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National Nuclear Security Administration
Los Alamos Site Office, A316
3747 West Jemez Road
Los Alamos, New Mexico 87545
(505) 667-5794/FAX (505) 667-5948

Date: JUL 12 2012
Refer To: ENV-RCRA-12-0162
LAUR: 12-22794, 12-22795

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. John E. Kieling Program Manager
Permits Management Program
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303

Dear Mr. Kieling:

SUBJECT: RESPONSE TO DISAPPROVAL, TA-63 TRANSURANIC WASTE FACILITY PERMIT MODIFICATION REQUEST, REVISION 1.0, LOS ALAMOS NATIONAL LABORATORY, EPA ID #NM 0890010515, LANL-11-045

The purpose of this letter is to transmit the United States Department of Energy and Los Alamos National Security, LLC (Permittees) response to the above referenced Notice of Disapproval (NOD) dated May 24, 2012. The NOD requires additional information or clarification regarding that presented in the *Permit Modification Request for Technical Area 63, Transuranic Waste Facility, Hazardous Waste Container Storage Unit,* Revision 1.0, (PMR) originally submitted to the New Mexico Environment Department-Hazardous Waste Bureau (NMED-HWB) on April 16, 2012.

The Permittees request that a meeting be arranged with the NMED-HWB to further discuss the soil vapor monitoring network proposed in the Response to Comment 30. Some information regarding the proposed goals for the monitoring network was previously discussed in a meeting with NMED-HWB on May 31, 2012. Additional questions indicated in the response have been raised as the proposal was developed. A meeting would also allow further explanation of the proposal, clarify any unresolved technical details, and potentially help to answer any further questions by your office.

As requested by the NOD, this response submittal contains a number of documents. Enclosure 1 is the body of the response to the NOD. In that submittal, the NMED-HWB comments are included verbatim in italics to assist with review. The Permittees' responses follow each NMED-HWB comment and there are several supporting attachments including revisions to the PMR and examples of the revised figures requested in the NOD. A clean hard copy of the revised PMR is also included as Enclosure 2 of this submittal. Accordingly, a signed certification is enclosed. As requested in the NOD, this submittal also includes a reproduction of the hardcopy in portable document format (.PDF) in addition to the word processing files used to create the hardcopy version of the document.

If you have comments or questions regarding this permit modification or would like to arrange the requested meeting, please contact Gene Turner at (505) 667-5794 or Mark Haagenstad, at (505) 665-2014.

Sincerely,

Anthony R. Grieggs
Group Leader
Water Quality & RCRA Group
Los Alamos National Security, LLC

Sincerely,

Gene E. Turner
Environmental Permitting Manager
Environmental Projects Office
Department of Energy
Los Alamos Site Office

Enclosures:

(1) Response to the Notice of Disapproval, TA-63 Transuranic Waste Facility Permit Modification Request.
(2) Permit Modification Request Technical Area 63 Transuranic Waste Facility Hazardous Waste Container Storage Unit, Rev. 2.0

ARG:GET:GB/lm

Cy: Laurie King, USEPA/Region 6, Dallas, TX, w/enc.
Tim Hall, NMED/HWB, Santa Fe, NM, w/enc.
Kevin Smith, LASO-OOM, w/o enc., A316
George Rael, LASO-NSM, w/o enc., A906, (E-File)
Gene E. Turner, LASO-EPO, w/o enc., A316, (E-File)
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Alison M. Dorries, ENV-DO, w/o enc., K491, (E-File)
John Isaacson, ENV-DO, w/o enc., K404, (E-File)
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Susan McMichael, LC-ESH, w/o enc., AI87, (E-File)
IRM-RMMSO, w/enc., A150, (E-File)
ENV-RCRA Correspondence File, K490

Los Alamos
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ENCLOSURE 1

Response to the Notice of Disapproval, TA-63 Transuranic Waste Facility Permit Modification Request

ENV-RCRA-12-0162

LA-UR-12-22794

Date: JUL 1 2 2012

July, 2012
LA-UR-12-22794

RESPONSE TO NOTICE OF DISAPPROVAL TA-63 TRANSURANIC WASTE FACILITY PERMIT MODIFICATION REQUEST, Rev. 1 LOS ALAMOS NATIONAL LABORATORY

Prepared by:

Los Alamos National Laboratory
Water Quality & Resource Conservation and Recovery Act Group
Los Alamos, New Mexico 87545

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RESPONSE TO THE
DISAPPROVAL, TA-63 TRANSURANIC WASTE FACILITY
PERMIT MODIFICATION REQUEST
REVISION 1.0
LOS ALAMOS NATIONAL LABORATORY
EPA ID# NM 0890010515
LANL-11-045

INTRODUCTION

This document responds to the May 24, 2012, New Mexico Environment Department-Hazardous Waste Bureau (NMED-HWB) Notice of Disapproval (NOD) referenced above. The NOD was issued for the *Permit Modification Request for Technical Area 63, Transuranic Waste Facility, Hazardous Waste Container Storage Unit* (PMR), Revision 1.0, submitted to NMED-HWB on April 16, 2012, by the United States Department of Energy and Los Alamos National Security, LLC, collectively the Permittees. The Permittees are seeking to modify the Hazardous Waste Facility Permit (Permit) for Los Alamos National Laboratory (LANL) for approval of the construction of the Transuranic Waste Facility (TWF) at Technical Area 63 (TA-63) and permission to store hazardous waste there.

This response may contain information regarding the management of radioactive materials, including source, special nuclear, and byproduct material. Information on radioactive materials and radionuclides, including the results of sampling and analysis of radioactive constituents, is voluntarily provided to NMED-HWB in accordance with U.S. Department of Energy (DOE) policy.

The NMED-HWB comments are included verbatim in italics to help with review. The Permittees' responses follow each NMED-HWB comment. There are six Attachments to this document. Attachment A includes a copy of the original NOD. Attachment B includes the proposed revisions to the PMR resulting from the Permittees' responses to the comments in this NOD. Attachments C, D, E, and F include proposed revised figures for the revised PMR. Attachment G includes a facility certification for this document in accordance with 40 CFR §270.11(b).

Section Specific Comments:

1. *The Permittees' Response to NOD Comment 2 did not completely address the comment. Revise Table 1-1 to address the requirements at 40 CFR 264.75, 264.175(c), 264176, 264.177(a), 264.177(b), 264.177(c), 264.17(b), 264.17(c), and 270.27. Also, the response to Comment 2 states that Section 2.2.6 of the PMR addresses 40 CFR 264.175(b)(5). Section 2.2.6, Other Project Structures, does not address the cited requirements; however, it is addressed in Section 2.2.5, Retention Basin.*

Table 1-1 has been revised to include the listed references. The table now contains the following insertions. Text has also been added to the sections of the PMR where necessary to reference the appropriate regulation.

Regulatory Citations	Description of Requirement	Location in PMR
264.175	Containment	Sections 2.2.2 and 2.5.4
264.175(c)	Solid waste storage drainage conditions	Section 2.5.4
264.176	15-meter storage buffer for ignitable or reactive waste	Section 2.8
264.177(a)	Incompatible waste in containers	Section 2.8
264.177(b)	Incompatible waste in containers	Section 2.8
264.177(c)	Incompatible waste separation or segregation	Section 2.8
264.17(b)	Prevention of reactions	Section 2.8
264.17(c)	Documentation of precautions for ignitable, reactive or incompatible waste	Section 2.8
270.27	Air emission controls for containers	Section 2.5.8

2. *Section 2.2 still states that Figure 2-5 depicts "the location of areas where storage will occur highlighted," but the figure in fact does not have the storage areas highlighted. Revise the section to remove that statement, and instead refer to Figure 55 in Attachment G, Proposed Revisions to the LANL Hazardous Waste Facility Permit, and/or Figure F-l of Attachment F, TA-63 Transuranic Waste Facility Closure Plan.*

Figure 2-5 has been revised to show the portions of the TWF where storage may occur and Section 2.2 has also been revised to reference Figure 55. The revised Figure 2-5 is included as Attachment C of this submittal.

3. *Revise Section 2.2.2 to include the definition of "mat slab" as requested in NOD Comment 11.*

   Section 2.2.2 of the PMR has been revised to include the following: "A mat slab is a concrete slab designed with reinforcement such as metal bars or mesh to resist the uplift forces created by hydrostatic pressures. Most slab foundations are used to distribute heavy column and wall loads across the entire building area to lower the contact pressure compared to conventional spread footings with extensive reinforcing to ensure relatively uniform load transfer."

4. *In response to Comment 13, the Permittees revised Section 2.2.4 of the PMR to state: "In some uncommon situations, there is a potential that a waste container could be left in the characterization trailer for greater than [24 hours] and the option for storage should be retained to preserve operational flexibility." Permit Section 3.1(2), however, states that "for purposes of compliance with secondary containment requirements, the holding of a hazardous waste container within a permitted unit for a period not to exceed 24 hours, for transportation, treatment, characterization, or packaging, shall not be deemed storage." The Permittees argue that secondary containment is not required in characterization trailers because the containers will be inside the trailer; however, the characterization trailers do not meet the definition of secondary containment. Furthermore, "operational flexibility" is neither defined nor a valid reason for an exemption from the secondary containment requirements in 40 CFR 264.175 or the requirements in Permit Section 3.7.1. Revise the PMR and delete the proposed language in Attachment G, Section A.6.4, that conflicts with the requirements in Permit Sections 3.1 (2) and 3.7.1. Also see Comment 26 below.*

   The discussion of potential waste storage in the characterization trailers in Section 2.2.4 of the PMR has been revised to reference the 24 hour condition of Permit Section 3.1(2). Storage periods of greater than 24 hours are not intended to occur in the trailers during waste characterization activities. If waste containers are kept in the trailers for longer than that period, these occurrences will be noted in the permit non-compliance report (Permit Section 1.9.14) and the mitigating factors will be described.

   PMR Section 2.2.4 and Section A.6.4, Attachment G of the PMR have been revised as follows. The phrase "…and the option for storage should be retained to preserve operational flexibility…" has been deleted from the sentence starting "In some uncommon situations…" An additional sentence has been added to the paragraph stating "If storage of liquid bearing wastes for greater than 24 hours occurs, the reporting conditions of Permit Section 1.9.14, *Other Noncompliance*, will be followed."

The last two paragraphs of Section A.6.4 describing waste management procedures for the potential storage of waste containers in the characterization trailers for a period of greater than 24 hours have been deleted.

5. *PMR Section 2.2.7.2 states that Standard Large Boxes 2 (SLB2s) and Oversize Waste Boxes (OWBs) are planned to be used for storage of TRU waste at the TA-63 TWF. NMED is not aware of the Permittees' capabilities to characterize and certify such containers to meet the Waste Isolation Pilot Plant (WIPP) Waste Acceptance Criteria (WAC), nor is NMED aware of plans to include such capabilities in the future. Further, OWBs are not WIPP-compliant containers, and NMED is unaware of plans for WIPP to add OWBs to their list of WIPP-compliant containers. Section 2.2.7.1, Loading and Unloading, states that all waste containers will be WIPP-compliant. Section 2.2.7.1, and Attachment G, Sections 3.14.1 and A.6, state that waste containers will not be opened during characterization or while in storage at TA-63 TWF; therefore no re-packing of waste will be allowed at TA-63 TWF. Revise the PMR to resolve these discrepancies and describe the plans for ensuring that all containers stored and characterized at TWF will be WIPP-compliant.*

   As discussed in the meeting with NMED representatives of May 31, 2012, the statement that all waste containers stored at the TWF will be WIPP-compliant is in error and based on inaccurate information. The PMR did not propose, as stated in permit section 2.2.7.1, that "all waste containers will be WIPP-compliant." Further, this statement is inconsistent with the waste container descriptions in that paragraph, Section 2.2.7.4 of the PMR, and the previous version of the PMR, which specifically excluded OWBs from the statement.

   The proposed revision is also not consistent with the function of the TWF. The function of the TWF is to store newly generated waste (1) at LANL for further disposition at LANL or off-site hazardous waste management facilities and (2) to characterize that waste for compliance with WIPP waste acceptance procedures (See Section 2.2 and 2.2.7). In some cases, the TWF might receive a container for storage that is an OWB and not WIPP-compliant; although no repackaging will occur at TWF, these containers must be stored at the facility while awaiting further disposition (e.g., sending back to the generator or for management at other LANL hazardous waste management facilities. This practice is consistent with the currently approved Permit (Part 3.3, *Acceptable Storage Containers*). The purpose of such storage will be to potentially identify further options, facilitate subsequent transport for the waste, accumulate waste for subsequent campaigning, and provide a relief point for waste approaching 90-day limits in generator accumulation areas. Such storage will be in accordance with the Federal Facility Compliance Act of 1992, and the LANL Site Treatment Plan regarding storage timeframes. For these reasons, the Permittees have requested that container storage at the TWF include the OWBs and the PMR has been revised to clarify that provision. Therefore, the Permittees request that the requirement that all containers stored at the TWF be WIPP-compliant not be imposed upon the facility through this permit modification request.

6. *Section 2.2.7.1 states that there are six types of containers that may be used for storage at the TA-63 TWF: 55-gallon drums; 85-gallon drums; Standard Waste Boxes (SWBs); SLB2s, Pipe Over-pack Containers (POCs) inside 55-gallon drums, and OWBs. Section 2.2.7.2, Storage, states that there are four types of containers planned for use at TA-63 TWF: 55-gallon drums; SWBs; SLB2s; and OWBs; although it also states that 55-gallon drums may be over-packed into 85-gallon drums. Table 2-1, however, indicates that there are eight types of containers that will be used for storage at TA -63 TWF, adding 100-gallon drums and Ten Drum Overpacks (TDOPs) to the lists above. Revise the PMR to resolve these discrepancies, and to limit the container types to only those that can be characterized by the Permittees at TWF (or elsewhere at LANL) and that can be certified for disposal at WIPP. Also revise Attachment G, Section A.6 to state that the TWF will only store containers that are WIPP-compliant.*

   Table 2-1 has been revised to delete the listings for 100 gallon drums and 10 drum overpacks. The table also now includes a note that the listed containers are specific for storage at the TWF. Section 2.2.7.1 of the PMR has also been revised to describe only those containers that will be stored at the TWF. A revision has also been made to Section 2.2.7.2 of the PMR for clarity to specifically include POCs.

7. *The response to Comment 9 references the Multi-Sector General Permit For Stormwater Discharges Associated with Industrial Activity (MSGP) issued by the U.S. Environmental Protection Agency (EPA), and the response to Comment 31 states that information about the retention basin storm water monitoring system was not intended to be included in the Permit. In order for the Department to evaluate the Permittees' assertion that storm water sampling at the retention basin is exempt from the requirements at 40 CFR 264.31, the Permittees must provide the MSGP and include the rationale for the exemption.*

   The MSGP is available at:

   http://www.epa.gov/npdes/pubs/msgp2008_finalpermit.pdf.

   The TWF storm water monitoring requirements will fall under Sector K, *Hazardous Waste Treatment, Storage, or Disposal Facilities* of the applicable MSGP once the unit is constructed and operable. As requested in the May 31, 2012 meeting with the NMED-HWB, the constituents that would most likely be required to be sampled to meet the MSGP requirements would possibly include biochemical oxygen demand (BOD), total suspended solids (TSS), ammonia, alpha terpinol, aniline, benzoic acid, naphthalene, p-cresol, phenol, pyridine, total chromium, total recoverable zinc, total arsenic, adjusted gross alpha, aluminum and pH. These constituents are sampled to meet the requirements of the MSGP and not to address 40 CFR§264.31.

   The response regarding Comment 9 of the April 16, 2012 NOD Response was provided as part of the description of the retention basin at the TWF. As discussed in Section 2.2.5 of the PMR, the retention basin is a key component of the safeguards at the TWF to prevent the potential release of hazardous waste constituents in the event of a fire and application of fire suppression water. The intent of the discussion was to provide complete information related to the procedures in place at the retention basin for storm

water management and to distinguish between the dual modes of operation at the structure.

40 CFR§264.31 requires that a facility be operated to minimize the possibility of a fire, explosion or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents. The response to Comment 9 does not state that the storm water sampling at the retention basin is exempt from the requirement but that the monitoring of storm water is subject to the MSGP and specific to those requirements contained in the MSGP only. As stated in the response, the automated storm water sampler would not be used to collect samples that address releases of hazardous waste or hazardous constituents derived from waste management at the unit. Provisions for the remediation of such releases are included in the currently approved Contingency Plan in the LANL Permit. Sampling to meet the provisions for sudden releases to surface water will be taken from any liquid collected in the retention pond as stated in the PMR. The provisions of Section D.7 of the Contingency Plan will be implemented for non-sudden releases.

8. *In response to Comments 18 and 19, the Permittees revised Sections 2.2.7 and 2.3 to state that while reactive waste will not be accepted, the TWF "may need to temporarily store these types of waste (e.g., aerosol cans) that have been detected in TRU waste drums during the RTR characterization process." Sections 2.2.7, 2.2.7.5, and 2.3 also discuss management of containers with small quantities of free liquid. One of the reasons for using radiography is to ensure that containers shipped to WIPP do not contain items prohibited by the WIPP WAC (e.g., free liquids in excess of the WIPP WAC limits and aerosol cans). When prohibited items are detected, they must be removed (i.e., remediated) before the containers can be shipped to WIPP. Since containers cannot be opened at the TWF, they must be sent to another facility at LANL for remediation. The Permittees have not discussed how containers that do not meet the WIPP WAC will be dispositioned, nor have they defined "temporary" storage of such containers. Section 2.2.7 states that "the potential exists that a small quantity of free liquid may be present in some containers (e.g., TRU waste determined to contain liquids such as condensation or in smaller internal containers by RTR characterization after waste receipt at the TWF)." Considering that the WIPP WAC allows up to 1 % liquid by volume in containers, coupled with the fact that the Permittees are proposing to store SWBs and SLB2s, the statement that small quantities of free liquid may be present is misleading. One percent of the volume of an SWB is approximately five gallons, while it is approximately 17 gallons for an SLB2. Because the stated purpose of the TWF in Section 1.2 of the PMR is to provide "the necessary capacity for management of newly generated TRU waste," there should be adequate controls to significantly reduce the necessity of managing containers with prohibited items (e.g., liquid and reactive wastes) at the TWF. Revise Sections 2.2.7 and 2.3 of the PMR and propose requirements in Attachment G that address the following: Controls to be implemented at the generator sites to prevent prohibited items from being packaged in containers sent to TWF. Specific actions that will be taken at the TWF when prohibited items are detected in TRU waste containers during characterization (i.e., how the containers will be temporarily stored; how they will be labeled; and how they will be dispositioned). The maximum time period that*

containers with prohibited items will be temporarily stored at the TWF (i.e., define "temporary storage").

The LANL Hazardous Waste Facility Permit defines storage at Permit Section 1.8 to mean the holding of hazardous waste for a temporary period at the end of which the waste is treated, disposed of, or stored elsewhere. This is consistent with the definition of storage in 40 CFR §260.10. The Permit does not limit the period of storage at a permitted waste management facility prior to the Land Disposal Requirements of 40 CFR§268.50. The Permittees do not propose to define temporary storage other than that Permit definition. The intent in originally using the term was to convey that the waste items would be conditionally stored for a relatively short period prior to transport to other facilities for subsequent disposition or remediation and not to try to establish another definition or interpretation of storage. In order to prevent confusion, the last sentence in the first paragraph of Section 2.2.7 of the PMR has been revised to better explain the referenced storage practice. The use of the term “temporary” storage has also been deleted at Sections 2.2.7 and 2.3 of the PMR to prevent confusion with the storage definition.

Controls are currently in place to minimize the potential for prohibited items in newly generated TRU waste containers. TRU waste generators at LANL are subject to internal procedures for waste generation and repackaging and to the LANL and WIPP Waste Acceptance Criteria (WAC) for the acceptance and further disposition of TRU waste and containers at permitted hazardous waste management units. The internal procedures include provisions for proper characterization of the waste (i.e., the Waste Analysis Plan in the Permit for mixed TRU waste), waste documentation, and waste examination for prohibited items. Examples of prohibited items that would not be allowed in TRU waste containers include free liquids with volumes higher than WIPP WAC limits, evidence of hazardous constituents not allowed at WIPP, corrosive liquids, compressed gas containers, DOT oxidizers, explosive or reactive chemicals, and PCB waste (> 50 ppm). Waste containers with newly generated wastes are subject to waste acceptable knowledge documentation review and visual inspection. Visual examination under the WIPP waste certification program will also be used for future waste streams.

As stated in Sections 2.2.7 and 2.3 of the PMR, there will always be a theoretical potential that prohibited items will be discovered in TRU waste containers sent to the TWF and discovered during the waste characterization activities conducted there. In such an event, the storage conditions of the Permit will apply as appropriate. This will specifically include the waste location identification requirements of Permit Section 3.5(4), the labeling requirements of Permit Section 3.6, the containment requirements of Permit Section 3.7, and the requirements for ignitable, reactive, and incompatible waste of Permit Section 2.8. Section 2.2.7 of the PMR has been revised to state that the permit conditions for storage will be met as appropriate for any waste containers that are discovered to contain items prohibited by the WIPP WAC.

9. *Since the stated purpose of the TWF is to provide "the necessary capacity for management of newly generated TRU waste," revise Section 2.2.7 and propose language*

in Attachment G to restrict storage at the TWF to only newly generated waste that has never been part of the LANL Site Treatment Plan (STP) inventory, and add a provision that all newly generated TRU waste will be shipped to WIPP within one year of the date it is generated.

LANL respectfully requests that this permit condition not be imposed through this PMR. LANL compliance with RCRA's one-year prohibition of storage for LDR mixed wastes under RCRA §3004(j) and 40 CFR §268.50(c) is already addressed by the Federal Facility Compliance Act (FFCA) and under the NMED-issued *Federal Facility Compliance Order* (FFCO, October 4, 1995), and individual Site Treatment Plan (STP) implementing the FFCO. The FFCO requires LANL to identify covered wastes in the STP, and covered wastes are identified as "all mixed waste at LANL, regardless of time generated," including newly discovered, identified, generated, or received from off-site …" (FFCO, §§5A, 6) LANL is also required to update the STP annually to include covered wastes and treatment progress (FFCO, §7).

LANL may store newly-generated LDR restricted mixed wastes longer than one year as long as it is in compliance with the FFCO and STP, therefore a requirement that all newly-generated TRU waste be shipped to WIPP within one year of the date it is generated would conflict with FFCO provisions. Since all mixed waste is or will be identified in the STP, the proposed language would have the unintended consequence of effectively restricting the TWF from storage or treatment of TRU mixed waste.

Finally, to the extent this comment regarding adding a provision that all newly generated TRU waste will be shipped to WIPP within one year of the date it is generated is intended to address non-mixed as well as mixed TRU waste, this would be outside the scope of NMED's RCRA authority since non-mixed TRU waste is regulated under the Atomic Energy Act of 1954, as amended, 42 USC §2011 et. seq.

10. *In response to Comment 38, the Permittees revised Section 2.8 to reference Permit Section 2.8.2. The response to the comment states: "Compliance with the provisions of the Permit Section [2.8.2] is discussed in Section 2.8 with one exception. This is the permit condition that Permittees will ensure that incompatible wastes or materials are not stored so that a release or spill of these wastes might commingle in fire suppression water holding area or tank." The Permittees have not adequately provided the basis for this exception from the requirement in Permit Section 2.8.2, which states: "The Permittees shall ensure that incompatible wastes or materials are not stored so that a release or spill of these wastes might commingle in a fire suppression water holding area or tank." This requirement is intended to ensure compliance with 40 CFR 264.177, which requires the Permittees to prevent mixing of incompatible wastes in the event of a spill or leak. Revise the PMR to remove the discussion of this exception, and to state how the Permittees will comply with the requirements in Permit Section 2.8.2. If necessary, revise the proposed language in Attachment G to ensure compliance with Permit Section 2.8.2.*

Section 2.8 of the PMR has been revised to remove the discussion of the probability of incompatible waste mingling with fire suppression water and to comply with Permit Section 2.8.2. The last paragraph of Section 2.8 has been deleted and the following sentences added to the first paragraph of the section:

"These precautions will also be used to prevent a release or spill of incompatible waste from potentially commingling with fire suppression water in the unit's retention pond. In the event of a fire or spill, the Contingency Plan of the Permit may also be implemented including emergency segregation procedures determined to be necessary at that time."

11. *Figure 2-5 indicates an "Area designated as future expansion," but there is no explanation of what this future expansion will be. Revise the PMR to discuss what type of future expansion (e.g., additional characterization trailers) the Permittees propose in Figure 2-5.*

Section 2.2.4 of the PMR has been revised by adding the following phrase to the description of additional characterization trailers to reference Figure 2-5: "Additional trailers may be needed as characterization needs for the facility change and would be located in the area noted (Note #13) for future expansion in Figure 2-5, Overall Site Plan".

12. *Section 2.4 states that entry stations are shown in Figure 2-34; however, Figure 2-34 does not identify any entry stations. Revise the figure to include the locations of the entry stations.*

Figure 2-34 has been revised to show the location of the personnel entry station at the Operations Support Building. A note has also been added to the figure for clarification. The revised figure is shown in Attachment D of this document.

13. *Several of the references cited in Section 4.0, Corrective Action, are not listed in Section 6.0, References. Also, the response to Comment 46 states that the Middle Mortandad/Ten Site Aggregate Investigation Report, Revision 2, is cited in section 4.2. This report is not cited, nor is it listed in Section 6.0. Revise the PMR accordingly, and provide copies of any references not previously submitted to the Department with the PMR.*

The following references have been added to Section 6.0:

LANL, 1992: *RFI Work Plan for Operable Unit 1129*. Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 2004. *Addendum to Sampling and Analysis Plan for the Middle Mortandad/Ten Site Aggregate*, Los Alamos National Laboratory, Los Alamos, New Mexico.

Section 4.2 of the PMR has also been revised to include the reference to the Addendum.

14. *Section 2.1.1, Free Liquids, of the 2010 LANL Waste Acceptance Criteria for Contact Handled TRU Waste (provided as a reference in Section 6.0) is inconsistent with the current WIPP WAC. Since the LANL WAC is used to control prohibited items duringpackaging of containers to be managed at the TWF for shipment to WIPP. Revise the LANL WAC to be consistent with the WIPP WAC*

    LANL will revise the current version of the LANL WAC to be consistent with the most recently updated version of the WIPP WAC for TRU waste at the next revision to the LANL WAC.

Attachment F (Closure Plan) Comments

15. *Section 1.0 of Attachment F states: "[t]he TWF unit will be closed by removal of the major structures and equipment." The statement that major structures and equipment will be removed appears to be inconsistent with Section 5.3, Removal and Decontamination of Structures and Related Equipment, which seems to state that all structures and equipment will be either 1) removed and disposed of as solid (potentially hazardous) waste, or 2)decontaminated and removed from TWF for re-use by LANL. Revise the statement in Section 1.0 to state that all structures and equipment will be removed from TWF at closure.*

    The statement noted in Section 1.0 has been modified to read: “The TWF unit will be closed by removal of all structures and equipment.”

16. *Section 2.0 references Figure 2-5 of the PMR for the TWF Site Plan. Since Figure 2-5 is not proposed to be included in the Permit, remove the reference from the Closure Plan.*

    The reference to Figure 2-5 has been removed from Section 2.0 of Attachment F.

17. *Section 2.0 references "Characterization Pads." Revise this reference to "Characterization Trailers."*

    The reference to "Characterization Pads" has been changed to "Characterization Trailers" in Section 2.0 of Attachment F.

18. *Response to Comment 59 includes a revised Table 2 that includes a third column not included in Table 2 of Attachment F. The column includes the basis for the closure*

activity and schedule, which is useful information, and should be included in Table 2 of Attachment F. Revise Table 2 of Attachment F to include the Basis column.

The column in Table 2 of Response to Comment #59 of the April 16, 2012 NOD response has been added to Table 2 of Attachment F.

19. *Response to Comment 60 (see fifth bullet) includes a reference to "the closure modification procedures of Permit Section" but fails to include the actual Permit Section that contains the modification procedures. The Department assumes the appropriate reference to be Section 9.4.8. Revise the PMR, and Attachment F if necessary, to identify the referenced Permit Section.*

A reference to Permit Section 9.4.8 has been added to the PMR and Attachment F.

20. *Response to Comment 65 states that Section 5.2.2 was revised to state "that LANL will submit a permit modification for the sampling and analysis plan in accordance with Permit Section 9.4.6, Records Review and Structural Assessment, upon determination that additional sampling locations are needed." Section 5.2.2 does not state that the Permittees will submit a permit modification. Revise Section 5.2.2 to state: "If additional sampling locations are necessary, the Permittees will request a permit modification to modify the sampling and analysis plan in accordance with Permit Section 9.4.6."*

The following sentence has been added to Section 5.2.2 of Attachment F: "If additional sampling locations are necessary, the Permittees will request a permit modification to modify the SAP in accordance with Permit Section 9.4.6."

21. *Section 6.1, Bullet c, states that one sample will be collected "to the south of the permitted unit at the storm water discharge drainage location." Figure F-l indicates that the proposed sampling location is within the permitted unit. Revise Bullet c to state that one sample will be collected "at the south end of the permitted unit at the storm water discharge drainage location."*

In Section 6.1 bullet c of Attachment F of the PMR, the word "to" has been changed to "at".

22. *Response to Comment 90 states that "Section 7.4.1 (now 6.4.2.1) has been revised to reference Section 6.4." Section 6.4.2.1 does not reference Section 6.4. Revise the response and/or Attachment F to resolve the discrepancy.*

Section 6.4.2.1 no longer provides a reference to Section 6.4 of Attachment F in the PMR Revision 2.0.

23. *Section 10.0, References, was revised to include a reference to NMED's 2009 Technical Background Document for Development of soil Screening Levels. This document was replaced and superseded by Risk Assessment Guidance for Site Investigations and Remediation in February 2012. Revise Section 10.0 to reference this document (see NMED/HWB web site, Guidance Documents).*

Section 10.0 of Attachment F of the PMR has been revised to eliminate the document titled "NMED 2009 Technical Background Document for Soil Screening Levels" and to include "NMED 2012 Risk Assessment Guidance for Site Investigations and Remediation."

Attachment G (proposed Revisions) Comments

24. *Proposed Section 2.5 states that entry stations are shown in Figure 55; however, Figure 55 does not identify the entry stations. Revise the figure to include the locations of the entry stations.*

Figure 55 has been revised to include personnel access into the unit from the Operations Support Building. Revised Figure 55 is included in Attachment F of this document.

25. *As part of the Permittees' response to Comment 103, Section 3.14.1(1) of Attachment G has been revised to state: "The Permittees shall ensure that at the TWF, all containers storing hazardous waste with free liquids are stored on secondary containment pallets as required by Permit Section 3.1(2), except inside the following structures: Trailers 155, 156, and 157." Section 3.1(2) does not require secondary containment pallets; rather, it is the basis for the Permittees' request to exempt the storage of waste in characterization trailers for less than 24 hours from the secondary containment requirements in 3.7.1, Containers with Free Liquids. Section 3.1(2) states, "for purposes of compliance with secondary containment requirements, the holding of a hazardous waste container within a permitted unit for a period not to exceed 24 hours, for transportation, treatment, characterization, or packaging, shall not be deemed storage." Revise the proposed language in Section 3.14.1(1) to state that the characterization trailers at TA-63 are exempt from secondary containment requirements in 3.7.1 as specified in Section 3.1 (2). Also see Comment 4 above.*

The proposed language in Section 3.14.1 (1) of Attachment G has been revised to delete the phrase regarding the characterization trailers. The sentence will read:"The Permittees

shall ensure that at the TWF, all containers storing hazardous waste with free liquids are stored on secondary containment pallets as required by Permit Section 3.1(2)." The Permittees intend to complete characterization procedures on waste containers in the trailers within the 24 hour period. If storage of liquid bearing wastes for greater than 24 hours occurs without implementing the requirements of Permit Section 3.1(2), the reporting requirements of Permit Section 1.9.14 will be followed (See Response to Comment 4).

26. *Proposed Section A.6.1 references Figure 2-5; however, Figure 2-5 is not proposed to be included in the Permit. Revise the section to reference Figure 55.*

Proposed Section A.6.1 has been revised to reference Figure 55.

27. Proposed Section A.6.4 includes erroneous information in several places, regarding Real Time Radiography (RTR) non-destructive evaluation (NDE) characterization equipment, implying that NDE is the same as non-destructive assay (NDA). For example, it refers to RTR as "assay equipment," the High-Efficiency Neutron Counter (HENC), and the Super-HENC. This erroneous description of RTR equipment is also included in Section 2.2.4, Characterization Trailers, of the PMR. Revise the discussion of RTR in Section 2.2.4 of the PMR and in proposed Section A.6.4 to differentiate between RTR (NDE) and NDA characterization equipment. Also propose language in the third paragraph of Section A.6 that clarifies the general discussion of characterization activities at TWF.

Proposed Section A.6.4 and Section 2.2.4 of the PMR have been revised to correct the distinction between NDA and NDE:

- The term "assay" used in the first bullet for the RTR unit has been replaced with "NDE."
- The term "assay" used in the second bullet for the HENC unit has been replaced with "NDA."
- The term "assay" used in the third bullet for the SuperHENC unit has been replaced with "NDA."

The following text has been added to the third paragraph of Section A.6: "Non-destructive assay (NDA) is used to confirm the types and amounts of radioactive elements within the waste container. NDA is a non-intrusive characterization technique that measures gamma rays and neutrons emanating from the container. Non-destructive examination (NDE) uses X-rays and a video system to inspect waste container contents."

28. Proposed Section A.6.9 states that "Water will be supplied via the 150,000 gallon tank north of the operations support building ..." However, PMR Section 2.5.1 states this tank

is 125,000 gallons. Revise the PMR and/or Attachment G to state the correct tank volume.

PMR Section 2.5.1 has been revised to state that the designed tank volume is 150,000 gallons.

29. *Attachment G skips Section A.6.7 in the section number sequence. Revise the section number sequence in Attachment G, Sections A.6.8 through A.6.10.*

The number sequence has been revised.

30. *Propose the installation of a monitoring network capable of detecting contaminant migration toward the TWF from the MDA-C vapor plume in order to prevent completion of exposure pathways to the TWF structures or other potential receptor locations (see Comments on Attachment C of the Response to Notice of Deficiency below).*

LANL is proposing the installation of two soil vapor monitoring wells and the inclusion of one existing soil vapor monitoring port associated with the current MDA-C vapor monitoring network as a monitoring network for the TWF to detect contaminant levels associated with the MDA-C vapor plume. These wells are positioned between the TWF and locations where vapors have been detected above occupational exposure standards in the subsurface beneath MDA-C.

The proposed locations for the two monitoring wells are included in Figure 4.2 in Attachment E of this NOD Response. These new wells will be situated in the area north of Puye Road in order to place them between the central source in the MDA-C vapor plume and the nearest boundaries of the TWF. These locations will provide monitoring data inline with the source of the vapor plume and potential receptor sites at the TWF. As directed in NMED's December 8, 2011 approval for the Phase III Investigation Report for MDA-C (HWB-LANL-11-050), LANL is currently monitoring the 25-ft and 142-ft ports in existing vapor monitoring well 50-24822 on a semi-annual basis. Data from these monitoring ports, which are located between the MDA-C vapor plume and the new monitoring wells, will be used along with data from the new wells to evaluate potential exposure pathways. The existing well is described in the Phase III Report.

The proposed soil vapor monitoring wells will sample vapor from the 25 ft and 60 ft. levels. The 25 foot level is proposed as a near surface layer sampling point considering the potential for at least a 15 foot variance in the surface elevation of the TWF site at construction and during preliminary grading. The 60 foot depth is chosen to provide an additional sample below the surface depth. As shown in Figure 5.1-1 of the March 2011, Completion Report for Regional Aquifer Well R-60, (LANL, EP2011-0003), the surface tuff layer (Qbt3, Unit 3 of the Tshirege Member) extends to a depth of 100 feet so there is

no geologic evidence for additional sampling depths to determine vapor concentrations in other adjacent tuff layers.

