(L, S) SW6010A
Nickel		(L, S) SW6010A
Selenium		(L, S) SW6010A
Silver		(L, S) SW6010A
Thallium		(L, S) SW6010A
Zinc		(L, S) SW6010A
Mercury	Manual cold-vapor technique	(L) SW7470A
		(S) SW7471A

Refer to footnotes at end of table.

TABLE E.10-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 54, AREA G, CONTAINER STORAGE AREAS
(continued)

Parameter	Test Method	Reference[b]
Free liquids	Paint Filter Liquids Test	(L, S) SW9095

[a] At Los Alamos National Laboratory, current analytical capabilities include limited analyses of mixed waste samples. These analyses include, but are not limited to, gross alpha, beta, and gamma screening.
[b] "ASTM" refers to American Society for Testing and Materials standards.
"SW" refers to U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
(L) refers to liquid waste.
(S) refers to solid waste.
[c] See also atomic absorption methods.

TABLE E.10-2
SCHEDULE FOR CLOSURE ACTIVITIES AT TECHNICAL AREA 54, AREA G, CONTAINER STORAGE AREAS TA-54-226, -229, -230, -231, -232, ~~PAD 2,~~ AND PAD 10~~-4~~

Activity	Maximum Time Required[a]
Let contract request for proposals-90 Days	
Notify the New Mexico Environment Department (NMED)	-45 Days
Receive proposals	-30 Days
Select contractor and award contract	-10 Days
Collect background samples	-5 Days
Final receipt of waste	Day 0
Begin closure activities - removal of wastes	Day 10
Washdown of structures	Day 20
Perform initial sampling of the waste management area	Day 25
Analyze samples	Day 55
Perform additional washdown (if necessary)	Day 60
Perform additional sampling (if necessary)	Day 70
Analyze samples (if necessary)	Day 100
Perform pad washdown and sampling	Day 110
Analyze samples	Day 140
Perform final cleanup (e.g., removal of decontaminated equipment and decontamination wastes)	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.

TABLE E.10-3
SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES
FOR SEDIMENT/SOIL/SLUDGE SAMPLES

Analyte Group	Container	Preservative	Holding Time[a]
Target compound volatile organics[b]	8 ounce (oz.) WM[c]-G[d]	Cool 4°Celsius (C)	14 days from field collection to toxicity characteristic leaching procedure (TCLP) extraction 14 days from preparative extraction to determinative analysis
Target compound semivolatile organics[b]	2 x 120 milliliter (ml) G vial Teflon™-lined cap	Cool 4°C	14 days from field collection to TCLP extraction 7 days from TCLP extraction to preparative extraction 40 days from preparative extraction to determinative analysis
Target analyte metals[b] (except mercury)	8 oz. WM-G	Cool 4°C	180 days from field collection to TCLP extraction 180 days from preparative extraction to determinative analysis
Mercury	1 liter P[e]	HNO_3[f] to pH <2	28 days from field collection to TCLP extraction 28 days from preparative extraction to determinative analysis
Radioactivity screening	120 ml G vial	None	Analyze upon receipt

[a] Holding time information was taken from the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Appendix II, revised November 1, 1995.
[b] Target compound volatile and semivolatile organics and target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[c] WM = Wide-mouth
[d] G = Glass
[e] P = Polyethylene
[f] HNO_3 = Nitric acid

TABLE E.10-4
SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES FOR LIQUID SAMPLES

Analyte Group	Container	Preservative	Holding Time[a]
Target compound volatile organics[b]	2 x 40 milliliter (ml) AG[c] septa vials	HCl[d], Cool 4°Celsius (C)	14 days from field collection to toxicity characteristic leaching procedure (TCLP) extraction 14 days from preparative extraction to determinative analysis
Target compound semivolatile organics[b]	2 x 1 liter AG	Cool 4°C	14 days from field collection to TCLP extraction 7 days from TCLP extraction to preparative extraction 40 days from preparative extraction to determinative analysis
Target analyte metals[b] (except mercury)	1 liter P[e]	HNO_3[f] to pH <2	180 days from field collection to TCLP extraction 180 days from preparative extraction to determinate analysis
Mercury	500 ml P	HNO_3 to pH <2	28 days from field collection to TCLP extraction 28 days from preparative extraction to determinative analysis
Radioactivity screening	40 ml G[g] vial, no septa	None	Analyze upon receipt

[a] Holding time information was taken from the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Appendix II, revised November 1, 1995.
[b] Target compound volatile and semivolatile organics and target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[c] AG = Amber glass
[d] HCl = Hydrochloric acid
[e] P = Polyethylene
[f] HNO_3 = Nitric acid
G = Glass

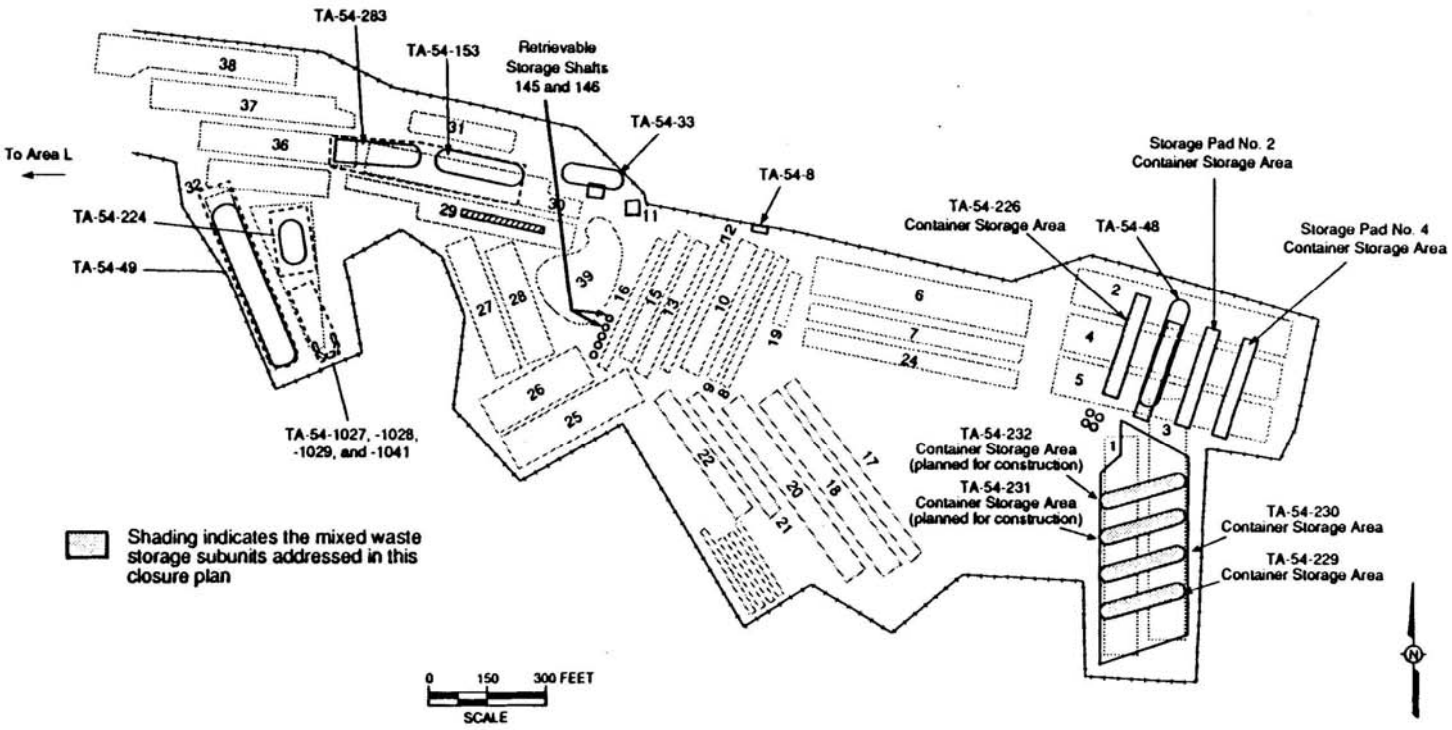


FIGURE E.10-1

TECHNICAL AREA (TA) 54, AREA G, TA-54-226, -239, -230, -231, -232, ~~PAD 2~~ AND PAD 10-4

CLOSURE PLAN
PERMIT ATTACHMENT E.11
NM 0890010515-1

CLOSURE PLAN
PERMIT ATTACHMENT E.11
NM0890010515-1

E.11 TECHNICAL AREA 50, BUILDING 69, WASTE CHARACTERIZATION, REDUCTION, AND REPACKAGING FACILITY (WCRRF) INDOOR AND OUTDOOR CONTAINER STORAGE AREAS

The container storage areas (CSA) addressed in this closure plan include the Indoor and Outdoor CSAs at the Technical Area 50, Building 69 (TA-50-69), Waste Characterization, Reduction, and Repackaging Facility (WCRRF) (Figure E.11-1). The CSAs are used to store transuranic (TRU) mixed waste, low-level mixed waste, and hazardous waste.

Waste containers stored in the WCRRF Indoor CSA include drums of various sizes, fiberglass-reinforced plywood (FRP) boxes, standard waste boxes (SWB), and other irregular containers. The WCRRF Indoor CSA consists of Rooms 102 and 103. Room 102 is approximately 45 feet (ft) wide and 52 ft long. The floor is reinforced concrete slab with epoxy paint. A floor drain located near the glovebox enclosure in Room 102 is connected directly to the Radioactive Liquid Waste Treatment Facility (RLWTF) at TA-50-1. Whenever waste containers known or suspected to contain free liquids are managed in this room, the floor drain grate is replaced by a metal plate and rubber gasket. Room 103 is approximately 18 ft wide and 19 ft long. The floor is epoxy painted, reinforced concrete slab. A floor drain located in the eastern part of Room 103 is plumbed directly to the RLWTF; however, the floor drain grate is replaced by a metal plate and rubber gasket whenever waste containers known or suspected to contain free liquids are managed in this room.

Waste containers stored in the WCRRF Outdoor CSA, located approximately 30 ft from the southwest corner of TA-50-69, include drums of various sizes, FRP boxes, SWBs, B25 boxes, and other irregular containers. Transportainers are also utilized at the WCRRF Outdoor CSA to provide weather protection for containers of various sizes. The Outdoor CSA is 24 ft wide and 90 ft long. It is constructed of asphaltic concrete, approximately 4 inches thick.

E.11.1 Estimate of Maximum Waste in Storage

The maximum inventory of waste in storage at any time at the TA-50-69 WCRRF Indoor and Outdoor CSAs is estimated at 31,500 gallons. A breakdown of the maximum inventories for each of these areas is as follows:

- WCRRF Indoor CSA - 1,500 gallons
- WCRRF Oudoor CSA - 30,000 gallons

E.11.2 Description of Waste

TRU mixed waste stored in the TA-50-69 WCRRF Indoor and Outdoor CSAs is generated during research activities, processing and recovery operations, and decontamination and decommissioning operations primarily at TA-3, TA-21, TA-50, and TA-55. Low-level mixed waste stored is generated during research

activities, processing and recovery operations, decontamination and decommissioning operations, and environmental remediation/restoration activities at various TAs throughout Los Alamos National Laboratory (LANL). These wastes are classified as mixed wastes because Resource Conservation and Recovery Act (RCRA) characteristic and/or listed wastes are or may be present in the waste, along with a radioactive component. Hazardous wastes generated throughout LANL and stored at these CSAs are generated primarily from research and development activities, processing and recovery operations, decontamination and decommissioning projects, and environmental remediation/restoration activities.

E.11.3 Closure Procedure and Decontamination

E.11.3.1 Partial Closure

Partial closure would consist of closing one or more of the RCRA-regulated waste management units or subunits at the LANL facility, while leaving the other RCRA-regulated waste management units at LANL in service. In the event of a partial closure, the following procedures would apply to the unit(s) being closed.

E.11.3.2 Unit Closure

To the extent possible, all contaminated structures and equipment at the CSAs addressed in this closure plan will be decontaminated. Structures, equipment, and media that cannot be decontaminated will be containerized and managed in compliance with appropriate regulations. All sampling conducted during closure and decontamination will be done in accordance with quality assurance/quality control (QA/QC) procedures (see Section E.11.7).

Before proceeding with any closure activities, the CSAs will be surveyed for radiological contamination. Personal protective equipment (PPE) and monitoring requirements will be determined by LANL's Health Physics Operations (ESH-1) and Industrial Hygiene and Safety (ESH-5) Groups following a field inspection. Radiation and chemical monitoring will occur throughout closure activities. If any contamination is found, the contaminated materials, equipment, and/or structures will be decontaminated (if possible) or containerized and taken to an approved storage location at LANL appropriate for the waste type.

Personnel involved in closure activities will wear appropriate PPE, specified by ESH-1 and ESH-5, and will follow good hygiene practices to protect employees from exposure to hazardous and/or mixed waste. The level of PPE that will be required will depend upon the levels of radiological and/or chemical contamination that are detected, if any. If ESH-1 and ESH-5 surveys do not indicate detectable contamination levels, minimum PPE requirements will consist of coveralls, steel-toed boots, and safety glasses or face shields. If an overhead danger is present, a hard hat will be worn. All workers involved in closure activities will be required to have training and medical monitoring. Contaminated PPE will either be decontaminated or managed in compliance with appropriate regulations.

All wastes will be removed from the CSA scheduled to be closed prior to the initiation of closure activities. Containers will be removed from each storage area primarily with forklifts. Small containers may be handled manually or with dollies. All containers will be placed onto flatbed trucks or trailers for transport. All appropriate shipping papers will accompany the wastes during transport. Containers holding

RCRA-regulated wastes will be moved to an approved on-site facility or permitted off-site treatment and/or disposal facility.

Before decontamination activities begin, samples of the clean water and detergent (wash water) solution squeezed from mops and/or sponges prior to use will be collected for analysis of the parameters listed in Table E.11-1. The analytical results from these samples will be used to provide a baseline for decontamination verification.

Prior to decontamination of the main surfaces of the CSA, any portable equipment to be removed from the area will be wiped down with wash water solution. This may include equipment such as self-containment pallets, wooden pallets, and miscellaneous equipment. Portable berms will be used to provide containment for the used wash water. After the washdown process, the used wash water will be collected, transferred to containers, sampled, and analyzed for the parameters in Table E.11-1. If the used wash water is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise the used wash water will be managed at an appropriate on-site facility. If sampling and analysis indicate that radioactive and/or hazardous constituents are present, the wash cycles and analyses will continue until the equipment has been decontaminated or the decision is made to manage it appropriately as contaminated waste. This material may be transported to and stored at other waste management facilities to facilitate the closure process.

The walls, floors, and remaining equipment of the WCRRF Indoor CSA will then be wiped down with wash water solution. Portable berms will be used to collect and provide containment for the used wash water. The used wash water will be collected, sampled, and analyzed for the parameters in Table E.11-1. If the used wash water is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise, the used wash water will be managed at an appropriate on-site facility, depending on the regulated constituents present. If sampling and analysis indicate that hazardous and/or radioactive constituents are present, the wash cycles and analyses will continue until the area has been decontaminated or the decision is made to segregate contaminated portions of the storage area for subsequent management as contaminated waste. Decontamination verification is discussed further in Section E.11.3.3.

Prior to use, all decontamination equipment will be rinsed with distilled water. Decontamination equipment rinsate blanks will be collected and analyzed in accordance with QA/QC procedures (see Section E.11.7). Reusable protective clothing, tools, and equipment used during closure activities will be cleaned with a wash water solution and scraped as necessary to remove any residue. Residue, disposable equipment, and reusable equipment that cannot be decontaminated will be containerized and managed appropriately at an approved on-site facility, depending on the regulated constituents present. Used wash water will be collected and analyzed for the parameters listed in Table E.11-1. If the used wash water is nonhazardous and nonradioactive, the water will be managed appropriately in accordance with LANL policy. Otherwise, it will be managed at an appropriate on-site facility, depending on the regulated constituents present.

The transportainers used as equipment to provide weather protection for containerized wastes at the Outdoor CSA will be decontaminated as follows. The inside of the units will be scrubbed and rinsed with a wash water solution. (A sample of unused wash water solution will be collected and analyzed for parameters listed in Table E.11-1 to provide a baseline for decontamination verification.) Portable berms will be used to collect and provide containment for the used wash water. The wash water will be pumped into U. S. Department of Transportation (DOT)-approved drums with pumps. The used wash water will be sampled

and analyzed for the parameters in Table E.11-1 to demonstrate decontamination. If sampling and analysis indicate that hazardous and/or radioactive constituents are present, the inside of the units will be washed a second time in the same manner. The wash cycles and analyses will continue until the unit has been completely decontaminated. Decontamination verification is discussed further in Section E.11.3.3. If the used wash water is nonhazardous and nonradioactive, it will be disposed of via the industrial waste water sewer. Otherwise, it will be managed at the appropriate on-site facility, depending on the regulated constituents present. The outside surfaces and equipment of the transportainers will not be exposed to waste material during normal operations. Therefore, these surfaces will not be sampled beyond radiological surveying unless there is information that these surfaces have been exposed to spills during the active life of the unit or that interior spills may have caused leakage from the transportainer.

The asphaltic concrete pad at the Outdoor CSA will be washed down with a wash water solution. Portable berms or other containment structures will be used to collect the wash water from the pad. Before the first washdown, a sample of the clean wash water solution will be collected and analyzed for the parameters listed in Table E.11-1 to provide a baseline for decontamination verification. The used wash water from the pad will also be collected, transferred to DOT-approved containers, sampled, and analyzed for the parameters in Table E.11-1. If the used wash water is nonhazardous and nonradioactive, it will be discharged to the industrial wastewater sewer. Otherwise, the used wash water will be managed at the appropriate on-site facility, depending on the regulated constituents present.

Used wash water samples from the Outdoor CSA asphaltic concrete pad may exhibit anomalously high levels of organic compounds due to leaching of the pad materials during washdown. If this is the case, record reviews (e.g., manufacturer's specifications, MSDS) and additional analyses may be performed to determine if leaching of organic constituents from the pad contributed to the organic compound concentration in used wash water. If this additional evaluation confirms the asphaltic concrete materials as the source of contamination, baseline concentrations for clean wash water will be adjusted accordingly. The pad area may undergo up to two wash cycles. If decontamination verification cannot be demonstrated after two wash cycles, the asphaltic concrete material will be removed from the site and managed as appropriate for the waste type. If the wash water is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise, it will be managed at an appropriate on-site facility, depending on the regulated constituents present.

Soil sampling will be conducted as part of the closure activities to determine if contaminants have migrated from the south side of the WCRRF Outdoor CSA. Prior to the initiation of closure activities, background soil samples will be collected near the pad and analyzed for the parameters listed in Table E.11-1. After washdown activities at the CSA are complete, a statistically representative number of soil samples will be collected from the soil surrounding the pad. Samples will be collected 6 inches from the edge of the pad to a depth of 6 inches and equally spaced to ensure that samples are representative of the entire perimeter of the storage area. Samples will be analyzed for the parameters listed in Table E.11-1. If contamination is found in any of the soil samples as a result of container storage on the pad, the contaminated soil will be removed to statistically significant levels based on concentrations in the background soil samples.

