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NMED Hazardous Waste Bureau

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Date: September 3, 2009
Refer To: ENV-DO-09-013
LAUR: 09-05638

James Bearzi, Bureau Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303

Dear Mr. Bearzi:

SUBJECT: COMMENTS ON THE DRAFT LOS ALAMOS NATIONAL LABORATORY HAZARDOUS WASTE FACILITY PERMIT

In accordance with the public notice issued on July 6, 2009 by the New Mexico Environment Department- Hazardous Waste Bureau (NMED-HWB), the U.S. Department of Energy, Los Alamos Site Office and the Los Alamos Nuclear Security, LLC, (DOE/LANS) hereby submit comments on the revised draft Hazardous Waste Facility Permit to be issued for the Los Alamos National Laboratory. The Permittees offer a number of comments that identify general and specific objections with the draft permit. With these comments, DOE/LANS also request that a public hearing be scheduled to address outstanding issues. In the event that a resolution is reached for these issues in advance of a hearing, the DOE/LANS will withdraw the hearing request.

The attached table titled "Comments on the Revised Draft Permit for Los Alamos National Laboratory" (LA-UR-09-05638) presents the comments from DOE/LANS. Part 1 are substantive comments on portions of the revised draft Permit to which we made exceptions. Additionally, as you requested, we have also provided non-substantive comments. These are in Part 2 and are primarily administrative and factual corrections. Our comments include appendices that contain supporting information for these comments. These appendices are:

- Appendix 1 – Documents supporting Comment 20, RLWTF
- Appendix 2 – Documents supporting Comment 10, mixed waste venting
- Appendix 3 – Documents supporting Comment 23, dioxin/furan prohibition
- Appendix 4 – Attachment K-summary of suggested changes to Tables K-1, K-2, and K-3

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- Appendix 5 – Attachment N-updated figures
- Appendix 6 – Attachment C-updated Tables C-6, C-12
- Appendix 7 – Attachment A Table of Contents
- Appendix 8 – Attachment D revisions

Provided herein is one hard copy and one electronic copy of the submittal. If you have questions concerning this submittal please contact Jack Ellvinger at (505) 667-0633 or Gene Turner at (505) 667-5794.

Sincerely,

Victoria A. George
Division Leader
Environmental Protection Division
Los Alamos National Laboratory

Sincerely,

George J. Rael
Assistant Manager
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Ellen Louderbough, LC-LESH, w/enc., A187
ENV-DO File, w/o enc., J978
ENV-RCRA File (09-165), w/enc., K490
IRM-RMMSO, w/enc., A150

DOE/LANS COMMENTS ON THE REVISED DRAFT PERMIT FOR LOS ALAMOS NATIONAL LABORATORY

PART 1

COMMENT 1
DESIGNATION OF REGULATED UNITS

The revised draft Permit identifies three categories of permitted units at the facility-indoor units, outdoor units and regulated units. (Section 9.1). The regulated units are identified as "material disposal areas G, H, L." (*Id.*; Table J-1). The term "regulated unit" is used throughout the revised draft Permit. The Permittees oppose the designation of the entirety of "material disposal areas G, H, L" as regulated units because it is inconsistent with the applicable regulatory requirements and is inconsistent with the history of the facility and the 2005 Compliance Order on Consent (Consent Order). Each material disposal area is made up of all the associated SWMUs and AOCs in that area, so, for example, MDA G consists of all the subsurface SWMUs and AOCs at Area G.

Technical Area 54 (TA-54) Areas G, H and L include solid waste management units (SWMUs) and regulated units. 40 CFR §264.90 defines regulated units as a "surface impoundment, waste pile, and land treatment unit or landfill that receives hazardous waste after July 26, 1982." Based on the definition in §264.90, the only regulated units at TA-54 are Shaft 124 and Pit 29 at Area G, Shaft 9 at Area H, and a number of shafts and surface impoundments at Area L because these are the only discrete units that accepted hazardous waste after July 26, 1982. Pursuant to regulatory requirements and the intent to close those units under RCRA, LANL has consistently submitted closure plans that have identified the pits and shafts as discrete hazardous waste units. All of the other units at TA-54, including MDAs G, H, and L, have been identified as SWMUs by both LANL and NMED. The LANL SWMU report, required by EPA, and Module VIII to the current RCRA Permit, identified the units that had received hazardous waste before 1982 and mixed waste before 1990 as solid waste management units subject to corrective action. The Consent Order removed all the corrective action requirements for the SWMUs and AOCs from the current Permit to place them in a separate enforceable document (the Consent Order). Corrective action for the SWMUs is to be completed under the Consent Order.

Corrective action at LANL SWMUs and Areas of Concern (AOCs) is being conducted pursuant to the Consent Order, which meets the statutory and regulatory requirements for 1) corrective action under RCRA for releases of hazardous waste or hazardous waste constituents; 2) corrective action for releases to groundwater; and 3) groundwater monitoring, groundwater characterization and groundwater corrective action requirements for regulated units under 40 CFR Subpart F and for miscellaneous units under 40 CFR Subpart X and 4) additional groundwater information required in RCRA Part B permit applications. (Consent Order Section III.A). The Consent Order requires LANL to submit a Corrective Measures Implementation Plan, which will be equivalent to a closure plan under the RCRA regulations and Part 9 of the revised draft Permit. (Fact Sheet at 5).

The Consent Order includes corrective action requirements for TA-54. (Consent Order Section IV.C specifically identifies work to be undertaken at MDAs G, H, and L). Areas G, H and L contain SWMUs, AOCs and regulated units. 40 CFR§264.110(c) allows alternative closure for regulated units "situated among" SWMUs and AOCs as long as the alternative requirements are set out in a permit or in an enforceable document. The regulated units (as identified above) in Areas G, H and L are co-located or situated among SWMUs and AOCs and the Consent Order is an enforceable document. NMED has agreed that alternative closure is applicable to the regulated units.

Section 9.3 states that the closure of the regulated units will be done under the Consent Order using alternative closure requirements in accordance with 40 CFR 264.110(c). In order to be consistent with the Consent Order and the administrative record, the regulated units should be specifically

identified as Shaft 124 and Pit 29 at Area G, Shaft 9 at Area H and Shafts 1, 13-17, 19-34 and Impoundments B and D at Area L. The specifically identified regulated units are situated among SWMUs and AOCs at Areas G, H, and L and are thus eligible for alternative closure.

COMMENT 2
PART 2, SECTIONS 2.13, 2.14, 2.15 and 2.16
FINANCIAL ASSURANCE

The Permittees object to the financial assurance requirements set forth in Sections 2.13 (Cost Estimates for Closure and Post-Closure Care), 2.14 (Financial Assurance for Closure and Post-Closure Care), 2.15 (Liability Requirements) and 2.16 (Incapacity of Operators, Guarantors, or Financial Institutions) and as referenced throughout the revised draft Permit and Attachments. The provisions require LANS, as the private co-operator of LANL, to provide cost estimates and financial assurance for closure and post-closure care and to provide liability insurance for sudden and accidental occurrences. The financial assurance requirements set forth in the revised draft Permit conflicts with EPA guidance on the RCRA exemption for publicly-owned facilities, are not consistent with Public Law 106-113, Section 220 and conflict with the 2005 Compliance Order on Consent (Consent Order).

RCRA EXEMPTION

RCRA Subpart H establishes financial assurance requirements for closure and post-closure care for owners or operators of hazardous waste facilities. 40 CFR §264.140(c) specifically exempts States and the Federal government from the financial assurance requirements of Subpart H. State and Federally-owned RCRA facilities are exempt from the financial assurance requirements because "government institutions are permanent and stable, and have as their reason for being the health and welfare of their people." (45 FR 33198 (May 19, 1980). Because of the permanency and stability of State and Federal governments, they are "more likely and more able to carry out their closure and post-closure responsibilities." *Id.* As EPA explained in promulgating the exemption, "State and Federally-owned facilities will always have adequate resources to conduct closure and post-closure care activities properly." *Id.* Unlike owners of private facilities, Federal and State governments have the financial strength and incentive to cover the costs of closure and post-closure care.

Although NMED recognizes that §264.140(c) exempts DOE from financial assurance requirements, NMED has taken the position that LANS, as the private co-operator, is required to provide financial assurance. NMED is improperly focusing on the status of the Permittees as either a Federal entity or a private entity rather than on the fact that LANL is a Federally-owned facility. The EPA has consistently stated that the exemption applies to publicly-owned facilities, with the emphasis being on the ownership of the facility. The Preamble to Subpart H states that publicly-owned facilities, meaning State and Federally-owned facilities, are exempt from the financial assurance requirements. (45 FR 33198). In the EPA training manual on RCRA financial assurance, the EPA states that the requirements of Subpart H "are not, however, applicable to state and federally owned or operated facilities. (§§264/265.140.c))." (RCRA Training Module, EPA530-K-02-0181, Oct. 2001). The EPA directive on State authorization to handle mixed wastes states that "Federal facilities that handle mixed waste are not required to demonstrate financial assurance." (OSWER 9441.1987). In an audit report, the EPA Office of Inspector General stated that "Federal and state owned RCRA facilities are not required to establish financial assurance." ("RCRA Financial Assurance for Closure and Post-Closure", Report No. 2001-P-007, March 30, 2001).

NMED's position that LANS is required to provide financial assurance is contrary to EPA guidance and is not consistent with the rationale underlying the exemption. The EPA has stated that a private sector co-operator at a publicly owned facility is also exempt from the financial assurance requirements. In a January 5, 1983, letter from John Skinner, UPEPA Acting Director of Solid Waste, the EPA stated "that where one party (the owner or operator) is an exempted party because it is a State or Federal government unit, the other, private sector party need not comply with the Subpart H requirements." In promulgating the regulations for solid waste disposal facilities, which also include a financial assurance exemption for publicly-owned facilities, EPA stated that "the financial assurance exemption extends to cases in which a [landfill] is owned by a State or Federal government entity and operated by a private party or local government (or operated by a State or Federal government entity while owned privately or by a local government." 56 FR 50978 (Oct. 9, 1991). Exempting private co-operators of publicly-owned facilities is consistent with the purpose of financial assurance and with the rationale for the exemption. The purpose of the financial assurance requirements is to ensure that "owners and operators of TSDFs will have sufficient funds to properly close and maintain the site. EPA promulgated the financial assurance requirements to ensure that owners and operators could not default to federal funds because they are unable or unwilling to cover significant closure or post-closure costs." (RCRA Training Module, EPA530-K-02-0181, Oct. 2001). Because the State or Federal government is liable for closure and post-closure costs as an owner or operator of a publicly-owned facility, and because the rationale for the exemption is that the governments will have the necessary means to complete closure and post-closure care, there is no reason to require a private owner or operator to provide financial assurance.

In the context of a pre-emption argument, the United States Supreme Court refused to make a distinction between the Federal government as the owner of a Federal facility and the private contractor as the operator of the facility. The Court, in interpreting the possible application of state worker's compensation laws to the Portsmouth Gaseous Diffusion Plant, stated that, "[a]s an initial matter…we consider whether the federally owned Portsmouth facility is…shielded from direct state regulation even though the facility is operated by a private party under contract to the United States." *Goodyear Atomic Corp. v. Miller et al.*, 486 U.S. 174, 180 (1988). The Portsmouth facility was a Federally owned nuclear production facility operated by a private contractor. The Court stated that nuclear production facilities "are authorized by statute to carry out a federal mission, with federal property, under federal control." *Id.* at 181. The Court found that federal pre-emption protected the facilities from direct state regulation, "even though the federal function is carried out by a private contractor."

LANL is a Federally-owned facility that is carrying out a Federal mission, on Federal property, under Federal control. NMED has recognized that DOE is exempt from financial assurance requirements. LANS, as the co-operator of a Federally-owned facility, is also exempt from financial assurance. Pursuant to the EPA preamble, which bases the rationale for the exemption on the fact that the particular facility is publicly owned, the LANL facility is exempt because it is a publicly owned facility. Therefore, because the Facility is exempt and because the expectation supporting the exemption is that DOE will have the means to pay for closure and post-closure costs, there is no reason to require LANS to post financial assurance.

There is no basis for making the distinction between a Federally-owned facility and a private contractor that NMED is making for purposes of financial assurance. Making such a distinction ignores the underlying rationale for the exemption, which is that State and Federal entities will have the means to pay for closure and post-closure care. Since EPA has determined that State and Federal entities have such funds, there is no basis to impose additional financial assurance on the private operators.

NMED attempts to justify imposing financial assurance requirements on LANS by arguing that the closure of the MDAs may be frustrated by funding shortfalls. (Fact Sheet at 28). As discussed below, LANL is required by the Consent Order to close the MDAs by 2015. The Consent Order has numerous mechanisms, which NMED has shown that it is willing to use, to ensure that the requirements of the Consent Order are met. The Consent Order includes provisions for stipulated penalties and NMED has the authority to undertake enforcement action if it believes that DOE is not complying with the Consent Order. Despite NMED's statements in the Fact Sheet, the work under the Consent Order is proceeding and funding continues to be made available. There is no evidence that DOE intends to discontinue funding of the corrective action measures required for the MDAs under the Consent Order. The crux of NMED's argument is that DOE is not providing funding at the level the Department would like to see. However, that is not a valid justification for imposing financial assurance requirements on LANS when the EPA guidance applies the exemption to publicly-owned facilities and includes private co-operators in the exemption and where there is no evidence that EPA was incorrect in assuming that the Federal government will have adequate resources to provide for closure and post-closure care.

In addition, DOE has made a commitment to undertake closure and post-closure care of DOE owned facilities nationwide. As part of the long-term stewardship of the nuclear weapons facilities, DOE has committed to comply with the applicable requirements under RCRA and other laws for the closure and post-closure care of the facilities.

Finally, NMED's reliance on the Hearing Officer's report in the WIPP proceeding is misplaced because it does not have any precedential value. Following the imposition of the financial assurance requirements against the private co-operator of WIPP, the Permittees appealed the requirements to the United States District Court. Prior to a decision on the appeal, Congress passed a Federal statute exempting the WIPP facility, including both DOE and DOE contractors, from the RCRA financial assurance requirements. 114 Stat. 536 (Public Law 106-246). Congress passed a similar provision for Sandia National Laboratories. 118 Stat. 440 (Public Law 108-199). Following the passage of Public Law 106-246, then Secretary of the Environment Pete Maggiore stated that "the standards and regulations upon which the Permit was based have changed and the State of New Mexico may no longer impose upon DOE's contractors the financial assurance requirements." (Letter from Pete Maggiore to Dr. Inez Triay, August 9, 2000). After the Public Law was passed, WIPP voluntarily dismissed the appeal on August 18, 2000. There has not been a definitive ruling by either a State or Federal Court on the applicability of financial assurance provisions to private contractors at Federally-owned facilities.

PUBLIC LAW 106-113, SECTION 220

Congress has exempted the Federal Government and its contractors at facilities designed to manage transuranic waste from financial assurance requirements under RCRA. 113 Stat. 1501A, App. E Sec. 220, Public Law 106-113. Section 220 states:

> Exemption for Waste Management Facilities Owned or Operated by the United States. No form of financial responsibility requirement shall be imposed on the Federal Government or its contractors as to the operation of any waste management facility which is designed to manage transuranic waste material and is owned or operated by a department, agency, or instrumentality of the executive branch of the Federal Government and subject to regulation by the Solid Waste Disposal Act (42 U.S.C. 6901 et seq.) or by a State program authorized under that Act.

LANL is owned and co-operated by DOE, which is a department in the executive branch of the Federal Government and is subject to regulation by NMED pursuant to the State hazardous waste management program, which is a state program authorized by the Solid Waste Disposal Act. LANS is a contractor to the Federal Government. Portions of the LANL Facility that are governed by the RCRA regulations are waste management facilities designed to manage TRU waste and therefore the exemption under Section 220 applies to those portions of the LANL Facility and both DOE and LANS are exempt from the RCRA financial assurance requirements. The language of Section 220 is consistent with the exemption in 264.140(c) and demonstrates that Congress intended the financial assurance exemption to apply to contractors of the Federal Government at specific types of waste management facilities.

CONFLICT WITH THE CONSENT ORDER

Section 2.13.1 of the draft RCRA permit, Closure Cost Estimates, requires LANS to

> "submit closure cost estimates for each regulated unit listed in Table J-1 (*Active Portion of the Facility*) in Attachment J (*Hazardous Waste Management Units*) at the time of the submission of the Corrective Measures Evaluation (CME) report in accordance with Permit Section 9.3 and §VII.D.4.b.v of the Order. The Permittee LANS shall include the final cost estimate of the selected remedy in the submittal of the closure plan (*i.e., Corrective Measures Implementation Plan*) for the regulated units listed in Table J-1."

The revised draft Permit identifies the regulated units as "material disposal areas G, H, L." (Attachment J, Table J-1; Section 9.1). Section 2.14 states that "[f]or Material Disposal Areas G, H, and L, the Permittees shall identify the instruments for financial assurance for closure in the associated Corrective Implementation Plans."

The Consent Order specifically states that it is the sole mechanism and only enforceable document for establishing and enforcing corrective action requirements for SWMUs and AOCs at the Facility. (Consent Order, Section III.W.2). The Consent Order also states that the RCRA permit will not include any corrective action requirements, nor any other requirement that is duplicative of this Consent Order." (Section III.W.4). Section 11.1 of the revised draft Permit is consistent with the Consent Order and states that NMED and the Permittees have agreed to the Consent Order "which requires the Permittees to conduct corrective action at all solid waste management units (SWMUs) and Areas of Concern (AOCs) at the Facility to fulfill the requirements of 40 CFR §264.101. The Consent Order is an enforceable document pursuant to 40 CFR §§264.90(f), 264.110(c), and as defined in 40 CFR §270.1(c)(7). Nothing in this Permit Part shall be construed to constitute a change to the Consent Order." Section 9.3 states that the closure of the regulated units will be done under the Consent Order using alternative closure requirements in accordance with 40 CFR 264.110(c).

The provisions of Sections 2.13, 2.14, 2.15 and 2.16 of the revised draft Permit are inconsistent with the Consent Order because they create duplicative requirements and establish a second enforceable document for corrective action. The Consent Order includes the three MDAs in all of the Consent Order processes, including the pre-CME, CME and CMI requirements. The specific pits and shafts that the Permittees have identified as regulated units come under the Consent Order because they are co-located with the SWMUS and AOCs and alternative closure is therefore allowed under 40 CFR §264.110. (*See* Comment on Regulated Units). The revised draft Permit states that closure of the regulated units shall be in accordance with the Consent Order. The Consent Order specifically states that compliance with the Consent Order constitutes compliance with Subpart F and Subpart F includes a requirement for financial assurance at §264.101. The Consent Order does not create or carve out an exception for

financial assurance but states that all of Subpart F is met. Therefore, by including closure cost estimates and financial assurance for the regulated units in the draft Permit, NMED has included duplicative requirements and created a second enforceable document for corrective action because the cost-estimates are clearly based on the CMI, which is a Consent Order requirement.

In summary, the exemption applies to publicly-owned facilities and is not limited to a State or the Federal government as a permittee.

COMMENT 20
PART 4, SECTION 4.6
RLWTF

The Permittees object to the inclusion of Section 4.6 in the revised draft permit, which sets forth a proposed permit condition applicable to the Radioactive Liquid Waste Treatment Facility (RLWTF) at TA-50. As discussed below, this permit condition does not meet minimum legal criteria of 40 C.F.R. § 270.32(b), is not supported by the record, and is an inappropriate condition to impose under RCRA permit regulations. Section 4.6 provides as follows:

> The Permittees shall discharge all treated wastewater from the TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF) through the outfall permitted under Section 402 of the federal Clean Water Act, or as otherwise authorized by the terms of an applicable Clean Water Act permit that regulates the treatment and use of wastewater. If the Permittees intentionally discharge through a location other than the permitted outfall, they will fail to comply with this requirement, and as a consequence the wastewater treatment unit exemption under 40 CFR § 264.1(g)(6) will no longer apply to the RLWTF. The Permittees shall not accept listed hazardous wastes as specified at 40 CFR Part 261 Subpart D at the RLWTF. Revised Draft Permit § 4.6, p. 78.

1. *Permit Condition 4.6 does not meet the criteria of 40 CFR § 270.32(b).*

Section 270.32(b)(1) provides that the Department may impose permit conditions necessary to achieve compliance with RCRA regulations, including each of the applicable requirements specified in Parts 264 and 266 through 268. Department rules also require the agency to either incorporate the applicable regulatory requirement by reference or provide a specific citation to the applicable regulatory requirement (§ 270.32(e)). The Agency has the burden of proof to support agency-imposed permit conditions, and must provide ample justification in the administrative record.

As an initial matter, Permit Condition 4.6 does not meet the criteria of § 270.32(b)(1) or § 270.32(f). The Department provides no regulatory citation or support that the requirement is necessary to ensure compliance with a hazardous waste management requirement under parts 264, 266 or 268. Instead, the Department states that the condition is necessary to ensure that the wastewater treatment unit (WWTU) exemption applicable at the RLWTF will “no longer apply” as a consequence of the Permittees’ intentional failure to comply with the requirement that the discharge of all treated wastewater from the RLWTF be through an outfall permitted under Section 402 of the federal Clean Water Act (CWA) (Fact Sheet, at 82). In other words, the permit condition mischaracterizes the circumstances under which LANL may or may not lose its WWTU exemption at the RLWTF. The

issue, as explained below, is a fact-specific question and ultimately an enforcement issue for EPA or NMED. The condition is not based on achieving compliance with any regulatory standard under part 264 or part 268.[1]

2. *Permit Condition 4.6 inappropriately attempts to regulate the RLWTF and imposes requirements not supported by EPA and NMED rules.*

The WWTU Exemption

The RLWTF, a facility that treats wastewater, discharges effluent through an outfall (discharge point) into Mortandad Canyon that is regulated by a permit issued by EPA under § 402 of the CWA. LANL treats hazardous wastewater at the RLWTF without a RCRA permit under the WWTU exemption (Fact Sheet at 82).[2] 40 CFR § 264.1(g)(6) exempts a wastewater treatment unit (as defined in 40 CFR § 260.10) from the requirement to obtain a RCRA permit for that storage and treatment of hazardous wastewater in tanks or tank systems. The WWTU exemption was issued to avoid imposing duplicative permitting requirements on a facility subject to both an NPDES permit and a hazardous waste permit for the same unit (i.e., tank). To qualify for and maintain the exemption, LANL must treat hazardous wastewater in a "device" that meets the criteria of § 260.10.[3] A facility that does not meet these criteria (for whatever reason) cannot claim that its treatment tanks are exempt from RCRA permit requirements. As a consequence, the facility must obtain a RCRA permit or be subject to potential enforcement.

Permit Condition 4.6

A. Permit Condition 4.6 states that the WWTU exemption "will no longer apply to the RLWTF" if the Permittees *intentionally* discharge through a location other than the permitted outfall. As drafted, the proposed condition can be construed to result in a loss of the WWTU exemption on a permanent basis. EPA did not intend this result. The WWTU exemption is conditional, and the failure to meet any of the three criteria results in a loss of the exemption. It does not automatically disqualify the wastewater treatment facility from future operation under the WWTU exemption. There are numerous circumstances that may result in the loss of the WWTU exemption under § 260.10 (e.g., a tank fails to meet the *tank* definition due to leakage or discharge into the environment or inadvertent shipment of wastewater to an off-site treatment facility). If a wastewater treatment facility fails to meet the criteria of § 260.10 it may not rely on the WWTU exemption and could be subject to potential enforcement.

B. The permit condition sets a standard for the loss of the WWTU exemption that conflict with EPA and NMED rules. The Department explains that the WWTU exemption "would not be lost" if another discharge point were used by inadvertence, such as when a leak developed, but the intentional diversion of treated wastewater voids the exemption." (Fact Sheet, pp. 82-83.) Section 260.10 does not distinguish between *intentional* and *non-intentional diversions* of treated wastewater, and these terms are undefined. Nor does the WWTU exemption limit how a facility may divert

[1] Part 266 addresses other types of RCRA permits, and is not applicable in this permit proceeding.
[2] *See* NMED letter and LANL response and documentation to support the operation of the tanks at the RLWTF under the WWTU exemption (attached as Appendix 1, hereto).
[3] To qualify as a WWTU, the device must meet the following criteria: (1) the unit must be part of a wastewater treatment facility subject to an NPDES permit requirement; (2) the unit receives and treats or stores an influent wastewater that is hazardous waste as defined in § 261.3, or generates and accumulates, treats or stores a wastewater treatment sludge that is hazardous waste as defined in § 261.3; and (3) the unit meets the definition of a *tank* or *tank system* under § 260.10.

wastewater so long as it meets the requirements of § 260.10.[4] A facility can operate under the WWTU exemption so long as it uses tanks or tank systems to manage hazardous wastewater dedicated for use with an on-site wastewater treatment facility subject to an NPDES permit requirement.[5] The Department states that LANL would not lose the WWTU exemption by an inadvertent leak from a tank. Does this mean an inadvertent leak into the environment or a leak to a secondary containment device with no releases into soils and sediments? How is an intentional leak defined? The permit condition is unclear and inaccurately describes how the WWTU exemption may be lost.

C. The Department also states that the WWTU exemption "would not be lost . . . so long as EPA . . . states unambiguously that the new configuration would be regulated by the EPA . . . and meets the definition of a [WWTU] under § 260.10" (Fact Sheet, at 82). This goes far beyond the scope of EPA rules at § 260.10. EPA has authority to issue NPDES permits, and will determine what conditions are necessary to meet CWA effluent limitations and NPDES permit requirements. The applicability of the WWTU exemption does not require the CWA agency (i.e., EPA) to determine whether or not a unit meets the criteria of § 260.10.

D. The permit condition prohibits the RLWTF from accepting listed hazardous wastes. This is an attempt to prescribe an operational requirement at the RLWTF, unrelated to ensuring compliance with part 264 standards. Currently, the RLWTF does not accept listed hazardous wastes due to its internal waste acceptance procedures and the fact that the treatment systems at the RWLTF are not configured to treat listed hazardous wastes. The WWTU exemption allows treatment of listed hazardous wastes (§ 261.3) and does not prohibit a facility from treating listed hazardous waste. It is possible that LANL may determine in the future to treat listed wastes at the RLWTF but could only do so with new technological treatment equipment and in compliance with the WWTU exemption requirements.

E. The permit condition applies to "all treated wastewater," which is broader than RCRA authority which applies by definition to *hazardous* wastewater (§ 260.10). The WWTU exemption applies to hazardous wastes treated in tanks. Non-hazardous wastewaters are not regulated by RCRA.

Based on the foregoing, Section 4.6 should be deleted from the revised draft Permit.

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[4] EPA explained that tanks do not need to be directly connected to the WWTU and wastewater may be conveyed in any manner (i.e., piped or trucked) to the wastewater treatment facility so long as the tank is used solely for on-site treatment. *See e.g.,* U.S. EPA, RCRA Online Letter from D. Bussard, EPA to J. Mulligan, Faxback 11519, R.O. 11519 (June 1, 1990) and U.S. EPA RCRA Online Letter from J. Skinner, EPA to J. Scarbrough, EPA Region 4, Faxback 11050 (Dec. 26, 1984).

[5] The exemption does not apply to off-site hazardous waste treatment facilities not subject to the CWA requirements. See 53 Fed. Reg. 34079 (Sept. 2, 1988) (discussing on-site vs. off-site treatment facilities).

	Part/ Attachment	Section	Comment	Suggested Text Change
3	Part 1	1.8	Definition of "Hazardous Waste Management Unit" Page 17, Line 28 The definition for hazardous waste management unit in this section is acceptable but the Permittees reserve the right to object to the use of the term in other portions of the revised draft permit. The objection relates to the interpretation of the term "permitted units" in this general definition. The Permittees specifically object to the identification of certain units as permitted units in other parts of the permit (please see comment on the definition of permitted unit on page 18, line 14). In particular, the use of the term hazardous waste management unit subsequently affects the interpretation of Parts 11.2.(1) and (2) of the revised draft permit regarding the division of the appropriate unit designations between those covered by the permit and the Consent Order.	No suggested change to text.
4	Part 1	1.8	Definition of "Permitted Unit" Page 18, Line 14 The definition for permitted unit in this section is acceptable but the Permittees reserve the right to object to the use of the term in other portions of the revised draft permit. The Permittees do not agree with the list of identified permitted units contained in Attachment J (Hazardous Waste Management Units), Table J-1 (Active Portion of the Facility) of the permit. The table lists Column 1,*Unit Identifiers* for TA-54 "G," "H," and "L" with the term "Material Disposal Area" in the Column 4 *General Information.* These identifiers potentially include a much larger area than the Permittees agree has been actually used for the management of hazardous waste. This identification also confuses other portions of the revised draft permit (*see*	No suggested change to text.

	Part/ Attachment	Section	Comment	Suggested Text Change
			comment on the definition of hazardous waste management unit on page 17, line 28 and the general comment on regulated units). *See* Comment on Table J-1 and proposed text change, below.	
5	Part 1	1.10	The Permittees support the requirements for an information repository as set forth in the revised draft Permit, which allows the Permittees to establish either an electronic repository with access available through the internet or a physical repository or both. It is the Permittees' position that a virtual repository will provide the most accessibility and will support the goals of transparency and providing information to the public. 40 CFR §124.33 provides the Secretary with discretion to determine if an information repository is needed and the type of repository that should be maintained. The requirements in Section 1.10 satisfy and exceed the requirements of §124.33.	
6	Part 1	1.12	The Permittees support the requirements for a community relations plan as set forth in the revised draft permit, with one requested change. As part of the Community Relations Plan, the Permittees are required to specify how they will consult on a government-to-government basis with the local tribes and pueblos. The Permittees do not document any information about consultations, communications, agreements, and disagreements between the Permittees and tribes and pueblos either in the Facility Operating Record or on the Permittees' web site unless the tribes and pueblos specifically request that the information be so documented or posted. The Permittees propose that Section 1.12 be revised to clarify this requirement.	Page 29, lines 1-4, modify the sentence to read as follows: The Permittees shall not document in the Facility Operating Record or post on the Permittees' web site consultations, communications, agreements, or disagreements between the Permittees and tribes and pueblos unless ~~approved by~~ those tribes and pueblos specifically request that the information be included in the Facility Operating Record or be posted on the Permittees' web site.