The proposed soil vapor monitoring wells will be installed in a similar manner to the stainless-steel vapor monitoring wells at MDA- C. These wells are generally drilled using a hollow stem auger mounted on a conventional mobile drill rig. The following procedure is used for the vapor monitoring well construction.

The well is drilled to the design depth. Bentonite clay is added down the hollow stem augers as the augers are withdrawn to the lowest sampling depth (i.e., 60 foot sampling interval) to seal the bottom of the borehole. A 1/4 inch stainless steel sampling tubing with screened end openings is then placed in the borehole to the sampling depth and filter pack sand is added to the desired depth below and above the position for the sampling tubing as augers are withdrawn to create a vapor permeable medium at the depth of the sampling screen. The well is then sealed with bentonite clay as the augers are withdrawn to the next sampling level (i.e., 25 foot sampling interval) and another sampling tube is placed with filter pack sand. After creating that vapor sampling port, the well is filled to within 2 ft of the surface with bentonite as the remaining augers are withdrawn to complete the active well with two sampling positions. Final construction of the monitoring well involves the installation of a well head cap, construction of a pad, surface casing if aboveground, and the installation of protective bollards.

As directed by NMED, the existing MDA-C monitoring network is currently sampling soil vapor monitoring wells at a frequency of one every six months. The sampling frequency for these wells is therefore proposed to be the same. The basis for this is that the wells can be sampled at the same times for efficiency and to keep the data consistent with any other data obtained for the comprehensive MDA-C vapor plume monitoring network.

Revisions to the PMR to incorporate the details of this soil vapor monitoring well network have not been included with this submittal. A meeting with NMED-HWB to discuss the proposal is requested in the transmittal letter. Although some technical details of a potential monitoring network were discussed in the May 31, 2012 meeting, additional questions have been raised as the proposal was developed. These questions involve a clearer definition of the purpose of the monitoring network, the required detection and action levels for analytical data, and future activities associated with potential vapor plume constituent detections. A meeting would also allow further explanation of the proposal and answers to any questions by NMED. This purpose for the meeting should result in an improved basis for agreement on the provisions of a monitoring network prior to issuance of the draft permit.

Comments on Attachment C of the Response to Notice of Deficiency

The Vapor Plume at MDA C in Relation to Pajarito Corridor Facilities, LA-UR-12-02320

31. Section 2.1 Comparison to Threshold Limit Values, page 3, last paragraph

Permittees' Statements: *"A total of 28 VOCs have been detected in the vapor plume beneath MDA C in the two years of quarterly monitoring data collected at the site. The maximum vapor-phase concentrations of these constituents were compared to their respective TL V s. Of these, only trichloroethylene (TCE) exceeds its TLV. The TLV for airborne TCE is 10 parts per million (ppm), a standard that is lower than the OSHA standard of 5O ppm. Based on two years of quarterly vapor monitoring, TCE concentrations at MDA C exceed the TLV at depths of 200 to 300 ft below ground surface (bgs), with a maximum of 118% of the TLV. However, TCE concentrations have been determined to be significantly lower than the TLV at the ground surface and at 20 feet below the surface (Figure 3). The TCE concentrations do not exceed the OSHA standard."*

NMED Comment: *The paragraph cited above omitted the data listed below:*

• Between 2006 and 2011, at depths of less than 200-ft bgs, TCE was detected above 10-ppm (53,700-ug/m3) nine times.

• On April 23, 2011, at vapor monitoring well 50-603471, TCE was detected at 146-ft bgs at 63,000-ug/m3 (11.7-ppm).

• On April25, 2011, at vapor monitoring well 50-24813, TCE was detected at both25-ft bgs and 99-ft bgs at 93,000-ug/m (17.3-ppm) or 173% of the TLV. This well is one of the vapor monitoring wells closest to the proposed future TRU waste facility.

These data indicate that the maximum vapor-phase concentrations of TCE at MDA C are 173 % of the TLV and occur between 25 and 100-ft bgs.

The Permittees incorrectly state that the maximum vapor-phase concentrations present at MDA C that are greater than 100% of the TLV concentrations are located between 200 and 300-ft bgs. It appears that the Permittees' conclusions are based on modeling of data that did not include the maximum TCE concentrations observed in the latest round of vapor sampling at MDA C. The plume modeling presented in the MDA C Phase III Investigation Report was based on average concentrations, not maximums, which must be accounted for in evaluating vapor migration and potential exposure scenarios. Revise Attachment C to address the appropriate depths and contaminant concentrations or remove all references to the attachment from the PMR.

Pursuant to the discussion in the May 31, 2012 meeting with NMED-HWB, the addition of the proposed soil vapor monitoring network (see Response to Comment 30) has replaced the need for the discussion of the MDA-C vapor plume model contained in Attachment C of the April 16, 2012 NOD Response. Therefore, these Comments to the NOD Response and associated responses are no longer needed.

32. Section 4.0, Distribution** of the **TCE Vapor Plume at MDA C and LANL Worker Safety, page 8

***Permittees' Statements:** "Figure 3 indicates that the RLUOB and the proposed CMRR-NF facilities are clearly outside of the modeled plume, while the proposed RLWTF and TWF Projects are in areas with low TCE concentrations in comparison to the TLV measurements. Specifically, the proposed RL WTF and TWF Project facilities are in locations in which the measured surface concentrations of TCE are less than 5 percent of the TLV. Utility trenches associated with these three projects are likewise in locations with surface measurements around 5 percent of the TLV." (Paragraph 1 *) (*for relation to NMED comments)*

"These relationships can also be visualized in "at depth" plan views. Figure 4 represents the TCE vapor plume that would be encountered at a depth of 5 feet bgs. This is useful for understanding how the vapor plume might impact the future construction of the RLWTF building and a series of utility trenches that cross the plume but will not exceed a depth of 5 feet." (Paragraph 2)

"The maximum TCE vapor concentration at the 5-foot depth would be about 30 percent of the TLV in the southeastern corner of MDA C. In the case of the construction of the RLTWF building, it is expected that the TCE vapor concentration would not exceed 2 percent of the TLV at the construction site. The bottoms of the utility line trenches would encounter a TCE vapor concentration estimated at a maximum of around 10 percent of the TLV, and typically much less. Figure 4 also illustrates that TCE vapor plume concentrations in the vicinity of the temporary CMRR Project facilities south of Pajarito Road are anticipated to be minimal. The parking areas would be subject to a TCE vapor concentration less than 5% of the TLV, while the temporary office buildings would be less than 1 %. The fact that the parking areas are paved greatly reduces the likelihood of detectable surface concentrations of TCE in the vicinity of the temporary facilities." (paragraph 3)

"Figure 5 similarly depicts the modeled TCE vapor plume at a depth of 24 feet below the present ground surface. The modeled plume at this depth indicates that the highest concentration of TCE would be around 50% of the TLV in the southeastern corner of MDA C." (Paragraph 4)

"Construction of the TWF includes the leveling of the site to design grade, which will require the removal of fill to a depth of approximately 20 feet below the present surface in the northwestern upslope portion of the project area. The anticipated TCE vapor

concentration at the bottom of the construction excavation would be less than 5% of the TLV. The construction of the foundation for the RLWTF water tower would encounter a TCE vapor concentration estimated at around 2% of the TLV." (Paragraph 5)

***NMED Comment:** Several issues require resolution within this section of the report. The comments are broken out for relation to specific paragraphs quoted above.*

1. Paragraph 1: The modeled plume does not correlate to the available data and therefore is not appropriate for use with regard to health and safety. This paragraph refers to "measured surface concentrations of TCE" and "surface measurements." The Department's administrative record does not contain records of measurements of TCE collected at the ground surface at MDA C. Either provide the referenced data in Attachment C with the appropriate descriptions of data collection and analysis methods or remove these statements from the evaluation.

2. Paragraph 2: The modeled plume for TCE vapor-phase contamination at MDA C does not include the most recent sampling results from the MDA C vapor monitoring wells. Figure 4 presents a modeled plume that does not correlate with actual field measurements.

3. Paragraph 3: The latest sampling event at MDA C reports concentrations of TCE between 25 and 99-ft bgs to be 173 % of the TLV. As the Permittees have stated previously, "[t]he steepest concentration gradients are upward toward the surface, which leads to preferential VOC transport toward the mesa top and yields releases to the atmosphere." Based on this observation, it is unlikely that the modeled concentration of TCE would decrease from 93,000-ug /m^3 at 25-ft bgs to 16,110- ug/m^3 at 5-ft bgs, a distance of only 20-ft.

4. Paragraph 4: "The modeled plume at this depth (24 feet) indicates that the highest concentration of TCE would be around 50% of the TLV in the southeastern corner of MDA C." Data from the most recent sampling event at MDA C lists TCE levels at this location at a depth of 25 feet as 173 % of TLV. Use of an average TCE concentration for the model, instead of measured concentrations yields an average concentration at 25-ft bags greater than 50% of the TLV.

5. Paragraph 5: The estimates of anticipated TCE vapor concentrations do not correspond to the available data; therefore, the model as presented does not provide support for the Permit tees' conclusions.

Revise Attachment C to address all of the available data rather than assumed model TCE concentrations or remove all references to the attachment from the PMR.

Pursuant to the discussion in the May 31, 2012 meeting with NMED-HWB, the addition of the proposed soil vapor monitoring network (see Response to Comment 30) has replaced the need for the discussion of the MDA-C vapor plume model contained in Attachment C of the April 16, 2012 NOD Response. Therefore, these Comments to the NOD Response and associated responses are no longer needed.

33. Section 5.0, Conclusions Regarding the Health** Risks of the TCE **Vapor Plume at MDA C, page 11

***Permittees' Statements:** "Investigations at MDA C have defined a vapor plume beneath the site. The maximum trichloroethylene (TCE) concentrations in the plume exceed the American Conference of Governmental Industrial Hygienists Threshold Limit Value (TLV) for adversely affecting human health at a subsurface depth of between 200 and 300 feet. On the surface, the maximum is slightly more than 30% of the TLV in the southeastern comer of MDA C. These percentage values drop off below 10% of the TLV in all areas represented by present and planned Pajarito Corridor infrastructure projects.*

This document provides information that indicates that the vapor plume does not pose a threat to the health of LANL workers nor will it pose a threat to workers during construction of proposed facilities along Pajarito Road."

***NMED Comment:** The Permittees' conclusion is not supported by the data included in the Department's administrative record (See Comment 2 above). In addition, TCE concentrations detected "on the surface," implies that TCE is detectable above ground. Ambient air movement would significantly dilute detected TCE concentrations indicating that subsurface vapor migration is a concern at the TWF that requires a monitoring network.*

Pursuant to the discussion in the May 31, 2012 meeting with NMED-HWB, the addition of the proposed soil vapor monitoring network (see Response to Comment 30) has replaced the need for the discussion of the MDA-C vapor plume model contained in Attachment C of the April 16, 2012 NOD Response. Therefore, these Comments to the NOD Response and associated responses are no longer needed.

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Attachment A

Copy of the May 24, 2012 Notice of Disapproval

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NEW MEXICO ENVIRONMENT DEPARTMENT

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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

May 24, 2012

Kevin W. Smith, Manager
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Michael Brandt, Associate Director
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Los Alamos National Security, LLC
Los Alamos Research Park
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RE: DISAPPROVAL
TA-63 TRANSURANIC WASTE FACILITY
PERMIT MODIFICATION REQUEST
REVISION 1.0
LOS ALAMOS NATIONAL LABORATORY
EPA ID# NM 0890010515
LANL-11-045

Dear Messrs. Smith and Brandt:

The New Mexico Environment Department (Department) has received the *Permit Modification Request for Technical Area 63, Transuranic Waste Facility, Hazardous Waste Container Storage Unit, Revision 1.0* (PMR), dated April 16, 2012, from the United States Department of Energy and Los Alamos National Security, LLC collectively the Permittees. The Permittees seek to modify the Hazardous Waste Facility Permit (Permit) for Los Alamos National Laboratory (LANL) for the construction of a new Transuranic Waste Facility (TWF) at Technical Area 63 (TA-63) to store mixed transuranic and hazardous waste.

The Department has reviewed the Permittees' *Response to Notice of Deficiency* and the PMR, and hereby notifies the Permittees of its disapproval of the PMR. The Permittees must address the attached comments or deficiencies before the Department can further evaluate the PMR. The Permittees' response to this Disapproval must include five items: 1) a narrative responding to each of the comments; 2) a revised electronic version of the PMR with changes tracked; 3) a

revised PDF version of PMR without tracked changes; 4) a revised Word version of the PMR without tracked changes; and 5) a hard copy of the revised PMR. The Permittees must respond to this Disapproval no later than July 13, 2012.

If you have questions regarding this correspondence, please contact Tim Hall of my staff at 476-6049 or at timothy.hall@state.nm.us.

Sincerely,

John E. Kieling
Chief
Hazardous Waste Bureau

JEK/th

Attachment
1) Comments and Deficiencies

cc:
J. Davis, RPD, NMED
J. Kieling, HWB, NMED
T. Hall, HWB, NMED
L. King, EPA 6PD-N
T. Grieggs, ENV-RCRA, LANS, MS-K490
M. Haagenstad, ENV-RCRA, LANS, MS-K404
G. Bacigalupa, ENV-RCRA, LANS, MS-K404
G. Turner, DOE-LASO, MS-A316

File: Reading and LANL Permit 2012

LANL-11-045

ATTACHMENT

COMMENTS

PERMIT MODIFICATION REQUEST FOR TECHNICAL AREA 63, TRANSURANIC WASTE FACILITY, HAZARDOUS WASTE CONTAINER STORAGE UNIT, REVISION 1.0 (APRIL 16, 2012)

LOS ALAMOS NATIONAL LABORATORY

HAZARDOUS WASTE FACILITY PERMIT

Introduction:

The New Mexico Environment Department (Department) provides the following comments regarding the *Permit Modification Request for Technical Area 63, Transuranic Waste Facility, Hazardous Waste Container Storage Unit, Revision 1.0* (PMR) and the *Response to Notice of Deficiency (NOD),* dated April 16, 2012, from the Permittees. The Permittees seek to modify the Hazardous Waste Facility Permit (Permit) for Los Alamos National Laboratory (LANL) for the construction of a new Transuranic Waste Facility (TWF) at Technical Area 63 (TA-63) to store mixed transuranic and hazardous waste.

Specific Section Comments

1. The Permittees' Response to NOD Comment 2 did not completely address the comment. Revise Table 1-1 to address the requirements at 40 CFR 264.75, 264.175(c), 264176, 264.177(a), 264.177(b), 264.177(c), 264.17(b), 264.17(c), and 270.27. Also, the response to Comment 2 states that Section 2.2.6 of the PMR addresses 40 CFR 264.175(b)(5). Section 2.2.6, *Other Project Structures*, does not address the cited requirements; however, it is addressed in Section 2.2.5, *Retention Basin.*

2. Section 2.2 still states that Figure 2-5 depicts "the location of areas where storage will occur highlighted," but the figure in fact does not have the storage areas highlighted. Revise the section to remove that statement, and instead refer to Figure 55 in Attachment G, *Proposed Revisions to the LANL Hazardous Waste Facility Permit*, and/or Figure F-1 of Attachment F, *TA-63 Transuranic Waste Facility Closure Plan.*

3. Revise Section 2.2.2 to include the definition of "mat slab" as requested in NOD Comment 11.

4. In response to Comment 13, the Permittees revised Section 2.2.4 of the PMR to state: "In some uncommon situations, there is a potential that a waste container could be left in the characterization trailer for greater than [24 hours] and the option for storage should be retained to preserve operational flexibility." Permit Section 3.1(2), however, states that "for purposes of compliance with secondary containment requirements, the holding of a hazardous waste container within a permitted unit for a period not to exceed 24 hours, for transportation, treatment, characterization, or packaging, shall not be deemed storage."

   The Permittees argue that secondary containment is not required in characterization trailers because the containers will be inside the trailer; however, the characterization trailers do not meet the definition of secondary containment. Furthermore, "operational flexibility" is neither defined nor a valid reason for an exemption from the secondary containment requirements in 40 CFR 264.175 or the requirements in Permit Section 3.7.1. Revise the PMR and delete the proposed language in Attachment G, Section A.6.4, that conflicts with the requirements in Permit Sections 3.1(2) and 3.7.1. Also see

Comment 26 below.

5. PMR Section 2.2.7.2 states that Standard Large Boxes 2 (SLB2s) and Oversize Waste Boxes (OWBs) are planned to be used for storage of TRU waste at the TA-63 TWF. NMED is not aware of the Permittees' capabilities to characterize and certify such containers to meet the Waste Isolation Pilot Plant (WIPP) Waste Acceptance Criteria (WAC), nor is NMED aware of plans to include such capabilities in the future. Further, OWBs are not WIPP-compliant containers, and NMED is unaware of plans for WIPP to add OWBs to their list of WIPP-compliant containers. Section 2.2.7.1, *Loading and Unloading*, states that all waste containers will be WIPP-compliant. Section 2.2.7.1, and Attachment G, Sections 3.14.1 and A.6, state that waste containers will not be opened during characterization or while in storage at TA-63 TWF; therefore no re-packing of waste will be allowed at TA-63 TWF. Revise the PMR to resolve these discrepancies and describe the plans for ensuring that all containers stored and characterized at TWF will be WIPP-compliant.

6. Section 2.2.7.1 states that there are six types of containers that may be used for storage at the TA-63 TWF: 55-gallon drums; 85-gallon drums; Standard Waste Boxes (SWBs); SLB2s, Pipe Over-pack Containers (POCs) inside 55-gallon drums, and OWBs. Section 2.2.7.2, *Storage*, states that there are four types of containers planned for use at TA-63 TWF: 55-gallon drums; SWBs; SLB2s; and OWBs; although it also states that 55-gallon drums may be over-packed into 85-gallon drums. Table 2-1, however, indicates that there are eight types of containers that will be used for storage at TA-63 TWF, adding 100-gallon drums and Ten Drum Overpacks (TDOPs) to the lists above. Revise the PMR to resolve these discrepancies, and to limit the container types to only those that can be characterized by the Permittees at TWF (or elsewhere at LANL) and that can be certified for disposal at WIPP. Also revise Attachment G, Section A.6 to state that the TWF will only store containers that are WIPP-compliant.

7. The response to Comment 9 references the *Multi-Sector General Permit For Stormwater Discharges Associated with Industrial Activity* (MSGP) issued by the U.S. Environmental Protection Agency (EPA), and the response to Comment 31 states that information about the retention basin storm water monitoring system was not intended to be included in the Permit. In order for the Department to evaluate the Permittees' assertion that storm water sampling at the retention basin is exempt from the requirements at 40 CFR 264.31, the Permittees must provide the MSGP and include the rationale for the exemption.

8. In response to Comments 18 and 19, the Permittees revised Sections 2.2.7 and 2.3 to state that while reactive waste will not be accepted, the TWF "may need to temporarily store these types of waste (*e.g.*, aerosol cans) that have been detected in TRU waste drums during the RTR characterization process." Sections 2.2.7, 2.2.7.5, and 2.3 also discuss management of containers with small quantities of free liquid.

   One of the reasons for using radiography is to ensure that containers shipped to WIPP do not contain items prohibited by the WIPP WAC (*e.g.*, free liquids in excess of the WIPP

WAC limits and aerosol cans). When prohibited items are detected, they must be removed (*i.e.*, remediated) before the containers can be shipped to WIPP. Since containers cannot be opened at the TWF, they must be sent to another facility at LANL for remediation. The Permittees have not discussed how containers that do not meet the WIPP WAC will be dispositioned, nor have they defined "temporary" storage of such containers.

Section 2.2.7 states that "the potential exists that a small quantity of free liquid may be present in some containers (*e.g.*, TRU waste determined to contain liquids such as condensation or in smaller internal containers by RTR characterization after waste receipt at the TWF)." Considering that the WIPP WAC allows up to 1% liquid by volume in containers, coupled with the fact that the Permittees are proposing to store SWBs and SLB2s, the statement that *small quantities of free liquid* may be present is misleading. One percent of the volume of an SWB is approximately five gallons, while it is approximately 17 gallons for an SLB2.

Because the stated purpose of the TWF in Section 1.2 of the PMR is to provide "the necessary capacity for management of newly generated TRU waste," there should be adequate controls to significantly reduce the necessity of managing containers with prohibited items (*e.g.*, liquid and reactive wastes) at the TWF. Revise Sections 2.2.7 and 2.3 of the PMR and propose requirements in Attachment G that address the following:

- Controls to be implemented at the generator sites to prevent prohibited items from being packaged in containers sent to TWF.

- Specific actions that will be taken at the TWF when prohibited items are detected in TRU waste containers during characterization (*i.e.*, how the containers will be temporarily stored; how they will be labeled; and how they will be dispositioned).

- The maximum time period that containers with prohibited items will be temporarily stored at the TWF (*i.e.*, define "temporary storage").

9. Since the stated purpose of the TWF is to provide "the necessary capacity for management of newly generated TRU waste," revise Section 2.2.7 and propose language in Attachment G to restrict storage at the TWF to only newly generated waste that has never been part of the LANL Site Treatment Plan (STP) inventory, and add a provision that all newly generated TRU waste will be shipped to WIPP within one year of the date it is generated.

10. In response to Comment 38, the Permittees revised Section 2.8 to reference Permit Section 2.8.2. The response to the comment states: "Compliance with the provisions of the Permit Section [2.8.2] is discussed in Section 2.8 with one exception. This is the permit condition that Permittees will ensure that incompatible wastes or materials are not stored so that a release or spill of these wastes might commingle in fire suppression water holding area or tank."

The Permittees have not adequately provided the basis for this exception from the requirement in Permit Section 2.8.2, which states: "The Permittees shall ensure that incompatible wastes or materials are not stored so that a release or spill of these wastes might commingle in a fire suppression water holding area or tank." This requirement is intended to ensure compliance with 40 CFR 264.177, which requires the Permittees to prevent mixing of incompatible wastes in the event of a spill or leak. Revise the PMR to remove the discussion of this exception, and to state how the Permittees will comply with the requirements in Permit Section 2.8.2. If necessary, revise the proposed language in Attachment G to ensure compliance with Permit Section 2.8.2.

11. Figure 2-5 indicates an "Area designated as future expansion," but there is no explanation of what this future expansion will be. Revise the PMR to discuss what type of future expansion (*e.g.*, additional characterization trailers) the Permittees propose in Figure 2-5.

12. Section 2.4 states that entry stations are shown in Figure 2-34; however, Figure 2-34 does not identify any entry stations. Revise the figure to include the locations of the entry stations.

13. Several of the references cited in Section 4.0, *Corrective Action*, are not listed in Section 6.0, *References*. Also, the response to Comment 46 states that the *Middle Mortandad/Ten Site Aggregate Investigation Report, Revision 2*, is cited in section 4.2. This report is not cited, nor is it listed in Section 6.0. Revise the PMR accordingly, and provide copies of any references not previously submitted to the Department with the PMR.

14. Section 2.1.1, *Free Liquids*, of the 2010 LANL Waste Acceptance Criteria for Contact-Handled TRU Waste (provided as a reference in Section 6.0) is inconsistent with the current WIPP WAC. Since the LANL WAC is used to control prohibited items during packaging of containers to be managed at the TWF for shipment to WIPP. Revise the LANL WAC to be consistent with the WIPP WAC.

Attachment F (Closure Plan) Comments

15. Section 1.0 of Attachment F states: "[t]he TWF unit will be closed by removal of the major structures and equipment." The statement that *major* structures and equipment will be removed appears to be inconsistent with Section 5.3, *Removal and Decontamination of Structures and Related Equipment*, which seems to state that all structures and equipment will be either 1) removed and disposed of as solid (potentially hazardous) waste, or 2) decontaminated and removed from TWF for re-use by LANL. Revise the statement in Section 1.0 to state that *all* structures and equipment will be removed from TWF at closure.

16. Section 2.0 references Figure 2-5 of the PMR for the TWF Site Plan. Since Figure 2-5 is not proposed to be included in the Permit, remove the reference from the Closure Plan.

17. Section 2.0 references "Characterization Pads." Revise this reference to "Characterization Trailers."

18. Response to Comment 59 includes a revised Table 2 that includes a third column not included in Table 2 of Attachment F. The column includes the basis for the closure activity and schedule, which is useful information, and should be included in Table 2 of Attachment F. Revise Table 2 of Attachment F to include the *Basis* column.

19. Response to Comment 60 (*see* fifth bullet) includes a reference to "the closure modification procedures of Permit Section" but fails to include the actual Permit Section that contains the modification procedures. The Department assumes the appropriate reference to be Section 9.4.8. Revise the PMR, and Attachment F if necessary, to identify the referenced Permit Section.

20. Response to Comment 65 states that Section 5.2.2 was revised to state "that LANL will submit a permit modification for the sampling and analysis plan in accordance with Permit Section 9.4.6, *Records Review and Structural Assessment*, upon determination that additional sampling locations are needed." Section 5.2.2 does not state that the Permittees will submit a permit modification. Revise Section 5.2.2 to state: "If additional sampling locations are necessary, the Permittees will request a permit modification to modify the sampling and analysis plan in accordance with Permit Section 9.4.6."

21. Section 6.1, Bullet c, states that one sample will be collected "to the south of the permitted unit at the storm water discharge drainage location." Figure F-1 indicates that the proposed sampling location is within the permitted unit. Revise Bullet c to state that one sample will be collected "at the south end of the permitted unit at the storm water discharge drainage location."

22. Response to Comment 90 states that "Section 7.4.1 (now 6.4.2.1) has been revised to reference Section 6.4." Section 6.4.2.1 does not reference Section 6.4. Revise the response and/or Attachment F to resolve the discrepancy.

23. Section 10.0, *References*, was revised to include a reference to NMED's 2009 *Technical Background Document for Development of soil Screening Levels*. This document was replaced and superseded by *Risk Assessment Guidance for Site Investigations and Remediation* in February 2012. Revise Section 10.0 to reference this document (*see* NMED/HWB web site, *Guidance Documents*).

Attachment G (Proposed Revisions) Comments

24. Proposed Section 2.5 states that entry stations are shown in Figure 55; however, Figure 55 does not identify the entry stations. Revise the figure to include the locations of the entry stations.

25. As part of the Permittees' response to Comment 103, Section 3.14.1(1) of Attachment G has been revised to state: "The Permittees shall ensure that at the TWF, all containers storing hazardous waste with free liquids are stored on secondary containment pallets as required by Permit Section 3.1(2), except inside the following structures: Trailers 155, 156, and 157." Section 3.1(2) does not require secondary containment pallets; rather, it is the basis for the Permittees' request to exempt the storage of waste in characterization trailers for less than 24 hours from the secondary containment requirements in 3.7.1, *Containers with Free Liquids*. Section 3.1(2) states, "for purposes of compliance with secondary containment requirements, the holding of a hazardous waste container within a permitted unit for a period not to exceed 24 hours, for transportation, treatment, characterization, or packaging, shall not be deemed storage." Revise the proposed language in Section 3.14.1(1) to state that the characterization trailers at TA-63 are exempt from secondary containment requirements in 3.7.1 *as specified* in Section 3.1(2). Also see Comment 4 above.

26. Proposed Section A.6.1 references Figure 2-5; however, Figure 2-5 is not proposed to be included in the Permit. Revise the section to reference Figure 55.

27. Proposed Section A.6.4 includes erroneous information in several places, regarding Real-Time Radiography (RTR) non-destructive evaluation (NDE) characterization equipment, implying that NDE is the same as non-destructive assay (NDA). For example, it refers to RTR as "assay equipment," the High-Efficiency Neutron Counter (HENC), and the Super-HENC. This erroneous description of RTR equipment is also included in Section 2.2.4, *Characterization Trailers*, of the PMR. Revise the discussion of RTR in Section 2.2.4 of the PMR and in proposed Section A.6.4 to differentiate between RTR (NDE) and NDA characterization equipment. Also propose language in the third paragraph of Section A.6 that clarifies the general discussion of characterization activities at TWF.

28. Proposed Section A.6.9 states that "Water will be supplied via the 150,000 gallon tank north of the operations support building..." However, PMR Section 2.5.1 states this tank is 125,000 gallons. Revise the PMR and/or Attachment G to state the correct tank volume.

29. Attachment G skips Section A.6.7 in the section number sequence. Revise the section number sequence in Attachment G, Sections A.6.8 through A.6.10.

30. Propose the installation of a monitoring network capable of detecting contaminant migration toward the TWF from the MDA-C vapor plume in order to prevent completion

of exposure pathways to the TWF structures or other potential receptor locations (see *Comments on Attachment C of the Response to Notice of Deficiency* below).

Comments on Attachment C of the Response to Notice of Deficiency

The Vapor Plume at MDA C in Relation to Pajarito Corridor Facilities, LA-UR-12-02320

1. Section 2.1 Comparison to Threshold Limit Values, page 3, last paragraph

Permittees' Statements: "A total of 28 VOCs have been detected in the vapor plume beneath MDA C in the two years of quarterly monitoring data collected at the site. The maximum vapor-phase concentrations of these constituents were compared to their respective TLVs. Of these, only trichloroethylene (TCE) exceeds its TLV. The TLV for airborne TCE is 10 parts per million (ppm), a standard that is lower than the OSHA standard of 50 ppm. Based on two years of quarterly vapor monitoring, TCE concentrations at MDA C exceed the TLV at depths of 200 to 300 ft below ground surface (bgs), with a maximum of 118% of the TLV. However, TCE concentrations have been determined to be significantly lower than the TLV at the ground surface and at 20 feet below the surface (Figure 3). The TCE concentrations do not exceed the OSHA standard."

NMED Comment: The paragraph cited above omitted the data listed below:

- Between 2006 and 2011, at depths of less than 200-ft bgs, TCE was detected above 10-ppm (53,700-ug/m^3) nine times.
- On April 23, 2011, at vapor monitoring well 50-603471, TCE was detected at 146-ft bgs at 63,000-ug/m^3 (11.7-ppm).
- On April 25, 2011, at vapor monitoring well 50-24813, TCE was detected at both 25-ft bgs and 99-ft bgs at 93,000-ug/m^3 (17.3-ppm) or 173% of the TLV. This well is one of the vapor monitoring wells closest to the proposed future TRU waste facility.

These data indicate that the maximum vapor-phase concentrations of TCE at MDA C are 173% of the TLV and occur between 25 and 100-ft bgs.

The Permittees incorrectly state that the maximum vapor-phase concentrations present at MDA C that are greater than 100% of the TLV concentrations are located between 200 and 300-ft bgs. It appears that the Permittees' conclusions are based on modeling of data that did not include the maximum TCE concentrations observed in the latest round of vapor sampling at MDA C. The plume modeling presented in the MDA CPhase III Investigation Report was based on average concentrations, not maximums, which must be accounted for in evaluating vapor migration and potential exposure scenarios. Revise Attachment C to address the appropriate depths and contaminant concentrations or remove all references to the attachment from the PMR.

2. Section 4.0, Distribution of the TCE Vapor Plume at MDA C and LANL Worker Safety, page 8

Permittees' Statements: "Figure 3 indicates that the RLUOB and the proposed CMRR-NF facilities are clearly outside of the modeled plume, while the proposed RLWTF and TWF Projects are in areas with low TCE concentrations in comparison to the TLV measurements. Specifically, the proposed RLWTF and TWF Project facilities are in locations in which the measured surface concentrations of TCE are less than 5 percent of the TLV. Utility trenches associated with these three projects are likewise in locations with surface measurements around 5 percent of the TLV." (Paragraph 1*) (*for relation to NMED comments)

"These relationships can also be visualized in "at depth" plan views. Figure 4 represents the TCE vapor plume that would be encountered at a depth of 5 feet bgs. This is useful for understanding how the vapor plume might impact the future construction of the RLWTF building and a series of utility trenches that cross the plume but will not exceed a depth of 5 feet." (Paragraph 2)

"The maximum TCE vapor concentration at the 5-foot depth would be about 30 percent of the TLV in the southeastern corner of MDA C. In the case of the construction of the RLTWF building, it is expected that the TCE vapor concentration would not exceed 2 percent of the TLV at the construction site. The bottoms of the utility line trenches would encounter a TCE vapor concentration estimated at a maximum of around 10 percent of the TLV, and typically much less. Figure 4 also illustrates that TCE vapor plume concentrations in the vicinity of the temporary CMRR Project facilities south of Pajarito Road are anticipated to be minimal. The parking areas would be subject to a TCE vapor concentration less than 5% of the TLV, while the temporary office buildings would be less than 1%. The fact that the parking areas are paved greatly reduces the likelihood of detectable surface concentrations of TCE in the vicinity of the temporary facilities." (Paragraph 3)

"Figure 5 similarly depicts the modeled TCE vapor plume at a depth of 24 feet below the present ground surface. The modeled plume at this depth indicates that the highest concentration of TCE would be around 50% of the TLV in the southeastern corner of MDA C." (Paragraph 4)

"Construction of the TWF includes the leveling of the site to design grade, which will require the removal of fill to a depth of approximately 20 feet below the present surface in the northwestern upslope portion of the project area. The anticipated TCE vapor concentration at the bottom of the construction excavation would be less than 5% of the TLV. The construction of the foundation for the RLWTF water tower would encounter a TCE vapor concentration estimated at around 2% of the TLV." (Paragraph 5)

NMED Comment: Several issues require resolution within this section of the report. The comments are broken out for relation to specific paragraphs quoted above.

1. Paragraph 1: The modeled plume does not correlate to the available data and therefore is not appropriate for use with regard to health and safety. This paragraph refers to "measured surface concentrations of TCE" and "surface measurements." The Department's administrative record does not contain records of measurements of TCE collected at the ground surface at MDA C. Either provide the referenced data in Attachment C with the appropriate descriptions of data collection and analysis methods or remove these statements from the evaluation.
2. Paragraph 2: The modeled plume for TCE vapor-phase contamination at MDA C does not include the most recent sampling results from the MDA C vapor monitoring wells. Figure 4 presents a modeled plume that does not correlate with actual field measurements.
3. Paragraph 3: The latest sampling event at MDA C reports concentrations of TCE between 25 and 99-ft bgs to be 173% of the TLV. As the Permittees have stated previously, "[t]he steepest concentration gradients are upward toward the surface, which leads to preferential VOC transport toward the mesa top and yields releases to the atmosphere." Based on this observation, it is unlikely that the modeled concentration of TCE would decrease from 93,000-$\mu g/m^3$ at 25-ft bgs to 16,110-µg/m3 at 5-ft bgs, a distance of only 20-ft.
4. Paragraph 4: "The modeled plume at this depth (24 feet) indicates that the highest concentration of TCE would be around 50% of the TLV in the southeastern corner of MDA C." Data from the most recent sampling event at MDA C lists TCE levels at this location at a depth of 25 feet as 173% of TLV. Use of an average TCE concentration for the model, instead of measured concentrations, yields an average concentration at 25-ft bgs greater than 50% of the TLV.
5. Paragraph 5: The estimates of anticipated TCE vapor concentrations do not correspond to the available data; therefore, the model as presented does not provide support for the Permittees' conclusions.

Revise Attachment C to address all of the available data rather than assumed model TCE concentrations or remove all references to the attachment from the PMR.

3. Section 5.0, Conclusions Regarding the Health Risks of the TCE Vapor Plume at MDA C, page 11

Permittees' Statements: "Investigations at MDA C have defined a vapor plume beneath the site. The maximum trichloroethylene (TCE) concentrations in the plume exceed the American Conference of Governmental Industrial Hygienists Threshold Limit Value (TLV) for adversely affecting human health at a subsurface depth of between 200 and 300 feet. On the surface, the maximum is slightly more than 30% of the TLV in the southeastern corner of MDA C. These percentage values drop off below 10% of the TLV in all areas represented by present and planned Pajarito Corridor infrastructure projects.

This document provides information that indicates that the vapor plume does not pose a threat to the health of LANL workers nor will it pose a threat to workers during construction of proposed facilities along Pajarito Road."