The north, west, and east boundaries of the WCRRF Outdoor CSA are not situated near soil areas. After washdown activities at the CSA are complete, a statistically representative number of small area washdown samples will be collected from the asphalt surrounding the pad in a manner similar to the above soil samples. One-foot-square areas approximately 3 feet from the boundary of the CSA will be wiped down.

The wash water will be collected and analyzed for the parameters listed in Table E.11-1. The baseline concentration asphalt leachate samples or information described above will also apply for these samples. The degree of contamination, if present, will be assessed for these areas. If the samples do not exhibit contamination, the area will be considered to be decontaminated. If contamination is found in these samples as a result of container storage on the pad, the asphalt area around the CSA may be subject to the same wash down or removal process described above for the asphalt inside the CSA.

E.11.3.3 Decontamination Verification

Sufficient sampling and analysis will be required to demonstrate that hazardous or mixed waste residue is not present at the site after closure. Two samples of clean wash water solution squeezed from mops and/or sponges prior to use will be collected before initial washdown of the CSAs. The samples will be analyzed for parameters listed in Table E.11-1 to provide baseline data for decontamination verification. Analytical procedures will conform to methods found in the most current version of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846). Used washdown solutions will also be analyzed for the parameters listed in Table E.11-1. Washdown solutions will be considered contaminated if the used wash water solution shows a significant increase (i.e., determined using statistical methods defined in SW-846) in the analytical parameters over the clean wash water solution. If subsequent washdowns are deemed necessary, an additional sample of clean wash water solution squeezed from mops and/or sponges prior to use will be taken for each additional washdown event.

Existing background soil data for TA-50-69 may also be used to demonstrate that hazardous or mixed waste residue resulting from storage activities is not present at the site after closure. A comparison of closure sampling data to existing background soil data will be used to establish the source of any hazardous waste or constituents present in the soil. If the data comparison indicates that contamination is from container storage activities, additional contaminated soil excavations will be performed until at least one of the decontamination criteria has been met successfully.

Successful decontamination meets one of the following criteria:

- No detectable hazardous waste or constituents from container storage activities are found in the final sample.
- Detectable hazardous waste or constituents from container storage activities in the final sample are removed to statistically significant levels based on baseline concentrations in the clean wash water or established background soil data.
- Detectable hazardous waste or constituents from container storage activities in the final sample are at or below levels negotiated with the New Mexico Environment Department (NMED).
- Detectable hazardous waste or constituent concentrations from container storage activities do not significantly decrease after several washdowns. In such an event, hazardous constituents will be allowed to remain that pose an acceptable risk as mutually agreed upon with NMED.

E.11.4 Closure Schedule

Closure will not commence until all of the wastes have been removed from the CSA scheduled to be closed. Closure activities will begin in accordance with the approved closure plan, as required by the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.113(a), revised November 1, 1995, within 90 days after final receipt of waste at the CSA. This timeframe will be met as long as facilities are available for treatment and/or disposal of these wastes. In the event that closure activities cannot be completed at the CSA within 90 days, LANL will notify the Secretary of the NMED in accordance with the extension requirements cited in 20 NMAC 4.1, Subpart V, 264.113(a), revised November 1, 1995. Closure activities and reporting requirements will be completed within 180 days of the receipt of the final volume of waste at the waste management area to be closed. Closure will be conducted in accordance with the schedule presented in Table E.11-2. In the event that closure of a CSA is prevented from proceeding according to schedule, LANL will notify the Secretary of the NMED in accordance with extension request requirements in 20 NMAC 4.1, Subpart V, 264.113(b), revised November 1, 1995. In addition, the demonstrations in 20 NMAC 4.1, Subpart V, 264.113(a)(1) and (b)(1), revised November 1, 1995, will be made in accordance with 20 NMAC 4.1, Subpart V, 264.113(c), revised November 1, 1995.

E.11.5 Closure Certification

Within 60 days after completion of closure activities for each of the CSAs, the U.S. Department of Energy (DOE) will submit to the Secretary of the NMED, via certified mail, a certification that the area has been closed in accordance with the specifications of the closure plan. The certification will be attested to by an independent, registered professional engineer and will be signed by the appropriate DOE and LANL officials, in accordance with 20 NMAC 4.1, Subpart V, 264.115, revised November 1, 1995. Documentation supporting the independent registered engineer's certification will be furnished to the Secretary of the NMED with the original certification. A copy of the certification and supporting documentation shall be maintained by both the DOE/Los Alamos Area Office and LANL's Hazardous and Solid Waste Group.

E.11.6 Sampling and Analytical Procedures

The following sections describe procedures and methods for sampling, analysis, and documentation applicable to closure activities. While the procedures and methods are specific, other applicable procedures or methods given in SW-846 may be used if conditions or experience show the alternate method to be more appropriate. All sampling and analytical procedures actually used will be annotated in the final closure report. Sampling will be conducted in accordance with procedures given in SW-846 (for hazardous components) and LANL's Inorganic Trace Analysis Group (CST-9) procedures (for radiological analysis).

E.11.6.1 Soil Sampling

Soil samples will be collected at the WCRRF Outdoor CSA at TA-50-69. The soil samples will be collected to determine if contaminants have migrated from the CSA and, if so, to determine the horizontal and vertical extent of such migration.

E.11.6.1.1 Cleaning of Samplers

To prevent cross contamination, it is important to clean the samplers after each sample is collected. An unused, disposable sampler may be presumed clean if still in a factory-sealed wrapper. Unsealed samplers

will be cleaned prior to use. The samplers will be washed with a detergent and water solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry.

E.11.6.1.2 Sampling Procedures

The sampling procedures outlined below will be used to obtain samples to determine the amount of RCRA constituents in soil associated with the units undergoing closure. Soil samples will be collected from the 6-inch depth with a trowel or scoop or with a Veihmeyer soil sampler. Sampling procedures will be performed as follows:

- Trowel or Scoop
  - Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
  - Combine the samples in a container appropriate for the required analysis.
  - Cap the container, attach a label and seal, and preserve as required (see Table E.11-3). Record in the field logbook, and complete the sample analysis request sheet and chain-of-custody form. Deliver the samples to CST-9 for radiological screening and to the laboratory for analysis.
- Veihmeyer Sampler
  - Assemble the sampler by screwing in the tip and drive head on the sampling tube.
  - Insert the tapered handle (drive guide) of the drive hammer through the drive head.
  - Place the sampler in a perpendicular position on the soil to be sampled.
  - With the left hand holding the tube, drive the sampler into the soil to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube further than the tip of the hammer's drive guide.
  - Record the length of the tube that penetrated the material.
  - Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.
  - Rotate the sampler at least two revolutions to shear off the sample at the bottom.
  - Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.
  - Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a puller jack and grip.

- Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.

- Store the sample in an appropriate sample container.

- Label the sample, affix the seals, preserve as required (see Table E.11-3), record in the field logbook, complete the sample analysis request sheet and chain-of-custody form, and deliver the samples to CST-9 for radiological screening and to the laboratory for analysis.

E.11.6.2 Liquid Sampling

A coliwasa or similar device will be used to sample unused wash water solutions before decontamination begins in order to determine baseline parameters. It will also be used to sample the wash water used in cleaning structures and equipment. As an alternative to the coliwasa, glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of appropriately after each sample is collected, thus eliminating the potential for cross contamination.

E.11.6.2.1 Cleaning of Samplers

The sampler must be clean before use. An unused, disposable sampler may be presumed clean if still in a factory-sealed wrapper. Unsealed samplers will be cleaned prior to use. Samplers will be washed with a detergent and water solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the coliwasa is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Improper cleaning of sampling equipment will cause cross contamination of samples. Clean samplers should be stored in clean polyethylene plastic tubes or bags in a clean and protected area.

E.11.6.2.2 Sampling Procedure

Liquid sampling with a coliwasa will be performed as follows:

- Ensure that the coliwasa is clean.

- Assemble the coliwasa.

- Check that the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.

- Wear necessary protective clothing and gear, and observe required sampling precautions.

- Put the sampler in the open position by placing the stopper-rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.

- Slowly lower the coliwasa into the liquid at a rate that permits the level of the liquid inside and

outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a nonrepresentative sample.

- When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.

- Slowly withdraw the sampler from the container with one hand, while wiping the sampler tube with a disposable cloth with the other hand.

- Carefully discharge the sample into a sample container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block, while the lower end of the sampler is positioned in the sample container.

- Preserve as required (see Table E.11-4), cap the container, attach a label and seal, place immediately in an insulated container with ice (if required), record in the field logbook, and complete the sample analysis request sheet and chain-of-custody form.

- Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site, or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.

E.11.6.3 Sample Handling and Documentation

Samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and sample analysis request form. The chain-of-custody form is necessary to trace sample possession from the time of collection to the time of analysis and must accompany every sample. The original record accompanies shipment. The copy is retained by LANL. If samples are analyzed at LANL, the original will be maintained by LANL. The request for analysis form has two parts: field and laboratory. The field portion of this form must be completed by the person collecting the sample and include most of the pertinent information noted in the logbook. The laboratory portion is intended to be completed by the analytical laboratory personnel when the sample is received. The analytical laboratory retains the original record and sends a copy to LANL.

Sample containers appropriate for the requested analyses will be used for all samples. Sample containers, preservation, and holding times will conform to those specified in SW-846 for the corresponding analyses. Samples will be collected, placed in bottles, sealed, and tagged. Sample container surfaces will be screened for radiological contamination and decontaminated, if necessary. Sample containers will then be immediately packed in vermiculite, sawdust, or if refrigeration is required, an insulated container with ice. Recommended sample containers, preservation, and holding times are presented in Tables E.11-3 and E.11-4.

The sample container must be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. A sample label is necessary to prevent misidentification of samples and should include, if

applicable, the grid number referenced to positions staked on the site perimeter. The sample label must be completed to include the project name, sample number, collection date/time, collector's name, sample location, sample media description, preservative, and analysis requested. In the case of soil sampling, field information shall include observations such as the soil texture and surface appearance, ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling.

A field logbook will be kept and will contain all information pertinent to field surveys and sampling. The logbook shall have bound and consecutively numbered pages in 8 1/2 - by 11 inch format. Minimum entries should include:

- Purpose of sample (routine sampling, special sampling)
- Location of sampling (coordinates referenced to staked field points, if soil sample)
- Name and business address of person making log entry
- Type of process producing waste
- Number and volume of sample
- Description of each sampling location, sampling methodology, equipment used, etc.
- Date and time of sample collection
- Sample destination and transporter's name (e.g., name of laboratory, United Parcel Service, etc.)
- Map or photograph of the sampling site, if any
- Field observations, if applicable (e.g., ambient temperature, sky conditions, past 24-hour precipitation)
- Field measurements, if applicable (e.g., pH, conductivity)
- Collector's sample identification number(s)
- Signature of person responsible for the log entry.

Because sampling situations vary widely, no specific rule can be given as to the extent of information that must be entered in the logbook. It is recommended, however, to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

E.11.7 Quality Assurance/Quality Control

A qualified individual or individuals shall be designated to independently oversee the closure activities and to report directly to senior management on the quality of the closure performance. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed, and

review the analysis reports for accuracy and adequacy. A written QA/QC plan prepared in accordance with SW-846 guidance shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the level of decontamination verification achieved.

E.11.8 Closure Report

Upon completion of the closure activities for each CSA addressed in this closure plan, a closure report shall be submitted to the Secretary of the NMED. The report shall document the closure and contain, at a minimum, the following:

- The certification described in Section E.11.5

- Any variance from the approved activities and the reason for the variance

- A tabular summary of all sampling results, showing:
  - Sample identification
  - Sampling location
  - The datum reported
  - Detection limit for each datum
  - A measure of analytical precision (e.g., uncertainty, range, variance)
  - Identification of analytical procedure
  - Identification of analytical laboratory.

- A QA/QC statement on analytical data validation and decontamination verification

- The location of the file of supporting documentation, including:
  - Field logbooks
  - Laboratory sample analysis reports
  - QA/QC documentation
  - Chain-of-custody forms.

- Disposition location of RCRA-regulated closure materials

- A certification of accuracy of the report.

TABLE E.11-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 50, BUILDING 69 (TA-50-69), WASTE CHARACTERIZATION, REDUCTION, AND REPACKAGING FACILITY (WCRRF) INDOOR AND OUTDOOR CONTAINER STORAGE AREAS

Parameter	Test Method	Reference[b]
Ignitability	Pensky-Martens closed-cup method	(L) SW1010 (L) ASTM D93-80
Reactivity	Test method to determine hydrogen cyanide released from waste	(L, S) HCN Test Method, Section 7.3
	Test method to determine hydrogen sulfide released from waste	(L, S) H_2S Test Method, Section 7.3
Corrosivity	Electrometric (pH of aqueous solution)	(L) SW9040B
Toxicity characteristic	Toxicity characteristic leaching procedure (TCLP) extraction	(L, S) SW1311
Metals:	Graphite furnace atomic absorption (AA) spectroscopy, gaseous hydride AA, or direct aspiration AA	
Arsenic		(L, S) SW7060A, SW7061A
Barium		(L, S) SW7080A, SW7081
Cadmium		(L, S) SW7130, SW7131A
Chromium		(L, S) SW7190, SW7191
Lead		(L, S) SW7420, SW7421
Selenium		(L, S) SW7740, SW7741A
Silver		(L, S) SW7760A, SW7761

Refer to footnotes at end of attachment.

TABLE E.11-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 50, BUILDING 69 (TA-50-69), WASTE CHARACTERIZATION, REDUCTION, AND REPACKAGING FACILITY (WCRRF) INDOOR AND OUTDOOR CONTAINER STORAGE AREAS
(continued)

Parameter	Test Method	Reference[b]
Mercury	Manual cold-vapor technique	(L)SW7470A, (S) SW7471A
Volatile organics	Gas chromatography (GC)/mass spectrometry (MS)	(L, S) SW8240B
	GC/MS capillary column technique	(L, S) SW8260A
Semivolatile organics	GC/MS	(L, S) SW8250A
	GC/MS capillary column technique	(L, S) SW8270B
Organochlorine pesticides	TCLP extraction and GC	(L, S) SW8080A
Chlorinated herbicides		(L, S) SW8150B
Total metals[c]	Acid digestion	(L) SW3010A, (S) SW3050A
	Inductively coupled plasma atomic emission spectroscopy	(L, S) SW6010A
Arsenic		(L, S) SW6010A
Barium		(L, S) SW6010A
Beryllium		(L, S) SW6010A

Refer to footnotes at end of attachment.

TABLE E.11-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 50, BUILDING 69 (TA-50-69), WASTE CHARACTERIZATION, REDUCTION, AND REPACKAGING FACILITY (WCRRF) INDOOR AND OUTDOOR CONTAINER STORAGE AREAS
(continued)

Parameter	Test Method	Reference[b]
Cadmium		(L, S) SW6010A
Chromium		(L, S) SW6010A
Lead		(L, S) SW6010A
Nickel		(L, S) SW6010A
Selenium		(L, S) SW6010A
Silver		(L, S) SW6010A
Thallium		(L, S) SW6010A
Zinc		(L, S) SW6010A
Mercury	Manual cold-vapor technique	(L) SW7470A (S) SW7471A
Free liquids	Paint Filter Liquids Test	(L, S) SW9095

[a] At Los Alamos National Laboratory, current analytical capabilities include limited analyses of mixed waste samples. These analyses include, but are not limited to, gross alpha, beta, and gamma screening.
[b] "ASTM" refers to American Society for Testing and Materials standards.
"SW" refers to U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
(L) refers to liquid waste.
(S) refers to solid waste.
[c] See also atomic absorption methods.

TABLE E.11-2
SCHEDULE FOR CLOSURE ACTIVITIES AT THE TECHNICAL AREA 50, BUILDING 69 (TA-50-69), WASTE CHARACTERIZATION, REDUCTION, AND REPACKAGING FACILITY (WCRRF) INDOOR AND OUTDOOR CONTAINER STORAGE AREAS

Activity	Maximum Time Required[a]
Let contract request for proposals-90 Days	
Notify the New Mexico Environment Department (NMED)	-45 Days
Receive proposals	-30 Days
Select contractor and award contract	-10 Days
Collect background samples	-5 Days
Final receipt of waste	Day 0
Begin closure activities (perform washdown of structures)	Day 10
Perform initial sampling of the waste management area	Day 15
Analyze samples	Day 45
Perform additional washdown (if necessary)	Day 50
Perform additional sampling (if necessary)	Day 60
Analyze samples (if necessary)	Day 90
Perform pad washdown and sampling	Day 100
Analyze samples	Day 130
Perform final cleanup (e.g., removal of decontaminated equipment and decontamination wastes)	Day 130
Verify decontamination	Day 140
Submit final report to NMED	Day 180

[a] The schedule above indicates calendar days from the beginning by which activities will be completed. Some activities may be conducted simultaneously.