	Part/ Attachment	Section	Comment	Suggested Text Change
7	Part 2	2.4.7	Section 2.4.7 requires the Permittees to notify the Department in writing within three days of receiving notice from a waste disposal facility that there is a discrepancy between the waste received and the pre-approved waste analysis certification or accompanying waste manifest or shipping paper. 40 CFR §264.72(c), which addresses manifest discrepancies, states that the owner or operator of the receiving facility must attempt to reconcile significant manifest discrepancies, as defined in 264.72(b), with the waste generator or transporter. Section 264.72(c) allows 15 days for resolution of the discrepancy before notice must be given to the administrative agency. The Permittees request that the three day requirement in the revised draft Permit be changed to 15 days. Three days does not provide enough time for the Permittees to attempt to reconcile the discrepancy with the receiving facility, as required under Section 264.72(c).	Page 43, line 1, modify the sentence to read as follows: Permittees shall notify the Department in writing within ~~three~~ 15 days of their receipt of the notice of the discrepancy from the receiving facility.
8	Part 2	2.4.9	The Permittees agree that there may be occasions when a comprehensive analysis for all constituents of a generated waste may be appropriate to meet the requirements of 40 CFR §268.48 where there is no other information. However, the permit condition does not allow alternative options. The condition as written does not explain the terms "laboratory analysis" and "capable of measuring," and is therefore ambiguous. Any condition of this Permit must clearly identify requirements imposed on the Permittees. Section 2.4.9 regards waste characterization for compliance with Land Disposal Restrictions (LDR) and the condition specifically addresses the hazardous constituents listed in the referenced table. 40 CFR §268.48 describes compliance with treatment standards for underlying hazardous	Page 43, lines 34-36 to page 44, lines 1-2, delete the following: ~~When using laboratory analysis as part of a hazardous waste characterization, the Permittees shall require the laboratory to report concentrations of all hazardous constituents listed at 40 CFR §268.48, *Table UTS*, that the analytical test method used is capable of measuring, as specified at the most recent version of the US EPA's Test Methods for Evaluating Solid Wastes (*SW-846*).~~

	Part/ Attachment	Section	Comment	Suggested Text Change
			constituents as defined by 40 CFR §268.2(i). 40 CFR §268.2(i) states that the term "underlying hazardous constituents" (UHCs) means constituents listed in the table "…which can reasonably be expected to be present at the point of generation of the hazardous waste at a concentration above the constituent–specific UTS treatment standards." The permit condition precludes the use of process knowledge or other acceptable knowledge (see Section 3.1.1, Attachment C) to reasonably determine whether the UHCs are present. The preamble to the final Phase II rule implementing the LDR states: "regulated entities do not have to ascertain the presence of all hazardous constituents for which EPA is promulgating a universal treatment standard. Generators may base this determination on their knowledge of the raw materials they use, the process they operate, and the potential reaction products of the process, or upon the results of a one-time analysis of the entire list of constituents at 268.48" (see 59 FR 48015). In addition, EPA's April 1994 guidance for waste analysis plans in permits also supports the use of other waste information in addition to sampling and analysis for characterization and does not revise this provision in the case of LDR determinations (ECDIC-2002-011, OSWER 9938.4-03). NMED's adoption of the federal regulations does not include a provision revising this requirement (see Hazardous Waste Management Regulations, 20.4.1.801 [3/1/2009]). Additionally, as indicated above, and at 58 FR 29872, if a one-time analysis for all the 40 CFR §268.48 constituents is conducted, subsequent analysis may be limited to only those UHCs identified in the initial sampling and analysis. The	

	Part/ Attachment	Section	Comment	Suggested Text Change
			permit condition, as currently written, requires that all constituents must be analyzed at any time laboratory analysis is used as part of a hazardous waste characterization. Attachment C of the draft permit describes the use of laboratory analysis both as primary sampling and analysis (Section 3.1.2) where acceptable knowledge is insufficient for waste characterization and as additional characterization data, an allowable component of acceptable knowledge when appropriate (Section 3.1.1). Laboratory analysis supporting AK is often selective in terms of analytes measured. The proposed permit condition does not define which type of laboratory analysis is being considered. The use of the term "capable of measuring" in the condition is not sufficiently explained by the additional reference to SW-846 to resolve its meaning for compliance purposes. SW-846 contains numerous sources for determining whether the contained methods are appropriate for analytes of concern. Chapter Two of SW-846 specifies the determinative methods for analysis of specified analytes but individual methods can potentially be used for much wider ranges of analytes. For example, Method 8260B (gas chromatography/ mass spectrometry) of SW-846 is used to determine volatile organic compounds for waste characterization. The method contains a table listing those compounds that can be determined by the method using the contained procedures (Section 1.1) and this table is generally in agreement with Table 2-1 of Chapter Two. However, the method further states that it can be used to quantitate most volatile organic compounds that have boiling points below 200°C (Section 1.3). This would potentially	

	Part/ Attachment	Section	Comment	Suggested Text Change
			add many analytes in Table UTS that are not specifically listed for the method in SW-846 Table 2-1 where the appropriateness of the analytical requirements (e.g., detection limits, reproducibility) are not known. Additionally, there are six potential sample preparation techniques for Method 8260B (Section 1.2), none of which are appropriate for all the potential analytes capable of being measured by the method. The proposed permit condition does not resolve the applicability of any of these factors in determining how compliance will be achieved.	
9	Part 2	2.6.3	The Permittees take exception to the use of the word "potentially" in the context stated as follows: *"any errors potentially affecting waste containment or compliance with this Permit;"* The requirement for listing *any errors potentially affecting waste containment or compliance with this Permit* is duplicative, onerous and beyond the requirements of the regulations in 264.15(d). "Potentially" is a broad word in its meaning and is ambiguous here. Should an issue arise with the waste containers or compliance (i.e. equipment) found during the inspection, the anomaly is noted as required in Attachment E, Section E.1.1 and corrective measures are taken and documented. Container management for containers and mitigative measures are outlined in Part 3 of	Page 46, line 34, modify the sentence to read as follows: any errors ~~potentially~~ affecting waste containment or compliance with this Permit;

	Part/ Attachment	Section	Comment	Suggested Text Change
			this Draft Permit.	
10	Part 2	2.8.1	The Permittees propose lines 24-26 on page 48 be revised. Based on the supporting documents, listed below and attached as Appendix 2, hereto, and discussions with NMED and other parties, the Permittees anticipates that Southwest Research and Information Center and other parties will agree to the proposed language. If NMED files a response to comments or other documents stating that the proposed language will be included in the final Permit, the Permittees will withdraw the exception to Section 2.8.1. The following documents, attached hereto as Appendix 2, support the proposed language and were included in discussions held between the interested parties, NMED and the Permittees in July and August, 2009 to develop the proposed language: o LANL Response to Questions Submitted on July 9, 2009 by Don Hancock o LANL Waste Acceptance Criteria, P930-1, Rev. 2 o Waste Generator Instruction for Completing the Waste Profile Form (WPF), TL-001, Rev. 0 o Waste Profile Form, Form 1346 (9/08) o User Manual for the Waste Disposal Request (WDR) Form, Rev. o LANL Response to Questions Submitted on August 7, 2009 by Don Hancock o Storage and Remote Drum Venting of Unvented Transuranic Waste Drums, Safety Basis Addendum No. 1, Rev 0 to the	Page 48, lines 24-26, modify sentence to read as follows: The Permittees shall assume that all ~~containers~~ drums with volume capacities between 55 and 100 gallons that hold mixed transuranic wastes and that are not vented, and standard waste boxes that hold mixed transuranic wastes and that are not vented, contain hydrogen gas and that the associated wastes are subject to the conditions of this Section 2.8.1. ~~considered ignitable. (*see* 40 CFR §§264.17(a); 270.32(b)(2).~~

	Part/ Attachment	Section	Comment	Suggested Text Change
			TA-54, Area G Documented Safety Analysis, Dec. 2007 o Approval of Safety Basis Addendum No. 1, Rev. 0 o Waste Acceptance Criteria Exception Form, Form 1973, May 2008	
11	Part 2	2.12.2 (8)	Based on the general comment on Financial Assurance, the Permittees object to 2.12.2(8) which requires that all closure cost estimates be included in the Facility Operating Record.	Delete Section 2.12.2(8).
12	Part 2	2.13	Based on the general comment on Financial Assurance above, the Permittees object to the inclusion of requirements for cost estimates for closure and post-closure and request that this section be deleted.	Delete Section 2.13.
13	Part 2	2.14	Based on the general comment on Financial Assurance above, the Permittees object to the inclusion of financial assurance requirements and request that this section be deleted.	Delete Section 2.14.
14	Part 2	2.15	Based on the general comment on Financial Assurance above, the Permittees object to the inclusion of liability requirements and request that this section be deleted.	Delete Section 2.15.
15	Part 2	2.16	Based on the general comments on Financial Assurance above, the Permittees object to the inclusion of the requirements in this section and request that this section be deleted.	Delete Section 2.16.
16	Part 3	3.7.1(2)	The requirement to remove liquid within 24 hours or immediately is not based on the regulation cited and does not address the need to extend the timeframe when justified. Additionally, the term "accumulated" is not defined sufficiently to determine whether the condition of the storage unit	Page 67, line 32, delete the following: ~~If the sumps or secondary containment system are the sole means of secondary containment the Permittees must remove the spilled or leaked waste and/or accumulated precipitation within 24 hours of detection or immediately if necessary to prevent overflow of the secondary containment system.~~

	Part/ Attachment	Section	Comment	Suggested Text Change
			is in compliance. The triggers for action to remove material from the containment system under the cited regulations are linked to the excess capacity (40 CFR §264.175(b)(4)) and potential overflow of the collection system (40 CFR §264.175(b)(5)). In both cases, this involves determinations primarily related to the volume of the system and the potential for release rather than the residence time of the material. The specified timeframes in the revised draft Permit condition do not consider program needs that may appropriately result in longer removal times. Examples include the need to prepare for removal of ice or liquid and the need for sampling and analyzing spilled waste or precipitation to determine the appropriate removal method and related safety procedures. Based on the cited regulations, material can accumulate in the secondary collection systems unless the condition results in reduction of the required secondary containment volumes for the unit or overflow of the system. However, the permit condition does not provide a definition of a threshold amount that would activate the requirement. Thus, removal would potentially be necessary for any amount less than those levels, including de minimus precipitation or run-on events. This imposes a requirement that is burdensome and makes it difficult to determine the compliance status of the unit. Therefore, the Permit requirement should reflect the language of the regulation which is implementable and appropriate.	
17	Part 3	3.7.1(4)	If an existing coating or sealant has been applied using normal industry standard practices (painting	Page 68, lines 8-11, modify sentence to read as follows: If a coating or sealant is used as a secondary containment

	Part/ Attachment	Section	Comment	Suggested Text Change
			or spraying), appears functional, and passes inspection, there is no reason to replace it. The effect of the condition as written could require the replacement of coatings based solely on the lack of records that were not previously required irrespective of the condition of the material. The condition is retroactive and should be restricted to new or repaired coatings.	system and is re-applied or renewed during the life of this permit, the Permittees shall maintain documentation in the Facility Operating Record that the coating or sealant was applied and maintained in accordance with the manufacturer's specifications.
18	Part 3	3.11.3	The section inappropriately requires the Permittees to prevent run off from TA-50 units. Run off cannot be prevented. However, existing run-on and run-off controls ensure that water does not come into contact with waste and then run off the site. Hazardous waste is stored within transportainers at the unit and does not come into contact with precipitation. Precipitation does fall on the asphalt pad and is directed as described within the rest of the section.	Section 3.11.3, Page 71, Lines 17-18: The Permittees shall prevent ~~runoff~~ run-on and run-off from contact with waste at ~~from~~ the TA-50 permitted units. ~~to other areas or to the environment.~~
19	Part 3	3.12.1 3.12.3.6	Sections 3.12.1 and 3.12.3.6 should be revised to accurately reflect the actual waste management practices at TA-54-412. Section 3.12.1, General Operating Conditions, requires that, at Area G, all containers storing hazardous waste with free liquids be stored on secondary containment pallets, except inside specifically identified structures, including Building TA-54-412 (DVRS). Section 3.12.3.6 sets forth secondary containment requirements for TA-54-412 and treats the building itself as the secondary containment. However, TA-54-412 is not designed to provide secondary containment and is not used for secondary containment. If free liquids are stored in TA-54-412, they are stored on secondary containment pallets. Therefore, the exception in 3.12.1 is not needed and the	Page 72, line 4, delete the following ~~Building TA-54-412 (DVRS).~~ Page 74, delete lines 7-11, Section 3.12.3.6. ~~**3.12.3.6 TA-54-412**~~ ~~The Permittees shall treat the floor of the building with an epoxy sealant, providing an impervious seal to contain any potential leaks, spills, or accumulation of precipitation. The Permittees shall maintain the sealant in accordance with Permit Section 3.7.1 and the manufacturer's specifications.~~

	Part/ Attachment	Section	Comment	Suggested Text Change
			requirements in Section 3.12.3.6 should be removed.	
20	Part 4	4.6	See RLWTF Comment 20 text above.	Page 78, lines 12-21, delete Section 4.6. ~~The Permittees shall discharge all treated wastewater from the TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF) through the outfall permitted under Section 402 of the federal Clean Water Act, or as otherwise authorized by the terms of an applicable Clean Water Act permit that regulates the treatment and use of wastewater. If the Permittees intentionally discharge through a location other than the permitted outfall, they will fail to comply with this requirement, and as a consequence the wastewater treatment unit exemption under 40 CFR § 264.1(g)(6) will no longer apply to the RLWTF. The Permittees shall not accept listed hazardous wastes as specified at 40 CFR Part 261 Subpart D at the RLWTF.~~
21	Part 6	6.2	NMED states in the July 6, 2009, Fact Sheet, which provides the basis for requirements not specified in state regulations, that its prohibition on burning the hazardous component of mixed wastes "effectively prohibits the burning of radionuclides." NMED has authority to regulate only the hazardous portion of mixed waste, therefore its prohibition amounts to an impermissible regulation of the radioactive component of mixed waste.	Page 82, line 34, modify the sentence to read as follows: (1) ~~the hazardous component of mixed wastes, and~~ beryllium (*see* 40 CFR §270.32(b)(2));
22	Part 6	6.2(2)(i)	To clarify this section, the Permittees propose to add language stating that the certification will be included in the Biennial Report.	Page 83, lines 2-4, add the following sentence: Certification will be included in the Biennial Report.
23	Part 6	6.2(9)	The Permittees request the removal of the waste prohibition in Section 6.2(9), which prohibits the treatment of "wastes capable of generating dioxins and furans." The following presents the Permittees' support for the removal of this Permit condition.	Page 83, delete lines 16-24: ~~(9) wastes capable of generating dioxins and furans.~~ ~~(i) The Permittees shall provide to the Department, prior to each treatment event, a certification that wastes being treated are not capable of generating dioxins and~~

	Part/ Attachment	Section	Comment	Suggested Text Change
			Air Model Background To demonstrate that the OB units will not cause adverse effects on human health or the environment, air modeling was performed and reports were generated by both the Permittees and NMED. The Permittees' modeling showed that OB treatment operations at Technical Area (TA)-16 are protective of human health and the environment and pose no adverse effects due to migration of waste constituents in the air. The NMED model showed that open burning treatment of 20,000 pounds (lbs) of bulk high explosive (HE) waste "can be conducted and considered protective of human health and the environment." However, the NMED conclusion was that burning 20,000 lbs per year of HE-contaminated waste "can be considered protective of human health but not protective of ecological receptors." The model found that the estimated 10-year soil deposition value for dioxin/furan due to the burning of HE-contaminated wastes would fail the LANL Ecological Screening Level for a Montane Shrew. The NMED model report stated that the "exceedances were driven by the emission factors chosen for furans while the dioxin component did not contribute to the exceedance." The NMED model report also recommended that the treatment of HE-contaminated wastes at TA-16-388 required "performance of a more refined analysis of ecological risk, restrictions on the types of HE-contaminated wastes treated, and/or implementation of controls or procedures to prevent exposure of small mammals."	~~furans.~~ ~~(ii) To remove the prohibition, the Permittees must submit to the Department a Class 3 permit modification request that includes a demonstration that the treatment of waste capable of generating dioxins or furans will be conducted in a manner that will ensure protection of human health and the environment.~~

	Part/ Attachment	Section	Comment	Suggested Text Change
			Model screening exceedance only with HE-contaminated combustibles The NMED model results determined that operations at the open burning treatment units pose <u>no adverse effects</u> for the treatment of bulk HE waste up to 20,000 lbs. Most of the waste treated through open burning at LANL (approximately 90%) is bulk HE from the machining of high explosives components used for testing, research and development projects within the DOE Complex. This waste consists of scraps and chips of explosives from machining mixed with water and the fiber filter socks used to strain the larger chunks of explosives from the water used for cooling. All waste treated at the TA-16-399 Burn Tray is bulk HE and most of the waste treated at the TA-16-388 Flash Pad is bulk HE and filters. The treatment of the HE-contaminated combustible waste makes up a small percentage of the waste treated at the open burning treatment units and in recent years has been less than 2% of the 20,000 lbs. modeled. Another major factor influencing the result for the open burning of HE-contaminated waste is the uncertainty associated with the emission factors used in the analysis. The emission factors for furans chosen by NMED represented a surrogate waste that did not accurately represent waste actually treated at the TA-16-388 Flash Pad. The emission factors were associated with the open burning of propellant-contaminated Manufacturer's Waste consisting of 65% aluminized ammonium perchlorate propellant, 20% plastic material (polyethylene gloves), 11% paper/wood/cloth and 4% diesel fuel. These emissions factors represent the highest values available for furans. The HE-contaminated combustible waste stream that is	

	Part/ Attachment	Section	Comment	Suggested Text Change
			treated at the TA-16-388 Flash Pad, however, consists of pieces or powder HE, cloth, cardboard, kim-wipes, limited plastic bags, small amounts of solvent or oil on kim-wipes or filters, small glass pieces, and small metal pieces. This waste stream does not contain a high percentage of plastics, wood, or paper as these items would lead to the higher production of furans. Also, propellants such as ammonium perchlorate are not treated through open burning by the Permittees and are not considered high explosives. Based on these potential impacts, and to address recommendations from NMED modelers, the Permittees will implement the following. *Ecological Risk Analysis* To address recommendations from NMED's modelers, the Permittees conducted limited soil sampling, which found a higher value of dioxin/furan congeners in one out of the six samples. The elevated furan reading is suspected to result from activities that are no longer performed at that location. It was determined that more data is necessary to assess the ecological risk at the site. On August 26, 2009, 31 additional soil samples were collected and sent for analysis for dioxin/furans and the eight Resource Conservation and Recovery Act metals. The analysis of these soil samples will be added to the previously collected samples and the data will be used to characterize the TA-16 Burn Ground in regards to the air depositional impact that could occur from the current open burning treatment operations. The risk assessment will characterize the risk to wildlife in the area associated with the open burning treatment units at the TA-16 Burn Ground and take into consideration past operational	

	Part/ Attachment	Section	Comment	Suggested Text Change
			activities and acts of nature (forest fires) that have impacted the site. Anticipated results of the risk assessment include data presenting values close to concentrations measured within other areas of LANL property, while taking into consideration historic activities and occurrences at the site. The data quality objectives and a map of the soil sampling locations for the most recent sampling event are included in Appendix 3, hereto. *Restrictions on Waste Treated* The revised draft Permit includes restrictions on the amount of waste treated as well as the types of waste at the open burning treatment units. The amount of waste that can be treated at the open burning treatment units was decreased from the volume of waste that was modeled. The model volume of waste was 20,000 lbs. and the draft Permit condition requires that the Permittees treat no more than 12,500 lbs. per year. An additional list of prohibited wastes has been added to the revised draft Permit that includes many dioxin/furan producers. The list includes chlorinated solvents and ammonium perchlorate, polyvinyl chloride, and structural components of demolition and decommissioning wastes. The prohibition of these wastes covers much of the concern for dioxin/furan producers. In fact, the Permittees are prohibited from treating the waste stream upon which NMED's modeling was based. Additionally, these specific waste bans are much less complicated to comply with for the Permittees and increase the enforceability for the NMED-HWB compliance inspectors. *Controls to Prevent Small Mammal Exposure* Periodic surveys of the TA-16 Burn Ground were recommended by NMED's model report to identify	

	Part/ Attachment	Section	Comment	Suggested Text Change
			and relocate nesting areas. The fire break that is described in the comment to Section 6.1.1.1(1) of this document helps to discourage small animals from living in the area and the Permittees are committed to adding a periodic survey to look for signs of small burrowing mammals as an operational requirement that would be documented in the operating record for the permitted units. See Appendix 3 for supporting documents.	
24	Part 6	6.1.1.1(1)	NOTE: this should be 6.3.1.1(1). The requirement for all vegetation to be trimmed to 6 inches or less is excessive. The Permittees follow the requirements for vegetation control and combustible material control within the Department of Energy (DOE) Explosives Safety Manual (DOE M 440.1-1A). Vegetation control for fire protection (Section 5.1) states "Vegetation around storage magazines and explosives operating facilities should be controlled to minimize potential damage to the magazine or facility from erosion or grass, brush, or forest fires. A firebreak at least 50-ft (15-m) wide and free from combustible material should be maintained around each aboveground magazine or explosives operating facility." For waste management areas, Section 20.5(d) of the manual states "[d]uring destruction operations, the area within 200 ft (60 m) of the destruction point shall be kept clear of dry grass, leaves, and other extraneous combustible material. This clearance may be reduced to fire brand distance if aids to limit the range of fragments and debris are provided for the destruction points used within the disposal area." Combustible material is defined by the DOE Explosive Safety Manual as "[a]ny material that, when ignited, will sustain burning." Stakeholders expressed concern with erosion due to	Page 84, Lines 5-8, modify the text to read as follows: Grasses and shrubs ~~Vegetation~~ within a 200 ft radius of the Flash Pad and the Burn Tray shall be trimmed to less than or equal to six inches above the ground surface and the area will be kept free of other combustible material, before treatment. The Permittees shall document compliance with this provision in the Operating Record;

	Part/ Attachment	Section	Comment	Suggested Text Change
			tree removal during a site visit on June 30, 2009. Vegetation at the open burning treatment units is controlled in a manner that minimizes the combustible material around each of the units. There are evergreen trees within the 200 ft radius that are necessary to aid in erosion control at the site.	
25	Part 6	6.1.1.1(2)	NOTE: This section should be 6.3.1.1(2). The Permittees request that the requirement in 6.3.1.1.(2) be modified to be consistent with Section 6.3.3.2, which requires the Permittees to cover and inspect the treatment units within 10 hours of the last open burn treatment. As written, this section prohibits all access to the treatment units for 10 hours and is inconsistent with the requirement in Section 6.3.3.2.	Page 84, lines 9-11, modify sentence to read as follows: The barricade at TA-16-389 shall be closed for the duration of the treatment. ~~and for.~~ Safety barricades will be used during the ten-hour cool-down period after treatment to prevent the entry of unauthorized personnel into ~~the area~~ TA-16-388 or TA-16-399, except as provided in Permit Section 6.3.3.2.
26	Part 6	6.1.1.3(4)	NOTE: This Section should be 6.3.1.3(4)). Section 6.3.1.3(4) inappropriately prohibits treatment during high fire danger conditions. Current operations at the open burning treatment units allow for safe operation under "High" Fire Danger Rating. The ratings system was developed by the United States Forest Service's Wild Fire Assessment System and modified by Facility personnel for specific terrain and weather conditions. Forecast for fire danger each day utilizes the Wild Fire Assessment System and the National Oceanic and Atmospheric Administration's Storm Prediction Center, which are incorporated at http://www.weather.lanl.gov/fire_outlook.asp. The Storm Prediction Center's Fire Outlook indicates areas where the combination of dry dead fuels, such as grass and timber, and meteorological conditions (wind, relative humidity, temperature, and dry thunderstorms) might contribute to potentially	Page 85, Lines 11-14, modify the section to read as follows: (4) Open burning treatments shall not be conducted during ~~High,~~ Very High, or Extreme Fire Danger classes as designated by the ~~National Oceanic and Atmospheric Administration's National Weather Service~~ United States Forest Service. Treatment during High Fire Danger must only occur at wind speeds less than 10 miles per hour.

	Part/ Attachment	Section	Comment	Suggested Text Change
			dangerous wild fire behavior. However, it does not forecast local meteorological conditions (i.e., local variability of relative humidity or the effects of terrain on wind direction and speed). Local meteorological conditions are considered when the fire danger rating is posted each day at LANL. In addition, an assessment of slope of local terrain, types of fuels, variability of fuels, and live fuel moisture content at the site initially establishes and regularly reaffirms specific controls for operations during each fire danger rating. The *Restrictions on Operations* section (currently Section 6.1.1) of the revised draft Permit includes these operational controls. During "High" Fire Danger, open burning operations can be conducted with controls in addition to the conditions already included within the Permit for lower fire danger ratings. The suggested text highlights the extra precaution taken when open burning treatment occurs under "High" fire conditions. Through evaluation by fire protection personnel, it has been determined that treatment operations at the TA-16 open burning treatment units are conducted safely and without any additional risk to human health and the environment. Other general controls during a burn include scheduling with other waste treatment and experimental firing sites, so as not to overload any resources; receiving High Explosive Safety Operations personnel approval; notifying site access control as well as the Los Alamos Fire Department (LAFD); watching the burn remotely through a camera during and 30 minutes after completion; and measuring wind speed just prior to the burn to ensure it is within the fire danger matrix. Additionally, water and fire extinguishers are available if they are needed and personnel are	

	Part/ Attachment	Section	Comment	Suggested Text Change
			trained to use fire extinguishers, and LAFD Station #5 is located less than 5 minutes away from the open burning treatment units. The ability to treat waste during High Fire Danger is needed to ensure compliance with regulatory and safety requirements for the storage of high explosives waste and high explosive contaminated waste. Specific requirements which must be met include generator storage area time frames or laboratory safety storage volume limits.	
27	Part 6	6.5.1	The list of analytes for soil monitoring at the open burning treatment units includes constituents that are not representative of treatment operations at the permitted units. The revised draft Permit includes a prohibition on treatment of perchlorate at the open burning treatment units. Therefore, the Permittees should not have to monitor for this constituent "to monitor for hazardous constituents release to soils during open burning treatment events" as is stated in the first paragraph of the section. Additionally, the revised draft Permit currently includes a prohibition on the treatment of wastes capable of generating dioxins/furans. In Comment 23, above, the Permittees objected to the prohibition. Therefore, based on the current prohibition, the Permittees should not have to monitor for this constituent. However, if the prohibition in Section 6.2(9) is removed, the Permittees do not object to soil monitoring requirements for dioxin/furan congeners. Additionally, volatile organic compounds and semi-volatile organic compounds are not constituents likely to be released to soils from the open burning treatment units. The deposition of these constituents is unlikely and analysis for metals will give a better indication of adverse	Page 87, lines 4-6, modify the sentence to read as follows: The Permittees shall analyze the soil samples collected during each monitoring event for total metals and explosive compounds.~~, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), perchlorate, and dioxins/furans.~~

	Part/ Attachment	Section	Comment	Suggested Text Change
			impacts to the soil from the open burning treatment operations as they have the highest potential to impact the soil from open burning treatment operations. The Environmental Protection Agency submitted comments to the first draft permit indicating that a multi increment sampling approach is appropriate for this site. The Permittees support this suggestion and request reconsideration of the multi increment sampling approach and sampling locations to allow for this method.	
28	Part 6	6.5.2	The list of analytes for surface water monitoring at the open burning treatment units includes analytes that are not representative of treatment operations at the permitted units and constituents that in practice are not reliably detected in storm water. Storm water monitoring for perchlorate is not warranted because it is prohibited from treatment at the permitted units. Storm water monitoring for dioxins/furan is not warranted because the treatment of wastes capable of generating dioxins/furans is prohibited. However, if the prohibition in Section 6.2(9) is removed, the Permittees will monitor for dioxin/furan congeners. Storm water should not be monitored for volatile organic compounds and semi-volatile organic compounds because it is difficult to collect a representative sample. Analysis for metals will give a better indication of the impacts on storm water from the open burning treatment operations as they have the highest potential to impact the soil from open burning treatment operations.	Page 88, lines 3-4 and 7-8, modify the section to read as follows: The samples shall be analyzed for total metals~~,~~ and explosive compounds.~~, volatile organic compounds, semi-volatile organic compounds, perchlorate, and dioxins/furans.~~ If the precipitation event produces insufficient sample volume to perform all analyses, the Permittees will prioritize the list of analytes based on the sample volume collected as follows: 1) explosive compounds; and 2) total metals;~~ 3) semi-volatile organic compounds; and 4) perchlorate.~~
29	Part 9	9.1	Based on the Permittees' comment on the designation of regulated units, above, the	Page 93, lines 3-10, modify the section to read as follows:

	Part/ Attachment	Section	Comment	Suggested Text Change
			Permittees propose that Section 9.1 be revised to accurately identify the regulated units and to clarify that the outdoor units are either co-located with SWMUs and AOCs or not co-located with SWMUs and AOCs.	This Permit Part addresses the three categories of permitted units at the Facility. They are identified as follows: (1) regulated units (*i.e.*, ~~material disposal areas G, H, L~~ Area G Pit 29 and Shaft 124; Area H Shaft 9; and Area L Shafts 1, 13-17, 19-34 and Impoundments B and D); (2) indoor units (structures and related equipment); and (3) outdoor units (asphalt or concrete pads and related structures and equipment): a. co-located with ~~a regulated unit~~ solid waste management units (SWMUs) and areas of concern (AOCs); b. not co-located with ~~a regulated unit~~ SWMUs and AOCs; and c. associated with an open burn unit.
30	Part 9	9.1.1	The Permittees support the requirements of this section but object to the designation of regulated units in the revised draft Permit. *See* Comment on designation of regulated units, above.	No suggested text change.
31	Part 9	9.1.3	Based on the Permittees comment on the designation of regulated units, above, the Permittees propose that Section 9.1.3 be revised to be consistent with 40 CFR §264.110(c) and to clarify that the outdoor units are either co-located with SWMUs and AOCs or not co-located with SWMUs and AOCs.	Page 94, lines 1-6, modify the section to read as follows: (1) asphalt or concrete storage pads co-located with ~~a regulated unit~~ SWMUS and AOCs (*i.e.* outdoor storage unit) (*e.g.*, TA-54 Area L); (2) asphalt storage pads not co-located with ~~a regulated unit~~ SWMUS and AOCs (*i.e.* outdoor storage unit) (*e.g.*, TA-50-69 Outdoor Unit); and (3) concrete pads associated with an open burn unit (*i.e.* outdoor treatment units) (*e.g.* TA-16-388).
32	Part 9	9.2.2.2	Based on the Permittees comment on the designation of regulated units, above, the Permittees propose that Section 9.2.2.2 be revised to clarify that alternative closure requirements may	Page 95, lines 19-23, modify the section to read as follows: **Outdoor Units Co-located with ~~Regulated Units~~ SWMUs and AOCs**

	Part/ Attachment	Section	Comment	Suggested Text Change
			be used for outdoor units co-located with SWMUs and AOCs.	The Permittees may petition the Department for alternative closure requirements in accordance with 40 CFR §264.110(c) if the closure performance standards at Permit Sections 9.2.1(1) and (2) are not attainable for an outdoor unit (including associated indoor structures) co-located with ~~a regulated unit~~ SWMUs and AOCs (*see* Permit Section 9.1.3(1)).
33	Part 9	9.2.2.3	Based on the Permittees comment on the designation of regulated units, above, the Permittees propose that Section 9.2.2.3 be revised to be consistent with 40 CFR §264.110(c) and the accurate identification of regulated units.	Page 95, lines 30-31, modify the sentence to read as follows: for an outdoor unit (including associated indoor structures) *not* located with ~~a regulated unit~~ SWMUs or AOCs (*see* Permit Section 9.1.3(2))…
34	Part 9	9.3	The Permittees agree with the requirements of Section 9.3 as long as the regulated units are identified as set forth in the Permittees' comment on the designation of regulated units, above, and in the proposed changes to Section 9.1.1 and Table J-1.	No suggested text change.
35	Part 9	9.4.6.2	This section requires the Permittees to notify NMED at least 60 days prior to conducting a structural assessment. However, Attachment G requires the Permittees to make notification of closure at least 45 days before the Permittees begin closure, and to make notice of the Permittees intent to conduct a structural assessment at least 20 days before final receipt of waste. The notification requirement in this section would require the Permittees to notify NMED of the intent to conduct a structural assessment before they notify NMED of the closure of a unit. The Permittees suggest that the permit requirement be changed so that the notification of the structural assessment could come at the same time as the notification for closure at 45 days prior to beginning closure activities. The structural	Page 99, lines 31-33, modify sentence to read as follows: The Permittees shall notify the Department of the closure and the structural assessment at the same time, that is, 45 days prior to initiating closure. ~~at least 60 days prior to conducting the assessment to provide the Department the opportunity to participate in the unit's physical condition review.~~ Suggested text change: The Permittees shall remove all hazardous wastes from a permitted unit no later than 90 days after the date on which the unit receives the known final volume of hazardous waste or, if there is a reasonable possibility that the permitted unit will receive additional hazardous wastes, no later than one year after the date on which the unit received the most recent volume of hazardous wastes, in accordance with 40 CFR

Deleted: begin closure of a permitted unit

	Part/ Attachment	Section	Comment	Suggested Text Change
			assessment must be conducted prior to beginning decontamination activities but after all waste has been removed from the unit, therefore, it would be beneficial to plan this at the time of notification for closure. This section provides that the Permittees "shall begin closure of a permitted unit no later than 90 days after the date on which the unit receives the known final volume of hazardous waste," and cites 40 CFR §113(a) as authority for the requirement. 40 CFR does not address when a permittee shall begin closure, rather it requires that a permittee treat, remove from the unit or facility, or dispose on-site, all hazardous wastes in accordance with the approved closure plan within 90 days. Attachment G contains the details of closure activities, therefore Permittees suggest that 9.4.1 refer to Attachment G.	§264.113(a).
36	Part 9	9.5	The Permittees request the deletion of the reference to financial assurance requirements. *See* Permittees' comment on financial assurance requirements, above.	Page 105, lines 4-6, delete the following: ~~Documentation supporting the independent registered professional engineer's certification must be furnished to the Department before the Permittees are released from the financial assurance requirements for closure under 40 CFR §264.143.~~
37	Part 10	10.1.2	The Permittees agree with the requirements of Section 10.1.2 as long as the regulated units are identified as set forth in the Permittees' comment on the designation of regulated units, above, and in the proposed changes to Section 9.1.1 and Table J-1.	No suggested text change.
38	Part 11	11.1	The Permittees agree with the statement made in the section concerning the corrective action requirements under the Consent Order. However, as discussed in the Permittees' comments on the designation of regulated units and the financial	No suggested text change.

	Part/ Attachment	Section	Comment	Suggested Text Change
			assurance requirements, above, the Permittees believe that certain requirements in the revised draft Permit do constitute a change to the Consent Order.	
39	Part 11	11.2	The Permittees object to this section to the extent it purports to state the exceptions identified in the Consent Order. This language is inconsistent with the language in the Consent Order, appears to substantively change the meaning of the language in the Consent Order, and therefore directly conflicts with the Consent Order. This section must incorporate the Consent Order language by reference or include it verbatim. Section III.W.1 of the Consent Order identifies the four items which will be addressed in the Permit rather than the Consent Order, and states that: The Department has determined that all corrective action for releases of hazardous waste or hazardous constituents at the Facility, required by sections 3004(u) and (v) of RCRA, 42 U.S.C. §§ 6924(u) and (v), and sections 74-4-4(A)(5)(h) and (i) and 74-4-4.2(B) of the HWA, shall be conducted solely under this Consent Order and not under the current or any future Hazardous Waste Facility Permit ("Permit"), with the exception of … four items which will be addressed in the Permit and not in this Consent Order:	Page 111, lines 14-23, substitute the following for the language in the revised draft Permit: (1) new releases of hazardous waste or hazardous constituents from operating units at the Facility; (2) the closure or post-closure care requirements of 20.4.1.500 NMAC (incorporating 40 CFR Part 264, Subpart G), as they apply to operating units at the Facility; (3) implementation of the controls, including long-term monitoring, for any SWMU on the Permit's Corrective Action Complete with Controls list [Table K-2 in the draft permit]; and (4) any releases of hazardous waste or hazardous constituents that occur after the date on which the Consent Order terminates.
40	Part 11	11.2.1	Section 11.2.1 identifies SWMUs and AOCs. The title should be changed for clarification and the reference to Table J-1 should be deleted.	Page 112, line 1, modify the title to read as follows: 11.2.1 Identification of SWMUs and AOCs ~~Requiring Corrective Action.~~ Delete lines 13-15:

	Part/ Attachment	Section	Comment	Suggested Text Change
				~~Attachment J, Table J-1 (*Active Portion of the Facility*) includes lists of hazardous waste management units at the Facility and their status (*e.g.*, interim status, permitted operating, closed) of each unit.~~
41	Part 11	11.3.1	Page 112, line 18. The Permittees agree with the requirements of Section 11.3.1 as long as the regulated units are identified as set forth in the Permittees' comment on the designation of regulated units, above, and in the proposed changes to Section 9.1.1 and Table J-1.	No suggested text change.
42	Part 11	11.3.1.2	Page 114, line 24. The Permittees agree with the requirements of Section 11.3.1.2 as long as the regulated units are identified as set forth in the Permittees' comment on the designation of regulated units, above, and in the proposed changes to Section 9.1.1 and Table J-1.	No suggested text change.
43	Part 11	11.4.2.1	The revised draft Permit references soil-screening levels for residential and industrial land use, but does not include soil-screening levels for construction workers. NMED's *Technical Background Document for Development of Soil Screening Levels (Rev. 5.00)*, Section 2.3 Non-Residential Land Uses separates industrial and construction worker.	Page 117, line 28, modify the sentence to read as follows: residential, industrial and construction worker land use.
44	Part 11	11.4.2.1	The revised draft Permit states "The Department may determine that a dilution attenuation factor of 1, as calculated using Department approved methods, for contaminated soils is appropriate to achieve clean closure, at sites where migration of contaminants through the soil column to groundwater has occurred or when the Department determines that the potential exists for the migration of contaminants through the soil column to groundwater." The sentence is in conflict with NMED's *Technical Background Document for*	Page 117, lines 28-33, replace the sentence with the following text: The Permittees shall evaluate the soil contamination and its potential to migrate to groundwater. DAF SSLs (calculated according to Department methods) that reflect subsurface conditions at the site may be used as part of this evaluation.