NMED Comment: The Permittees' conclusion is not supported by the data included in the Department's administrative record (See Comment 2 above). In addition, TCE concentrations detected "on the surface," implies that TCE is detectable above ground. Ambient air movement would significantly dilute detected TCE concentrations indicating that subsurface vapor migration is a concern at the TWF that requires a monitoring network.

Attachment B

Proposed Revisions to the LANL TA-63 TWF Permit Modification Request, Rev. 1

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Permit Modification Request
Technical Area 63 Transuranic Waste Facility
Hazardous Waste Container Storage Unit

Revision 2.0

LA-UR-~~12-20477~~12-22795

Prepared by:

Los Alamos National Laboratory

Water Quality & Resource Conservation and Recovery Act Group

Los Alamos, New Mexico 87545

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List of Abbreviations and Acronyms

40 CFR	Title 40, U.S. Code of Federal Regulations
ACI	American Concrete Institute
AK	Acceptable Knowledge
ALARA	As Low As Reasonably Achievable
amsl	Above mean sea level
AOC	Area of Concern
ASCE	Association of Civil Engineers
ASTM	American Society for Testing and Materials, International
BV	Background Value
CCP	Central Characterization Project
CMR	Chemical and Metallurgy Research
CSMM	Container Storage and Matrix Management
D/DE	Drum/Drum Equivalent
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EDS	Employee Development System
EPA	U.S. Environmental Protection Agency
FGA	Flammable Gas Analysis
HC	Hazard Category
HENC	High Efficiency Neutron Counter
HEPA	High Efficiency Particulate Air
HSG	Head Space Gas
HWB	Hazardous Waste Bureau
INEEL	Idaho National Energy and Environment Laboratory
LACCDC	Los Alamos County Consolidated Dispatch Center
LAFD	Los Alamos Fire Department
LANL	Los Alamos National Laboratory
LANS	Los Alamos National Security, LLC
MSDS	Material Safety Data Sheet
LEED	Leadership in Energy and Environment Design

NDA	Non-Destructive Assay
NDE	Non-Destructive Evaluation
NFPA	National Fire Protection Association
NRHP	National Register of Historic Places
NIOSH	National Institute of Occupational Safety and Health
NMED	New Mexico Environment Department
NMHWA	New Mexico Hazardous Waste Act
NNSA	National Nuclear Security Administration
NRC	Nuclear Regulatory Commission
OSHA	Occupational Safety and Health Administration
OJT	On the Job Training
OWB	Over-sized Waste Box
PA	Public Address
PMR	Permit Modification Request
POC	Pipe Over-pack Container
PPE	Personal protective equipment
ppmw	parts per million by weight
POV	Privately Owned Vehicle
RANT	Radioassay Non-destructive Testing (Facility)
RCRA	Resource Conservation and Recovery Act
RTR	Real Time Radiography
SLB2	Standard Large Box 2
SuperHENC	Super High Efficiency Neutron Counter
SWB	Standard Waste Box
SWEIS	Site-Wide Environmental Impact Statement
SWMU	Solid Waste Management Unit
SWSC	Sanitary Wastewater Systems Consolidation
TA	Technical Area
T&E	Threatened and Endangered
TRU	Transuranic
TWF	Transuranic Waste Facility
USFWS	U.S. Fish and Wildlife Service

VOC	Volatile Organic Compounds
WAC	Waste Acceptance Criteria
WCRRF	Waste Compaction, Reduction, and Repackaging Facility (TA-54)
WIPP	Waste Isolation Pilot Plant
WRCC	Western Regional Climate Center

1.0 INTRODUCTION

This Class 3 permit modification requests the addition of a hazardous waste management unit, the Transuranic Waste Facility (TWF), to the *Los Alamos National Laboratory Hazardous Waste Facility Permit* (November 2010), (hereinafter referred to as "the Permit"). The Permit was issued by the New Mexico Environment Department (NMED) in November, 1989 and renewed in 2010 (NMED 2010). The Los Alamos National Laboratory (LANL) Environmental Protection Agency (EPA) Identification Number is NM0890010515. The facility is owned by the National Nuclear Security Administration (NNSA) of the Department of Energy (DOE), and is operated jointly by NNSA-DOE and by Los Alamos National Security, LLC (LANS). This permit modification request has been prepared to address requirements in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), as revised October 2009, that are specific for the proposed new hazardous waste storage operations at the TWF.

The 20.4.1 NMAC adopts, with a few limited exceptions, all of the Code of Federal Regulations, Title 40, (40 CFR) Parts 260 to 266, Part 268, Part 270, and Part 273. The citations in this document reference the appropriate federal regulations because they set forth the detailed requirements for hazardous waste management units and procedures. Table 1-1 provides a list of these regulatory references and the corresponding location for the information addressed in this permit modification request.

The renewed Permit contains many of the conditions addressing the requirements of the New Mexico Hazardous Waste Act (NMHWA) and implementing regulations, specifically 40 CFR, that are common to all LANL hazardous waste management units. The relevant sections of the Permit are referenced throughout this document. Together, information provided in this document and in the Permit will meet the applicable requirements specified in 40 CFR Parts 264 and 270 for the proposed unit.

1.1 REQUEST FOR PERMIT MODIFICATION

This Class 3 permit modification request has been prepared and submitted to the NMED – Hazardous Waste Bureau (NMED-HWB) to request the addition of the proposed hazardous waste storage unit at Technical Area 63 to the Permit.

1.2 PURPOSE OF THE TRANSURANIC WASTE FACILITY

The TWF is a mission-critical component of LANL's strategic role regarding support of the DOE's Stockpile Stewardship Program which is administered by the NNSA and nuclear defense and research programs. LANL must have a continuing capability to process transuranic (TRU) waste and to ship that waste to the Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico. TRU waste generally contains radioactive elements heavier than uranium, i.e., those with atomic numbers greater than 92. Mixed TRU (MTRU waste) is waste that also contains a hazardous component as defined by the Resource Conservation and Recovery Act (RCRA). This is the type of waste currently stored at TA-54, Area G, in accordance with the Permit.

The signed Compliance Order on Consent (Consent Order) with the State of New Mexico of March 2005 requires that Area G be closed and remediated by December 2015. The closure of Area G will create a gap in TRU waste management capability for waste generated by LANL in

the future. LANL must develop new capabilities for storage, characterization, and intra-site shipping of TRU waste and the TRU waste storage and characterization capabilities located at Area G need to be re-established at a different site on a schedule that supports the closure. The TWF will replace the TRU waste storage and characterization capabilities currently located at Area G. The TWF provides the necessary capacity for management of newly generated TRU waste to allow the closure of Area G in a timely and integrated manner. The TWF is part of a comprehensive, long-term strategy to consolidate hazardous and radioactive waste operations into a smaller, more compact area that can operate safely, securely, and effectively for the foreseeable future.

1.3 FACILITY DESCRIPTION

The TWF will be located at TA-63 at LANL. It will be designed, permitted, constructed, and commissioned as a hazardous waste storage unit to meet the conditions of the Permit for safe storage. The TWF is designated as a DOE Hazard Category (HC)-2 nuclear facility for radioactive material management. The TWF will also be designed, constructed, and operated within the conditions described by the LANL Site-Wide Environmental Impact Statement (SWEIS) for compliance with the National Environmental Policy Act.

The TWF is intended to replace the TRU waste storage currently taking place at TA-54 Area G. It is designed to store a maximum of 105,875 gallons (1,925 55-gallon drum or drum equivalents, D/DE). In addition to drums, the unit will also store other standardized metal containers used for TRU waste management. This storage capacity is less than 2.5% of the 4,346,590 gallon (79,029 D/DE) current storage capacity at Area G as listed in Table J-1, *Active Portion of the Facility* in Attachment J, *Hazardous Waste Management Units,* of the Permit.

The TWF will include various structures for waste management activities. A concrete pad will form a base for storage and characterization buildings, characterization trailers, and a receiving area, as well as providing storm water management and spill retention. The boundaries of the pad will designate the RCRA-permitted portion of the TWF. There will be six waste storage buildings on the pad, five of which will be used only for storage of waste containers. The additional building will be used for storage and for head space gas sampling and analysis of containers. The TWF will also include characterization trailers that are needed to certify containers to the WIPP Waste Acceptance Criteria (WAC). The TWF characterization trailers will include or be functional equivalents of those currently in operation at Area G, Pad 10, as described in the Permit. A fire suppression water storage tank will be situated for emergency fire suppression activities at the storage buildings. A retention basin will be designed to capture and distribute storm and, potentially, fire suppression water from the pad. Other functions provided by the TWF include operational support facilities, and utility services.

1.4 PERMIT MODIFICATION OUTLINE

This permit modification request is organized as follows:

- Section 1.0: Includes an introduction to the permit modification request and a crosswalk of the regulatory requirements associated with the unit requesting permitting.
- Section 2.0: Includes a description of the TWF and addresses environmental performance standards, waste characterization, security, preparedness, hazards prevention, emergency equipment, inspection requirements, and recordkeeping

requirements.

- Section 3.0: Discusses general facility requirements such as traffic patterns, location information, evaluates other federal laws and other permit activities, and training specific to the TWF.
- Section 4.0: Describes two Solid Waste Management Units (SWMUs) assessed for contamination and remediation that are located near the TWF.
- Section 5.0: Includes the closure requirements and proposed closure plan for the TWF.
- Section 6.0: Contains a list of references used throughout this document.
- Section 7.0: Contains the certification statement and signatures for this permit modification request as required by ~~40 CFR §~~ 40 CFR §270.11.

In addition, attachments included with this permit modification request provide detailed information to meet regulatory requirements. These attachments are referenced and described within the individual sections as appropriate.

Attachment G contains proposed changes to the Permit to incorporate the descriptions and site specific equipment and procedures for this unit. Additional and revised text is proposed for Permit Parts and Attachments. The Permit sections proposed for revision include:

- Part 1, General Permit Conditions
- Part 2, General Facility Conditions
- Part 3, Storage in Containers
- Permit Attachment A, Technical Area (TA) – Unit Descriptions
- Permit Attachment B, *Part A Application*
- Permit Attachment D, General Contingency Plan
- Permit Attachment G, *Closure Plans*
- Permit Attachment J, Hazardous Waste Management Units
- Permit Attachment N, *Figures.*

The proposed changes to the Permit incorporate permit conditions appropriate for the new unit as suggested by the Permittees to meet RCRA requirements for operation of the hazardous waste management unit in a manner that protects human health and the environment. Proposed changes may be subject to further revisions subject to the NMED review.

Attachment H of this permit modification request includes presentation materials for a pre-submittal, public information meeting (as required by ~~40 CFR §~~ 40 CFR §124.32). The attachment also includes a list of attendees, and copies of written comments collected at the meeting. The meeting occurred on August 10, 2011, at Fuller Lodge in Los Alamos, New Mexico.

Design drawings are included in this permit modification request to illustrate the construction and project details proposed for the unit structures. 40 CFR §270.14(a) requires that design

drawings submitted with waste management unit applications for approval be certified by a qualified Professional Engineer. The drawings in this permit modification request have been certified by Professional Engineers registered in the state of New Mexico. These engineers were responsible for preparation of the drawings in support of the design process for the unit. Similarly, figures such as floor plans have been certified by an architect registered to practice in New Mexico.

The design drawings included with this submittal also contain the phrase "Not for Construction, Part B Permit Application," in addition to the certification. The addition of this phrase indicates the drawing revision at the time of submittal. The drawings included are complete in terms of the major components and structures for the project. However, there may be future design changes that do not affect the major elements of the project such as the addition of equipment or for changes made in response to NMED direction as a result of the permit modification review and approval process. Design drawings subject to such a potential change included in this submittal are noted with sheet number and date to provide a reference.

Design details presented herein are considered sufficient for the purposes of this permit modification request. The drawings included in this document present detailed information intended to facilitate review of the permit modification request and approval by NMED. These drawings will not be included in the final unit figures used for the Permit based on its current format. Should drawings be changed substantially subsequent to submittal of this permit modification request, supplemental information will be submitted to the NMED.

Table 1-1

Regulatory References and Corresponding Permit Modification Request Location

Regulatory Citation(s) 40 CFR	Description of Requirement	Location in this Permit Modification Request
§270.14(b)(1)	General facility description	Section 2.1,2.2
§270.14(b)(2)	Chemical and physical analyses of hazardous waste	Section 2.3.1
§270.14(b)(3)	Waste analysis plan	Section 2.3
§264.13(b)	Development and implementation of a written waste analysis plan	Section 2.3
§264.13(c)	Off-site waste analysis requirements	Section 2.3
§270.14(b)(4)	Security procedures and equipment	Section 2.4
§264.14	Security procedures and equipment	Section 2.4
§270.14(b)(5)	General inspection schedule	Section 2.9
§264.15(b)	General inspection schedule	Section 2.9
§264.174	Inspections/containers	Section 2.9
§264.195	Overfill control inspections	NA
§264.226	Surface impoundment monitoring and inspection	NA
§264.254	Waste pile monitoring and inspection	NA
§264.273	Land treatment and operating requirements	NA
§264.303	Landfill monitoring and inspection	NA
§264.1033	Process vent standards	NA
§264.1052	Equipment leak air emission standards	NA
§264.1053	Compressor standards	NA

§264.1058	Standards for pumps, valves, pressure relief devices, flanges, and connections	NA
§270.14(b)(6)	Request for waiver from preparedness and prevention requirements of 264 Subpart C	NA
§264.30-37	Preparedness and prevention: applicability, design and operation, required equipment, testing and maintenance of equipment, access to communications or alarm systems, required aisle space, and arrangements with local authorities	Section 2.6 and 2.7
§264.227	Surface impoundment emergency repairs	NA
§270.14(b)(7)	Contingency Plan	Section 2.7
§264.50-56	Contingency plan and emergency procedures: applicability, purpose/implementation of contingency plan, content of contingency plan, copies of contingency plan, amendment to contingency, emergency coordinator, and emergency procedures	Section 2.7
§270.14(b)(8)	Description of preparedness and prevention	Section 2.6, 2.7
§270.14(b)(8)(i)	Hazard prevention in unloading operations	Section 2.5.3
§270.14(b)(8)(ii)	Runoff prevention	Section 2.5.4
§270.14(b)(8)(iii)	Prevent contamination of water supplies	Section 2.5.5
§270.14(b)(8)(iv)	Mitigation of equipment failure and power outages	Section 2.5.6
§270.14(b)(8)(v)	Prevention of undue exposure of personnel to hazardous waste	Section 2.5.7
§270.14(b)(8)(vi)	Prevention of releases to the atmosphere	Section 2.5.8, 2.5.9
270.14(b)(9)	Prevention of accidental ignition or reaction of ignitable, reactive, or incompatible wastes	Section 2.8

§264.17	Procedures to prevent accidental ignition, reaction of ignitables, reaction of reactives, reaction of incompatibles, and documentation of compliance with 40 CFR §264.17 (general requirements for ignitable, reactive, or incompatible wastes)	Section 2.8
§270.14(b)(10)	Traffic pattern: volume, controls, and access	Section 3.1
§264.18(a)	Seismic considerations	Section 3.2.1
§270.14(b)(11)	Facility/unit identification and location information	Section 3.2
§270.14(b)(11)(i)	Seismic standard applicability [40 CFR §264.18(a)]	Section 3.2.1
§270.14(b)(11)(ii)	Seismic standard requirements	Section 3.2.1
§270.14(b)(11)(ii)(A)	No fault within 3,000 feet (ft) with displacement in Holocene time	Section 3.2.1
§270.14(b)(11)(ii)(B)	If faults which have displacement in Holocene time are present within 3,000 ft, no faults pass within 200 ft of portions of the facility where treatment, storage, or disposal will be conducted	Section 3.2.1, Attachment D
§270.14(b)(11)(iii)	100-year floodplain standard	Section 3.2.2, Fig. 3-4
§270.14(b)(11)(iv)(A-C)	Facilities located within the 100-year floodplain	NA
§270.14(b)(11)(v)	Compliance schedule for 40 CFR §264.18(b)	NA
§270.14(b)(12)	Personnel training program	Section 3.7
§270.14(b)(13)	Closure and post-closure plans	Section 5.0, Attachment F
§264, Subpart G	Closure and post-closure	Section 5.0, Attachment F
§264.178	Closure/containers	Section 5.0, Attachment F
§264.197	Closure and post-closure care/tanks	NA

§264.228	Surface impoundments	NA
§264.258	Waste piles	NA
§264.280	Land treatment	NA
§264.310	Landfills	NA
§264.351	Incinerators	NA
§264.603	Requirements by the Secretary	NA
§270.14(b)(14)	Deed restrictions/post-closure notices (40 CFR §264.119)	NA
§270.14(b)(15)	Closure cost estimate (40 CFR §264.142)	NA, Section 5.1
§270.14(b)(16)	Post-closure cost estimate (40 CFR §264.144)	NA, Section 5.1
§270.14(b)(17)	Liability insurance (40 CFR §264.147)	NA, Section 5.1
§270.14(b)(18)	Proof of financial coverage (40 CFR §264.149-150)	NA, Section 5.1
§270.14(b)(19)	Topographic map requirements	Section 3.3
§270.14(b)(19)(i)	Map scale and date	Section 3.3
§270.14(b)(19)(ii)	100-year floodplain area	Section 3.2.2, Fig. 3-4
§270.14(b)(19)(iii)	Surface waters	Section 3.3, Fig. 3-4
§270.14(b)(19)(iv)	Surrounding land uses	Section 3.3, Fig. 2-2
§270.14(b)(19)(v)	Wind rose	Section 3.3, Fig. 3-5
§270.14(b)(19)(vi)	Map orientation	Section 3.3
§270.14(b)(19)(vii)	Legal boundaries	Section 3.3, Fig. 2-3
§270.14(b)(19)(viii)	Access control	Section 3.3, Fig. 3-3
§270.14(b)(19)(ix)	Wells	Section 3.3, Fig. 3-10
§270.14(b)(19)(x)	Buildings	Section 3.3, Fig. 2-4
§270.14(b)(19)(xi)	Drainage barriers or flood control	Section 3.3, Figs. 2-5, 2-31, 2-32 and 2-33

§270.14(b)(19)(xii)	Location of operational units	Section 2.2, Fig. 2-5
§270.14(b)(20)	Considerations Under Federal Law	Section 3.5
§270.3(a)	Wild and Scenic Rivers Act	Section 3.5
§270.3(b)	National Historic Preservation Act	Section 3.5
§270.3(c)	Endangered Species Act	Section 3.5
§270.3(d)	Coastal Zone Management	Section 3.5
§270.3(e)	Fish and Wildlife Coordination Act	Section 3.5
§270.3(f)	Executive Orders	Section 3.5
§270.14(b)(21)	Notice of extension approval for land disposal facilities	NA
§270.14(b)(22)	A summary of the pre-application meeting	Attachment H
§270.14(c)	Groundwater monitoring requirements	NA, Section 3.4
§270.14(c)(3)	Topographic map with points of compliance	NA
§270.14(c)(3)	Proposed location of groundwater monitoring wells	NA
§270.14(c)(4)	Description of plume of contamination that has entered the groundwater from a regulated unit at the time the application was submitted	NA
§270.14(c)(4)(i)	Extent of plume indicated on topographic map	NA
§270.14(c)(4)(ii)	Identification of constituents and concentration	NA
§270.14(c)(5)	Detailed plan and engineering report describing proposed groundwater monitoring program	NA
§270.14(c)(6)	If no release detected at date of submitted, then submit following	NA
§270.14(c)(6)(i)	List of proposed indicator parameters, waste constituents, and reaction products	NA
§270.14(c)(16)(ii)	Proposed groundwater monitoring system	NA

§270.14(c)(16)(iii)	Background values for each proposed monitoring parameter	NA
§270.14(c)(16)(iv)	Description of proposed sampling, analysis, and statistic comparisons to be used	NA
§270.14(c)(7)	If a release is detected at the point of compliance, then corrective actions	NA
§270.14(d)	Information requirements for SWMUs	Section 4
§270.14(d)(1)(i)	Location of SWMUs on topographic map	Section 4
§270.14(d)(1)(ii)	Types of SWMUs	Section 4
§270.14(d)(1)(iii)	Dimensions and descriptions of SWMUs	Section 4
§270.14(d)(1)(iv)	Dates of SWMU operations	Section 4
§270.14(d)(1)(v)	Waste types managed at SWMUs	Section 4
§270.14(d)(2)	Information on releases from SWMUs	Section 4
§270.14(d)(3)	RCRA Facility Assessment sampling and analysis results	NA
§270.15	Information requirements for containers	Section 2.2
§264.175	Containment	Sections 2.2.2, 2.5.4
§264.175(c)	Solid waste storage drainage conditions	Section 2.5.4
§264.176	15-meter storage buffer for ignitable or reactive wastes	Section 2.8
§264.177(a)	Incompatible wastes in containers	Section 2.8
§264.177(b)	Incompatible wastes in containers	Section 2.8
§264.177 (c)	Incompatible wastes separation or segregation	Section 2.8
§264.17 (b)	Prevention of reactions	Section 2.8
§264.17(c)	Documentation of precautions for ignitable, reactive or incompatible waste	Section 2.8
§270.27	Air emission controls for containers	Section 2.5.8
§264.175 (b)(5)	Spilled or leaked waste	Section 2.2.5

2.0 TA-63 TWF UNIT ACTIVITIES

In accordance with ~~40 CFR §~~ 40 CFR §270.14(b), this section of the permit modification request provides a general description of LANL and a specific description of the TA-63 TWF hazardous waste management unit proposed for approval. The description of the unit includes the waste accepted at the unit, the waste storage activities, how access to the unit is controlled, and preparedness and prevention measures, including hazards prevention. This section also describes the contingency (emergency) plan; containment systems; the management of ignitable, reactive, and incompatible wastes; and inspection and recordkeeping requirements at the unit.

2.1 LANL FACILITY DESCRIPTION

LANL is located in Los Alamos County, an incorporated county, in north-central New Mexico, approximately 60 miles north-northeast of Albuquerque and 25 miles northwest of Santa Fe. The regional location of LANL is shown on Figure 2-1. LANL is divided into TAs, as shown on Figure 2-2 and occupies an area of approximately 39 square miles. LANL and the residential and commercial areas of Los Alamos County, which occupy a combined area of approximately 109 square miles, are situated on the Pajarito Plateau. The plateau consists of a series of finger-like mesas separated by deep east-west trending canyons. Ephemeral, interrupted, or intermittent streams lie at the bottoms of all the canyons. The mesa tops range in elevation from approximately 7,800 feet (ft) above mean sea level (amsl) at the flank of the Jemez Mountains, located to the west of Los Alamos, to about 6,200 ft amsl at their eastern extent, where they terminate above the Rio Grande.

Land use in the LANL region is linked to the economy of northern New Mexico, which depends heavily on tourism, recreation, agriculture, and Federal and state government employment for its economic base. Area communities generally are small and primarily support urban uses including residential, commercial, light industrial and recreational facilities. These include the DOE, the U.S. Forest Service, Native American communities, the U.S. National Park Service, the County of Los Alamos, private land-owners, the State of New Mexico, and the Bureau of Land Management. The Native American communities in the region include the Pueblo of San Ildefonso on LANL's eastern border and six other Pueblos located nearby. Entities that serve as land stewards and determine land uses within the LANL region are depicted in Figure 2-2.

LANL's central mission is the reduction of global nuclear danger supported by research that also contributes to conventional defense, civilian, and industrial needs. This includes programs in nuclear, medium energy, and space physics; hydrodynamics; conventional explosives; chemistry; metallurgy; radiochemistry; space nuclear systems; controlled thermonuclear fusion; laser research; environmental technology; geothermal, solar, and fossil energy research; nuclear safeguards; biomedicine; health and biotechnology; and industrial partnerships. LANL is owned by the DOE and is operated jointly by the DOE NNSA and the LANS. The facility mailing address is P.O. Box 1663, Los Alamos, New Mexico, 87545.

LANL is an existing RCRA treatment and storage facility whose waste management activities are approved through the Permit. The Permit includes treatment and storage units that are current or proposed "active" operating units. This permit modification request is submitted for the addition of the TWF to the Permit as a waste storage unit. Further details regarding the

hazardous waste management units and waste types are included in the Permit and the revised Part A Permit Application included as Attachment A of this submittal.

2.2 TA-63 TWF UNIT

The following section generally describes the proposed TWF unit with detailed descriptions of the unit's structures in the subsections. The TWF will consist of one waste management unit that will provide storage in containers for TRU waste, including the hazardous component of MTRU waste and, potentially, mixed low-level waste streams. The TWF may also manage hazardous-only waste streams generated on site. The information provided in this section is submitted to address the applicable container storage requirements of 40 CFR §270.15 and Part 264, Subpart I.

The TWF will be located at TA-63 on a mesa between a branch of Mortandad Canyon on the north and Pajarito Canyon on the south in the north central portion of LANL (see Figure 2-3 for the location of TA-63 at LANL). The unit will be built at the intersection of Pajarito Road and Puye Road, within the triangle formed by Building 63-111 to the east, Puye Road to the north, and Pajarito Road to the southwest. Figure 2-4 depicts this location with respect to nearby buildings and facilities. The closest buildings are shops immediately north of Puye Road, Office Building 63-111, records storage buildings immediately east of the TWF location, and buildings and structures on Pecos Drive further north of the TWF. A concrete batch plant and staging area will be required and located south-east of the TWF during the future construction activities for the Chemistry and Metallurgy Research Replacement Project at TA-55.

The primary purpose of the TWF is two-fold: first, safe indoor storage of TRU waste newly generated by LANL operations. Second, waste containers stored at the TWF will be subject to characterization including review of generator documentation, gas sampling, and non-intrusive radioassay. The overall process of waste characterization at LANL is described in Attachment C, *Waste Analysis Plan*, of the Permit.

Waste will be contact handled (CH) TRU waste; no remote-handled TRU waste will be stored at the TWF. Some TRU waste containers may be determined through final waste characterization not to meet the WIPP requirements for TRU waste. Depending on the presence of hazardous constituents, these waste containers will be reclassified as either low-level radioactive waste or mixed low-level waste and stored at the TWF until they are dispositioned appropriately.

Waste shipments will be made from the LANL waste generating facilities to the TWF for storage and then to the RCRA permitted Radioactive Assay and Nondestructive Testing (RANT) Facility at TA-54-38 West. The RANT Facility is used to load the TRU waste containers into approved steel shipment containers required for off-site shipment to the WIPP. Waste shipments may also occur from TWF to the RCRA permitted TA-50-69 Waste Characterization, Reduction, and Repackaging Facility (WCRRF) if repackaging of the containers is necessary.

The TWF will be 1.81 acres or 78,843 square feet. The layout of the unit is depicted in Figure 2-5 and proposed Figure 55 (Attachment G) with the location of areas where storage will occur highlighted. The main structure for the unit will be the concrete pad providing a physical base for six waste storage buildings, several waste characterization trailers, and outside storage of waste containers too large for the buildings. The pad will be surrounded by a security fence. The boundary of the hazardous waste management unit will be limited to the northern portion of the concrete pad defined by those areas that drain to a supporting retention pond. Along the northern

and western sides of the unit, this will be the edge of the concrete pad along the bottom of the retaining walls. On the east side, the edge of the curbing for the concrete pad will be the boundary. The southern side of the revised boundary will be defined by a painted line in compliance with Permit Section 3.5(2), *Management of Containers.* The line will be situated approximately between the south east corner of the retention basin and the curb and gutter at the opposite corner of the fence line along the eastern side of the unit. This will be defined by the points at which run-off will flow to the retention basin.

To provide containment for the unit, a retention pond is designed to capture and distribute storm water at the TWF. It will also retain fire suppression water in the event of a fire. Water will be released via a manual valve providing control of the flow rate from the basin. Should a fire occur, water collected will be analyzed for contaminants prior to discharge.

The unit will also include a small storage building for calibration sources used for waste characterization activities, a covered forklift charging station, and equipment storage shed. Outside the fence, other site structures include an operations support building and a fire water storage tank and associated utility building.

2.2.1 Concrete Pad

The TWF concrete pad will be of reinforced concrete construction, on grade to provide support for the site structures and vehicle movement. The concrete pad will also provide for low combustible loading between the buildings and for the site. The pad will be laid on a graded soil and gravel base course and be nominally 8 inches thick. The existing ground at the site slopes from the northwest to the southeast. There is a significant grade difference from the northwest corner to the southwest corner of the site. After the site has been graded, portions will be lower in elevation than Pajarito Road or Puye Road. Given the elevation difference on the site, retaining walls will be constructed along the northwest portion of the site. The pad will be sloped at approximately 2% to provide for storm water and fire suppression water drainage.

The perimeter of the pad will have a 24” gutter and 6” high curb to provide run-off control. A valley gutter isolates the northern portion of the pad. Storm water and potentially contaminated firewater run-off (in the event of a fire in the storage buildings) from the northern portion of the pad flows to the valley gutter then will be channeled to the retention basin, thus, providing containment for the site in accordance with 40 CFR §264.175(b). This is a feature that negates the need for berms, dikes, or sumps around each storage building. The southern portion of the concrete pad (where waste is not stored and outside the hazardous waste management unit) slopes southeast providing drainage off the pad toward the parking lot. Refer to Figures 2-5 through 2-8 for further details regarding the pad configuration.

2.2.2 Storage Buildings

The TWF will include six storage buildings, five of which will be functionally identical and are described in this section. The additional storage building with other design elements is described in Section 2.2.3. The five buildings will measure 33 x 64 ft or approximately 2112 square feet, and will be 15 ft high. The storage buildings provide safe covered storage for LANL generated TRU waste containers through weather protection, physical security, and DOE design requirements for safety at nuclear facilities. Multiple buildings are being proposed to minimize the radioactive material content at individual storage buildings and to reduce the potential impact from accidents relative to a single larger building. Multiple smaller buildings will also reduce

overall risk associated with events such as vehicle impact or fire. The storage building floor plan is presented in Figure 2-9. These five storage buildings will be designated 63-0149, 63-0150, 63-0151, 63-0152, and 63-0153.

Containers loaded onto pallets will be stored on a reinforced concrete floor. The building floor ~~(i.e.,~~is a mat ~~slab)~~ slab. A mat slab is a concrete slab designed with reinforcement such as metal bars or mesh to resist the uplift forces created by hydrostatic pressures. Most slab foundations are used to distribute heavy column and wall loads across the entire building area to lower the contact pressure compared to conventional spread footings with extensive reinforcing to ensure relatively uniform load transfer. The slab will be higher than the concrete pad to prevent run-on, and will be sloped towards a roll-up door at the building entrance for drainage in the event of a fire, in accordance with the requirements of 40 CFR§264.175 at 40 CFR §264.175(b)(2) and (c).

The concrete floors will be coated to provide a sealed surface and chemical resistance although secondary containment pallets will be used to meet the containment requirements of the Permit for potential liquid containing waste in the storage buildings and also compliance with 40 CFR §264.175(b)(1). The floor coating standards include:

- Minimum Class B per National Fire Protection Association (NFPA);
- Radiation resistant as determined by American Society for Testing and Materials, International specification ASTM D 4082; and
- Decontaminable to at least 95 percent of total activity removed and certified for Nuclear Coating Service level II.

Further details for the floor coating are provided in Attachment B.

The storage buildings will be constructed as covered single-story structural steel frames. Each of the storage buildings and its structural members are designed to exceed the snow load for roof design, the design wind force for buildings, and the seismic loading for structural components, as described in American Society of Civil Engineers specification ASCE 7-05, *Minimum Design Loads for Buildings and Other Structures.* The document that illustrates the calculations for those loads is included in Part 6.0, *References,* of this document (LANL, 2011a). The steel frame is an ordinary moment frame with joists to attach roof panels and girts to attach wall panels. The walls of the facility will be rigid to provide protection from the elements and external forces. Gypsum board on light gauge metal studs with industrial coating will finish the interior walls. The roof is a high quality metal standing seam. Batt insulation in the ceiling and on the inside of the walls will reduce heat loss and gain inside the buildings. Electric heaters will heat the interior to prevent fire suppression systems and eyewash stations from freezing. Cooling will be provided by venting fans. In order to drain the building in the event of a fire, the floors will be constructed to provide a shallow slope (1/8 inch to 1 foot) from the back end of the building towards the front, and then out the roll-up door opening and a loading ramp to the concrete pad outside the building.

The following drawings illustrate additional design details for the storage buildings:

- Figure 2-10 shows the building foundation plan with dimensions and locations for beam supports.
- Figures 2-11 and 2-12 include support details for the building framework.
- Figure 2-13 shows structural sections for the storage buildings.

- Figure 2-14 provides thickness details of the slab and beam supports.
- Figure 2-15 shows the constructed building elevations.
- Figures 2-16 and 2-17 provide details regarding the buildings' fire protection sprinkler system including sprinkler locations and the water supply system.
- Figure 2-18 provides specifications for the buildings' emergency eyewash and shower equipment (locations in Figure 2-10).

2.2.3 Storage and Characterization Building

The sixth storage building is divided into a storage area, a room for the thermal equilibrium of containers to prepare for head space gas sampling, and additional support and analytical equipment rooms. The storage area in this building will be used for a variety of containers including SWBs and SLB2s. In order to accurately analyze headspace gas, the container temperature must be allowed to equilibrate to a minimum of 64 degrees Fahrenheit for 72 hours, as described in the Central Characterization Project procedure: CCP-TP-093, *CCP Sampling of TRU Waste Container*, (CCP, 2010). Sampling equipment is available for obtaining headspace gas samples and flammable gas samples from waste containers. Gas chromatography and mass spectrometry on the flammable gas sample will occur in an adjacent room.

The floor plan of the building measures 80 x 33 ft or approximately 2640 square ft, and the building height is approximately 15 ft. Figure 2-19 shows the floor plan of the storage building. The building will otherwise be constructed to the same standards as the other storage buildings. The building will be numbered 63-0154.

Additional facility drawings with design details for the Storage and Characterization Building are included as follows:

- Figure 2-18 provides eyewash/safety shower details (specifications are the same as Storage Buildings, shown in Figure 2-18).
- Figure 2-20 shows the building foundation plan with dimensions and locations for beam supports.
- Figures 2-21 and 2-22 provide building structural elevations including support details for the building framework.
- Figure 2-23 includes structural section construction details.
- Figure 2-24 includes foundation construction details.
- Figure 2-25 shows constructed building elevations.
- Figure 2-26 provides building section details.
- Figure 2-27 and 2-28 show the fire protection plan and its associated piping & instrumentation diagram.

2.2.4 Characterization Trailers

The TWF facility will include pads with utility hook-ups for the characterization trailers used to certify containers to DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria (WAC) for the Waste Isolation Pilot Plant*, (WIPP, 2010). The non-destructive evaluation (NDE) and non-destructive assay (NDA) equipment will be provided for the TWF in mobile modified commercial trailers brought to the facility. These trailers are in use and functional at other DOE waste characterization sites. These trailers are currently providing this function for TRU waste management at the TA-54, Area G, Pad 10 permitted hazardous waste unit and will be moved to the TWF when it becomes operational. Radiographic assay equipment used for characterization is housed in these trailers as follows:

- Real Time Radiography (RTR) unit. The ~~assay~~ NDE equipment in the trailer is designed to provide X-ray examination of the contents of TRU waste drums. This trailer is currently designated as TA-54-0497 in use at Area G.
- High-Efficiency Neutron Counter (HENC) unit. The ~~assay~~ NDA equipment in the trailer is designed to provide a passive neutron and gamma measurement of 55-gallon TRU waste drums. This trailer is currently designated as TA-54-0498 in use at Area G.
- SuperHENC unit. The ~~assay~~ NDA equipment in the trailer is similar to the HENC but includes a high efficiency neutron counter and a gamma counter that are both designed to handle SWBs. This trailer is currently designated as TA-54-0457 in use at Area G.