TABLE E.11-3
SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES FOR SEDIMENT/SOIL/SLUDGE SAMPLES

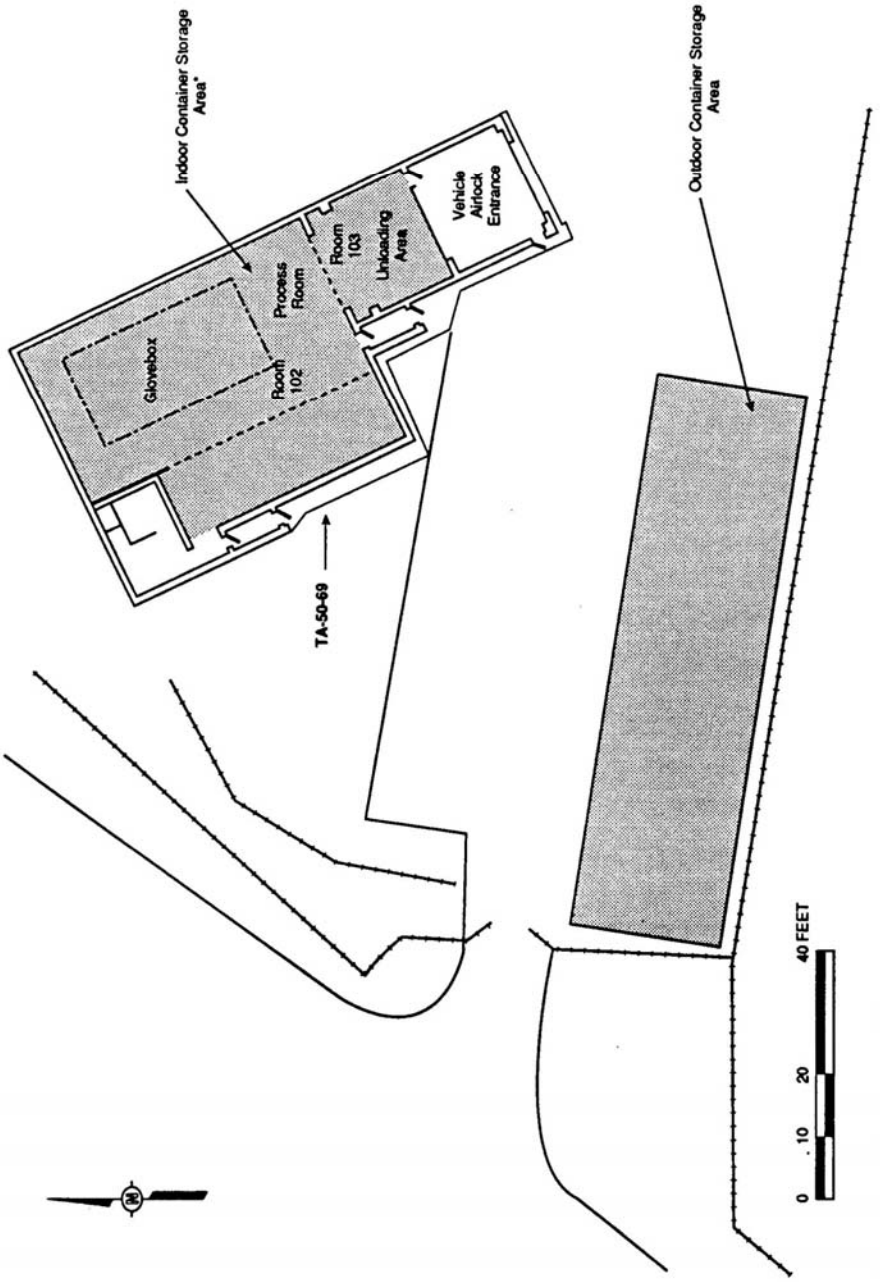
Analyte Group	Container	Preservative	Holding Time[a]
Target compound volatile organics[b]	8 ounce (oz.) WM[c]-G[d]	Cool 4°Celsius (C)	14 days from field collection to toxicity characteristic leaching procedure (TCLP) extraction 14 days from preparative extraction to determinative analysis
Target compound semivolatile organics[b]	2 x 120 milliliter (ml) G vial Teflon™-lined cap	Cool 4°C	14 days from field collection to TCLP extraction 7 days from TCLP extraction to preparative extraction 40 days from preparative extraction to determinative analysis
Target analyte metals[b] (except mercury)	8 oz. WM-G	Cool 4°C	180 days from field collection to TCLP extraction 180 days from preparative extraction to determinative analysis
Mercury	1 liter P[e]	HNO_3[f] to pH <2	28 days from field collection to TCLP extraction 28 days from preparative extraction to determinative analysis
Radioactivity screening	120 ml G vial	None	Analyze upon receipt

[a] Holding time information was taken from the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Appendix II, revised November 1, 1995.
[b] Target compound volatile and semivolatile organics and target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[c] WM = Wide-mouth
[d] G = Glass
[e] P = Polyethylene
[f] HNO_3 = Nitric acid

TABLE E.11-4
SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES FOR LIQUID SAMPLES

Analyte Group	Container	Preservative	Holding Time[a]
Target compound volatile organics[b]	2 x 40 milliliter (ml) AG[c] septa vials	HCI[d], Cool 4°Celsius (C)	14 days from field collection to toxicity characteristic leaching procedure (TCLP) extraction 14 days from preparative extraction to determinative analysis
Target compound semivolatile organics[b]	2 x 1 liter AG	Cool 4°C	14 days from field collection to TCLP extraction 7 days from TCLP extraction to preparative extraction 40 days from preparative extraction to determinative analysis
Target analyte metals[b] (except mercury)	1 liter P[e]	HNO_3[f] to pH <2	180 days from field collection to TCLP extraction 180 days from preparative extraction to determinate analysis
Mercury	500 ml P	HNO_3 to pH <2	28 days from field collection to TCLP extraction 28 days from preparative extraction to determinative analysis
Radioactivity screening	40 ml G[g] vial, no septa	None	Analyze upon receipt

[a] Holding time information was taken from the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Appendix II, revised November 1, 1995.
[b] Target compound volatile and semivolatile organics and target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[c] AG = Amber glass
[d] HCl = Hydrochloric acid
[e] P = Polyethylene
[f] HNO_3 = Nitric acid
[g] G = Glass



*Note: Container Storage Area in Building 69 does not include mezzanine.

FIGURE E.11-1

TECHNICAL AREA (TA) 50, BUILDING 69, WASTE CHARACTERIZATION, REDUCTION, AND REPACKAGING FACILITY (WCRRF)
INDOOR AND OUTDOOR CONTAINER STORAGE AREAS

CLOSURE PLAN
PERMIT ATTACHMENT E.12
NM 0890010515-1

CLOSURE PLAN
PERMIT ATTACHMENT E.12
NM0890010515-1

E.12 TECHNICAL AREA 54 WEST, BUILDING 38, RADIOASSAY AND NONDESTRUCTIVE TESTING (RANT) FACILITY CONTAINER STORAGE AREAS

The container storage areas (CSA) addressed in this closure plan include the Low Bay, the High Bay, the Loading Dock, and the Outdoor CSAs at the Technical Area 54 West, Building 38 (TA-54-38), Radioassay and Nondestructive Testing (RANT) Facility (Figure E.12-1). The CSAs are used to store transuranic (TRU) mixed waste and low-level mixed waste.

Waste drums of various sizes are stored in the Low Bay CSA and the Loading Dock CSA. The Low Bay CSA is approximately 11 feet (ft) square, and the low bay floor is 6-inch reinforced concrete slab coated with industrial grade enamel paint. The Loading Dock, located just east of the low bay, is approximately 16 ft wide and 39 ft long. It is constructed of cast-in-place concrete. A truck ramp, which is not part of the Loading Dock CSA, runs perpendicular to the loading dock platform. At the bottom of the truck ramp is a 38-inch-square grate covering a drainage culvert. A slide gate valve is closed to seal the culvert whenever potential liquid-bearing waste containers are loaded or unloaded at the loading dock. The Loading Dock CSA is divided into two areas on the platform. One area at the north end of the loading dock is 16 ft by 10 ft. The second area at the south end of the loading dock is 16 ft by 12 ft.

The High Bay CSA stores drums of various sizes, fiberglass-reinforced plywood boxes, standard waste boxes (SWB), and B25 boxes. The High Bay CSA, located along the south side of the center wall, is approximately 11 ft wide and 34 ft long. The high bay floor is 6-inch reinforced concrete slab. It slopes gently toward a central 50-ft trench and a sump. The sump is locked out and a pipe plug has been installed.

Waste containers stored in the Outdoor CSA include drums of various sizes, SWBs, and B25 boxes. The Outdoor CSA, located just north of the RANT Facility, is 40 ft square. It is constructed of asphaltic concrete, is approximately 4 inches thick, and slopes gently to the northeast.

E.12.1 Estimate of Maximum Waste in Storage

The maximum inventory of waste in storage at any time at the TA-54-38 RANT Facility is estimated at 11,660 gallons. A breakdown of the maximum inventories for each of these areas is as follows:

- Low Bay CSA - 880 gallons
- High Bay CSA - 2,200 gallons
- Loading Dock CSA - 660 gallons
- Outdoor CSA - 7,920 gallons

E.12.2 Description of Waste

TRU mixed waste stored in the TA-54-38 RANT Facility CSAs is generated during research activities, processing and recovery operations, and decontamination and decommissioning operations primarily at TA-3, TA-21, TA-50, and TA-55. Low-level mixed waste stored is generated during research activities, processing and recovery operations, decontamination and decommissioning operations, and environmental remediation/restoration activities at various TAs throughout Los Alamos National Laboratory (LANL). These wastes are classified as mixed wastes because Resource Conservation and Recovery Act (RCRA) characteristic and/or listed wastes are or may be present in the waste, along with a radioactive component.

E.12.3 Closure Procedure and Decontamination

E.12.3.1 Partial Closure

Partial closure would consist of closing one or more of the RCRA-regulated waste management units or subunits at the LANL facility, while leaving the other RCRA-regulated waste management units at LANL in service. In the event of a partial closure, the following procedures would apply to the unit(s) being closed.

E.12.3.2 Unit Closure

To the extent possible, all contaminated structures and equipment at the CSAs addressed in this closure plan will be decontaminated. Structures, equipment, and media that cannot be decontaminated will be containerized and managed in compliance with appropriate regulations. All sampling conducted during closure and decontamination will be done in accordance with quality assurance/quality control (QA/QC) procedures (see Section E.12.7).

Before proceeding with any closure activities, the CSAs will be surveyed for radiological contamination. Personal protective equipment (PPE) and monitoring requirements will be determined by LANL's Health Physics Operations (ESH-1) and Industrial Hygiene and Safety (ESH-5) Groups following a field inspection. Radiation and chemical monitoring will occur throughout closure activities. If any contamination is found, the contaminated materials, equipment, and/or structures will be decontaminated (if possible) or containerized and taken to an approved storage location at LANL appropriate for the waste type.

Personnel involved in closure activities will wear appropriate PPE, specified by ESH-1 and ESH-5, and will follow good hygiene practices to protect employees from exposure to hazardous and/or mixed waste. The level of PPE that will be required will depend upon the levels of radiological and/or chemical contamination that are detected, if any. If ESH-1 and ESH-5 surveys do not indicate detectable contamination levels, minimum PPE requirements will consist of coveralls, steel-toed boots, and safety glasses or face shields. If an overhead danger is present, a hard hat will be worn. All workers involved in closure activities will be required to have training and medical monitoring. Contaminated PPE will either be decontaminated or managed in compliance with appropriate regulations.

All wastes will be removed from the CSA scheduled to be closed prior to the initiation of closure activities. Containers will be removed from each storage area primarily with forklifts. Small containers may be handled manually or with dollies. All containers will be placed onto flatbed trucks or trailers for transport. All appropriate shipping papers will accompany the wastes during transport. Containers holding RCRA-regulated wastes will be moved to an approved on-site facility or permitted off-site treatment and/or disposal facility.

Before decontamination activities begin, samples of the clean water and detergent (wash water) solution squeezed from mops and/or sponges prior to use will be collected for analysis of the parameters listed in Table E.12-1. The analytical results from these samples will be used to provide a baseline for decontamination verification.

The walls, floors, and equipment in the Low Bay, High Bay, and Loading Dock CSAs will then be wiped down with wash water solution. Portable berms will be used to collect and provide containment for the used wash water. After the washdown process, the used wash water will be collected, sampled, and analyzed for the parameters in Table E.12-1. If the used wash water is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise, the used wash water will be managed at an appropriate on-site facility, depending on the regulated constituents present. If sampling and analysis indicate that hazardous and/or radioactive constituents are present, the wash cycles and analyses will continue until the area has been decontaminated or the decision is made to segregate contaminated portions of the storage area for subsequent management as contaminated waste. Decontamination verification is discussed further in Section E.12.3.3.

Under normal circumstances, the following soil sampling information will not be applicable for the Low Bay and High Bay CSAs because they are located inside a building with an impervious floor. However, if soil sampling is deemed necessary based on analytical evidence and the operational history of the unit, sampling of the area will be performed to verify that no hazardous constituents remain upon closure as a result of container storage. A grid will be sited over the area to be sampled, boreholes will be drilled through the floor material, and soil samples will be collected and analyzed to determine the horizontal and vertical extent of contamination.

Prior to use, all decontamination equipment will be rinsed with distilled water. Decontamination equipment rinsate blanks will be collected and analyzed in accordance with QA/QC procedures (see Section E.12.7). Reusable protective clothing, tools, and equipment used during closure activities will be cleaned with a wash water solution and scraped as necessary to remove any residue. Residue, disposable equipment, and reusable equipment that cannot be decontaminated will be containerized and managed appropriately at an approved on-site facility, depending on the regulated constituents present. Used wash water will be collected and analyzed for the parameters listed in Table E.12-1. If the used wash water is nonhazardous and nonradioactive, the water will be managed appropriately in accordance with LANL policy. Otherwise, it will be managed at an appropriate on-site facility, depending on the regulated constituents present.

The Outdoor CSA asphaltic concrete pad will be washed down with a wash water solution. Portable berms or other containment structures will be used to collect the wash water from the pad. Before the first washdown, a sample of clean wash water solution will be collected and analyzed for the parameters listed in Table E.12-1 to provide a baseline for decontamination verification. The used wash water will also be

collected, transferred to DOT-approved containers, sampled, and analyzed for the parameters in Table E.12-1. If the used wash water is nonhazardous and nonradioactive, it will be discharged to the industrial wastewater sewer. Otherwise, the used wash water will be managed at an appropriate on-site facility, depending on the regulated constituents present.

Used wash water samples from the Outdoor CSA may exhibit anomalously high levels of organic compounds due to leaching of the asphaltic concrete pad materials during washdown. If this is the case, record reviews (e.g., manufacturer's specifications, MSDS) and additional analyses may be performed to determine if leaching of organic constituents from the pad contributed to the organic compound concentration in the used wash water. If this additional evaluation confirms the asphaltic concrete materials as the source of contamination, baseline concentrations for clean wash water will be adjusted accordingly. The pad area may undergo up to two wash cycles. If decontamination verification cannot be demonstrated after two wash cycles, the asphaltic concrete material will be removed from the site and managed as appropriate for the waste type. If the wash water is nonhazardous and nonradioactive, it will be managed appropriately in accordance with LANL policy. Otherwise, it will be managed at an appropriate on-site facility, depending on the regulated constituents present.

The RANT Facility Outdoor CSA is situated on an extensive asphalt area and container storage is not likely to result in soil contamination except in the case of a major spill that would initiate the cleanup conditions of the contingency plan and be recorded in the facility record. Therefore, after washdown activities at the CSA are complete, a statistically representative number of small area washdown samples will be collected from the asphalt surrounding the pad in a manner similar to the above washdown of the CSA. One-foot-square areas approximately 3 feet from the boundary of the CSA will be wiped down. This wash water will be collected and analyzed for the parameters listed in Table E.12-1. The baseline concentration asphalt leachate samples or information described above will also apply for these samples. The degree of contamination, if present, will be assessed for these areas. If the samples do not exhibit contamination, the area will be considered to be decontaminated. If contamination is found in these samples as a result of container storage on the pad, the asphalt area around the CSA may be subject to the same wash down or removal process described above for the asphalt inside the CSA.

E.12.3.3 Decontamination Verification

Sufficient sampling and analysis will be required to demonstrate that hazardous or mixed waste residue is not present at the site after closure. Two samples of clean wash water solution squeezed from mops and/or sponges prior to use will be collected before initial washdown of the CSAs. The samples will be analyzed for parameters listed in Table E.12-1 to provide baseline data for decontamination verification. Analytical procedures will conform to methods found in the most current version of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846). Used washdown solutions will also be analyzed for the parameters listed in Table E.12-1. Washdown solutions will be considered contaminated if the used wash water solution shows a significant increase (i.e., determined using statistical methods defined in SW-846) in the analytical parameters over the clean wash water solution. If subsequent washdowns are deemed necessary, an additional sample of clean wash water solution squeezed from mops and/or sponges prior to use will be taken for each additional washdown event.

Existing background soil data for the RANT Facility CSAs may also be used to demonstrate that hazardous or mixed waste residue resulting from storage activities is not present at the site after closure. A comparison

of closure sampling data to existing background soil data will be used to establish the source of any hazardous waste or constituents present in the soil. If the data comparison indicates that contamination is from container storage activities, additional contaminated soil excavations will be performed until at least one of the decontamination criteria has been met successfully.

Successful decontamination meets one of the following criteria:

- No detectable hazardous waste or constituents from container storage activities are found in the final sample.
- Detectable hazardous waste or constituents from container storage activities in the final sample are removed to statistically significant levels based on baseline concentrations in the clean wash water or established background soil data.
- Detectable hazardous waste or constituents from container storage activities in the final sample are at or below levels negotiated with the New Mexico Environment Department (NMED).
- Detectable hazardous waste or constituent concentrations from container storage activities do not significantly decrease after several washdowns. In such an event, hazardous constituents will be allowed to remain that pose an acceptable risk as mutually agreed upon with NMED.

E.12.4 Closure Schedule

Closure will not commence until all of the wastes have been removed from the CSA scheduled to be closed. Closure activities will begin in accordance with the approved closure plan, as required by the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.113(a), revised November 1, 1995, within 90 days after final receipt of waste at the CSA. This timeframe will be met as long as facilities are available for treatment and/or disposal of these wastes. In the event that closure activities cannot be completed at the CSA within 90 days, LANL will notify the Secretary of the NMED in accordance with the extension requirements cited in 20 NMAC 4.1, Subpart V, 264.113(a), revised November 1, 1995. Closure activities and reporting requirements will be completed within 180 days of the receipt of the final volume of waste at the waste management area to be closed. Closure will be conducted in accordance with the schedule presented in Table E.12-2. In the event that closure of a CSA is prevented from proceeding according to schedule, LANL will notify the Secretary of the NMED in accordance with extension request requirements in 20 NMAC 4.1, Subpart V, 264.113(b), revised November 1, 1995. In addition, the demonstrations in 20 NMAC 4.1, Subpart V, 264.113(a)(1) and (b)(1), revised November 1, 1995, will be made in accordance with 20 NMAC 4.1, Subpart V, 264.113(c), revised November 1, 1995.

E.12.5 Closure Certification

Within 60 days after completion of closure activities for each of the CSAs, the U.S. Department of Energy (DOE) will submit to the Secretary of the NMED, via certified mail, a certification that the area has been closed in accordance with the specifications of the closure plan. The certification will be attested to by an independent, registered professional engineer and will be signed by the appropriate DOE and LANL officials, in accordance with 20 NMAC 4.1, Subpart V, 264.115, revised November 1, 1995. Documentation supporting the independent registered engineer's certification will be furnished to the Secretary of the NMED with the original certification. A copy of the certification and supporting documentation shall be maintained by both the DOE/Los Alamos Area Office and LANL's Hazardous and Solid Waste Group.

E.12.6 Sampling and Analytical Procedures

The following sections describe procedures and methods for sampling, analysis, and documentation applicable to closure activities. While the procedures and methods are specific, other applicable procedures or methods given in SW-846 may be used if conditions or experience show the alternate method to be more appropriate. All sampling and analytical procedures actually used will be annotated in the final closure report. Sampling will be conducted in accordance with procedures given in SW-846 (for hazardous components) and LANL's Inorganic Trace Analysis Group (CST-9) procedures (for radiological analysis).

E.12.6.1 Soil and Sediment Sampling

Soil samples will be collected only if evidence is found that hazardous constituents have migrated from the CSAs discussed in this closure plan. The soil samples will only then be collected to determine if contaminants have migrated from the CSAs and, if so, to determine the horizontal and vertical extent of such migration. Sediment samples from the sump associated with the High Bay CSA may also need to be obtained if evidence is found that hazardous constituents have migrated from this CSA.

E.12.6.1.1 Cleaning of Samplers

To prevent cross contamination, it is important to clean the samplers after each sample is collected. An unused, disposable sampler may be presumed clean if still in a factory-sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a detergent and water solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry.

E.12.6.1.2 Sampling Procedures

The sampling procedures outlined below will be used to obtain samples to determine the amount of RCRA constituents in soil associated with the units undergoing closure. Soil samples will be collected from the 6-inch depth with a trowel or scoop or with a Veihmeyer soil sampler. Sediment samples will be collected with a trowel or scoop. Sampling procedures will be performed as follows:

- Trowel or Scoop
  - Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
  - Combine the samples in a container appropriate for the required analysis.

- Cap the container, attach a label and seal, and preserve as required (see Table E.12-3). Record in the field logbook, and complete the sample analysis request sheet and chain-of-custody form. Deliver the samples to CST-9 for radiological screening and to the laboratory for analysis.