	Part/ Attachment	Section	Comment	Suggested Text Change
			Development of Soil Screening Levels (Rev. 5.00), Section 4.4 Dilution Attenuation Factor. This Section states that "A DAF of 1 implies no reduction in contaminant concentration occurs." And "NMED believes that a DAF of 20 for a 0.5 acre source area is protective of groundwater in New Mexico. If the default DAF is not representative of conditions at a specific site, then it is appropriate to calculate a site-specific DAF based upon available site data." Use of a dilution attenuation factor soil screening level (DAF SSL) is not applicable or appropriate. Furthermore, if as stated above, migration of contaminants to groundwater has occurred, the DAF SSLs are no longer appropriate. The Department-approved methods for calculating DAF soil cleanup levels incorporate a number of conservative assumptions that are very favorable for migration of contamination from soil to groundwater, and are not representative of LANL. If the Permittees must use DAF SSLs, even a DAF of 20 is too low given the physical conditions at most LANL sites. Specifically, the methods described in the Department's background document assume an infinite source of contamination and a uniform contaminant distribution from the surface to the water table. These conditions are not appropriate for any site where the vertical extent of contamination is bounded in the vadose zone, which is the case at almost all sites investigated at LANL so far. The methods also assume a receptor well (point of exposure) at the down gradient edge of the source, which is inappropriate for most locations at LANL. Further the methods presented in the Technical Background document use an infiltration rate of	

	Part/ Attachment	Section	Comment	Suggested Text Change
			0.13 m/yr, which may be two orders of magnitude higher than the actual infiltration rate at most mesa top locations at LANL. The Permittees believe that if DAF SSLs must be included, they should be calculated using a DAF appropriate for the physical conditions at LANL sites. The assumptions and calculations used would be submitted to the Department for their approval.	
45	Part 11	11.4.2.1	Maximum concentration and soil saturation concentration values are not included in NMED Version 5 and the current EPA RSL Table. In addition, further in the sentence, EPA Region VI HHMSL should be replaced with EPA RSL.	Page 117, line 39 to page 118, line 1, modify the sentence to read as follows: …the soil cleanup level shall be established using the most recent version of the EPA RSL for residential and industrial soil compounds designated as "n" (non-carcinogen effects) ~~"max (maximum concentration) and "sat" soil saturation concentration),~~ or ten times the EPA ~~Region VI HHMSSL~~ RSL for compounds designated "c" (carcinogen effects).
46	Part 11	11.4.2.1	The revised draft Permit lists specific types of land use in parentheses, but does not include the "construction worker" scenario. NMED's *Technical Background Document for Development of Soil Screening Levels (Rev. 5.00)*, Section 2.3 Non-Residential Land Uses separates industrial and construction worker.	Page 118, line 9, modify the sentence to read as follows: …(*e.g.*, residential, recreational, industrial, construction).
47	Part 11	11.5	LANL's *Screening Level Ecological Risk Assessment Methods* has been revised to *Screening Level Ecological Risk Assessment Methods Revision 2* (LA-UR-04-8246).	Page 118, Lines 24-30, reference the current version: *Screening Level Ecological Risk Assessment Methods Rev. 2* (LA-UR-04-8246).
48	Part 11	11.5	The cite to the radionuclide reference document is outside of the scope of the Permit, which does not regulate radionuclides.	Page 118, lines 33-34, delete the following reference: ~~*Assessing Ecological Risks Posed by Radionuclides: Screening-Level Radioecological Risk Assessment* (April 2000).~~
49	Part 11	11.7.1	This section clearly states the requirement for long-term maintenance and monitoring for SWMUs undergoing corrective action under the Permit. It	Page 120, insert the following at line 10 after "measures": For SWMUS and AOCs subject to corrective action under the

	Part/ Attachment	Section	Comment	Suggested Text Change
			also clearly defines the process by which the monitoring and maintenance plan is developed, approved, and enforced. However, the section should be consistent with the Consent Order, and so must clearly distinguish the process applied to SWMUs and AOCs subject to corrective action under the Consent Order; for those units, the long term monitoring and maintenance requirements are established solely under the Consent Order.	Consent Order, the long-term monitoring and maintenance plan shall include the controls identified in the Certificate of Completion issued by the Department pursuant to section VII.E.6.b of the Consent Order. Pursuant to Section III.W.3.b of the Consent Order, no additional controls will be imposed by this permit, but controls identified in the Certificate of Completion are enforceable under this Permit. Upon approval, such plans shall be included in Attachment O (*Long-term Monitoring and Maintenance Plans*).
50	Part 11	11.10.4	The organization of the paragraph is not sequential. The paragraph should be organized to reflect the order of processes the Permittees will perform so it is clear what the actual sequence of work is. Furthermore, combining the Site-Specific Human Health Risk Assessment and the Site-Specific Ecological Risk Assessment (Section 11.10.5) and the related work plans and reports that go with these assessments into one Risk Assessment Report including both human health and ecological assessments is current practice and is efficient.	Page 156, lines 12-20, rearrange the paragraph and combine Sections 11.10.4 and 11.10.5 Site Specific Ecological Risk Assessment Methods. Modify the section to read as follows: Should the Permittees be unable to meet the cleanup levels in Permit Section 11.4.2, they shall conduct a Site-Specific Risk Assessment, that addresses both human health and ecological risk assessments, as appropriate, in accordance with current and acceptable EPA, Regional EPA, and Department guidance and methodology (as updated). The Permittees shall submit to the Department for its review and approval a work plan that includes, at a minimum, the site-specific exposure assumptions and any additional sampling needed to support the risk assessment. The Permittees shall prepare a Risk Assessment Report, which addresses both human health and ecological risk assessments, as appropriate, in support of corrective action, and, if necessary, for closure in accordance with Permit Part 9.
51	Part 11	11.10.4.1..ii	The last two sentences as drafted are unclear and do not define a Statement of Work. It is unclear what the comparison would entail and what the consequences would be. Also, there is no reference to the specific EPA methodology for handling non-detects and replicates in the risk assessment. The permit condition is ambiguous and unclear. The last two sentences of the Section should be deleted. If the sentences are not deleted, a reference to the	Page 157, Lines 14-19, modify the section as follows: The risk assessment shall include an evaluation of analytical data and usability of the data in the assessment. Data validation shall be conducted in accordance with current EPA guidelines. ~~The evaluation of data shall also include a comparison of detection limits with appropriate and current risk-based screening levels. Current EPA methodology for handling non-detects and replicates in the risk assessment~~

	Part/ Attachment	Section	Comment	Suggested Text Change
			EPA methodology for handling non-detects and replicates should be included.	~~shall be applied.~~
52	Part 11	11.10.4.1.iii	COPCs are initially identified in Section 11.4 in conjunction with the comparison to soil screening levels. The COPCs are carried forward from Section 11.4.2 to Section 11.10.4 if the Permittees are unable to meet the cleanup levels in Permit Section 11.4.2. Therefore, this discussion of Constituents of Potential Concern should be inserted in 11.4 as 11.4.1.	Move Section 11.10.4.1.iii, page 157, lines 20-34 to page 158, to Section 11.4.1.
53	Part 11	11.10.4.1.iii	No. 4 of the inorganic chemical site attribution analysis indicates that maximum detected concentration is compared to upper tolerance limit (UTL), but the Permittees currently compare the maximum concentration, including detection limits. So if the maximum is a non-detect, the Permittees will still compare it to the UTL, because the Permittees believe this is more protective.	Page 158, lines 1 and 2, in addition to moving this Section to 11.4.1, modify the sentence as follows: (4) comparison of maximum ~~detected~~ site concentrations to a background reference value (*e.g.* upper tolerance limit, UTL)
54	Part 11	11.10.4.1.iii	An alternative should be included in the event that sample size is not sufficient to perform statistical analysis.	Page 158, lines 3-5, in addition to moving this Section to 11.4.1, add the following this sentence to the end of number (5): If the sampling size is not sufficient to perform statistical analysis, a comparison of the maximum site concentration to the maximum background concentration shall be used;
55	Part 11	11.10.4.1.iii	The evaluation of essential nutrients does not necessarily include comparison to recommended daily allowances. This comparison is only done if the Permittees cannot eliminate the essential nutrient based on comparisons to the background. Currently the Permittees evaluate essential nutrients if they are not eliminated by UTL or statistics, using frequency detected above background and how much above background per EPA RAGS.	Page 158, line 10, in addition to moving this Section to 11.4.1, modify the sentence as follows: (8) evaluate essential nutrients ~~and compare to recommended daily allowances and/or upper intake limits.~~ by frequency detected above background and by how much above background per EPA RAGS. If the nutrients cannot be eliminated by this comparison the Permittees shall compare them to recommended daily allowances or upper intake limits.
56	Part 11	11.10.4.1.iv	The ProUCL software that is used as an example of EPA and/or Department accepted guidance and	Page 158, lines 17 and18, add the following sentence:

	Part/ Attachment	Section	Comment	Suggested Text Change
			methodologies does not always recommend using 95% estimate of the upper confidence limit (95% UCL). Sometimes a 97.5% or 99% UCL is recommended. The Permittees believe that the percentage of UCL should be consistent with what ProUCL recommends if the software is to be used to calculate EPCs.	The Permittees shall use the 95% UCL or greater dependant upon what the EPA ProUCL software recommends.
57	Part 11	11.10.4.1.iv	There is no guidance from EPA or NMED on how to conduct an acute assessment. Furthermore, the soil screening levels are for chronic exposure not acute. This condition is ambiguous and should be deleted from the draft permit or the section should be revised to fully describe how to perform acute risk assessment.	Page 158, lines 18 and 19, delete the following: ~~For acute exposures, the maximum detected site concentration shall be used as the EPC.~~
58	Part 11	11.10.4.1.iv	The Johnson and Ettinger model is used in determining residential indoor air concentrations not industrial. OSHA worker safety requirements are applicable for industrial environments.	Page 158, lines 24-30, modify the section as follows: EPA does not recommend estimating intakes for air inhalation pathway, but rather compares estimated volatile/particulate air concentrations adjusted for exposure frequencies, duration and time. For inhalation of volatiles/particulates from soil, EPCs shall be determined using current EPA and/or Department methodology.~~, based upon volatilization factor or particulate emission factor. Indoor air concentrations shall be determined using EPA and Department accepted approaches, such as the EPA recommended Johnson and Ettinger model.~~ The Permittees shall evaluate the relevance of the vapor intrusion pathway. If there is a complete pathway, the Permittees shall assess this pathway using appropriate methodologies."
59	Part 11	11.10.4.1.vi	The context of the sentence "Cumulative effects for risk and hazard shall be determined" is unclear. In previous sections "cumulative" risk seems to mean "additive." Whereas, in this section, it appears that "cumulative" means from all sources or exposures (*i.e*. soil, air, water, and biota).	Page 159, line 4, Please provide a definition of the word "cumulative" as used in the context: "Cumulative effects for risk and hazard shall be determined."
60	Part 11	11.10.5	Combining the Site-Specific Human Health Risk Assessment and the Site-Specific Ecological Risk Assessment (Section 11.10.5) and the related reports that go with these assessments into one Risk	Page 159, Lines 14-22 See the comment on this subject in Section 11.10.4. Refer to Section 11.10.4 in the text of the draft permit.

	Part/ Attachment	Section	Comment	Suggested Text Change
			Assessment Report including both human health and ecological assessments is current practice and is efficient.	
61	Part 11	11.10.6.1	The Permittees object to the requirement to develop background data for surface water. The Permittees have developed background data sets for the Consent Order, which the Department accepted. These background data sets address soil, sediment, tuff, and groundwater, including springs. The current Department-approved background data set should meet the permit requirement to "determine an appropriate background data set" in section 11.10.6, line 24. In addition, the requirement to determine background data for surface water is ambiguous. The current background data set includes "springs," and the revised draft Permit omits any information on how a background data set for surface water could otherwise be determined.	Page 160, line 14, delete the words "surface water" from the first sentence of the Section: "...and determining whether metals are present in soil/groundwater/~~surface water~~ tuff/sediment due to site activities."
62	Part 11	11.10.6.1	Site attribution analysis is addressed by the revised draft Permit in Section 11.10.4.1iii. The Permittees have commented on that Section.	Page 160, Lines 18-24. Please see the comment on Section 11.10.4.1iii suggesting moving this text to Section 11.4.1.
63	Attachment C	C.2.2	The Permittees agree that there may be occasions when a comprehensive analysis for all constituents of a generated waste may be appropriate for waste characterization where there is no other information. However, the permit condition does not allow alternative options. The condition as written does not explain the terms "laboratory analysis" and "capable of measuring," making it difficult for the facility to understand how the condition will be enforced. The new permit condition precludes the use of process knowledge or other acceptable knowledge	Page 16, lines 30-32, delete the following: ~~The Permittees shall require the laboratory to report all constituents the laboratory method is capable of measuring as specified in the most recent version of the US EPA's Test Methods for Evaluating Solid Wastes (SW-846).~~

	Part/ Attachment	Section	Comment	Suggested Text Change
			(see Section 3.1.1, Attachment C) to determine whether hazardous constituents are present or to be used to limit the constituents otherwise analyzed for. EPA's April 1994 guidance for waste analysis plans in permits supports the use of other waste information in addition to sampling and analysis for characterization (ECDIC-2002-011, OSWER 9938.4-03). Additionally, if a one-time analysis for all the potential hazardous constituents is conducted, subsequent analysis may be limited to only those identified in the initial sampling and analysis if no other waste generation process changes have occurred. The permit condition, as currently written, requires that all constituents must be analyzed at any time laboratory analysis is used as part of a hazardous waste characterization. Attachment C of the draft permit describes the use of laboratory analysis both as primary sampling and analysis (Section 3.1.2) where acceptable knowledge is insufficient for waste characterization and as additional characterization data, an allowable component of acceptable knowledge when appropriate (Section 3.1.1). Laboratory analysis supporting AK is often selective in terms of analytes measured. The proposed permit condition does not define which type of laboratory analysis is being considered. The use of the term "capable of measuring" in the condition is not sufficiently explained by the additional reference to SW-846 to resolve it's meaning for compliance purposes. SW-846 contains numerous sources for determining whether the contained methods are appropriate for analytes of concern. Chapter Two of SW-846 specifies the determinative methods for analysis of specified analytes but individual methods can potentially be	

	Part/ Attachment	Section	Comment	Suggested Text Change
			used for much wider ranges of analytes. For example, Method 8260B (gas chromatography/ mass spectrometry) of SW-846 is used to determine volatile organic compounds for waste characterization. The method contains a table listing those compounds that can be determined by the method using the contained procedures (Section 1.1) and this table is generally in agreement with Table 2-1 of Chapter Two. However, the method further states that it can be used to quantitate most volatile organic compounds that have boiling points below 200°C (Section 1.3). This would potentially add many analytes in Table UTS that are not specifically listed for the method in SW-846 Table 2-1 where the appropriateness of the analytical requirements (e.g., detection limits, reproducibility) are not known. Additionally, there are six potential sample preparation techniques for Method 8260B (Section 1.2), none of which are appropriate for all the potential analytes capable of being measured by the method. The proposed permit condition does not resolve the applicability of any of these factors in determining how compliance will be achieved.	
64	Attachment C	Table C-2	Suggested text changes resolve a discrepancy in the terminology for cresol and incorporate operational revisions previously submitted to NMED. In some cases, this is because the tables already include o-cresol, m-cresol, and p-cresol (the forms of cresol) or the compound should not be included.	Revise the descriptions of Hazardous Constituents in the Waste Types as follows: Page 32, Spent Solvents, delete cresol from Potential Hazardous Waste Constituents and Potential Underlying Hazardous Constituents. Page 34, Contaminated Solid Wastes, delete cresol from Potential Hazardous Waste Constituents and Potential Underlying Hazardous Constituents. Page 36, Contaminated Non-Corrosive Aqueous and Non-Aqueous Solutions and Sludges, delete cresol from Potential Hazardous Waste Constituents and Potential Underlying Hazardous Constituents. Page 37, Unused/Off-Specification Commercial Chemical

	Part/ Attachment	Section	Comment	Suggested Text Change
				Products, delete cresol from Potential Hazardous Waste Constituents and Potential Underlying Hazardous Constituents. Page 37, Unused/Off-Specification Commercial Chemical Products, delete 1-dichlorobenzene from Potential Underlying Hazardous Constituents. Page 37, Unused/Off-Specification Commercial Chemical Products, add 1,2-dichloroethane to Potential Underlying Hazardous Constituents. Page 38, Gas Cylinder Waste, delete cresol from Potential Underlying Hazardous Constituents
65	Attachment C	Table C-6	Table C-6 should be revised in order to be consistent with the waste streams that may be treated at the Open Burn treatment units. Further discussion of the proposed changes to Table C-6 is found in Comment 231 in Part 2 of the Comments and revised Table C-6 is attached in Appendix 6.	Attachment C, page 59, replace Table C-6 in the revised draft Permit with Table C-6 in Appendix 6.
66	Attachment F	F.2.1	The suggested change is consistent with the changes suggested to Tables F.1 and F.2. In support of the scope of the Personnel Training Plan as stated in Section F.2, the Permittees understand that the requirements within Section F.2.1 pertain to "permitted unit hazardous/mixed waste workers, managers and supervisors of permitted unit hazardous/mixed waste workers, emergency responders, and uncontrolled area potential release site workers." The requirements within this section to train appropriate waste characterization personnel and personnel that operate radiography equipment or conduct visual examinations (VE) of waste contents do not belong within this section. Personnel receive on-the-job training for these activities, therefore, this discussion should be	Page 5, move the following text to Section F.2.3 On-the-Job Training: The Permittees shall ensure that training concerning the use of waste characterization documentation is included in a Facility waste documentation course. This training shall be provided to appropriate personnel, and provide detailed instructions on how to complete forms for characterizing wastes. Only properly trained personnel may operate radiography equipment or conduct visual examinations (VE) of waste contents. Radiography and VE procedure operators shall receive formal and on-the-job training in project requirements, system operations and standards, safe operating practices, application techniques, specific waste-generating practices, packaging configurations, parameter estimation, and identification of prohibited items. The Permittees shall train and test operators before they are qualified for radiography operation and VE, and shall requalify operators at least every

	Part/ Attachment	Section	Comment	Suggested Text Change
			moved to Section F.2.3 *On-the-Job Training*. This type of training should not be considered a Facility-wide course. Not all personnel at all of the permitted units conduct these activities.	two years.
67	Attachment F	Table F.1	The requirement that a waste characterization course is "required for appropriate Facility personnel performing permitted unit waste characterization or generating or reviewing waste characterization documentation regardless of whether personnel work at a permitted unit" expands the scope of the Attachment F Personnel Training Plan. However, based on the Personnel Training Plan Introduction, the Permittees understand this requirement to be applicable to personnel who review and approve waste characterization documentation for the permitted units rather than all of the generators that send waste to each of the permitted units. The introduction of the plan on page 3 states, "[t]he primary objective of the training program is to prepare personnel to operate and maintain safely those areas managing hazardous and/or mixed waste. This training program applies to all employees of the Permittees and any subcontractors who work regularly at LANL permitted units and manage hazardous and/or mixed waste." The Permittees suggest the deletion of the final row (and the associated footnote) of Table F.1 and additions to Table F.2 for the following reasons: - Most generators of the waste managed at the permitted units do not enter or manage waste within the permitted units; therefore, this requirement cannot apply to them. - Most waste management handlers do not prepare or approve waste characterization documentation; therefore, they are not required	Page 10, Table F-1: Please delete the row that lists the course titled Waste Characterization and footnote "g" to the table. Page 11, Table F-2: Add the following bullets under both "Permitted unit-specific training will include, as applicable, the following topics:" and "OJT will include the following topics, as applicable:" • Review and approve waste characterization documentation • Operation of radiography equipment • Visual examination (VE) of waste contents

	Part/ Attachment	Section	Comment	Suggested Text Change
			to take this course. Inclusion in Table F-2 of the personnel who review and approve waste characterization documentation, conduct radiography, or conduct visual examination is appropriate because they receive on-the-job training.	
68	Attachment G General	All closure plans at Section 4.2	Please see Comment 35.	Suggested text change: The Permittees shall remove all hazardous wastes from a permitted unit, no later than 90 days after the date on which the unit receives the known final volume of hazardous waste or, if there is a reasonable possibility that the permitted unit will receive additional hazardous wastes, no later than one year after the date on which the unit received the most recent volume of hazardous wastes, in accordance with 40 CFR §264.113(a).
69	Attachment G General	All closure plans at Section 4.2	Section 4.2 of the closure plans states that the records review and structural assessment must occur within ten days of final receipt of waste. This timeframe is very short as these units have generally operated for a long period of time. The Permittees propose that the majority of the records review could be initiated prior to this schedule milestone and could be amended to include any relatively late additions within this period. The suggested text change incorporates this concept.	Revise the text in the fourth paragraph of Section 4.2 as follows: Within ten days after the final receipt of hazardous waste, the Permittees will finalize the records review, conduct the structural assessment ~~conduct the review and assessment~~ and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification in accordance with Permit Section 9.4.8.
70	Attachment G General	All closure plans at Section 4.2	The closure plans require that "Within five days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste." The time period is unreasonably short and does not comport with 40 CFR §264.113(a), which allows 90 days to treat, remove from the unit or facility, or dispose of on-site, all hazardous wastes.	Suggested language change: Within ninety days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste.
	Attachment	All closure	The Attachments referenced at the end of the last	Section 2.0:

Deleted: begin closure of a permitted unit

Deleted: five

	Part/ Attachment	Section	Comment	Suggested Text Change
71	G General	plans Section 2.0	sentence of the section includes Attachment B (Part A Application) which is a listing of hazardous waste codes each Technical Area is authorized for. Not all these codes will necessarily be managed in an individual unit. The tables listing the actual waste constituents and codes managed based on records review were included with the closure plans submitted by the Permittees in April 2009. Adding the word potential is consistent with the language in sections 5.2.1.a. of the plans that requires the determination of the specific hazardous constituents at the records review. Additionally, tables listing constituents have been deleted from certain plans (e.g., Hazardous Waste Constituents of Concern at the TA-54, Area G Pad 1 Outdoor Container Storage Unit). Request for inclusion of these tables into the closure plans is also requested by the Permittees. Adjustments to the requested language changes must be made to accommodate the treatment units in Attachments G.2, G.3, and G.24.	Change the sentence at the end of this section from: "Permit Part 3 (Storage in Containers), Permit Attachment A (Technical Area Unit Descriptions), Permit Attachment B (Part A Application), and Permit Attachment C (Waste Analysis Plan) include information about waste management procedures and potential hazardous waste constituents stored at the permitted unit."
72	Attachment G General	All closure plans Section 4.1(b)	Establishing residential soil cleanup levels is not appropriate for outdoor units at LANL. The units are included within the area that will be affected by the corrective action closure of SWMUs at each of the sites. As such, the appropriate soil cleanup criteria regarding the use of residential or industrial exposure factors have not been determined pending approval of the remediation options being proposed. There is no discussion presented in the revised draft Permit or the Fact Sheet for using a more conservative exposure factor for the unit if an industrial receptor is chosen for the basis of the corrective action risk assessment. Residual soil contamination levels at the unit may be appropriate for future industrial land use, the overall cleanup levels determined for each unit, and the final soil	Revise Section 4.1(b) to allow for potential of industrial land use after closure of each unit.

	Part/ Attachment	Section	Comment	Suggested Text Change
			surface associated with the unit may not be exposed depending upon the final remediation option selected.	
73	Attachment G.1	Section 6.1	The number of areas to be sampled within the closure plan doubled from the closure plan submitted to NMED in April 2009 without explanation. The extra samples do not seem to be driven by the requirements in Part 9.4.7.1.i, because the sample areas presented within the closure plan submitted by the Permittees met the requirements of one sample every 900 square feet.	Page 6, Section 6.1, Second paragraph: Please justify the requirement for extra samples or change the third, fourth, and fifth sentences of the paragraph as from : "A total of 10 ~~17~~ wipe samples will be collected from Room 9010; four ~~eight~~ from the floor, two ~~four~~ from each of the longer walls, and one ~~five~~ from the shorter walls. A total of three ~~five~~ wipe samples will be collected from Room 9020; one ~~two~~ from the floor, one ~~two~~ from the wall, and one from the floor drain. A total of two ~~four~~ wipe samples will be collected from Room 9030; one ~~two~~ from the floor and ~~one two~~ from the wall."
74	Attachment G.2	Section 4.2	The reference to verification sampling within the fifth paragraph is incomplete. Closure of this unit will require verification chip sampling and may require verification wipe sampling.	Page 8, Section 4.2, Fifth paragraph: Soil sampling, ~~and~~ decontamination verification wipe sampling, and chip sampling will be conducted to demonstrate that soils, surfaces, and related equipment at the permitted unit meet the performance standards in Permit Section 9.2."
75	Attachment G.2	Section 6.1	Administrative – typographical error	Page 9, Section 6.1: Change "form" to "from" in the first sentence of the section.
76	Attachment G.2	Section 6.1	The requirement to collect a soil sample beneath the asphalt directly in front of the unit requires justification. Because the unit is an open burning treatment unit, pathways for exposure include runoff, air dispersion, and particulate deposition from air. There is no subsurface aspect to the treatment unit that would cause concern for migration beneath an asphalt pad in front of the unit. Additionally, soil samples will be collected from the areas around the unit to determine the concentration of any hazardous constituents that	Page 10, Section 6.1, (b): Please change the requirement to: one wipe~~soil~~ sample will be collected from the asphalt pad where waste to be treated is unloaded off the vehicle;

Deleted: beneath

	Part/ Attachment	Section	Comment	Suggested Text Change
			may have migrated from the unit and a soil monitoring program has been written into Part 6 of this draft Permit so the concentrations of these constituents can be monitored as they change over time. The Permittees recommend that a wipe sample be collected from the surface of the asphalt and analyzed for high explosives compounds to determine whether contamination from the operations at the permitted unit has occurred.	
77	Attachment G.2	Section 6.1 Figure G.2-2	The storm water discharge point is a rocked area where no soil is available for collection. The Permittees suggest moving the location to just above the rocked area, where storm water has flowed.	Page 10, Section 6.1(c): Please change the requirement from: "one soil sample above ~~at~~ the storm water discharge point; and
78	Attachment G.2	Section 6.1	The requirement to collect a surface water sample is confusing and needs clarification. There is no surface water within the area surrounding the open burning treatment units. However; collection of a storm water run-off sample could occur during closure activities if there is precipitation during that timeframe. Otherwise, prior to closure, water monitoring requirements within Part 6, Section 6.5.2 apply.	Page 10, Section 6.1 (d): Suggest deleting the requirement or clarifying that a storm water sample will be collected at the storm water monitoring station if precipitation that causes run-off occurs during the time of closure activities.
79	Attachment G.2	Section 6.4	The table that listed the potential constituents of concern for the unit was removed from the version of the closure plan submitted to the NMED in April 2009.	Page 13, Section 6.4: Please include the table with the following modifications in a revised closure plan.

<table>
<tr><th></th><th>Part/ Attachment</th><th>Section</th><th>Comment</th><th>Suggested Text Change</th></tr>
<tr><td></td><td></td><td></td><td></td><td>Table G.2-6

Hazardous Waste Constituents of Concern at the TA-16-388 Flash Pad[a]
<table>
<tr><th>Category</th><th>EPA Hazardous Waste Numbers</th><th>Specific Constituents</th></tr>
<tr><td>High Explosives (HE) and associated compounds</td><td>D003</td><td>HMX, RDX, TNT, PETN, Tetryl, and Other Nitrobenzenes and Nitrotoluenes</td></tr>
<tr><td>Toxic Metals</td><td>D004, D005, D006, D007, D008, D009, D010, D011</td><td>Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver</td></tr>
<tr><td>Organic Compounds</td><td>D030, D036, F004</td><td>2,4-Dinitrotoluene, Nitrobenzene</td></tr>
<tr><td></td><td>F002, F003, F004, F005</td><td>Acetone, Ethanol, Benzene, MEK, Methylene Chloride, Toluene, MIBK, Xylene, Ethyl Acetate, Methanol</td></tr>
<tr><td>Other Constituents of Concern</td><td></td><td>Dioxins/Furans, Perchlorate</td></tr>
</table>
[a] Based on the unit operating record.
EPA = U.S. Environmental Protection Agency
HMX = cyclotetramethylenetetranitramine
RDX = cyclonite
TNT = trinitrotoluene
PETN = pentaerythrioltetranitrate (2,2-bis[(nitroxy)methyl]-1,3-propanediol dinitrate
MEK= methyl ethyl ketone
MIBK = 4-methyl-2-pentanone</td></tr>
<tr><td>80</td><td>Attachment G.2</td><td>Table G.2-3</td><td>If, as the resolution to the previous comment to Section 6.4, Table G.2-6 is included in the closure plan a method for the analysis of dioxin and furan congeners must be added to Table G.2-3 for completeness.</td><td>Pages 19-20, Table G.2-3:

Add the following:
<table>
<tr><th>Analyte</th><th>EPA SW-846 Analytical Method[a]</th><th>Test Methods/ Instrumentation</th><th>Target Detection Limit[b]</th><th>Rationale</th></tr>
<tr><td colspan="5">Other Analysis</td></tr>
<tr><td>Dioxins/Furans</td><td>8290</td><td>GC/MS</td><td>1.0 to 200 ug/L</td><td>Determine the dioxin/furan concentration in the samples.</td></tr>
</table></td></tr>
<tr><td>81</td><td>Attachment G.3</td><td>Section 6.1 Figure G.3-1</td><td>The requirement to collect a soil sample at the storm water discharge point is confusing. The Permittees suggest moving the location to just outside the fenced area around the unit where storm water has flowed.</td><td>Page 4, third paragraph:

The first sentence should be changed from:

“Five soil samples and one surface water sample will be collected in accordance with Permit Section 9.4.7.1.ii.b (see Figures G.3-1 and G.3-2, respectively); four samples from soils surrounding the permitted unit and one sample outside the unit boundary where ~~at the~~ stormwater has flowed. ~~discharge point.~~</td></tr>
</table>

<table>
<tr><th></th><th>Part/ Attachment</th><th>Section</th><th>Comment</th><th>Suggested Text Change</th></tr>
<tr><td>82</td><td>Attachment G.3</td><td>Section 6.1</td><td>There is no surface water within the area surrounding the open burning treatment units, however; collection of a storm water run-off sample could occur during closure activities if there is precipitation during that timeframe. Otherwise, prior to closure, water monitoring requirements within Part 6, Section 6.5.2 apply.</td><td>Page 4, Section 6.1 (d):

Suggest deleting the requirement in the final sentence of the section or clarifying that a storm water sample will be collected at the storm water monitoring station if precipitation that causes run-off occurs during the time of closure activities.</td></tr>
<tr><td>83</td><td>Attachment G.3</td><td>Section 6.4</td><td>The table that listed the potential constituents of concern for the unit was removed from the version submitted to the NMED in April 2009.</td><td>Page 13, Section 6.4:

Please include the table as follows in a revised closure plan.

Table G.3-1

Hazardous Waste Constituents of Concern at the TA-16-399 Burn Tray[a]

<table><tr><th>Category</th><th>EPA Hazardous Waste Numbers</th><th>Specific Constituents</th></tr><tr><td>High Explosives (HE) and associated compounds</td><td>D003</td><td>HMX, RDX, TNT, PETN, Tetryl, and Other Nitrobenzenes and Nitrotoluenes</td></tr><tr><td>Toxic Metals</td><td>D005</td><td>Barium</td></tr><tr><td>Semi-volatile Organic Compounds</td><td>D030</td><td>2,4-Dinitrotoluene</td></tr></table>
[a] Based on the unit operating record.
EPA = U.S. Environmental Protection Agency
HMX = cyclotetramethylenetetranitramine
RDX = cyclonite
TNT = trinitrotoluene
PETN = pentaerythrioltetranitrate (2,2-bis[(nitroxy)methyl]-1,3-propanediol dinitrate
MEK= methyl ethyl ketone
MIBK = 4-methyl-2-pentanone</td></tr>
<tr><td>84</td><td>Attachment G.6</td><td>Section 6.1(f) Figure G.6-2</td><td>The requirement for ten samples along the drainage swale is not consistent with the requirement at Part 9.4.7.ii.a and is not technically necessary. The Part 9 requirement is limited to samples taken within a permitted unit, which does not apply as the drainage swale is outside the limits of Pad 1. A sample taken where any potential run-off occurs would be applicable to the third condition and the Permittees have also proposed the rock check dam location as a point to determine the extent of any potential contamination. The amended closure plan does not provide a rationale for the need for other samples located progressively along the swale and</td><td>Section 6.1(f), Page 6:

The requirement for ten samples along the swale south of Pad 10 should be deleted and Figure G.6-2 should be revised.</td></tr>
</table>

	Part/ Attachment	Section	Comment	Suggested Text Change
			it is not clear why this would be necessary if the beginning and end points for this potential contamination pathway are sampled. This sampling scheme was not proposed in the Permittees' submitted closure plan draft.	
85	Attachment G.6	Figure G.6-1	The location of the sump in Building 412 should be shown in the southeast corner rather than the southwest corner of the building.	Page 23: Revise Figure G.6-1 to illustrate the sump in Building 412 correctly.
86	Attachment G.6	Figure G.6-1	Clarification is needed to emphasize that the "Storm water sampling location" labeled on Figure G.6-1 is actually a soil sample that will be collected at a point of storm water flow.	Page 23: Revise Figure G.6-1 to clarify the soil sample at the southeastern corner of Pad 1.
87	Attachment G.6	Figure G.6-2	The location of the rock check dam on Figure G.6-2 is not correct. The location should be moved further south to just below the contour line. Also, the structure arrangement on Pad 10 does not match the arrangement in Figure G.11-1.	Page 24: Revise Figure G.6-2 to accurately illustrate the rock check dam south of Pad 10 and the correct arrangement of structures on Pad 10.
88	Attachment G.7	Section 6.1(d)	The requirement for nine samples along the drainage swale is not consistent with the requirement at Part 9.4.7.ii.a and is not technically necessary. The Part 9 requirement is limited to samples taken within a permitted unit, which does not apply as the drainage swale is outside the limits of Pad 3. A sample taken where any potential run-off occurs would be applicable to the third condition and the Permittees have also proposed the rock check dam location as a point to determine the extent of any potential contamination. The amended closure plan does not provide a rationale for the need for other samples located progressively along the swale and it is not clear why this would be necessary if the beginning and end points for this potential contamination pathway are sampled. This sampling scheme was not proposed in the Permittees submitted closure plan draft, April 2009.	Section 6.1(d), Page 6: Delete the requirement for the extra nine samples along the swale to Pad 10. Revise Figure G.7 to remove these sample locations.

	Part/ Attachment	Section	Comment	Suggested Text Change
89	Attachment G.7	Figure G.7-1	The structure arrangement on Pad 10 as shown in Figure G.7-1 does not match the arrangement in Figure G.11-1.	Page 22: Revise Figure G.7-1 to accurately illustrate the arrangement of structures on Pad 10.
90	Attachment G.7	Figure G.7-2	The location of the rock check dam on Figure G.7-2 is not correct. The location should be moved further south to just below the contour line. Also, the structure arrangement on Pad 10 does not match the arrangement in Figure G.11-1.	Page 23: Revise Figure G.7-2 to accurately illustrate the rock check dam south of Pad 10 and the correct arrangement of structures on Pad 10.
91	Attachment G.8	Figure G.8-1	The loading zone sample locations for Sheds 144, 145, 146, 177, 1027, and 1028 should be on the eastern side of the structures.	Page 23: Revise Figure G.8-1 to accurately illustrate the unloading areas for the sheds on Pad 5.
92	Attachment G.9	Section 2.0 Section 6.1(a) Figure G.9-1	The requirement to sample in front of the storage sheds should not apply to the five sheds located on Pad 6 because they do not manage mixed waste. The requirement is only appropriate for the transportainer structure 491.	Section 2.0, Page 1: Remove the reference to the "five storage sheds" in the third paragraph of Section 2.0. Section 6.1(a), Page 6: Delete the requirement to sample in front of the five storage sheds. Page 22: Revise Figure G.9-1 to remove these soil sample locations.
93	Attachment G.10	Section 2.0 Section 6.1(a) Figure G.10-1	The requirement to sample the loading zones for structures 484 and 574 is not appropriate because these storage sheds have not been used to manage waste containers.	Section 2.0, Page 1: Remove the reference to the "one transportainer, and two storage sheds" at the end of the second paragraph of Section 2.0. Section 6.1(a), Page 6: Delete the requirement to sample in front of the transportainer and each of the storage sheds. Page 28: Revise Figure G.10-1 to remove these soil sample locations.
94	Attachment G.11	Figure G.11-1	The location of the rock check dam on Figure G.11-1 is not correct. The location should be	Page 22:

	Part/ Attachment	Section	Comment	Suggested Text Change
			moved south and west to just below the contour line.	Revise Figure G.11-1 to accurately illustrate the rock check dam south of Pad 10.
95	Attachment G.14	Section 1.0	The major portion of the unit is a dome over a concrete pad and the sampling requirements are those for an outdoor unit; therefore, the Permittees recommend revision of the description.	Section 1.0, Page 1: The closure plan for this unit should be redefined as an outdoor unit including changes in the title and introduction.
96	Attachment G.14	Section 6.1(b)(iv) Figure G-14.1	There are two large vehicle doors at Dome 33. These are at the western and the south-east ends (see Figure G-26 in the TA-54 Part B permit application, Rev. 3, June 2003). The sample locations should be adjusted to represent this. Additionally, there is only one door on the western end and therefore, only one sample should be collected there.	Section 6.1(b)(iv), Page 6: Sample locations 4 and 5 should be combined into one location. Revise Figure G-14.1 combine these sample locations to accurately represent the locations of the roll-up doors.
97	Attachment G.16	Section 6.1(b)	The rational for two samples from each of the longer walls is not justified. The total area of the High Bay Unit is 3200 square feet. The requirement in Permit part 9 is one sample per 900 square feet and the result is one sample per wall.	Section 6.1(b), Page 5: Please change the requirement as follows: "b. four ~~six~~ from the walls (one ~~two~~ from each wall) ~~of the longer walls and one from each of the shorter walls)~~ (see Figure G.16-1);
98	Attachment G.17	Section 6.1(c) Figure G.17-1	Sampling from the swale does not fulfill requirements for Permit Part 9. The drain goes to the outfall where there was originally a sample location. NMED removed this location and inserted the two swale sample locations. Suggest removing these sample locations and adding back the one original location at the outfall. Also, data pulled from RACER on the outfall does not show contaminants of concern above ppb levels.	Section 6.1(c), Page 10: Remove the requirement to sample within the swale and reinsert the soil sample location at the storm water discharge point that was included with the closure plan submitted by the Permittees in April 2009. Revise Figure G.17-1 to reflect these changes.
99	Attachment G.18	Section 1.0 and title of document	Suggest change corrects an editorial error. B40 is an area within the basement, not a room.	Page 1: Remove the word "Room" from the first sentence of the closure plan.

