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CERTIFIED MAIL
RETURN RECEIPT REQUESTED

January 3, 1997

G. Thomas Todd, Area Manager
Department of Energy
Albuquerque Operations Office
Los Alamos Area Office
Los Alamos, New Mexico 87544

Dear Mr. Todd:

**RE: Approval of Class 3 Permit Modifications for the Controlled Air Incinerator (CAI), TA-50, Building 37 and TA-54, Area L, Structures/Pads #36 and #58
EPA I.D. No. NM 0890010515**

The New Mexico Environment Department (NMED) Hazardous and Radioactive Materials Bureau (HRMB) has completed a review of the proposed Class 3 modifications submitted by Los Alamos National Laboratory (LANL). HRMB finds the proposed modifications to be administratively complete and technically adequate. HRMB issued a Public Notice and Comment Period from September 27, 1996 to November 11, 1996, and received no comments. HRMB also held a Public Meeting on October 16, 1996 which was unattended by the public.

NMED hereby approves the captioned Class 3 Permit Modifications. The effective date of approval is your date of receipt of this letter. Enclosed please find clean insertable pages incorporating the modifications to LANL's Permit, which was originally issued by NMED. LANL is required to incorporate these pages into the Permittee Copy of the Permit.



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TK

Mr. G. Thomas Todd
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Please contact Mr. Michael Chacón of my staff at (505) 827-1561 if you have any questions.

Sincerely,



Ed Kelley, Ph.D., Director
Water and Waste Management Division

Enclosures

cc: Benito J. Garcia, Chief, HRMB
Stu Dinwiddie, Manager, RCRA Permits Management
David Neleigh, EPA (6PD-N)
File - LANL TA-54 Red 97, LANL TA-50 Red 97 and Reading

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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.
 - 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 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.

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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. 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. Building 50-37. Containers may be stored within storage room 115, 117, and 118 of TA-50-37 as shown in Figure 4.
 - d. Containers containing free liquids may be stored in the modular storage buildings, Model 22 or equivalent, Facility Numbers 50-114, 50-137 and 50-138, located as shown in Figure III-2.

III.B. AUTHORIZED WASTES

1. Identification. Only hazardous 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 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)
 - 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.

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- 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 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.

III.C. CONTAINERS

1. Capacity.

- a. Labpacked 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 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 264.1 75(b) (3) are not exceeded.

2. Type. Containers must be of a type specified in the DOT hazardous materials regulations, 49 CFR 171 to 179, if those regulations specify a particular container for the waste. As applicable, the containers shall be either: (1) previously unused or 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.

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If the hazardous wastes are to be received and stored in their original shipping containers, the Permittee must insure that the requirements of permit paragraph III.C. are satisfied. Polyethylene bulk containers shall meet or exceed DOT 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. No more than 440 gallons of liquid shall be stored at Technical Area 54, Area L, Building Number 54-31.
 - c. No more than 17,220 gallons of liquid shall be stored at each concrete containment structure: Facility Numbers 54-32, 50-139 or 50-140.
 - d. 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. No more than 3,630 gallons of liquid shall be stored in Building 50-37, Rooms 115, 117 and 118 combined.
 - f. No more than 1,650 gallons of waste shall be stored in each modular storage unit.
4. Condition.

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- a. If a container 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 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, that the ability of the container to contain the waste is not impaired. When necessary, this shall include procedures for determining whether the hazardous 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 and Permit Attachment F.

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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.

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.

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 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".

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- c. Signs shall be in both English and Spanish.
- d. Signs on approachable perimeter fences shall be spaced no more than 50 feet apart.

**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 a Chemical Waste Disposal Request (Form 10-3A) and sends the form to the Waste Management Group (HSE-7). 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 (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.

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 is transferred in accordance with the Laboratory's On-Site Transportation Manual.

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 (referred to as labpacks). Vermiculite will be the most commonly used absorbent; however, the organic waste is compatible with absorbents such as comcobs 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 for storage.

Drums and Tuff-Tanks will be visually inspected for integrity before transport. If the drum is unacceptable it will be repackaged or overpacked prior to transport. The wastes are transported on a half-ton to twelve-ton truck.

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Upon arrival at TA-54, Area L, the wastes are unloaded from the transport vehicle. Labpack waste will be temporarily 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 or drum, is labeled with the following information:

- chemical group number
- unique record number
- date of generation (if this information is not already on the container, the date from the Chemical Waste Disposal Request form is used)
- either an EPA hazardous waste label or the words "hazardous waste"

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.

Sampling of the waste is then performed as outlined in Permit Attachment A. The sampling pad is re-restricted to one family of chemicals at a time, for example 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 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

The Laboratory has five groups of storage areas: two modular storage units and the main storage pad at TA-54, Area L, the

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modular storage units and two storage pads at TA-50, and the storage room at the incinerator. 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 labpack waste, particularly those in fiberboard containers. After labeling, the labpacks 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 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 Units 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 residues have been removed. All waste stored here will have been labeled and sampled at TA-54, Area L.

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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 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.

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 such practices as slowly venting the drum as it is being opened and personnel wearing protective clothing and splash guards will be followed.

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Any spills resulting from the transfer/storage of waste will be cleaned up in accordance with Attachment D.

Inspection will be conducted in accordance with Attachment B.

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. Repackaging can range from overpacking a leaking container to offsite contractors repackaging the labpack waste to meet incinerator specifications.

Permit Module III provides additional requirements such as required aisle space for all storage in container areas.

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CLOSURE PLAN
PERMIT ATTACHMENT E.3
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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.

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 labpacked 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.

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 Group, HSE-5, following a field inspection.

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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 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.

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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 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 washwater or background sample.

An alternative demonstration of decontamination may be proposed and justified at the time of closure as circumstances indicate. The Director will evaluate the proposed alternative in accordance with the standards and guidance then in effect and, if approved,

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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 2100. 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. One copy shall be maintained at the DOE office and one copy maintained by the HSE-8 Regulatory Compliance Section.

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.

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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.

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- 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.

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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 an 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.

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- 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.

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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.

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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. 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,

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- 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.

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TABLE E.3.1.
CLOSURE SCHEDULE

ACTIVITY REQUIRED	MAXIMUM TIME
Notify EID 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 EID	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.

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TABLE E.3.2.

ANALYTICAL PARAMETERS

METALS

Arsenic
Barium
Cadmium
Selenium
Lead
Mercury
Nickel
Beryllium
Chromium
Silver

ORGANICS

Halogenated volatile organics
Nonhalogenated volatile organics
Acid-extractable semivolatile organics
Base-neutral extractable semivolatile organics
Phenols
Organochlorine pesticides
Chlorinated herbicides

OTHER

Cyanides
Ignitability
Reactivity
pH

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 shall be analyzed by Extraction Procedure Toxicity procedures. Both data shall be reported in the final report.

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TABLE E.3.3.
SAMPLING SUMMARY

MATERIAL SAMPLED	METALS	ORGANICS	OTHER
Soil sampling *	X	X	X
Solid wastes & residues	X	X	X
Washwater before use	X	X	X
Washwater after use	X	X	X
Protective clothing washwater		X	

NOTES:

Analytical parameters are given in Table E.3.2.

* For units placed over permeable surfaces.

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FIGURE E.3.1

LOCATION OF TA-50 CHEMICAL WASTE INCINERATOR MAP

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

FIGURE E.3.2
TA-54 AREA L MAP

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FIGURE E.3.3 COMPOSITE LIQUID WASTE SAMPLER (COLIWASA)

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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 _____

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FIGURE E-3.6
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 |

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