- Veihmeyer Sampler
  - Assemble the sampler by screwing in the tip and drive head on the sampling tube.
  - Insert the tapered handle (drive guide) of the drive hammer through the drive head.
  - Place the sampler in a perpendicular position on the soil to be sampled.
  - With the left hand holding the tube, drive the sampler into the soil to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube further than the tip of the hammer's drive guide.
  - Record the length of the tube that penetrated the material.
  - Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.
  - Rotate the sampler at least two revolutions to shear off the sample at the bottom.
  - Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.
  - Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a puller jack and grip.
  - Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.
  - Store the sample in an appropriate sample container.
  - Label the sample, affix the seals, preserve as required (see Table E.12-3), record in the field logbook, complete the sample analysis request sheet and chain-of-custody form, and deliver the samples to CST-9 for radiological screening and to the laboratory for analysis.

E.12.6.2 Liquid Sampling

A coliwasa or similar device will be used to sample unused wash water solutions before decontamination begins in order to determine baseline parameters. It will also be used to sample the wash water used in cleaning structures and equipment. As an alternative to the coliwasa, glass tubes may be used to sample

liquids. The primary advantage in using a glass tube is that the tube will be disposed of appropriately after each sample is collected, thus eliminating the potential for cross contamination.

E.12.6.2.1 Cleaning of Samplers

The sampler must be clean before use. An unused, disposable sampler may be presumed clean if still in a factory-sealed wrapper. Unsealed samplers will be cleaned prior to use. Samplers will be washed with a detergent and water solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the coliwasa is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Improper cleaning of sampling equipment will cause cross contamination of samples. Clean samplers should be stored in clean polyethylene plastic tubes or bags in a clean and protected area.

E.12.6.2.2 Sampling Procedure

Liquid sampling with a coliwasa will be performed as follows:

- Ensure that the coliwasa is clean.
- Assemble the coliwasa.
- Check that the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.
- Wear necessary protective clothing and gear, and observe required sampling precautions.
- Put the sampler in the open position by placing the stopper-rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.
- Slowly lower the coliwasa into the liquid at a rate that permits the level of the liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a nonrepresentative sample.
- When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.
- Slowly withdraw the sampler from the container with one hand, while wiping the sampler tube with a disposable cloth with the other hand.
- Carefully discharge the sample into a sample container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block, while the lower end of the sampler is positioned in the sample container.

- Preserve as required (see Table E.12-4), cap the container, attach a label and seal, place immediately in an insulated container with ice (if required), record in the field logbook, and complete the sample analysis request sheet and chain-of-custody form.

- Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site, or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.

E.12.6.3 Sample Handling and Documentation

Samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and sample analysis request form. The chain-of-custody form is necessary to trace sample possession from the time of collection to the time of analysis and must accompany every sample. The original record accompanies shipment. The copy is retained by LANL. If samples are analyzed at LANL, the original will be maintained by LANL. The request for analysis form has two parts: field and laboratory. The field portion of this form must be completed by the person collecting the sample and include most of the pertinent information noted in the logbook. The laboratory portion is intended to be completed by the analytical laboratory personnel when the sample is received. The analytical laboratory retains the original record and sends a copy to LANL.

Sample containers appropriate for the requested analyses will be used for all samples. Sample containers, preservation, and holding times will conform to those specified in SW-846 for the corresponding analyses. Samples will be collected, placed in bottles, sealed, and tagged. Sample container surfaces will be screened for radiological contamination and decontaminated, if necessary. Sample containers will then be immediately packed in vermiculite, sawdust, or if refrigeration is required, an insulated container with ice. Recommended sample containers, preservation, and holding times are presented in Tables E.12-3 and E.12-4.

The sample container must be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. A sample label is necessary to prevent misidentification of samples and should include, if applicable, the grid number referenced to positions staked on the site perimeter. The sample label must be completed to include the project name, sample number, collection date/time, collector's name, sample location, sample media description, preservative, and analysis requested. In the case of soil sampling, field information shall include observations such as the soil texture and surface appearance, ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling.

A field logbook will be kept and will contain all information pertinent to field surveys and sampling. The logbook shall have bound and consecutively numbered pages in 8 1/2 - by 11 inch format. Minimum entries should include:

- Purpose of sample (routine sampling, special sampling)

- Location of sampling (coordinates referenced to staked field points, if soil sample)

- Name and business address of person making log entry

- Type of process producing waste
- Number and volume of sample
- Description of each sampling location, sampling methodology, equipment used, etc.
- Date and time of sample collection
- Sample destination and transporter's name (e.g., name of laboratory, United Parcel Service, etc.)
- Map or photograph of the sampling site, if any
- Field observations, if applicable (e.g., ambient temperature, sky conditions, past 24-hour precipitation)
- Field measurements, if applicable (e.g., pH, conductivity)
- Collector's sample identification number(s)
- Signature of person responsible for the log entry.

Because sampling situations vary widely, no specific rule can be given as to the extent of information that must be entered in the logbook. It is recommended, however, to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

E.12.7 Quality Assurance/Quality Control

A qualified individual or individuals shall be designated to independently oversee the closure activities and to report directly to senior management on the quality of the closure performance. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed, and review the analysis reports for accuracy and adequacy. A written QA/QC plan prepared in accordance with SW-846 guidance shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the level of decontamination verification achieved.

E.12.8 Closure Report

Upon completion of the closure activities for each CSA addressed in this closure plan, a closure report shall be submitted to the Secretary of the NMED. The report shall document the closure and contain, at a minimum, the following:

- The certification described in Section E.12.5
- Any variance from the approved activities and the reason for the variance

- A tabular summary of all sampling results, showing:
  - Sample identification
  - Sampling location
  - The datum reported
  - Detection limit for each datum
  - A measure of analytical precision (e.g., uncertainty, range, variance)
  - Identification of analytical procedure
  - Identification of analytical laboratory.

- A QA/QC statement on analytical data validation and decontamination verification

- The location of the file of supporting documentation, including:
  - Field logbooks
  - Laboratory sample analysis reports
  - QA/QC documentation
  - Chain-of-custody forms.

- Disposition location of RCRA-regulated closure materials

- A certification of accuracy of the report.

TABLE E.12-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 54, BUILDING 38 (TA-54-38), RADIOASSAY AND NONDESTRUCTIVE TESTING (RANT) FACILITY CONTAINER STORAGE AREAS

Parameter	Test Method	Reference[b]
Ignitability	Pensky-Martens closed-cup method	(L) SW1010 (L) ASTM D93-80
Reactivity	Test method to determine hydrogen cyanide released from waste	(L, S) HCN Test Method, Section 7.3
	Test method to determine hydrogen sulfide released from waste	(L, S) H_2S Test Method, Section 7.3
Corrosivity	Electrometric (pH of aqueous solution)	(L) SW9040B
Toxicity characteristic	Toxicity characteristic leaching procedure (TCLP) extraction	(L, S) SW1311
Metals:	Graphite furnace atomic absorption (AA) spectroscopy, gaseous hydride AA, or direct aspiration AA	
Arsenic		(L, S) SW7060A, SW7061A
Barium		(L, S) SW7080A, SW7081
Cadmium		(L, S) SW7130, SW7131A
Chromium		(L, S) SW7190, SW7191
Lead		(L, S) SW7420, SW7421

Refer to footnotes at end of attachment.

Selenium		(L, S) SW7740, SW7741A
Silver		(L, S) SW7760A, SW7761
Mercury	Manual cold-vapor technique	(L)SW7470A, (S) SW7471A

TABLE E.12-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 54, BUILDING 38 (TA-54-38), RADIOASSAY AND NONDESTRUCTIVE TESTING (RANT) FACILITY CONTAINER STORAGE AREAS
(continued)

Parameter	Test Method	Reference[b]
Volatile organics	Gas chromatography (GC)/mass spectrometry (MS)	(L, S) SW8240B
	GC/MS capillary column technique	(L, S) SW8260A
Semivolatile organics	GC/MS	(L, S) SW8250A
	GC/MS capillary column technique	(L, S) SW8270B
Organochlorine pesticides	TCLP extraction and GC	(L, S) SW8080A
Chlorinated herbicides		(L, S) SW8150B
Total metals[c]	Acid digestion	(L) SW3010A, (S) SW3050A
	Inductively coupled plasma atomic emission spectroscopy	(L, S) SW6010A

Refer to footnotes at end of attachment.

Arsenic	(L, S) SW6010A
Barium	(L, S) SW6010A
Beryllium	(L, S) SW6010A
Cadmium	(L, S) SW6010A
Chromium	(L, S) SW6010A
Lead	(L, S) SW6010A
Nickel	(L, S) SW6010A

Refer to footnotes at end of attachment.

TABLE E.12-1
ANALYTICAL PARAMETERS AND TEST METHODS[a] FOR THE TECHNICAL AREA 54, BUILDING 38 (TA-54-38), RADIOASSAY AND NONDESTRUCTIVE TESTING (RANT) FACILITY CONTAINER STORAGE AREAS
(continued)

Parameter	Test Method	Reference[b]
Selenium		(L, S) SW6010A
Silver		(L, S) SW6010A
Thallium		(L, S) SW6010A
Zinc		(L, S) SW6010A
Mercury	Manual cold-vapor technique	(L) SW7470A (S) SW7471A
Free liquids	Paint Filter Liquids Test	(L, S) SW9095

[a] At Los Alamos National Laboratory, current analytical capabilities include limited analyses of mixed waste samples. These analyses include, but are not limited to, gross alpha, beta, and gamma screening.
[b] "ASTM" refers to American Society for Testing and Materials standards.
"SW" refers to U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
(L) refers to liquid waste.
(S) refers to solid waste.
[c] See also atomic absorption methods.

TABLE E.12-2
SCHEDULE FOR CLOSURE ACTIVITIES AT THE TECHNICAL AREA 54, BUILDING 38 (TA-54-38), RADIOASSAY AND NONDESTRUCTIVE TESTING (RANT) FACILITY CONTAINER STORAGE AREAS

Activity	Maximum Time Required[a]
Let contract request for proposals-90 Days	
Notify the New Mexico Environment Department (NMED)	-45 Days
Receive proposals	-30 Days
Select contractor and award contract	-10 Days
Collect background samples	-5 Days
Final receipt of waste	Day 0
Begin closure activities (perform washdown of structures)	Day 10
Perform initial sampling of the waste management area	Day 15
Analyze samples	Day 45
Perform additional washdown (if necessary)	Day 50
Perform additional sampling (if necessary)	Day 60
Analyze samples (if necessary)	Day 90
Perform pad washdown and sampling	Day 100
Analyze samples	Day 130
Perform final cleanup (e.g., removal of decontaminated equipment and decontamination wastes)	Day 130
Verify decontamination	Day 140
Submit final report to NMED	Day 180

[a] The schedule above indicates calendar days from the beginning by which activities will be completed. Some activities may be conducted simultaneously.

TABLE E.12-3
SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES
FOR SEDIMENT/SOIL/SLUDGE SAMPLES

Analyte Group	Container	Preservative	Holding Time[a]
Target compound volatile organics[b]	8 ounce (oz.) WM[c]-G[d]	Cool 4°Celsius (C)	14 days from field collection to toxicity characteristic leaching procedure (TCLP) extraction 14 days from preparative extraction to determinative analysis
Target compound semivolatile organics[b]	2 x 120 milliliter (ml) G vial Teflon™-lined cap	Cool 4°C	14 days from field collection to TCLP extraction 7 days from TCLP extraction to preparative extraction 40 days from preparative extraction to determinative analysis
Target analyte metals[b] (except mercury)	8 oz. WM-G	Cool 4°C	180 days from field collection to TCLP extraction 180 days from preparative extraction to determinative analysis
Mercury	1 liter P[e]	HNO_3[f] to pH <2	28 days from field collection to TCLP extraction 28 days from preparative extraction to determinative analysis
Radioactivity screening	120 ml G vial	None	Analyze upon receipt

[a] Holding time information was taken from the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Appendix II, revised November 1, 1995.
[b] Target compound volatile and semivolatile organics and target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[c] WM = Wide-mouth
[d] G = Glass
[e] P = Polyethylene
[f] HNO_3 = Nitric acid

TABLE E.12-4
SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES FOR LIQUID SAMPLES

Analyte Group	Container	Preservative	Holding Time[a]
Target compound volatile organics[b]	2 x 40 milliliter (ml) AG[c] septa vials	HCl[d], Cool 4°Celsius (C)	14 days from field collection to toxicity characteristic leaching procedure (TCLP) extraction 14 days from preparative extraction to determinative analysis
Target compound semivolatile organics[b]	2 x 1 liter AG	Cool 4°C	14 days from field collection to TCLP extraction 7 days from TCLP extraction to preparative extraction 40 days from preparative extraction to determinative analysis
Target analyte metals[b] (except mercury)	1 liter P[e]	HNO_3[f] to pH <2	180 days from field collection to TCLP extraction 180 days from preparative extraction to determinate analysis
Mercury	500 ml P	HNO_3 to pH <2	28 days from field collection to TCLP extraction 28 days from preparative extraction to determinative analysis
Radioactivity screening	40 ml G[g] vial, no septa	None	Analyze upon receipt

[a] Holding time information was taken from the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Appendix II, revised November 1, 1995.
[b] Target compound volatile and semivolatile organics and target analyte metals are listed by respective test method numbers in U.S. Environmental Protection Agency, 1992, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[c] AG = Amber glass
[d] HCl = Hydrochloric acid
[e] P = Polyethylene
[f] HNO_3 = Nitric acid
[g] G = Glass

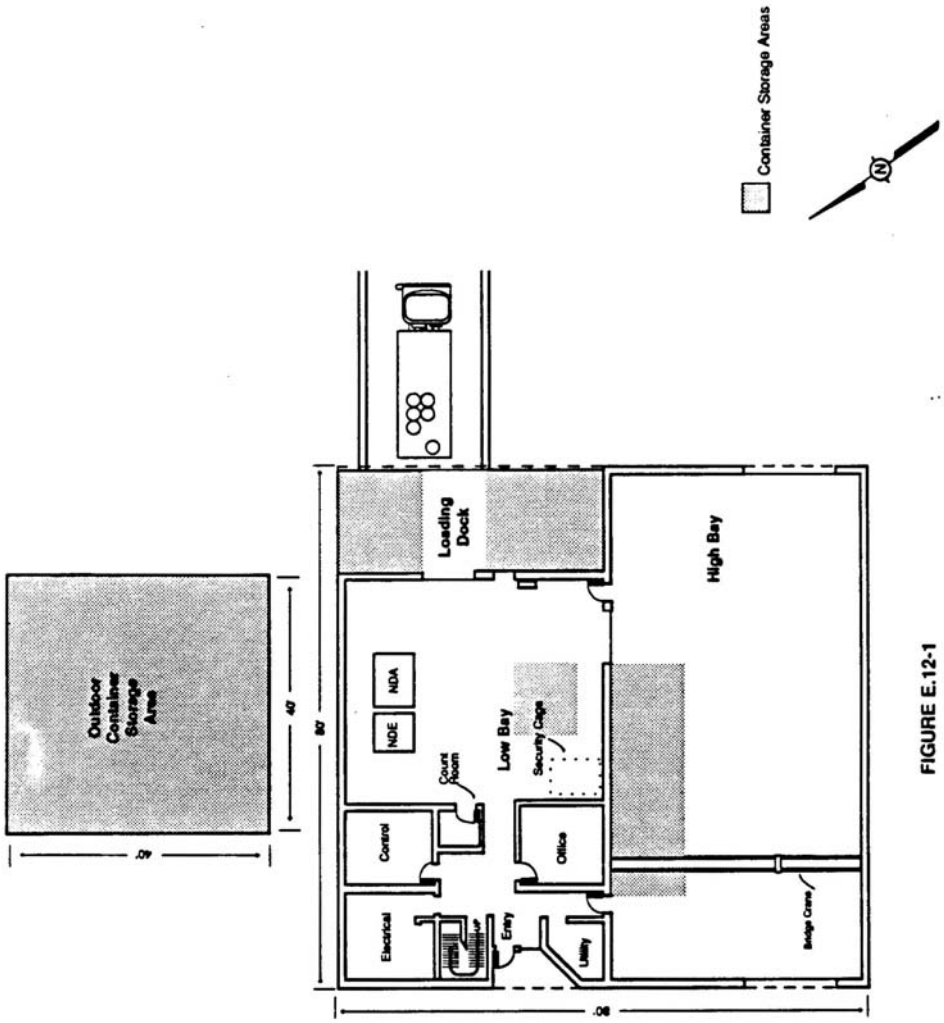


FIGURE E.12-1

TECHNICAL AREA (TA) 54 WEST, BUILDING 38, RADIOASSAY AND NONDESTRUCTIVE TESTING (RANT) FACILITY
LOW BAY, HIGH BAY, LOADING DOCK, AND OUTDOOR CONTAINER STORAGE AREAS

CONTAINER MANAGEMENT
PERMIT ATTACHMENT F
NM0890010515-1

ATTACHMENT F
CONTAINER MANAGEMENT

F.1 CONTAINER PACKAGING, SAMPLING and LABELING

F.1.1 Container Packaging and Transport

When chemical substances are declared to be in excess, the originating group completes Waste Profile Form (WPF, see Permit Attachments A.2 and A.3) ~~a Chemical Waste Disposal Request Form 10-3A)~~ and sends the form to the ~~Waste Management Group (HSE-7)~~ Chemical and Mixed Waste Management Group (CMWM~~CST-5~~). The WPF provides waste characterization information for subsequent management of material. The WPF is reviewed for adequacy of information and assignation of segregation codes, Department of Transportation information, and Environmental Protection Agency (EPA) Hazardous Waste Numbers. When the WPF is approved, the waste generator submits a Chemical Waste Disposal Request (CWDR) to CMWM. The CWDR~~The request~~ lists the chemical waste the generating group needs to dispose of, the quantity ~~and physical form~~ of the wastes, and other pertinent information about~~such as the condition of~~ the containers. ~~Material Safety Data Sheets (MSDS's) and existing analytical data may also be available. The containers described will range from two ounce bottles of unusable chemical to 330-gallon Tuff-Tanks of plating material.~~

A uniform waste manifest is prepared for use when the waste is collected, packaged, and transported. All waste materials are packaged and transferred in accordance with DOT regulations.~~The Chemical Waste Disposal Request form is reviewed for adequacy of information and assignation of segregation codes, DOT information, and EPA codes. It is then used by HSE-7 personnel as the shipping form when the waste is collected. HSE-7 personnel then visit the generating site to package the waste for transport to TA-54, Area L.~~ All waste materials are packaged and ~~is~~ transferred in accordance with DOT regulations the ~~Laboratory's On-Site Transportation Manual~~.

CST-5 personnel review the waste disposal request for adequacy of information and assignation of segregation codes, DOT information, and EPA codes. CST-5 personnel then use the waste disposal request to complete the shipping papers for waste collection. Also, CST-5 use the waste disposal request to create a second record as part of the Hazardous Waste Database. CST-5 personnel visit the generating site to package the waste and transport it to TA-54, Area L. All waste is transferred in accordance with DOT regulations and Laboratory procedures.