	Part/ Attachment	Section	Comment	Suggested Text Change
100	Attachment G.19	Section 1.0 and title of document	Suggest change corrects an editorial error. K13 is an area within the basement, not a room.	Page 6: Remove the word "Room" from the first sentence of the closure plan.
101	Attachment G.19	Section 6.1	The number of areas to be sampled on the floor and wall of the unit within the closure plan doubled from the closure plan submitted to NMED in April 2009 without explanation. The extra samples do not seem to be driven by the requirements in Part 9.4.7.1.i, because the sample areas presented within the closure plan submitted by the Permittees met the requirements of one sample every 900 square feet or at least on sample from the floor and wall.	Page 10, Section 6.1, Second paragraph: Please change the last sentence as follows: A total of three ~~five~~ wipe samples will be collected: one ~~two~~ from the floor; one ~~two~~ from the wall; and one from the pillar.
102	Attachment G.20	Section 1.0 and title of document	Suggest change corrects an editorial error. B05 is an area within the basement, not a room.	Page 1: Remove the word "Room" from the first sentence of the closure plan.
103	Attachment G.20	Section 2.0	Construction of TA-55 was completed in 1979.	Section 2.0, Page 1 Change text to reflect that TA-55, Building PF4 was constructed in 1979.
104	Attachment G.21	Section 1.0 and title of document	Suggest change corrects an editorial error. B45 is an area within the basement, not a room.	Page 6: Remove the word "Room" from the first sentence of the closure plan.
105	Attachment G.21	Section 6.1	The number of areas to be sampled on the wall of the unit within the closure plan doubled from the closure plan submitted to NMED in April 2009 without explanation. The extra sample does not seem to be driven by the requirements in Part 9.4.7.1.i, because the sample areas presented within the closure plan submitted by the Permittees met the requirements of one sample every 900 square feet or at least one sample from the floor and wall.	Page 10, Section 6.1, Second paragraph: Change the second to the last sentence to read as follows: A total of three ~~four~~ wipe samples will be collected: two from the floor; and one ~~two~~ from the wall.
106	Attachment G.22	Section 6.1	The number of areas to be sampled on the walls of the unit within the closure plan doubled from the closure plan submitted to NMED in April 2009	Page 5, Section 6.1, Second paragraph: Change the second sentence to read as follows:

	Part/ Attachment	Section	Comment	Suggested Text Change
			without explanation. The extra samples do not seem to be driven by the requirements in Part 9.4.7.1.i, because the sample areas presented within the closure plan submitted by the Permittees met the requirements of one sample every 900 square feet or at least one sample from the floor and wall.	In compliance with Permit Section 9.4.7.1.i, this closure plan will ensure the collection of at least 14~~18~~ wipe samples; eight wipe samples from the floor, one from each of the shorter walls, and two ~~four~~ from each of the longer walls.
107	Attachment G.23	Section 1.0	Suggested change corrects a typographical error.	Page 1: Remove "the basement of" from the first sentence of the closure plan.
108	Attachment G.23	Section 5.3.1	The requirement within the closure plan to remove "(t)he storage tanks, piping and the glovebox and all materials associated with the permitted unit in Room 401 (tanks, ancillary equipment, glovebox, etc.)" prior to the structural assessment is confusing. The structural assessment conducted on a permitted unit after it has been emptied of waste and prior to beginning closure activities. Removal of the tanks and ancillary equipment is a closure activity for this unit because the tank storage system is the permitted unit.	Page 4, Section 5.3.1: Please revise the last sentence to read as follows: The storage tanks, piping, and the glovebox, and all materials associated with the permitted unit in Room 401 (tanks, ancillary equipment, glovebox, etc.) will be removed in accordance with this section. ~~before the assessment.~~
109	Attachment G.23	Section 5.3.2	The requirements within this section need to be clarified to state that decontamination will be conducted on the secondary containment of the permitted unit. No storage of hazardous waste occurs within Room 401 itself. It is used as secondary containment for the storage tank system permitted unit and the cementation permitted unit located within the room.	Page 4, Section 5.3.2: Please revise the first sentence of the second paragraph of the section to read as follows: Decontamination of the permitted unit's secondary containment and equipment related to the permitted unit will be conducted by first removing loose material (e.g., dust, dirt) through sweeping followed by washing using a wipe-down method with a solution consisting of a surfactant detergent (e.g., Alconox®) and water mixed in accordance with the manufacturer's recommendations." Page 5, Section 5.3.2: Please revise the fourth paragraph of the section to read as follows:

	Part/ Attachment	Section	Comment	Suggested Text Change
				The entirety of the unit's secondary containment floors will be decontaminated directly below the unit. To ensure that decontamination of the walls is conducted to a sufficient height, all walls in the permitted unit will be decontaminated to a height of 2~~11~~ ft. Ceilings of the permitted unit, walls above 2~~11~~ ft, and the areas outside of the permitted unit will be presumed to be free of contamination unless there is some physical indication of contamination (*e.g.*, staining), the records review reveals that large amounts of liquid volatile or semi-volatile organic waste was stored in the permitted unit, or a spill or release occurred within the permitted unit that could have affected the ceiling or the walls above 2~~11~~ ft."
110	Attachment G.23	Section 6.1	A total number of samples has not been provided within this closure plan.	Page 5, Section 6.1: Revise the last sentence of the paragraph to read as follows: If the entire floor of the secondary containment room is decontaminated, a total of 5~~.X~~ wipe samples will be collected: one from the floor and one from each wall.
111	Attachment G.24	Section 5.3.1	The requirement within the closure plan to remove "(t)he pH column, vacuum trap, two motor-driven mixers, four impellers, piping and the glovebox and all other materials in Room 401 associated with the permitted unit" prior to the structural assessment is confusing. The structural assessment is conducted on a permitted unit after it has been emptied of waste and prior to beginning closure activities. Removal of the mixers and ancillary equipment is a closure activity for this unit because the cementation unit is the permitted unit.	Page 4, Section 5.3.1: Revise the last sentence of the section to read as follows: The pH column, vacuum trap, two motor-driven mixers, four impellers, piping and the glovebox and all other materials in Room 401 associated with the permitted unit will be removed in accordance with this section. ~~before the structural assessment.~~
112	Attachment J	Table J-1	Based on the Permittees comment on the designation of regulated units, above, the Permittees propose that Table J-1 be revised to provide the accurate identification of regulated units.	Page 3, revise the row identified as TA-54 "G" as follows: ~~Material Disposal Area~~ Pit 29 and Shaft 124. Page 5, revise the row identified as TA-54 "H" as follows:

<table>
<tr><th></th><th>Part/ Attachment</th><th>Section</th><th>Comment</th><th>Suggested Text Change</th></tr>
<tr><td></td><td></td><td></td><td></td><td><s>Material Disposal Area H</s> Shaft 9

Page 5, revised the row identified as TA-54 “L” as follows:
<s>Material Disposal Area L</s> Shafts 1, 13-17, 19-34 and Impoundments B and D</td></tr>
<tr><td>113</td><td>Attachment K</td><td>Table K-1</td><td>Sites subject to the corrective action requirements of Module VIII of the current LANL RCRA Permit are listed in Tables A and C of Module VIII (Table B contains a high priority subset of the sites listed in Table A). These sites are identified as SWMUs. Corrective action units that are not listed in Module VIII are identified as AOCs.

Table K-1 contains sites that are identified as AOCs but which are listed in Table A or Table C of Module VIII and should be identified on Table K-1 as SWMUs. These sites are identified within the suggested change column along with the corresponding Table in Module VIII.</td><td>Table K-1 should be revised to identify these sites as SWMUs.
<table>
<tr><td>SWMU 03-052(f)</td><td>Listed in Table C</td></tr>
<tr><td>SWMU 16-005(a)</td><td>Listed in Table C</td></tr>
<tr><td>SWMU 16-005(c)</td><td>Listed in Table C</td></tr>
<tr><td>SWMU 16-005(d)</td><td>Listed in Table C</td></tr>
<tr><td>SWMU 16-005(e)</td><td>Listed in Table C</td></tr>
<tr><td>SWMU 16-005(g)</td><td>Listed in Table A</td></tr>
<tr><td>SWMU 16-005(h)</td><td>Listed in Table C</td></tr>
<tr><td>SWMU 16-005(j)</td><td>Listed in Table C</td></tr>
<tr><td>SWMU 16-005(k)</td><td>Listed in Table C</td></tr>
<tr><td>SWMU 16-005(l)</td><td>Listed in Table C</td></tr>
<tr><td>SWMU 16-005(m)</td><td>Listed in Table C</td></tr>
<tr><td>SWMU 16-005(n)</td><td>Listed in Table A</td></tr>
<tr><td>SWMU 16-024(e)</td><td>Listed in Table C</td></tr>
<tr><td>SWMU 39-002(a)</td><td>Listed in Table A</td></tr>
</table>
A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4</td></tr>
<tr><td>114</td><td>Attachment K</td><td>Table K-1</td><td>Sites subject to the corrective action requirements of Module VIII are listed in Tables A and C of Module VIII (Table B contains a high priority subset of the sites listed in Table A). These sites are identified as SWMUs. Corrective action units that are not listed in Module VIII are identified as AOCs.</td><td>Table K-1 should be revised to identify these sites as AOCs.
<table>
<tr><td>AOC 00-030(n)</td></tr>
<tr><td>AOC 00-030(o)</td></tr>
<tr><td>AOC 00-030(p)</td></tr>
<tr><td>AOC C-21-001</td></tr>
<tr><td>AOC 35-018(a)</td></tr>
<tr><td>AOC 43-001(a2)</td></tr>
</table></td></tr>
</table>

	Part/ Attachment	Section	Comment	Suggested Text Change
			Table K-1 contains sites that are identified as SWMUs but which are not listed in Table A or Table C of Module VIII and should be identified on Table K-1 as AOCs. These sites are identified within the suggested change column.	A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.
115	Attachment K	Tables K-1, K-3	Sites that are not listed in Tables A and C of Module VIII do not require a Class III permit modification to remove them from these tables once NMED has determined that no further corrective actions are required. Sites not listed in Module VIII and which have already been issued certificates of completion without controls should be listed in Table K-2. Table K-1 contains sites that are not listed in Table A or Table C of Module VIII and which have been issued certificates of completion without controls by NMED under the Consent Order. These sites should not be listed in Table K-1, but should be listed in Table K-3, *Corrective Action Complete Without Controls*. These sites are identified within the suggested change column, along with the date that the certificates of completion were issued by NMED.	Table K-1 should be revised by removing these sites and, as necessary, Table K-3 should be revised to include or delete these sites, as indicated below. AOC 00-030(k): Certificate of completion, corrective action complete without controls issued 12/6/06 (not listed in Table K-3 but should be) AOC 00-033(b): Certificate of completion, corrective action complete without controls issued 2/23/06 (should be listed in Table K-3) AOC 00-034(a): Certificate of completion, corrective action complete without controls issued 12/6/06 (not listed in Table K-3 but should be) AOC C-19-001: Certificate of completion, corrective action complete without controls issued 6/27/06 (already listed in Table K-3).

<table>
<tr><th></th><th>Part/ Attachment</th><th>Section</th><th>Comment</th><th>Suggested Text Change</th></tr>
<tr><td></td><td></td><td></td><td></td><td>A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.</td></tr>
<tr><td>116</td><td>Attachment K</td><td>Tables K-1, K-3</td><td>Table K-1 includes some AOCs that were previously negotiated by NMED and LANL to have approved decisions of “no further action (NFA).” In the March 2005 Order on Consent, NMED specifically recognized that AOCs identified in a January 21, 2005 letter from EPA to NMED that received a prior NFA decision from EPA had no further corrective action requirements (See Section III.A of the Consent Order). These AOCs should be removed from Table K-1.

Table K-1 contains sites that are not listed in Table A or Table C of Module VIII and which were previously determined to require no further action by EPA. These sites should not be listed in Table K-1, but should be listed in Table K-3, Corrective Action Complete Without Controls. These sites, which are all included in the January 21, 2005 EPA letter, are identified within the suggested change column.</td><td>Table K-1 should be revised by removing these sites and Table K-3 should be revised by adding AOC 52-002(g).
<table>
<tr><td>AOC C-20-001</td><td>On EPA 1/21/05 letter (already listed in Table K-3)</td></tr>
<tr><td>AOC C-20-002</td><td>On EPA 1/21/05 letter (already listed in Table K-3)</td></tr>
<tr><td>AOC C-20-003</td><td>On EPA 1/21/05 letter (already listed in Table K-3)</td></tr>
<tr><td>AOC 43-001(b1)</td><td>On EPA 1/21/05 letter (already listed in Table K-3)</td></tr>
<tr><td>AOC C-51-001</td><td>On EPA 1/21/05 letter (already listed in Table K-3)</td></tr>
<tr><td>AOC C-51-002</td><td>On EPA 1/21/05 letter (already listed in Table K-3)</td></tr>
<tr><td>AOC 52-002(g)</td><td>On EPA 1/21/05 letter (should be listed in Table K-3)</td></tr>
<tr><td>AOC 63-002</td><td>On EPA 1/21/05 letter (already listed in Table K-3)</td></tr>
</table>
A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.</td></tr>
<tr><td>117</td><td>Attachment K</td><td>Tables K-1, K-3</td><td>Once NMED has determined that no further corrective action is necessary, a Class 3 permit modification should not be required to remove sites from Tables A and C of Module VIII. Sites not listed in Module VIII and for which NMED made a</td><td>Table K-1 should be revised by removing these sites and Table K-3 revised by adding these sites.
<table>
<tr><td>AOC 00-030(i)</td><td>Site was proposed for NFA in the VCA Completion Report for</td></tr>
</table></td></tr>
</table>

	Part/ Attachment	Section	Comment	Suggested Text Change		
			determination of NFA prior to the effective date of the Consent Order should be listed in Table K-3. Table K-1 contains sites that are not listed in Table A or Table C of Module VIII and which were determined to require no further action by NMED prior to the effective date of the Consent Order. These sites should not be listed in Table K-1, but should be listed in Table K-3, *Corrective Action Complete Without Controls*. These sites are identified within the suggested change column.			Consolidated Unit 00-003-99 and AOC 00-030(i). NMED approved the VCA Completion Report and concurred with NFA on January 30, 2002. Add to Table K-3 with corrective action completed date of 1/30/2002.
					AOC 21-030	NFA approved 6/21/04 as part of approval of Voluntary Corrective Action Report for SWMU 21-024(f) and AOCs C-21-015 and 21-030 (already listed in Table K-3)
					AOCs C-06-006, C-06-007, C-06-008, C-06-009, C-06-010, C-06-011, C-06-012, C-06-013, C-06-014, C-06-015, C-06-016, C-06-017, C-06-018, C-06-020, and C-06-021	These AOCs were proposed for NFA in the RFI Report for TA-6. NMED approved the RFI Report and concurred with NFA on March 14, 2000. Add to Table K-3 with corrective action completed date of 3/14/2000.
					AOCs 73-007, C-73-005(a), C-73-005(b), C-73-005(c), C-73-005(d),	NFA approved 3/28/01 as part of approval of RFI Report for Consolidated Unit 73-005-99. Add to Table K-3 with corrective

	Part/ Attachment	Section	Comment	Suggested Text Change
				<table><tr><td>C-73-005(e), and C-73-005(f),</td><td>action completed date of 3/28/01.</td></tr></table> A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.
118	Attachment K	Tables K-1, K-3	SWMUs that have been removed from Table C of Module VIII through a Class III permit modification prior to the effective date of the Consent Order are approved for NFA and require no controls and should be listed in Table K-3. Table K-1 contains sites that are listed in Table C.1 of Module VIII. These sites have been removed from Table C by NMED through a Class III permit modification. These sites should not be listed in Table K-1, but should be listed in Table K-3, *Corrective Action Complete Without Controls*. These sites are identified in the suggested change column.	Table K-1 should be revised by removing these sites. <table><tr><td>SWMU 03-032</td><td>Listed in Module VIII Table C.1, Class III permit modification effective 05-02-01 (already listed in Table K-3)</td></tr><tr><td>SWMU 03-045(i)</td><td>Listed in Module VIII Table C.1, Class III permit modification effective 05-02-01 (already listed in Table K-3)</td></tr></table> A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.
119	Attachment K	Table K-1	SWMUs that have not been removed from Tables A or C of Module VIII of the current LANL permit through a Class III permit modification should be included in Table K-1. Table K-1 does not contain several sites that have not previously been approved for NFA or received a certificate of completion. These sites are identified in the suggested change column.	Table K-1 should be revised by adding these sites. <table><tr><td>SWMU 03-029</td><td>Listed in Module VIII Table C (should be listed in Table K-1)</td></tr><tr><td>SWMU 16-032(c)</td><td>Listed in Module VIII Table C (should be listed in Table K-1)</td></tr><tr><td>SWMU 36-006</td><td>Listed in Module VIII Table A (should be listed in Table K-1)</td></tr></table> A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.
120	Attachment K	Table K-1	Several sites that were originally contained in the 1988 SWMU Report and listed in the original 1990	Table K-1 should be revised by removing these sites.

	Part/ Attachment	Section	Comment	Suggested Text Change	
			Module VIII were renumbered in the 1994 modification of Module VIII. The new numbers are the numbers used in the current version of Module VIII. The old numbers are no longer contained in Module VIII and should not be used in the Permit. Table K-1 contains sites that have been renumbered and are duplicates of other sites already listed in Table K-1. These sites are identified below, along with the numbers of the duplicate sites.	SWMU 00-002	1990 SWMU Report (Vol. 1, pg. 11) shows that this site was being renumbered from 00-002 to 61-006. SWMU 61-006 is included in Table K-1.
				SWMU 15-009(l)	The 1988 SWMU Report identified SWMU 15-009(k) as a septic tank having structure number 15-293. The 1990 SWMU Report (Vol. 1, pg. 36) noted that septic system 15-293 had never been constructed and proposed deleting SWMU 15-009(k). The 1990 SWMU Report (Vol. 1, pg. 27) also proposed adding two new septic system SWMUs in TA-15. These were designated as SWMU 15-009(k), which was associated with structure 15-67, and SWMU 15-009(l), which was associated with structure 15-00. Septic tank 15-67, however, was renumbered to structure 36-61 and was already designated as SWMU 36-006(b). Because the newly added SWMU 15-009(k) was a duplicate of SWMU 36-006(b), it was deleted and SWMU 15-009(l) (associated with 15-00) was renumbered as SWMU 15-009(k), which is listed in Table K-1.
				SWMU 15-012(c)	1990 SWMU Report (Vol. 1, pg. 15) shows that this site was being renumbered

	Part/ Attachment	Section	Comment	Suggested Text Change		
						from 15-012(c) to 15-014(m). SWMU 15-014(m) is included in Table K-3 and Module VIII Table A.1.
					SWMU 15-012(d)	1990 SWMU Report (Vol. 1, pg. 15) shows that this site was being renumbered from 15-012(d) to 15-014(k). SWMU 15-014(k) is included in Table K-1 and Module VIII Table A.
					SWMU 15-012(e)	1990 SWMU Report (Vol. 1, pg. 15) shows that this site was being renumbered from 15-012(e) to 15-014(l). SWMU 15-014(l) is included in Table K-1 and Module VIII Table A.
					SWMU 15-012(f)	1990 SWMU Report (Vol. 1, pg. 15) shows that this site was being renumbered from 15-012(f) to 15-014(i). SWMU 15-014(i) is included in Table K-1 and Module VIII Table A.
					SWMU 15-012(g)	1990 SWMU Report (Vol. 1, pg. 15) shows that this site was being renumbered from 15-012(g) to 15-014(j). SWMU 15-014(j) is included in Table K-1 and Module VIII Table A.
					AOC 36-009	1993 RFI Work Plan for Operable Unit 1093, which includes former TA-27, indicates that the bazooka impact area identified as SWMU 27-003 is the same as the mortar impact area identified as SWMU 36-009. 1994 RFI Work Plan

<table>
<tr><th></th><th>Part/ Attachment</th><th>Section</th><th>Comment</th><th>Suggested Text Change</th></tr>
<tr><td></td><td></td><td></td><td></td><td>
<table>
<tr><td></td><td>for Operable Unit 1130, which includes TA-36, indicates that SWMU 36-009 is being addressed in OU 1093 as SWMU 27-003. EPA’s 1994 modification to Module VIII drops SWMU 36-009 because it is the same site as SWMU 27-003. SWMU 27-003 is listed in Table K-1.</td></tr>
</table>
A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.
</td></tr>
<tr><td>121</td><td>Attachment K</td><td>Table K-1</td><td>Several SWMUs in Table K-1 were never identified by EPA as corrective action units or were deleted as corrective action units by EPA in the 1994 modification to Module VIII. SWMUs 21-016(d) and 21-016(e) were listed in May 1990 Module VIII but were not included in 1994 modification of Module VIII.

Table K-1 contains SWMUs that were proposed for deletion in the 1990 SWMU Report and which were subsequently removed from Module VIII by EPA in the 1994 modification to Module VIII. These sites are identified in the suggested change column.</td><td>Table K-1 should be revised by removing these sites.
<table>
<tr><td>SWMU 21-016(d)</td><td>SWMU 21-016(d) is identified in 1988 SWMU Report as a sump associated with MDA T (SWMU 21-016[a]). The 1990 SWMU Report (Vol. 1, pg. 36) proposes deleting this SWMU since it has been incorporated into SWMU 21-016(a) and the TA-21 section of the report (Vol. 2) does not list this site. The NMED-approved Investigation Work Plan for MDA T indicates that the sump comprising former SWMU 21-016(d) is part of SWMU 21-016(a). SWMU 21-016(a) is listed in Table K-1.</td></tr>
<tr><td>SWMU 21-016(e)</td><td>SWMU 21-016(e) is identified in 1988 SWMU Report as a sump associated with MDA T (SWMU 21-016[a]). The 1990 SWMU Report (Vol. 1, pg. 36) proposes deleting this SWMU since it has been incorporated into SWMU 21-016(a) and the TA-21 section of the report (Vol. 2) does not list this site. The NMED-approved Investigation Work Plan for MDA T indicates that the sump comprising former SWMU 21-016(e) is part of SWMU 21-016(a). SWMU 21-016(a) is listed in Table K-1.</td></tr>
</table>
</td></tr>
</table>

	Part/ Attachment	Section	Comment	Suggested Text Change
				A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.
122	Attachment K	Table K-1	Several sites listed in Table K-1 were identified in the 1990 SWMU Report but were subsequently renumbered or incorporated into other SWMUs. Although identified in the 1990 SWMU Report, these sites were not listed in Module VIII by EPA. The actual or potential releases associated with these sites have been incorporated into other sites that are listed in Table K-1. Therefore, including these sites in Table K-1 would be duplicative and is not necessary. The revised SWMU descriptions and designations have been included in work plans or other documents approved by EPA or NMED. The original designations contained in the 1990 SWMU Report were not included by EPA in the 1994 modification to Module VIII and are not in the current version of Module VIII. These sites are identified in the suggested change column.	Table K-1 should be revised by removing these sites. SWMU 35-010(misc): SWMU 35-010(misc) has been renumbered to AOC 35-010(e). The 1990 SWMU Report identifies five SWMUs, 35-010(a-d) and 35-010(misc), as being associated with the TA-35 sanitary lagoon and sand filter. SWMU 35-010(misc) is identified as being associated with Structure TA-35-215, which is the sand filter. In the 1992 RFI Work Plan for OU 1129, which includes TA-35, these five sites are identified as SWMUs 35-010(a-e). SWMU 35-101(e) is identified as the discharge headwall, which is part of structure TA-35-215, and is the same site as SWMU 35-010(misc). The 1994 modification to Module VIII contained SWMUs 35-010(a-d). The discharge from the sand filter (formerly SWMU 35-010[misc]) is currently identified as AOC 35-010(e) and is listed in Table K-1. SWMU 49-001(misc): SWMU 49-001(misc) has been incorporated into SWMUs 49-001(a-g). The 1990 SWMU Report identifies SWMUs 49-001(a-g) and 49-001(misc) as comprising MDA AB. No descriptive information is provided concerning SWMU 49-001(misc). The 1992 RFI Work Plan for OU 1144, which includes TA-49, notes that SWMU 49-001(misc) is a nonspecific category mentioned in the 1990 SWMU Report that is addressed

	Part/ Attachment	Section	Comment	Suggested Text Change		
						under SWMUs 49-001(a-g). SWMUs 49-001(a-g) are currently listed in Module VIII and are listed in Table K-1.
					SWMU 50-011(misc)	SWMU 50-011(misc) has been incorporated into SWMU 50-011(a). The 1990 SWMU Report identifies SWMUs 50-011(a-b) and 50-011(misc) as comprising septic systems at TA-50. No descriptive information is provided concerning SWMU 50-011(misc), but a referenced historical document indicates that it is the leach field for a decommissioned septic system. SWMU 50-011(a) is described as a septic tank, manhole, and distribution box. The 1992 RFI Work Plan for OU 1147, which includes TA-50, describes SWMU 50-011(a) as including the septic tank, manhole, distribution box, and leach field. Therefore, the leach field (50-011[misc]) has been incorporated into the septic system (50-011[a]). SWMU 50-011(a) is currently listed in Module VIII and Table K-1.
					SWMU 54-007(misc)	SWMU 54-007(misc) is identified in the 1990 SWMU Report as one of the SWMUs associated with septic systems in TA-54, along with SWMUs 54-007(a-e). SWMUs 54-007(a-e) were described as the septic systems associated with five septic tanks at TA-54. No descriptive information or structure number was provided for SWMU 54-007(misc). SWMUs 54-007(a-d) were listed by EPA in Module VIII. The investigations and

	Part/ Attachment	Section	Comment	Suggested Text Change
				voluntary corrective actions conducted at these sites have considered releases from all components of these septic systems (i.e., tanks, drain lines, outfalls). Therefore, whatever component of the five septic systems was represented by SWMU 54-007(misc) has been incorporated into SWMUs 54-007(a-d) and AOC 54-007(e). SWMUs 54-007(a) and (d) are listed in Table K-1 and SWMUs 54-007(b) and (c) and AOC 54-0047(e) have been approved for NFA and are listed in Table K-3. A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.
123	Attachment K	Table K-1	SWMU 16-009(b) was incorporated into SWMU 16-019, which is listed in Table K-1. SWMU 16-009(b) was deleted from Module VIII when EPA modified Module VIII in 1994.	Table K-1 lists SWMU 16-009(b), but this site was incorporated into SWMU 16-019 and deleted as a separate site. Table A of the May 1990 version of Module VIII lists SWMUs 16-009(a) and 16-009(b). The 1990 SWMU Report proposes deleting SWMU 16-009(b) because it is a burn area that was part of Material Disposal Area R and addressed in SWMU 16-019. When EPA modified Module VIII in 1994, SWMU 16-009(b) was deleted from Table A. Table K-1 should be revised by removing SWMU 16-009(b). A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.
124	Attachment K	Table K-1	Table K-1 lists two SWMUs that are permitted units actively managing hazardous wastes and that are listed in Table J-1. Units should not be listed in both Table J-1 and Table K-1. These sites are identified in the suggested change column.	Table K-1 should be revised by removing these sites. SWMU 16-010(c) — SWMU 16-010(c) is a flash pad used for op explosives and is designated as structure 16- in Table J-1 of the draft Permit. SWMU 16-010(d) — SWMU 16-010(d) is a burn tray used for op explosives and is designated as structure 16- in Table J-1 of the draft Permit.

	Part/ Attachment	Section	Comment	Suggested Text Change
				A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.
125	Attachment K	Table K-1	Table K-1 lists AOCs and SWMUs that are closed units not in post-closure care and that are listed in Table J-3. Units should not be list in both Table J-3 and Table K-1. These sites are identified in the suggested change column. Please delete these from Table K-1	Table K-1 should be revised by removing these sites. SWMU 16-008(b) — SWMU 16-008(b) is a former surface impoundment. This unit was closed under RCRA and is listed in Table J-3 as TA-16 Surface Impoundment. SWMU 16-010(b) — SWMU 16-010(b) is a former flash pad used for open burning of waste explosives that is designated as structure 16-387. This unit was closed under RCRA and is listed in Table J-3 as TA-16-387. SWMU 16-010(e) — SWMU 16-010(e) is a filter vessel formerly used for open burning of waste explosives that is designated as structure 16-401. This unit was closed under RCRA and is listed in Table J-3 as TA-16-401. SWMU 16-010(f) — SWMU 16-010(f) is a filter vessel formerly used for open burning of waste explosives that is designated as structure 16-406. This unit was closed under RCRA and is listed in Table J-3 as TA-16-406. SWMU — SWMU 16-010(j) is a

<table>
<tr><th></th><th>Part/ Attachment</th><th>Section</th><th>Comment</th><th>Suggested Text Change</th></tr>
<tr><td></td><td></td><td></td><td></td><td>
<table>
<tr><td>16-010(j)</td><td>former filter bed. This unit was closed under RCRA and is listed in Table J-3 as TA-16-394.</td></tr>
<tr><td>SWMU 16-018</td><td>SWMU 16-018 is a former waste pile (MDA P). This unit was closed under RCRA and is listed in Table J-3 TA-16, Material Disposal Area P.</td></tr>
<tr><td>SWMU 40-003(a)</td><td>SWMU 40-003(a) is a former explosive scrap burn pile. This unit was closed under RCRA and is listed in Table J-3 as TA-40, Scrap Detonation Unit.</td></tr>
<tr><td>AOC 54-009</td><td>AOC 54-009 consists of former waste treatment tanks. This unit was closed under RCRA and is listed in Table J-3 as TA-54-L, Bldg. 35, Storage/Treatment Tanks (4).</td></tr>
</table>
A summary of the requested changes to TablesKP-1, K-2, and K-3 is included with this document as Appendix 4.
</td></tr>
<tr><td>126</td><td>Attachment K</td><td>Table K-3</td><td>Some of the AOCs listed in Table K-3 do not have an entry for corrective action completed date. These AOCs were approved for NFA by NMED prior to the effective date of the Consent Order. The document approval date should be used as the corrective action completed date for AOCs.

These sites are identified in the suggested change column, along with documents where NFA was approved.</td><td>Table K-3 should be revised by incorporating the changes indicated below.
<table>
<tr><td>AOC 00-030(i)</td><td>Site was proposed for NFA in the VCA Completion Report for Consolidated Unit 00-003-99 and AOC 00-030(i). NMED approved the VCA</td></tr>
</table>
</td></tr>
</table>

	Part/ Attachment	Section	Comment	Suggested Text Change
				<table><tr><td></td><td>Completion Report and concurred with NFA on January 30, 2002. Add corrective action completed date of 1/30/2002.</td></tr><tr><td>AOCs C-06-003, C-06-006, C-06-007, C-06-008, C-06-009, C-06-010, C-06-011, C-06-012, C-06-013, C-06-014, C-06-015, C-06-016, C-06-017, C-06-018, C-06-020, and C-06-021</td><td>These AOCs were proposed for NFA in the RFI Report for TA-6. NMED approved the RFI Report and concurred with NFA on March 14, 2000. Add corrective action completed date of 3/14/2000.</td></tr><tr><td>AOCs 73-007, C-73-005(a), C-73-005(b), C-73-005(c), C-73-005(d), C-73-005(e), and C-73-005(f),</td><td>These AOCs were proposed for NFA in the RFI Report for Consolidated Unit 73-005-99. NMED approved the RFI Report and concurred with NFA on March 28, 2001. Add corrective action completed date of 3/28/2001</td></tr></table> A summary of the requested changes to Tables K-1, K-2, and

	Part/ Attachment	Section	Comment	Suggested Text Change
				K-3 is included with this document as Appendix 4.
127	Attachment K	Table K-3	SWMUs 35-006 and 35-011(a) were removed from Table A of Module VIII prior to the effective date of the Consent Order and should be identified as having corrective action complete without controls.	SWMUs 35-006 and 35-011(a) were removed from Table A of Module VIII by a Class III permit modification approved May 2, 2001. Table K-3 should be revised by adding SWMUs 35-006 and 35-011(a) with corrective action completed dates of 5/2/2001. A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.
128	Attachment K	Table K-1	Table K-1 contains sites that are also listed in Table J-1. Table J-1 contains permitted units. New releases from permitted units are subject to corrective action under the Permit rather than under the Consent Order. Under the conditions of the draft Permit, these permitted units are subject to clean closure, which would address historical releases from these units. Because new and historical releases from these units will be addressed under the Permit, these units should not also be identified as corrective action units under the Consent Order. This would lead to potentially conflicting requirements, and is unnecessarily confusing. These sites are identified in the suggested change column, along with the corresponding Table J-1 permitted unit.	Table K-1 should be revised by removing these units. SWMU 54-001(a) (Structure 215) — Listed in Table J-1 as part of TA-54 Area L Outdoor Pad. AOC 54-001(b) (Structure 31) — Listed in Table J-1 as part of TA-54 Area L Outdoor Pad. AOC 54-001(d) (Structure 39) — Listed in Table J-1 as part of TA-54 Area L Outdoor Pad. AOC 54-001(e) (Structure 32) — Listed in Table J-1 as part of TA-54 Area L Outdoor Pad. AOC 54-002 (Structure 216) — Listed in Table J-1 as part of TA-54 Area L Outdoor Pad. AOC 54-015(a) (Shed 8) — Listed in Table J-1 as TA-54 Area G Storage Shed 8. AOC 54-015(c) (Pad 1) — Listed in Table J-1 as part of TA-54 Area G Pad 1.