The RTR is a self-contained, non-intrusive X-ray unit, physically housed in a mobile container 48 feet in length by 8 feet wide used to X-ray waste containers up to 85 gallons in volume. Radiography is a nondestructive qualitative and semi-quantitative technique that involves X-ray scanning of waste containers to identify and verify waste container contents. Radiography is used to examine the waste container to verify its physical form. This technique can detect prohibited items such as liquid wastes and gas cylinders, which are prohibited for WIPP disposal. Radiography examination must achieve the following to meet the WIPP criteria:

- Verify and document the physical form of each waste container.
- Identify any prohibited waste in the waste container.
- Confirm that the physical form of the waste matches its waste stream description (i.e., homogeneous solids, soil/gravel, or debris waste [including uncategorized metals]).

The HENC is a self-contained, non-intrusive, passive assay unit, physically housed in a mobile assay container 48 feet in length by 8 ½ feet wide by 12 ¾ feet high. The HENC is designed to assay 55-gallon (208 liter) drums containing fissionable radionuclides. The system simultaneously performs passive neutron counts and gamma spectrometry to detect gamma-emitting radionuclides for the purpose of determining quantitative concentrations of TRU constituents. The equipment and mobile container only require electrical power to operate. Approximately 10 to 13 drums a day can be processed through the HENC, with each drum taking approximately 45 minutes for examination. The HENC is a large rectangular-shaped neutron counter that is specifically designed to assay the container in a fixed geometry. The HENC system uses passive and add-a-source neutron analysis methods to assay the nuclide mass

contained in 55-gal drums of TRU waste. Waste drums to be assayed are placed on a conveyor that feeds drums into the system.

The SuperHENC operates on the same principle as the HENC, within a similar tractor trailer. The process however, is applicable to the assay of TRU radionuclides in larger waste packages such as Standard Waste Boxes (SWBs). Data from this process is used to assay the radioactive content of SWBs containing TRU waste, sorting SWBs based on the 100 nanocurie per gram (nCi/g) TRU limit, and confirming radioisotopes indentified via acceptable knowledge (AK).

The trailers will be numbered 63-0155, 63-0156, and 63-0157 at TA-63. Additional trailers may be needed as characterization needs for the facility change and would be located in the area noted (Note #13) for future expansion in Figure 2-5. In the event that trailers are added or moved at the unit, the permit modification procedures in Permit Section 3.1.(3) will be followed.
The WIPP verification procedures for the waste containers managed in the characterization trailers are generally completed within 24 hours in compliance with Permit Section 3.1(2). In some uncommon situations, there is a potential that a waste container could be left in the characterization trailer for greater than that time period ~~and the option for storage should be retained to preserve operational flexibility~~. Examples that would require such an option include situations such as inclement weather, power outages, equipment malfunctions, ~~-~~ evacuations, and Laboratory closures. If storage of liquid bearing wastes for greater than 24 hours occurs, the reporting conditions of Permit Section 1.9.1~~1~~4, *Other Noncompliance*, will be followed.

~~The basis for not requiring secondary containment pallets is that the containers are located inside the trailers and the internal radioassay equipment during the characterization process. These do not represent secondary containment although they are enclosed and provide a degree of containment. The containers are never opened during the process and the potential waste volumes involved in a spill from an individual drum would be minimal based on the typical transuranic waste streams involved and the waste characterization and packaging requirements for the generators to meet the LANL TRU Waste Acceptance Criteria. In the event of a spill during active management of the containers, the primary defense for containment would be detection and remediation of the spill by the on-site personnel at the trailers or, if necessary, by the provisions of the Contingency Plan. If a spill occurred that could not be remediated or during off hours in the facility, containment would ultimately be provided by the grading of the site to the retention pond and the confinement provided by the volume of the pond and the normally closed exit valve.~~

~~Additionally, in the event that a liquid containing waste item or free liquids such as condensation are discovered in a container through the waste verification process in the trailers, the item will routinely be transported back to a storage building and managed in compliance with the secondary containment requirement in the permit provision within 24 hours. This is based on the typical multiple daily container turn-around, the identification of the container as an anomaly meriting priority, and best management policy to avoid potential waste management problems.~~

2.2.5 Retention Basin

The storage buildings and characterization trailers are located within the northern portion of the site. The retention basin is located south of the storage buildings and characterization trailers along the western edge of the site. The retention basin is designed to collect water from this area

in two types of events. Primarily, surface storm water or melt water run-off from the concrete pavement in this area is directed to the retention basin via the slope (nominally 2%) of the concrete pad. A valley gutter also helps to channel water from the east side of the concrete pad to the retention basin. Secondly, in the event of a fire at the unit, fire suppression water will potentially flow out of the storage buildings or from other unit structures to the concrete pad and then to the retention basin.

The designed volume capacity for the retention basin includes the potential for a combination of both events. This includes run-off from a projected 25 year frequency and 2 hour duration precipitation event (1.94 inches of precipitation resulting in approximately 85,900 gallons (11,500 cubic ft.) from 1.63 acres). For a fire suppression event, an estimate of suppression water needed is calculated from NFPA 13 factors (380 gpm for 30 min. of sprinkler demand and 500 gpm for 30 min. fire hose stream allowance), for a total of approximately 26,400 gallons (3,530 cubic ft.). Volume from both events results in a total capacity of approximately 112,300 gallons (approximately 15,000 cubic ft.). The designed total retention basin volume also includes 0.5 ft of freeboard, resulting in a total capacity of 137,450 gallons (18,375 cubic ft.). Final dimensions of the basin will be 125 ft by 42 ft by 3.5 ft deep. Facility drawings for the retention basin foundation plan and foundation details are included as Figure 2-29 and Figure 2-30of this permit modification request. The concrete mixture used for construction of the retention basin will also be supplemented with an additive to improve the concrete's water resistance.

The retention basin will be drained as needed via a manual release valve that is normally in the closed position in order to prevent overflow and to comply with 40 CFR §264.175(b)(5). The retention basin will also be equipped with an automated storm water sampler at a drainage point into the basin. This sampler will only be used to meet the requirements for stormwater monitoring under the *The Multi-Sector General Permit For Stormwater Discharges Associated with Industrial Activity* (MSGP) for the facility. Product specifications for the sampler are included in Attachment E of this submittal. In normal storm water events the manual drain valve will be opened and the collected storm water will be released through a pipeline at the calculated predevelopment flow rate (i.e., the rate of storm water runoff from the site prior to construction of the facility) after the opening of the valve. The released storm water will drain through the pipe line to a release site on the east side of the TWF and then to other stormwater retention structures developed for the aggregate area to be defined and included in the TA-63 TWF Multi Sector General Permit Storm Water Plan to be developed for the site. See Figure 2-34 for details concerning the storm drain plan and Figure 2-35 for construction details of the storm drain inlet. When only stormwater has been contained in the retention basin, the decision to open the drain valve will be based upon standard MSGP processes including visual examination for surface sheens, discoloration or other obvious indicators of stormwater pollution relative to the collected stormwater.

In the event of a fire at the TWF, the retention basin will serve the critical function of collecting the fire suppression water in the basin. The slope of the unit's concrete pad and the valley gutter serve to ensure that any water draining from the unit's storage buildings or the characterization trailers will be routed to the retention basin. This key design feature provides containment of possible contamination and a backup option for any emergency management activities. In such an event, collected water will remain in the basin until sampling and water-quality analysis can be performed to determine whether or not the water is contaminated. The collected water will be

evaluated by obtaining a representative grab sample of the liquid and analyzing it for any hazardous waste constituents managed at the facility and reasonably expected to be present. This data will be compared to the surface water quality standards outlined in the Clean Water Act (33 U.S.C. §§ 1251 to 1387), the New Mexico WQCC Regulations (20.6.2 NMAC), and the State of New Mexico Standards for Interstate and Intrastate Surface Waters (20.6.4 NMAC) to determine whether the collected water can be released, a Notice of Intent needs to be submitted to the New Mexico Groundwater Bureau, or it will be characterized to the Permit Attachment C, *Waste Analysis Plan*, standards for collection and waste disposition determination. In the event of such a fire or release, any further decontamination of the retention basin will be subject to the provisions of Attachment D, *Contingency Plan*, of the Permit.

The concrete structure, concrete waterproofing additives and associated valve will minimize the potential for leakage of collected water from the retention basin. Routine inspections of the retention basin pursuant to Permit Section 2.6, *General Inspection Requirements* and subsequent repairs as required by Permit Section 2.6.2, *Repair of Equipment and Structures* will ensure that the water collection capability of the retention basin is maintained or mitigated. In the case of a fire water or spill event that results in collected water, the level of water in the retention basin will also be checked for the potential of over-topping and inspected daily for water levels until final disposition of the water is determined.

2.2.6 Other Project Structures

Other project structures are present at the TWF to provide support for the hazardous waste management activities at the unit. These structures are either outside the boundary of the hazardous waste management unit or do not directly store or manage hazardous waste.

The Operations Support Building provides offices and services for operations personnel and management. Personnel are housed in the separate building to ensure that radiological exposures are as low as reasonably achievable (ALARA) by increasing distance from the waste management activities. The Operations Support Building is approximately 75 ft by 80 ft. Operations and characterization personnel will be housed in this building, although it will not be occupied continuously. However, it will provide storage of waste container data and monitoring of key operational parameters and specific safety structure, system, and component (SSC) status. In addition, a public address system will be powered from this building to facilitate emergency response. The building will include offices, conference rooms, restrooms, change rooms, site security access, and circulation space for about 25 workers. The building will be outside the security control fence; windows provide visual observation of the control area. The building will use an ordinary steel moment frame and include nonload bearing metal panel walls. The exterior finish will be metal sandwich insulating panels. The roof will be a low slope membrane-type with high solar reflectance and roof and overflow drains. The floor will be reinforced concrete slab on grade and finished concrete in some areas.

Access to the waste management site is via a gated driveway east of the concrete pad. Gates are normally closed and vehicle access to the controlled area within the unit fence line requires check-in at the Operations Support Building. Pedestrian access to the controlled area also requires check-in through the Operations Support Building. Parking for site workers and visitors is provided south of the Operations Support Building and outside the controlled area fence.

Located to the north of the Operations Support Building, on the project site but outside the controlled area fence, is a dedicated fire water supply tank and utility building. The utility building is adjacent to the water tank that supplies water for the fire suppression system. This building will house two fire water pumps and instrumentation needed to ensure operation of the fire suppression system. The back-up pump is diesel powered. Access into the fenced unit will not be required for filling the diesel pump fuel tank as fueling can occur from the roadway.

Further to the north, across the access driveway is an existing groundwater monitoring well. The monitoring well is R-46, part of the LANL groundwater monitoring network. The TWF controlled area fence line is located to the west of the monitoring well. Space has been allocated to allow for routine and upset condition access to the monitoring well. Access to the TWF is not required for activities associated with the monitoring well.

A forklift charging station is located along the western edge of the site. This structure will be an open roofed shed with storage areas for the forklifts and charging equipment.

There will be an equipment storage shed on the west side of the unit. This shed will be a light warehouse of 1250 square feet and will be used to store items such as metal pallets, containers used to over-pack waste containers if necessary, and snow removal equipment. The building will be 25 ft x 50 ft x 15 ft high. The sides of the shed will be closed with a rollup (garage-type door) in addition to a personnel access/egress door. There will be no fire protection in this building.

The characterization process will require sealed radioactive sources for calibration of the HENC and SuperHENC radioassay sensors. A separate building designated the Characterization Source and Matrix Management (CSMM) Building will house sealed sources.

2.2.7 Waste Management Practices

The primary function of the TWF is to safely receive, inspect, handle, characterize, certify, store, and ship newly generated TRU waste containers to other LANL facilities for additional waste management activities or for off-site disposition. Storage at the TWF will be predominantly for waste in solid form and may include both TRU (radioactive only) or MTRU (radioactive and hazardous component) waste. Wastes that are mainly or completely in liquid form within the volume of the waste container will not be accepted at the TWF but the potential exists that a small quantity of free liquid may be present in some containers (e.g., TRU waste determined to contain liquids such as condensation or in smaller internal containers by RTR characterization after waste receipt at the TWF). Other types of mixed waste (e.g., TRU waste reclassified as low level waste through the NDE/NDA in the HENC or Super HENC) or hazardous only waste (e.g., from on-site waste generation such as empty paint cans or forklift maintenance) may also be managed at the TWF while waiting for further appropriate waste management. Wastes excluded by the LANL TRU WAC will not be accepted at the TWF, including medical, infectious, explosive or compressed gas wastes. However, the hazardous waste management unit ~~may need~~will have to ~~temporarily~~ store containers that include these ~~types of~~ waste~~s~~ items needing further management (e.g., aerosol cans) that have been detected in TRU waste drums during the RTR characterization process. The containers will be stored in compliance with the conditions of Parts 2 and 3 of the Permit.

TWF waste management activities will occur in three areas: the waste storage buildings, the characterization trailers, and outside storage on the concrete pad. The main storage function at the unit will occur in the waste storage buildings. Outside storage will be used for occasional storage of large containers pending further action such as re-packaging at one of LANL's other TRU facilities. Temporary waste staging will also occur at the characterization trailers during waste analysis and at the loading/unloading area during receipt of the waste containers.

2.2.7.1 Loading and Unloading

The area between the retention pond and Storage Building 63-0149 will be used for receipt of TRU waste from LANL generators and for re-shipment of waste to the TA-54-38 RANT Facility or TA-50-69 WCRRF. Waste containers will be transported to the TWF by truck and enter from the north gate on the east side. The containers will be unloaded from the trucks in the unloading area. Containers will be unloaded with electric forklifts used exclusively at the TWF to reduce potential ignition sources. Waste containers for storage at the TWF may include: 55 or 85 gal metal drums, SWBs, Standard Large Boxes 2 (SLB2s), Pipe Over-pack Containers (POCs) inside 55 gallon drums, and Over-sized Waste Boxes (OWBs). Further descriptions of these containers are included in Table 2-1. With the exception of the OWBs, ~~All~~ all containers will be both WIPP-compliant [DOE/WIPP 2008] and DOT 7A, Type A certified, as described in Section 3.3, *Acceptable Storage Containers,* of the Permit.

Containers may be staged in the unloading area or in Storage Building 63-0149 for a short period after unloading, anticipated to be less than 1 day under normal circumstances. Only closed and vented containers will be handled at the TWF. Waste containers will not be opened at the unit although their filter vents may be replaced if necessary. All containers received at the TWF will be equipped with WIPP-approved filtered vents that contain a sample port for headspace gas/flammable gas sampling without removing the filter. The TRU waste containers provide a confinement barrier between radiological contaminants and the environment and operations personnel. As a result of this confinement capability, the containers can be safely staged temporarily outside after unloading.

While the containers are staged at the unloading area or in Storage Building 63-0149, the following receiving operations will occur: initial inspection, verification of the container identification (scanning the container identification barcode and checking labels), wiping container surfaces, visual inspection of the filter vent, and a radiation/contamination survey (validation of generator's measurements). In the event of an abnormal condition such as inclement weather, staging at the loading/unloading area may exceed 24 hours but removal of the containers to Storage Building 63-0149 or other storage buildings will occur as quickly as possible.

2.2.7.2 Storage

After receiving activities are complete, waste containers will be transported across the TWF concrete pad using forklifts. Containers will be taken to the waste storage buildings and prepared for storage. In the buildings, drums will be placed on metal pallets in groups of four followed by banding with metal strapping. The four-pack is then placed into a storage array within the building, where it awaits further handling such as for transportation to the characterization trailers. The SWBs, SLB2s, and OWBs will also be taken into the storage

buildings. Boxes without built-in devices that prevent contact with the floor will be placed on appropriately sized pallets or other structures to allow inspection and preclude contact with liquids as required by Permit Section 3.7, *Containment Systems*.

~~Four~~ The following types of waste containers are planned to be used for storage of transuranic (TRU) waste at the TA-63 TWF. These waste container types are 55-gallon drums, SWBs, SLB2s, and OWBs. POCs may be packaged within 55-gallon drums. ~~(~~It is also possible that a 55-gallon drum could be over-packed into an 85-gallon drum if a 55-gallon drum was damaged or there was some other concern for its integrity, but 85-gallon drums will not be used as primary waste containers.

Although 55-gallon drums and SWBs are expected to make up the majority of the containers by number, some TRU waste will also be stored in both SLB2s and OWBs. Numbers of the various types of waste containers will vary at any given time. Table 2-2 presents a scenario for waste container storage that has a maximum number of SWBs, SLB2s, and OWBs that would likely be stored at the facility. Four of the waste storage buildings would store only 55-gallon drums, a fifth storage building would store primarily SWBs but some 55-gallon drums, the storage and characterization building would store primarily SLB2s but some 55-gallon drums, and OWBs would be stored outside under this scenario. This is discussed in more detail below. The total estimated storage capacity shown in the table was rounded to 105,875 gallons for the maximum design storage capacity of the Transuranic Waste Facility. See Table 2-2 for further details on the storage capacity.

The layout of waste containers in the four storage buildings that would store only 55-gallon drums (no other container types) in this scenario consists of two rows of ten groups of pallets with four 55-gallon drums per pallet and pallets stacked three high (resulting in a total of 120 drums per row and 240 drums per waste storage building.) The layout of the rows with pallets is like that shown in Figure 2-9, Storage Building Floor Plan.)

The layout of the storage building that would store primarily SWBs and some drums in this scenario consists of two rows of groups of pallets with a single SWB stacked two high. One row would consist of a total of 10 groups of pallets with one SWB per pallet stacked two high, and the other row would consist of a total of 9 groups of pallets with one SWB per pallet stacked two high (resulting in a total of 20 SWBs in one row and 18 SWBs in the second row.) A single group of pallets with 55-gallon drums stacked three high would be located at the end of the row of 9 groups of pallets with SWBs two high. Total storage within this waste storage building would be a total of 38 SWBs and 12 55-gallon drums). The layout of the rows with pallets would be similar to that shown in Figure 2-9, except that groups of SWBs stacked two-high on pallets would replace all of the groups of drums stacked three high on pallets except for one group of pallets containing drums (this was done to ensure sufficient aisle space for emergency egress at each of the personnel doors in the storage building).

The layout of the storage and characterization building that would store SLB2s and some drums in this scenario consists of two rows of SLB2s (one high stacking) in the storage bay of the building, with two SLB2s in one row and three SLB2s in the other row. Five pallets of four 55-gallon drums (one high stacking) would be located in the Thermal Equilibration (T.E.) Room of

the building. Total storage within the storage and characterization building would be a total of 5 SLB2s and 20 drums. The layout of containers under this scenario would be similar to that shown in the floor plan in Figure 2-19, Storage and Characterization Building Floor Plan, except that a row of three SLB2s would replace the row of drums on pallets in the storage bay, and a row of two SLB2s would replace the single large container shown in the figure. The layout of 55-gallon drums stored in the T.E. Room would be like that shown in the figure. Because the waste storage buildings would be filled to capacity under this scenario, the four OWBs would be stored outside on the concrete pad.

The stored containers will be arranged to meet the conditions of Permit Section 3.5.1, *Storage Configuration and Minimum Aisle Space*. The central aisle in the storage buildings allows for the movement of forklifts during waste placement. In addition to the center aisle, a minimum of a two feet wide aisle space will be maintained between the rows of waste containers and the storage building walls. Four-packs of drums may be stored up to three high, SWB's and SLB2's may be stacked 2 high, and OWB containers will be stored one-high indoors.

There may be a need to store containers in different configurations at times to allow assembling of waste for retrieval and transport, waste characterization campaigns, or for segregation of incompatible wastes as required by Permit Section 2.8.2, *Incompatible Waste Precautions*. Aisle spacing of at least two feet will be maintained in any alternate configuration as required by Permit Section 3.5.1 (1) and the maximum capacity of the TWF permitted unit will not be exceeded.

2.2.7.3 Characterization

TRU waste containers stored at the TWF will be initially characterized using generator knowledge of the waste prior to being received. Newly-generated TRU waste containers are primarily characterized by AK and may go through a certified visual examination (VE) process at the waste generator location (e.g., TA-55) before being transported to the TWF. Container integrity inspection, weighing, and labeling also occur at the generator facility. Additional characterization procedures at the TWF will be used to verify the generator's waste information and certify that the waste containers are ready for shipment to WIPP as required by Permit Section C.3.2.3, *WIPP Characterization*. Characterization activities will be performed at the TWF in the characterization trailers and the Storage and Characterization Building as described below.

Waste containers will be transported to the trailers by forklifts from the storage buildings. Each of the characterization trailers includes internal and external waste handling equipment such as lifts, conveyors, and container radioassay equipment. The containers will be positioned on the trailer's conveyors. They will then be moved into the trailers' radioassay equipment and examined. After characterization, they will be removed by forklift from the trailers and put back into storage in the buildings**.**

Characterization and certification of containers for WIPP is performed at LANL by an independent WIPP contractor. Characterization and certification operations begin by:

- Verification that the containers are from a WIPP AK waste stream.
- Verifying that the containers have a legible radiological label/tag.

- Verifying that the containers have an external radiation dose equivalent rate less than 200 millirem/hour.
- Visual inspection to ensure satisfactory container integrity.
- Visual inspection to ensure use of approved filters and proper seating.
- Verification of the container gross weight.
- The containers are also labeled to record completion of all operations.

Typically, NDE is the first characterization operation performed on drums (only) following the verification steps noted above. The NDE is conducted using RTR performed at the RTR trailer. RTR confirms the waste contents identified in AK and detects free liquids or items or conditions that are prohibited at WIPP. RTR operations will be performed as required by Permit Section C.3.2.1, *Real-Time Radiography,* during storage at the TWF. RTR (at TWF) will not be necessary for newly-generated waste containers that underwent a certified VE process at the generator site but will be used for any other waste containers.

The NDA operation is conducted in the HENC trailer for drums and the SuperHENC trailer for SWBs. The HENC is used to detect gamma-emitting radionuclides for the purpose of determining quantitative concentration of TRU. The HENC and SuperHENC operate on the same principle, and data from this process is used to assay the radioactive content of SWBs containing TRU waste, sorting SWBs based on the 100 nanocurie per gram (nCi/g) TRU limit, and confirming radioisotopes identified via AK.

All TRU containers will be tested for the presence of excessive flammable gases using Flammable Gas Analysis (FGA). The primary concerns are hydrogen and volatile organic compounds (VOCs). The presence of levels higher than those set by WIPP will not be allowed to be transported and may indicate that the hydrogen permeability of the container's vent filters has been compromised. Documentation of the levels of concern below the limit is required for WIPP certification. Internal gases will be extracted from the containers with a syringe inserted into the sampling port of the container vent filter. The sample is analyzed for volatile organic carbon compounds (VOCs) using gas chromatography/ mass spectrometry equipment located in the Storage and Characterization Building. Levels of hydrogen and methane gases are determined with a thermal conductivity detector.

A random sample of containers from TRU waste streams composed of debris waste will require Headspace Gas (HSG) sampling and analysis. Container temperature must be constant in order to collect a valid sample. Container temperature is allowed to stabilize to achieve the minimum temperature requirements for the sampling method in the thermal equilibration (TE) room located in the Storage and Characterization Building. Sampling for FGA may also be conducted in any of the waste storage buildings or on the concrete pad next to the characterization trailers if minimum temperature requirements for sampling are met. After thermal conditioning, HSG samples are collected with a syringe assembly including an evacuated SUMMA® canister (or equivalent) inserted into the sampling port of the vent filter. This sample is sent to the Idaho National Engineering and Environmental Laboratory (INEEL) for analysis of VOCs.

2.2.7.4 Outdoor Staging/Storage

The OWB container is too large to fit into a Nuclear Regulatory Commission (NRC) approved Type B shipping canister, and as such, will not be shipped to WIPP. OWBs will be temporarily stored at the TWF in queue for repackaging at other LANL facilities. OWB sizes vary, but will be no greater than 13 ft by 9 ft by 7 ft (on the order of a 100-drum equivalent). The radioactivity associated with these containers is relatively low compared to other containers.

OWBs may be stored in the TWF storage buildings. In the event that TWF indoor storage is approaching maximum capacity, OWBs will be stored outdoors. OWB storage will comply with the requirements of Permit Section 3.5.1.(5). OWBs stored outdoors will not be contacted by flowing storm water. Containers without stand-offs (i.e., either legs or tubing that runs either the width or length of the OWB) will be placed onto pallets. The OWBs will also be covered with tarps or other weather protective means to prevent contact with precipitation. OWBs may be stored two high outdoors on the concrete pad.

2.2.7.5 Free Liquid Restrictions

The containers to be stored at the TWF will generally contain either (1) no free liquids or (2) free liquids at less than 1% of the total container volume to meet the WIPP WAC. Any free liquid in containers at the TWF will be managed pursuant to the requirements of Permit Sections 3.6 (2) and 3.7 regarding waste labeling and containment systems. This involves the use of secondary containment pallets, maintenance of the run-on and run-off features described in Section 2.5.4 of this submittal, and removal of any spills in a timely manner as required by Permit Section 3.7.1(2).

The presence of liquid in the containers stored at the TWF is determined using either of three methods. The first method involves AK or process information supplied by the waste generators. The second method is the use of RTR to remotely examine the waste containers for liquids and other parameters. The third method for identifying free liquids is visual examination. Visual inspection if needed would necessitate opening the container and thus, would occur at other LANL storage facilities (e.g., TA-55, CMR, or TA-50-69 WCRRF). If plans are made in the future to allow the opening of containers in a suitable characterization trailer at the TWF (e.g., a visual examination trailer), this would be subject to the approval of NMED through a permit modification.

2.2.7.6 Filter Vent Changes

Vent filters that are found to be inadequate (e.g., inoperable or plugged) during container inspection or characterization will be changed out with new approved vent filters in an operation conducted using a portable HEPA filtration unit and appropriate personal protective equipment (PPE) for the operators.

2.3 AUTHORIZED WASTES AND WASTE ACCEPTANCE

The TWF will store hazardous wastes identified by one or more of the EPA Hazardous Waste Numbers presented in "Los Alamos National Laboratory General Part A Permit Application, Revision 8" included in Attachment A of this permit modification request pursuant to Permit Section 2.2, *Authorized Wastes*. These waste numbers are currently associated with wastes in storage at TA-54 included in Attachment B, *Part A Application*, of the Permit. Wastes that will

not be accepted at the TWF are documented in the LANL WAC, Attachment 2, *Contact-Handled Transuranic (TRU) Waste* (LANL, 2010). Excluded wastes include medical, infectious, explosive wastes, and waste containing compressed gases. However, the hazardous waste management unit may need to ~~temporarily~~ store these types of wastes (e.g., aerosol cans) that have been detected in TRU waste drums during the RTR characterization process. . ~~.~~The containers will be stored in compliance with the conditions of Parts 2 and 3 of the Permit.

Wastes that are mainly or completely in liquid form within the volume of the approved waste containers will not be accepted at the TWF. As discussed in Section 2.2 of this document, the majority of waste stored at the TWF will be mixed TRU waste. However, the potential exists that mixed low-level waste may be stored if the TRU waste is re-characterized as a result of WIPP characterization. There may also be small quantities of nonradioactive hazardous waste generated and stored on-site.

2.3.1 Characterization Procedures

Wastes to be managed at the TWF will be subject to the characterization requirements of Permit Section 2.4, *Waste Analysis*, and Attachment C, *Waste Analysis Plan* (WAP), as applicable. A summary of the waste streams anticipated at the TWF and the applicable characterization criteria is provided in Table 2-3 of this submittal which references the relevant portions of the WAP. These requirements will be met through the routine waste characterization procedures of LANL for any hazardous or mixed low-level waste generated or stored at the unit. The waste characterization trailers on-site at the TWF will be used to provide additional waste characterization for mixed TRU waste subject to WIPP certification as described in the WAP. This includes HSG analysis at INEEL, FGA for containers at the Storage and Characterization Building, and NDA/NDE radiographic analysis in the characterization trailers as previously described.

2.3.2 Verification Frequencies

Wastes to be managed at the TWF will be subject to the waste verification requirements of Permit Section 2.4.7, *Waste Characterization Review*, and Attachment C, *Waste Analysis Plan*, of the Permit.

2.4 SECURITY AND ACCESS CONTROL

The hazardous waste management unit at the TA-63 TWF will meet the requirements of Permit Section 2.5, *Security*. The DOE provides security for the area within LANL boundaries. Guard stations will control public access to this area of LANL from Pajarito Road east and west of TA-63. Therefore, only properly identified LANL and DOE employees authorized to enter the facility or individuals under their escort will have access to the TWF.

The unit security requirement will be met because the TWF will be within a security fenced area with controlled access gates. The security fence around the waste management portion of the TWF will be at least 8 ft high and be a chain link type fence with steel pipe fence posts. Fence tops will have at least three strands of barbed wire angled away from the protected area to prevent a person from scaling the fence. Two vehicle access gates will be integrated into the fence line. These gates, when opened, shall provide at least a 16 foot wide clearance to enable

vehicle access. Gates will be locked when the facility is not operational.

Controlled entry to the unit will be provided by a system of access controls (badge readers and administrative controls will be required prior to entrance) to ensure that only authorized personnel are granted access. These access controls will also ensure that all facility personnel can be identified and located in an emergency.

The TWF will be patrolled by LANL security personnel during both operational and non-operational hours to ensure that the gates are locked and that unauthorized entry does not occur. In accordance with 40 CFR §270.14(b)(19)(viii), the proposed locations of the security fences, entry gates, and entry stations are shown in Figure 2-34.

Warning signs stating "Danger – Unauthorized Personnel Keep Out," will be posted on the perimeter fences and gates. These will be able to be seen from any approach to the TWF in accordance with Permit Section 2.5.2, *Warning Signs*. The legends on the signs will be bilingual (i.e., English and Spanish) and will also indicate "No Trespassing by Order of the United States Department of Energy." The signs will be legible from a distance of 25 feet. Signs for any confined areas, if necessary, may be reduced in size, but will be legible to personnel who require access to these areas. TA-63 does not have a shared boundary with the Pueblos of San Ildefonso or Santa Clara and, therefore, the signs will not include warnings in Tewa dialects.

2.5 HAZARDS PREVENTION (PROCEDURES, STRUCTURES, AND EQUIPMENT)

Descriptions of the preventive procedures, structures, and equipment at the TA-63 TWF are presented below. This information is provided in accordance with the requirements of ~~40 CFR §~~ 40 CFR §270.14(b)(8). Adherence to the procedures and proper use of the structures and equipment will help to prevent hazards, prevent undue exposure of personnel to hazardous waste, and prevent releases to the environment.

2.5.1 Fire Protection

The TWF is bordered on two sides by roadways and by parking lot and cleared space on the third side of the roughly triangular space. Beyond the roadways, grassland gives way to sparse piñon woodland near canyons to the north. South of the TWF, ponderosa pine trees and piñon/juniper are about equally distributed and there are stands of scrub oak. Trees near and within canyons are almost all ponderosa and the terrain is covered with shrubs and bushes of various species.

Defensible fire perimeter around TWF structures will be maintained and will include the concrete pad within the fenced TWF, Puye/Pajarito Roads, and parking areas outside of the TWF. Some vegetation control including grass trimming and shrub cutting is anticipated outside the TWF during the growing season, especially to the south and east of the TWF. At least 75 ft of defensible space around the unit will be maintained for minimization of exposure to wildland fire per NFPA 1144, *Standard for Reducing Structure Ignition Hazards from Wildland Fire*, (NFPA, 2007).

The TWF unit uses a wet-pipe sprinkler system designed in accordance with the pertinent portions of the 2010 edition of NFPA 13, *Standard for the Installation of Sprinkler Systems,* for fire suppression. The fire water supply will be sufficient for the fire suppression systems in storage buildings. Water will be supplied via the 150~~25~~,000-gal tank north of the operations support building, with a combination of electric- and diesel-powered fire pumps, the tank and its

associated level detection, freeze protection, pumps, and power supply for the pumps. The fire suppression water will be pumped to automatic sprinkler systems in the buildings. This system is designed in accordance with NFPA 13. Further details for the systems are shown in Figures 2-16, 2-17, 2-27, and 2-28.

Automatic fire suppression is not currently planned for the characterization trailers. Given the small size of the trailers, firefighter entry is not anticipated during an emergency; therefore, lack of fire suppression systems is not considered a potential firefighter hazard requiring built-in protection. However, the capability of providing automatic fire suppression in the future will be provided through the facility utility hookups included in the TWF design.

The fire alarm systems are designed in accordance with pertinent sections of NFPA 72, *National Fire Alarm and Signaling Code*. The storage buildings and characterization trailers in the unit will be tied into a single fire alarm panel located at the TWF Support Operations Building. Fire alarms will also be connected to the Los Alamos Fire Department (LAFD) through the Los Alamos County Consolidated Dispatch Center (LACCDC). Sprinkler system water flow, manual pull-stations, and system supervisory and trouble signals will be monitored at the fire alarm control panel. A fire alarm at any location within the TWF is currently anticipated to result in a TWF-wide alarm: horns/strobes in all appropriate facilities will sound simultaneously; a public address system will be part of this system configuration. If the public address system is to be used for emergency notification, then the system design must meet NFPA 72 requirements. Section 2.7.1 of this permit modification request submittal also includes descriptions of additional fire equipment such as fire extinguishers and alarms.

In addition to the on-site TWF capabilities, the LANL facility fire protection resources and procedures contained in Permit Section 2.11, *Contingency Plan* and Attachment D, *General Contingency Plan* of the Permit may also be utilized if the Contingency Plan is implemented in the event of a fire at the unit. These will include coordination by the LANL Emergency Manager of fire suppression activities and emergency medical services with internal and external agencies such as the LAFD .

2.5.2 Lightning Protection

Lightning protection is provided for TWF storage and storage & characterization buildings. Figures 2-35 and 2-36 present the Electrical Site Plan which provides locations for electrical poles equipped with grounding features that protect the unit structures from lightning. Figure 2-37 specifies design details for both lighting and lightning protection poles. Lightning protection consisting of a system of copper wiring connected to grounding rods protects personnel and structures by providing a path to ground for a lightning strike in the vicinity or a direct strike to a structure. Lightning protection prevents uncontrolled discharge of hazardous electrical energy in a manner that injures personnel, damages equipment or structures, or results in fire. These protective measures for lightning protection are designed to meet the requirement of Permit Section 2.8.1(5).

2.5.3 Waste Handling and Preventing Hazards during Loading/Unloading

Flatbed trucks, trailers, forklifts, or other appropriate vehicles may be used to transport waste containers to and from the waste management unit at the TWF and other LANL waste generation

or management units. These vehicles will not be used to transport waste on the concrete pad. Only electric forklifts will be used for vehicular transport of waste containers within the TWF to reduce the combustible- and flammable-loading associated with TWF operations. Forklift operators may use an auxiliary boom, if necessary, to improve handling capabilities. Trained spotters may assist with container movement during forklift operations. Light drums may be handled manually or with a dolly. The use of proper handling equipment, appropriate to a container's size and weight, helps to prevent hazards while moving containers. Waste management personnel will be trained for safe handling operations in accordance with Attachment F, *Personnel Training Plan*, of the Permit.

2.5.4 Control of Run-on/Run-off

This information is provided to meet the requirements of 40 CFR §264.175(b)(4) and 40 CFR §270.14(b)(8)(ii). Controlling run-on and run-off at the TWF locations where waste management operations will regularly occur is accomplished by the design of the buildings and the use of control structures with appropriate contouring of surface areas. Run-on of storm water into the storage buildings will not occur. The building walls are on raised floors, and surface contouring slopes away from the building to prevent storm water from pooling against the foundations, doors, and loading areas. The internal floors of the buildings will be sloped to the front doors to prevent flooding by precipitation or storm water in addition to providing drainage to the outside to meet the requirements of 40 CFR §264.175(c).

The TWF site will maintain a nominally 2% slope to optimize drainage and the use of electric forklifts to handle waste containers. After the site has been graded, the site will be lower in elevation than Pajarito Road or Puye Road. A retention wall will maintain the differences in elevation between the roads and the site. The site will be surfaced in concrete and will include a retention basin for management of storm water and for the collection of fire suppression water until it is sampled and verified to be uncontaminated. Retention basin capacity includes the run-off from a 25-yr 2-hr precipitation event in addition to a fire event or a total capacity of approximately 137,450 gallons or 18,375 cubic feet of water.