~~Small containers of waste (<5 gallon size), will be overpacked in either a DOT-approved cardboard box or plastic or metal drum with absorbent material (this packaging configuration is commonly referred to as a lab packs). Vermiculite will be the most commonly used absorbent; however, the organic waste is compatible with absorbents such as comcobs corncobs and sawdust. These absorbents may be used for this category of waste since in cases of contamination of the absorbent incinerators prefer to receive a more combustible material than vermiculite. Containers that will be composited at TA-54, Area L will be sorted and packaged separately from those that will remain in labpacks lab packs for storage.~~

Containers ~~Drums and Tuff-Tanks~~ will be visually inspected for integrity before transport. If the container~~drum~~ is unacceptable, it will be repackaged or overpacked prior to transport. The wastes are transported by vehicles ranging from ~~on a~~ half-ton to ~~twelve-ton~~ trucks to semitrailers with maximum capacities of up to 80,000 pounds.

Upon arrival at a hazardous or mixed waste management unit, ~~TA-54, Area L,~~ the wastes are unloaded from the transport vehicle and placed into appropriate storage areas. ~~Labpack~~ Lab pack waste will be temporary placed at the packaging building for labeling or compositing. Drums and Tuff-Tanks will be placed on either the sampling pad or storage pad for sampling and labeling.

F.1.2 Drum Labeling, Recording, and Sampling System

Each unique package of waste~~, meaning labpack~~ ~~lab pack or drum,~~ is labeled with the following information:

—chemical segregation group number

—unique record number

—date of generation (if this information is not already on the container, the date from the CWDR~~Chemical Waste Disposal Request form~~ ~~waste disposal request~~ form is used)

—either an EPA hazardous waste label or the words "hazardous waste."

—DOT Hazard class and shipping information, as appropriate

~~This information and the Chemical Disposal Request Form is provided to the resident data analyst. This individual creates a second record as part of the Hazardous Waste Database. All records are then maintained by the data analyst in accordance with the requirements of this permit.~~

This information and the data from the CWDR are entered into a chemical and mixed waste database.~~waste disposal request is provided to the resident data analyst, who maintains all records in accordance with the requirements of this permit.~~ All records are then maintained in accordance with the requirements of this permit.

Sampling of the waste is then performed as outlined in Permit Attachment A. The sampling pad at TA-54, Area L, is restricted to one compatibility group~~family~~ of chemicals at a time~~, for example~~ (e.g., organics). The group allowed at the time will be posted on the pad. This ensures that incompatible chemicals do not react in the containment basin of the pad. Before a new compatibility group~~family~~ of chemicals is placed on the pad, the containment area will be cleaned. For this reason, the main sampling pad will generally be used for organic waste and acid/base waste will be sampled at the appropriate storage cell.

After all packages are labeled and/or sampled, they are moved to one of the Laboratory's storage areas. The permitted areas are defined in Permit Module III.

F.2 STORAGE AREA PRACTICES

F.2.1 ~~Specific~~ Storage Areas at TA-50 and TA-54

The Laboratory has the following~~five groups of~~ storage areas that are the subject of this permit: two modular storage units and the main storage pad at TA-54, Area L~~,~~; the modular storage unit~~s and two storage pads~~ at TA-50, ~~and~~ the storage room ~~at the incinerator~~; ~~the TA-50-1, Rooms 35, 36, and 38/38A storage~~

~~units (three total)~~; the TA-50-69 indoor and outdoor storage units (two total); and the TA-54-38 storage units (four total); and TA-54-226, -229, -230, -231, -232, ~~Pad 2,~~ and Pad 10~~-4~~ at TA-54, Area G. The usage of each of these units is discussed below.

F.2.1.1 Modular Storage Units, TA-54, Area L (TA-54-68 and -69)

The primary usage of the modular units will be for the storage of lab pack waste, particularly those in fiberboard containers. After labeling, the lab packs are placed directly in the appropriate storage cell. Each modular unit has three cells allowing a maximum of six chemical family groups to be stored at any one time. However, multiple cells may be used for the same chemical family, such as two cells ~~contain~~ containing organic waste. Each cell will be labeled as to the chemical family stored there. If at any time the cell designation changes, such as from organic to reactive, the cell will first be cleaned to ensure that no organic residues remain that would create an incompatibility problem during a spill.

F.2.1.2 Storage Pad at TA-54, Area L (TA-54-32)

Material stored on the storage pad at TA-54, Area L, will generally be placed there after labeling and sampling. This may not be the case for acids and bases where the storage cell is also used as the sampling pad. The pad is divided into six cells allowing the storage of six families of chemicals. However, more than one cell may be used for the same chemical type. All cells will be labeled as to which chemical type is stored there. If at any time it is necessary to change the designation of a cell, it will first be cleaned to remove any residues that might produce an unfavorable reaction with the new chemical type.

F.2.1.3 Modular Storage Unit~~s~~ at TA-50 (TA-50-114~~, -137, and -138~~)

The modular storage units at TA-50 will be used primarily to store acid and base wastes ~~that will be treated at the Batch Waste Treatment Unit~~. Each cell will be labeled acid or base to indicate the type of waste stored there. If at any time the designation of a cell needs to be changed, the cell will first be cleaned to ensure that ~~incompatibility~~ incompatible residues have been removed. All waste stored here will have been labeled and sampled at TA-54, Area L.

~~F.2.1.4 Storage Pads at TA-50 (TA-50-139 and -140)~~

~~Two large storage pads will be located at TA-50. Each pad will have six divisions capable of storing six types of chemicals. Multiple cells may be used for the same chemical type. Each cell will be labeled to indicate the type of chemical stored there. If a cell designation needs to be changed, the cell will first be cleaned to remove any residues that might result in an incompatibility problem. All waste stored at this location will have been labeled and sampled at TA-54, Area L.~~

F.2.1.5 Storage Room at TA-50-37, Room 117

The storage room at TA-50-37 is divided into two areas, one for solids and one for liquids. The liquid side is further divided into two cells. Therefore, up to three chemical types may be stored at any one time. Cells will be labeled as to the chemical type stored there. If at any time the cell designation needs to be changed, the cell will be cleaned to remove any incompatible residues. ~~Generally, only waste that is already approved for on-site incineration will be stored there. This means the waste has not only been sampled and labeled but also analyzed per Permit Attachment A. However, if the need should arise, the area will be used for~~

~~compatible waste for which analytical results are pending. All labeling and sampling will have occurred at TA-54, Area L. The primary chemical type stored here will be organic waste. If small quantities of other waste types, such as oxidizers, are to be incinerated, it will generally be delivered the day of the burn to avoid storage in this room.~~

F.2.1.6 Storage Pads at TA-54, Area L (TA-54-36 and –58)

The primary activities at TA-54-36 and TA-54-58 will fall into two categories. The first is sorting, surveying, and decontaminating certain waste currently in storage and labeled "suspect mixed waste." All of the waste found to contain no radioactive component will be repackaged, shipped off-site, and disposed of at a permitted Hazardous Waste Treatment, Storage and Disposal Facility.

The second is directed at specific mixed waste streams for which commercial treatment and/or disposal is currently available. These mixed waste streams will be staged, inspected, sampled, and analyzed to provide complete hazardous waste and radiological characterization. When these steps are completed, the mixed waste streams will be profiled into the commercial facilities and shipped for ultimate treatment and/or disposal.

The activities at pads #58 and #36 consist of opening the drums, surveying the contents for radiological content, decontaminating the material as warranted, repackaging the material for either return to storage, shipment off-site for disposal, or disposal as low level waste at TA-54, Area G.

Pads #58 and #36 consist of two cement pads that are sloped toward a dry containment sump at the centerline of the rear wall to facilitate pumping of any captured liquids. The walls encircling the pads vary from approximately 4 inches in height at the drive over entrance to the pad to approximately eleven and one-half inches in height at the edge of the dry sump. The "dry sump" in each pad is to provide secondary containment only, has no discharge and must be pumped in the event any liquid is captured. The pads are coated with an impermeable epoxy coating and are covered by a single, metal "pole barn."

Pad #36 has a temporary modular containment structure constructed over it. This structure provides containment and protection for the sampling and repackaging activities. The sides of the structure have been equipped with slanted sheets of plywood to direct the snow and rain away from the secondary containment. The modular containment structure is secured to the beams supporting the "pole barn" wit guy wires. Whenever this temporary structure is removed from Pad #36, it will be decontaminated according to the procedures of Permit Attachment E.3, E.3.3 and E.3.4: Closure Procedures and Decontamination and Decontamination Verification.

~~F.2.1.6 Technical Area 50, Building 1 (TA-50-1), Rooms 35, 36, and 38/38A Container Storage Areas~~

~~The container storage areas at TA-50-1, Rooms 35, 36, and 38/38A, are used for storage of transuranic (TRU) mixed waste, low-level mixed waste, and hazardous waste. Potentially incompatible wastes will be segregated on self-containment pallets in the Rooms 35, 36, and 38/38A storage areas. Potential liquid-~~

~~bearing waste containers will be stored on self-containment pallets in the Rooms 35 and 38/38A storage areas. Only solid physical forms of waste will be stored in the Room 36 storage area.~~

F.2.1.6 TA-54, Area G, Container Storage Areas (TA-54-226, -229, -230, -231, -232, ~~Pad 2,~~ and Pad 10-~~4~~)

The container storage areas (CSA) at TA-54, Area G (TA-54-226, -229, -230, -231, -232, ~~Pad 2,~~ and Pad 10-~~4~~) will be used for the storage of transuranic (TRU) mixed waste containers retrieved from under earthen cover at Pad 1 (TA-54-226) and Pads 2 and 4. The waste containers, including drums and fiberglass-reinforced plywood (FRP) boxes, will be segregated by LANL waste code prior to being placed in a storage dome. If any of the retrieved containers require overpacking or repackaging, the overpack or repackaging container will be labeled with barcodes that identify the original waste container. None of the wastes to be placed in the storage domes will be ignitable or reactive, no incompatible wastes will be mixed, and no wastes will be placed in containers that previously held incompatible wastes. TA-54-230 will be used to store drums and FRP crates that potentially contain liquids. The remaining CSAs will store only solid TRU mixed waste.

F.2.1.7 TA-50-69 Indoor and Outdoor Container Storage Areas

The indoor and outdoor storage areas associated with TA-50-69 are used for storage of TRU mixed waste, low-level mixed waste, and hazardous waste. Potentially incompatible wastes will be segregated on self-containment pallets at both the indoor and outdoor storage areas. Potential liquid-bearing waste containers will be stored on self-containment pallets at both the indoor and outdoor storage areas.

F.2.1.8 TA-54-38 Container Storage Areas

The four container storage areas at TA-54-38 are used for storage of TRU mixed waste and low-level mixed waste. Potentially incompatible wastes will be segregated on self-containment pallets at each storage area. Potential liquid-bearing waste containers will be stored on self-containment pallets at each storage area.

F.2.2 General Container Management Practices

All recyclable materials are stored as hazardous waste until such time as they are recycled. They are placed in the same segregated storage areas as the other waste.

Any bulging drums are handled in accordance with accepted practice and Laboratory procedures. Generally this means that personnel will follow such practices as slowly venting the drum as it is being opened and personnel wearing protective clothing and splash guards. ~~will be followed.~~

Any spills resulting from the transfer/storage of waste will be cleaned up in accordance with Attachment D.

Inspection will be conducted and aisle space will be maintained in accordance with Permit Attachment B.

Off-site ~~Offsite~~ shipments of waste will occur at either the given storage area directly or from the transport pad at TA-54, Area L. This will avoid unnecessary transport on Pajarito Road.

Repackaging of waste will generally occur adjacent to the storage area the waste was removed from. Other possible areas include the TA-54, Area L, sampling pad (TA-54-31), transport pad (TA-54-58), and TA-54-

59; and the TA-50-69 indoor storage area~~; and the TA-50-1, Rooms 35 and 36 storage areas~~. Repackaging can range from overpacking a leaking container to ~~offsite~~ off-site contractors repackaging the ~~labpack~~ lab pack waste to meet incinerator specifications.

Permit Module III provides additional requirements ~~such as required aisle space for~~ all container storage ~~in container~~ areas.

ATTACHMENT G
Authorized Wastes
NM0890010515-1

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
D	0	0	1	100,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
D	0	0	2	320,000	P	S	0	1	T	0	1				
D	0	0	3	35,000	P	S	0	1	T	0	1	~~T~~	~~0~~	~~4~~	Reacted at TA-16 (see IIIc)
D	0	0	3	5,000	P	S	0	1	T	0	1				Lithium hydride only
D	0	0	4	2,000	P	S	0	1	T	0	1				
D	0	0	5	60,000	P	S	0	1	S	0	2	T	0	1	Sand from cleanout of explosives burn pads
D	0	0	6	1,000	P	S	0	1	T	0	1				
D	0	0	7	1,500	P	S	0	1	T	0	1				
D	0	0	8	~~50,000~~ 100,000	P	S	0	1	T	0	1				May contain other metals (D004-D011)
D	0	0	9	15,000	P	S	0	1	T	0	1				
D	0	1	0	7,500	P	S	0	1	T	0	1				
D	0	1	1	7,500	P	S	0	1	T	0	1				
D	0	1	2	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
D	0	1	3	500	P	S	0	1							
D	0	1	4	500	P	S	0	1							
D	0	1	5	500	P	S	0	1							
D	0	1	6	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
D	0	1	7	500	P	S	0	1							
D	0	1	8	~~500~~ 15,000	P	S	0	1							
D	0	1	9	500	P	S	0	1							
D	0	2	0	500	P	S	0	1							
D	0	2	1	500	P	S	0	1							
D	0	2	2	~~500~~ 3,000	P	S	0	1							
D	0	2	3	500	P	S	0	1							
D	0	2	4	500	P	S	0	1							
D	0	2	5	500	P	S	0	1							
D	0	2	6	1,000	P	S	0	1							
D	0	2	7	500	P	S	0	1							

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
D	0	2	8	500	P	S	0	1							
D	0	2	9	500	P	S	0	1							
D	0	3	0	500	P	S	0	1							
D	0	3	1	500	P	S	0	1							
D	0	3	2	500	P	S	0	1							
D	0	3	3	500	P	S	0	1							
D	0	3	4	500	P	S	0	1							
D	0	3	5	~~500~~ 2,500	P	S	0	1							
D	0	3	6	500	P	S	0	1							
D	0	3	7	500	P	S	0	1							
D	0	3	8	500	P	S	0	1							
D	0	3	9	~~500~~ 1,000	P	S	0	1							
D	0	4	0	~~500~~ 2,500	P	S	0	1							
D	0	4	1	500	P	S	0	1							
D	0	4	2	500	P	S	0	1							
D	0	4	3	500	P	S	0	1							
				END OF D DESIGNATOR											

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
F	0	0	1	~~10,000~~ 360,000	P	S	0	1	S	0	2	~~T~~ ~~T~~	~~0~~ ~~0~~	~~3~~ ~~4~~	Solidified if treatment standards are met
F	0	0	2	75,000	P	S	0	1	S	0	2	~~T~~ ~~T~~	~~0~~ ~~0~~	~~3~~ ~~4~~	
F	0	0	3	150,000	P	S	0	1	S	0	2	~~T~~ ~~T~~	~~0~~ ~~0~~	~~3~~ ~~4~~	
F	0	0	4	~~500*~~ 2,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
F	0	0	5	~~15,000~~ 100,000	P	S	0	1	S	0	2	~~T~~ ~~T~~	~~0~~ ~~0~~	~~3~~ ~~4~~	
F	0	0	6	500*	P	S	0	1	T	0	1				
F	0	0	7	12,500	P	S	0	1	T	0	1				
F	0	0	8	1,000	P	S	0	1	T	0	1				
F	0	0	9	6,000	P	S	0	1	T	0	1				
F	0	2	7	700	P	S	0	1	~~T~~	~~0~~	~~3~~				
F	0	2	8	700	P	S	0	1	~~T~~	~~0~~	~~3~~				
				END OF F DESIGNATOR											

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
K	0	4	4	20,000	P	S	0	1	~~T~~	~~0~~	~~4~~				
K	0	4	7	500*	P	S	0	1	~~T~~	~~0~~	~~4~~				
K	0	4	5	2,000	P	S	0	1	~~T~~	~~0~~	~~4~~				
				END OF K DESIGNATOR											

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
P	0	0	1	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	0	2	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	0	3	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	0	4	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	0	4	1,000	P	S	0	1	T	0	3				
P	0	0	5	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	0	6	1,000	P	S	0	1	~~T~~	~~0~~	~~4~~				
P	0	0	7	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	0	8	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	0	9	1,000	P	S	0	1	~~T~~	~~0~~	~~4~~				
P	0	1	0	1,000	P	S	0	1							
P	0	1	1	1,000	P	S	0	1							
P	0	1	2	1,000	P	S	0	1							
P	0	1	3	1,000	P	S	0	1	T	0	1				
P	0	1	4	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	1	5	1,000	P	S	0	1							
P	0	1	6	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	1	7	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	1	8	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	2	0	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	2	1	1,000	P	S	0	1	T	0	1				
P	0	2	2	1,000	P	S	0	1	~~T~~	~~0~~	~~4~~				
P	0	2	3	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	2	4	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	2	6	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	2	7	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	2	8	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	2	9	500*	P	S	0	1	T	0	1				
P	0	3	0	500*	P	S	0	1	T	0	1				
P	0	3	1	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
P	0	3	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
P	0	3	4	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
P	0	3	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	3	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	3	8	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	3	9	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	4	0	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	4	1	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	4	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	4	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	4	4	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	4	5	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	4	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	4	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	4	8	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	4	9	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	5	0	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	5	1	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	5	4	500*	P	S	0	1	T	0	1	~~T~~ ~~T~~	~~0~~ ~~0~~	~~3~~ ~~4~~	
P	0	5	6	6,000	P	S	0	1							
P	0	5	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	5	8	500*	P	S	0	1							
P	0	5	9	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	6	0	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	6	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	6	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
P	0	6	4	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
P	0	6	5	500*	P	S	0	1	~~T~~	~~0~~	~~4~~				
P	0	6	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	6	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	6	8	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	6	9	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
P	0	7	0	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
P	0	7	1	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
P	0	7	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	7	3	500*	P	S	0	1	T	0	1	~~T~~	~~0~~	~~4~~	
P	0	7	4	500*	P	S	0	1	T	0	1				
P	0	7	5	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	7	6	500*	P	S	0	1	T	0	1	~~T~~	~~0~~	~~4~~	
P	0	7	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
P	0	7	8	500*	P	S	0	1	T	0	1				
P	0	8	1	500*	P	S	0	1	~~T~~	~~0~~	~~4~~				
P	0	8	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	8	4	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	8	5	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	8	7	500*	P	S	0	1							
P	0	8	8	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	8	9	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	9	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	9	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	9	4	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	9	5	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	9	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
P	0	9	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	0	9	8	500*	P	S	0	1	T	0	1				
P	0	9	9	500*	P	S	0	1	T	0	1				
P	1	0	1	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	1	0	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	1	0	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	1	0	4	500*	P	S	0	1	T	0	1				
P	1	0	5	500*	P	S	0	1							
P	1	0	6	500*	P	S	0	1	T	0	1				
P	1	0	7	500*	P	S	0	1	~~T~~	~~0~~	~~4~~				
P	1	0	8	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	1	0	9	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
P	1	1	0	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	1	1	1	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	1	1	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
P	1	1	3	500*	P	S	0	1	T	0	1				
P	1	1	4	500*	P	S	0	1	T	0	1				
P	1	1	5	500*	P	S	0	1	T	0	1				
P	1	1	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	1	1	8	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
P	1	1	9	500*	P	S	0	1							
P	1	2	0	500*	P	S	0	1							
P	1	2	1	1,000	P	S	0	1	T	0	1				
P	1	2	2	1,000	P	S	0	1	~~T~~	~~0~~	~~4~~				
P	1	2	3	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
				END OF P DESIGNATOR											