	Part/ Attachment	Section	Comment	Suggested Text Change
				<table><tr><td>AOC 54-015(d) (Pad 2)</td><td>Now part of Pad 10, listed in Table J-1 as TA-54 Area G Pad 10.</td></tr><tr><td>AOC 54-015(e) (Pad 3)</td><td>Listed in Table J-1 as part of TA-54 Area G Pad 3.</td></tr><tr><td>AOC 54-015(f) (Pad 4)</td><td>Now part of Pad 10, listed in Table J-1 as TA-54 Area G Pad 10.</td></tr><tr><td>AOC 54-015(j) (Dome 49)</td><td>Listed in Table J-1 as part of TA-54 Area G Pad 5.</td></tr></table> A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.
129	Attachment K	Tables K-1, K-2, K-3	Many of the unit type descriptions contained in Tables K-1, K-2, and K-3 appear to be outdated. LANL has revised and updated these descriptions to reflect current site status and to provide better consistency of descriptions of similar sites.	Updated unit type descriptions for those units that do not match current LANL descriptions are included with this document as Appendix 4.
130	Attachment M		Based on the general comment on Financial Assurance above, the Permittees object to the inclusion of cost estimates for financial assurance and request that this section be deleted.	Delete Attachment M
131	Attachment N		During the negotiations, the Permittees indicated that a number of the figures in Attachment N needed to be updated and replaced with new figures to be provided by the Permittees. Some of the changes are needed to be consistent with the closure plans and some are clarifications or updates to the figures. The updated figures identified below are included in Appendix 5, attached to these comments.	

	Part/ Attachment	Section	Comment	Suggested Text Change
132	Attachment N	Figure 5	Update of Figure 5 clarifies access control via barricades placed on roadways versus access gates.	Updated figure is included with this document as part of Appendix 5.
133	Attachment N	Figure 6	Update of Figure 6 removes the added area at the TA-50-69 Outdoor Pad, because the request to permit this area was withdrawn by the Permittees.	Updated figure is included with this document as part of Appendix 5.
134	Attachment N	Figure 7	Update of Figure 7 cleans up overlapping text and clarifies labeling on structures.	Updated figure is included with this document as part of Appendix 5.
135	Attachment N	Figure 8	Update of Figure 8 creates consistency with other figures that contain the TA-54 Area L Outdoor Pad within the Permit.	Updated figure is included with this document as part of Appendix 5.
136	Attachment N	Figure 9	Update of Figure 9 includes a correction of the boundary for the TA-54-38 West Indoor permitted unit.	Updated figure is included with this document as part of Appendix 5.
137	Attachment N	Figure 10	Updated Figure 10 removes the added area at the TA-55 Outdoor Pad, because the request to permit this area was withdrawn by the Permittees.	Updated figure is included with this document as part of Appendix 5.
138	Attachment N	Figure 11	Updated Figure 11 depicts current Facility boundary.	Updated figure is included with this document as part of Appendix 5.
139	Attachment N	Figure 13	Updated Figure 13 removes sample areas that are only required for the figures within the closure plans.	Updated figure is included with this document as part of Appendix 5.
140	Attachment N	Figure 14	Updated Figure 14 removes sample areas that are only required for the figures within the closure plans.	Updated figure is included with this document as part of Appendix 5.
141	Attachment N	Figure 15	Updated Figure 15 removes sample areas that are only required for the figures within the closure plans.	Updated figure is included with this document as part of Appendix 5.
142	Attachment N	Figure 16	Updated Figure 16 depicts current Facility boundary.	Updated figure is included with this document as part of Appendix 5.
143	Attachment N	Figure 17	Updated Figure 17 removes outlines of units and structures that no longer exist at the site.	Updated figure is included with this document as part of Appendix 5.

	Part/ Attachment	Section	Comment	Suggested Text Change
144	Attachment N	Figure 22	Updated Figure 22 depicts current Facility boundary.	Updated figure is included with this document as part of Appendix 5.
145	Attachment N	Figure 23	Updated Figure 23 removes the added area at the TA-50-69 Outdoor Pad, because the request to permit this area was withdrawn by the Permittees.	Updated figure is included with this document as part of Appendix 5.
146	Attachment N	Figure 24	Updated Figure 24 depicts current Facility boundary.	Updated figure is included with this document as part of Appendix 5.
147	Attachment N	Figure 26	Updated Figure 26 cleans up overlapping text and clarifies labeling on structures.	Updated figure is included with this document as part of Appendix 5.
148	Attachment N	Figure 28	Updated Figure 28 clarifies the boundary of the unit and removes illustration of the storage configuration which is dynamic.	Updated figure is included with this document as part of Appendix 5.
149	Attachment N	Figure 29	Updated Figure 29 clarifies the boundary of the unit and removes illustration of the storage configuration which is dynamic.	Updated figure is included with this document as part of Appendix 5.
150	Attachment N	Figure 30	Updated Figure 30 clarifies the boundary of the unit and removes illustration of the storage configuration which is dynamic.	Updated figure is included with this document as part of Appendix 5.
151	Attachment N	Figure 31	Updated Figure 31 clarifies the boundary of the unit and removes clarifies the current configuration of characterization trailers.	Updated figure is included with this document as part of Appendix 5.
152	Attachment N	Figure 32	Updated Figure 32 clarifies the boundary of the unit and removes illustration of the storage configuration which is dynamic.	Updated figure is included with this document as part of Appendix 5.
153	Attachment N	Figure 33	Updated Figure 33 clarifies the boundary of the unit and removes illustration of the storage configuration which is dynamic.	Updated figure is included with this document as part of Appendix 5.
154	Attachment N	Figure 34	Updated Figure 34 removes the illustration of the storage configuration which is dynamic.	Updated figure is included with this document as part of Appendix 5.
155	Attachment N	Figure 35	Updated Figure 35 removes the illustration of the storage configuration which is dynamic.	Updated figure is included with this document as part of Appendix 5.

	Part/ Attachment	Section	Comment	Suggested Text Change
156	Attachment N	Figure 36	Updated Figure 36 clarifies features around the unit and removes illustration of the storage configuration which is dynamic.	Updated figure is included with this document as part of Appendix 5.
157	Attachment N	Figure 37	Updated Figure 37 includes the entire areas requested for the TA-54-38 West Indoor and TA-54-38 Outdoor Pad permitted units.	Updated figure is included with this document as part of Appendix 5.
158	Attachment N	Figure 38	Updated Figure 38 depicts the current Facility boundary.	Updated figure is included with this document as part of Appendix 5.
159	Attachment N	Figure 39	Updated Figure 39 includes TA-55-185 as a permitted unit.	Updated figure is included with this document as part of Appendix 5.
160	Attachment N	Figure 47	Updated Figure 47 corrects the reagent transfer device venting path.	Updated figure is included with this document as part of Appendix 5.
161	Attachment N	Figure 48	Updated Figure 48 makes corrections to the paths for the vacuum trap venting and the compressed air.	Updated figure is included with this document as part of Appendix 5.
162	Attachment N	Figure 49	Updated Figure 49 depicts the current Facility boundary.	Updated figure is included with this document as part of Appendix 5.

DOE/LANS COMMENTS ON THE REVISED DRAFT PERMIT FOR LOS ALAMOS NATIONAL LABORATORY

PART 2

	Part/ Attachment	Section	Comment	Suggested Text Change
163	Part 1	1.16	Administrative – Suggested text change corrects a typographical error.	Section 1.16, Page 31, Line 8: Change the reference to Attachment N within in the section from “Figures 2, 3, and 4” to “to Figures 1, 2, and 3”.
164	Part 2	2.5	Administrative – Suggested text change corrects a typographical error.	Section 2.5, Page 44, Lines 34-35: Change the reference to Attachment N within the section from “Figures 5 through 11” to “Figures 4 through 10”.
165	Part 2	2.8	Administrative – Suggested text change corrects a typographical error.	Section 2.8, Page 47, Line 21: Change the reference to Attachment N within the section from “Figures 12, 15, 21, 23, and 37” to “Figures 11, 16, 22, 24, and 38”.
166	Part 6	6.1.1, 6.1.1.1, 6.1.1.2, 6.1.1.3, 6.1.2, 6.1.3, 6.1.3.1, 6.1.3.2, 6.1.3.3	Administrative – Typographical error on section numbers	Pages 84-86: Change section numbers 6.1.1, 6.1.1.1, 6.1.1.2, 6.1.1.3, 6.1.2, 6.1.3, 6.1.3.1, 6.1.3.2, and 6.1.3.3 to 6.3.1, 6.3.1.1, 6.3.1.2, 6.3.1.3, 6.3.2, 6.3.3, 6.3.3.1, 6.3.3.2, and 6.3.3.3.
167	Part 6	6.1	Administrative – Suggested text change corrects a typographical error.	Section 6.1, Page 81, Line 16: Change the reference to Attachment N within the section from “Figure 16” to “Figure 17”.
168	Part 6	6.1.2	Administrative – Suggested text change corrects a typographical error.	Section 6.1.2, Page 85, Line 19: Change the reference to Attachment N within the section from “Figure 17” to “Figure 18”.
169	Part 9	9.4.7.1.ii.b	Administrative – Suggested text change corrects a typographical error.	Section 9.4.7.1.ii.b, Page 102, Lines 22-27: Change the references to Attachment G figures within numbers 2 and 3 as follows: • Line 22 should change from “Figures G.2-1 and G.3-1” to “Figures G.2-2 and G.3-1”. • Line 24 should change from “Figures G.2-1 and G.3-1” to “Figure G.2-1”.

170	Attachment A	Table of Contents and Sections within Attachment	The section numbers within Attachment A do not appear consistent. Each of the Technical Areas represented within the attachment should have it's own major section. Suggested change realigns the sections for consistency.	Suggested changes are illustrated in a revised Table of Contents for Attachment A included with this document as Appendix 7.
171	Attachment A	A.1.1	Administrative – Suggested text change corrects a typographical error.	Section A.1.1, Page 4, Line 11: Change the reference to Attachment N within the section from "Figure 13" to "Figure 12".
172	Attachment A	A.1.2	Administrative – Suggested text change corrects a typographical error.	Section A.1.2, Page 4, Line 17: Change the reference to Attachment N within the section from 'Figure 14" to "Figure 13".
173	Attachment A	A.1.5	Administrative – Suggested text change corrects a typographical error.	Section A.1.5, Page 5, Line 19: Change the reference to Attachment N within the section from "Figure 5" to "Figure 4".
174	Attachment A	A.2	Administrative – Suggested text change corrects a typographical error.	Section A.2: Change the references to Attachment N within the section as follows: • Page 6, Line 38 should be changed from "Figure 15" to "Figure 16". • Page 7, Line 1 should be changed from 'Figure 16" to "Figure 17".
175	Attachment A	A.2.1	Administrative – Suggested text change corrects a typographical error.	Section A.2.1, Page 7, Line 17: Change the reference to Attachment N within the section from "Figure 19" to "Figure 20".
176	Attachment A	A.2.2	Administrative – Suggested text change corrects a typographical error.	Section A.2.2, Page 8, Line 3: Change the reference to Attachment N within the section from "Figure 20" to "Figure 21".
177	Attachment A	A.2.3	Administrative – Suggested text change corrects a typographical error.	Section A.2.3, Page 8, Line 17: Change the reference to Attachment N within the section from "Figure 6" to "Figure 5".

178	` Attachment A	A.3	Administrative – Suggested text change corrects a typographical error.	Section A.3, Page 8, Line 26: Change the reference to Attachment N within the first paragraph of the section from “Figure 21” to “Figure 22”.
179	Attachment A	A.3	Administrative – Suggested text change corrects a typographical error.	Section A.3, Page 10, Line 3: Change the reference to Attachment N within the first paragraph of the page from “Figure 5” to “Figure 6”.
180	Attachment A	A.3.1	Administrative – Suggested text change corrects a typographical error.	Section A.3.1, Page 11, Line 10: Change the reference to Attachment N within the section from “Figure 22” to “Figure 23”.
181	Attachment A	A.3.2	Administrative – Suggested text change corrects a typographical error.	Section A.3.2, Page 11, Line 21: Change the reference to Attachment N within the section from “Figure 22” to “Figure 23”.
182	Attachment A	A.4	Administrative – Suggested text change corrects a typographical error.	Section A.4, Pages 11-12, lines 35 and 1: Change the references within the first paragraph of the section as follows: • Change “Figure 23” in Line 35 to “Figure 24”. • Change “Figure 24” in Line 1 to “Figure 25”.
183	Attachment A	AttachA.4	Suggested change corrects a typographical error.	Section A.4, Page 12, Line 20: Delete “A.6.1” at the end of the section.
184	Attachment A	AttachA.4.1	Administrative – Suggested text change corrects a typographical error.	Section A.4.1, Page 12, Line 23: Delete “and” between the words canopy and 216.
185	Attachment A	A.4.1	Administrative – Suggested text change corrects a typographical error.	Section A.4.1, Page 12, Line 24: Change the reference to Attachment N within the section from “Figure 25” to “Figure 26”.
186	Attachment A	A.4.1.1	Administrative – Suggested text change corrects a typographical error.	Section A.4.1.1, Page 13, Line 2: Change the reference to Attachment N within the section from “Figure 25” to “Figure 26”.
187	Attachment A	A.4.1.2	Administrative – Suggested text change corrects a typographical error.	Section A.4.1.2, Page 13, Line 16: Change the reference to Attachment N within the section from “Figure 25”

				to “Figure 26”.
188	Attachment A	A.4.1.3	Administrative – Suggested text change corrects a typographical error.	Section A.4.1.3, Page 13, Line 25: Change the reference to Attachment N within the section from “Figure 25” to “Figure 26”.
189	Attachment A	A.4.1.4	Administrative – Suggested text change corrects a typographical error.	Section A.4.1.4, Page 14, Line 9: Change the reference to Attachment N within the section from “Figure 25” to “Figure 26”.
190	Attachment A	A.4.1.5	Administrative – Suggested text change corrects a typographical error.	Section A.4.1.5, Page 14, Line 22: Change the reference to Attachment N within the section from “Figure 25” to “Figure 26”.
191	Attachment A	A.4.1.6	Administrative – Suggested text change corrects a typographical error.	Section A.4.1.6, Page 15, Line 2: Change the reference to Attachment N within the section from “Figure 25” to “Figure 26”.
192	Attachment A	A.4.1.7	Administrative – Suggested text change corrects a typographical error.	Section A.4.1.7, Page 15, Line 13: Change the reference to Attachment N within the section from “Figure 25” to “Figure 26”.
193	Attachment A	A.4.1.8	Administrative – Suggested text change corrects a typographical error.	Section A.4.1.8, Page 15, Line 32: Change the reference to Attachment N within the section from “Figure 25” to “Figure 26”.
194	Attachment A	A.4.1.9	Administrative – Suggested text change corrects a typographical error.	Section A.4.1.9, Page 16, Line 4: Change the reference to Attachment N within the section from “Figure 25” to “Figure 26”.
195	Attachment A	A.4.2	Administrative – Suggested text change corrects a typographical error.	Section A.4.2, Page 16, Line 22: Change the reference to Attachment N within the section from “Figure 26” to “Figure 27”.
196	Attachment A	A.4.2.1	Administrative – Suggested text change corrects a typographical error.	Section A.4.2.1, Page 16, Line 32: Change the reference to Attachment N within the section from “Figure 27” to ‘Figure 28”.
197	Attachment A	A.4.2.1	Suggested deletion corrects an editorial error possibly created	Section A.4.2.1, Page 17, Lines 4-5: Delete the sentence: “The interior floor perimeter of each dome is

			during the rearrangement of the section from the previous section. The concrete ring-wall that actually exists at the unit is described in the sentence before. There are no asphalt curbs within the unit.	surrounded with a minimum 6-inch-wide asphalt curb.”
198	Attachment A	A.4.2.2	Administrative – Suggested text change corrects a typographical error.	Section A.4.2.2, Page 17, Line 27: Change the three references to Attachment N within the section from “Figure 28” to “Figure 29”.
199	Attachment A	A.4.2.3	Administrative – Suggested text change corrects a typographical error.	Section A.4.2.3, Page 19, Line 4: Change the reference to Attachment N within the section from “Figure 29” to “Figure 30”.
200	Attachment A	A.4.2.4	Administrative – Suggested text change corrects a typographical error.	Section A.4.2.4, Page 19, Line 14: Change the reference to Attachment N within the section from “Figure 30” to “Figure 31”.
201	Attachment A	A.4.2.4	Suggested change corrects an editorial error that creates confusion within the sentence.	Section A.4.2.4, Page 21, Line 2: Add “and” between the words stock and empty within the first sentence of the page.
202	Attachment A	A.4.3	Administrative – Suggested text change corrects a typographical error.	Section A.4.3, Page 21, Line 7: Change the reference to Attachment N within the section from “Figure 31” to “Figure 32”.
203	Attachment A	A.4.3.1	Administrative – Suggested text change corrects a typographical error.	Section A.4.3.1, Page 21, Line 15: Change the reference to Attachment N within the section from “Figure 31” to “Figure 32”.
204	Attachment A	A.4.3.2	Administrative – Suggested text change corrects a typographical error.	Section A.4.3.2, Page 21, Line 25: Change the two references to Attachment N within the section from “Figure 31” to “Figure 32”.
205	Attachment A	A.4.4	Administrative – Suggested text change corrects a typographical error.	Section A.4.4, Page 22, Line 11: Change the reference to Attachment N within the section from “Figure 32” to “Figure 33”.

206	Attachment A	A.4.4.1	Administrative – Suggested text change corrects a typographical error.	Section A.4.4.1, Page 22, Line 15: Change the reference to Attachment N within the section from “Figure 32” to “Figure 33”.
207	Attachment A	A.4.4.2	Administrative – Suggested text change corrects a typographical error.	Section A.4.4.2, Page 22, Line 19: Change the reference to Attachment N within the section from “Figure 32” to “Figure 33”.
208	Attachment A	A.4.5	Administrative – Suggested text change corrects a typographical error.	Section A.4.5, Page 22, Line 27: Change the reference to Attachment N within the section from “Figure 33” to “Figure 34”.
209	Attachment A	A.4.6	Administrative – Suggested text change corrects a typographical error.	Section A.4.6, Page 22, Line 34: Change the reference to Attachment N within the section from “Figure 34” to “Figure 35”.
210	Attachment A	A.4.7	Administrative – Suggested text change corrects a typographical error.	Section A.4.7, Page 23, Line 31: Change the reference to Attachment N within the section from “Figure 35” to “Figure 36”.
211	Attachment A	A.5	Administrative – Suggested text change corrects a typographical error.	Section A.5, Page 24, Line 2: Change the reference to Attachment N within the section from “Figure 36” to “Figure 37”.
212	Attachment A	A.5.1	Administrative – Suggested text change corrects a typographical error.	Section A.5.1, Page 24, Line 7: Change the reference to Attachment N within the section from “Figure 36” to “Figure 37”.
213	Attachment A	A.5.2	Administrative – Suggested text change corrects a typographical error.	Section A.5.2, Page 24, Line 22: Change the two references to Attachment N within the section from “Figure 36” to “Figure 37”.
214	Attachment A	A.5.2	Administrative – Suggested text change corrects a typographical error.	Section A.5.2, Page 24, Line 27: Change the reference to Attachment N within the section from “Figure X” to “Figure 37”.
215	Attachment A	A.5.3	Administrative – Suggested text change corrects a typographical error.	Section A.5.3, Page 25, Line 24: Change the reference to Attachment N within the section from “Figures 8, 9, and 10” to “Figures 7, 8, and 9”.

216	Attachment A	A.5.4	Suggested changes are editorial in nature and create greater consistency within the draft Permit. Changes bring Attachment A into alignment with descriptions in Attachment D. They add information as to the locations of fire alarm pull boxes, smoke detectors, and evacuation buttons as well as additional information about communications while present at the TA-54, Area L and Area G permitted units.	On page 25, lines 27-35, modify the text to read as follows: Area L is equipped with an audible alarm system to alert personnel of a fire or the need to evacuate the area. ~~This~~ These alarms can be activated by pulling a fire alarm pull box or by pushing the evacuation alarm button. The~~se~~ fire alarm pull boxes are located in Dome 215 ~~alarms are located throughout Area L~~ and are connected to the Los Alamos ~~County~~ Fire Department (LA~~C~~FD) through the Facility's central alarm system at all times. Evacuation alarms are located adjacent to the fenceline crash gates and other locations in Area L (see Attachment D, Table D-1). In addition to the alarms there are numerous telephones located in and around the structures within Area L. These telephones ensure that personnel can contact on-site and Facility emergency personnel at all times. Many of these telephones also serve as emergency paging phones so that information can be announced throughout the area. Alphanumeric pagers are also distributed to workers at Area L. Employees can be notified of an emergency situation and appropriate response actions through the use of a text message sent on the emergency alpha-numeric pagers. The emergency paging system can be utilized to alert workers of an emergency situation as well as appropriate response actions. On page 26, lines 13-30, modify the text to read as follows: The alarms can be activated by pulling a fire alarm or by pushing the evacuation alarm button. Fire alarms~~,~~and evacuation alarms~~, and strobe lights~~ are in place at strategic locations to alert personnel of emergency conditions. The~~se~~ fire alarms are located throughout Area G and are connected to the LA~~C~~FD through the Facility's central alarm system at all times. Flame or smoke detection equipment is located within structures TA-54-226, TA-54-229, TA-54-230, TA-54-231, and TA-54-232. Security personnel and LAFD are notified upon activation of the flame or smoke detectors. ~~Personnel working in Area G also carry pagers, cellular telephones, or two-way radios. Emergency paging telephones are in place so that information can be announced throughout the area. This equipment ensures that personnel can contact on-site and Facility emergency personnel at all times. Windsocks are at strategic locations to indicate wind direction and strength. PPE and emergency equipment supplies are stored at various locations throughout Area G. In addition, essential information for emergency personnel is located at the main gate to Area G in the event of an~~

				~~emergency after normal working hours or if Area G personnel are unavailable. There are different types of monitoring equipment located at the Area G CSUs that are used to qualitatively and quantitatively evaluate airborne contaminants. Alarms and strobe lights warn personnel when airborne concentrations exceed preset limits.~~ Fire control equipment is located throughout Area G. This equipment includes ABC-rated or BC rated ~~, water and carbon dioxide~~ fire extinguishers, dry-chemical fire suppression systems, ~~fire blankets,~~ and several fire hydrants. Trained personnel can use the fire extinguishers ~~and fire blankets~~ to extinguish small, nonchemical fires. For larger fires, security personnel and the LA~~C~~FD are alerted. ~~Eyewash stations, showers, and other first aid and decontamination equipment are maintained at various locations within Area G.~~ Personnel working in Area G also carry alphanumeric pagers, cellular phones, or two-way radios. Emergency paging telephones are in place so that information can be announced throughout the area. This equipment ensures that personnel can contact on-site and Facility emergency personnel at all times. Windsocks are at strategic locations to indicate wind direction and strength. PPE and emergency equipment supplies are stored a various locations throughout Area G. There are different types of monitoring equipment located at the Area G CSUs that are used to qualitatively and quantitatively evaluate airborne contaminants. Alarms and strobe lights warn personnel when airborne concentrations exceed preset limits.
217	Attachment A	A.6	Administrative – Suggested text change corrects a typographical error.	Section A.6, Page 28, Line 33: Change the reference to Attachment N within the section from “Figure 37” to “Figure 38”.
218	Attachment A	A.6.1	Administrative – Suggested text change corrects a typographical error.	Section A.6.1, Page 29, Line 8: Change the reference to Attachment N within the section from “Figure 38” to “Figure 40”.
219	Attachment A	A.6.2	Administrative – Suggested text change corrects a typographical error.	Section A.6.2, Page 29, Line 16: Change the reference to Attachment N within the section from “Figure 39” to “Figure 42”.
220	Attachment A	A.6.3	Administrative – Suggested text change corrects a typographical error.	Section A.6.3, Page 29, Line 23: Change the reference to Attachment N within the section from “Figure 40” to “Figure 41”.

221	Attachment A	A.6.4	Administrative – Suggested text change corrects a typographical error.	Section A.6.4, Page 29, Line 31: Change the reference to Attachment N within the section from “Figure 41” to “Figure 43”.
222	Attachment A	A.6.5	Administrative – Suggested text change corrects a typographical error.	Section A.6.5, Page 30, Line 3: Change the reference to Attachment N within the section from “Figure 42” to “Figure 44”.
223	Attachment A	A.6.6	Administrative – Suggested text change corrects a typographical error.	Section A.6.6, Page 30, Lines 10-11; Change the reference to Attachment N within the section from “Figure 44” to “Figure 45”.
224	Attachment A	A.6.7	Administrative – Suggested text change corrects a typographical error.	Section A.6.7, Page 30, Line 23: Change the reference to Attachment N within the section from “Figure 45” to “Figure 46”.
225	Attachment A	A.6.8	Administrative – Suggested text change corrects a typographical error.	Section A.6.8, Page 31, Line 20: Change the reference to Attachment N within the section from “Figure 46” to “Figure 47”.
226	Attachment A	A.6.8.1	Administrative – Suggested deletion removes reference to a figure that is in included within the draft Permit.	Section A.6.8.1, Page 32, Lines 18-19: Delete the sentence “Figure H-3 shows the dimensions of the evaporator glovebox tank component and its support structure.”
227	Attachment A	A.6.8.1	Administrative – Suggested deletion removes reference to a figure that is in included within the draft Permit.	Section A.6.8.1, Page 33, Lines 5-6: Delete the sentence “Figures H-4 and H-5 provide a legend and a piping and instrumentation diagram for the evaporator glovebox tank component.”
228	Attachment A	A.6.9	Administrative – Suggested text change corrects a typographical error.	Section A.6.9, Page 37, Line 15: Change the reference to Attachment N within the section from “Figure 47” to “Figure 48”.
229	Attachment A	A.6.10	Administrative – Suggested text change corrects a typographical error.	Section A.6.10, Page 37, Line 31: Change the reference to Attachment N within the section from “Figure 11” to “Figure 10”.
230	Attachment C	Section C.1.3.1	Administrative – Typographical Error	Section C.1.3.1, Page 13, Line 32: Change the reference to Section “C.3.2.3” to “C.3.2.4” in the final sentence

				of the section.
231	Attachment C	Section C.3.2.4	Suggested text change is consistent with operation of the unit and information presented in Attachment G.24.	Section C.3.2.4, Page 25, Lines 21-22: Add “and corrosivity” to the sentence that reads “This waste stream typically exhibits the hazardous characteristics of toxic metals.”
232	Attachment C	Table C-6	The waste descriptions included in Table C-6 of the draft Permit do not coincide with the descriptions of waste treated by open burning in Section C.1.3.2. Suggested changes bring the table into alignment with the descriptions in the waste analysis plan. Changes to the first row of the table coincide with the waste stream description for bulk solvent waste. The Permittees define this waste stream to only include HE and dimethyl sulfoxide, there would be no other Environmental Protection Agency Numbers other than D003 and D030. Changes to the second, fourth and fifth rows of the table add EPA Hazardous Waste Numbers from the table transmitted from the Permittees’ permit application which have been omitted but are allowed for acceptance at the open burning treatment units as outlined in Attachment B of the draft Permit (*Part B Permit*	Pages 59-62: Suggested changes are in Appendix 6, revised Table C-6.

			Application). Additional changes in the description in the second row limit the acceptance of this waste stream. Deletion of the sixth row of the table is recommended because solvent in de minimus quantities is not itself a waste stream. Solvents may be accepted at the open burning treatment units as part of the other waste streams as recommended by the suggested changes.	
233	Attachment C	Table C-12	The waste descriptions included in Table C-12 of the draft Permit do not coincide with the descriptions of waste treated by open burning in Section C.1.3.2. Suggested changes bring the table into alignment with the descriptions in the waste analysis plan. Changes to the first row of the table coincide with the waste stream description for bulk solvent waste. The Permittees define this waste stream to only include HE and dimethyl sulfoxide, there would be no EPA Hazardous Waste Numbers other than D003 and D030. Recommend deleting "solvents" from the waste	Pages 72-73: Suggested changes are in Appendix 6, revised Table C-12.

<table>
<tr><td></td><td></td><td></td><td>stream name to match the description in Section C.1.3.2.

Delete the row “HE Commercial Chemical Products” as this is not a waste stream that will be accepted at the open burning treatment units.

Change “Wet HE” to “HE Process Waste from Water Filtration” to match the description in Section C.1.3.2.

Delete the row “HE-Contaminated Liquid Acids, Bases, and/or Inorganic Salt Solutions” as this is not a waste stream that will be accepted at the open burning treatment units.</td><td></td></tr>
<tr><td>234</td><td>Attachment C</td><td>Table C-13</td><td>Administrative –Table C-13 is all one row.</td><td>Page 74:

Include Table C-13 formatted as follows:

Table C-13

Summary of Characterization Methods for
High Explosives (HE) Waste and HE-Contaminated Waste

<table><tr><th>Parameters</th><th>Method Numbers</th><th>Test Method</th><th>Rationale</th></tr><tr><td>HE in the Waste</td><td>SW-846
(Appropriate analytical method from the Method 8300 series)[a]</td><td>High Performance Liquid Chromatography or Acceptable Knowledge[b]

DX-2 Spot Test, DeTech, or other screening methods

Acceptable Knowledge[b]</td><td>Determine HE concentrations directly in homogeneous materials or by process information.

Determine if HE is present in the waste stream.

If all surfaces of heterogeneous waste cannot be directly tested or visually examined (e.g., debris or equipment) and the waste object was potentially contaminated with HE during its use.</td></tr></table>
[a] U.S. Environmental Protection Agency, 1986 and all approved updates, “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,” SW-846.
[b] Acceptable knowledge is broadly defined as process knowledge, additional characterization data, and/or facility records of analysis, U.S. Environmental Protection Agency, 1994, "Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Waste, A Guidance Manual,” OSWER 9938.4-03, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.</td></tr>
<tr><td>235</td><td>Attachment C</td><td>Table C-19</td><td>Suggested change requests the addition of EPA Hazardous Waste Numbers to the table to</td><td>Page 86:

Add the Hazardous Waste Numbers D005, D010, and D011 and</td></tr>
</table>

			add clarity. These numbers are allowed for acceptance at the stabilization unit as outlined in Attachment B of the draft Permit (*Part B Permit Application*).	corresponding constituents and regulatory limits to the table.
236	Attachment D	Throughout	Suggested text changes have been included in a revised Attachment D, attached hereto in Appendix 7. All of the requested changes have been presented with editing marks to highlight changes made to the Attachment. Changes that have been made are administrative or editorial in nature and do not change procedures as presented within the Contingency Plan. Many changes update organizational names, change system references, or remove the names of specific entities to better reference the function of personnel that are mentioned within the plan. Other changes add clarity and edit the text within the attachment to better state the emergency response process. The Permittees will submit a permit modification request that reflects these changes to the Permittees' current LANL Hazardous Waste Facility Permit. The drafting of this permit modification is underway.	See Appendix 8 for suggested text changes.
237	Attachment D	D.1.6.2	Administrative – Suggested text change corrects a	Section D.1.6.2, Page 10, Line 34:

			typographical error.	Change the reference to Attachment N within the section from “Figure 48” to “Figure 49”.
238	Attachment E	TA-55	Suggested change corrects a typographical error.	Introduction, Page 21: Within the second sentence of the Introduction, change “general inspection Section” to “General Inspection Section”.
239	Attachment E	Sections E.2.1, E.2.2, E.3.1, E.3.2, E.4.1, E.4.2, E.5.1, and E.5.2	Administrative – During the last permit modification change to the Inspection Record Form, the general information was expanded from Items 1-6 to Items 1-7.	Change “(Items 1-6)” to “(Items 1-7)” on list item 1 for each of these sections.
240	Attachment E	Section E.5.1	Suggested change corrects a typographical error.	Section E.5.1, Page 8: Add “)” to the end of the section title.
241	Attachment E	Section E.2.1	Suggested change is an editorial change that creates consistency between two sections of the Inspection Plan. The Permittee’s request that Section E.2.1 be made consistent with Section E.2.1 of the TA-55 portion of the Inspection Plan.	Section E.3.1, Page 7, Second sentence: Change the sentence to “An operating day includes when mixed waste is added to or emptied from a tank.”

DOE/LANS COMMENTS ON THE REVISED DRAFT PERMIT FOR LOS ALAMOS NATIONAL LABORATORY

APPENDICES

Appendix 1- Documents supporting Comment 20, RLWTF

Appendix 2- Documents supporting Comment 10, mixed waste venting

Appendix 3 Documents supporting Comment 23, dioxin/furan prohibition

Appendix 4 Attachment K-summary of changes to Tables K-1, K-2 and K-3

Appendix 5 Attachment N-updated figures

Appendix 6 Attachment C-updated Tables C-6, C-12

Appendix 7 Attachment A Table of Contents

Appendix 8 Attachment D revisions

Appendix 1
Documents Supporting Comments on the Radioactive Liquid Waste Treatment Facility

NEW MEXICO ENVIRONMENT DEPARTMENT

Hazardous Waste Bureau

BILL RICHARDSON
Governor

DIANE DENISH
Lieutenant Governor

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RON CURRY
Secretary

JON GOLDSTEIN
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

January 17, 2008

Donald L. Winchell, Jr., Manager
Los Alamos Site Office
Department of Energy
528 35th Street, Mail Stop A316
Los Alamos, NM 87544

Richard S. Watkins, Associate Director
Environment, Safety, Health, & Quality
Los Alamos National Security, LLC
Los Alamos Research Park
4200 Jemez Road, Suite 400
Los Alamos, NM 87545

RE: REQUIREMENT TO SUBMIT A RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) PERMIT APPLICATION FOR THE TA-50 RADIOACTIVE LIQUID WASTE TREATMENT FACILITY LOS ALAMOS NATIONAL LABORATORY (LANL) EPA ID NO. NM 890010515 LANL-07-020

Dear Messrs. Winchell and Watkins:

The New Mexico Environment Department (NMED) has reviewed the response provided by the Los Alamos National Security, LLC and the National Nuclear Security Administration (collectively the Permittees) dated November 28, 2007 (Response) to NMED's information request regarding the Resource Conservation and Recovery Act (RCRA) exemption status of the Technical Area (TA) 50 Radioactive Liquid Waste Treatment Facility (RLWTF). NMED has determined that the RLWTF is a hazardous waste management unit subject to New Mexico's Hazardous Waste Management regulations at 20 .4.1 NMAC. The Permittees must therefore submit a permit application for the unit in accordance with 20.4.1.900 NMAC (incorporating the federal regulations at 40 CFR part 270).

The Permittees claim the Wastewater Treatment Unit (WWTU) permitting exemption at 20.4.1.900 NMAC (incorporating 40 CFR § 270.1(c)(2)(V)) applies to the RLWTF and therefore

the unit is not subject to RCRA permitting. This exemption in part requires a unit be a WWTU subject to the regulations under Section 402 (National Pollution Discharge Elimination System (NPDES)) of the Clean Water Act (CWA). The RLWTF is a "dual use" unit because effluent from the unit both discharges to a National Pollution Discharge Elimination System (NPDES) permitted outfall (Outfall 51) and is transported to a non-NPDES permitted evaporation lagoon at TA-53. The WWTU exemption is not applicable to units where wastewater is managed by means other than, or in addition to, discharge through a NPDES permitted outfall.

The U.S. Environmental Protection Agency (EPA) elaborates on the WWTU exemption in an April 19, 1988 correspondence to Ms. Susan Pendleton (RCRA On-line (RO) # 14262). In that correspondence EPA states "EPA did not intend the WWTU exemption to apply in situations involving 'dual use' of a tank (where a tank is concurrently used for wastewater treatment and for another purpose). Nor did EPA intend for the exemption to apply in situations, such as the one your letter describes, involving 'alternating use' of a tank. Since the purpose of this exemption is to avoid dual regulation under the Clean Water Act and the Resource Conservation and Recovery Act (RCRA), EPA believes that a tank must be used only for wastewater treatment purposes at all times in connection with an on-site wastewater treatment facility in order to qualify for the exemption. EPA did not intend for the exemption to apply in either the 'dual use' or the 'alternating use' scenario. Accordingly, a tank that operates on a 'alternating use basis, as you describe above, does not satisfy the WWTU exemption and is subject to all relevant RCRA regulations."