Secondary containment will be provided where potential liquid-bearing containers are stored in the buildings to prevent run-off. Secondary containment systems (e.g. pallets) will be utilized, as needed, and will have sufficient capacity to contain at least 10 percent (%) of the volume of potential liquid-bearing containers or the volume of the largest container stored in the system, whichever is greater, pursuant to the requirements of 40 CFR §264.175(b)(3) and Permit Section 3.7, *Containment Systems*.

Waste spills or leaks will be managed inside the characterization trailers to prevent run-off. Containers stored outside on the concrete pad will be protected from contact with precipitation in accordance with Permit Section 3.5.1 (5).

Storm water run-on/run-off controls will meet requirements pursuant to the TA-63 TWF Multi Sector General Permit Storm Water Plan to be developed for the site.

2.5.5 Preventing Water Supply Contamination

The waste management unit at the TWF will be located, designed, constructed, operated, and maintained in a manner that will ensure the prevention of water supply contamination. No disposal activities will occur at the site. Waste storage activities involving any potential liquids

will occur only with secondary containment (pallets) and covers, if outdoors. In the event of a release, the liquids will be removed as quickly as possible and packaged in an appropriate container. Potential spills of liquid and solid form wastes will be contained in the storage buildings or prevented from contact with the subsurface by the concrete pad until clean-up occurs. Waste containers will be inspected daily while management activities are occurring in accordance with Permit Section 2.6, *General Inspection Requirements*. Spill responses will be subject to the conditions of Permit Section 2.10.4, *Spill Response*, or Section 2.11, *Contingency Plan* regarding containment and clean-up. Given these conditions, there is little to no potential for contaminants to enter the groundwater or other water supplies as a result of normal operations or accidents at the TWF.

In addition, the depth to groundwater at Well R-46 (the groundwater monitoring well adjacent to the northeast fenced portion of the TWF) is approximately 1,326 ft below ground surface after surface grading is completed (LANL, 2009/2010). The average annual precipitation in the Los Alamos area (including both rain and water equivalent or frozen precipitation) is 48 centimeters (cm) or 18.9 inches (in). The evaporation of freestanding water measured by pan evaporation rates significantly exceeds the annual precipitation. Representative evaporation rates for nearby locations include Santa Fe, 62.9 in/year, Cochiti Dam 88.0 in/year, Abiquiu Dam 72.13 in/year, and Jemez Dam 82.0 in/year. (WRCC, 2011). Permeability rates for soils nearby at TA-55 range from 1.5 to 5.0 cm per hour (cm/hr) in the top layers to 0.15 to 5.0 cm/hr in the lower layers. Available water-holding capacity ranges from 0.14 to 0.21 percent (Nyhan et al., 1978). Collectively, the depth to the regional aquifer, the annual moisture deficit, and soil parameters significantly limit the potential for contaminants to migrate to the groundwater in the unlikely event that contaminants reach the permeable ground surface surrounding the TWF.

The water supply lines to the TWF will be under pressure and will be equipped with backflow prevention devices to prevent potential contamination of the unit's potable water supplies. Pursuant to the requirements of 40 CFR §270.14(b)(8)(iii), no impact to water supplies is expected.

2.5.6 Mitigating Effects of Power Outages

Electrical power will be supplied at the TWF to operate building heating systems, the Public Address (PA) system, various instruments, and other electrical equipment. Evacuation alarms, equipped with a battery backup, will be located throughout the TWF and will continue to operate for eight hours during a power failure. Lighting and fire alarms will also have battery back-up power for 8 hours. Operations at the waste management unit will be discontinued until power is restored. Neither a power nor an equipment failure would affect containment at the TWF waste management unit. These backup power supplies will be used to meet the requirements of Permit Section 2.10.1, *Required Equipment.*

A seismic event of sufficient magnitude will trip a seismic switch resulting in loss of power at the unit. The three circuit breakers in the main service to the site will each have a shunt trip solenoid connected to a control power circuit. The control power circuit will interrupt the power when seismic sensors are activated by a seismic event. A control scheme that requires a minimum of two activated sensors before control power is applied to the trip coil of the breakers will be used. This scheme will minimize the nuisance tripping of power upon activation of only one sensor. The seismic sensor proposed is the Kinemetrics "Etna" device as used at TA-55 or an equivalent. This design feature is preventive in nature and is specified to prevent issues

associated with downed or damaged power lines.

2.5.7 Preventing Undue Exposure

To prevent undue exposure of personnel to hazardous or mixed waste, PPE appropriate for the waste containers being managed and the work performed will be worn by all on-site personnel at the TWF. Hard hats, safety shoes or boots, and gloves may also be worn while equipment is being operated and when containers are being loaded or unloaded. The different levels of PPE are defined by the Occupational Safety and Health Administration (OSHA) as follows:

Level D: Coveralls; safety shoes or boots; safety glasses or goggles; hard hat; and appropriate gloves.

Level C: Full-face, air-purifying respirator with appropriate cartridges for the chemicals or hazards present; chemical-resistant suits; chemical-resistant safety boots or booties; and inner and outer gloves.

Level B: All Level C equipment plus self-contained breathing apparatus in place of a Level C full-face respirator.

Level A: All Level B equipment, plus a fully-encapsulating chemical-resistant suit.

Most waste-handling operations at the TWF will require that personnel handling wastes or working in the unit will wear modified Level D PPE, (safety glasses and hard hats are not always required depending on the associated work hazards identified in job-specific hazard control plans). Modified Level D may include any combination of items in Level D. There are instances where an increased level of PPE is required, such as during sampling of headspace gases and change out of container vent filters, an emergency, or an unusual hazardous situation. If a situation arises during an emergency and an increased level of PPE is required, the PPE will be compatible with the hazards present. All personnel that use PPE are trained and qualified to use the equipment properly.

All personnel involved in waste-handling operations in the TWF will be required to have training appropriate for their work. Training requirements are presented in Attachment F, *Personnel Training Plan*, of the Permit. Personnel will also be required to review job hazards prior to performing waste-handling activities. Sampling plans, hazard control plans (which address monitoring equipment), and work authorizations will be required, in accordance with LANL safety procedures. The need for Personal Contamination Monitors (PCM, e.g., dosimeter, Draeger™ Tubes) will be established using the job hazard review process. Together, the required training, plans, and work authorizations will help to prevent undue exposure to personnel.

2.5.8 Air Emission Standards for Containers

The hazardous wastes that will be stored in containers at the TWF may be subject to 40 CFR Part 264, Subpart CC, "Air Emission Standards for Tanks, Surface Impoundments, and Containers" ~~and~~ Permit Section 3.9, *Volatile Organic Air Emissions*, implementing the Subpart CC requirements, and the information requirements of 40 CFR §270.27. Permit Section 3.9, *Volatile Organic Air Emissions*, implementing the Subpart CC requirements will also apply in such a case. Subpart CC standards for containers, as currently set forth by the EPA, require that containers of hazardous waste be covered so that there are no detectable emissions of volatile organic compounds to the air. Inspection and monitoring requirements are also specified.

However, as indicated in ~~40 CFR §~~ 40 CFR §264.1080(b)(6), these standards are not currently applicable to containers that are used solely for management of radioactive mixed waste in accordance with the regulations under the authority of the Atomic Energy Act and the Nuclear Waste Policy Act (EPA, 1994). This exemption will apply for the majority of waste containers stored and characterized at the TWF. The basis for this exemption is the need for these containers to be vented to prevent hydrogen gas buildup as described in the next section. These containers will be clearly labeled as radioactive in accordance with Permit Section 3.6, *Waste Container Labeling*. Under 40 CFR§ 264.1080, the standards are also not applicable to other containers of hazardous waste with less than 500 parts per million by weight (ppmw) VOCs or containers of less than 0.1 cubic meters (m^3) (approximately 26 gal) capacity, which may apply to hazardous wastes generated on-site.

The following management standards apply for hazardous wastes managed at the TWF that do not meet any of the exemptions listed in 40 CFR §264.1080(b) (or 40 CFR §265.1080(b) for wastes managed under 40 CFR Part 262 generator standards). Generator information will be used to determine whether the concentration of volatile organics in a waste stream at the point of generation is less than 500 ppmw, or is equal to or greater than 500 ppmw, which is the threshold concentration for Subpart CC requirements. In the event that this information is not available, the waste will be characterized in accordance with Attachment C, *Waste Analysis Plan*, of the Permit. Any hazardous waste that is newly-generated at the TWF or re-categorized through the characterization of waste managed at the TWF will be characterized in this manner.

Three levels of air emission controls based on container design capacity are established in ~~40 CFR §~~ 40 CFR §264.1086(b). The TWF hazardous waste storage procedures will require Level 1 controls based upon container design capacities if hazardous waste is managed. Containers of greater than 0.1 m^3 and less than 0.46 m^3 (approximately 119 gal) capacity and that meet U.S. Department of Transportation (DOT) specifications under 49 CFR, Part 178, will be kept closed during storage pursuant to ~~40 CFR §~~ 40 CFR §264.1086(c)(3). Containers undergoing waste characterization activities may be opened for access for the purposes described in ~~40 CFR §~~ 40 CFR §264.1086(c)(3). As required by ~~40 CFR §~~ 40 CFR §264.1086(c)(4), these containers are subject to a visual inspection and monitoring program. During storage at the TWF, the container will be inspected to check for visible cracks, holes, gaps, or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position, in accordance with ~~40 CFR §~~ 40 CFR §264.1086(c)(1)(ii). Pursuant to the Permit Section 2.6, *General Inspection Requirements* and Attachment E, *Inspection Plan*, containers will be inspected at least weekly at the TWF to ensure that the containers remain closed during storage.

2.5.9 Preventing Releases to the Atmosphere

In summary, as described in Section 2.5.8, *Air Emission Standards for Containers*, the majority of the waste containers at the TWF will manage and store radioactive mixed waste. Containers that store radioactive mixed waste are not subject to air emission standards under Subpart CC. *See* ~~40 CFR §~~ 40 CFR §264.1080(b)(6). These containers are not subject to RCRA air emission control requirements because these rules conflict with DOE technical requirements for containers holding radioactive mixed waste. Containers holding radioactive mixed waste cannot be sealed with "vapor leak-tight covers" as required under U.S. Environmental Protection Agency (EPA) rules due to unacceptable pressure buildup of hydrogen gas and the safety concerns associated with potential rupture of the container or serious explosion hazard. *See* U.S. EPA, 59 FR 62896,

62914 (1994). For this reason, containers holding radioactive mixed waste are exempt from EPA's air emission standards.

This information, however, pertains solely to DOE and Occupational Safety and Health Administration (OSHA) requirements for vents and air monitoring applicable to radioactive waste containers. This information is not relevant to containers holding hazardous waste only, which, as previously stated, are required to meet Subpart CC standards for air emissions. DOE requirements, in turn, address container standards for preventing air releases from transuranic waste containers through engineered controls and operations. Transuranic waste containers must meet ~~the U.S~~the U.S. Department of Transportation (DOT) Specification 7A, Type A, packaging requirements delineated in 49 CFR §173.465. These are the same container specifications for hazardous waste containers described by 40 CFR Part 264, Subpart CC §264.1086 standards.

As stated above, vent filters in radioactive waste containers are needed to meet DOE standards. All transuranic waste containers generated and in storage are required to be vented to avoid gas buildup in the containers by DOE *Radioactive Waste Management Manual*, M435.1-1, Item III. L(1)(b), implementing DOE Order 435.1, *Radioactive Waste Management*. This is also contained in the *Waste Isolation Pilot Plant Hazardous Waste Facility Permit* at Attachment A1, Section A1-1b[2]. The vents prevent the escape of particulate emissions from the containers and restrict the release of other gases at rates dependent on their molecular weight.

In addition to the waste container conditions subject to DOE, air sampling and monitoring commensurate with the hazards of the activities planned for the site must be performed to ensure that airborne radioactive is characterized in compliance with DOE Order 458.1, "*Radiation Protection of the Public and the Environment*" and 10 CFR 835, "*Occupational Radiation Protection.*" This may involve a range of monitoring options such as continuous air monitoring and routine swipe sampling for radioactive constituents determined by the waste management activities and locations.

2.6 PREPAREDNESS AND PREVENTION

The following sections present waste management techniques that will be used at TA-63 to comply with the preparedness and prevention requirements of 40 CFR Part 264, Subpart C. Additional information on the communication and alarm equipment available at LANL is presented in Attachment D, *Contingency Plan*, of the Permit. A discussion of the emergency equipment available for use at the hazardous waste management unit at the TWF is provided in Section 2.6.1 of this document. The TWF will be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment, in accordance with ~~40 CFR §~~ 40 CFR §264.31.

2.6.1 Required Equipment

In accordance with Permit Section 2.10.1, *Required Equipment*, at a minimum, the TWF will be equipped with safety-alarm systems to alert personnel in the event of an emergency and to evacuate the area. These alarm systems will be located both inside and outside the unit and will be monitored. The facility monitor/control system will be in operation 24 hours a day and will be located in the access control station at the TWF. Specific facility monitor/control system equipment to be located at the TWF is discussed below.

Emergency equipment will be located throughout the TWF and will include fire alarms, fire response systems, alarm systems, internal communications, spill kits, and decontamination equipment. Detailed information on the required emergency and safety equipment located at the TWF is provided below.

Pursuant to NFPA standards, fire-alarm pull boxes and/or drop box push-button alarms will be located in the TWF where waste management activities will be conducted. Fire-alarm pull boxes may be used by personnel to activate a local fire alarm when a fire or other emergency is discovered. The TWF will also be equipped with automatic fire-suppression alarm systems. The fire-suppression alarms will be activated when water flow is detected in the sprinkler pipes of the fire-suppression system. Upon activation of the fire-alarm system, an alarm will sound and red lights will flash to alert personnel of emergency conditions. All fire-alarm pull boxes and automatic fire-suppression systems that will be located at the TWF will alert the LAFD through the LACCDC.

In addition to the alarms described above, a PA system may also be used to announce emergency conditions or to initiate an evacuation at the TWF. The PA system will be audible throughout the TWF and will be activated at the access control station in the Operations Support Building.

Personnel working at the TWF will have the ability to communicate the location and nature of hazardous conditions using conventional telephones or cellular telephones to call the access control station. This type of call will summon assistance from the Emergency Management and Response Office, local police and fire departments, and state emergency response teams, if necessary.

Fire control equipment will be readily available for the waste management unit. Portable fire extinguishers will be available and may be used by trained on-site personnel depending on the size of the fire and the fuel source. However, LANL policy encourages immediate evacuation of the area and notification of appropriate emergency personnel. Fire hydrants are located in accordance with NFPA standards on the west and east sides of the TWF pad and near the Operations Building (see Figure 2-5). Water will be supplied to the fire hydrants by a municipal water system which will provide adequate volume and pressure (i.e., greater than 1,000 gal per minute and 90 pounds per square inch static pressure) to multiple water hoses in the event of a fire. The LAFD will supply all water hoses needed in the event of a fire at the TWF.

There will be spill kits available at the TWF in the storage areas to mitigate containable spills. These kits will typically contain sorbents, neutralizers, PPE and other equipment essential for containment of spills. Trained personnel will use the spill kits only if they know what has been spilled and they are sure their actions will not put themselves or others at risk. In addition to the spill kits, cleanup equipment such as shovels, bags, drums, etc. will be available at the TWF. Overpack drums and sorbents will also be stored in an equipment storage shed on the west side of the TWF. Emergency personnel can also provide additional spill control equipment and assistance upon request depending on the size and severity of the spill.

Personnel decontamination equipment that will be available at the TWF will include safety showers and eye wash stations located inside each of the storage buildings. These will be situated at all the waste storage buildings in accordance with OSHA requirements. Additional decontamination equipment may be provided by emergency personnel. Material Safety Data Sheets MSDS (e.g., for cleaners or solvents used on site) will be available at operations areas and will provide useful exposure information in accordance with OSHA requirements.

2.6.2 Testing and Maintenance of Equipment

In accordance with Permit Section 2.10.2, *Testing and Maintenance of Equipment*, all communications and alarm systems, fire protection, and decontamination equipment at TWF will be inspected, tested, and/or maintained as provided according to the inspection schedule. The frequency of inspection will be adequate to ensure proper operation in the event of an emergency. Maintenance, repair and replacement of emergency equipment will be performed as required.

2.6.3 Access to Communications or Alarm System

When waste is being handled in the TWF hazardous waste management unit, all personnel involved will have immediate access to an internal alarm or emergency communication devices, either directly or through visual or voice contact with another individual. These devices will include fire alarms, evacuation alarms, and cellular telephones as specified in Permit Section 2.10.3, *Access to Communications or Alarm Systems*. In the event of an emergency, communication equipment at the TWF will allow personnel to contact emergency response personnel, the access control station at the Operations Support Building, the operating group management, and/or the LACCDC operator. In addition to communications and alarm systems, the TWF personnel may carry pagers so that they can be contacted by the access control station and other LANL emergency support personnel at all times.

2.6.4 Space Requirements

Waste containers in the TWF storage units will be arranged in accordance with Permit Section 3.5.1, *Storage Configuration and Minimum Aisle Space*. In addition, storage configuration within a row will depend upon the type of container, its size, and its weight restrictions. Fifty-five-gal drums will be placed on a pallet, banded in an array of four drums, and arranged in rows allowing inspection of all sides and bottom. The four-drum on a pallet array may be stacked up to three units high. SWBs and SLB2s will be stacked to a maximum of two containers high. Stacking height for other containers will be assessed on the basis of container size and weight restrictions (which may prohibit stacking), to address any safety concern.

2.7 CONTINGENCY PLAN

In accordance with 40 CFR Part 264, Subpart D and ~~40 CFR §~~ 40 CFR §270.14(b)(7), emergency measures applicable to the TWF are provided in Attachment D, *Contingency Plan*, of the Permit. Specific information on emergency response resources and release prevention/mitigation at the TWF is provided below. A copy of the Contingency Plan in Attachment D of the Permit will be maintained at the Operations Support Building, 63-0144. Hazardous waste compliance personnel will be primarily responsible for updating the plan.

Figure 2-38 shows the evacuation route and muster area that may be used at the TWF in the event of an emergency. The evacuation route and muster area location are subject to change. A listing of emergency equipment currently available for use at the TWF is provided below.

The waste management personnel at the TWF will be trained in emergency procedures and responsible for correction of a nonsudden release from the unit if the correction can be performed safely with normal maintenance and management procedures. Personnel from the Emergency Management and Response 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.

Contingency or emergency measures are unanticipated "fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste ..." for which a schedule of remedial actions cannot be reasonably ascertained. Any remedial actions carried out under the provisions of the Contingency Plan will be performed as soon as possible to ensure protection of human health and the environment, as described in Attachment D of the Permit. These remedial actions include site cleanup; proper handling of recovered waste, contaminated soil, or contaminated surface water; decontaminating equipment, as needed; replacing or repairing equipment, as needed; and testing to verify successful cleanup.

2.7.1 Emergency Equipment at the TWF

The following sections list the equipment located at the TWF in case of an emergency. The list is similar to the unit specific lists included in the Contingency Plan of the Permit.

2.7.1.1 Fire Control Equipment:

ABC and/or BC rated fire extinguishers are located in the storage buildings and the characterization trailers. An ABC rated fire extinguisher is located in each vehicle used to transport waste containers.

Description of General Capabilities:

Portable, manually operated, fire extinguishers may be used by any qualified employee in event of a small fire. For larger fires, the LAFD is alerted.

2.7.1.2 Communication Equipment:

Telephones and the public address system are located inside the Operations Support Building.

Description of General Capabilities:

Telephones for internal and external communication are available for use by any employee. Employees can be notified of an emergency situation and appropriate response action through the PA system.

Fire alarm pull stations are located in the storage buildings and at operations support building.

Description of General Capabilities:

Manually-operated fire alarms may be activated by any employee in the event of a fire to alert TWF site personnel, LANL Emergency Response Personnel, and the LAFD.

Fire and public address system alarms

Description of General Capabilities:

The fire and public address system are activated or used to provide a sound signal to alert personnel of fires or the need to clear the area.

2.7.1.3 Decontamination Equipment:

Eyewash/emergency shower stations and MSDSs are available in the storage buildings and the Operation Support Building. MSDS information is maintained where appropriate for personnel accessibility and are used for chemicals that will be needed to support operations or emergency

activities.

Description of General Capabilities:

Eyewashes and emergency showers may be used by personnel who receive a chemical splash to the eyes or body. Specific MSDSs should be reviewed prior to working with chemicals.

2.7.1.4 Personal Protective Equipment

Personnel at TWF will be required to use appropriate PPE to protect themselves from hazards found under normal conditions. This PPE may include gloves, steel toe shoes, and eye protection, additional PPE may be required during unusual hazardous situations. First aid kits and hearing protection will also be available.

Description of General Capabilities:

To prevent undue exposure of personnel to hazardous or mixed waste, PPE appropriate for the waste containers being managed will be worn by all on-site personnel at the TWF (see section 2.5.6). First aid kits may be used by personnel who sustain minor injuries at the unit in the course of operations. Hearing protection may be used by operations personnel to mitigate noise impacts.

2.7.1.5 Other

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

2.7.2 Support Agreements with Outside Agencies

Information on support agreements with outside agencies, as required by ~~40 CFR §~~ 40 CFR §264.37, is presented in Attachment D, *Contingency Plan*, of the Permit. These include local and state emergency organizations, police, fire, and medical agencies.

2.8 IGNITABLE, REACTIVE, AND INCOMPATIBLE WASTES

Incompatible wastes will be segregated and separated during storage in accordance with ~~40 CFR §~~ 40 CFR §264.177(c) and Permit Section 2.8.2, *Incompatible Wastes Precautions*. All waste will be segregated and stored in accordance with DOT compatibility groups. These DOT compatibility groups are: flammables (Class 3), oxidizers (Class 5.1), combustible and noncombustible miscellaneous hazardous material (Class 9), corrosives (Class 8), poisons (Class 6), radioactive (Class 7), acids (Class 8), reactives (Class 4), and non-regulated materials. Incompatible wastes will be separated and segregated from other wastes and materials by means of a berm, dike, wall, or other specific means (e.g., secondary containment pallets, modular sheds, distance) during storage as required by 40 CFR§ 264.17 (c). These precautions will also be usd to prevent a release or spill of incompatible wastes from potentially comingling with fire suppression water in the unit's retention pond in accordance with Permit Section 2.8.2. In the event of a fire or spill, the Permit Contingency Plan may also be implemented including emergency segregation procedures determined to be necessary at that time. In addition, no incompatible waste will be mixed, and no waste will be placed in a container that previously held an incompatible waste, as required by 40 CFR §§ 264.177(a) and (b), and ~~40 CFR §~~ 40 CFR §270.15(d).

There will be no sources of open flames allowed within the unit. Cutting and welding activities

will not be conducted in the vicinity of waste containers. Ignitable or reactive wastes will be packaged in sealed containers and will not be exposed to ignition sources. Waste management practices of segregation and separation by distance in the TWF storage buildings will minimize the possibility of accidental ignition. Indoor storage eliminates exposure to spontaneous ignition sources such as sunlight and contact with hot surfaces. These wastes will be stored a minimum of 15 m from the TA-63 boundary in accordance with ~~40 CFR §~~ 40 CFR §264. 176 and Permit Section 2.8, *Special Requirements for Ignitable, Reactive, or Incompatible Waste*. The distance to the nearest TA-63 boundary from the TWF boundary is approximately 1.5 m (5 ft) further than the 15 m requirement as shown in Figure 2-39. This distance is only applicable for the south-western side of the TWF where no waste storage is anticipated. The areas and structures where storage occurs in the unit are all significantly over 15 m from the TA-63 boundaries.

Only non-sparking tools will be used for waste management operations such as removing plugged filter vents from waste containers. Smoking will not be allowed in the TWF. "No Smoking" signs will be conspicuously placed wherever there is a potential hazard from ignitable or reactive waste, as required by ~~40 CFR §~~ 40 CFR §264.17(a). Precautions will be taken to prevent reactions that may generate extreme heat, pressure, fire, or explosion. TWF operations will minimize the potential for reactions that may produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment. TRU waste containers will have vents to prevent over-pressurization as discussed previously. Containers will not be opened during storage except to replace vents if necessary. Together, these measures will meet the requirements of 40 CFR §§ 264.17(a) and (b) and 264.176. Cutting and welding activities will be conducted in the TWF only under special authorization and will not be conducted in the vicinity of waste containers. Lightning protection will be provided at the TWF site as described in Section 2.5.2 of this document.

~~Permit condition 2.8.2 also requires that the facility will ensure that incompatible wastes or materials are not stored so that a release or spill of these wastes might commingle in a fire suppression water holding area or tank. As a performance based permit condition, it is very unlikely that this event would occur at the TWF. The majority of transuranic waste in containers is solid form and not liquid. There is no waste management process occurring at the TWF other than storage that would raise the potential for mixing of spills (e.g., such as waste treatment involving liquid processes). The fire suppression water holding area at the TWF is the retention pond and this is relatively far from the storage buildings. The enclosed nature of the buildings will act as confinement for solid waste forms in the event of a spill. The probability of liquids in waste containers is low based on generator packaging requirements for transuranic waste and the TWF waste acceptance criteria. Any known liquid containing waste container will be stored in secondary containment pallets. The potential liquid amounts in individual containers are relatively low and waste spill remediation activities such as spill kits or berms would have an excellent probability of blocking spills from reaching the retention pond. In the event of a large spill or one that represented an immediate threat to the environment, the provisions and LANL Facility resources of the Contingency Plan would be implemented. In the event of a fire, the large amounts of collected firewater relative to the amount of potential wastes would serve to minimize the reactivity of waste mixing. A fire in a permitted unit would also involve the implementation of the Contingency Plan, including risk assessment of the runoff and resulting protective actions.~~

2.9 INSPECTION

In accordance with the requirements of 40 CFR §264.15 and Permit Section 2.6, *General Inspection Requirements*, the TWF will incorporate the inspection requirements outlined in Attachment E, *Inspection Plan*, of the Permit.

2.9.1 Additions to Inspection Plan Necessary for the TWF

In accordance with 40 CFR §§ 264.15(b) and 264.602, the TWF is inspected according to the schedule provided below. Inspection frequencies are adequate based on the deterioration rates of equipment/systems and the probability of harm to human health or the environment if failure of the equipment/systems occurs, or any operator error goes undetected between inspections.

2.9.1.1 On Day(s) of Waste Handling

Inspections will be conducted daily, or the day after, waste handling activities are conducted at the TWF. Waste handling activities are outlined in Attachment E, *Inspection Plan*, Section E.2.1 of the Permit.

2.9.1.2 Weekly Inspections

Weekly inspections of the storage areas at the TWF will be conducted as long as waste remains in storage. Weekly inspections will be conducted in accordance with Attachment E, *Inspection Plan*, Section E.2.2 of the Permit.

2.10 RECORDKEEPING REQUIREMENTS

In accordance with 40 CFR Part 264, Subpart E, recordkeeping requirements applicable to the TWF are discussed in the following sections. TWF operations will meet the requirements contained in Permit Section 2.12, *Recordkeeping and Reporting*.

2.10.1 Manifest Systems

Waste information supporting shipping manifests will be updated to record TWF TRU waste characterization activities. This data will support manifest information needed for shipments of waste received at, or initiated from, the LANL Facility as a whole. Documentation for each TRU waste container will be maintained from the time of receipt at the TWF and records will follow each container to the RANT Facility where the manifest is completed upon shipment to WIPP. Waste characterization data for manifests for secondary mixed low-level and hazardous waste streams at the TWF will follow the record keeping practices of Permit Section 2.12.1, *Manifest Systems* or the requirements of 40 CFR Part 262.

2.10.2 Facility Operating Record

Many of the records required under the Permit Section 2.12.2, *Facility Operating Record*, will be generated and maintained at TWF in support of LANL Facility requirements. In particular, these include:

- Hazardous waste received and managed, Section 2.12.2(1);
- Location of waste stored, Section 2.12.2(2);
- Waste analyses, Section 2.12.2.(3);

- Contingency Plan incidents, Section 2.12.2.(4);
- Inspection records, Section 2.12.2.(5);
- 40 CFR §268.7 notices, Section 2.12.2.(10);
- Secondary containment records, Section 2.12.2.(15);
- Personnel training records, Section 2.12.2.(16);
- Alternate emergency equipment, Section 2.12.2(17;) and
- Fire suppression system activations, Section 2.12.2(18).

TWF personnel will be trained in the implementation of these record requirements and will maintain logbooks or other formats to enable saving applicable data. These or compiled records will be maintained in the Operations Support Building as part of the unit's operating record.

2.10.3 Availability of Facility Operating Record

The TWF operations will comply with the requirements of Permit Section 2.12.3, *Availability of Facility Operating Record*, by keeping records on-site at the Operations Support Building or by passing data on to centralized LANL records or record organizations.

2.10.4 Biennial Report

The TWF will provide timely waste management data to cover the unit's activities to support the reporting requirements of Permit Section 2.12.5, *Biennial Report*. This will include a description and the quantity of each hazardous waste the facility received during the calendar years covered by the report year and the method of treatment, storage, or disposal for each hazardous waste.

2.10.5 Unmanifested Waste Report

Waste from off-site sources may be accepted on a limited basis at LANL provided that such waste is properly characterized and manifested and meets the requirements listed in Permit Section 2.2.1, *Hazardous Waste from Off-Site Sources*. No wastes will be accepted for treatment at the TWF.

2.10.6 Additional Reports

In accordance with the requirements of ~~40 CFR §~~ 40 CFR §264.77, LANL will also report the following to the NMED-HWB:

- Releases and unanticipated fires and explosions that require implementation of the contingency plan, as specified in ~~40 CFR §~~ 40 CFR §264.56(i);
- Facility closures, as specified in ~~40 CFR §~~ 40 CFR §264.115; and
- As otherwise required by 40 CFR Part 264, Subparts F, BB, and CC.

2.10.6.1 Waste Minimization

In accordance with the requirements of ~~40 CFR §~~ 40 CFR §264.75 and Section 2.9 of the Permit, LANL develops a report outlining annual waste minimization efforts. This report is submitted to

NMED-HWB prior to December 1 of each year.

2.10.6.2 Reporting Other Noncompliance

In accordance with the requirements of Permit Section 1.9.13 and 1.9.14, LANL develops an annual report outlining any non-threatening release from or at a permitted unit and all instances of noncompliance not reported as an anticipated noncompliance. This report is submitted to NMED-HWB prior to December 1 of each year.

Table 2-1

Proposed Storage Containers for Mixed Transuranic Waste[a]

Container Type	Description	Requirements	Filter Vents [a][b]
Standard 55-gallon Drum	• Gross internal volume of 7.3 ft^3 (0.21 m^3). • Constructed of mild steel. • May also contain ridge, molded polyethylene (or other compatible material) liner.	Meet the requirements for DOT Specification 7A in 49 CFR §178.350.	One or more filter vents installed on top of the container.
Pipe Overpack Container (POC)	55-gallon drum containing a pipe component and dunnage.	DOE/WIPP 11-3384 Rev. 1 Page 9 of 27 DOT Type A payload container.	One or more filter vents installed on top of the container
Standard Large Box 2 (SLB2)	Gross internal volume of 261 ft^3 Length 108" x Height 74" x Width 69"	Meet the requirements for DOT Specification 7A in 49 CFR §178.350.	Up to 6 filter vents installed on top of the container
Standard Waste Box (SWB)	Gross internal volume of 66 ft^3 (1.88 m^3). Length 69" x Height 37" x Width 52"	Meet the requirements for DOT Specification 7A in 49 CFR §178.350.	One or more filter vents installed on top of the container.
Standard 85-gallon Drum Over Pack	• Gross internal volume of 11.3 ft^3 (0.32 m^3). • Used for over packing contaminated 55-gallon drums.	DOT Specification 7A and is certified to meet applicable requirements for Type A packaging	One or more filter vents installed on top of the container.
~~100-gallon (379-liter) Drum~~	~~• gross internal volume of 13.4 ft^3 (0.38m^3).~~ ~~• May be direct loaded with contact-handled TRU mixed waste~~	~~Meet the requirements for DOT Specification 7A in 49 CFR §178.350.~~	~~One or more filter vents installed on top of the container.~~
~~Ten Drum Overpack~~	~~• Gross internal volume of 160 ft^3 (4.5 m^3).~~ ~~• Used to contain up to ten standard 55-gallon drums or one SWB~~	~~DOT Specification 7A and is certified to meet applicable requirements for Type A packaging~~	~~One or more filter vents installed on top of the container.~~
Oversized Waste Box	• Gross internal volume greater than 11.3 ft^3 (0.32 m^3). • Used for oversized waste.	DOT Specification 7A and is certified to meet applicable requirements for Type A packaging	Two or more filter vents installed on sides of container.

[a] The containers listed in this table are described for storage at the TWF

[b] Vents are high-efficiency particulate air grade filters to preclude container pressurization caused by gas generation and to prevent particulate material from escaping. Vents have an orifice approximately 0.375 inches (9.53 millimeters [mm]) in diameter through which internally generated gas may pass. Filter media can be any material compatible with the contents of the container (e.g., composite carbon, sintered metal).

CFR = Code of Federal Regulations

DOT = U.S. Department of Transportation

m^3 = cubic meters

ft^3 = cubic feet

~~ft^3 = cubic feet~~
~~m^3 = cubic meters~~

TABLE 2-2
Waste Container Storage Capacity Example

Container Type	Number of Containers	Nominal Container Dimensions (feet)	Nominal Container Capacity (gallons)	Total Gallons
55-Gallon Drum	992	Height = 2.79 Diameter = 1.88	55	54,560
Standard Waste Box (SWB)	38	Height = 3.03 Length = 5.73 Width = 4.33	470	17,860
Standard Large Box 2 (SLB2)	5	Height = 5.38 Length = 8.50 Width = 5.25	1,790	8,950
Oversize Waste Box (OWB)	4	Height = 7.0 Length = 13.0 Width = 9.0	6,126	24,504
			TOTAL CAPACITY	105,874

Table 2-3

References for Waste Stored at the TWF

Waste Type	**Waste Stream Description**	**Permit Attachment C, *Waste Analysis Plan*, Waste Description Locations[a]**
Hazardous (generated at the TWF only)	• Spent Solvents • Contaminated Solid Waste • Paint and Related Waste • Corrosive Liquid Waste • Solid Metals and Metallic Compounds • Mercury Waste • Contaminated Non-Corrosive Aqueous and Non-aqueous Solutions and Sludges • Gas Cylinder Waste • Used Batteries and Battery Fluids	• Section C.1.2.1, Non-mixed Hazardous Waste • Table C-2, Descriptions of Hazardous Waste Stored at the Facility • Table C-9, Parameters, Characterization Methods, and Rationale for Parameter Selection for Hazardous Waste • Table C-16, Summary of Characterization Methods for Hazardous Waste
Low-Level Mixed (only TRU waste that is re-classified to Low Level Mixed will be stored at TWF until it can be dispositioned)	• Lead Waste • Noncombustible Debris • Combustible Debris • Organic Contaminated Combustible Solids • Mercury Wastes • Aqueous and Non-aqueous Liquids Contaminated with Heavy Metals and/or Organics • Gas Cylinder Waste	• Section C.1.2.2, Mixed Low-Level Waste • Table C-3, Descriptions of Mixed Low-Level Waste Stored at the Facility • Table C-10, Parameters, Characterization Methods, and Rationale for Parameter Selection for Mixed Low-Level Waste • Table C-17, Summary of Characterization Methods for Mixed Low-Level Waste
Transuranic Mixed	• S3000 Homogeneous • S4000 Soil/Gravel • S5000 Debris	• Section C.1.2.3, Mixed Transuranic Waste • Table C-4, Facility MTRU

		Waste Stream Waste Matrix Codes Correlated with Facility Waste Identification Systems • Table C-5, Descriptions of Mixed Transuranic Waste Stored at the Facility • Table C-11, Parameters, Characterization Methods, and Rationale for Parameter Selection for Mixed Transuranic Waste • Table C-18, Summary of Characterization Methods for Mixed Transuranic Waste

[a] From *Los Alamos National Laboratory Hazardous Waste Facility Permit* (LANL, 2010)

3.0 FACILITY REQUIREMENTS

This section of the TWF permit modification request addresses facility information requirements including traffic patterns, location information (i.e., seismic standard, floodplain standard, archeological sites), provides a listing and location for required topographic maps, an evaluation of other federal laws, an evaluation of other permit activities, and training specific to the TA-63 TWF Unit.