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
U	0	0	1	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	0	2	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	0	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	0	4	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	0	5	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	0	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
U	0	0	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	0	8	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
U	0	0	9	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	1	0	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	1	1	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	1	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	1	4	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	1	5	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	1	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	1	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	1	8	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	1	9	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	2	0	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
U	0	2	1	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	2	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	2	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
U	0	2	4	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	2	5	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	2	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	2	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	2	8	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	2	9	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	3	0	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	3	1	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	3	2	1,000	P	S	0	1	T	0	1				
U	0	3	3	1,000	P	S	0	1	~~T~~	~~0~~	~~4~~				

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
U	0	3	4	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	3	5	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	3	6	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	3	7	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	3	8	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	3	9	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	4	1	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	4	2	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
U	0	4	3	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
U	0	4	4	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	4	5	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
U	0	4	6	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	4	7	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	4	8	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	4	9	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	5	0	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	5	1	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	5	2	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	5	3	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	5	5	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	5	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	5	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	5	8	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	5	9	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	6	0	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	6	1	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	6	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	6	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	6	4	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	6	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	6	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	6	8	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
U	0	6	9	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	7	0	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	7	1	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	7	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	7	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	7	4	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	7	5	500*	P	S	0	1							
U	0	7	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	7	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	7	8	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	7	9	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	8	0	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	8	1	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	8	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	8	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	8	4	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	8	5	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	8	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	8	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	8	8	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	8	9	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	9	0	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	9	1	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	9	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
U	0	9	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	9	4	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	9	5	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	9	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	9	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	9	8	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	0	9	9	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	0	1	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
U	1	0	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	0	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	0	5	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	0	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	0	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	0	8	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	0	9	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	1	0	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	1	1	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	1	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
U	1	1	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
U	1	1	4	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	1	5	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
U	1	1	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	1	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
U	1	1	8	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
U	1	1	9	500	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	2	0	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	2	1	500*	P	S	0	1							
U	1	2	2	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	2	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	2	4	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	2	5	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	2	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	2	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	2	8	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	2	9	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	3	0	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	3	1	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	3	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	3	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
U	1	3	4	10,000	P	S	0	1	T	0	1				

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
U	1	3	5	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~ T	~~0~~ 0	~~4~~ 1	
U	1	3	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	3	7	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	3	8	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	3	9	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	4	0	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	4	1	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	4	2	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	4	3	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	4	4	1,000	P	S	0	1							
U	1	4	5	1,000	P	S	0	1							
U	1	4	6	1,000	P	S	0	1							
U	1	4	7	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	4	8	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	4	9	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	5	0	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	5	1	1,000	P	S	0	1							
U	1	5	2	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	5	3	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	5	4	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	5	5	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	5	6	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	5	7	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	5	8	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	5	9	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	6	0	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
U	1	6	1	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	6	2	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	6	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	6	4	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	6	5	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	6	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
U	1	6	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	6	8	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	6	9	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	7	0	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	7	1	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	7	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	7	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	7	4	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	7	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	7	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	7	8	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	7	9	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	8	0	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	8	1	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	8	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	8	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	8	4	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	8	5	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	8	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	8	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	8	8	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	8	9	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
U	1	9	0	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	9	1	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	9	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	9	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	9	4	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	9	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	1	9	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	0	0	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	0	1	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	0	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
U	2	0	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	0	4	500*	P	S	0	1							
U	2	0	5	500*	P	S	0	1	~~T~~	~~0~~	~~4~~				
U	2	0	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	0	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	0	8	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	0	9	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	1	0	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	1	1	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	1	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	1	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
U	2	1	4	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	1	5	500*	P	S	0	1							
U	2	1	6	500*	P	S	0	1							
U	2	1	7	500*	P	S	0	1	~~T~~	~~0~~	~~4~~				
U	2	1	8	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	1	9	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	2	0	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	2	1	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	2	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	2	3	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	2	5	500*	P	S	0	1							
U	2	2	6	1,500 ~~10,000~~	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	2	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	2	8	2,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	3	0	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	3	1	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	3	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	3	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	3	4	500*	P	S	0	1	~~T~~	~~0~~	~~3~~	~~T~~	~~0~~	~~4~~	
U	2	3	5	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	3	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				

A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	(1) Process Codes (enter)									(2) Process Description [if a code is not entered in D(1)]
U	2	3	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	3	8	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	3	9	1,000	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	4	0	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	4	2	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	4	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	4	4	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	4	6	500*	P	S	0	1							
U	2	4	7	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	4	8	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	2	4	9	500*	P	S	0	1							
U	3	2	6	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	3	5	3	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
U	3	5	9	500*	P	S	0	1	~~T~~	~~0~~	~~3~~				
				END OF U DESIGNATOR											

EPA I.D. Number *(Enter from Page 1)*	Secondary ID Number *(Enter from Page 1)*
NM0890010515	

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	*A. EPA Hazardous Waste No. (enter code)*	*B. Estimated Annual Quantity Of Waste*	*C. Unit of Measure (enter code)*	*D. PROCESSES*			
				(1) PROCESS CODES (enter)			*(2) PROCESS DESCRIPTION (If a code is not entered in D(1))*
Technical Area 50, Building 1, Rooms 35, 36 and 38/38A Container Storage Areas							
1	D001	50	K	S01			Low-level Mixed Waste (LLMW) and Transuranic Mixed Waste (TRUMW)
2	D002	30	K	S01			LLMW and TRUMW
3	D003	10	K	S01			LLMW and TRUMW
4	D004	20	K	S01			LLMW and TRUMW
5	D005	20	K	S01			LLMW and TRUMW
6	D006	2,300	K	S01			LLMW and TRUMW
7	D007	2,390	K	S01			LLMW and TRUMW
8	D008	5,410	K	S01			LLMW and TRUMW
9	D009	170	K	S01			LLMW and TRUMW
10	D010	20	K	S01			LLMW and TRUMW
11	D011	20	K	S01			LLMW and TRUMW
12	D018	10	K	S01			LLMW and TRUMW
13	D019	20	K	S01			LLMW and TRUMW
14	D021	10	K	S01			LLMW and TRUMW
15	D022	10	K	S01			LLMW and TRUMW
16	D027	10	K	S01			LLMW and TRUMW
17	D028	730	K	S01			LLMW and TRUMW
18	D029	730	K	S01			LLMW and TRUMW
19	D030	20	K	S01			LLMW and TRUMW
20	D031	10	K	S01			LLMW and TRUMW
21	D032	10	K	S01			LLMW and TRUMW
22	D033	10	K	S01			LLMW and TRUMW
23	D034	10	K	S01			LLMW and TRUMW
24	D035	10	K	S01			LLMW and TRUMW
25	D036	10	K	S01			LLMW and TRUMW

EPA I.D. Number *(Enter from Page 1)*	Secondary ID Number *(Enter from Page 1)*
NM0890010515	

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
26	D037	20	K	S01			LLMW and TRUMW
27	D038	10	K	S01			LLMW and TRUMW
28	D039	10	K	S01			LLMW and TRUMW
29	D040	10	K	S01			LLMW and TRUMW
30	D041	10	K	S01			LLMW and TRUMW
31	D042	10	K	S01			LLMW and TRUMW
32	D043	10	K	S01			LLMW and TRUMW
33	F001	1,400	K	S01			LLMW and TRUMW
34	F002	180	K	S01			LLMW and TRUMW
35	F003	100	K	S01			LLMW and TRUMW
36	F004	10	K	S01			LLMW and TRUMW
37	F005	820	K	S01			LLMW and TRUMW
38	P003	10	K	S01			LLMW and TRUMW
39	P012	10	K	S01			LLMW and TRUMW
40	P015	10	K	S01			LLMW and TRUMW
41	P029	10	K	S01			LLMW and TRUMW
42	P030	10	K	S01			LLMW and TRUMW
43	P031	10	K	S01			LLMW and TRUMW
44	P038	10	K	S01			LLMW and TRUMW
45	P056	10	K	S01			LLMW and TRUMW
46	P063	10	K	S01			LLMW and TRUMW
47	P068	10	K	S01			LLMW and TRUMW
48	P073	10	K	S01			LLMW and TRUMW
49	P076	10	K	S01			LLMW and TRUMW
50	P078	10	K	S01			LLMW and TRUMW
51	P095	10	K	S01			LLMW and TRUMW
52	P096	10	K	S01			LLMW and TRUMW

EPA I.D. Number *(Enter from Page 1)*	Secondary ID Number *(Enter from Page 1)*
NM0890010515	

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
53	P098	10	K	S01			LLMW and TRUMW
54	P106	10	K	S01			LLMW and TRUMW
55	P113	10	K	S01			LLMW and TRUMW
56	P120	10	K	S01			LLMW and TRUMW
57	U001	10	K	S01			LLMW and TRUMW
58	U002	10	K	S01			LLMW and TRUMW
59	U003	10	K	S01			LLMW and TRUMW
60	U012	10	K	S01			LLMW and TRUMW
61	U019	10	K	S01			LLMW and TRUMW
62	U022	10	K	S01			LLMW and TRUMW
63	U029	10	K	S01			LLMW and TRUMW
64	U031	10	K	S01			LLMW and TRUMW
65	U037	10	K	S01			LLMW and TRUMW
66	U044	10	K	S01			LLMW and TRUMW
67	U045	10	K	S01			LLMW and TRUMW
68	U052	10	K	S01			LLMW and TRUMW
69	U056	10	K	S01			LLMW and TRUMW
70	U057	10	K	S01			LLMW and TRUMW
71	U075	10	K	S01			LLMW and TRUMW
72	U077	10	K	S01			LLMW and TRUMW
73	U080	10	K	S01			LLMW and TRUMW
74	U108	10	K	S01			LLMW and TRUMW
75	U112	10	K	S01			LLMW and TRUMW
76	U115	10	K	S01			LLMW and TRUMW
77	U117	10	K	S01			LLMW and TRUMW
78	U121	10	K	S01			LLMW and TRUMW
79	U122	10	K	S01			LLMW and TRUMW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
80	U123	10	K	S01			LLMW and TRUMW
81	U131	10	K	S01			LLMW and TRUMW
82	U133	10	K	S01			LLMW and TRUMW
83	U134	10	K	S01			LLMW and TRUMW
84	U135	10	K	S01			LLMW and TRUMW
85	U140	10	K	S01			LLMW and TRUMW
86	U144	10	K	S01			LLMW and TRUMW
87	U145	10	K	S01			LLMW and TRUMW
88	U151	10	K	S01			LLMW and TRUMW
89	U154	10	K	S01			LLMW and TRUMW
90	U159	10	K	S01			LLMW and TRUMW
91	U160	10	K	S01			LLMW and TRUMW
92	U161	10	K	S01			LLMW and TRUMW
93	U165	10	K	S01			LLMW and TRUMW
94	U169	10	K	S01			LLMW and TRUMW
95	U188	10	K	S01			LLMW and TRUMW
96	U190	10	K	S01			LLMW and TRUMW
97	U196	10	K	S01			LLMW and TRUMW
98	U204	10	K	S01			LLMW and TRUMW
99	U210	10	K	S01			LLMW and TRUMW
100	U211	10	K	S01			LLMW and TRUMW
101	U213	10	K	S01			LLMW and TRUMW
102	U216	10	K	S01			LLMW and TRUMW
103	U218	10	K	S01			LLMW and TRUMW
104	U219	10	K	S01			LLMW and TRUMW
105	U220	10	K	S01			LLMW and TRUMW
106	U225	10	K	S01			LLMW and TRUMW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
107	U226	10	K	S01			LLMW and TRUMW
108	U227	10	K	S01			LLMW and TRUMW
109	U228	10	K	S01			LLMW and TRUMW
110	U239	10	K	S01			LLMW and TRUMW
111	U246	10	K	S01			LLMW and TRUMW
112	D001	1,020	K	S01			Hazardous Waste (HW)
113	D002	820	K	S01			HW
114	D003	50	K	S01			HW
115	D004	70	K	S01			HW
116	D005	80	K	S01			HW
117	D006	210	K	S01			HW
118	D007	380	K	S01			HW
119	D008	1,570	K	S01			HW
120	D009	660	K	S01			HW
121	D010	90	K	S01			HW
122	D011	470	K	S01			HW
123	D016	10	K	S01			HW
124	D017	10	K	S01			HW
125	D018	90	K	S01			HW
126	D019	10	K	S01			HW
127	D021	10	K	S01			HW
128	D022	60	K	S01			HW
129	D026	10	K	S01			HW
130	D027	10	K	S01			HW
131	D028	740	K	S01			HW
132	D029	740	K	S01			HW
133	D030	30	K	S01			HW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
134	D031	10	K	S01			HW
135	D032	10	K	S01			HW
136	D033	10	K	S01			HW
137	D034	10	K	S01			HW
138	D035	30	K	S01			HW
139	D036	10	K	S01			HW
140	D037	10	K	S01			HW
141	D038	30	K	S01			HW
142	D039	10	K	S01			HW
143	D040	30	K	S01			HW
144	D041	10	K	S01			HW
145	D042	10	K	S01			HW
146	D043	10	K	S01			HW
147	F001	2,050	K	S01			HW
148	F002	1,850	K	S01			HW
149	F003	510	K	S01			HW
150	F004	30	K	S01			HW
151	F005	2,500	K	S01			HW
152	F009	10	K	S01			HW
153	F027	10	K	S01			HW
154	P003	10	K	S01			HW
155	P006	10	K	S01			HW
156	P011	10	K	S01			HW
157	P012	10	K	S01			HW
158	P015	10	K	S01			HW
159	P029	10	K	S01			HW
160	P030	10	K	S01			HW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
161	P031	10	K	S01			HW
162	P033	10	K	S01			HW
163	P038	10	K	S01			HW
164	P043	10	K	S01			HW
165	P048	10	K	S01			HW
166	P056	50	K	S01			HW
167	P063	10	K	S01			HW
168	P068	10	K	S01			HW
169	P073	10	K	S01			HW
170	P076	10	K	S01			HW
171	P078	10	K	S01			HW
172	P092	10	K	S01			HW
173	P095	10	K	S01			HW
174	P096	10	K	S01			HW
175	P098	10	K	S01			HW
176	P104	10	K	S01			HW
177	P105	10	K	S01			HW
178	P106	10	K	S01			HW
179	P112	10	K	S01			HW
180	P113	10	K	S01			HW
181	P119	10	K	S01			HW
182	P120	10	K	S01			HW
183	U001	10	K	S01			HW
184	U002	10	K	S01			HW
185	U003	10	K	S01			HW
186	U007	10	K	S01			HW
187	U008	10	K	S01			HW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
188	U009	10	K	S01			HW
189	U012	10	K	S01			HW
190	U018	10	K	S01			HW
191	U019	10	K	S01			HW
192	U022	10	K	S01			HW
193	U029	10	K	S01			HW
194	U031	10	K	S01			HW
195	U033	10	K	S01			HW
196	U037	10	K	S01			HW
197	U041	10	K	S01			HW
198	U044	10	K	S01			HW
199	U045	10	K	S01			HW
200	U052	10	K	S01			HW
201	U055	10	K	S01			HW
202	U056	10	K	S01			HW
203	U057	10	K	S01			HW
204	U067	10	K	S01			HW
205	U068	10	K	S01			HW
206	U070	10	K	S01			HW
207	U075	10	K	S01			HW
208	U077	10	K	S01			HW
209	U080	10	K	S01			HW
210	U085	10	K	S01			HW
211	U091	10	K	S01			HW
212	U092	10	K	S01			HW
213	U103	10	K	S01			HW
214	U108	10	K	S01			HW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
215	U109	10	K	S01			HW
216	U112	10	K	S01			HW
217	U115	10	K	S01			HW
218	U117	10	K	S01			HW
219	U121	10	K	S01			HW
220	U122	10	K	S01			HW
221	U123	10	K	S01			HW
222	U124	10	K	S01			HW
223	U131	10	K	S01			HW
224	U133	10	K	S01			HW
225	U134	10	K	S01			HW
226	U135	10	K	S01			HW
227	U136	10	K	S01			HW
228	U140	10	K	S01			HW
229	U144	10	K	S01			HW
230	U145	10	K	S01			HW
231	U151	10	K	S01			HW
232	U153	10	K	S01			HW
233	U154	10	K	S01			HW
234	U159	10	K	S01			HW
235	U160	10	K	S01			HW
236	U161	10	K	S01			HW
237	U162	10	K	S01			HW
238	U163	10	K	S01			HW
239	U165	10	K	S01			HW
240	U167	10	K	S01			HW
241	U168	10	K	S01			HW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
242	U169	10	K	S01			HW
243	U170	10	K	S01			HW
244	U188	10	K	S01			HW
245	U190	10	K	S01			HW
246	U196	10	K	S01			HW
247	U204	10	K	S01			HW
248	U210	10	K	S01			HW
249	U211	10	K	S01			HW
250	U213	10	K	S01			HW
251	U216	10	K	S01			HW
252	U218	10	K	S01			HW
253	U219	10	K	S01			HW
254	U220	10	K	S01			HW
255	U223	10	K	S01			HW
256	U225	10	K	S01			HW
257	U226	100	K	S01			HW
258	U227	10	K	S01			HW
259	U228	20	K	S01			HW
260	U239	10	K	S01			HW
261	U240	10	K	S01			HW
262	U246	10	K	S01			HW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 50, Building 69, Indoor and Outdoor Container Storage Area							
263	D001	1,170	K	S01			Low-level Mixed Waste (LLMW) and Transuranic Mixed Waste (TRUMW)
264	D002	610	K	S01			LLMW and TRUMW
265	D003	60	K	S01			LLMW and TRUMW
266	D004	390	K	S01			LLMW and TRUMW
267	D005	360	K	S01			LLMW and TRUMW
268	D006	57,130	K	S01			LLMW and TRUMW
269	D007	59,610	K	S01			LLMW and TRUMW
270	D008	135,280	K	S01			LLMW and TRUMW
271	D009	4,120	K	S01			LLMW and TRUMW
272	D010	430	K	S01			LLMW and TRUMW
273	D011	480	K	S01			LLMW and TRUMW
274	D018	20	K	S01			LLMW and TRUMW
275	D019	450	K	S01			LLMW and TRUMW
276	D021	170	K	S01			LLMW and TRUMW
277	D022	100	K	S01			LLMW and TRUMW
278	D027	70	K	S01			LLMW and TRUMW
279	D028	18,250	K	S01			LLMW and TRUMW
280	D029	18,160	K	S01			LLMW and TRUMW
281	D030	410	K	S01			LLMW and TRUMW
282	D031	10	K	S01			LLMW and TRUMW
283	D032	260	K	S01			LLMW and TRUMW
284	D033	180	K	S01			LLMW and TRUMW
285	D034	90	K	S01			LLMW and TRUMW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
286	D035	10	K	S01			LLMW and TRUMW
287	D036	30	K	S01			LLMW and TRUMW
288	D037	50	K	S01			LLMW and TRUMW
289	D038	10	K	S01			LLMW and TRUMW
290	D039	120	K	S01			LLMW and TRUMW
291	D040	280	K	S01			LLMW and TRUMW
292	D041	10	K	S01			LLMW and TRUMW
293	D042	90	K	S01			LLMW and TRUMW
294	D043	40	K	S01			LLMW and TRUMW
295	F001	35,050	K	S01			LLMW and TRUMW
296	F002	4,540	K	S01			LLMW and TRUMW
297	F003	2,300	K	S01			LLMW and TRUMW
298	F004	130	K	S01			LLMW and TRUMW
299	F005	20,430	K	S01			LLMW and TRUMW
300	P003	10	K	S01			LLMW and TRUMW
301	P012	10	K	S01			LLMW and TRUMW
302	P015	10	K	S01			LLMW and TRUMW
303	P029	10	K	S01			LLMW and TRUMW
304	P030	10	K	S01			LLMW and TRUMW
305	P031	10	K	S01			LLMW and TRUMW
306	P038	10	K	S01			LLMW and TRUMW
307	P056	20	K	S01			LLMW and TRUMW
308	P063	10	K	S01			LLMW and TRUMW
309	P068	10	K	S01			LLMW and TRUMW
310	P073	110	K	S01			LLMW and TRUMW
311	P076	10	K	S01			LLMW and TRUMW
312	P078	10	K	S01			LLMW and TRUMW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
313	P095	10	K	S01			LLMW and TRUMW
314	P096	10	K	S01			LLMW and TRUMW
315	P098	10	K	S01			LLMW and TRUMW
316	P106	10	K	S01			LLMW and TRUMW
317	P113	10	K	S01			LLMW and TRUMW
318	P120	10	K	S01			LLMW and TRUMW
319	U001	10	K	S01			LLMW and TRUMW
320	U002	10	K	S01			LLMW and TRUMW
321	U003	10	K	S01			LLMW and TRUMW
322	U012	10	K	S01			LLMW and TRUMW
323	U019	10	K	S01			LLMW and TRUMW
324	U022	10	K	S01			LLMW and TRUMW
325	U029	10	K	S01			LLMW and TRUMW
326	U031	10	K	S01			LLMW and TRUMW
327	U037	10	K	S01			LLMW and TRUMW
328	U044	10	K	S01			LLMW and TRUMW
329	U045	10	K	S01			LLMW and TRUMW
330	U052	10	K	S01			LLMW and TRUMW
331	U056	10	K	S01			LLMW and TRUMW
332	U057	10	K	S01			LLMW and TRUMW
333	U075	10	K	S01			LLMW and TRUMW
334	U077	10	K	S01			LLMW and TRUMW
335	U080	10	K	S01			LLMW and TRUMW
336	U108	10	K	S01			LLMW and TRUMW
337	U112	10	K	S01			LLMW and TRUMW
338	U115	10	K	S01			LLMW and TRUMW
339	U117	10	K	S01			LLMW and TRUMW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
340	U121	10	K	S01			LLMW and TRUMW
341	U122	10	K	S01			LLMW and TRUMW
342	U123	10	K	S01			LLMW and TRUMW
343	U131	10	K	S01			LLMW and TRUMW
344	U133	10	K	S01			LLMW and TRUMW
345	U134	10	K	S01			LLMW and TRUMW
346	U135	10	K	S01			LLMW and TRUMW
347	U140	10	K	S01			LLMW and TRUMW
348	U144	10	K	S01			LLMW and TRUMW
349	U145	10	K	S01			LLMW and TRUMW
350	U151	10	K	S01			LLMW and TRUMW
351	U154	10	K	S01			LLMW and TRUMW
352	U159	10	K	S01			LLMW and TRUMW
353	U160	10	K	S01			LLMW and TRUMW
354	U161	10	K	S01			LLMW and TRUMW
355	U165	10	K	S01			LLMW and TRUMW
356	U169	10	K	S01			LLMW and TRUMW
357	U188	10	K	S01			LLMW and TRUMW
358	U190	10	K	S01			LLMW and TRUMW
359	U196	10	K	S01			LLMW and TRUMW
360	U204	10	K	S01			LLMW and TRUMW
361	U210	10	K	S01			LLMW and TRUMW
362	U211	10	K	S01			LLMW and TRUMW
363	U213	10	K	S01			LLMW and TRUMW
364	U216	10	K	S01			LLMW and TRUMW
365	U218	10	K	S01			LLMW and TRUMW
366	U219	10	K	S01			LLMW and TRUMW