Furthermore, the WWTU exemption requires wastes entering the unit be classified as "wastewater." The Response provides numerous waste profile forms (WPF) of waste entering the RLWTF that either are identified as non-wastewaters or do not qualify as wastewater as defined by EPA in an August 2000 memorandum. WPF #s 32733, 35269, 35576, 36237, and 36404 identify hazardous or mixed wastes going to the RLWTF as non-wastewaters. EPA's memorandum dated August 4, 2000 (RO # 14472) states "[t]he Agency has not formally defined "wastewater" in the context of the wastewater treatment unit exclusion. However, in a July 31, 1981 letter from John P. Lehman to Richard C. Boyton ..., the Agency described wastewater by stating that wastewaters are 'not concentrated chemicals or non aqueous wastes. While we have not promulgated a formal definition, we are interpreting the term (wastewaters) to refer to wastes which are substantially water with contaminants amounting to a few percent at most.'" The Response includes greater than thirty WPFs that identify wastes which at times contain less than 95 % water and concentrations of contaminants exceeding two percent. The unit is therefore disqualified from the WWTU exemption.

NMED hereby requires the Permittees to submit a RCRA permit application for the RLWTF. The Permittees must submit this application by April 30, 2008.

Please contact Steve Pullen at (505) 476-6044 if you have any questions.

Sincerely,

James P. Bearzi
Chief
Hazardous Waste Bureau

cc: J. Kieling, NMED-HWB
D. Cobrain, NMED-HWB
S. Pullen, NMED-HWB
R. Kay, NMED-HWB
J. Young, NMED-HWB
B. Olsen, NMED-GWQB
M. Leavitt, NMED-SWQB
T. Grieggs, ENV-RCRA, LANL-LASO, MS K490
T. George, ENV-RCRA, LANL-LASO, MS J978
J. Ellvinger, ENV-RCRA, LANL-LASO, MS K490
G. Turner, DOE-LANS, MS A316
G. Rael, EO, LANL-LASO

file: Reading and LANL Permit 2008

Los Alamos
NATIONAL LABORATORY
EST. 1943

Environment, Safety, Health & Quality
P.O. Box 1663, Mail Stop K491
Los Alamos, New Mexico 87545
(505) 667-4218/FAX: (505) 665-3811

Date: February 21, 2008
Refer To: ESH&Q-08-019

VIA E-MAIL AND HAND-DELIVERED

Mr. James P. Bearzi
Chief, Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6030

Dear Mr. Bearzi:

SUBJECT: REQUEST TO RECONSIDER REQUIREMENT TO SUBMIT A RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) PERMIT APPLICATION FOR THE TA-50 RADIOACTIVE LIQUID WASTE TREATMENT FACILITY, LOS ALAMOS NATIONAL LABORATORY

The U.S. Department of Energy (DOE) and Los Alamos National Security LLC (LANS) are in receipt of your January 17, 2008 letter, requesting submittal of a permit application by April 30, 2008 for the TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF). This request is based on the Hazardous Waste Bureau's conclusion that the RLWTF is not eligible for the Resource Conservation and Recovery Act (RCRA) wastewater treatment unit exemption (WWTU), and is a hazardous waste management unit subject to New Mexico's Hazardous Waste Management regulations at 20.4.1 NMAC. We have carefully reviewed this issue and your analysis, and respectfully request that you reconsider this decision. DOE and LANS are confident that the RLWTF meets the requirements for the RCRA WWTU exemption. As explained more fully in the enclosed Position Paper, the RLWTF treats "wastewater" and is not a "dual-use" facility. To assist in your review of this issue, we have provided new information and supporting documents.

We would appreciate the opportunity to meet with you at your convenience to discuss this matter. If you have any questions, please call Gene Turner at (505) 667-5794, or Anthony R. Grieggs at (505) 667-0666.

Sincerely,

Richard S. Watkins
Associate Director
Environment, Safety, Health and Quality
Los Alamos National Security, LLC

George J. Rael
Environmental Operations
Los Alamos Site Office

RSW:GJR/lm

Enclosures: a/s

Cy: Tracy Hughes, OGC, NMED, Santa Fe, NM, w/ enc.
Gene Turner, LASO-EO, w/o enc., A316
Lisa Cummings, LASO-OC, w/o enc., A316
Jan Van Prooyen, DIR, w/o enc., A100
Michael B. Mallory, PADOPS, w/o enc., A102
Sue Stiger, ADEP, w/o enc., M991
Tori George, ENV-DO, w/o enc., J978
Deborah Woitte, LC-LESH, w/o enc., A-187
ENV-RCRA File (08-041), w/enc., K490
ADESHQ, Files, w/enc., K491
IRM-RMMSO, w/enc., A150

Position Paper – Radioactive Liquid Waste Treatment Facility (TA-50)
RCRA Wastewater Treatment Exemption

Background

The Radioactive Liquid Waste Treatment Facility (RLWTF) at TA-50 is a batch plant that receives industrial, acid and caustic wastewaters. The RLWTF primarily receives non-hazardous industrial influent from numerous generating points (e.g., specific sinks, floor drains) across the Laboratory. Industrial influent makes up 99% of the volume of wastewater received at the RLWTF. The RLWTF also receives small quantities (up to 50 gallons) of characteristic RCRA waste in the industrial wastewater and in caustic and acid liquid wastewater from TA-55. The RLWTF does not, however, accept listed RCRA waste. Influent wastewater is transported to the RLWTF by truck or through double-walled pipes by gravity flow. The RLWTF discharges treated effluent to Mortandad Canyon through an NPDES-permitted outfall, Outfall #051. Outfall #051 has been an NPDES-permitted outfall since 1978.

The three wastewater streams are conveyed through separate collection systems to separate influent storage tanks. Industrial waste is treated in the Main Treatment Process (MTP), which includes precipitation, sedimentation, filtration, ion exchange, and reverse osmosis. The MTP process generates two secondary waste streams, sludge and evaporator bottoms. The acid and caustic wastewaters are treated in the Room 60 process by neutralization, which removes the characteristic of corrosivity, and are then sent to the evaporator. The industrial wastewater influent is treated to reduce or remove metals, certain radioactive constituents, and other contaminants to meet NPDES discharge limits. The treated wastewater (filtrate) meets NPDES effluent limits and is discharged through Outfall #051. Evaporator distillate is sent to the MTP; and evaporator bottoms are shipped off-site for drying. MTP sludge is a low-level solid radiological waste stream; Room 60 sludge is solidified and disposed as transuranic or mixed transuranic waste. The general process is illustrated in the diagram provided in Attachment A.

Discussion

On October 26, 2007, the New Mexico Environment Department's Hazardous Waste Bureau (the "Bureau") sent LANL an information request concerning the RLWTF's exemption as a wastewater treatment unit (WWTU). LANL responded to this request on November 28, 2007. Based on this response, the Bureau concluded that the RLWTF failed to meet the criteria for a WWTU exemption for two reasons: (1) it is a "dual-use" system, and (2) it does not treat "wastewater." For the reasons discussed below, LANL is confident that the RLWTF treats "wastewater" and is not a dual use system and, therefore, meets the applicable criteria for a WWTU.

I. *RCRA's Wastewater Treatment Unit Exemption (WWTU) & RCRA Treatment*

Under EPA and NMED rules, a wastewater treatment facility is exempt from RCRA treatment permit requirements so long as it qualifies for the WWTU exemption. The primary reason for the WWTU exemption is to avoid imposing duplicative permitting requirements. Without this exemption, facilities could be subject to both an NPDES permit or wastewater pretreatment permit and a RCRA permit for the same unit.[1] To qualify for the WWTU exemption under § 264.1, the RLWTF must meet the following three criteria:

A. The unit must be part of a wastewater treatment facility which is subject to regulation under either §§ 402 or 307(b) of the Clean Water Act (CWA); EPA clarified that this requirement includes wastewater treatment units at facilities that 1) discharge treated wastewater effluent into surface waters or into a POTW sewer system, or 2) produce no treated wastewater effluent as a direct result of such requirements;[2]

B. The unit receives and treats or stores an influent wastewater which is hazardous waste as defined in § 261.3, or generates and accumulates a wastewater treatment sludge which is hazardous waste as defined in § 261.3, or treats or stores a wastewater treatment sludge which is hazardous waste as defined in § 261.3; and

C. The unit meets the definition of a "tank" or "tank system" in § 260.10.

There are two other important exemptions, applicable to the hazardous wastewater treated at the RLWTF. First, EPA and NMED rules at § 261.4(a)(2) exclude from the definition of "solid waste" industrial wastewater discharges that are point source discharges subject to Section 402 of the CWA. Second, characteristic hazardous wastewaters that are treated to meet the land disposal restriction (LDR) treatment standard of "deactivation" under § 268.40 *and* that are subject to the controls imposed under a CWA NPDES permit, are exempt from additional treatment standards under 40 CFR Part 268. Like the WWTU exemption, these exemptions are intended to avoid dual regulation under the CWA and RCRA. As applied to the RLWTF, the only hazardous wastewaters treated at this facility are characteristic wastes that are treated under its NPDES permit to meet the "deactivation standard" at § 268.40, or are rendered nonhazardous. The effluent discharged from this facility goes to an NPDES permitted Outfall #051, and thus is not a solid waste or subject to hazardous waste management regulations.

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[1] U.S. EPA RCRA Online Letter from S. Lowrance, USEPA to Thomas Cervino, Colonial Pipeline Co., Jan. 16, 1993 (Faxback #13526).

[2] U.S. EPA RCRA Online Letter from Bruce Weddle, USEPA to R. Andes, Marathon Oil Co., Nov. 1, 1993 (Faxback #13634) and 53 Fed. Reg. 34080 (Sept.2, 1988).

1. Dual Use

The Bureau states that the RLWTF is a "dual use" unit because effluent from the unit discharges both to a NPDES permitted Outfall #051 and "is transported to a non-NPDES permitted evaporation lagoon at TA-53." For these reasons, the Bureau concludes that the RLWTF is not eligible for the WWTU exemption. As support, the Bureau relies upon EPA guidance that states that the WWTU exemption would not apply to hazardous waste tank systems "*if it is used solely for wastewater treatment for part of the year and is then used for another purpose for another part of the year.*"[3] In this letter, a facility sought an EPA opinion as to whether it could use a hazardous waste tank as an accumulation tank part of the year (e.g., to store hazardous waste), and the same tank as a WWTU another part of the year. EPA confirmed that to qualify for the WWTU exemption, the tank must be dedicated solely for on-site wastewater treatment at all times. EPA stated that its 1988 preamble language was "clear on this point," and concluded that the accumulation tank described by the facility operates on an "alternating use" basis and therefore does not satisfy the WWTU exemption. The 1988 preamble language cited by EPA states:

> EPA intends that this [WWTU] exemption apply to any tank system that manages hazardous wastewater and is dedicated for use with an on-site wastewater treatment facility. However, if a tank system, in addition to being used in conjunction with an on-site wastewater treatment facility, is used on a *routine or occasional basis to store or treat a hazardous waste prior to shipment off-site for treatment, storage, or disposal, it is not covered by this exemption.*" 53 Fed. Reg. 34080 (Sept. 2, 1988) (emphasis added).

LANL recognizes, as EPA stated, that the WWTU exemption does not apply to hazardous waste tank systems used on an alternating basis to store or treat hazardous wastewaters prior to off-site shipment for treatment. That is not, however, the case here. The hazardous wastewater tanks used in conjunction with the RLWTF are dedicated 100% to the treatment of potentially hazardous wastewater. The RLWTF collection system is designed to accept for treatment in tanks two hazardous wastewater streams (acid and caustic), in addition to a third waste stream comprised of small volumes of inorganic D002 industrial wastes for treatment in tanks. No hazardous wastewater is stored or accumulated in these tanks or at the RLWTF: (1) prior to shipment off-site for treatment, or (2) on an alternating basis with storage part of the year, and treatment the remainder of the year. As illustrated in the attached diagram, hazardous liquid wastes are treated to meet NPDES permit limits, with treated effluent discharged to Outfall #051 (see Attachment A).

In addition, LANL does not transport hazardous wastewater effluent for treatment to a "non-NPDES evaporation lagoon at TA-53" as implied. On two instances (5 and 7 years ago), LANL transferred from TA-50 to TA-53 *non-RCRA* wastewater effluent (low-level

[3] U.S. EPA RCRA Online, Letter from E. Cotsworth to S. Pendleton (Faxback # 14262)

radioactive waste) from TA-50's industrial wastewater tanks for treatment by evaporation in tanks (not lagoons).[4] The fact that a wastewater treatment facility, such as the RLWTF, transfers non-RCRA wastewater for on-site treatment has no bearing on RCRA's WWTU exemption; instead, EPA explicitly states that the exemption would not cover *hazardous waste* tank systems used as a WWTU and on a "routine or occasional basis to store or treat a *hazardous waste* prior to shipment off-site for treatment, storage or disposal." Further, these discharges were not to a non-NPDES permitted outfall, but to tanks fully covered under LANL's NPDES permit.[5] Attached are copies of analytical results demonstrating that the wastewater transferred from TA-50 to TA-53 was non-RCRA wastewater (see Attachment C). Based on these facts, there is no basis to exclude the RLWTF from the WWTU exemption.

2. *Wastewaters*

The Bureau states that the RLWTF does not treat "wastewater" and is therefore ineligible for the WWTU exemption. To reach this conclusion, the Bureau defines "wastewater" to be wastes "*which at times contain less than 95% water and concentrations of contaminants exceeding 2%.*" Based on this standard, the Bureau then concludes that the RLWTF does not treat "wastewaters" because LANL's waste profile forms (WPFs) show ranges of "water" that are less than 95% and contaminant concentration exceeding 2%. The application of this new standard to the RLWTF raises several important concerns.

First, the standard was not developed by rule or in any publicly available guidance, policy or other document for the regulated community or LANL to review and comment upon to determine what constitutes "wastewaters" for purposes of wastewater treatment facilities. It is unclear where these specific percentages derive from, and what support and sources were used to develop this standard. Although EPA recognizes that states can develop their own interpretations of "wastewaters," it must do so by regulations, or in policy.[6] Significant ramifications flow from an agency rule addressing the amounts of liquids and solids needed to constitute "wastewaters" under RCRA, and any such standard requires public notice and participation through rulemaking.

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[4] The RLWTP at TA-53 does not accept, treat, store, or discharge hazardous waste.

[5] LANL properly filed Notices of Changed Conditions in accordance with its NPDES Permit and CWA rules to allow it to discharge non-RCRA wastewater effluent to TA-53 under its NPDES Permit (see Attachment B). The first, dated October 22, 2001, described the transfer of treated effluent from the RLWTF to the Radioactive Liquid Waste Treatment Plant (RLWTP) at TA-53 for further treatment by solar evaporation. The wastewater transferred to the RLWTP in 2001 was non-RCRA regulated wastewater effluent with elevated levels of tritium. The second Notice of a planned change at NPDES Outfall #051, dated October 14, 2003, described the transfer of treated non-RCRA-regulated wastewater with elevated levels of Chemical Oxygen Demand (COD) from the TA-50 RLWTF to the solar evaporator units at TA-53.

[6] U.S. EPA Online Letter from S. Lowrance, EPA to Heritage Environmental Services, Indiana (Feb. 11, 1991) (Faxback # 11582).

Second, the Bureau's standard appears to be unprecedented and unsupported by EPA policy as suggested. No EPA guidance states that to constitute a "wastewater" at a wastewater treatment facility, wastewater must contain 95% or more liquids and contaminant concentrations below 2%. The faxback relied upon by the Bureau cites in its entirety a 1981 letter which states "wastewaters are 'not concentrated chemicals or *non aqueous* wastes,' and refers to 'wastes which are substantially water with contaminants amounting a few percent at most.'"[7] Although EPA rules do not define the term "non aqueous," they define the term "aqueous" to mean a liquid phase containing more than 50% water.[8] Since 1981, however, EPA issued guidance regarding the interpretation of "wastewater" as applied to wastewater treatment units. In 1987, the EPA issued an OSWER directive regarding the application of the RCRA permit exclusion for a wastewater treatment unit. EPA stated:

> The OSW [Office of Solid Waste] currently has no formal definition of wastewater. Although Agency guidance suggested that wastewater should not exceed more than a 'few' percent constituents other than water, this definition was never promulgated. *Therefore, our current interpretation is that any waste that is treated in a unit that is subject to regulation under Section 402 or 307(b) of the Clean Water Act and meets the other requirements specified in 40 CFR 260.10 for a wastewater treatment unit is eligible for the exemption.*[9]

Later, in 1992, EPA stated that the reference to a "few percent" source contaminant in its prior [1981] memo is "*not a regulatory definition of wastewater, and, thus, not part of the definition of a wastewater treatment unit.*"[10] In this same guidance, EPA stated that "[t]ypically, [the agency] has used a very broad interpretation [of wastewater] in other regulatory programs (e.g., the Effluent Guidelines Division's Development Document for Electroplating Pretreatment Standards defines wastewater as "*any water that has been released from the purpose for which it was intended to be used*"). Indeed, there are numerous instances where EPA has discussed wastewaters and the application of solid/liquid mixtures managed in wastewater treatment units. EPA does not suggest that only liquids greater than 95% meet the definition of "wastewaters" in the context of wastewater treatment units. For example, in reviewing percentage of solids and liquid hazardous wastes (e.g., paints) the agency stated that "*we [EPA] believe that wastes containing less than 15% solids will be managed in units associated with wastewater*

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[7] U.S. EPA RCRA Online, Memo from E. Cotsworth to S. Coleman, Region VI, Aug. 4, 2000 (Faxback 14472) (referring to letter from J. Lehman to R. Boyton, July 31, 1981)).

[8] U.S. EPA RCRA Online, Letter from R. Scarberry, EPA to S. Gock, Printing Developments, Inc., Sept. 14, 1987 (Faxback 9443.1987).

[9] U.S. EPA OSWER Dir. 9433.1987, 1987 WL 383857 (July 12, 1987).

[10] U.S. EPA RCRA Online, Letter from S. Lowrance, EPA to T. Hopkins, Department of Environmental Quality, Aug. 15, 1990 (Faxback 9483.1990).

treatment, such as tanks or surface impoundments."[11] The only definition of "wastewater" in EPA rules was developed in conjunction with land disposal restriction treatment standards, which is not relevant to and considered overly restrictive when applied to wastewater treatment.[12] Some states, like Ohio, have issued formal guidance on RCRA's wastewater treatment exemption and define "wastewater" to mean "any waste authorized to be treated in a WWTU under a CWA wastewater permit."[13] This definition, in turn, is consistent with EPA's OSW guidance discussed above.

Third, the Bureau's position is not technically sound and would be unreasonable if applied as a new standard to determine the RLWTF receives "wastewater." The RLWTF was constructed, designed and engineered to treat radioactive liquid waste that constitutes "wastewaters." These wastewaters are treated, and any effluent must meet stringent technology-based effluent limitations for wastewater discharges required by its NPDES permit under Section 402 of the CWA, including Total Suspended Solid (TSS) limitations of 30 to 40 mg/liter and C.O.D. of 125 mg/liter. Wastewater influent is transported to the facility by truck or through double-walled pipes by gravity flow. The wastewater is so aqueous that no pumps or other equipment are necessary to transport non-liquid wastes or solid/liquid wastewater mixtures. The fact that approximately 33 WPFs identify "additional constituents" as containing "water" in a range (e.g., 80 to 99%) has no bearing whatsoever on the issue of whether the treatment facility is receiving "wastewater," or whether the facility has the technological capability to treat liquids comprised substantially of water such as 70 to 80%. Instead, the RLWTF is designed and technologically capable of treating wastestreams of less than 95% liquid. The RLWTF established influent limits for contaminants listed in the NPDES permit, based upon the treatment capabilities of the facility's treatment units. This treatment process, in turn, neutralizes the waste, removes hazardous constituents, and discharges liquid effluent which meets NPDES permit requirements. Indeed, EPA encourages wastewater treatment as a method to reduce toxicity, mobility and the amount of hazardous waste generated so as to minimize threats to human health and the environment. A standard that a wastewater treatment system must treat "wastewaters" defined as being greater than 95% liquids and contaminant concentrations less than 2% thwarts, rather than encourages, technological improvements designed to treat these types of wastestreams.

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[11] See 66 Fed. Reg. 10060, 10104 (Feb. 13, 2001). See e.g., 60 Fed. Reg. 66344 (Dec, 21, 1995) (in reviewing risk analysis for waste management units used to manage wastewater and non-wastewater, EPA has stated that it "believes that wastes containing less than 15% solids will more frequently be managed in the types of units associated with wastewater treatment, such as tanks and surface impoundments . . . treatment will produce solid residues or treated water discharged under the CWA").

[12] U.S. EPA RCRA Online, S. Lowrance, USEPA to Ted Hopkins,Oregon Department of Environmental Quality, Aug. 15, 1990 (Faxback # 9483.1990) (EPA stated that the LDR definition of "wastewater" was defined for purposes of establishing BDAT treatability groups and was "not pertinent" to the issue of whether a unit could be a wastewater treatment unit or elementary neutralization unit).

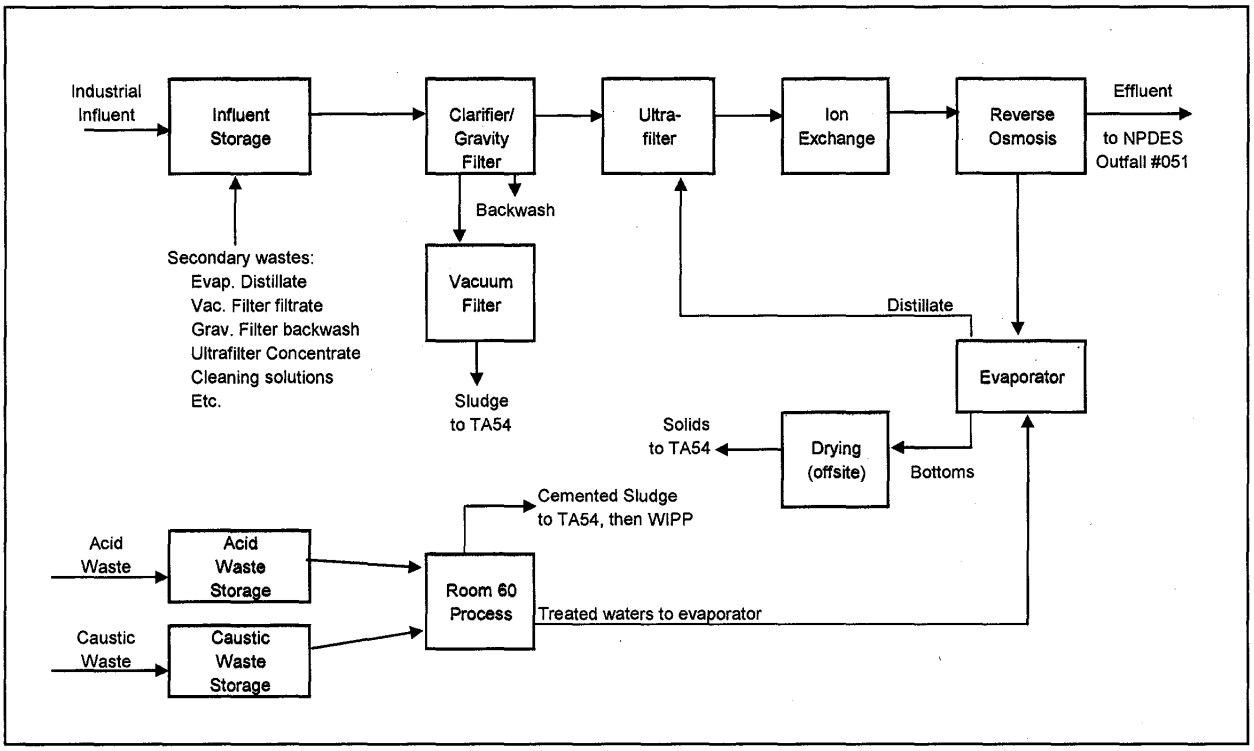
[13] See State of Ohio Environmental Protection Agency, *The Wastewater Treatment Unit Exemption Under Ohio Hazardous Waste Rules* (July 2004).

Fourth, the Bureau's reliance on LANL WPF's to conclude that the RLWTF treats wastestreams with less than 95% liquid and constituent concentrations exceeding 2% is technically misplaced. A WPF may denote a range of liquids, but this does not necessarily support the conclusion that a specific waste stream has liquids less than 95% with concentrated contaminants exceeding 2%. For example, WPF 35269 indicates that this wastewater is hazardous for chromium at a maximum concentration of 6.0 ppm. The other constituents in this wastewater are sodium sulfate at 1.5% and beryllium at 0.00001%; leaving the liquid concentration at approximately 98.5%. Another example is WPF 32733. This WPF references a wastewater that is only hazardous for corrosivity. Nitric acid is the primary constituent ranging from 0.5% to 1%. This wastewater also contains other constituents with a percentage concentration well below 1%; indicating that liquid makes up greater than 98.5% of the waste stream (see Attachment D). Further, samples collected at the RLWTF from January 2006 to December 2007 show that the wastewater influent at the headworks is, under average conditions, >99.9% liquid and <0.1% solids, and, under worst case conditions, >99% liquid and <1% solids. In sum, the WPFs do not support the technical conclusion that the RLWTF treats wastestreams with less then 95% liquid and contaminate concentrations exceeding 2%.

ATTACHMENT A

ATTACHMENT A

TA50 RLWTF Process Schematic



ATTACHMENT B

Los Alamos
NATIONAL LABORATORY

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

Date: October 22, 2001
In Reply Refer To: ESH-18/WQ&H:01-353
Mail Stop: K497
Telephone: (505) 665-1859

Mr. Samual Coleman, P. E., Director
Compliance Assurance and Enforcement Division (6-EN)
U. S. Environmental Protection Agency
1445 Ross Avenue
Dallas, Texas 75202-2733

SUBJECT: NOTICE OF CHANGED CONDITION AT NPDES OUTFALL 051, NPDES PERMIT NO. NM0028355

Dear Mr. Coleman:

On June 13, 2000, Los Alamos National Laboratory notified (Letter ESH-18/WQ&H:00-0194) the U. S. Environmental Protection Agency (EPA) regarding a change in the waste streams contributing to the effluent discharged from NPDES Outfall 051 at the Technical Area 50, Radioactive Liquid Waste Treatment Facility (TA-50 RLWTF). In order to meet the Department of Energy's (DOE) Derived Concentration Guidelines (DCGs) concerning radioactive constituents established by DOE Order 5400.5 and to meet ground water discharge requirements for nitrate and other parameters established by New Mexico Water Quality Control Commission (NMWQCC) Regulations, the TA-50 RLWTF upgraded its treatment processes in a two-phased project. Phase I, installation of the Tubular Ultrafiltration and Reverse Osmosis treatment units, was completed in November, 1999. Phase II, installation of the Electrodialysis Reversal (EDR) treatment unit and the interim mechanical evaporator, was completed in January, 2000. These upgrades have significantly improved effluent quality at TA-50 RLWTF.

Provided as Enclosure 1 is the updated process schematic for the TA-50 RLWTF which includes the Phase I and Phase II upgrades. Additionally, reverse osmosis permeate and evaporator distillate with more than 20 nCi/l of tritium are trucked to the TA-53 Radioactive Liquid Wastewater Treatment Plant (TA-53 RLWTP) which makes use of solar evaporation. A process schematic for the TA-53 RLWTP is provided as Enclosure 2.

Please contact Mike Saladen of the Laboratory's Water Quality and Hydrology Group at (505) 665-6085, if additional information would be helpful.

Sincerely,

Steven Rae
Group Leader
Water Quality and Hydrology Group

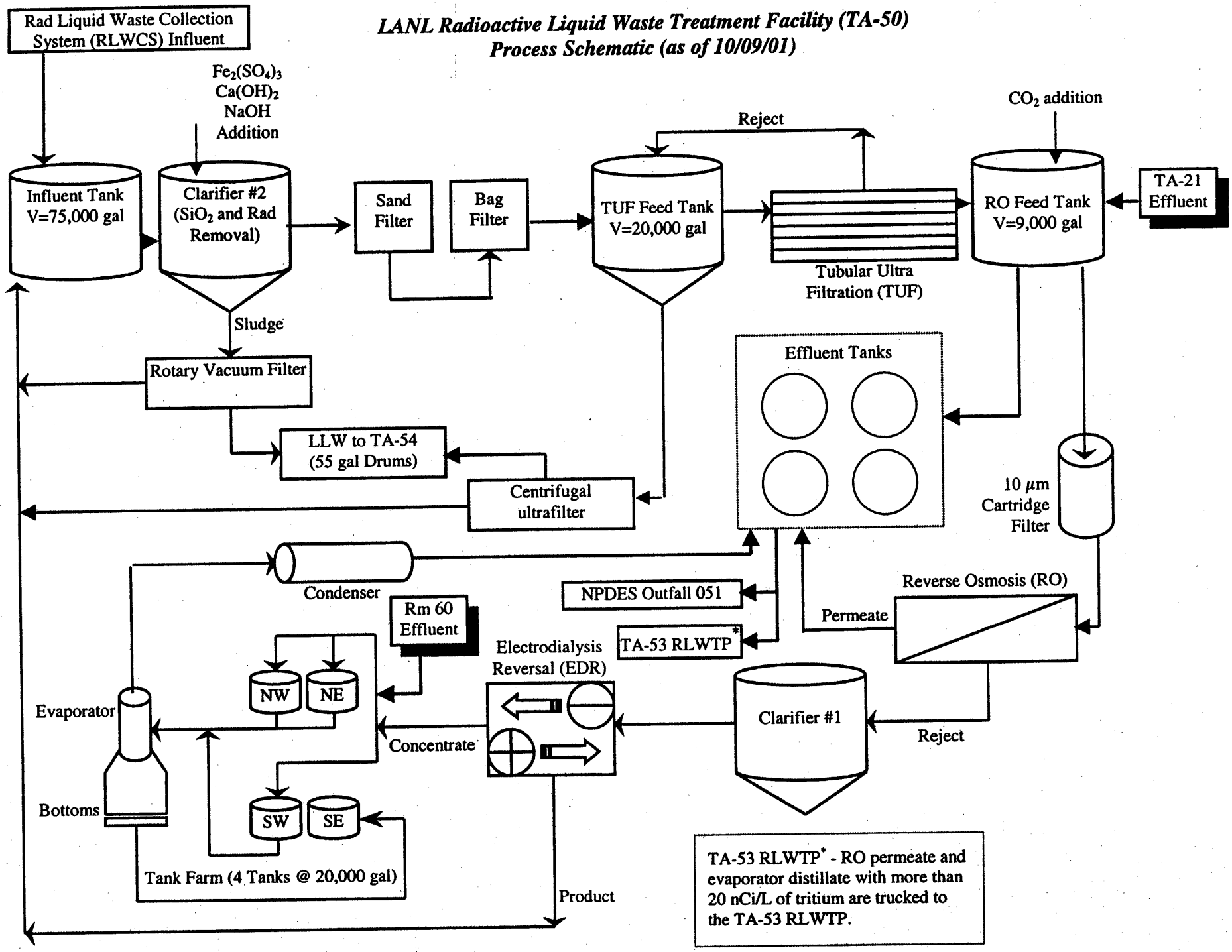
SR:MS/tml

Enclosures: a/s

Cy: E. Spencer, USEPA, Region VI, Dallas, Texas, w/enc.
S. Wilson, USEPA, Region VI, Dallas, Texas, w/enc.
J. Davis, NMED/SWQB, Santa Fe, New Mexico, w/enc.
J. Vozella, DOE/LAAO, w/enc., MS A316
K. Agogino, DOE/AL, w/enc., MS A316
J. Holt, ADO, w/enc., MS A104
A. Standford, FWO-DO, w/enc., MS K492
B. Ramsey, FWO-DO, w/enc., MS K492
D. McLain, FWO-RLW, w/enc., MS E518
R. Alexander, FWO-RLW, w/enc., MS E518
L. McAtee, ESH-DO, w/enc., MS K491
P. Thullen, ESH-DO, w/enc., MS K491
D Stavert, ESH-DO, w/enc., MS K491
B. Beers, ESH-18, w/enc., MS K497
M. Saladen, ESH-18, w/enc., MS K497
M. Bailey, ESH-18, w/enc., MS K497
D. Woitte, UC-GEN, w/enc., MS A187
WQ&H File, w/enc., MS K497
IM-5, w/enc., MS A150

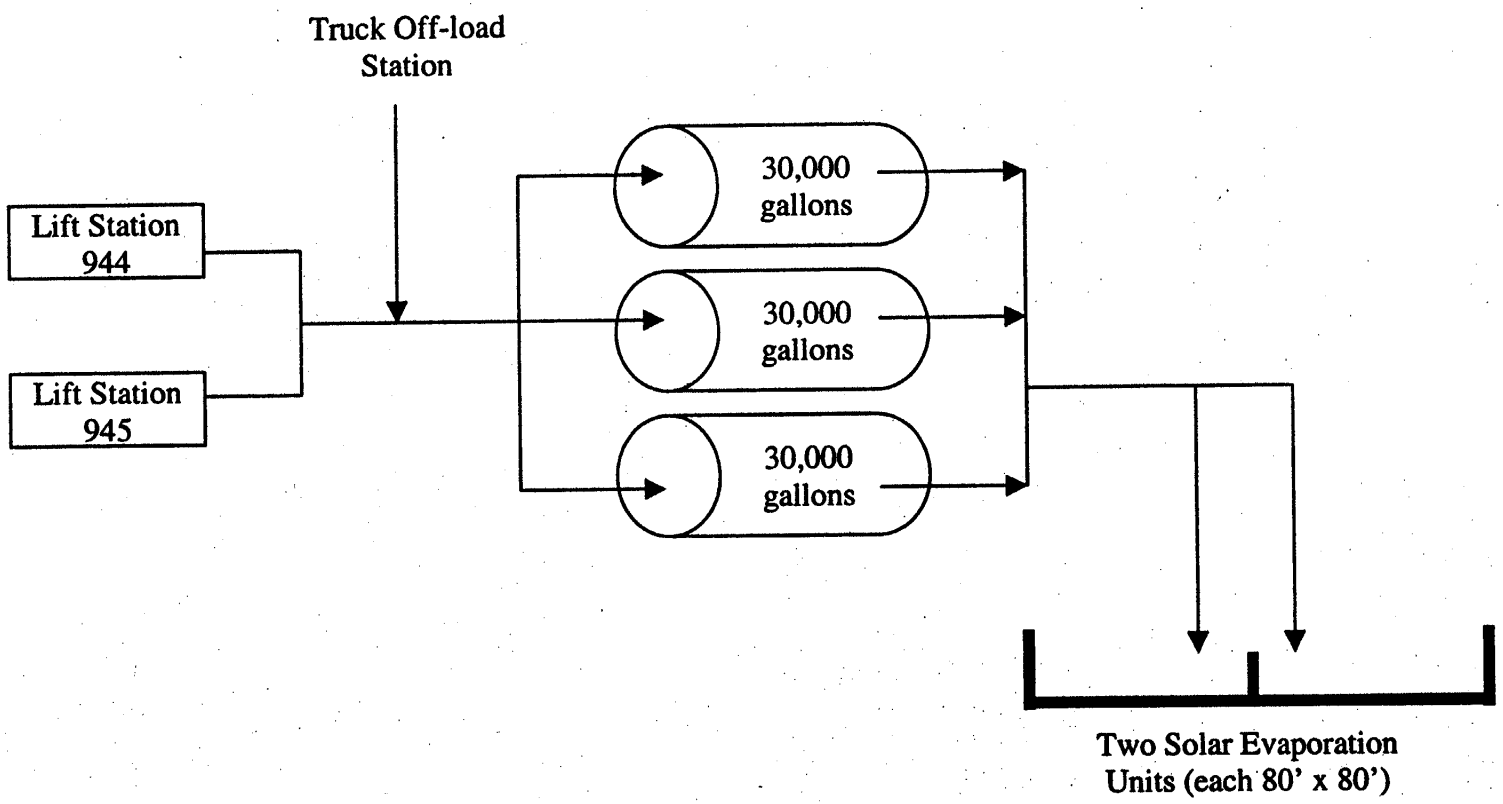
ENCLOSURE 1

LANL Radioactive Liquid Waste Treatment Facility (TA-50)
Process Schematic (as of 10/09/01)



ENCLOSURE 2

LANL Radioactive Liquid Waste Treatment Plant (TA-53)
Process Schematic (as of 10/09/01)



Los Alamos
NATIONAL LABORATORY

Risk Reduction & Environmental Stewardship Division
Water Quality & Hydrology Group (RRES-WQH)
PO Box 1663, MS K497
Los Alamos, New Mexico 87545
(505) 665-1859/Fax: (505) 665-9344

Date: October 14, 2003
Refer to: RRES-WQH: 03-267

Ms. Waudelle Strickley
Environmental Specialist
U. S. Environmental Protection Agency
Water Enforcement Branch
1445 Ross Avenue
Dallas, Texas 75202-2733

SUBJECT: NOTICE OF PLANNED CHANGE AT NPDES OUTFALL 051, NPDES PERMIT NO. NM0028355

Dear Ms. Strickley:

The National Pollutant Discharge Elimination System (NPDES) Permit No. NM0028355 for Los Alamos National Laboratory requires the permittee to notify the U. S. Environmental Protection Agency (EPA) regarding any physical alterations or additions to the permitted facility that could significantly change the nature or increase the quantity of pollutants discharged. In accordance with Part III.D.1.a. *Reporting Requirements* of the Laboratory's NPDES Permit, we are providing written notification regarding the transfer of up to 80,000 gallons of treated wastewater from the TA-50 Radioactive Liquid Treatment Facility (RLWTF) to the TA-53 basins for evaporation. This wastewater meets all NPDES effluent requirements with the exception of Chemical Oxygen Demand (COD). The Laboratory's NPDES Permit limit for COD is 125 mg/l. The COD results for the RLWTF wastewater is approximately 400 mg/l and therefore does not meet effluent limits for discharge at NPDES Outfall 051. Mr. Scott Wilson, EPA Region VI (Permits Branch), was verbally notified of this request for transfer on October 8, 2003.