3.1 TRAFFIC PATTERNS

In accordance with the requirements of 40 CFR §270.14(b)(10), general traffic pattern information, traffic volumes, and traffic control signals for the LANL-wide facility are provided in Appendix A of the LANL General Part B (LANL, 2003). Figure 3-1 illustrates major roads through LANL. Information specific to the TA-63 TWF is provided below.

3.1.1 Routes of Travel

The primary traffic routes used to transport hazardous waste to the TA-63 TWF include Pajarito Road, Puye Road, and the access road along the east side of the unit, see Figure 3-2. Pajarito Road is a primary thoroughfare at LANL; the following Technical Areas are located along this corridor: TA-3, TA-36, TA-48, TA-54, TA-55, TA-63, and TA-54. This road parallels the west and south borders of the TWF site. The TWF site cannot be directly accessed via Pajarito Road. This two-lane road was built for 55 mph traffic with no vehicle size restrictions, and only limited heavy truck and fuel-truck traffic prohibitions. Puye Road is a secondary two-lane road connecting Pajarito Road and TA-5, TA-52, and TA-63. Vehicle barriers will be used to protect the TWF from Pajarito and Puye Road traffic.

Waste transportation trucks that enter the TWF will park in the area between the retention pond and Storage Building 63-0149 for loading and unloading activities. Loaded electric forklifts will transport waste containers to the Characterization Trailers, the Storage Buildings, and the Storage and Characterization Building.

Other than electric forklifts, it is anticipated that the only vehicle traffic within the TWF controlled area would be semi-trucks (for occasional placement and removal of the characterization trailers), delivery trucks with specialty gases (for characterization and radiation protection equipment), and snow removal equipment. The site has been designed to provide clearance for the movement of the characterization trailers. However, due to the relatively small size of the site, removal of a particular trailer may require temporary shifting of other trailers.

It is anticipated that gas bottles for the specialty gases will be unloaded inside the gates of the site and then transported with forklifts into the controlled area. There will be a single large Dewar flask for liquid nitrogen located near the receiving area and Operations Support Building. This flask will be replenished from a truck transporting liquid nitrogen. Smaller containers will be filled from the Dewar flask and transported (fork lift, dolly, cart, as needed) to the point of use in the characterization trailers.

Snow removal equipment such as blade equipped all-terrain vehicles may also be used. Snow

removal equipment such as snow plows may be used for heavy snows, but those vehicles would not be used near waste containers stored outside, would be escorted by TWF personnel, and would be limited to speeds less than ten miles per hour. If snow removal in the vicinity of waste containers stored outside is needed, snow shovels or a snow blower will be used. Other vehicles or equipment that may be required to perform maintenance within the TWF will also be escorted and limited to speeds less than 10 miles per hour.

3.1.2 Traffic Volumes

Pajarito Road has an average daily traffic volume of approximately 4000 vehicles per 24-hour day (LANL, 2008). This includes vehicles traveling both northwest and southeast. Vehicle types include cars, light- and medium-duty trucks, and vans. Traffic volume at the TWF will not be high. Anticipated traffic volumes at the TWF will be from one to several waste shipments by truck to or from the loading/unloading area per day, forklift traffic within the unit, occasional delivery trucks for analytical gases and other supplies, and, rarely, waste characterization trailer movement. Daily use of the Operations Building parking area is anticipated for twenty to thirty vehicles, government-use and privately-owned vehicles (POV).

3.1.3 Traffic Control Signals

Roadway access to the TWF site is required for POV, site vehicles, tractors/semi-trailers, other waste trucks, delivery vehicles, and characterization trailers. Traffic control signals within and around TA-63 will include stop signs, posted speed limits, and other traffic and pedestrian control signs. The locations of existing and proposed signals and signs near the TWF are shown in Figure 3-3.

3.1.4 Road Surfacing and Load-Bearing Capacity

Roads within TA-63 are generally two-lane roads with asphaltic concrete surfaces. Load-bearing capacity for these roads is 32,000 pounds per axle. These roads are typically constructed with a 6-inch-thick base course overlain with a 3-inch-thick asphaltic concrete surface. These roads were designed and constructed to meet the American Association of State Highway and Transportation Officials Specification HS-20.

The reinforced concrete pad within the TWF boundary will be constructed to be nominally 8 inches thick in traffic bearing areas. This will meet American Concrete Institute (ACI) 360 R-92 standards for design of slabs on grade for this type of structure.

3.2 LOCATION INFORMATION

3.2.1 Seismic Standard

The proposed TWF is in compliance with the seismic location standards of 40 CFR 270.14(b)(11) and 264.18(a). These regulations require seismic studies for new facilities to demonstrate that evidence of Holocene faulting is not found within 200 feet of the waste management unit. The seismic investigation included in Attachment D, *Seismic Report,* of this permit modification request demonstrates that there has been no direct evidence observed for Holocene faulting within that radius of the TWF.

Site specific geologic investigations at TA-63 have revealed the apparent presence of lineaments near this location, i.e., topographic features of regional extent that may reflect crustal structure

within 3,000 ft. However, trench excavation and mapping of these lineaments indicates that they do not correlate with known Holocene faults. Published geologic studies in and around TA-63 (including several lengthy geologic test trenches excavated in 1992-1993), together with aerial reconnaissance of the area within a 5-mi radius from the proposed TWF, and the field reconnaissance of the lineaments and contact elevations, combine to demonstrate that no faults with Holocene displacement are present within 200 ft of the proposed TWF. Aerial reconnaissance, detailed geologic mappings of portions of LANL, and paleoseismic trenching investigations show that the focus of potential Holocene faulting at LANL is concentrated along the main Pajarito fault, over 16,000 ft (4877 m) west of the proposed TWF.

3.2.2 Floodplain Standard

Pursuant to the requirements of 270.14(b)(19)(ii), LANL has mapped all 100-year floodplain boundaries within the LANL complex, as required in "*Module VIII: Special Conditions Pursuant to the 1984 Hazardous and Solid Waste Amendments to RCRA for Los Alamos National Laboratory*, EPA I.D. NM0890010515" (EPA, 1998). The latest version of these maps including revisions after the Cerro Grande Fire was published in a report documenting the floodplain mapping procedures (McLin et. al., 2001).

The flood plains near TWF are shown in Figure 3-4 of this permit modification request. The TA-63 TWF is located on a mesa top between Mortandad Canyon on the north and Pajarito Canyon on the south. The proposed site for the TWF is located approximately 150 vertical ft above the floodplain limits for Mortandad Canyon at a distance of approximately 2000 ft. The site is located approximately 200 vertical ft above the floodplain limit for Pajarito Canyon at a distance of approximately 1000 ft. The site is also at the head of the Canada del Buey, thereby assuring surface water drainage to the east. Therefore, the TWF is not located within the 100-year floodplain boundary in accordance with 40 CFR §§ 270.14(b)(11)(iii through v).

3.2.3 Cultural Resources

Cultural resources are human imprints on the landscape and are defined and protected by a series of federal laws, regulations, and guidelines as described in *A Plan for the Management of the Cultural Heritage at Los Alamos National Laboratory, New Mexico* [LANL 2006]. The three general categories of cultural resources at LANL are archaeological resources, historic buildings and structures, and traditional cultural properties. Archaeological resources include any material remains of past human life or activities which are of archaeological interest. Historic buildings include buildings or other structures constructed after 1942 and LANL-era buildings that have been evaluated for eligibility to the National Register of Historic Places (NRHP). Traditional cultural properties are defined as a place of special heritage value to contemporary communities, often, but not necessarily American Indian groups. A total of 1802 archaeological sites at LANL have been determined eligible or potentially eligible for listing in the NRHP, along with 371 historic buildings and structures. None are within or immediately adjacent to the footprint of the TRU Waste Facility.

3.3 TOPOGRAPHIC MAPS

Topographic maps and figures are provided in this Permit modification request or referenced to meet the requirements of ~~40 CFR § 40~~ 40 CFR §270.14(b)(19). The maps clearly show the map scale, the date of preparation, and a north arrow. The maps and figures used to fulfill these

regulatory requirements in this submittal include the following:

- Access roads and control features for the TA-63 TWF, Figure 3-3.
- 100-year flood plain adjacent to TA-63, Figure 3-4.
- Surface waters, including intermittent streams, near TA-63, Figure 3-4.
- Surrounding land uses (e.g., residential, recreational) are depicted on Figure 2-2.
- Windroses of average wind speed and direction day and night, measurements collected at four primary measurement stations at LANL in 2009, Figure 3-5.
- Legal boundaries of LANL (including TA-63), Figure 2-3.
- A topographic map of buildings and structures within a 1000 foot radius of the TWF at TA-63, Figure 2-4.
- A map of National Pollutant Discharge Elimination System outfall locations, Figure 3-6.
- Storm and process sewer systems at TWF, Figure 3-7.
- Drainage control features of the TWF, Figures 2-5, 2-6, 2-31, 2-32 and 2-33.
- Natural surface drainages are shown on the topographic map included as Figure 3-8.
- Fire stations serving LANL and the County of Los Alamos are shown on Figure 3-9, as well as Attachment N, Fig. 49, of the Permit.
- Map of supply wells, monitoring wells, test wells, springs, and surface-water sampling stations near TA-63, Figure 3-10.
- A map showing all existing and proposed wells and boreholes within an approximate one-mile radius of TA-63 is included as Figure 3-11.

Contour lines on all topographic maps are in intervals sufficient to detail natural drainage at LANL and in the vicinity of the waste management unit. As provided in ~~40 CFR § 40~~ 40 CFR §270.14(b)(19), LANL has submitted the maps to the NMED at these scales and contour intervals due to the size of the waste management unit, the extent of the LANL facility, and the topographic relief in the area.

3.4 GROUNDWATER MONITORING

The groundwater monitoring requirements of 40 CFR Subpart F do not apply to the TWF as it is not a regulated unit as defined at 40 CFR 264.90(a)(2). The site is for storage in contained structures only and no spills have occurred. The groundwater monitoring well (R-46) outside the north east fence line of the TWF is included in the LANL groundwater monitoring program but is not associated with this container storage unit.

3.5 OTHER FEDERAL LAWS

The following federal laws are required under 40 CFR §§ 270.3 and 270.14(b)(20), to be given consideration when applying for a hazardous waste facility permit. When any of these laws is applicable, its procedures must be followed:

The Wild and Scenic Rivers Act (16 United States Code [USC] 1273 et seq.). This act provides

for a national wild and scenic rivers system and prohibits construction of any waterway that would have a direct adverse effect on the values for which a wild and scenic river was established.

The National Historic Preservation Act of 1966 (16 USC 470 et seq.). This act establishes a program for the preservation of historic properties throughout the country. The act has provisions that require mitigation of adverse effects to registered properties.

The Endangered Species Act of 1973 (16 USC 1531). This act provides for the conservation of endangered and threatened species of fish, wildlife, and plants. The act prohibits any action that would jeopardize the continued existence of any endangered or threatened species or adversely affect its critical habitat.

The Coastal Zone Management Act of 1972 (16 USC 1451 et seq.). This act establishes national policy for the management, use, protection, and development of land and water resources of the nation's coastal zones. Section 307(c) of the act and implementing regulations prohibit the U.S. EPA from issuing a permit for activity affecting coastal zone land or water without the certification from the applicant that the activity is in compliance with the state Coastal Zone Management Program.

The Fish and Wildlife Coordination Act of 1934, as amended (16 USC 661 et seq.). This act promotes the conservation of wildlife, fish, and game and integrates this conservation with water resource projects. Certain provisions of the act require that permits proposing or authorizing the impoundment, diversion, or other control or modification of any body of water be considered by the appropriate state agency for impacts to wildlife resources.

Because LANL has ongoing programs in support of the National Historic Preservation Act, the Endangered Species Act, and the Fish and Wildlife Coordination Act, consideration was given to these federal laws.

The National Historic Preservation Act is administered by the Advisory Council on Historic Preservation, appointed by the President, and the New Mexico State Historic Preservation Office. Section 106 of the Act requires DOE to consider the effects of its actions on historic properties, and provide the Council with a reasonable opportunity to comment on those actions and the manner in which DOE takes historic properties into account in their decisions. DOE accomplishes this through consultation with the State Historic Preservation Office whenever a project may potentially impact a historic property. LANL may prepare a Historic Building Survey Report assessing the eligibility of a historic building dating from the Manhattan Project and early Cold War periods (1943 to 1956) for the National Register of Historic Places and evaluating the impacts of the proposed actions. The consultation process was formalized in April 2000 through a Programmatic Agreement between DOE, the Council, and the State.

For any undertaking on DOE land that may directly or indirectly impact threatened and endangered (T&E) species or their habitat, DOE must consult with the U.S. Fish and Wildlife Service (USFWS), as provided under Section 7 of the Endangered Species Act. Similarly, DOE must consult with the USFWS for projects that would impound, divert, or otherwise control or modify a body of water, as required by the Fish and Wildlife Coordination Act.

For Endangered Species Act compliance, LANL may prepare a Biological Assessment to document the presence of T&E species and to evaluate the impacts of a project on a listed species or its habitat. DOE will then request in writing that the USFWS concurs with DOE's

findings in the Biological Assessment. In recent years, DOE and LANL have streamlined the consultation process by preparing a T&E Species Habitat Management Plan. This plan fulfills the provisions of the Endangered Species Act that require federal agencies to carry out programs for the conservation of T&E species and their habitat. The USFWS approved this plan in February 1999.

Provisions in the Wild and Scenic Rivers Act and the Coastal Zone Management Act are not applicable to LANL's activities.

Consideration will be given to Executive Orders, issued by the President, that are relevant to waste management activities at LANL. When any of these Orders is applicable, its provisions will be followed. Requirements for Executive Orders are reserved in ~~40 CFR §~~ 40 CFR §270.3(f).

3.6 OTHER PERMIT ACTIVITIES

Other types of RCRA permits include, but are not limited to, the following;

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

None of these permit types are relevant for the proposed waste storage operations at TA-63.

3.7 TRAINING

In accordance with 40 CFR §§ 270.14(b)(12) and 264.16 and Permit Section 2.7, *Training*, training requirements for treatment, storage, and disposal facility workers at LANL are addressed in Attachment F, *Training Plan*, of the Permit. The training program instituted at the Facility includes a combination of Facility-wide courses, permitted unit-specific training, and on-the-job training (OJT). Facility-wide courses are provided internally or through external vendors and are usually classroom-based. Permitted unit-specific training may be developed and delivered within a particular permitted unit, and OJT consists of supervised and documented training focused primarily on procedures performed by individual workers.

All TWF employees and contract and support personnel who handle hazardous and/or mixed waste at the unit will receive the appropriate level of training within six months of their date of hire or transfer for work. Personnel will not be allowed to work in unsupervised waste handling positions at the TWF until they have successfully completed the appropriate level of training for their positions and responsibilities as included in Table F-1 of Attachment F of the Permit at a minimum.

Records of Facility-wide training currently sponsored or administered by central training personnel are entered by that group into the UTrain System, the official Facility training

database, and these records document that the required training has been successfully completed by the TWF workers. LANL will retain these training records in accordance with Permit Section 2.12.2, *Facility Operating Record*.

3.8 LAND DISPOSAL RESTRICTIONS

Wastes managed at the TWF will be subject to the Land Disposal Restrictions of 40 CFR Part 268, as implemented by Permit Section 2.3, *Land Disposal Restrictions*.

4.0 CORRECTIVE ACTION

This section describes four Solid Waste Management Units (SWMUs) located in, or potentially impacting, TA-63 at LANL. Information on the SWMUs at and near TA-63 is contained in LANL's *Solid Waste Management Units Report* (LANL, 1990), hereinafter referred to as the 1990 SWMU Report, and in the *RFI Work Plan for Operable Unit 1129* (LANL, 1992), as well as other references cited below.

4.1 INTRODUCTION

The information in this section is being submitted in response to regulatory requirements in ~~40 CFR §~~ 40 CFR §270.14(d). LANL uses the definition of a SWMU presented in the March 1, 2005 Compliance Order on Consent for LANL issued by NMED on March 1, 2005, hereinafter called the Consent Order. This definition states that SWMUs are "any discernible unit at which solid wastes have been placed at any time, and from which the Department determines there may be a risk of a release of hazardous waste or hazardous waste constituents, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at the Facility at which solid wastes have been routinely and systematically released; they do not include one-time spills."

4.2 SWMU DESCRIPTIONS

Descriptions of the SWMUs at and near TA-63 identified for corrective action in the Consent Order and Table K-1, *SWMUs and AOCs Requiring Corrective Action*, of the Permit are presented below. These descriptions were compiled from the *RFI Work Plan for Operable Unit 1129* (LANL, 1992), the 1990 SWMU Report, the *Addendum to "Sampling and Analysis Plan for the Middle Mortandad/Ten Site Aggregate"* (LANL 2004), and the *Phase III Investigation Report for Material Disposal Area C, Solid Waste Management Unit 50-009 at Technical Area 50* (LANL 2011c). Brief unit and waste descriptions are also provided in Table 4-1.

4.2.1 TA-63 SWMUs

SWMUs at TA-63 include two inactive septic systems, neither of which is situated within the boundary of the TWF. Their locations are shown in Figure 4-1 of this permit modification request.

4.2.1.1 SWMU 63-001(a)

SWMU 63-001(a) is an inactive 1000-gal. septic tank (structure 63-12, formerly designated as structure 52-49) and its associated seepage pit and drain line (formerly designated as structure 52-50). The seepage pit is 4 ft in diameter and 50 ft deep. This septic system formerly served Buildings 63-3, -4, -5, and -6. The septic system was removed from service in 1993 when the lines were connected to the TA-46 SWSC. Building 63-3 is a single-story concrete-block building that contains carpentry, welding, plumbing, and paint shops and two offices. Building 63-4 is a modular office building. Buildings 63-5 and -6 are trailers that are subdivided into offices.

Potential contaminants at SWMU 63-001(a) are solvents and other unspecified chemicals. No documentation of spills, releases, or incidents at TA-63 has been found.
Sampling was conducted at SWMU 63-001(a) in 1995. A total of 31 samples were collected from four locations and submitted for laboratory analysis of inorganic chemicals, organic chemicals, and radionuclides. Arsenic was detected below its background value (BV). Silver was detected slightly above its BV. Three inorganic chemicals with no established BVs were also detected. Nitrate (as NO3), nitrite (as NO2), and nitrogen dioxide were also detected. Cesium-134 was detected in one sample. There is no established BV for this radionuclide. Plutonium-238 and plutonium-239 were detected below their surface BVs. However, because these compounds were detected at depth these results are considered greater than background. Two organic chemicals with no established BVs, xylene and di-n-butyl pthalate, were detected.

Sampling was conducted at SWMU 63-001(a) in 1995. A total of 32 samples were collected from four locations and submitted for laboratory analysis of inorganic chemicals, organic chemicals, and radionuclides. Arsenic was detected below its background value (BV). Silver was detected slightly above its BV. Three inorganic chemicals with no established BVs were also detected. Nitrate (as NO3) and nitrite (as NO2) were also detected. Cesium-134 was detected in one sample. There is no established BV for this radionuclide. Plutonium-238 and plutonium-239 were detected below their surface BVs. However, because these compounds were detected at depth these results are considered greater than background. Two organic chemicals with no established BVs, xylene and di-n-butyl pthalate, were detected. The results of the 1995 sampling were not presented in a report, but were included in the *Addendum to "Sampling and Analysis Plan for the Middle Mortandad/Ten Site Aggregate"* (LANL 2004).

4.2.1.2 SWMU 63-001(b)

SWMU 63-001(b) is an inactive 920-gal. septic tank (structure 63-14) and its associated seepage pit and drainlines. The seepage pit is 4 ft in diameter and 50 ft deep. Formerly, the tank and seepage pit were designated as structures 52-154 and structure 00-462, respectively. This septic system served Building 63-1 and received only sanitary wastewater. The septic system was removed from service in 1993 when the lines were connected to the TA-46 SWSC. Building 63-1 is a single-story building that houses offices, an electronics shop, and a machine shop. The building formerly was designated structure 00-155. Potential contaminants at SWMU 63-001(b) are solvents and other unspecified chemicals. No documentation of spills, releases, or incidents at TA-63 has been found.

In 1995, RFI samples were collected at SWMU 63-001(b). A total of 31 samples were collected from 4 locations and submitted for laboratory analysis of inorganic chemicals, organic chemicals, and radionuclides. Arsenic was detected below its BV. Five inorganic chemicals with no established BVs were detected below their respective screening levels: lithium, molybdenum, nitrate (as NO3), nitrite (as NO2), and strontium. Plutonium-238 was detected above its BV. Two organic chemicals, benzo(a)athracene and di-n-butylpthalate, were detected below their respective screening levels.

4.2.1.3 SWMU 52-002(e) [duplicate of SWMU 63-001(a)]

In the SWMU Report (LANL1990), SWMU 52-002(e) is described as an active 1,000-gal. septic tank, TA-52-49, and its associated seepage pit, TA-52-50. The septic tank/seepage pit were located in the western portion of TA-52. In May of 1989, the western portion of TA-52 was reassigned as TA-63; septic tank TA-52-49 and its associated seepage pit, TA-52-50, were consequently reassigned as structures TA-63-12 and TA-63-13. The Structure Number Log maintained by LANL's Facility Engineering Department recorded that structures TA-52-49 and TA-52-50 were renumbered as TA-63-12 and TA-63-13. The SWMU Report, however, failed to consider the resassigned area as a portion of TA-52, but it also included that same area under its new designation of TA-63. As a component of TA-63, the septic tank and its associated seepage pit, TA-63-12, were assigned a second SWMU number, 63-001(a). Thus, the septic tank/seepage pit received two different SWMU numbers, 52-002(e) and 63-001(a).

Because this site was a duplicate of another SWMU, the Laboratory requested that it be approved for no further action and removed from the corrective action module (Module VIII) of the Laboratory's Hazardous Waste Facility Permit (LANL 1996). NMED approved this request and modified Module VIII to remove this site on December 8, 1997 (NMED 1997).

~~4.2.2~~ 4.2.14Corrective Action

Pursuant to ~~40 CFR §~~ 40 CFR §264.101(a), corrective action is required only for releases of hazardous waste or hazardous constituents. The SWMUs at TA-63 will be investigated and remediated, as necessary and with NMED approval, during LANL Corrective Action Program under the Consent Order. Corrective action will generally follow the RCRA Facility Investigation/Corrective Measures Study process.

The July 15, 2011 Investigation Report (LANL, 2011c) discussed the sampling performed to define a vapor plume made up of volatile organic compounds (VOCs) beneath MDA C. In particular, the concentration data for the most prevalent VOC, trichloroethylene (TCE), were modeled to illustrate the shape and extent of the vapor plume. The Investigation Report examined the vapor plume with respect to its potential for impacting groundwater and found that the plume is situated about 700 ft above the regional aquifer with vertical and horizontal extents shown in the figures in the report. These indicate the potential for a VOC plume near or within the boundaries of the TWF site. ~~LANL has since developed an additional report to evaluate the potential impact of the plume on affected workers. The report is titled "*The Vapor Plume at Material Disposal Area C in Relation to Pajarito Corridor Facilities*," Revised: April 12, 2012, and is included in Appendix C of this Response.~~

~~**The vapor-monitoring network at MDA C is made up of 14 vapor monitoring wells with 129 sampling ports with sampling ports ranging from near the surface to 697 ft bgs. Two regional groundwater-monitoring wells, R-46 and R-60, are placed specifically to monitor for potential releases from MDA C. A total of 28 VOCs have been detected in the vapor plume beneath MDA C in the two years of quarterly monitoring data collected at the site. The maximum vapor-phase concentrations of these constituents were compared to their respective time-weighted threshold limit values (TLVs) defined by the American Conference of Governmental Industrial Hygienists (ACGIH). The time-weighted TLV is set so that a worker does not experience health effects even with daily exposure. Of the detected VOCs, only trichloroethylene (TCE) exceeds its TLV. The TLV for airborne TCE is 10 parts per million (ppm), a standard that is lower than the OSHA standard of 50 ppm.**~~

~~Based on the quarterly vapor monitoring data, the modeling described in the reports shows TCE concentrations at MDA C exceed the TLV at depths of 200 to 300 ft below ground surface (bgs), with a maximum of 118% of the TLV. However, TCE concentrations have been determined to be significantly lower than the TLV at the ground surface and at 20 feet below the surface (see Figure 3 of the report).~~

~~Based on two years of quarterly monitoring data, the TCE plume appears to be steady. The plume configuration suggests that the bulk of the VOCs present in the subsurface are from past releases with little or no contribution from ongoing releases from the waste disposed at MDA C. The present TCE plume is a vapor-phase plume; there is currently no evidence of liquid-phase TCE in the subsurface at MDA C. Continued investigation and monitoring of the plume will occur as a function of the continued corrective action process under the LANL Compliance Order on Consent of 2005 as it has been to this point.~~

~~The exposure pathway of concern at the TWF site would be air emissions related to the vapor phase concentration at the surface of the site. As discussed in the April 12, 2012 report and shown in Figures 3, 4 and 5, the proposed TWF project facilities are in locations in which the measured surface concentrations of TCE are less than 5 percent of the TLV beneath the TWF and specifically at levels of five feet and 24 feet beneath the existing soil surface. Those levels correspond to anticipated surface conditions and to account for the grading that will occur at the site as described in the report. The conclusion of the report is that the vapor plume does not pose a threat to the health of LANL workers at the site nor will it pose a threat to workers during construction.~~

~~The report does not assume any mitigating circumstances for worker exposure in developing its conclusion. The TWF site contains several additional factors that will minimize air emission exposures. Two main factors are that the modeled vapor concentrations are not present across the entire site. The majority of the site is below the 1% of TLV concentration level as shown in the figures. Only the farthest corner of the northwest portion of the site exceeds the 2% level for TLV concentrations or 50 times lower than the ACGIH value. The second major factor is that the majority of the site, and all of the portions of the site where waste management activities will occur, is capped with the 8 inch thick concrete pad. This will act as an almost impermeable barrier to migration of the relatively low levels of contaminant vapor to the air above the surface. The concrete slab foundations under the storage buildings are also 8 inches.~~

~~Other mitigating factors include design conditions such as ventilation of the storage buildings and the elevation of the characterization trailers above the concrete pad. Environmental factors that would minimize worker exposure include the dilution of vapors and weather conditions in the air above the pad surface and preferential VOC transport away from the unit toward more permeable areas of the mesa top. Operational procedures to limit worker time in the waste management areas will also minimize the total amount of exposure levels. Potential future remediation activities at MDA C associated with the corrective action program may also reduce the source concentrations for the plume."~~

~~The option of developing a contaminant baseline is being considered. The vapor plume data assessment continues under the corrective action. Additionally, it is likely that some monitoring of construction related activities will occur that may provide more information~~

~~**about the actual site conditions. If it is attempted, such data will be included in the TWF unit's operating record for assessment at the unit's closure.**~~

Table 4-1. Solid Waste Management Unit (SWMU) Descriptions[a]

SWMU No.	Unit Type	Unit Description	Waste Description
63-001(a)[b]	Septic System	Inactive site located in the Middle Mortandad/ Ten Site Canyons at TA-63	Sanitary and industrial wastewater
63-001(b)[b]	Septic System	Inactive site located in the Middle Mortandad/ Ten Site Canyons at TA-63	Sanitary wastewater

[a] Information compiled from: *Solid Waste Management Units Report* (LANL, 1990); *Module VIII: Special Conditions Pursuant to the 1984 Hazardous and Solid Waste Amendments to RCRA for Los Alamos National Laboratory, EPA I.D. NM0890010515* (EPA 1998); and *RFI Work Plan for Operable Unit 1129* (LANL, 1992).

[b] SWMU is identified in *Module VIII: Special Conditions Pursuant to the 1984 Hazardous and Solid W Amendments to RCRA for Los Alamos National Laboratory, EPA I.D. NM0890010515* (EPA, 1998) *LANL Hazardous Waste Facility Permit* (NMED, 2010).

5.0 CLOSURE PLAN

The closure plan describes the activities necessary to close the TA-63 TWF Unit. The information provided in the closure plan addresses the closure requirements specified in Permit Part 9, 40 CFR Part 264, Subparts G and I for hazardous waste management units operated at LANL under RCRA and the NMHWA.

The proposed closure plan for the TWF is included as Attachment F of this permit modification request. The plan is not included in its entirety as a potential revision to the Permit in Attachment G of this submittal to avoid duplication. The closure plan includes references to the requirements of Permit Part 9, *Closure*, and information regarding the procedures to meet them. It closely follows the format and content of the current closure plans included in Attachment G of the Permit. These includes descriptions of the closure performance standards, schedules, closure procedures (including waste equipment disposition, structure removal, decontamination and verification procedures), the sampling and analysis plan, waste management, and the closure certification report.

Until closure is complete and has been certified in accordance with Permit Section 9.5, *Closure Certification Report*, to the NMED, a copy of the approved closure plan or the Permit containing the plan, any approved revisions, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at LANL and at the DOE Los Alamos Site Office. Prior to closure of the TWF, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans will be submitted to NMED for approval prior to implementing closure activities.

5.1 Closure Cost Estimate, Financial Assurance and Liability Requirements

LANL is a federal facility, owned by the DOE. In accordance with 40 CFR §264.140(c), LANL is exempt from the 40 CFR §264 Subpart H requirements to provide a cost estimate, financial assurance mechanisms, and liability insurance for closure actions. Therefore, these provisions are not included in the closure plan included as Attachment F of this permit modification request.

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ATTACHMENT A

TECHNICAL AREA (TA) - UNIT DESCRIPTIONS

TABLE OF CONTENTS

A.6 TA-63 TRANSURANIC WASTE FACILITY

The following section generally describes the TWF unit with detailed descriptions of the unit's structures in the subsections. The TWF consists of one hazardous waste management unit that provides storage in containers for TRU waste, including the hazardous component of MTRU waste and, potentially, mixed low-level waste streams. The TWF also manages hazardous-only waste streams generated on site. The information provided in this section is submitted to address the applicable container storage requirements of 40 CFR §270.15 and Part 264, Subpart I.

The TWF is located at TA-63 on a mesa between a branch of Mortandad Canyon on the north and Pajarito Canyon on the south in the north central portion of LANL (see Figure 2-3 for the location of TA-63 at LANL). The unit is built at the intersection of Pajarito Road and Puye Road, within the triangle formed by Building 63-111 to the east, Puye Road to the north, and Pajarito Road to the southwest. The closest buildings are shops immediately north of Puye Road, Office Building 63-111, records storage buildings immediately east of the TWF location, and buildings and structures on Pecos Drive further north of the TWF.

The primary purpose of the TWF is two-fold: first, safe indoor storage of TRU waste newly generated by LANL operations. Second, waste containers stored at the TWF are subject to characterization including review of generator documentation, gas sampling, and non-intrusive radioassay. Non-destructive assay (NDA) is used to confirm the types and amounts of radioactive elements within the waste container. NDA is a non-intrusive characterization technique that measures gamma rays and neutrons emanating from the container. Non-destructive examination (NDE) uses X-rays and a video system to inspect waste container contents. The overall process of waste characterization at LANL is described in Attachment C, *Waste Analysis Plan*, of the Permit. Waste containers will only be accepted at the TWF if they are closed and equipped with WIPP approved filter vents. Waste containers will not be opened during characterization nor while in storage although their filter vents may be replaced if necessary. However, as noted in the contingency plan, provisions are in place to manage open containers on an emergency basis.

Waste is contact handled (CH) TRU waste; no remote-handled TRU waste is stored at the TWF. Some TRU waste containers are determined through final waste characterization not to meet the WIPP requirements for TRU waste. Depending on the presence of hazardous constituents, these waste containers are reclassified as either low-level radioactive waste or mixed low-level waste and stored at the TWF until they are dispositioned appropriately.

Waste shipments are made from the LANL waste generating facilities to the TWF for storage and then to the RCRA permitted Radioactive Assay and Nondestructive Testing (RANT) Facility at TA-54-38 West. The RANT Facility is used to load the TRU waste containers into TRUPACTs (steel shipment containers) required for off-site shipment to the WIPP. Waste shipments may also occur from TWF to the RCRA permitted TA-50-69 Waste Characterization, Reduction, and Repackaging Facility (WCRRF) if repackaging of the containers is necessary.

The TWF is 1.81 acres or 78,843 square feet. The layout of the unit is depicted in Figure 55 with the location of areas where storage occurs highlighted. The main structure for the unit is the concrete pad providing a physical base for the six waste storage buildings, several waste

characterization trailers and outside storage of waste containers too large for the buildings. The pad is surrounded by a security fence. The boundary of the hazardous waste management unit is limited to the northern portion of the concrete pad defined by those areas that drain to a supporting retention pond. Along the northern and western sides of the unit, this is the edge of the concrete pad along the bottom of the retaining walls. On the east side, the edge of the curbing for the concrete pad is the boundary. The southern side of the revised boundary is defined by a painted line in compliance with Permit Section 3.5(2), *Management of Containers.* The line is situated approximately between the south east corner of the retention basin and the curb and gutter at the opposite corner of the fence line along the eastern side of the unit. This is defined by the points at which run-off will flow to the retention basin.

To provide containment for the unit, a retention basin is designed to capture and distribute storm water at the TWF. It also retains fire suppression water in the event of a fire. Water is released via a manual valve providing control of the flow rate from the basin. Should a fire occur, water collected will be analyzed for contaminants prior to discharge.

The unit also includes a small storage building for calibration sources used for waste characterization activities, a covered forklift charging station, and equipment storage shed. Outside the fence, other site structures include an operations support building and a fire water storage tank and associated utility building.

A.6.1 Concrete Pad

The TWF concrete pad is of reinforced concrete construction, on grade to provide support for the site structures and vehicle movement. The concrete pad also provides for low combustible loading between the buildings and for the site. The pad is laid on a graded soil and gravel base course and is nominally 8 inches thick. The existing ground at the site slopes from the northwest to the southeast. There is a significant grade difference from the northwest corner to the southwest corner of the site. Portions are lower in elevation than Pajarito Road or Puye Road. Given the elevation difference on the site, retaining walls are along the northwest portion of the site. The pad is sloped at approximately 2% to provide for storm water and fire suppression water drainage.

The perimeter of the pad has a 24” gutter and 6” high curb to provide run-off control. A valley gutter isolates the northern portion of the pad. Storm water and potentially contaminated firewater run-off (in the event of a fire in the storage buildings) from the northern portion of the pad flows to the valley gutter then will be channeled to the retention basin, thus, providing containment for the site in accordance with 40 CFR §264.175(b). This is a feature that negates the need for berms, dikes, or sumps around each storage building. The southern portion of the unit (where waste is not stored and outside the hazardous waste management unit) slopes southeast providing drainage off the pad toward the parking lot. Refer to Figure 55 for further details regarding the pad configuration.

A.6.2 Storage Buildings

The TWF includes six storage buildings, five of which are functionally identical and are described in this section. The additional storage building with other design elements is described in section A.6.3. The five buildings measure 33 x 64 ft or approximately 2112 square feet, and

are 15 ft high. The storage buildings provide safe covered storage for LANL generated TRU waste containers through weather protection, physical security, and DOE design requirements for safety at nuclear facilities. Multiple buildings are used to minimize the radioactive material content at individual storage buildings and to reduce the potential impact from accidents relative to a single larger building. Multiple smaller buildings also reduce overall risk associated with events such as vehicle impact or fire. These five storage buildings are designated 63-0149, 63-0150, 63-0151, 63-0152, and 63-0153.