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Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
367	U220	10	K	S01			LLMW and TRUMW
368	U225	10	K	S01			LLMW and TRUMW
369	U226	10	K	S01			LLMW and TRUMW
370	U227	10	K	S01			LLMW and TRUMW
371	U228	10	K	S01			LLMW and TRUMW
372	U239	10	K	S01			LLMW and TRUMW
373	U246	10	K	S01			LLMW and TRUMW
374	D001	25,360	K	S01			Hazardous Waste (HW)
375	D002	20,550	K	S01			HW
376	D003	1,200	K	S01			HW
377	D004	1,700	K	S01			HW
378	D005	1,900	K	S01			HW
379	D006	5,250	K	S01			HW
380	D007	9,400	K	S01			HW
381	D008	39,200	K	S01			HW
382	D009	16,400	K	S01			HW
383	D010	2,150	K	S01			HW
384	D011	11,700	K	S01			HW
385	D016	10	K	S01			HW
386	D017	20	K	S01			HW
387	D018	2,270	K	S01			HW
388	D019	40	K	S01			HW
389	D021	110	K	S01			HW
390	D022	1,450	K	S01			HW
391	D026	180	K	S01			HW
392	D027	80	K	S01			HW
393	D028	18,400	K	S01			HW

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Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
394	D029	18,300	K	S01			HW
395	D030	730	K	S01			HW
396	D031	10	K	S01			HW
397	D032	300	K	S01			HW
398	D033	210	K	S01			HW
399	D034	120	K	S01			HW
400	D035	670	K	S01			HW
401	D036	50	K	S01			HW
402	D037	50	K	S01			HW
403	D038	580	K	S01			HW
404	D039	200	K	S01			HW
405	D040	570	K	S01			HW
406	D041	10	K	S01			HW
407	D042	100	K	S01			HW
408	D043	60	K	S01			HW
409	F001	51,170	K	S01			HW
410	F002	46,030	K	S01			HW
411	F003	12,770	K	S01			HW
412	F004	660	K	S01			HW
413	F005	61,650	K	S01			HW
414	F009	20	K	S01			HW
415	F027	20	K	S01			HW
416	P003	10	K	S01			HW
417	P006	10	K	S01			HW
418	P011	10	K	S01			HW
419	P012	10	K	S01			HW
420	P015	10	K	S01			HW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
421	P029	10	K	S01			HW
422	P030	10	K	S01			HW
423	P031	10	K	S01			HW
424	P033	10	K	S01			HW
425	P038	10	K	S01			HW
426	P043	10	K	S01			HW
427	P048	10	K	S01			HW
428	P056	1,030	K	S01			HW
429	P063	10	K	S01			HW
430	P068	10	K	S01			HW
431	P073	10	K	S01			HW
432	P076	60	K	S01			HW
433	P078	70	K	S01			HW
434	P092	10	K	S01			HW
435	P095	10	K	S01			HW
436	P096	10	K	S01			HW
437	P098	10	K	S01			HW
438	P104	10	K	S01			HW
439	P105	10	K	S01			HW
440	P106	10	K	S01			HW
441	P112	10	K	S01			HW
442	P113	10	K	S01			HW
443	P119	10	K	S01			HW
444	P120	10	K	S01			HW
445	U001	10	K	S01			HW
446	U002	310	K	S01			HW
447	U003	10	K	S01			HW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
448	U007	10	K	S01			HW
449	U008	10	K	S01			HW
450	U009	10	K	S01			HW
451	U012	10	K	S01			HW
452	U018	10	K	S01			HW
453	U019	90	K	S01			HW
454	U022	10	K	S01			HW
455	U029	10	K	S01			HW
456	U031	10	K	S01			HW
457	U033	10	K	S01			HW
458	U037	10	K	S01			HW
459	U041	10	K	S01			HW
460	U044	10	K	S01			HW
461	U045	10	K	S01			HW
462	U052	10	K	S01			HW
463	U055	10	K	S01			HW
464	U056	10	K	S01			HW
465	U057	10	K	S01			HW
466	U067	10	K	S01			HW
467	U068	10	K	S01			HW
468	U070	20	K	S01			HW
469	U075	50	K	S01			HW
470	U077	10	K	S01			HW
471	U080	1,690	K	S01			HW
472	U085	10	K	S01			HW
473	U091	180	K	S01			HW
474	U092	10	K	S01			HW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
475	U103	10	K	S01			HW
476	U108	10	K	S01			HW
477	U109	10	K	S01			HW
478	U112	10	K	S01			HW
479	U115	10	K	S01			HW
480	U117	10	K	S01			HW
481	U121	10	K	S01			HW
482	U122	230	K	S01			HW
483	U123	10	K	S01			HW
484	U124	10	K	S01			HW
485	U131	10	K	S01			HW
486	U133	10	K	S01			HW
487	U134	180	K	S01			HW
488	U135	80	K	S01			HW
489	U136	10	K	S01			HW
490	U140	10	K	S01			HW
491	U144	10	K	S01			HW
492	U145	10	K	S01			HW
493	U151	240	K	S01			HW
494	U153	10	K	S01			HW
495	U154	40	K	S01			HW
496	U159	20	K	S01			HW
497	U160	10	K	S01			HW
498	U161	90	K	S01			HW
499	U162	10	K	S01			HW
500	U163	10	K	S01			HW
501	U165	10	K	S01			HW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
502	U167	10	K	S01			HW
503	U168	10	K	S01			HW
504	U169	10	K	S01			HW
505	U170	10	K	S01			HW
506	U188	10	K	S01			HW
507	U190	10	K	S01			HW
508	U196	10	K	S01			HW
509	U204	10	K	S01			HW
510	U210	100	K	S01			HW
511	U211	40	K	S01			HW
512	U213	10	K	S01			HW
513	U216	10	K	S01			HW
514	U218	10	K	S01			HW
515	U219	10	K	S01			HW
516	U220	100	K	S01			HW
517	U223	10	K	S01			HW
518	U225	10	K	S01			HW
519	U226	2,540	K	S01			HW
520	U227	10	K	S01			HW
521	U228	420	K	S01			HW
522	U239	170	K	S01			HW
523	U240	10	K	S01			HW
524	U246	10	K	S01			HW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54 West, Building 38, Container Storage Area							
525	D001	4,210	K	S01			Low-level Mixed Waste (LLMW) and Transuranic Mixed Waste (TRUMW)
526	D002	2,180	K	S01			LLMW and TRUMW
527	D003	200	K	S01			LLMW and TRUMW
528	D004	1,400	K	S01			LLMW and TRUMW
529	D005	1,280	K	S01			LLMW and TRUMW
530	D006	205,660	K	S01			LLMW and TRUMW
531	D007	214,580	K	S01			LLMW and TRUMW
532	D008	487,000	K	S01			LLMW and TRUMW
533	D009	14,840	K	S01			LLMW and TRUMW
534	D010	1,540	K	S01			LLMW and TRUMW
535	D011	1,720	K	S01			LLMW and TRUMW
536	D018	80	K	S01			LLMW and TRUMW
537	D019	1,600	K	S01			LLMW and TRUMW
538	D021	610	K	S01			LLMW and TRUMW
539	D022	380	K	S01			LLMW and TRUMW
540	D027	230	K	S01			LLMW and TRUMW
541	D028	65,680	K	S01			LLMW and TRUMW
542	D029	65,350	K	S01			LLMW and TRUMW
543	D030	1,480	K	S01			LLMW and TRUMW
544	D031	20	K	S01			LLMW and TRUMW
545	D032	940	K	S01			LLMW and TRUMW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
546	D033	630	K	S01			LLMW and TRUMW
547	D034	330	K	S01			LLMW and TRUMW
548	D035	30	K	S01			LLMW and TRUMW
549	D036	100	K	S01			LLMW and TRUMW
550	D037	160	K	S01			LLMW and TRUMW
551	D038	20	K	S01			LLMW and TRUMW
552	D039	440	K	S01			LLMW and TRUMW
553	D040	990	K	S01			LLMW and TRUMW
554	D041	20	K	S01			LLMW and TRUMW
555	D042	320	K	S01			LLMW and TRUMW
556	D043	120	K	S01			LLMW and TRUMW
557	F001	126,190	K	S01			LLMW and TRUMW
558	F002	16,330	K	S01			LLMW and TRUMW
559	F003	8,270	K	S01			LLMW and TRUMW
560	F004	490	K	S01			LLMW and TRUMW
561	F005	73,530	K	S01			LLMW and TRUMW
562	P003	10	K	S01			LLMW and TRUMW
563	P012	10	K	S01			LLMW and TRUMW
564	P015	10	K	S01			LLMW and TRUMW
565	P029	10	K	S01			LLMW and TRUMW
566	P030	10	K	S01			LLMW and TRUMW
567	P031	10	K	S01			LLMW and TRUMW
568	P038	10	K	S01			LLMW and TRUMW
569	P056	80	K	S01			LLMW and TRUMW
570	P063	10	K	S01			LLMW and TRUMW
571	P068	10	K	S01			LLMW and TRUMW
572	P073	10	K	S01			LLMW and TRUMW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
573	P076	10	K	S01			LLMW and TRUMW
574	P078	10	K	S01			LLMW and TRUMW
575	P095	10	K	S01			LLMW and TRUMW
576	P096	10	K	S01			LLMW and TRUMW
577	P098	10	K	S01			LLMW and TRUMW
578	P106	10	K	S01			LLMW and TRUMW
579	P113	10	K	S01			LLMW and TRUMW
580	P120	10	K	S01			LLMW and TRUMW
581	U001	10	K	S01			LLMW and TRUMW
582	U002	10	K	S01			LLMW and TRUMW
583	U003	10	K	S01			LLMW and TRUMW
584	U012	10	K	S01			LLMW and TRUMW
585	U019	10	K	S01			LLMW and TRUMW
586	U022	10	K	S01			LLMW and TRUMW
587	U029	10	K	S01			LLMW and TRUMW
588	U031	10	K	S01			LLMW and TRUMW
589	U037	10	K	S01			LLMW and TRUMW
590	U044	10	K	S01			LLMW and TRUMW
591	U045	10	K	S01			LLMW and TRUMW
592	U052	10	K	S01			LLMW and TRUMW
593	U056	10	K	S01			LLMW and TRUMW
594	U057	10	K	S01			LLMW and TRUMW
595	U075	10	K	S01			LLMW and TRUMW
596	U077	10	K	S01			LLMW and TRUMW
597	U080	30	K	S01			LLMW and TRUMW
598	U108	10	K	S01			LLMW and TRUMW
599	U112	10	K	S01			LLMW and TRUMW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
600	U115	10	K	S01			LLMW and TRUMW
601	U117	10	K	S01			LLMW and TRUMW
602	U121	10	K	S01			LLMW and TRUMW
603	U122	10	K	S01			LLMW and TRUMW
604	U123	10	K	S01			LLMW and TRUMW
605	U131	10	K	S01			LLMW and TRUMW
606	U133	10	K	S01			LLMW and TRUMW
607	U134	10	K	S01			LLMW and TRUMW
608	U135	10	K	S01			LLMW and TRUMW
609	U140	10	K	S01			LLMW and TRUMW
610	U144	10	K	S01			LLMW and TRUMW
611	U145	10	K	S01			LLMW and TRUMW
612	U151	60	K	S01			LLMW and TRUMW
613	U154	20	K	S01			LLMW and TRUMW
614	U159	30	K	S01			LLMW and TRUMW
615	U160	10	K	S01			LLMW and TRUMW
616	U161	10	K	S01			LLMW and TRUMW
617	U165	10	K	S01			LLMW and TRUMW
618	U169	10	K	S01			LLMW and TRUMW
619	U188	10	K	S01			LLMW and TRUMW
620	U190	10	K	S01			LLMW and TRUMW
621	U196	10	K	S01			LLMW and TRUMW
622	U204	10	K	S01			LLMW and TRUMW
623	U210	10	K	S01			LLMW and TRUMW
624	U211	10	K	S01			LLMW and TRUMW
625	U213	10	K	S01			LLMW and TRUMW
626	U216	10	K	S01			LLMW and TRUMW

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XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (enter)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
627	U218	10	K	S01			LLMW and TRUMW
628	U219	10	K	S01			LLMW and TRUMW
629	U220	10	K	S01			LLMW and TRUMW
630	U225	10	K	S01			LLMW and TRUMW
631	U226	260	K	S01			LLMW and TRUMW
632	U227	10	K	S01			LLMW and TRUMW
633	U228	20	K	S01			LLMW and TRUMW
634	U239	20	K	S01			LLMW and TRUMW
635	U246	10	K	S01			LLMW and TRUMW

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XIV. Description of Hazardous Wastes (Continued)

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	D. Processes			
				(1) Process Codes (enter)			(2) Process Description (If a code is not entered in D[1])
Technical Area (TA) 54-226, -229, -230, -231, -232, ~~Pad 2~~ and Pad ~~10-4~~							
1	F001	1,301	P	S01			Transuranic Mixed Waste (TRUMW); A15
2	F002						
3	THIS LINE INTENTIONALLY LEFT BLANK						
4	D007	406,940	P	S01			TRUMW; A25
5	D008						
6	THIS LINE INTENTIONALLY LEFT BLANK						
7	D006	311,765	P	S01			TRUMW; A26
8	D007						
9	D008						
10	THIS LINE INTENTIONALLY LEFT BLANK						
11	D001	101,995	P	S01			TRUMW; A27
12	THIS LINE INTENTIONALLY LEFT BLANK						
13	D003	71,062	P	S01			TRUMW; A28
14	THIS LINE INTENTIONALLY LEFT BLANK						
15	D008	96,700	P	S01			TRUMW; A30
16	THIS LINE INTENTIONALLY LEFT BLANK						
17	D008	190,691	P	S01			TRUMW; A31
18	THIS LINE INTENTIONALLY LEFT BLANK						
19	D008	434,743	P	S01			TRUMW; A61
20	THIS LINE INTENTIONALLY LEFT BLANK						
21	D004	2,413,802	P	S01			TRUMW; A75
22	D007						
23	D008						
24	D011						
25	F001						
26	F002						

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XIV. Description of Hazardous Wastes (Continued)

Line Number	A. EPA Hazardous Waste No. (enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	D. Processes			
				(1) Process Codes (enter)			(2) Process Description (If a code is not entered in D[1])
27	F003						
28	F005						
29	THIS LINE INTENTIONALLY LEFT BLANK						
30	D007	313,787	P	S01			TRUMW; A76
31	F001						
32	F002						
33	F005						

Attachment H was deleted by January 30 1995 Modifications due to the closure of the Batch Waste Treatment Unit covered in Attachment H.

ADDITIONAL DATA SUBMITTAL SCHEDULE
PERMIT ATTACHMENT I
NM0890010515-1

ADDITIONAL DATA SUBMITTAL SCHEDULE
PERMIT ATTACHMENT I
NM0890010515-1

As used in this attachment, "investigate" means, within the restraints of personnel safety, to visually observe and trace from the point of origin or generation to the point of discharge, accumulation or treatment, a waste stream. Investigate further includes documentation of analyses accomplished to ascertain the chemical nature of the waste in accordance with HWMR-5, as amended 1989, Part III, 40 CFR section 262.11.