Please contact Mike Saladen of the Laboratory's Water Quality and Hydrology Group at (505) 665-6085, if additional information would be helpful.

Sincerely,

Steven Rae
Group Leader
Water Quality & Hydrology Group

An Equal Opportunity Employer / Operated by the University of California

Printed on Recycled Paper

SR:MS/tml

Cy: S. Wilson, USEPA, Region VI, Dallas, TX
M. Leavitt, NMED/SWQB, Santa Fe, NM
J. Vozella, DOE/OLASO, MS A316
G. Turner, DOE/OLASO, MS A316
A. Stanford, FWO-DO, MS K492
D. McLain, FWO-WFM, MS E518
R. Alexander, FWO-WFM, MS E518
B. Ramsey, RRES-DO, MS J591
K. Hargis, RRES-DO, MS J591
T. George, RRES-DO, MS J591
D Stavert, RRES-EP, MS J591
B. Beers, RRES-WQH, MS K497
M. Saladen, WQH, MS K497
P. Wardwell, LC-ESH, MS A187
RRES-WQH File, MS K497
IM-5, MS A150

ATTACHMENT C

RECEIVED OCT 0 8 2003

ORIGINAL

LOS ALAMOS
National Laboratory

WASTE PROFILE FORM

Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: EM-SWO at **MS J595.** For assistance with completing this form, call EM-SWO at **5-4000.**	Reference Number 36754 (For EM-SWO use only.)

Generator's Z Number	Waste Generator's Name (print)	WMC's Z Number	WMC's Name (print)
113354	V. Peter Worland	117028	Steve Torrez

Generator's Telephone	Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room
667-4301	E-518	FMU-6 WFM	50	1	34B

Waste Accumulation (Check only one.)
- ☐ Satellite Accumulation Area — Site no: ____
- ☐ Less-than-90-days Storage Area — Site no: ____
- ☐ TSDF — Site no: ____
- ☐ Universal Waste Storage Area — Site no: ____
- ☒ None of the Above

ER Use Only ☐ ER Site PRS #: ____

Method of Characterization (Check as many as apply.)
- ☐ Analysis/Documents Attached
- ☒ ~~Chemical/Physical Analysis~~ VPW 10/8/03 — Sample #: ____
- ☒ ~~Radiological Analysis~~ VPW 10/8/03 — Sample #: ____
- ☐ PCB Analysis — Sample #: see attached
- ☒ Acceptable Knowledge Documentation — Documentation #: ____
- ☐ MSDS

COC Tracking # N-05IC3007 # MCMP

Section 1 - Chemical and Physical Information

Waste Type (Check only one.)
- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☒ Process Waste/Spent Chemical/ other (Complete all sections.)
- ☐ Green is Clean Waste (Complete all sections as appropriate.)

Waste Classes

Radiological Information
Was Waste Generated in a RCA? ☒ Yes ☐ No
- ☐ Non-radioactive
- ☒ Radioactive
  - ☒ Low-Level
  - ☐ Transuranic

Wastewater Information
- ☐ Wastewater for SWSC (TA-46) (Complete Attachment 1)
- ☒ Wastewater for ~~RLWTF~~ TA-53 RLWTP (~~TA-50/TA-21~~) (Complete Attachment 2)
- ☐ Wastewater for TA-16 (HE)

Classification Information
- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check as many as apply.)
- ☒ Inorganic
- ☐ Organic
- Volatile Organics ☐ < 500 ppm ☐ ≥ 500 ppm
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste residue
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)
- Asbestos ☐ friable ☐ non-friable
- PCB Source Concentration
  - ☐ PCB < 50 ppm
  - ☐ PCB ≥ 50 - < 500 ppm
  - ☐ PCB ≥ 500 ppm
- ☐ Other (Describe below)

* Concentrations 10% or greater before use.

Waste Source (Check only one.)

Routine Waste
- ☐ Decon
- ☐ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup - Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Non-routine Waste
- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping - Non-routine
- ☐ Spill Cleanup - Non-routine
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☒ Other (Describe below)

Waste Matrix (Check only one.)

Gas
- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid
- ☒ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid
- ☐ Powder/Ash
- ☐ Solid
- ☐ Sludge
- ☐ Absorbed liquid

Matrix Type (Check only one.)
- ☒ Homogeneous
- ☐ Heterogeneous (Describe below)

Waste/Process Description (Chemical formulas may be used in this field.)

This waste is off spec effluent water from the RLWTF at TA-50. The water meets all radiological and non-radiological parameters for discharge to the NPDES permitted outfall except for chemical oxygen demand (COD). The COD limit is 125 mg/L. This water has up to 500 mg/L COD.

LOS ALAMOS
National Laboratory

WASTE PROFILE FORM

Section 2 - Characteristics

Ignitability (Check only one.) (°F)	(°C)	Corrosivity (Check only one.) (pH)	Reactivity (Check as many as apply.)	Boiling Point (Check only one.) (°F)	(°C)
☐ < 73	< 22.8	☐ ≤ 2.0	☐ RCRA Unstable	☐ ≤ 95	≤ 35
☐ 73 - 99	22.8 - 37.2	☐ 2.1 - 4.0	☐ Water Reactive	☒ > 95	> 35
☐ 100 - 139	37.8 - 59.4	☐ 4.1 - 6.0	☐ Cyanide Bearing (> 250 ppm)		
☐ 140 -200	60.0 - 99.3	☒ 6.1 - 9.0	☐ Sulfide Bearing (> 500 ppm)		
☐ > 200	> 99.3	☐ 9.1 - 12.4	☐ Pyrophoric		
☐ EPA Ignitable - Non-liquid		☐ ≥ 12.5	☐ Shock Sensitive		
☐ DOT Flammable Gas		☐ Liquid corrosive to steel	☐ Explosive - DOT Div. _____		
☐ DOT Oxidizer					
☒ Not ignitable		☐ Non-aqueous	☒ Non-reactive	☐ Not applicable	

Identify for all contaminants listed.	Characterization Method: AK	TCLP	Total	Concentration of Contaminants: None or Non-detect	Present Below Regulatory Limit	Above Regulatory Limit (Concentration in ppm only.) Minimum	Maximum
Toxicity Characteristic Metals							
Arsenic	☒	☐	☐	☒	☐ < 5.0 ppm	_____ to	_____ ppm
Barium	☐	☐	☐	☐	☐ < 100.0 ppm	_____ to	_____ ppm
Cadmium	☐	☐	☐	☐	☐ < 1.0 ppm	_____ to	_____ ppm
Chromium (Total)	☐	☐	☐	☐	☐ < 5.0 ppm	_____ to	_____ ppm
Lead	☐	☐	☐	☐	☐ < 5.0 ppm	_____ to	_____ ppm
Mercury	☐	☐	☐	☐	☒ < 0.2 ppm	_____ to	_____ ppm
Selenium	☐	☐	☐	☐	☐ < 1.0 ppm	_____ to	_____ ppm
Silver	☐	☐	☐	☐	☐ < 5.0 ppm	_____ to	_____ ppm
Toxicity Characteristic Organics							
Benzene	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
Carbon tetrachloride	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
Chlorodane	☐	☐	☐	☐	☐ < 0.03 ppm	_____ to	_____ ppm
Chlorobenzene	☐	☐	☐	☐	☐ < 100.0 ppm	_____ to	_____ ppm
Chloroform	☐	☐	☐	☐	☒ 6.0 ppm	_____ to	_____ ppm
o - cresol	☐	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
m - cresol	☐	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
p - cresol	☐	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
Cresol - mixed	☐	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
2,4-D	☐	☐	☐	☐	☐ < 10.0 ppm	_____ to	_____ ppm
1,4-Dichlorobenzene	☐	☐	☐	☐	☐ < 7.5 ppm	_____ to	_____ ppm
1,2-Dichloroethane	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
1,1-Dichloroethylene	☐	☐	☐	☐	☐ < 0.7 ppm	_____ to	_____ ppm
2,4-Dinitrotoluene	☐	☐	☐	☐	☐ < 0.13 ppm	_____ to	_____ ppm
Endrin	☐	☐	☐	☐	☐ < 0.02 ppm	_____ to	_____ ppm
Heptachlor (& its epoxide)	☐	☐	☐	☐	☐ < 0.008 ppm	_____ to	_____ ppm
Hexchlorobenzene	☐	☐	☐	☐	☐ < 0.13 ppm	_____ to	_____ ppm
Hexchlorobutadiene	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
Hexchloroethane	☐	☐	☐	☐	☐ < 3.0 ppm	_____ to	_____ ppm
Lindane	☐	☐	☐	☐	☐ < 0.4 ppm	_____ to	_____ ppm
Methoxychlor	☐	☐	☐	☐	☐ < 10.0 ppm	_____ to	_____ ppm
Methyl ethyl ketone	☐	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
Nitrobenzene	☐	☐	☐	☐	☐ < 2.0 ppm	_____ to	_____ ppm
Pentachlorophenol	☐	☐	☐	☐	☐ < 100.0 ppm	_____ to	_____ ppm
Pyridine	☐	☐	☐	☐	☐ < 5.0 ppm	_____ to	_____ ppm
Tetrachloroethylene	☐	☐	☐	☐	☐ < 0.7 ppm	_____ to	_____ ppm
Toxaphene	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
Trichloroethylene	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
2,4,5-Trichlorophenol	☐	☐	☐	☐	☐ < 400.0 ppm	_____ to	_____ ppm
2,4,6-Trichlorophenol	☐	☐	☐	☐	☐ < 2.0 ppm	_____ to	_____ ppm
2,4,5-TP (Silvex)	☐	☐	☐	☐	☐ < 1.0 ppm	_____ to	_____ ppm
Vinyl chloride	☐	☐	☐	☒	☐ < 0.2 ppm	_____ to	_____ ppm

LOS ALAMOS
National Laboratory

WASTE PROFILE FORM

Section 3 - Additional Constituents

Additional Constituents and Contaminates. Please account for 100% of waste. Ranges should be given within guidelines of LIG 404-00-03 of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum		Maximum	
	WATER	99.98	to	100	%
	Dissolved Salts Na^+, Ca^{++}, Cl^-, $SO_4^=$, HCO_3^-	0.00	to	0.02	%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
	Total of max. ranges of this section	100.02		in %	
	Total of max. ranges from page 2.	<0.1		in ppm	

Additional Information (Use additional sheet if necessary.)

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

Gross alpha activity in this water is less than 30pCi/L.
Total suspended solids are less than 5 mg/L.
Total dissolved solids are less than 600 mg/L.
Tritium is less than 20nCi/L.
NO_3-N and Fluoride are less than 0.5mg/L.
Zinc is less than 0.01 mg/L and Mercury is less than 0.1µg/L.
Perchlorates are less than 0.001mg/L.
The organic material composing the COD in the water is small in size (on the order of an acetate or citrate ion or isopropyl alcohol).

The Acceptable Knowledge documentation is of analyses on previous representative samples of this particular waste stream. VPW

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

Signature	Date
V. Peter Warland	10-08-03

WASTE MANAGEMENT COORDINATOR: I have reviewed this form and to the best of my knowledge, the information is complete and accurate.

Signature	Date
Steve K Gerez	10/08/03

LOS ALAMOS
National Laboratory

WASTE PROFILE FORM

RLWTP TA-53

Attachment 2 - Wastewater Characteristics for RLWTF (~~TA-50 & TA-21~~)

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

Indicate if waste was: ☐ Accelerator produced ☒ Reactor produced ☐ Other (Describe in WPF Section 1 "Waste/Process Description.")

Radionuclide Contaminants

Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min. / Max.	Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min. / Max.
As-74	☐ ≤ 4.0 E -8	/	Rb-84	☐ ≤ 1.0 E -8	/
Be-7	☐ ≤ 1.0 E -6	/	Sc-46	☐ ≤ 2.0 E -8	/
Ce-141	☐ ≤ 5.0 E -8	/	Sc-48	☐ ≤ 2.0 E -8	/
Cs-134	☐ ≤ 2.0 E -9	/	Se-75	☐ ≤ 2.0 E -8	/
Cs-137	☐ ≤ 3.0 E -9	/	Na-22	☐ ≤ 1.0 E -8	/
Co-56	☐ ≤ 1.0 E -8	/	Sr-85	☐ ≤ 7.0 E -8	/
Co-57	☐ ≤ 1.0 E -7	/	Sr-89	☐ ≤ 2.0 E -8	/
Co-58	☐ ≤ 4.0 E -8	/	Sr-90	☐ ≤ 1.0 E -9	/
Co-60	☐ ≤ 5.0 E -9	/	Sn-113	☐ ≤ 5.0 E -8	/
Eu-152	☐ ≤ 2.0 E -8	/	V-48	☐ ≤ 2.0 E -8	/
H-3	☒ ≤ 2.0 E -8	/	Y-88	☐ ≤ 3.0 E -8	/
I-133	☐ ≤ 1.0 E -8	/	Zn-65	☐ ≤ 9.0 E -9	/
Mn-52	☐ ≤ 2.0 E -8	/	Am-241	☒ ≤ 0.1 E -6	Below 6.0 E-12
Mn-54	☐ ≤ 5.0 E -8	/	Pu-238	☒ ≤ 0.1 E -6	Below 6.0 E-12
Ra-226 + 228	☐ ≤ 3.0 E -11	/	Pu-239	☒ ≤ 0.1 E -6	Below 6.0 E-12
Rb-83	☐ ≤ 2.0 E -8	/	U-234	☐ ≤ 5.0 E -8	/
Others:			**Others:**		
		/			/
		/			/
		/			/

Volume Reduced 10 times

Other Contaminants

Metal Contaminants	Present Below LOC (in ppm)	Range if above LOC (in ppm) Min. / Max.	Additional Contaminants	Min. / Max
Aluminum	☐ ≤ 5.0	to ppm	Chemical Oxygen Demand (COD)	0 to 500 mg/l
Boron	☐ ≤ 5.0	to ppm	Total Suspended Solids (TSS)	0 to 4 mg/l
Cobalt	☐ ≤ 1.0	to ppm		
Copper	☐ ≤ 1.0	to ppm	☐ Total Nitrogen or (only one	to mg/l
Vanadium	☐ ≤ 0.10	to ppm	☒ Total Nitrates as entry needed)	0 to 1 mg/l
Zinc	☐ ≤ 95.40	to ppm	Nitrogen	

Radioactive Contaminant Totals:

Total Alpha	<10E-12	Ci/l
Total Beta	<100E-12	Ci/l
Total Gamma	NA	Ci/l

For TA-55 use only.
~~Wastewater will be discharged through one of the following:~~
~~☐ Acid Line ☐ Caustic Line ☐ Industrial Waste Line~~

☐ Yes ☒ No Scintillation Cocktail Brand Name _____ Volume _____ Unit _____

☐ Yes ☒ No Chemical Treatment for Boilers / Water Chillers

☐ Yes ☒ No Industrial Cleaner Type _____ Volume _____ Unit _____

Average daily volume when discharge occurs: 6,000 ☒ Gallons/day ☐ Liters/day

Maximum daily volume when discharge occurs: 16,000 ☒ Gallons/day ☐ Liters/day

Estimated number of days per year discharge will occur: 14

Estimated total volume per year discharged to the Radioactive Liquid Waste ~~Collection System at TA-50 / TA-21~~: 80,000 ☒ Gallons ☐ Liters

Plant at TA53.

Documentation # MCMP

August 2003

Monthly Composite Sample Analyzed at RLWTR

8/31/2003	3.72308	TRITIUM	8.2E-09	CI/L	8E-10	FINAL50	MONTHLYCMP	RAD	MCF0016,18
8/31/2003	3.72308	AMMONIA-N	3	MG/L	0.3	FINAL50	MONTHLYCMP	MINERAL	EMH011,150
8/31/2003	3.72308	NITRATE-N	0.08	MG/L	0.01	FINAL50	MONTHLYCMP	MINERAL	EMH012,34
8/31/2003	3.72308	NITRITE-N	0.3	MG/L	0.03	FINAL50	MONTHLYCMP	MINERAL	EMH012,34
8/31/2003	3.72308	PERCHLORATE	0	MG/L	0.001	FINAL50	MONTHLYCMP	MINERAL	EMH011,74
8/31/2003	3.72308	CHLORIDE	4	MG/L	1	FINAL50	MONTHLYCMP	MINERAL	EMH012,34
8/31/2003	3.72308	FLUORIDE	0.29	MG/L	0.03	FINAL50	MONTHLYCMP	MINERAL	EMH012,34
8/31/2003	3.72308	SULFATE	10	MG/L	1	FINAL50	MONTHLYCMP	MINERAL	EMH012,34
8/31/2003	3.72308	COPPER	0.012	MG/L	0.01	FINAL50	MONTHLYCMP	MINERAL	EMH4301,4
8/31/2003	3.72308	LEAD	0	MG/L	0.02	FINAL50	MONTHLYCMP	MINERAL	EMH4301,4
8/31/2003	3.72308	VANADIUM	0	MG/L	0.01	FINAL50	MONTHLYCMP	MINERAL	EMH4301,4
8/31/2003	3.72308	ALUMINUM	0.116	MG/L	0.01	FINAL50	MONTHLYCMP	MINERAL	EMH4301,4
8/31/2003	3.72308	BORON	0.091	MG/L	0.01	FINAL50	MONTHLYCMP	MINERAL	EMH4301,4
8/31/2003	3.72308	CADMIUM	0.003	MG/L	0.003	FINAL50	MONTHLYCMP	MINERAL	EMH4301,4
8/31/2003	3.72308	COBALT	0	MG/L	0.0008	FINAL50	MONTHLYCMP	MINERAL	EMH4301,4
8/31/2003	3.72308	IRON	0.1	MG/L	0.01	FINAL50	MONTHLYCMP	MINERAL	EMH4301,4
8/31/2003	3.72308	NICKEL	0	MG/L	0.01	FINAL50	MONTHLYCMP	MINERAL	EMH4301,4
8/31/2003	3.72308	SELENIUM	0	MG/L	0.05	FINAL50	MONTHLYCMP	MINERAL	EMH4301,4
8/31/2003	3.72308	ZINC	0.02	MG/L	0.009	FINAL50	MONTHLYCMP	MINERAL	EMH4301,4
8/31/2003	3.72308	SODIUM	38	MG/L	4	FINAL50	MONTHLYCMP	MINERAL	EMH011,150
8/31/2003	3.72308	TOTAL_CHROMIUM	0.001	MG/L	0.003	FINAL50	MONTHLYCMP	MINERAL	EMH4301,4
8/31/2003	3.72308	MAGNESIUM	0	MG/L	1	FINAL50	MONTHLYCMP	MINERAL	EMH4301,4
8/31/2003	3.72308	ARSENIC	0	MG/L	0.008	FINAL50	MONTHLYCMP	MINERAL	EMH4301,4
8/31/2003	3.72308	SILVER	0	MG/L	0.0003	FINAL50	MONTHLYCMP	MINERAL	EMH4301,4
8/31/2003	3.72308	BARIUM	0	MG/L	0.002	FINAL50	MONTHLYCMP	MINERAL	EMH4301,4
8/31/2003	3.72308	BERYLLIUM	0	MG/L	0.001	FINAL50	MONTHLYCMP	MINERAL	EMH4301,4
8/31/2003	3.72308	CALCIUM	0	MG/L	1	FINAL50	MONTHLYCMP	MINERAL	EMH4301,4
8/31/2003	3.72308	POTASSIUM	0	MG/L	1	FINAL50	MONTHLYCMP	MINERAL	EMH4301,4
8/31/2003	3.72308	SILICON	2	MG/L	1	FINAL50	MONTHLYCMP	MINERAL	EMH4301,4
8/31/2003	3.72308	Th-232	5E-14	CI/L	3E-14	FINAL50	MONTHLYCMP	RAD	WCB004,074
8/31/2003	3.72308	URANIUM	0	MG/L	0.0003	FINAL50	MONTHLYCMP	MINERAL	WCB004,075
8/31/2003	3.72308	U-235	0	CI/L	3E-15	FINAL50	MONTHLYCMP	RAD	WCB004,075
8/31/2003	3.72308	U-238	0	CI/L	1E-13	FINAL50	MONTHLYCMP	RAD	WCB004,075
8/31/2003	3.72308	U-234	0	CI/L	1.3E-12	FINAL50	MONTHLYCMP	RAD	WCB004,075
8/31/2003	3.72308	COD	37	MG/L	8	FINAL50	MONTHLYCMP	MINERAL	EMH002,67
8/31/2003	3.72308	CONDUCTIVITY	220	UMHO/CM	20	FINAL50	MONTHLYCMP	MINERAL	MCF0008,106
8/31/2003	3.72308	pH	7.47	UNITS	0.1	FINAL50	MONTHLYCMP	MINERAL	MCF0008,106
8/31/2003	3.72308	TSS	0	MG/L	4	FINAL50	MONTHLYCMP	MINERAL	MCF0002,112
8/31/2003	3.72308	TDS	0	MG/L	140	FINAL50	MONTHLYCMP	MINERAL	MCF0002,112
8/31/2003	3.72308	MERCURY	0.00004	MG/L	0.00002	FINAL50	MONTHLYCMP	MINERAL	EMH005,91
8/31/2003	3.72308	ALKALINITY-MO	87.6	MG/L	8.8	FINAL50	MONTHLYCMP	MINERAL	WCB002,16
8/31/2003	3.72308	ALKALINITY-P	0	MG/L	20	FINAL50	MONTHLYCMP	MINERAL	WCB002,16
8/31/2003	3.72308	HARDNESS	0	MG/L	6.615	FINAL50	MONTHLYCMP	MINERAL	DERIVED
8/31/2003	3.72308	Np-237	0	CI/L	1.1E-11	FINAL50	MONTHLYCMP	RAD	MCF0005,51
8/31/2003	3.72308	Cs-137	1.3E-11	CI/L	3E-12	FINAL50	MONTHLYCMP	RAD	MCF0005,51

051 8/11/03

NPDES Industrial Discharge Monitoring

FORM C

LANL Water Quality and Hydrology (ESH-18)

TTOs

(THIS FORM TO ACCOMPANY SAMPLE - RESULTS TO BE RECORDED BY ANALYSIS LABORATORY-THEN RETURN WITH DATA PACKAGE)

FWO-WFM Sample Number
NPDES 0803.11

See attached Rad screening data

COC TRACKING #
N-051C3007

(Use Forms in Numerical Order)

EPA Serial No.: EPA 051
TA/Building: TA-50-1 Rm 116
Date Sampled: 8-11-03
Flow: 72630 (liters/day) ☐ estimated ☑ measured Sampled by: TOM MORRISON
Discharge Description:
color: Clear foam or floating solids: None odor: None
comments:

☑ Monthly (Submit to ER-SMO) ☑ TTO Samples Refrigerated ✓

Analysis	Results/Concentration	Time Collected	Preserv. Added✓	Date Began	Time Began	Method	Analyzed By
902 TTO* (Use 40CFR433.11 list)	See Below	1425	HCl (VOC) ☑	-----	-----	See 40-CFR-136	

*** Dioxin, Pesticides, PCBs not required in current LANL NPDES Permit**

86092

TTO List

Compound	Result (µg/L)	Compound	Result (µg/L)	Compound	Result (µg/L)	Compound	Result (µg/L)
Method 625A Semivolatile	(U) ND	Benzyl butyl phthalate	(U) ND	Hexachlorocyclopentadien	(U) ND	2-Chloroethyl vinyl ether	(U) ND
Parachlorometa cresol		Bis (2-Chloroethyl) ether		Hexachloroethane		Chloroform (J)	0.000655
2-Chlorophenol		Bis (2-Chloroethoxy) Methane		Indeno (1,2,3-cd) pyrene		Chloromethane	(U) ND
2,4-Dichlorophenol		Bis (2-Ethylhexyl) phthalate		Isophorone		Chlorodibromomethane	
2,4-Dimethylphenol		Bis (2-Chloroisopropyl) ether		Naphthalene		1,2-Dichlorobenzene	
2,4-Dinitrophenol		4-Bromophenyl phenyl ether		Nitrobenzene		1,3-Dichlorobenzene	
2-Methyl-4,6-dinitophenol		2-Chloronaphthalene		N-Nitrosodimethylamine		1,4-Dichlorobenzene	
2-Nitrophenol		4-Chlorophenyl phenyl ether		N-Nitrosodi-n-propylamine		1,1-Dichloroethane	
4-Nitrophenol		Chrysene		N-Nitrosodiphenylamine		1,2-Dichloroethane	
Pentachlorophenol		Dibenzo (a,h) Anthracene		Phenanthrene		1,1-Dichloroethylene	
Phenol		Di-N-Butylphthalate		Pyrene		1,2-Trans-chloroethylene	
2,4,6-Trichlorophenol		3,3'-Dichlorobenzidine		1,2,4-Trichlorobenzene		1,2-Dichloropropane	
Method 625B Semivolatile		Diethyl phthalate		Method 624 Volatile Organics		1,3-Dichloropropene	
Acenaphthene		Dimethyl phthalate		Acrolein		Ethyl benzene	
Acenaphthylene		2,4-Dinitrotoluene		Acrylonitrile		Methylene chloride	
Anthracene		2,6-Dinitrotoluene		Benzene		1,1,2,2-Tetrachloroethane	
Benzidine		Di-n-octyl phthalate		Dichlorobromomethane		Tetrachloroethylene	
Benzo (a) anthracene		1,2-Diphenylhydrazine		Bromoform		1,1,1-Trichloroethane	
Benzo (b) fluoranthene		Fluoranthene		Bromomethane		Trichloroethylene	
Benzo (k) fluoranthene		Fluorene		Carbon tetrachloride		1,1,2-Trichloroethane	
Benzo (a) pyrene		Hexachlorobenzene		Chlorobenzene		Toluene	
Benzo (g,h,i) Perylene		Hexachlorobutadiene		Chloroethane		Vinyl chloride	

See Reverse For Chain-of Custody/Containers

WJ 9/24/03

FORM C (back)

Outfall No. EPA051

Chain-Of-Custody Record

Relinquished By (Signature) & Org.	Date	Time	Received By (Signature) & Org.
Thomas O Monroe	8-13-03	1358	[illegible]
	8-14-03	0905	Mike [illegible]

Containers

Quantity	Volume/Type	Preservative	Parameter
4	1 liter amber glass	None	TTO (SVOC)
2	40 ml glass vial	HCl	VOC
2	40 ml glass vial	None	2-Chloroethyl-vinyl ether

WS

GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

051 8/11/03

e-mail

SVOA

Certificate of Analysis

Company : Los Alamos National Labs
Address : MS K497 ESH-18
Water Quality & Hydrology
Los Alamos, New Mexico 87545
Contact: Billy Turney
Project: NPDES Monitoring - Site 051

Report Date: August 21, 2003

WM 9/5/03

Client Sample ID: NPDES0803.11
Sample ID: 86092002
Matrix: Waste Water
Collect Date: 11-AUG-03
Receive Date: 14-AUG-03
Collector: Client

Project: ESHL00102
Client ID: ESHL001

Parameter	Qualifier	Result	Permit Limit	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Semi-volatile Mass spec Organics Federal											
3510/625TTO in Liquid-Federal											
1,2,4-Trichlorobenzene	U	ND		0.000789	0.0111	mg/L	1	KGB1 08/19/03	1507	270765	1
1,2-Diphenylhydrazine	U	ND		0.000956	0.0111	mg/L	1				
2,4,6-Trichlorophenol	U	ND		0.000433	0.0111	mg/L	1				
2,4-Dichlorophenol	U	ND		0.000522	0.0111	mg/L	1				
2,4-Dimethylphenol	U	ND		0.000522	0.0111	mg/L	1				
2,4-Dinitrophenol	U	ND		0.00556	0.0222	mg/L	1				
2,4-Dinitrotoluene	U	ND		0.000778	0.0111	mg/L	1				
2,6-Dinitrotoluene	U	ND		0.000556	0.0111	mg/L	1				
2-Chloronaphthalene	U	ND		0.000444	0.00111	mg/L	1				
2-Chlorophenol	U	ND		0.000456	0.0111	mg/L	1				
2-Methyl-4,6-dinitrophenol	U	ND		0.00111	0.0111	mg/L	1				
2-Nitrophenol	U	ND		0.000656	0.0111	mg/L	1				
3,3'-Dichlorobenzidine	U	ND		0.000567	0.0111	mg/L	1				
4-Bromophenylphenylether	U	ND		0.00136	0.0111	mg/L	1				
4-Chlorophenylphenylether	U	ND		0.000933	0.0111	mg/L	1				
4-Nitrophenol	U	ND		0.00556	0.0111	mg/L	1				
Acenaphthene	U	ND		0.000556	0.00111	mg/L	1				
Acenaphthylene	U	ND		0.000556	0.00111	mg/L	1				
Anthracene	U	ND		0.000556	0.00111	mg/L	1				
Benzidine	U	ND		0.00556	0.0556	mg/L	1				
Benzo(a)anthracene	U	ND		0.000556	0.00111	mg/L	1				
Benzo(a)pyrene	U	ND		0.000556	0.00111	mg/L	1				
Benzo(b)fluoranthene	U	ND		0.000556	0.00111	mg/L	1				
Benzo(ghi)perylene	U	ND		0.000556	0.00111	mg/L	1				
Benzo(k)fluoranthene	U	ND		0.000556	0.00111	mg/L	1				
Butylbenzylphthalate	U	ND		0.000756	0.0111	mg/L	1				
Chrysene	U	ND		0.000556	0.00111	mg/L	1				
Di-n-butylphthalate	U	ND		0.00111	0.0111	mg/L	1				
Di-n-octylphthalate	U	ND		0.000967	0.0111	mg/L	1				
Dibenzo(a,h)anthracene	U	ND		0.000556	0.00111	mg/L	1				
Diethylphthalate	U	ND		0.000989	0.0111	mg/L	1				
Dimethylphthalate	U	ND		0.000589	0.0111	mg/L	1				
Diphenylamine N-nitrosodiphenylamine	U	ND		0.000878	0.0111	mg/L	1				
Fluoranthene	U	ND		0.000556	0.00111	mg/L	1				
Fluorene	U	ND		0.000556	0.00111	mg/L	1				
Hexachlorobenzene	U	ND		0.000722	0.0111	mg/L	1				
Hexachlorobutadiene	U	ND		0.000356	0.0111	mg/L	1				
Hexachlorocyclopentadiene	U	ND		0.00111	0.0111	mg/L	1				

GENERAL ENGINEERING LABORATORIES, LLC

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e-mail

051 8/11/03

SVOA/VOA

Certificate of Analysis

Company : Los Alamos National Labs
Address : MS K497 ESH-18
Water Quality & Hydrology
Los Alamos, New Mexico 87545
Contact: Billy Turney
Project: NPDES Monitoring - Site 051

WM 9/3/03

Report Date: August 21, 2003

Client Sample ID: NPDES0803.11
Sample ID: 86092002

Project: ESHL00102
Client ID: ESHL001

Parameter	Qualifier	Result	Permit Limit	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-volatile Mass spec Organics Federal												
3510/625TTO in Liquid-Federal												
Hexachloroethane	U	ND		0.000478	0.0111	mg/L	1					
Indeno(1,2,3-cd)pyrene	U	ND		0.000556	0.00111	mg/L	1					
Isophorone	U	ND		0.000656	0.0111	mg/L	1					
N-Methyl-N-nitrosomethylamine	U	ND		0.00556	0.0111	mg/L	1					
N-Nitrosodipropylamine	U	ND		0.000833	0.0111	mg/L	1					
Naphthalene	U	ND		0.000122	0.00111	mg/L	1					
Nitrobenzene	U	ND		0.0007	0.0111	mg/L	1					
4-Chloro-3-methylphenol	U	ND		0.000767	0.0111	mg/L	1					
Pentachlorophenol	U	ND		0.00556	0.0111	mg/L	1					
Phenanthrene	U	ND		0.000556	0.00111	mg/L	1					
Phenol	U	ND		0.000333	0.0111	mg/L	1					
Pyrene	U	ND		0.000556	0.00111	mg/L	1					
bis(2-Chloroethoxy)methane	U	ND		0.000533	0.0111	mg/L	1					
bis(2-Chloroethyl) ether	U	ND		0.00152	0.0111	mg/L	1					
bis(2-Chloroisopropyl)ether	U	ND		0.000889	0.0111	mg/L	1					
bis(2-Ethylhexyl)phthalate	U	ND		0.00144	0.0111	mg/L	1					
Volatile Organics Federal												
EPA 624 TTO Liquid Federal - DOE AL								MAP	08/15/03	1900	270943	2
1,1,1-Trichloroethane	U	ND		0.00034	0.001	mg/L	1					
1,1,2,2-Tetrachloroethane	U	ND		0.00049	0.001	mg/L	1					
1,1,2-Trichloroethane	U	ND		0.00044	0.001	mg/L	1					
1,1-Dichloroethane	U	ND		0.00041	0.001	mg/L	1					
1,1-Dichloroethylene	U	ND		0.00041	0.001	mg/L	1					
1,2-Dichlorobenzene	U	ND		0.00036	0.001	mg/L	1					
1,2-Dichloroethane	U	ND		0.00029	0.001	mg/L	1					
1,2-Dichloropropane	U	ND		0.00025	0.001	mg/L	1					
1,3-Dichlorobenzene	U	ND		0.00033	0.001	mg/L	1					
1,4-Dichlorobenzene	U	ND		0.00025	0.001	mg/L	1					
2-Chloroethylvinyl ether	U	ND		0.00125	0.005	mg/L	1					
Acrolein	U	ND		0.00406	0.005	mg/L	1					
Acrylonitrile	U	ND		0.002	0.005	mg/L	1					
Benzene	U	ND		0.00033	0.001	mg/L	1					
Bromodichloromethane	U	ND		0.00038	0.001	mg/L	1					
Bromoform	U	ND		0.0005	0.001	mg/L	1					
Bromomethane	U	ND		0.0005	0.001	mg/L	1					
Carbon tetrachloride	U	ND		0.00029	0.001	mg/L	1					
Chlorobenzene	U	ND		0.00032	0.001	mg/L	1					
Chloroethane	U	ND		0.0005	0.001	mg/L	1					
Chloroform	J	0.000655		0.00036	0.001	mg/L	1					
Chloromethane	U	ND		0.0005	0.001	mg/L	1					
Dibromochloromethane	U	ND		0.00029	0.001	mg/L	1					

051 8/11/03

VOA

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Certificate of Analysis

Company : Los Alamos National Labs
Address . MS K497 ESH-18
Water Quality & Hydrology
Los Alamos, New Mexico 87545
Contact: Billy Turney
Project: NPDES Monitoring - Site 051

dm 9/5/03

Report Date: August 21, 2003

Client Sample ID: NPDES0803.11
Sample ID: 86092002

Project: ESHL00102
Client ID: ESHL001

Parameter	Qualifier	Result	Permit Limit	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics Federal											
EPA 624 TTO Liquid Federal - DOE AL											
Ethylbenzene	U	ND		0.00021	0.001	mg/L	1				
Methylene chloride	U	ND		0.0033	0.005	mg/L	1				
Tetrachloroethylene	U	ND		0.00033	0.001	mg/L	1				
Toluene	U	ND		0.00039	0.001	mg/L	1				
Trichloroethylene	U	ND		0.00036	0.001	mg/L	1				
Vinyl chloride	U	ND		0.00055	0.001	mg/L	1				
cis-1,3-Dichloropropylene	U	ND		0.0003	0.001	mg/L	1				
trans-1,2-Dichloroethylene	U	ND		0.00037	0.001	mg/L	1				
trans-1,3-Dichloropropylene	U	ND		0.00029	0.001	mg/L	1				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3510C	3510C BNA Liq. Prep-EPA 625 Analysis Fed	JPB	08/15/03	1400	270762

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 625	
2	EPA 624 DOE-AL	

Surrogate recovery	Test	Recovery%	Acceptable Limits
2,4,6-Tribromophenol	3510/625TTO in Liquid-Federal	72%	(35%-123%)
2-Fluorobiphenyl	3510/625TTO in Liquid-Federal	61%	(43%-107%)
2-Fluorophenol	3510/625TTO in Liquid-Federal	42%	(20%-68%)
Nitrobenzene-d5	3510/625TTO in Liquid-Federal	67%	(26%-125%)
Phenol-d5	3510/625TTO in Liquid-Federal	29%	(9%-53%)
p-Terphenyl-d14	3510/625TTO in Liquid-Federal	86%	(31%-127%)
Bromofluorobenzene	EPA 624 TTO Liquid Federal - DC	99%	(69%-137%)
Dibromofluoromethane	EPA 624 TTO Liquid Federal - DC	101%	(74%-144%)
Toluene-d8	EPA 624 TTO Liquid Federal - DC	96%	(76%-129%)

Notes:
The Qualifiers in this report are defined as follows :

< Result is less than amount reported.
> Result is greater than amount reported.
B Target analyte was detected in the sample as well as the associated blank.
Flag for results below the MDC or a flag for low tracer recovery.