Containers loaded onto pallets are stored on a reinforced concrete floor. The building floor (i.e., mat slab) is higher than the concrete pad to prevent run-on, and isbe sloped towards a roll-up door at the building entrance for drainage in the event of a fire, in accordance with 40 CFR §264.175(b)(2) and (c).

The concrete floors are coated to provide a sealed surface and chemical resistance although secondary containment pallets are used to meet the containment requirements of the Permit for potential liquid containing waste in the storage buildings and also compliance with 40 CFR §264.175(b)(1). The floor coating standards include:

- Minimum Class B per National Fire Protection Association (NFPA);
- Radiation resistant as determined by American Society for Testing and Materials, International specification ASTM D 4082; and
- Decontaminable to at least 95 percent of total activity removed and certified for Nuclear Coating Service level II.

The storage buildings are constructed as covered single-story structural steel frames. Each of the storage buildings and its structural members are designed to exceed the snow load for roof design, the design wind force for buildings, and the seismic loading for structural components, as described in American Society of Civil Engineers specification ASCE 7-05, *Minimum Design Loads for Buildings and Other Structures.* The steel frame is an ordinary moment frame with joists to attach roof panels and girts to attach wall panels. The walls of the facility are rigid to provide protection from the elements and external forces. Gypsum board on light gauge metal studs with industrial coating finish the interior walls. The roof is a high quality metal standing seam. Batt insulation in the ceiling and on the inside of the walls reduces heat loss and gain inside the buildings. Electric heaters heat the interior to prevent fire suppression systems and eyewash stations from freezing. Cooling is provided by venting fans. In order to drain the building in the event of a fire, the floors are constructed to provide a shallow slope (1/8 inch to 1 foot) from the back end of the building towards the front, and then out the roll-up door opening and a loading ramp to the concrete pad outside the building.

A.6.3 Storage and Characterization Building

The sixth storage building is divided into a storage area, a room for the thermal equilibrium of containers to prepare for head space gas sampling, and additional support and analytical equipment rooms. The storage area in this building is used for a variety of containers including SWBs and SLB2s. In order to accurately analyze headspace gas, the container temperature must be allowed to equilibrate to a minimum of 64 degrees Fahrenheit for 72 hours. Sampling

equipment is available for obtaining headspace gas samples and flammable gas samples from waste containers. Gas chromatography and mass spectrometry on the flammable gas sample occurs in an adjacent room.

The floor plan of the building measures 80 x 33 ft or approximately 2640 square ft, and is 15 ft high. The building is constructed to the same standards as the other storage buildings. The building is numbered 63-0154.

A.6.4 Characterization Trailers

The TWF facility includes pads with utility hook-ups for the characterization trailers used to certify containers to DOE WIPP waste acceptance criteria The non-destructive evaluation (NDE) and non-destructive assay (NDA) equipment is provided for the TWF in mobile modified commercial trailers brought to the facility. These trailers are in use and functional at other DOE waste characterization sites. These trailers are currently providing this function for TRU waste management at the TA-54, Area G, Pad 10 permitted hazardous waste unit and were moved to the TWF . Mixed waste containers may be stored for a period longer than 24 hours as a result of operational or weather related delays in the staging of the containers through the characterization trailers. Radiographic assay equipment used for characterization is housed in these trailers as follows:

- Real Time Radiography (RTR) unit. The NDE~~assay~~ equipment in the trailer is designed to provide X-ray examination of the contents of TRU waste drums.
- High-Efficiency Neutron Counter (HENC) unit. The NDA~~assay~~ equipment in the trailer is designed to provide a passive neutron and gamma measurement of 55-gallon TRU waste drums.
- SuperHENC unit. The NDA~~assay~~ equipment in the trailer is similar to the HENC but includes a high efficiency neutron counter and a gamma counter that are both designed to handle SWBs.

The RTR is a self-contained, non-intrusive X-ray unit, physically housed in a mobile container 48 feet in length by 8 feet wide used to X-ray waste containers up to 85 gallons in volume. Radiography is a nondestructive qualitative and semi-quantitative technique that involves X-ray scanning of waste containers to identify and verify waste container contents. Radiography is used to examine the waste container to verify its physical form. This technique can detect prohibited items such as liquid wastes and gas cylinders, which are prohibited for WIPP disposal. Radiography examination must achieve the following to meet the WIPP criteria:

- Verify and document the physical form of each waste container.
- Identify any prohibited waste in the waste container.
- Confirm that the physical form of the waste matches its waste stream description (i.e., homogeneous solids, soil/gravel, or debris waste [including uncategorized metals]).

The HENC is a self-contained, non-intrusive, passive assay unit, physically housed in a mobile assay container 48 feet in length by 8 ½ feet wide by 12 ¾ feet high. The HENC is designed to

assay 55-gallon (208 liter) drums containing fissionable radionuclides. The system simultaneously performs passive neutron counts and gamma spectrometry to detect gamma-emitting radionuclides for the purpose of determining quantitative concentrations of TRU constituents. The equipment and mobile container only require electrical power to operate. Approximately 10 to 13 drums a day can be processed through the HENC, with each drum taking approximately 45 minutes for examination. The HENC is a large rectangular-shaped neutron counter that is specifically designed to assay the container in a fixed geometry. The HENC system uses passive and add-a-source neutron analysis methods to assay the nuclide mass contained in 55-gal drums of TRU waste. Waste drums to be assayed are placed on a conveyor that feeds drums into the system.

The SuperHENC operates on the same principle as the HENC, within a similar tractor trailer. The process however, is applicable to the assay of TRU radionuclides in waste packages such as SWBs and SLB2's. Data from this process is used to assay the radioactive content of SWBs containing TRU waste, sorting SWBs based on the 100 nanocurie per gram (nCi/g) TRU limit, and confirming radioisotopes indentified via acceptable knowledge (AK).

The trailers are numbered 63-0155, 63-0156, and 63-0157 at TA-63. Additional trailers may be needed as characterization needs for the facility change. In the event that trailers are added or moved at the unit, the permit modification procedures in Permit Section 3.1.(3) will be followed.

The WIPP verification procedures for the waste containers managed in the characterization trailers are generally completed within 24 hours. In some uncommon situations, there is a potential that a waste container could be left in the characterization trailer for greater than that time period ~~and the option for storage should be retained to preserve operational flexibility~~. Examples that would require such an option include situations such as inclement weather, power outages, equipment malfunctions, ~~-~~evacuations, and Laboratory closures. If storage of liquid bearing wastes for greater than 24 hours occurs, the reporting conditions of Permit Section 1.9.14, *Other Noncompliance*, will be followed.

~~The basis for not requiring secondary containment pallets is that the containers are located inside the trailers and the internal radioassay equipment during the characterization process. These do not represent secondary containment although they are enclosed and provide a degree of containment. The containers are never opened during the process and the potential waste volumes involved in a spill from an individual drum would be minimal based on the typical transuranic waste streams involved and the waste characterization and packaging requirements for the generators to meet the LANL TRU Waste Acceptance Criteria. In the event of a spill during active management of the containers, the primary defense for containment would be detection and remediation of the spill by the on-site personnel at the trailers or, if necessary, by the provisions of the Contingency Plan. If a spill occurred that could not be remediated or during off hours in the facility, containment would ultimately be provided by the grading of the site to the retention pond and the confinement provided by the volume of the pond and the normally closed exit valve.~~

~~Additionally, in the event that a liquid containing waste item or free liquids such as condensation are discovered in a container through the waste verification process in the trailers, the item will~~

~~routinely be transported back to a storage building and managed in compliance with the secondary containment requirement in the permit provision within 24 hours. This is based on the typical multiple daily container turn-around, the identification of the container as an anomaly meriting priority, and best management policy to avoid potential waste management problems.~~

A.6.5 Retention Basin

The storage buildings and characterization trailers are located within the northern portion of the site. The retention basin is located south of the storage buildings and characterization trailers along the western edge of the site. The retention basin is designed to collect water from this area in two types of events. Primarily, surface storm water or melt water run-off from the concrete pavement in this area is directed to the retention basin via the slope (nominally 2%) of the concrete pad. A valley gutter also helps to channel water from the east side of the concrete pad to the retention basin. Secondly, in the event of a fire at the unit, fire suppression water will potentially flow out of the storage buildings or from other unit structures to the concrete pad and then to the retention basin.

The designed volume capacity for the retention basin includes the potential for a combination of both events. This includes run-off from a projected 25 year frequency and 2 hour duration precipitation event (1.94 inches of precipitation resulting in approximately 85,900 gallons (11,500 cubic ft.) from 1.63 acres). For a fire suppression event, an estimate of suppression water needed is calculated from NFPA 13 factors (380 gpm for 30 min. of sprinkler demand and 500 gpm for 30 min. fire hose stream allowance), for a total of approximately 26,400 gallons (3,530 cubic ft.). Volume from both events results in a total capacity of approximately 112,300 gallons (approximately 15,000 cubic ft.). The designed total retention basin volume also includes 0.5 ft of freeboard, resulting in a total capacity of 137,450 gallons (18,375 cubic ft.). Final dimensions of the basin will be 125 ft by 42 ft by 3.5 ft deep. The concrete mixture used for construction of the retention basin will also be supplemented with an additive to improve the concrete's water resistance.

The retention basin will be drained as needed via a manual release valve that is normally in the closed position in order to prevent overflow and to comply with 40 CFR §264.175(b)(5). The retention basin will also be equipped with an automated storm water sampler at a drainage point into the basin. This sampler will only be used to meet the requirements for storm water monitoring under the *The Multi-Sector General Permit For Stormwater Discharges Associated with Industrial Activity* (MSGP) for the facility. In normal storm water events the manual drain valve is opened and the collected storm water is released through a pipeline at the calculated predevelopment flow rate (i.e., the rate of storm water runoff from the site prior to construction of the facility) after the opening of the valve. The released storm water drains through the pipe line to a release site on the east side of the TWF and then to other stormwater retention structures developed for the aggregate area to be defined and included in the TA-63 TWF Multi Sector General Permit Storm Water Plan to be developed for the site. When only storm water has been contained in the retention basin, the decision to open the drain valve will be based upon standard MSGP processes.

In the event of a fire at the TWF, the retention basin will serve the critical function of collecting the fire suppression water in the basin. The slope of the unit's concrete pad and the valley gutter serve to ensure that any water draining from the unit's storage buildings or the characterization trailers will be routed to the retention basin. This key design feature provides containment of possible contamination and a backup option for any emergency management activities. In such an event, collected water will remain in the basin until sampling and water-quality analysis can be performed to determine whether or not the water is contaminated. The collected water will be evaluated by obtaining a representative grab sample of the liquid and analyzing it for any hazardous waste constituents managed at the facility and reasonably expected to be present. This data will be compared to the surface water quality standards outlined in the Clean Water Act (33 U.S.C. §§ 1251 to 1387), the New Mexico WQCC Regulations (20.6.2 NMAC), and the State of New Mexico Standards for Interstate and Intrastate Surface Waters (20.6.4 NMAC) to determine whether the collected water can be released, a Notice of Intent needs to be submitted to the New Mexico Groundwater Bureau, or it will be characterized to the Permit Attachment C, *Waste Analysis Plan*, standards for collection and waste disposition determination. In the event of such a fire or release, any further decontamination of the retention basin will be subject to the provisions of Attachment D, *Contingency Plan*, of the Permit.

The concrete structure, concrete waterproofing additives and associated valve minimize the potential for leakage of collected water from the retention basin. Routine inspections of the retention basin pursuant to Permit Section 2.6, *General Inspection Requirements* and subsequent repairs as required by Permit Section 2.6.2, *Repair of Equipment and Structures* ensure that the water collection capability of the retention basin is maintained or mitigated. In the case of a fire water or spill event that results in collected water, the level of water in the retention basin will also be checked for the potential of over-topping and inspected daily for water levels until final disposition of the water is determined.

A.6.6 Other Project Structures

Other project structures are present at the TWF to provide support for the hazardous waste management activities at the unit. These structures are either outside the boundary of the hazardous waste management unit or do not directly store or manage hazardous waste.

The Operations Support Building provides offices and services for operations personnel and management. Personnel are housed in the separate building to ensure that radiological exposures are as low as reasonably achievable (ALARA) by increasing distance from the waste management activities. The Operations Support Building is approximately 75 ft by 80 ft. Operations and characterization personnel are housed in this building, although it will not be occupied continuously. However, it provides storage of waste container data and monitoring of key operational parameters (e.g., fire alarm systems, safety equipment status indicators, and communication systems such as the public address system) and specific safety structure, system, and component status. In addition, a public address system is powered from this building to facilitate emergency response. The building includes offices, conference rooms, restrooms, change rooms, site security access, and circulation space for about 25 workers. The building is outside the security control fence; windows provide visual observation of the control area. The building uses an ordinary steel moment frame and includes nonload bearing metal panel walls.

The exterior finish is metal sandwich insulating panels. The roof is a low slope membrane-type with high solar reflectance and roof and overflow drains. The floor is reinforced concrete slab on grade and finished concrete in some areas.

Access to the waste management site is via a gated driveway east of the concrete pad. Gates are normally closed and vehicle access to the controlled area within the unit fence line requires check-in at the Operations Support Building. Pedestrian access to the controlled area also requires check-in through the Operations Support Building. Parking for site workers and visitors is provided south of the Operations Support Building and outside the controlled area fence.

Located to the north of the Operations Support Building, on the project site but outside the controlled area fence, is a dedicated fire water supply tank and utility building. The utility building is adjacent to the water tank that supplies water for the fire suppression system. This building will house two fire water pumps and instrumentation needed to ensure operation of the fire suppression system. The back-up pump is diesel powered. Access into the fenced unit will not be required for filling the diesel pump fuel tank as fueling can occur from the roadway.

Further to the north, across the access driveway is an existing groundwater monitoring well. The monitoring well is R-46, part of the LANL groundwater monitoring network. The TWF controlled area fence line is located to the west of the monitoring well. Space has been allocated to allow for routine and upset condition access to the monitoring well. Access to the TWF is not required for activities associated with the monitoring well.

There will be an equipment storage shed on the west side of the unit. This shed will be a light warehouse of 1250 square feet and will be used to store items such as metal pallets, containers used to over-pack waste containers if necessary, and snow removal equipment. The building will be 25 ft x 50 ft x 15 ft high. The sides of the shed will be closed with a rollup (garage-type door) in addition to a personnel access/egress door. There will be no fire protection in this building.

The characterization process will require sealed radioactive sources for calibration of RTR and HENC sensors. A separate building designated the Characterization Source and Matrix Management (CSMM) Building will house sealed sources.

A.6.7 ~~A.6.8~~ Security and Access Control

The DOE provides security for the area within LANL boundaries. Guard stations control public access to this area of LANL from Pajarito Road east and west of TA-63. Therefore, only properly identified LANL and DOE employees authorized to enter the facility or individuals under their escort have access to the TWF. The unit security requirements are met because the TWF is within a security fenced area with controlled access gates. The security fence around the waste management portion of the TWF is at least 8 feet (ft) high and is a chain link type fence with steel pipe fence posts. Fence tops have at least three strands of barbed wire angled away from the protected area to prevent a person from scaling the fence. Two vehicle access gates are integrated into the fence line. These gates, when opened, provide at least a 16 foot wide

clearance to enable vehicle access. Gates are locked when the facility is not operational. Controlled entry to the unit is provided by a system of access controls (badge readers and administrative controls are required prior to entrance) to ensure that only authorized personnel are granted access. These access controls also ensure that all facility personnel can be identified and located in an emergency.

The TWF is patrolled by LANL security personnel during both operational and nonoperational hours to ensure that the gates are locked and that unauthorized entry does not occur. Warning signs stating "Danger – Unauthorized Personnel Keep Out," are posted on the perimeter fences and gates. These can be seen from any approach to the TWF in accordance with Permit Section 2.5.2, *Warning Signs*. The legends on the signs are bilingual (i.e., English and Spanish) and indicate "No Trespassing by Order of the United States Department of Energy." The signs are legible from a distance of 25 feet. Signs for any confined areas, if necessary, may be reduced in size, but are to personnel who require access to these areas. TA-63 does not have a shared boundary with the Pueblos of San Ildefonso or Santa Clara and, therefore, the signs do not include warnings in Tewa dialects.

A.6.8 ~~A.6.9~~ Required Equipment

In accordance with Permit Attachment D.2, Contingency Plan, emergency equipment is located throughout the TWF and includes fire alarms, fire response systems, alarm systems, internal communications, spill kits, and decontamination equipment. Detailed information on the required emergency and safety equipment located at the TWF is provided below.

The TWF is equipped with safety-alarm systems to alert personnel in the event of an emergency and to evacuate the area. These alarm systems are located both inside and outside the unit and will be monitored. The facility monitor/control system will be in operation 24 hours a day and is located in the access control station at the TWF; the system is also connected to the LANL CAS. Specific facility monitor/control system equipment located at the TWF is discussed below. Emergency equipment is located throughout the TWF and will include fire alarms, fire response systems, alarm systems, internal communications, spill kits, and decontamination equipment. Detailed information on the required emergency and safety equipment located at the TWF is provided below.

Fire-alarm pull boxes and/or drop box push-button alarms are located pursuant to NFPA standards in the TWF where waste management activities will be conducted. Fire-alarm pull boxes can be used by personnel to activate a local fire alarm when a fire or other emergency is discovered. Once manually activated, an alarm will sound in the TWF access control station and at the LAFD through LANL's CAS. The TWF is also equipped with automatic fire suppression alarm systems. The fire-suppression alarms will be activated when water flow is detected in the sprinkler pipes of the fire-suppression system. Upon activation of the fire-alarm system, an alarm will sound and red lights will flash to alert personnel of emergency conditions. All fire-alarm pull boxes and automatic fire-suppression systems that will be located at the TWF will be connected to the LAFD through LANL's CAS.

In addition to the alarms described above, a public address (PA) system may also be used to announce emergency conditions or to initiate an evacuation at the TWF. The PA system will be audible throughout the TWF and will be activated by the access control station in the Operations Support Building.

Personnel working at the TWF will have the ability to communicate the location and nature of hazardous conditions using conventional telephones, or cellular telephones to call the access control station. This type of call will summon assistance from the Emergency Management and Response Office, local police and fire departments, and state emergency response teams, if necessary.

Fire control equipment are readily available for the waste management unit. Portable fire extinguishers are available and may be used by trained on-site personnel depending on the size of the fire and the fuel source. However, LANL policy encourages immediate evacuation of the area and notification of appropriate emergency personnel. Fire hydrants are located in accordance with NFPA standards on the west and east sides of the TWF pad and near the Operations Building. Water will be supplied to the fire hydrants by a municipal water system which will provide adequate volume and pressure (i.e., greater than 1,000 gal per minute and 90 pounds per square inch static pressure) to multiple water hoses in the event of a fire. The LAFD will supply all water hoses needed in the event of a fire at the TWF. Fire protection systems for the TWF storage buildings, including the Storage and Characterization Building 63-0154, include a wet-pipe sprinkler system for fire suppression. Water will be supplied via the 150,000 gallon tank north of the Operations Support Building with a combination of electric and diesel powered fire pumps, the tank and its associated level detection, freeze protection, and power supply for the pumps. The fire suppression water will be pumped to automatic sprinkler systems in the buildings.

There are kits available at the TWF in the storage areas to mitigate containable spills. These kits will typically contain sorbents, neutralizers, personal protective equipment (PPE), and other equipment essential for containment of spills. Trained personnel will use the spill kits only if they know what has been spilled and they are sure their actions will not put themselves or others at risk. In addition to the spill kits, cleanup equipment such as shovels, bags, drums, etc. will be available at the TWF. Overpack drums and sorbents will also be stored in an equipment storage shed on the west side of the TWF. Emergency personnel can also provide additional spill control equipment and assistance upon request depending on the size and severity of the spill. Personnel decontamination equipment that will be available at the TWF will include safety showers and eye wash stations located inside each of the storage buildings. These will be situated at all the waste storage buildings in accordance with OSHA requirements. Additional decontamination equipment may be provided by emergency personnel. Material Safety Data Sheets MSDS (e.g., for cleaners, solvents, used on site) will be available at the Operations Support Building and will provide useful exposure information in accordance with OSHA requirements.

A.6.9 ~~A.6.10~~ Control of Run-on/Run-off

Controlling run-on and run-off at the TWF locations where waste management operations regularly occur is accomplished by the design of the buildings and the use of control structures with appropriate contouring of surface areas. Run-on of storm water into the storage buildings will not occur: walls enclose raised floors, and surface contouring slopes away from the building to prevents storm water from pooling against the foundations, doors, and loading areas. The internal floors of the buildings are sloped to the front doors to prevent flooding by precipitation or storm water in addition to providing drainage to the outside.

The TWF site will maintain a nominally 2% slope to optimize drainage and the use of electric forklifts to handle waste containers. A retention wall maintains the differences in elevation between the surrounding roads and the site. The site is surfaced in concrete and includes a retention basin for management of storm water and for the collection of fire suppression water until it is sampled and verified to be uncontaminated. Retention basin capacity includes the runoff from a 25 yr-2 hr precipitation event in addition to a fire event or a total capacity of approximately 137,450 gallons or 18,375 cubic feet of water.

Secondary containment is provided where potential liquid-bearing containers are stored in the buildings to prevent run-off. Secondary containment systems (i.e., pallets) are utilized as needed and have sufficient capacity to contain at least 10 percent (%) of the volume of potential liquid-bearing containers or the volume of the largest container stored in the system, whichever is greater, pursuant to the requirements of 40 CFR §264.175(b)(3) and Permit Section 3.7, *Containment Systems*. Waste spills or leaks will be managed inside the characterization trailers to prevent run-off. Containers stored outside on the concrete pad will be protected from contact with precipitation in accordance with Permit Section3.5.1 (5).

ATTACHMENT F
TECHNICAL AREA 63
TRANSURANIC WASTE FACILITY
CLOSURE PLAN

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TRANSURANIC WASTE FACILITY
CLOSURE PLAN

1.0 INTRODUCTION

This closure plan describes the activities necessary to close the permitted mixed waste Transuranic Waste Facility (TWF) at Technical Area (TA)-63 at the Los Alamos National Laboratory (Facility) hereinafter referred to as the "Unit To Be Closed," or the "Permitted Unit." The information provided in this closure plan addresses the closure requirements specified in Permit Part 9 and the Code of Federal Regulations (CFR), Title 40, Part 264, Subparts G and I for waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

The TWF unit will be closed by removal of all~~the major~~ structures and equipment. Until closure is complete and has been certified in accordance with Permit Part 9.5 and 40 CFR §264.115, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions to the plan, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the unit, this closure plan may be amended in accordance with Permit Section 9.4.8 to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (the Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF THE UNIT TO BE CLOSED

The TWF is located at TA-63 at the junction of Pajarito Road and Puye Road, within the triangle formed by Building 63-111 to the east, Puye Road to the north, and Pajarito Road to the southwest. It was designed, constructed, and commissioned as a Hazard Category (HC)-2 nuclear facility and permitted as Resource Conservation and Recovery Act (RCRA) Storage Facility for TRU, mixed TRU and hazardous wastes. Refer to Permit Figure 55 for additional site information ~~Figure 2-5 of this permit modification request for the TWF Site Plan~~ and to Permit Attachment A.6, *Technical Area (TA), Unit Descriptions* for additional site information and building numbers.~~and Permit Figure 55 for additional site information~~.

STRUCTURES THAT HAVE MANAGED HAZARDOUS WASTE TO BE REMOVED AT CLOSURE:

- Storage Buildings: 63-0149, 63-0150, 63-0151, 63-0152, and 63-0153
- Storage and Characterization Building: 63-0154
- Characterization Trailers~~Pads~~: 63-0155, 63-0156, and 63-0156
- Concrete Storage Pad

Six buildings are designated for storage of TRU and Mixed TRU wastes in support of LANL programs and missions. One of the storage structures is used for both storage of larger-sized waste containers and for head space gas sampling and analysis. Certification of containers in accordance with Waste Isolation Pilot Plant (WIPP) Waste Acceptance Criteria (WAC) will occur at the three characterization and testing trailers. A concrete pad underlies the storage and

characterization buildings and trailers. The boundaries of the pad will be used to designate the RCRA-permitted portion of the TWF.

OTHER TWF STRUCTURES TO BE REMOVED AT CLOSURE:

- Calibration Source and Matrix Module (CSMM) Building: 63-0158
- Retention Basin

The CSMM Building and the Retention Basin are the only structures that will be closed within the boundary of the TWF permitted hazardous waste management unit that are not used to manage hazardous waste.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

The TWF will be capable of storing/staging a minimum of 825 55-gallon drum/drum equivalents (D/DE) with overflow storage capacity up to 1,240 D/DE. On a yearly basis, the TWF will process 1,100 D/DE per year, or 33,000 D/DE or 1.815 million gallons during the lifetime of the facility. Refer to Table 1 for more information pertaining to the estimate of waste stored at the permitted unit.

4.0 GENERAL CLOSURE REQUIREMENTS

The following sections describe the closure objectives and schedule for the permitted unit.

4.1 Closure Performance Standard

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. The cleanup levels for soil shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet
Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents,

leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264, Subparts G and I for container storage units.

Closure of the permitted unit will be deemed complete when:1) All surfaces and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

This closure plan is intended to address closure requirements for the permitted unit within the authorized timeframe of this Permit (see Permit Section 9.4.1). However, pursuant to 40 CFR §264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Subject to the provisions of 40 CFR §264.113(a), such removal may only occur before the end of the allowed 90 day period to remove, treat or dispose of closure related hazardous waste after receiving the final volume of hazardous waste. For the purposes of this closure plan, portable and temporary structures in this permitted unit such as characterization trailers are considered to be equipment by their design and to facilitate the closure schedule for the TWF.

Closure activities will proceed according to the schedule discussed below and Table 2 of this closure plan. Notification of closure will occur at least 45 days prior to when LANL expects to begin closure (see 40 CFR § 264.112(d)(1)). Closure activities will begin according to the requirements of 40 CFR § 264.112(d)(2) no later than 30 days after the date on which the unit receives the known final volume of hazardous waste. All hazardous wastes will be removed from the TWF within 90 days of the receipt of the known final volume of hazardous waste pursuant to Permit Section 9.4.1, *Closure Schedule,* Permit Section 9.4.2, *Removal of Hazardous Waste,* and 40 CFR §264.113(a). A records review of the operating history of the unit will occur within ten days of the completed removal or treatment of all waste from the permitted unit as required by Permit Section 9.4.6.1, *Records Review*. A structural assessment of the unit will occur within ten days of the completed removal or treatment of all waste from the permitted unit as required by Permit Section 9.4.6.2, *Structural Assessment.* Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, will occur in accordance with Permit Section 9.4.6.2.

After completion of the records review and structural assessment, LANL will submit an amended closure plan, if necessary, to the NMED for review and approval as a permit modification to incorporate changes to the sampling and analysis plan. After approval of the modified closure plan, if applicable, LANL will continue with closure activities. Decontamination verification sampling activities, and soil sampling, will be conducted to demonstrate that removal of the TWF structures and any other closure activities included in this or a modified closure plan will meet the closure performance standards in Permit Section 9.2.1.

All closure activities will be completed within 150 days of the beginning of closure activities or 180 days after the receipt of the known volume of hazardous waste in compliance with Permit

Section 9.4.1.1. The final closure report and certification will be submitted to NMED for review and approval within 60 days of closure completion as required by Permit Section 9.5. In the event that the activities required under the closure plan cannot be completed within the allotted timeframe, the Permittees may request a permit modification to modify the schedule pursuant to the requirements of Permit Section 9.4.8, *Amendment of the Closure Plan*, referencing the conditions of 40 CFR §264.112(c)(2) or of 40 CFR§264.113(b) and (c). In the event that closure of the TWF cannot proceed according to schedule, LANL will notify the NMED in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

The following sections describe the procedures to be used for closure of the permitted unit. The procedures will proceed in the order described although the operating records review described in Section 5.2.1 may be started earlier.

5.1 Removal of Waste

In accordance with Permit Part 9.4.2, all stored hazardous waste will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport from the permitted unit. Appropriate shipping documentation will be prepared for the wastes during transport. All hazardous waste containers will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

Before starting decontamination and sampling activities, the operating and inspection records for the permitted unit will be reviewed and a structural assessment of the unit will be conducted to determine any finding(s) or action(s) that may influence closure activities or additional sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed in accordance with Permit Section 9.4.6.1. The goals of this review will be to:

a) confirm the specific hazardous waste constituents of concern; and

b) confirm additional sampling locations (e.g., locations of any spills or chronic conditions identified in the Operating Record).

5.2.2 Structural Assessment

A structural assessment (assessment) of the unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2 and documented with photographs and drawings, as necessary. The TWF structural assessment will include the concrete pad (as an outdoor pad defined in Section 9.1.3(1) of the Permit) and the retention basin. If the assessment reveals any evidence of a release (e.g., stains) or damage (e.g., cracks, gaps, chips) to the flooring or building materials, the Permittees must incorporate these locations as additional sampling points in the updated sampling and analysis plan (see Section 7.0) and include the applicable sampling methods and procedures. If evidence of a release or damage is present, a wipe sample or a

representative sample of the media (e.g., concrete chip) will be collected according to the procedures in Section 7.2. If additional sampling locations are necessary, the Permittees will request a permit modification to modify the sampling and analysis plan ~~will be modified~~ in accordance with Permit Section 9.4.6. The locations of any additional sampling locations will be determined using Global Positioning Satellite (GPS) coordinates.

5.3 Removal and Decontamination of Structures and Related Equipment

In accordance with the procedures in Permit Section 9.4.3, all remaining hazardous waste residues and hazardous constituents will be removed from the permitted unit. The unit's structures and related equipment will be decontaminated if necessary, removed, and managed appropriately. All waste material will be handled and characterized as necessary as required by Permit Attachment C, *Waste Analysis Plan*, Permit Section 9.4.5, and the LANL waste management procedures.

5.3.1 Removal of Structures and Related Equipment

All structures and related equipment that are removed from the unit will require no further decontamination but will be considered solid waste and potentially, hazardous waste, as defined by the Permit, at removal. They will be disposed of in accordance with Permit Section 9.4.5 and Section 5.3 of this closure plan. The concrete pad, the materials associated with the pad (curbing and ramps), and a minimum of six inches of the base course and soil underlying the concrete pad will be removed. If the remaining soil surface shows evidence that the removal to this point has not gathered all appropriate soils and materials associated with the pad, additional soil removal will occur until the conditions of Permit Section 9.2 are met. The option of removing small areas of concrete at sampling locations where contamination is suspected (i.e., spill or staining sites) to allow sampling without disturbing the surrounding area prior to the general removal of the pad will be reviewed at the time of the structural assessment. If this option is used, the concrete removed at the sampling location and any concrete subsequently removed from the location during the general removal of the concrete pad to a radius to be determined during the structural assessment will be segregated to prevent potential cross contamination during the closure process.

5.3.2 Decontamination of Structures and Related Equipment

All structures and related equipment that will be re-used by the Facility will be decontaminated in accordance with Permit Section 9.4.3.1. This may include the characterization trailers and any associated equipment removed at closure. The lists of equipment needing decontamination will be reviewed during the pre-closure and structural assessment described in Part 9 of the Permit.

Water resistant equipment at the permitted unit will be decontaminated by steam cleaning using water or pressure washing with a solution consisting of a surfactant detergent (e.g., Alconox®) and water. Wipe-down washing with a solution consisting of a surfactant detergent (e.g., Alconox®) and water may be conducted on equipment within the unit if containment cannot be established for the steam cleaning water or pressure wash solution or these methods will damage the equipment preventing further use or recycling. The quantity of the wash solution will be minimized by dispensing from buckets, spray bottles, or other types of containers. Cheesecloth, rags, or other absorbent materials will be used to wipe down the equipment after being wetted in the wash solution or after spraying solution onto the equipment. If necessary, portable berms or other devices (e.g., absorbent socks, plastic sheeting, wading pools, or existing secondary

containment) designed to collect and provide containment will collect excess wash water and provide containment during the decontamination process. Wash solution will not be allowed to enter the fire suppression water drains.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during closure activities will be cleaned with a wash water solution. The solution will be characterized and managed as a hazardous waste if appropriate. Residue, disposable equipment, and equipment that cannot be decontaminated will be containerized and managed as waste.

6.0 SAMPLING AND ANALYSIS PLAN

This sampling and analysis plan (SAP) describes the sampling and analytical methods as well as the quality assurance and quality control (QA/QC) procedures that will be used to demonstrate that the permitted unit is closed in accordance with Permit Part 9 and all applicable closure requirements.

6.1 Soil Sampling Locations

Soils sampling will be conducted at the permitted unit in order to verify that the removal of structures and soils, with other closure related activities meet the closure performance standards in Permit Section 9.2, *Closure Performance Standards*. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan. Soil samples will be collected from beneath the concrete pad of the unit and in additional sampling locations specified to meet the conditions of Permit Section 9.4.7.1.ii.

In compliance with Permit Section 9.4.7.ii, this closure plan will ensure the collection of soil samples in the following locations:

a. One sample at each loading/unloading point for a total of 6 samples (see Permit Section 9.4.7.1.ii(1));

b. one sample every 900 square feet of the permitted unit for a total of 88 samples (see Permit Section 9.4.7.1.ii(2));

c. one sample ~~to~~at the south of the permitted unit at the stormwater discharge drainage location (see Permit Section 9.4.7.1.ii(3));

d. one sample, at 30 foot intervals, along the valley gutter for a total of 4 samples (see Permit Section 9.4.7.1.ii(8)); and

e. 3 additional samples along the long axis of the retention basin (see Permit Section 9.4.7.ii(5).

All soil sample locations are illustrated in Figure F-1 of this closure plan.

6.2 Sample Collection Procedures

Samples will be collected in accordance with Permit Section 9.4.7.1 and the procedures identified in this SAP which incorporates guidance from the United States Environmental

Protection Agency (USEPA)(EPA, 1986 and EPA, 2003), DOE (DOE, 1995) and other Department-approved procedures.

6.2.1 Liquid Sampling

Liquid sampling will consist of grab samples of the liquid at the drain of the retention basin, if aapplicable, to ensure the drain system has not been contaminated. Liquid sampling will be conducted using glass or plastic tubes, a composite liquid waste sampler, a bacon bomb, a bailer, or by pouring liquid into sample containers.

6.2.2 Wipe Sampling

When surface wipe samples are used to determine if residual hazardous constituents remain for structures or surfaces within the TWF, the samples will be taken in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods*, Method 9100 (NIOSH, 1994), or other approved methodology. The appropriate use of wipe sample methods will consider the type of surface being sampled, the type of contaminant, the solution used, and the desired contaminant concentration detection limits. The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (e.g., de-ionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.3 Soil Sampling

Soil will be sampled using a spade, scoop, auger, trowel, or other equipment as specified in approved methods for the type of analyte (i.e., EPA 1996 or 2002). Soil samples will be collected in accordance with Permit, Section 9.4.7.1.ii. Samples will be kept at their at-depth temperature or lower, protected from ultraviolet light, sealed tightly in the recommended container, and analyzed within the specific holding times listed in Table 3.

6.2.4 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried or wiped dry to prevent cross contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper. Residue, disposable decontamination equipment, and reusable decontamination equipment that cannot be decontaminated will be containerized and managed appropriately at an approved on-site facility.

6.3 Sample Management Procedures

The following information presents general sample management and sampling equipment cleaning procedures for closure of the permitted unit. Samples will be collected and transported using documented chain-of-custody and sample management procedures to ensure the integrity of the sample and provide an accurate and defensible written record of the possession and handling of a sample from the time of collection through laboratory analysis. Sample collection equipment will include labels, chain-of-custody forms, EPA-certified clean containers, coolers,

preservatives, and custody seals. The following provides a description of sample documentation; sample handling, preservation, and storage; and sample packaging and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

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

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until the samples are relinquished to the analytical laboratory. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a) in a person's physical possession;

b) in view of the person in possession; or

c) secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request/chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The completed original chain-of-custody form will be returned by the analytical laboratory and will become a part of the permanent record documenting the sampling effort.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a) a unique sample identification number;

b) name of the sample collector;

c) date and time of collection;

d) type of preservatives used, if any; and

e) location from which the sample was collected.