1. Within three months of the effective date of this permit, the Permittee shall:

   a. For each building and site in Technical Areas 0, 1, 2, and 4, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

   b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

   c. The requested information shall be compiled by technical area and building or outside test site and submitted to the ~~EID~~ NMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

2. Within six months of the effective date of this permit, the Permittee shall:

   a. For each building and site in Technical Areas 5, 6, 7, and 8, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

   b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

   c. The requested information shall be compiled by technical area and building or outside test site and submitted to the ~~EID~~ NMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

3. Within nine months of the effective date of this permit, the Permittee shall:

   a. For each building and site in Technical Areas 3, 9, 10, and 11, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

c. The requested information shall be compiled by technical area and building or outside test site and submitted to the ~~EID~~ NMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

4. Within twelve months of the effective date of this permit, the Permittee shall:

a. For each building and site in Technical Areas 12, 13, 14, and 15, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

c. The requested information shall be compiled by technical area and building or outside test site and submitted to the ~~EID~~ NMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

5. Within fifteen months of the effective date of this permit, the Permittee shall:

a. For each building and site in Technical Areas 16, 18, 19, and 20, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

c. The requested information shall be compiled by technical area and building or outside test site and submitted to the ~~EID~~ NMED. Each source within the technical area shall be

separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

6. Within eighteen months of the effective date of this permit, the Permittee shall:

   a. For each building and site in Technical Areas 21, 22, 26, and 28, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

   b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

   c. The requested information shall be compiled by technical area and building or outside test site and submitted to the ~~EID~~ NMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

7. Within ~~twentyone~~ twenty-one months of the effective date of this permit, the Permittee shall:

   a. For each building and site in Technical Areas 29, 30, 31, and 32, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

   b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

   c. The requested information shall be compiled by technical area and building or outside test site and submitted to the ~~EID~~ NMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

8. Within ~~twentyfour~~ twenty-four months of the effective date of this permit, the Permittee shall:

   a. For each building and site in Technical Areas 33, 35, 36, and 37, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

c. The requested information shall be compiled by technical area and building or outside test site and submitted to the ~~EID~~ NMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

9. Within ~~twentyseven~~ twenty-seven months of the effective date of this permit, the Permittee shall submit to the ~~EID~~ NMED:

a. For each building and site in Technical Areas 39, 40, 41, and 43, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

c. The requested information shall be compiled by technical area and building or outside test site and submitted to the ~~EID~~ NMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

10. Within thirty months of the effective date of this permit, the Permittee shall:

a. For each building and site in Technical Areas 44, 46, 47, and 48, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

c. The requested information shall be compiled by technical area and building or outside test site and submitted to the ~~EID~~ NMED. Each source within the technical area shall be

separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

11. Within ~~thirtythree~~ thirty-three months of the effective date of this permit, the Permittee shall submit to the ~~EID~~ NMED:

    a. For each building and site in Technical Areas 49, 50, 51, and 52, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

    b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11 if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

    c. The requested information shall be compiled by technical area and building or outside test site and submitted to the ~~EID~~ NMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

12. Within ~~thirtysix~~ thirty-six months of the effective date of this permit, the Permittee shall:

    a. For each building and site in Technical Areas 53, 54, 55, and 56, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

    b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

    c. The requested information shall be compiled by technical area and building or outside test site and submitted to the ~~EID~~ NMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

13. Within ~~thirtynine~~ thirty-nine months of the effective date of this permit, the Permittee shall submit to the ~~EID~~ NMED:

a. For each building and site in Technical Areas 57, 58, 59, and all other sites not identified above, investigate and compile a listing of every solid waste stream, as characterized in HWMR-5, Part II, 40 CFR section 261.2.

b. For each waste stream, determine, in accordance with HWMR-5, Part III, 40 CFR section 262.11, if each waste stream is a hazardous waste. Specific tests conducted in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(1), shall be identified and documented. All testing shall be by EPA-approved methods. Knowledge of process determinations made in accordance with HWMR-5, Part III, 40 CFR section 262.11(c)(2) shall be fully documented.

c. The requested information shall be compiled by technical area and building or outside test site and submitted to the ~~EID~~ NMED. Each source within the technical area shall be separately identified. Waste streams excluded in accordance with HWMR-5, Part III, 40 CFR section 262.11(a), shall be identified and fully documented as to the basis of the exclusion.

~~INCINERATOR OPERATIONAL SAFETY~~
~~PERMIT ATTACHMENT J~~
~~NM0890010515-1~~

~~INCINERATOR OPERATIONAL SYSTEM~~

~~J.1 LIMITING CONDITIONS FOR PROCESS OPERATION~~

~~J.1.1 Objective~~

~~To ensure safety and protection of the environment the CAI process operations will be conducted within the limits herein, and the following equipment, as appropriate to the activities, must be operating or available before process operations can be conducted.~~

~~J.1.2 Process Feed Operations~~

~~J.1.2.1 Plant Utilities~~

~~Electrical service (normal and auxiliary generator in 10-second standby model mode); compressed air (designed and standby compressors); and building fire protection systems (the main water supply is integral to the supply for the wet- an and dry pipe fire sprinkler systems) must be available. Prior to operations in the liquid feed preparation area, the special HALON[R] fire protection system must be available. The process area HEPA filtered ventilation system must be operating.~~

~~J.1.2.2 Plant Instrumentation~~

~~Prior to liquid waste operations, a survey of the ambient air in the Liquid Feed Preparation Room must be made, and instruments for measuring combustibles and oxygen concentrations must be at hand during preparation of volatile liquids.~~

~~J.1.2.3 Personnel~~

~~At least two persons must be on hand during any feed preparation operations.~~

~~J.1.3 Low-Temperature Check-Out Operations for the CAI~~

~~At low temperatures (below 500 F) the following are required:~~

~~J.1.3.1 Equipment~~

~~In addition to the minimum equipment requirements listed in J.1.2 above, low temperature operations for instrumentation and equipment checkout nd and calibration require the following:~~

~~J.1.3.2 Utilities~~

~~Liquid (diesel oil) and/or fuel gas (natural gas) supply systems; auxiliary cooling water system; uninterruptable power supply (UPS); and instrument air supply (designated and standby compressors).~~

~~J.1.3.3 Equipment in the CAI~~

~~Quench column pumps and sprays:; incinerator induced draft (ID blower or automatic crossover to the HEPA filter plenum in building exhaust); process off-gas HEPA filter banks.~~

~~J.1.3.4 Instrumentation~~

~~All instrumentation and control panels must be on and operating. Prior approval of the Section Leader for Technical Support Group Leader for CST-16 must be obtained to disable any safety interlock. If any interlocks are disabled, the front of the instrument chassis must be tagged and the interlock identified. An appropriate entry must be made in the Operations Log Book when any interlock is disabled or restored to operational condition.~~

~~J.1.3.5 Personnel~~

~~At least two persons must be present during operation of the incinerator. These are a shift supervisor and an additional process engineer.~~

~~J.1.4 High-Temperature Operations for the CAI~~

~~During incinerator startup for operation at temperatures above 500 F, and in addition to the items listed in J.1.3, the following must be fully functional:~~

~~J.1.4.1 Utilities~~

~~Auxiliary generator and automatic switchgear (running and ready); primary, secondary, and cooling tower loops and pumps; cooling tower blower(s) (depending on the outside and process scrub system temperatures); and the process steam generator with the preignition interlock satisfied.~~

~~J.1.4.2 Equipment in the CAI~~

~~Venturi scrubber system; packed-column scrubber system; process liquid filter and recirculation system; off-gas superheater; and induced draft (ID) blower.~~

~~J.1.4.3 Instrumentation~~

~~All of the process controls and interlocks listed in the Second Edition of the Final Safety Analysis Report must be operable. No interlocks shall be disabled.~~

~~J.1.4.4 Personnel~~

~~Personnel requirements are the same as for low temperature operations.~~

~~J.1.5 Waste Feed Operations~~

~~In addition to the above, the following are required for waste feed operations:~~

~~J.1.5.1 Utilities~~

~~Waste feed will be terminated if the primary electrical supply system is lost. The loss of the primary water supply system initiates a controlled shutdown of the incinerator.~~

~~J.1.5.2 Equipment~~

~~During incinerator waste feed operations, all equipment specified in the previous sections must be fully operational. Waste feed operations shall cease until any discrepancies are corrected.~~

~~The NMEID NMED permit for incineration of RCRA listed an and characteristic wastes specifies minimum operating temperatures, minimum percent oxygen in the secondary chamber, maximum carbon monoxide levels in the off-gas, maximum feed rates, and other parameters for hazardous waste feed operations. These parameters are detailed in Permit Module V for RCRA waste.~~

~~J.1.6 Process Off-gas Treatment~~

~~The following are required for off-gas treatment:~~

~~J.1.6.1 Equipment~~

~~Gas stream exit temperature from the quench column not greater than 350 F; gas stream exit temperature from the packed-column scrubber not greater than 180 F; gas stream inlet temperature to the process HEPA filters not greater than 250 F; scrubber solution temperature not greater than 180 F.~~

~~J.1.6.2 Personnel~~

~~In addition to the shift supervisor and process engineer, operations personnel shall be assigned to each shift as required to meet programmatic goals of the incinerator run plan.~~

~~J.1.7 Basis~~

~~Basis for limiting conditions for process operations is the 1979 AL/OSD Facility and Process Operational Safety Review and subsequent approval of the Operational Safety Requirements, the Technical Development Facility (TDF) Quality Assurance Manual (which includes requirements for reviews by the TDF experiment safety committee and design committee), and Administrative~~

~~Requirement 1-8 of the Los Alamos Health and Safety Environment, Safety, and Health Manual, Chapter 1.~~

~~J.2 DESIGN FEATURES~~

~~J.2.1 Construction~~

~~Except for the office addition, the TDF is constructed of precast, prestressed, retensioned pretensioned pretensioned concrete double "Tee" sections. The exterior walls are load bearing and are interior insulated. All sections contain weldments to provide connection of the reinforcing steel between adjacent panels, floors and roof decks. The interior load bearing walls are of filled concrete block construction. Non-load bearing walls are of metal stud and gypsumboard construction. The building shell is designed to remain as a confinement structure in all but a beyond design basis accident (BDBA).~~

~~Building design loads used were in accordance with ANSI Standard A58.1; 1972, and the Uniform Building Code for Earthquake Zone 2, 100 mph wind with a 100 year mean recurrence interval, Exposure B, and roof loads determined for 30 psf snow in addition to the ANSI Standard dead loads.~~

~~J.2.2 Fire Protection~~

~~The facility is designed for one hour Fire Code resistance with wet pipe sprinklers in all heated areas, except for the chemical storage area and the liquid feed preparation area. Antifreeze and dry pipe systems are installed in unheated areas to meet or exceed DOEM 0552 minimum requirements for "Improved Risk" level of protection.~~

~~The CAI process area exhaust duct to the facility main HEPA filter plenum contains a dry pipe water spray cooldown system upstream of the plenum. The plenum contains a mist eliminator/fire screen upstream of the filter banks. The main HEPA filter plenum has a dry pipe sprinkler system and the Bay 2 exhaust HEPA filter plenum contains an antifreeze sprinkler system. The chemical storage area contains a deluge fire sprinkler system and the liquid feed preparation area contains a HALON^{R} 1301 fire protection system.~~

~~J.2.3 Ventilation System~~

~~Three levels of containment with appropriate ventilation are provided. The four resulting zones are separated from each other by physical barriers and/or pressure gradients. All air exhausted from the process areas of the facility and the waste storage/staging bay is not less than double HEPA filtered before release from the facility stack. The ventilation supply and exhaust blowers are interlocked with the fire alarm system. A fire alarm initiates shutdown of these blowers to reduce the amount of oxygen available to a fire. Likewise, the liquid feed preparation area inlet air supply louvers and the ventilation exhaust blowers are interlocked with the fire alarm and the HALON^{R} system to isolate the room before the fire extinguishing medium is discharged.~~

~~J.2.4 Liquid Effluents~~

~~Except for the sanitary sewer system, all liquid effluents from the facility and the process are collected in sumps and are transferred through the double-contained and monitored radioactive waste line to the Industrial Waste Treatment Facility.~~

~~J.2.5 Utilities~~

~~The TDF has a diesel powered auxiliary generator and automatic switchgear which, when on standby mode, will supply electrical power to critical equipment, as well as communications and lighting to critical areas, within 10 seconds of a power failure. In the running and ready mode used during all incinerator operations, the transfer time is less than one second. A battery powered Uninterruptable Power Supply (UPS) system provides power to the instrumentation and controls if the auxiliary generator and line power are both lost.~~

~~Designated and backup air compressors, powered from both the line and auxiliary sources provide instrument air to the pneumatic process devices. These compressors are backed up by compressed gas (nitrogen) bottles.~~

~~J.2.6 Process~~

~~The CAI has a number of engineered safeguards:~~

~~J.2.6.1 Fire Protection Systems~~

~~In addition to the facility wet pipe, antifreeze filled, deluge, an and dry pipe sprinkler systems, the process has several engineered fire protection systems: The liquid feed preparation room has a HALON^{R} 1301 fire protection system, also initiated by UV detectors, temperature sensors, or manual pull station. The air supply louvers and exhaust blowers are interlocked with the alarm system to isolate the room prior to the HALON^{R} release.~~

~~The chemical storage area deluge sprinkler system is provided with a Fire Department connection for the addition of foam fire suppressant from a tanker truck.~~

~~The blowers supplying and exhausting air from the CAI process area and the waste storage/staging area are shut down upon the initiation of a fire alarm, to limit the oxygen available to a fire.~~

~~The floor drains in the CAI process and support areas and the sump in the radioactive waste storage area are connected to the facility sump tank in the pit in Room 112. This tank discharges to the double contained and instrumented industrial waste water pipe line to the treatment plant at TA-50, Building 1. Fire water from the CAI process and support area sprinkler systems is collected by the floor drains. The radioactive waste storage area fire water is collected in a floor sump and is pumped to the facility sump tank. This floor sump is provided with an overflow drain to one of the chemical storage area sumps in the event that sprinkler flow in this room exceeds the pump capacity. Fire sprinkler water in Bay 2 and the main HEPA filter plenum system flows through floor drains and directly into the industrial waste line to the treatment plant.~~

~~There are no floor drains in the bermed liquid feed preparation area. The chemical storage area is provided with sumps of sufficient volume to contain the entire contents of the storage area containers and not less than thirty minutes of the deluge sprinkler system flow.~~

~~J.2.6.2 Liquid Blend/Feed System~~

~~Except for the transferring of liquids from the shipping containers to the waste feed tanks (which requires hands-on operations), liquidblend/feed liquid blend/feed station operations are performed from the control panel outside the liquid feed enclosure. Selected controls and instrument readouts are also located at the incinerator main control panel and the liquid burner station at the incinerator.~~

~~J.2.6.3 Incinerator Controls and Interlocks~~

~~Incinerator startup and operation are automatically controlled and the systems are interlocked to prevent unsafe operation. Three shutdown modes (controlled, fast and scram), with automatic and/or manual initiation, are provided to ensure safe shutdown of the process. Both visible and audible alarms are provided for fault indication.~~

~~J.2.6.3.1 Pre-Ignition Interlocks~~

~~Incinerator startup is prevented if faults are detected in the incinerator negative pressure, burner fuel supplies, and off-gas cleaning and cooling systems.~~

~~J.2.6.3.2 Startup Controls~~

~~A sequential timer controls air purge, pilot ignition, burner ignition, and flame failure shutdown.~~

~~J.2.6.3.3 Temperature Controllers~~

~~After startup, the incinerator is brought to temperature manually or automatically by a single station microprocessor-based controller. In the run mode, incinerator temperatures are maintained at set levels by temperature controllers.~~

~~J.2.6.3.4 Waste Feed Interruption and Cut-Off Interlocks~~

~~During operation, certain fault conditions require that liquid and solid waste feed be interrupted. In the case of solid waste feed, the loading cycle timer is disabled and the ram feeder is placed into standby mode. Liquid waste feed is instantaneously interrupted by closing of a solenoid shutoff valve on the liquid waste feed line.~~

~~J.2.6.3.5 Shutdown Controls~~

~~The detection of certain faults in the process equipment controls and interlocks will initiate one of three logic sequences (controlled, fast, or scram) provided to shut~~

~~down the process in a safe and orderly manner, as dictated by the nature and potential consequences of the fault.~~

~~J.3 ADMINISTRATIVE CONTROLS~~

~~J.3.1 Responsibilities~~

~~Ultimate safety of the TDF operations lies with the HSE CST Division Leader, who appoints personnel to be responsible for the daily operation of the facility. These responsibilities include oversight of all engineering functions associated with maintenance and modifications of the building and with operating, maintaining, and modifying the CAI process.~~

~~J.3.2 Training~~

~~Training requirements for personnel assigned to the incinerator operations are delineated in Permit Attachment C.~~

~~J.3.3 Other Controls~~

~~The Technical Support Section Thermal Destruction and Science Technology Group maintains an emergency plan that is reviewed annually and updated as changes occur. Each employee assigned to the TDF has a copy of the emergency plan.~~

~~J.3.4 Internal Safety Review System~~

~~HSE-7 ESH-5 maintains a safety committee and appoints a safety officer to oversee safety functions of the group. The safety committee performs routine safety inspections of all HSE-7 ESH-5 facilities. A representative of HSE-3 Industrial Safety ESH-5 Industrial Hygiene and Safety, is an ad hoc member.~~

~~J.3.5 Documentation of Operating Procedures~~

~~J.3.5.1 Operating Manual~~

~~An Operating Manual for the CAI process is maintained at the TDF. This manual is reviewed and updated as required. Each person assigned to TDF operations receives a copy of the manual. Manual contents are as follows:~~

1. ~~Technical Support Section Organization~~
2. ~~Operational Safety Requirements (OSRs)~~
3. ~~Standard Operating Procedures (SOPs)~~
4. ~~The TDF Emergency Plan~~
5. ~~Facility Description~~
6. ~~Facility Operating Instructions (OIs)~~
7. ~~Process Description~~
8. ~~Process Operating Instructions (OIs)~~

~~9. Utility Operating Instructions (OIs)~~

~~J.3.5.2 Standard Operating Procedures~~

~~Standard Operating Procedures (SOPs) are in effect for operations in the TDF, as specified in Administrative Requirement 1-3 of the Los Alamos Health and Safety Environment, Safety, and Health Manual. The Technical Support Section CST-16 reviews all SOPs at least annually and submits updates and revisions to the HSE ESH Division SOP Committee for review and approval.~~

~~J.3.5.3 Special Work Permits~~

~~A Special Work Permit (SWP) must be obtained prior to conducting potentially hazardous activities not covered by an SOP. The building manager reviews and approves SWPs. The appropriate disciplines in Facilities Engineering (ENG-5) Operations and Maintenance Support (FSS-9), Radiation Safety (HSE-1) Health Physics Operations (ESH-1), Industrial Safety (HSE-3), and Industrial Hygiene and Safety (HSE-5) (ESH-5) also review the SWPs.~~

~~J.3.5.4 Operating Instructions~~

~~Operating Instructions (OIs) are the detailed process equipment operating procedures and check lists required to safely start, operate, and shut down the CAI process, utilities, and other mechanical equipment. Members of the section's engineering staff write the OIs, which are then submitted for peer review within the section. The OIs are revised as operational requirements dictate.~~