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

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross outs must be made with a single line and the change initialed and dated by the author. The sample logbook will include the following information:

a) the sample location by GPS coordinates recorded during the structural assessment,

b) suspected composition,

c) sample identification number,

d) volume/mass of sample taken,

e) purpose of sampling,

f) description of sample point and sampling methodology,

g) date and time of collection,

h) name of the sample collector,

i) sample destination and how it will be transported,

j) observations, and

k) names of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table 3 presents the requirements in SW-846 (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish these requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, waste, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier; air carrier; or freight. All off-site transportation will be processed through the Facility packaging and transportation organization, unless the shipper is specifically authorized through formal documentation by that organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all hazardous constituents listed in Appendix VIII 40 CFR 261 and in Appendix IX of 40 CFR 264 that have been stored at the permitted unit during its operational history. Samples will be analyzed by an independent laboratory using the methods outlined in

Table 4. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table 4.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6~~7~~.4.2~~.1~~. This analytical laboratory will have:

a) a documented comprehensive QA/ QC program,

b) technical analytical expertise,

c) a document control/records management plan, and;

d) the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table 4 was based on the following considerations:

a) the physical form of the waste,

b) constituents of interest,

c) required detection limits (e.g., regulatory thresholds), and

d) information requirements (e.g., waste classification).

6.4.2 Quality Assurance/Quality Control

Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contaminations associated with the sampling/analysis process and are described in the following sections, along with information on calculations necessary to evaluate the QC results. QA/QC samples will be collected in accordance with the Facility's most recent and appropriate sampling plan incorporating guidance from the EPA (EPA, 2002) and DOE (DOE, 1995), or other approved procedures. Analysis will be conducted in accordance with procedures given in SW-846 (EPA, 1986), or other approved procedures or methods.

6.4.2.1 Field Quality Control

The field QC samples that will be collected include trip blanks, field blanks, field duplicates, and equipment rinsate blanks as required by Permit Section 9.4.7.1(8). Table 5 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

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

6.4.3 Data Reduction, Verification, Validation, and Reporting

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

6.4.4 Data Reporting Requirements

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

a) a summary of analytical results for each sample;

b) results from QC samples such as blanks, spikes, and calibrations;

c) reference to standard methods or a detailed description of analytical procedures; and

d) raw data printouts for comparison with summaries.

The laboratory will describe off-normal sample preparations that occur during the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials, which are listed with potential disposal options in Table 6 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal.

Portable berms or other devices, if necessary, will be used to collect excess wash water and provide containment during the decontamination activities to prevent releases. The excess wash water will be collected, transferred to containers, sampled, and analyzed for the hazardous constituents listed in Table 7. The results of this analysis will determine if the excess wash water should be managed as hazardous or non-hazardous wastewater. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and other small equipment that cannot be decontaminated will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the TWF, a closure certification report will be prepared and submitted to the Department. The report will document that the unit has been closed in compliance with the specifications in this closure plan and will contain the following information in accordance with Section 9.5 of the Permit:

The Report shall summarize all activities conducted during closure including, but not limited to, the following:

(1) the results of all investigations;

(2) remediation waste management;

(3) decontamination;

(4) decontamination verification and soil sampling activities; and

(5) results of all chemical analyses and other characterization activities.

The closure certification report will be submitted to the Department no later than 60 days after completion of closure of the TWF Permitted Unit. The certification will be signed by the Permittees and by an independent professional engineer registered in the State of New Mexico.

The report will document the permitted unit's closure and contain, at a minimum, the following information:

(6) a copy of the certification pursuant to 40 CFR § 264.115;

(7) any variance, and the reason for the variance, from the activities approved in this closure plan;

(8) documentation of the structural assessment and records review conducted under this Permit Part 9;

(9) a summary of all sampling results, showing:

a. sample identification;
b. sampling location;
c. data reported;
d. detection limit for each analyte;
e. a measure of analytical precision (*e.g.*, uncertainty, range, variance);
f. identification of analytical procedure;
g. identification of analytical laboratory;

(10) a QA/QC statement on analytical data validation and decontamination verification;

(11) the location of the file of supporting documentation, including:

a. field logbooks;
b. laboratory sample analysis reports;
c. QA/QC documentation;
d. chain-of-custody forms;

(12) storage or disposal location of hazardous waste resulting from closure activities;

(13) a copy of the Human Health and Ecological Risk Assessment Reports, if a site specific risk assessment was conducted pursuant to Permit Sections 11.10.4 and 11.10.5 for the permitted unit; and

(14) a certification statement of the accuracy of the Closure Report.

9.0 DEPARTMENT CLOSURE ASSESSMENT

Upon submittal of the closure certification report described in Section 8.0 of this closure plan, the Facility will arrange an on-site closure review with representatives of the Department to assess the completion of the closure activities of the permitted unit's closure activities. The Facility may also arrange, at reasonable times, for other on-site reviews before, during, or after the closure period upon request by Department representatives.

10.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

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

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, D.C.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, Method 9100, 4th ed. Issue 1. 1994.

NMED, 2012. "Risk Assessment Guidance for Site Investigations and Remediation," New Mexico Environment Department, Santa Fe, New Mexico.

~~NMED, 2009. "Technical Background Document for Development of Soil Screening Levels," Rev. 5.0, 2009, New Mexico Environment Department, Santa Fe, New Mexico.~~

Table 1
Technical Area 63 TWF Storage Unit Capacities and Waste Categories

Structure	Estimated Maximum Waste[a] (gallons)	55-gallon Drum Equivalent	Estimated Inventory[b, c] (gallons)	Waste Category	Dimensions (feet^2)
TA-63-0149	11,367	206.7	302,500	TRU, MTRU	62’4” x 31’4”
TA-63-0150	11,367	206.7	302,500	TRU, MTRU	62’4” x 31’4”
TA-63-0151	11,367	206.7	302,500	TRU, MTRU	62’4” x 31’4”
TA-63-0152	11,367	206.7	302,500	TRU, MTRU	62’4” x 31’4”
TA-63-0153	11,367	206.7	302,500	TRU, MTRU	62’4” x 31’4”
TA-63-0154	11,367	206.7	302,500	TRU, MTRU	77’11” x 31’4”
Totals	**68,200**	**1,240**	**1,815,000**		

[a] Estimated maximum quantity of waste that can be stored at the unit at one time.

[b] Estimated lifetime inventory of waste stored/treated at the unit.

[c] Estimated waste inventories include future use.

Table 2
Closure Schedule for the TA-63 TWF

Closure Activity	Schedule	Basis
Provide closure notification to NMED	-45	40 CFR §264.112(d)(1)
Receive known final volume of waste	-30	Permit Section 9.4.1, 40 CFR §264.112(d)(2)(i)
Begin closure activity – requirement to begin removal of hazardous waste from the permitted unit	0	Permit Section 9.4.1, 40 CFR §264.112(d)(2)(i)
Notification of structural assessment to NMED	40	Permit Section 9.4.6.2: notification to occur at least 30 days prior to the structural assessment.
Hazardous waste removed	60	Permit Section 9.4.1 and 9.4.2, 40 CFR §264.113(a): removal must be completed within 90 days of the receipt of known final volume of hazardous waste.
Completion of record review	70	Permit Section 9.4.6.1: record review will occur within 10 days of completed waste removal or treatment.
Completion of structural assessment	70	Permit Section 9.4.6.2: structural assessment will occur within 10 days of completed waste removal or treatment.
Completion of closure activities	150	Permit Section 9.4.1.1, 40 CFR §264.113(b): closure activities must be completed within 180 days of the receipt of known final volume of hazardous waste.
Submittal of closure report to NMED	210	Permit Section 9.5, 40 CFR §264.115: report submitted within 60 days of closure completion

Note: The schedule shown represents the maximum allowable time to complete the activity.

Table 3
Recommended Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide-Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4°C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4°C	
TCLP/Total Mercury	Aqueous Media: 500-mL Wide-Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4°C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media: Cool to 4°C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	
Semi-Volatile Organic Compounds			
Target Compound Semi-volatile Organic Compounds	Aqueous Media: Four 1-L Amber Glass with Teflon-Lined Lid	Aqueous Media: Cool to 4 °C	Seven days from field collection to preparative extraction. 40 days from preparative extraction to determinative analysis.
	Solid Media: 250-mL Glass	Solid Media: Cool to 4°C	

[a] Smaller sample containers may be required due to health and safety concerns associated with potential radiation exposure, transportation requirements, and waste management considerations.

[b] Information obtained from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, U.S. Environmental Protection Agency, 1986 and all approved updates.

°C = degrees Celsius
HNO_3 = nitric acid
L = Liter
mL = milliliter
HCl = hydrochloric acid
TCLP = Toxicity Characteristic Leaching Procedure

Table 4
Summary of Proposed Analytical Methods

Analyte	EPA SW-846 Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Antimony	6010, 7010	ICP-AES, GFAA	20 ug/L	Determine the metal concentration in the samples.
Arsenic	6010, 7010, 7061A	ICP-AES, GFAA, CVAA	10 ug/L	
Barium	6010, 7010	ICP-AES,GFAA	200 ug/L	
Beryllium	6010, 7010	ICP-AES, GFAA	0.2 ug/L	
Cadmium	6010, 7010	ICP-AES, GFAA	2 ug/L	
Chromium	6010, 7010	ICP-AES, GFAA	10 ug/L	
Cobalt	6010, 7010	ICP-AES, GFAA	5 ug/L	
Copper	6010, 7010	ICP-AES, GFAA	5 ug/L	
Lead	6010, 7010	ICP-AES, GFAA	5 ug/L	
Mercury	6010, 7470A, 7471B	ICP-AES, CVAA	0.2 ug/L	
Selenium	6010, 7010, 7741A	ICP-AES, GFAA, CVAA	5 ug/L	
Silver	6010, 7010	ICP-AES, GFAA	10 ug/L	
Thallium	6010, 7010	ICP-AES, GFAA	30 ug/L	
Vanadium	6010, 7010	ICP-AES, GFAA	5 ug/L	
Zinc	6010, 7010	ICP-AES, GFAA	1 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified compounds (TIC)	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.
Target compound list SVOCs plus 20 TICs	8270D, 8275	GC/MS	10 mg/L	Determine the SVOCs concentration in the samples.
Other Parameters				
Cyanide	9010, 9012	Colorimetric	20 ug/L	Determine cyanide concentration

[a] U.S. Environmental Protection Agency (EPA), 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846.

[b] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitative limits. Actual detection limits may be higher depending on sample composition and matrix type.

CVAA = Cold-vapor atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
GC/MS = Gas chromatography/mass spectrometry
GFAA = Graphite furnace atomic absorption spectroscopy
ICP-AES = Inductively coupled plasma-atomic emission spectrometry
mg/L = milligrams per liter
SVOC = semi volatile organic compounds
ug/L = micrograms per liter.
VOC = volatile organic compounds

Table 5
Recommended Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

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

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

[b] Collected only if reusable sampling equipment used.

QC = quality control
VOC = volatile organic compound
SVOC = semi-volatile organic compound

Table 6
Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA, or an authorized off-site radioactive waste disposal facility. [a]
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D mixed waste landfill or the WIPP, as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D mixed waste landfill or WIPP, as appropriate.
Verification water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	RLWTF
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D mixed waste landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Potential Waste Materials	Waste Types	Disposal Options
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA, or an authorized off-site radioactive waste disposal facility. [a]
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D mixed waste landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA, or an authorized off-site radioactive waste disposal facility. [a]
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D mixed waste landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA , or an authorized off-site radioactive waste disposal facility. [a]
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D mixed waste landfill or WIPP, as appropriate.
Storage Structures	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA, or an authorized off-site radioactive waste disposal facility. [a]

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D mixed waste landfill or WIPP, as appropriate.
Concrete Pad	Non-regulated solid waste	Subtitle D landfill or potentially, re-use/recycle
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA, or an authorized off-site radioactive waste disposal facility.[a]
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D mixed waste landfill or WIPP, as appropriate.

[a] This description of the disposal option for low level waste may be subject to revision pending the resolution of the LANL Appeal of the November 2010 LANL Hazardous Waste Facility Permit.

Table 7
Hazardous Waste Constituents of Concern at the TWF[a]

Category	EPA Hazardous Waste Numbers	Specific Constituents
Toxic Contaminants	D004	Arsenic
	D005	Barium hydroxide
	D006	Cadmium
	D007	Chromium
	D008	Lead
	D009	Mercury
	D010	Selenium
	D011	Silver
	D018	Benzene
	D019	Carbon tetrachloride
	D021	Chlorobenzene
	D022	Chloroform
	D026	Cresol
	D027	1,4-Dichlorobenzene
	D028	1,2-Dichloroethane
	D029	1,1-Dichloroethylene
	D030	2,4-Dinitrotoluene
	D032	Hexachlorobenzene
	D033	Hexachlorobutadiene
	D034	Hexachloroethane
	D035	Methyl ethyl ketone
	D036	Nitrobenzene
	D037	Pentachlorophenol
	D038	Pyridine
	D039	Tetrachloroethylene
	D040	Trichloroethylene
	D041	2,4,5-Trichlorophenol
	D042	2,4,6-Trichlorophenol
	D043	Vinyl chloride
Volatile Organic Compounds	F001	Spent halogenated solvents, trichloroethylene
	F002	Spent halogenated solvents
	F003	Spent non-halogenated solvents, xylene, acetone
	F004	Spent non-halogenated solvents
	F005	Spent non-halogenated solvents
Toxic listed waste	U080	Methylene chloride

[a] This will be modified as needed, based on the unit operating record.
EPA = U.S. Environmental Protection Agency

Attachment C

Revised PMR Figure 2-5

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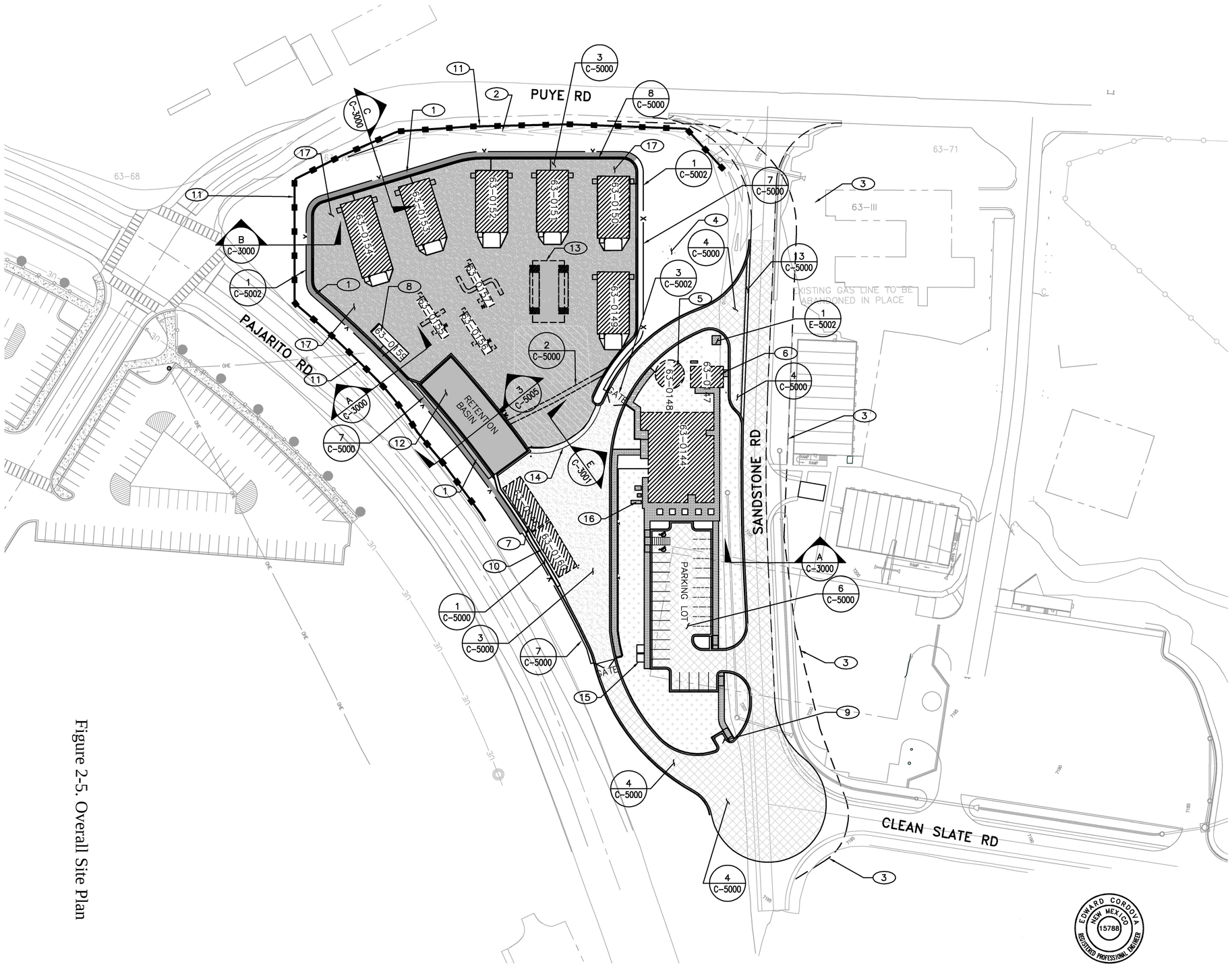

SITE PLAN
0 50' 100'
1"=50'-0"

GENERAL NOTES

1. FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
2. IF THIS SHEET IS NOT 24"x36", THEN IT IS A REDUCED SIZE PLOT. USE GRAPHIC SCALE ACCORDINGLY.
3. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY AND SHALL BE FIELD LOCATED PRIOR TO CONSTRUCTION.
4. THE INTENT OF THIS SHEET IS TO GIVE AN OVERALL SITE PLAN VIEW. SEE SHEETS C-1001 & C-1002 FOR MORE DETAIL.

KEYED NOTES

1. EXISTING RETAINING WALL BUILT PER TWF PHASE A
2. EXISTING ROADSIDE SWALE BUILT PER TWF PHASE A
3. LIMITS OF CONSTRUCTION.
4. EXISTING MONITORING WELL TO REMAIN, DO NOT DISTURB
5. FIRE WATER STORAGE DIAMETER=35ft, HEIGHT=21ft, VOLUME=150,000gal
6. UTILITY BUILDING, SEE ARCHITECTURAL PLANS
7. FORKLIFT CHARGING STATION
8. CSMM STORAGE BUILDING
9. DUMPSTER PAD
10. EQUIPMENT STORAGE SHED
11. K-12 P1 VEHICULAR BARRIER, SHEET END OF CONSTRUCTION DRAWINGS. THIS COMMENT IS CLASSIFIED AS SAFETY CLASS PER LANL PSDR (102355-RPT-000012-R0)
12. RETENTION BASIN SEE SHEETS C-1017 & C-5005 FOR DETAILS
13. AREA DESIGNATED AS FUTURE EXPANSION
14. LIMITS OF THE LOADING & UNLOADING AREA
15. LEEDS STORAGE AREA (TYP. 2)
16. EQUIPMENT PADS, SEE MECHANICAL SHEETS
17. TRU WASTE FACILITY PERMITTED UNIT

Figure 2-5. Overall Site Plan

NOT FOR CONSTRUCTION
PART B PERMIT APPLICATION

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP

EDWARD CORDOVA NEW MEXICO 15788 REGISTERED PROFESSIONAL ENGINEER

I, Edward Cordova, state that this drawing was prepared under my supervision and all the information presented hereon is true and correct to the best of my knowledge and information.

3/21/12 Date — Edward Cordova, NM P.E. 15788

WEIDLINGER-NAVARRO JV NORTHERN NM

TRU WASTE FACILITY PROJECT
PROJECT SITE

OVERALL SITE PLAN

BLDG TA-63

DRAWN	D PADILLA
DESIGN	J RAEL
CHECKED	E CORDOVA
DATE	03-22-12

SUBMITTED | APPROVED FOR RELEASE

Los Alamos NATIONAL LABORATORY
P0 Box 1663
Los Alamos, New Mexico 87545

SHEET C-1000
8 OF 740

CLASSIFICATION XXX | REVIEWER XXX | DATE

PROJECT ID 102355 | DRAWING NO C55443 | REV F

M:\TRN\10-100-205-05\CADD\SHEETS\4-26-12\102355-C-1000-RF.DWG-4/26/2012 3:07 PM

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Attachment D

Revised PMR Figure 2-34

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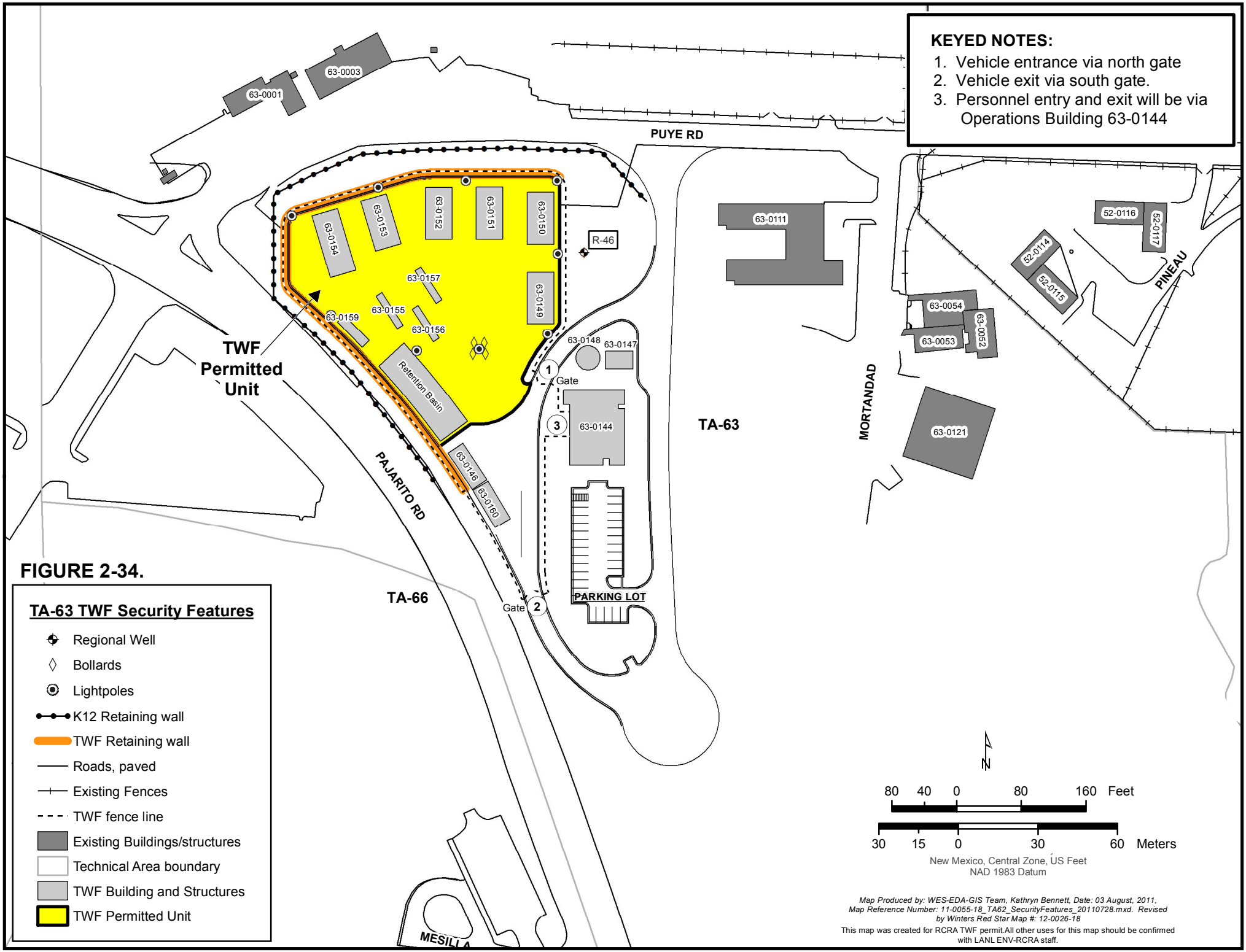
KEYED NOTES:
1. Vehicle entrance via north gate
2. Vehicle exit via south gate.
3. Personnel entry and exit will be via Operations Building 63-0144
PUYE RD
63-0001
63-0003
63-0154
63-0153
63-0152
63-0151
63-0150
63-0149
63-0157
63-0155
63-0159
63-0156
R-46
TWF Permitted Unit
Retention Basin
63-0148
63-0147
Gate 1
63-0144
63-0146
63-0160
PAJARITO RD
Gate 2
PARKING LOT
TA-66
TA-63
63-0111
MORTANDAD
63-0121
63-0054
63-0053
63-0052
52-0116
52-0117
52-0114
52-0115
PINEAU
MESILLA
TA-63 TWF Security Features
Regional Well
Bollards
Lightpoles
K12 Retaining wall
TWF Retaining wall
Roads, paved
Existing Fences
TWF fence line
Existing Buildings/structures
Technical Area boundary
TWF Building and Structures
TWF Permitted Unit
N
80 40 0 80 160 Feet
30 15 0 30 60 Meters
New Mexico, Central Zone, US Feet
NAD 1983 Datum
Map Produced by: WES-EDA-GIS Team, Kathryn Bennett, Date: 03 August, 2011,
Map Reference Number: 11-0055-18_TA62_SecurityFeatures_20110728.mxd. Revised by Winters Red Star Map #: 12-0026-18
This map was created for RCRA TWF permit.All other uses for this map should be confirmed with LANL ENV-RCRA staff.

FIGURE 2-34.

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Attachment E

Figure 4-2

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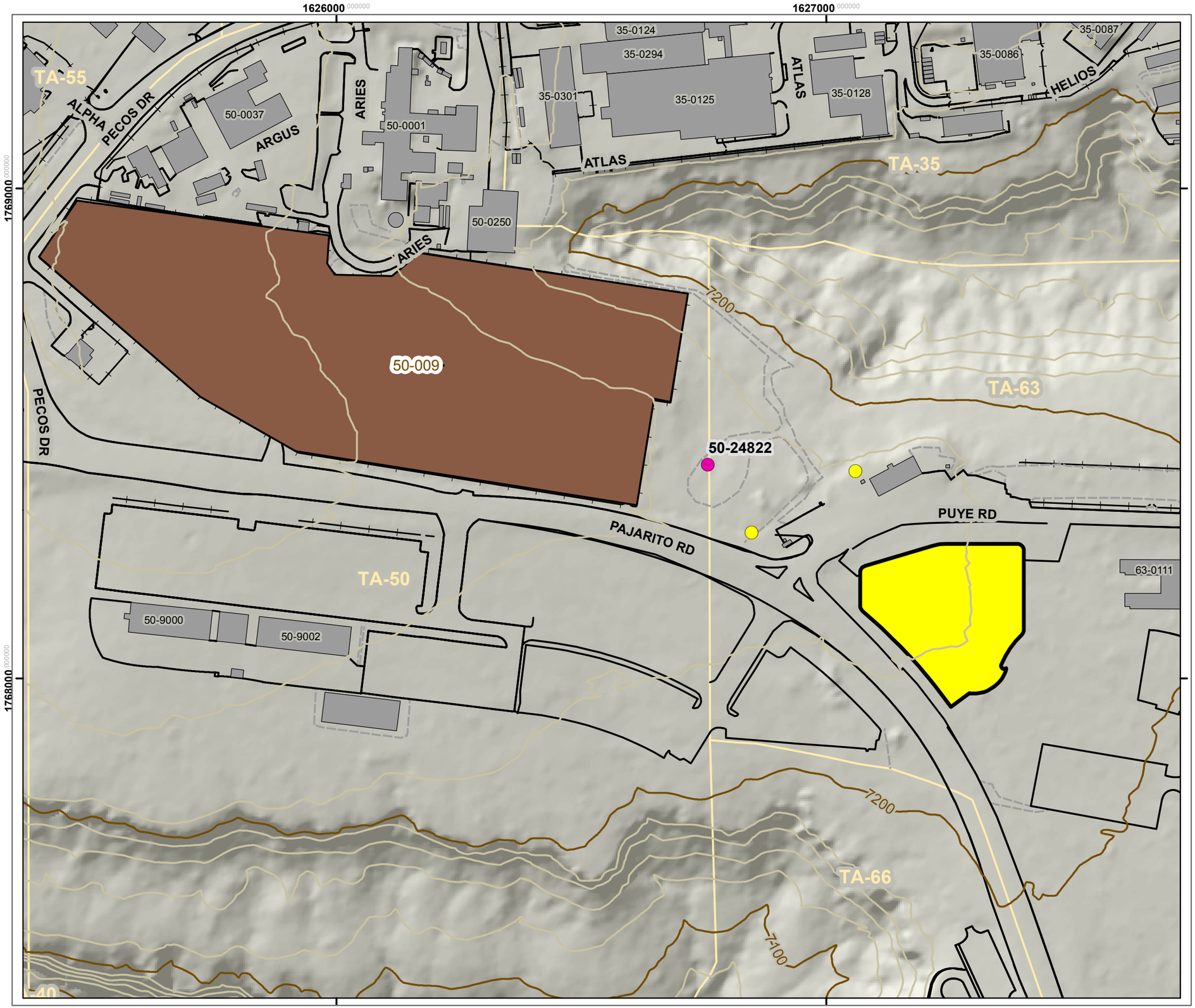

Figure 4-2

Transuranic Waste Facility: Soil Vapor Monitoring Network

Legend

- Existing Monitor Well
- Proposed Vapor Monitoring Wells
- Contours, 100 ft
- Contours, 20 ft
- Roads, paved1
- Roads, dirt
- Fences
- Solid Waste Management Unit
- Buildings/Structures
- TWF Permitted Unit
- Technical Area boundary

N

Meters
60 30 0 60

0 125 250 375 500
Feet

New Mexico State Plane Coordinate System,
Central Zone, Units in Feet.
North American Datum 1983. NGVD 1929

Reference Grid interval equals 1000 ft

DISCLAIMER: This map was created for work processes associated with LANL TA-63 TWF Permit Modification Request. All other uses for this map should be confirmed with LANL staff.

Map Produced by: WES-EDA-GIS Team, Kathryn Bennett, Date: 03 August, 2011 Map Reference Number: 11-0055-21_TA63_SWMU _disdir_sm.mxd Revised by Winters Red Star Map Reference#: 12-0026-19

Los Alamos NATIONAL LABORATORY EST.1943

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Attachment F

Revised Permit Figure 55

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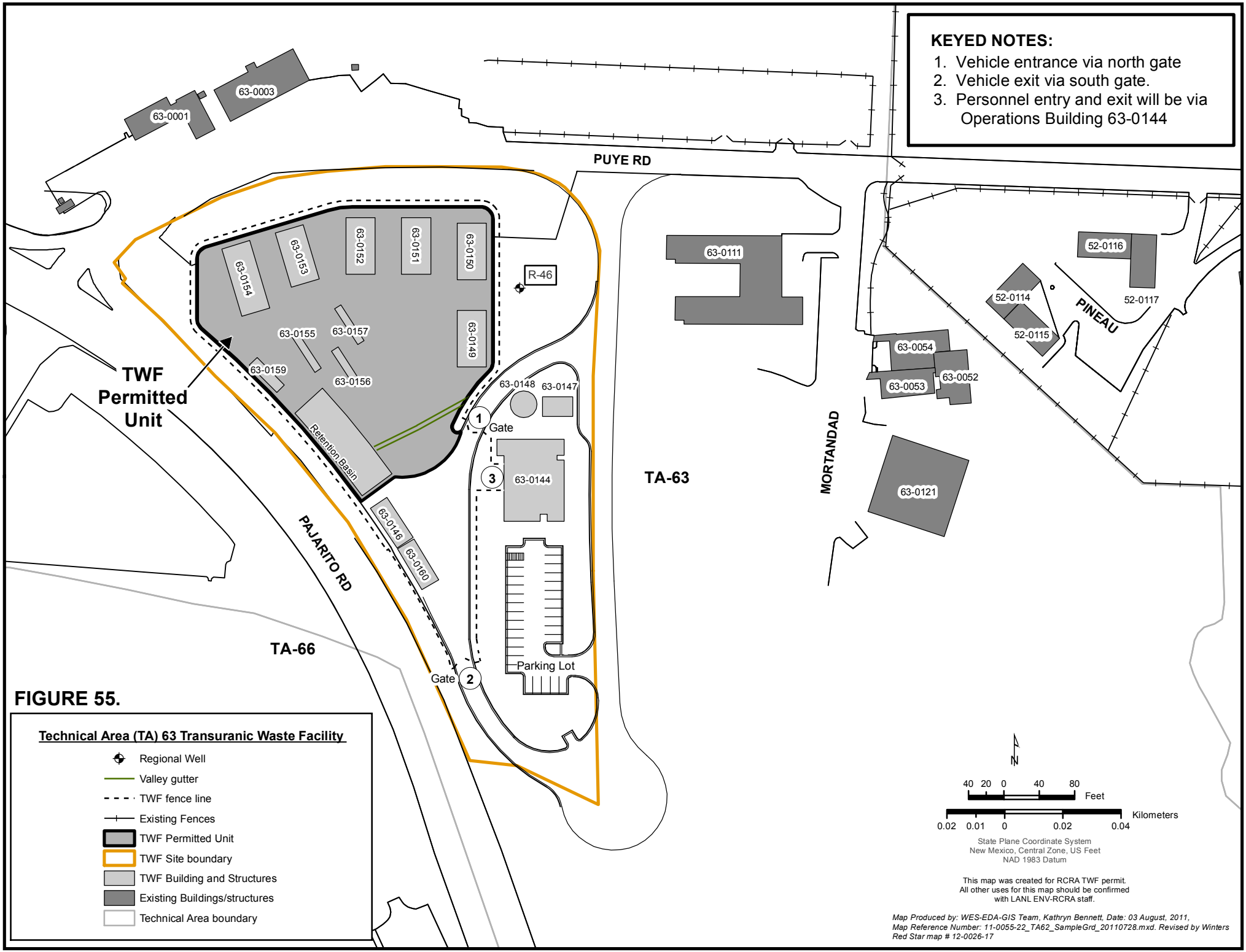
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63-0151
63-0150
63-0155
63-0157
63-0149
63-0159
63-0156
R-46
TWF Permitted Unit
Retention Basin
63-0148
63-0147
1
Gate
3
63-0144
63-0146
63-0160
PAJARITO RD
TA-66
Gate
2
Parking Lot
TA-63
63-0111
MORTANDAD
63-0121
63-0054
63-0053
63-0052
52-0116
52-0114
52-0115
52-0117
PINEAU
Technical Area (TA) 63 Transuranic Waste Facility
Regional Well
Valley gutter
TWF fence line
Existing Fences
TWF Permitted Unit
TWF Site boundary
TWF Building and Structures
Existing Buildings/structures
Technical Area boundary
N
40 20 0 40 80
Feet
0.02 0.01 0 0.02 0.04
Kilometers
State Plane Coordinate System
New Mexico, Central Zone, US Feet
NAD 1983 Datum
This map was created for RCRA TWF permit.
All other uses for this map should be confirmed
with LANL ENV-RCRA staff.
Map Produced by: WES-EDA-GIS Team, Kathryn Bennett, Date: 03 August, 2011,
Map Reference Number: 11-0055-22_TA62_SampleGrd_20110728.mxd. Revised by Winters
Red Star map # 12-0026-17

FIGURE 55.

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Attachment G

Certification

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CERTIFICATION

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

7/11/12

Alison M. Dorries

Date Signed

Division Leader
Environmental Protection Division
Los Alamos National Laboratory
Operator

7/12/12

FOR
Kevin W. Smith

Date Signed

Manager, Los Alamos Site Office
National Nuclear Security Administration
U.S. Department of Energy
Owner/Operator

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