GENERAL ENGINEERING LABORATORIES, LLC

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Certificate of Analysis

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Address : MS K497 ESH-18
Water Quality & Hydrology
Los Alamos, New Mexico 87545
Contact: Billy Turney
Project: NPDES Monitoring - Site 051

Report Date: August 21, 2003

Client Sample ID: NPDES0803.11
Sample ID: 86092002

Project: ESHL00102
Client ID: ESHL001

Parameter	Qualifier	Result	Permit Limit	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

E Concentration of the target analyte exceeds the instrument calibration range.
H Analytical holding time exceeded.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
P The response between the confirmation column and the primary column is >40%D.
U Indicates the target analyte was analyzed for but not detected above the detection limit.
UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
Y QC Samples were not spiked with this compound.
h Sample preparation or preservation holding time exceeded.

The above sample is reported on an "as received" basis.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Stacy Griffin.

Reviewed by

GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: August 21, 2003

Client : Los Alamos National Labs
MS K497 ESH-18
Water Quality & Hydrology
Los Alamos, New Mexico

Contact: Billy Turney

Workorder: 86092

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS Federal											
Batch 270840											
QC1200474158 85759001 DUP											
Chromium			0.166	U	ND	ug/L	N/A		(+/-3.00)	BAJ	08/16/03 15:08
Copper			1.76		1.89	ug/L	7 ^		(+/-1.00)		
Lead		J	0.144	J	0.131	ug/L	N/A ^		(+/-2.00)		
Nickel			2.04		2.06	ug/L	1 ^		(+/-2.00)		
Zinc			2.68	J	2.18	ug/L	N/A ^		(+/-10.0)		
Cadmium		U	ND	U	ND	ug/L	N/A		(+/-1.00)		
QC1200474162 LCS											
Chromium	50.0				52.1	ug/L		104	(85%-115%)		08/16/03 14:56
Copper	50.0				53.6	ug/L		107	(85%-115%)		
Lead	50.0				52.5	ug/L		105	(85%-115%)		
Nickel	50.0				52.4	ug/L		105	(85%-115%)		
Zinc	50.0				52.4	ug/L		105	(85%-115%)		
Cadmium	50.0				50.3	ug/L		101	(85%-115%)		
QC1200474157 MB											
Chromium				U	ND	ug/L					08/16/03 14:50
Copper				J	0.299	ug/L					
Lead				U	ND	ug/L					
Nickel				U	ND	ug/L					
Zinc				U	ND	ug/L					
Cadmium				U	ND	ug/L					
QC1200474160 85759001 MS											
Chromium	50.0		0.166		51.1	ug/L		102	(75%-125%)		08/16/03 15:14
Copper	50.0		1.76		54.5	ug/L		105	(75%-125%)		
Lead	20.0	J	0.144		21.7	ug/L		108	(75%-125%)		
Nickel	50.0		2.04		53.8	ug/L		104	(75%-125%)		
Zinc	50.0		2.68		52.6	ug/L		100	(75%-125%)		
Cadmium	5.00	U	ND		6.10	ug/L		122	(75%-125%)		
QC1200474161 85759001 MSD											
Chromium	50.0		0.166		50.7	ug/L	1	101	(0%-20%)		08/16/03 15:20
Copper	50.0		1.76		54.0	ug/L	1	105	(0%-20%)		
Lead	20.0	J	0.144		21.2	ug/L	2	105	(0%-20%)		
Nickel	50.0		2.04		52.7	ug/L	2	101	(0%-20%)		
Zinc	50.0		2.68		52.8	ug/L	0	100	(0%-20%)		
Cadmium	5.00	U	ND		6.05	ug/L	1	121	(0%-20%)		
QC1200474159 85759001 SDILT											
Chromium			0.166	U	ND	ug/L	N/A				08/16/03 15:26
Copper			1.76	J	0.749	ug/L	113				
Lead		J	0.144	U	ND	ug/L	N/A				
Nickel			2.04	J	0.412	ug/L	1.08				
Zinc			2.68	U	ND	ug/L	N/A				
Cadmium		U	ND	U	ND	ug/L	N/A				
Metals Analysis-Mercury Federal											

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QC Summary

Workorder: 86092

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Metals Analysis-Mercury Federal											
Batch 270808											
QC1200474061 86092001 DUP											
Mercury		U	ND	U	ND	ug/L	N/A		(+/-0.200)	NOR1	08/20/03 11:58
QC1200474060 LCS											
Mercury	2.00				2.11	ug/L		105	(85%-115%)		08/20/03 11:54
QC1200474059 MB											
Mercury				U	ND	ug/L					08/20/03 11:52
QC1200474062 86092001 MS											
Mercury	2.00	U	ND		2.05	ug/L		102	(75%-125%)		08/20/03 12:00
Semi-Volatiles-GC/MS Federal											
Batch 270765											
QC1200473957 LCS											
1,2,4-Trichlorobenzene	0.100				0.0689	mg/L		69	(53%-96%)	KGB1	08/20/03 08:30
2,4,6-Trichlorophenol	0.100				0.0903	mg/L		90	(58%-107%)		
2,4-Dichlorophenol	0.100				0.0815	mg/L		82	(58%-96%)		
2,4-Dimethylphenol	0.100				0.0759	mg/L		76	(32%-106%)		
2,4-Dinitrophenol	0.100				0.112	mg/L		112	(31%-143%)		
2,4-Dinitrotoluene	0.100				0.0962	mg/L		96	(61%-118%)		
2,6-Dinitrotoluene	0.100				0.0945	mg/L		95	(71%-109%)		
2-Chloronaphthalene	0.100				0.0811	mg/L		81	(64%-98%)		
2-Chlorophenol	0.100				0.0799	mg/L		80	(49%-94%)		
4-Methyl-4,6-dinitrophenol	0.100				0.113	mg/L		113	(36%-142%)		
Nitrophenol	0.100				0.0808	mg/L		81	(56%-102%)		
3'-Dichlorobenzidine	0.100				0.0884	mg/L		88	(31%-131%)		
4-Bromophenylphenylether	0.100				0.0943	mg/L		94	(67%-116%)		
4-Chlorophenylphenylether	0.100				0.0851	mg/L		85	(59%-109%)		
4-Nitrophenol	0.100				0.0424	mg/L		42	(16%-48%)		
Acenaphthene	0.100				0.0798	mg/L		80	(63%-112%)		
Acenaphthylene	0.100				0.0755	mg/L		76	(56%-98%)		
Anthracene	0.100				0.0823	mg/L		82	(67%-106%)		
Benzidine	0.100			J	0.0267	mg/L		27	(10%-150%)		
Benzo(a)anthracene	0.100				0.0837	mg/L		84	(69%-104%)		
Benzo(a)pyrene	0.100				0.0859	mg/L		86	(63%-109%)		
Benzo(b)fluoranthene	0.100				0.0898	mg/L		90	(66%-116%)		
Benzo(ghi)perylene	0.100				0.054	mg/L		54	(45%-128%)		
Benzo(k)fluoranthene	0.100				0.0998	mg/L		100	(62%-119%)		
Butylbenzylphthalate	0.100				0.098	mg/L		98	(59%-123%)		
Chrysene	0.100				0.0781	mg/L		78	(68%-105%)		
Di-n-butylphthalate	0.100				0.0905	mg/L		91	(65%-112%)		
Di-n-octylphthalate	0.100			E	0.126	mg/L		126	(47%-130%)		
Dibenzo(a,h)anthracene	0.100				0.0664	mg/L		66	(46%-125%)		
Diethylphthalate	0.100				0.0817	mg/L		82	(60%-110%)		
Dimethylphthalate	0.100				0.0837	mg/L		84	(64%-105%)		
Diphenylamine	0.100				0.0871	mg/L		87	(63%-111%)		
Fluoranthene	0.100				0.0846	mg/L		85	(65%-110%)		
Fluorene	0.100				0.0785	mg/L		79	(65%-109%)		
Hexachlorobenzene	0.100				0.0885	mg/L		89	(66%-106%)		
Hexachlorobutadiene	0.100				0.0638	mg/L		64	(43%-97%)		
Hexachlorocyclopentadiene	0.100				0.0726	mg/L		73	(20%-107%)		

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QC Summary

Workorder: 86092

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatiles-GC/MS Federal											
Batch 270765											
Hexachloroethane	0.100			0.0667	mg/L		67	(45%-95%)			
Indeno(1,2,3-cd)pyrene	0.100			0.0607	mg/L		61	(46%-126%)			
Isophorone	0.100			0.0744	mg/L		74	(59%-102%)			
N-Methyl-N-nitrosomethylamine	0.100			0.0553	mg/L		55	(10%-150%)			
N-Nitrosodi--n-propylamine	0.100			0.0816	mg/L		82	(52%-111%)			
Naphthalene	0.100			0.062	mg/L		62	(52%-99%)			
Nitrobenzene	0.100			0.0752	mg/L		75	(56%-106%)			
Parachlorometa cresol	0.100			0.091	mg/L		91	(54%-103%)			
Pentachlorophenol	0.100			0.102	mg/L		102	(38%-120%)			
Phenanthrene	0.100			0.0797	mg/L		80	(66%-105%)			
Phenol	0.100			0.0371	mg/L		37	(18%-45%)			
Pyrene	0.100			0.0896	mg/L		90	(52%-127%)			
bis(2-Chloroethoxy)methane	0.100			0.064	mg/L		64	(47%-102%)			
bis(2-Chloroethyl) ether	0.100			0.065	mg/L		65	(38%-100%)			
bis(2-Chloroisopropyl)ether	0.100			0.0693	mg/L		69	(49%-103%)			
bis(2-Ethylhexyl)phthalate	0.100			0.105	mg/L		105	(61%-123%)			
**2,4,6-Tribromophenol	0.100			0.0965	mg/L		97	(35%-123%)			
**2-Fluorobiphenyl	0.050			0.037	mg/L		74	(43%-107%)			
**2-Fluorophenol	0.100			0.0495	mg/L		50	(20%-68%)			
**Nitrobenzene-d5	0.050			0.0368	mg/L		74	(26%-125%)			
**enol-d5	0.100			0.0344	mg/L		34	(9%-53%)			
erphenyl-d14	0.050			0.0472	mg/L		94	(31%-127%)			
QC1200473956 MB										08/19/03	14:24
1,2,4-Trichlorobenzene			U	ND	mg/L						
1,2-Diphenylhydrazine			U	ND	mg/L						
2,4,6-Trichlorophenol			U	ND	mg/L						
2,4-Dichlorophenol			U	ND	mg/L						
2,4-Dimethylphenol			U	ND	mg/L						
2,4-Dinitrophenol			U	ND	mg/L						
2,4-Dinitrotoluene			U	ND	mg/L						
2,6-Dinitrotoluene			U	ND	mg/L						
2-Chloronaphthalene			U	ND	mg/L.						
2-Chlorophenol			U	ND	mg/L						
2-Methyl-4,6-dinitrophenol			U	ND	mg/L						
2-Nitrophenol			U	ND	mg/L						
3,3'-Dichlorobenzidine			U	ND	mg/L						
4-Bromophenylphenylether			U	ND	mg/L						
4-Chlorophenylphenylether			U	ND	mg/L						
4-Nitrophenol			U	ND	mg/L						
Acenaphthene			U	ND	mg/L						
Acenaphthylene			U	ND	mg/L						
Anthracene			U	ND	mg/L						
Benzidine			U	ND	mg/L						
Benzo(a)anthracene			U	ND	mg/L						
Benzo(a)pyrene			U	ND	mg/L						
Benzo(b)fluoranthene			U	ND	mg/L						
Benzo(ghi)perylene			U	ND	mg/L						
Benzo(k)fluoranthene			U	ND	mg/L						

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QC Summary

Workorder: 86092

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Semi-Volatiles-GC/MS Federal										
Batch 270765										
Butylbenzylphthalate			U	ND	mg/L					
Chrysene			U	ND	mg/L					
Di-n-butylphthalate			U	ND	mg/L					
Di-n-octylphthalate			U	ND	mg/L					
Dibenzo(a,h)anthracene			U	ND	mg/L					
Diethylphthalate			U	ND	mg/L					
Dimethylphthalate			U	ND	mg/L					
Diphenylamine			U	ND	mg/L					
Fluoranthene			U	ND	mg/L					
Fluorene			U	ND	mg/L					
Hexachlorobenzene			U	ND	mg/L					
Hexachlorobutadiene			U	ND	mg/L					
Hexachlorocyclopentadiene			U	ND	mg/L					
Hexachloroethane			U	ND	mg/L					
Indeno(1,2,3-cd)pyrene			U	ND	mg/L					
Isophorone			U	ND	mg/L					
N-Methyl-N-nitrosomethylamine			U	ND	mg/L					
N-Nitrosodi--n-propylamine			U	ND	mg/L					
Naphthalene			U	ND	mg/L					
Nitrobenzene			U	ND	mg/L					
[illegible]rachlorometa cresol			U	ND	mg/L					
[illegible]tachlorophenol			U	ND	mg/L					
[illegible]enanthrene			U	ND	mg/L					
Phenol			U	ND	mg/L					
Pyrene			U	ND	mg/L					
bis(2-Chlorocthoxy)methane			U	ND	mg/L					
bis(2-Chloroethyl) ether			U	ND	mg/L					
bis(2-Chloroisopropyl)ether			U	ND	mg/L					
bis(2-Ethylhexyl)phthalate			U	ND	mg/L					
**2,4,6-Tribromophenol	0.100			0.0717	mg/L		72	(35%-123%)		
**2-Fluorobiphenyl	0.050			0.0341	mg/L		68	(43%-107%)		
**2-Fluorophenol	0.100			0.0503	mg/L		50	(20%-68%)		
**Nitrobenzene-d5	0.050			0.0422	mg/L		84	(26%-125%)		
**Phenol-d5	0.100			0.0334	mg/L		33	(9%-53%)		
**p-Terphenyl-d14	0.050			0.044	mg/L		88	(31%-127%)		
QC1200473958 86092002 MS										
1,2,4-Trichlorobenzene	0.200	U	ND	0.123	mg/L		61	(44%-108%)		08/19/03 15:29
2,4,6-Trichlorophenol	0.200	U	ND	0.183	mg/L		91	(41%-120%)		
2,4-Dichlorophenol	0.200	U	ND	0.169	mg/L		84	(42%-109%)		
2,4-Dimethylphenol	0.200	U	ND	0.123	mg/L		61	(27%-111%)		
2,4-Dinitrophenol	0.200	U	ND	E 0.282	mg/L		141	(32%-145%)		
2,4-Dinitrotoluene	0.200	U	ND	0.196	mg/L		98	(44%-127%)		
2,6-Dinitrotoluene	0.200	U	ND	0.189	mg/L		94	(52%-122%)		
2-Chloronaphthalene	0.200	U	ND	0.160	mg/L		80	(49%-108%)		
2-Chlorophenol	0.200	U	ND	0.170	mg/L		85	(39%-105%)		
2-Methyl-4,6-dinitrophenol	0.200	U	ND	0.238	mg/L		119	(27%-142%)		
2-Nitrophenol	0.200	U	ND	0.164	mg/L		82	(37%-120%)		
3,3'-Dichlorobenzidine	0.200	U	ND	J 0.00926	mg/L		5*	(18%-128%)		

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QC Summary

Workorder: 86092

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatiles-GC/MS Federal												
Batch 270765												
4-Bromophenylphenylether	0.200	U	ND		0.191	mg/L		96	(51%-127%)			
4-Chlorophenylphenylether	0.200	U	ND		0.176	mg/L		88	(46%-122%)			
4-Nitrophenol	0.200	U	ND		0.139	mg/L		70	(10%-88%)			
Acenaphthene	0.200	U	ND		0.165	mg/L		83	(52%-119%)			
Acenaphthylene	0.200	U	ND		0.149	mg/L		75	(47%-102%)			
Anthracene	0.200	U	ND		0.163	mg/L		82	(54%-114%)			
Benzidine	0.200	U	ND	U	ND	mg/L		0*	(10%-150%)			
Benzo(a)anthracene	0.200	U	ND		0.167	mg/L		83	(51%-116%)			
Benzo(a)pyrene	0.200	U	ND		0.177	mg/L		89	(50%-117%)			
Benzo(b)fluoranthene	0.200	U	ND		0.183	mg/L		91	(51%-125%)			
Benzo(ghi)perylene	0.200	U	ND		0.155	mg/L		78	(35%-133%)			
Benzo(k)fluoranthene	0.200	U	ND		0.176	mg/L		88	(48%-129%)			
Butylbenzylphthalate	0.200	U	ND		0.204	mg/L		102	(46%-135%)			
Chrysene	0.200	U	ND		0.165	mg/L		83	(56%-113%)			
Di-n-butylphthalate	0.200	U	ND		0.173	mg/L		86	(52%-122%)			
Di-n-octylphthalate	0.200	U	ND		0.223	mg/L		112	(44%-131%)			
Dibenzo(a,h)anthracene	0.200	U	ND		0.178	mg/L		89	(39%-129%)			
Diethylphthalate	0.200	U	ND		0.169	mg/L		84	(49%-118%)			
Dimethylphthalate	0.200	U	ND		0.170	mg/L		85	(53%-113%)			
Diphenylamine	0.200	U	ND		0.168	mg/L		84	(44%-122%)			
[illegible]oranthene	0.200	U	ND		0.172	mg/L		86	(49%-120%)			
[illegible]rene	0.200	U	ND		0.164	mg/L		82	(57%-112%)			
Hexachlorobenzene	0.200	U	ND		0.174	mg/L		87	(49%-117%)			
Hexachlorobutadiene	0.200	U	ND		0.110	mg/L		55	(35%-108%)			
Hexachlorocyclopentadiene	0.200	U	ND		0.157	mg/L		78	(11%-120%)			
Hexachloroethane	0.200	U	ND		0.107	mg/L		54	(36%-102%)			
Indeno(1,2,3-cd)pyrene	0.200	U	ND		0.161	mg/L		81	(39%-131%)			
Isophorone	0.200	U	ND		0.150	mg/L		75	(52%-109%)			
N-Methyl-N-nitrosomethylamine	0.200	U	ND		0.145	mg/L		73	(10%-150%)			
N-Nitrosodi--n-propylamine	0.200	U	ND		0.169	mg/L		85	(47%-115%)			
Naphthalene	0.200	U	ND		0.119	mg/L		59	(48%-103%)			
Nitrobenzene	0.200	U	ND		0.158	mg/L		79	(46%-120%)			
Parachlorometa cresol	0.200	U	ND		0.179	mg/L		89	(43%-116%)			
Pentachlorophenol	0.200	U	ND		0.209	mg/L		104	(28%-134%)			
Phenanthrene	0.200	U	ND		0.158	mg/L		79	(57%-110%)			
Phenol	0.200	U	ND		0.113	mg/L		57	(17%-73%)			
Pyrene	0.200	U	ND		0.184	mg/L		92	(36%-138%)			
bis(2-Chloroethoxy)methane	0.200	U	ND		0.130	mg/L		65	(38%-108%)			
bis(2-Chloroethyl) ether	0.200	U	ND		0.128	mg/L		64	(32%-102%)			
bis(2-Chloroisopropyl)ether	0.200	U	ND		0.142	mg/L		71	(38%-110%)			
bis(2-Ethylhexyl)phthalate	0.200	U	ND		0.214	mg/L		107	(50%-131%)			
**2,4,6-Tribromophenol	0.200		0.0796		0.191	mg/L		96	(35%-123%)			
**2-Fluorobiphenyl	0.100		0.0341		0.078	mg/L		78	(43%-107%)			
**2-Fluorophenol	0.200		0.047		0.125	mg/L		63	(20%-68%)			
**Nitrobenzene-d5	0.100		0.0372		0.0755	mg/L		76	(26%-125%)			
**Phenol-d5	0.200		0.0325		0.105	mg/L		53	(9%-53%)			
**p-Terphenyl-d14	0.100		0.0477		0.0982	mg/L		98	(31%-127%)			

QC1200473959 86092002 MSD

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QC Summary

Workorder: 86092

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatiles-GC/MS Federal												
Batch 270765												
1,2,4-Trichlorobenzene	0.200	U	ND		0.125	mg/L	2	62	(0%-30%)			
2,4,6-Trichlorophenol	0.200	U	ND		0.186	mg/L	2	93	(0%-23%)			
2,4-Dichlorophenol	0.200	U	ND		0.168	mg/L	0	84	(0%-30%)			
2,4-Dimethylphenol	0.200	U	ND		0.123	mg/L	0	62	(0%-26%)			
2,4-Dinitrophenol	0.200	U	ND	E	0.266	mg/L	6	133	(0%-28%)			
2,4-Dinitrotoluene	0.200	U	ND		0.214	mg/L	9	107	(0%-30%)			
2,6-Dinitrotoluene	0.200	U	ND		0.200	mg/L	6	100	(0%-30%)			
2-Chloronaphthalene	0.200	U	ND		0.158	mg/L	2	79	(0%-30%)			
2-Chlorophenol	0.200	U	ND		0.168	mg/L	1	84	(0%-20%)			
2-Methyl-4,6-dinitrophenol	0.200	U	ND	E	0.257	mg/L	7	128	(0%-31%)			
2-Nitrophenol	0.200	U	ND		0.161	mg/L	2	81	(0%-21%)			
3,3'-Dichlorobenzidine	0.200	U	ND	J	0.00557	mg/L	50*	3	(0%-24%)			
4-Bromophenylphenylether	0.200	U	ND		0.195	mg/L	2	98	(0%-20%)			
4-Chlorophenylphenylether	0.200	U	ND		0.180	mg/L	2	90	(0%-30%)			
4-Nitrophenol	0.200	U	ND		0.152	mg/L	9	76	(0%-31%)			
Acenaphthene	0.200	U	ND		0.171	mg/L	3	85	(0%-22%)			
Acenaphthylene	0.200	U	ND		0.157	mg/L	5	78	(0%-30%)			
Anthracene	0.200	U	ND		0.176	mg/L	8	88	(0%-30%)			
Benzidine	0.200	U	ND	U	ND	mg/L	0	0	(0%-30%)			
Benzo(a)anthracene	0.200	U	ND		0.178	mg/L	6	89	(0%-30%)			
Benzo(a)pyrene	0.200	U	ND		0.191	mg/L	7	95	(0%-30%)			
Benzo(b)fluoranthene	0.200	U	ND		0.192	mg/L	5	96	(0%-25%)			
Benzo(ghi)perylene	0.200	U	ND		0.152	mg/L	2	76	(0%-28%)			
Benzo(k)fluoranthene	0.200	U	ND		0.202	mg/L	14	101	(0%-25%)			
Butylbenzylphthalate	0.200	U	ND		0.206	mg/L	1	103	(0%-25%)			
Chrysene	0.200	U	ND		0.179	mg/L	8	89	(0%-30%)			
Di-n-butylphthalate	0.200	U	ND		0.198	mg/L	14	99	(0%-21%)			
Di-n-octylphthalate	0.200	U	ND		0.237	mg/L	6	118	(0%-30%)			
Dibenzo(a,h)anthracene	0.200	U	ND		0.174	mg/L	2	87	(0%-27%)			
Diethylphthalate	0.200	U	ND		0.177	mg/L	5	88	(0%-30%)			
Dimethylphthalate	0.200	U	ND		0.178	mg/L	4	89	(0%-21%)			
Diphenylamine	0.200	U	ND		0.175	mg/L	4	87	(0%-25%)			
Fluoranthene	0.200	U	ND		0.192	mg/L	11	96	(0%-22%)			
Fluorene	0.200	U	ND		0.172	mg/L	5	86	(0%-30%)			
Hexachlorobenzene	0.200	U	ND		0.185	mg/L	6	93	(0%-30%)			
Hexachlorobutadiene	0.200	U	ND		0.109	mg/L	1	55	(0%-30%)			
Hexachlorocyclopentadiene	0.200	U	ND		0.149	mg/L	5	74	(0%-34%)			
Hexachloroethane	0.200	U	ND		0.113	mg/L	5	57	(0%-21%)			
Indeno(1,2,3-cd)pyrene	0.200	U	ND		0.166	mg/L	3	83	(0%-26%)			
Isophorone	0.200	U	ND		0.150	mg/L	0	75	(0%-30%)			
N-Methyl-N-nitrosomethylamine	0.200	U	ND		0.139	mg/L	4	70	(0%-30%)			
N-Nitrosodi--n-propylamine	0.200	U	ND		0.169	mg/L	0	85	(0%-30%)			
Naphthalene	0.200	U	ND		0.116	mg/L	3	58	(0%-30%)			
Nitrobenzene	0.200	U	ND		0.151	mg/L	4	76	(0%-30%)			
Parachlorometa cresol	0.200	U	ND		0.189	mg/L	6	95	(0%-23%)			
Pentachlorophenol	0.200	U	ND		0.223	mg/L	7	112	(0%-26%)			
Phenanthrene	0.200	U	ND		0.170	mg/L	8	85	(0%-30%)			
Phenol	0.200	U	ND		0.116	mg/L	3	58	(0%-22%)			

QC Summary

Workorder: 86092

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Semi-Volatiles-GC/MS Federal											
Batch 270765											
Pyrene	0.200	U	ND		0.176	mg/L	4	88	(0%-28%)		
bis(2-Chloroethoxy)methane	0.200	U	ND		0.128	mg/L	1	64	(0%-30%)		
bis(2-Chloroethyl) ether	0.200	U	ND		0.129	mg/L	1	65	(0%-27%)		
bis(2-Chloroisopropyl)ether	0.200	U	ND		0.144	mg/L	2	72	(0%-30%)		
bis(2-Ethylhexyl)phthalate	0.200	U	ND		0.222	mg/L	3	111	(0%-27%)		
**2,4,6-Tribromophenol	0.200		0.0796		0.186	mg/L		93	(35%-123%)		
**2-Fluorobiphenyl	0.100		0.0341		0.0729	mg/L		73	(43%-107%)		
**2-Fluorophenol	0.200		0.047		0.124	mg/L		62	(20%-68%)		
**Nitrobenzene-d5	0.100		0.0372		0.0746	mg/L		75	(26%-125%)		
**Phenol-d5	0.200		0.0325		0.105	mg/L		53	(9%-53%)		
**p-Terphenyl-d14	0.100		0.0477		0.0946	mg/L		95	(31%-127%)		
Solids Analysis Federal											
Batch 271052											
QC1200474789 86092001 DUP											
Total Suspended Solids		U	ND	U	ND	mg/L	N/A		(+/-2.50)	SDS	08/16/03 07:20
QC1200474788 LCS											
Total Suspended Solids	500				505	mg/L		101	(95%-105%)		
QC1200474787 MB											
Total Suspended Solids				U	ND	mg/L					
Spectrometric Analysis											
Batch 271225											
QC1200475211 LCS											
COD	500				481	mg/L		96	(85%-115%)	OW1	08/18/03 17:16
QC1200475206 MB											
COD				U	ND	mg/L					
Spectrometric Analysis Federal											
Batch 271225											
QC1200475208 85567007 DUP											
COD			57.0		57.0	mg/L	0 ^		(+/-20.0)	OW1	08/18/03 17:16
QC1200475210 85567007 PS											
COD	500		57.0		541	mg/L		97	(85%-115%)		
Volatile-GC/MS Federal											
Batch 270943											
QC1200474457 LCS											
1,1,1-Trichloroethane	0.020				0.0201	mg/L		100	(72%-136%)	MAP	08/15/03 09:00
1,1,2,2-Tetrachloroethane	0.020				0.0192	mg/L		96	(66%-127%)		
1,1,2-Trichloroethane	0.020				0.0186	mg/L		93	(77%-119%)		
1,1-Dichloroethane	0.020				0.0202	mg/L		101	(80%-119%)		
1,1-Dichloroethylene	0.020				0.0173	mg/L		87	(66%-132%)		
1,2-Dichlorobenzene	0.020				0.0201	mg/L		100	(80%-116%)		
1,2-Dichloroethane	0.020				0.0191	mg/L		96	(67%-131%)		
1,2-Dichloropropane	0.020				0.0196	mg/L		98	(75%-119%)		
1,3-Dichlorobenzene	0.020				0.0207	mg/L		104	(80%-122%)		
1,4-Dichlorobenzene	0.020				0.0204	mg/L		102	(70%-130%)		
2-Chloroethylvinyl ether	0.100				0.087	mg/L		87	(63%-131%)		
Benzene	0.020				0.0191	mg/L		95	(78%-116%)		
Bromodichloromethane	0.020				0.0198	mg/L		99	(78%-127%)		

QC Summary

Workorder: 86092

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS Federal										
Batch 270943										
Bromoform	0.020			0.0223	mg/L		112	(79%-141%)		
Bromomethane	0.020			0.0196	mg/L		98	(61%-144%)		
Carbon tetrachloride	0.020			0.0209	mg/L		105	(66%-141%)		
Chlorobenzene	0.020			0.0207	mg/L		104	(82%-118%)		
Chloroethane	0.020			0.0218	mg/L		109	(68%-132%)		
Chloroform	0.020			0.0203	mg/L		102	(80%-124%)		
Chloromethane	0.020			0.0183	mg/L		92	(72%-142%)		
Dibromochloromethane	0.020			0.0202	mg/L		101	(81%-129%)		
Ethylbenzene	0.020			0.021	mg/L		105	(80%-120%)		
Methylene chloride	0.020			0.016	mg/L		80	(73%-112%)		
Tetrachloroethylene	0.020			0.0201	mg/L		101	(78%-125%)		
Toluene	0.020			0.0201	mg/L		100	(79%-118%)		
Trichloroethylene	0.020			0.0197	mg/L		99	(83%-122%)		
Vinyl chloride	0.020			0.0207	mg/L		104	(67%-141%)		
cis-1,3-Dichloropropylene	0.020			0.0197	mg/L		99	(77%-129%)		
trans-1,2-Dichloroethylene	0.020			0.0197	mg/L		99	(78%-125%)		
trans-1,3-Dichloropropylene	0.020			0.0205	mg/L		103	(67%-132%)		
**Bromofluorobenzene	0.050			51.2	mg/L		102	(69%-137%)		
**Dibromofluoromethane	0.050			49.7	mg/L		99	(74%-144%)		
**Toluene-d8	0.050			48.8	mg/L		98	(76%-129%)		
QC1200474458 LCS										
[illegible]olein	0.100			0.128	mg/L		128	(70%-130%)		08/15/03 09:27
[illegible]rylonitrile	0.100			0.0968	mg/L		97	(70%-130%)		
**Bromofluorobenzene	0.050			49.9	mg/L		100	(69%-137%)		
**Dibromofluoromethane	0.050			48.6	mg/L		97	(74%-144%)		
**Toluene-d8	0.050			48.9	mg/L		98	(76%-129%)		
QC1200474454 MB										
1,1,1-Trichloroethane			U	ND	mg/L					08/15/03 10:20
1,1,2,2-Tetrachloroethane			U	ND	mg/L					
1,1,2-Trichloroethane			U	ND	mg/L					
1,1-Dichloroethane			U	ND	mg/L					
1,1-Dichloroethylene			U	ND	mg/L					
1,2-Dichlorobenzene			U	ND	mg/L					
1,2-Dichloroethane			U	ND	mg/L					
1,2-Dichloropropane			U	ND	mg/L					
1,3-Dichlorobenzene			U	ND	mg/L					
1,4-Dichlorobenzene			U	ND	mg/L					
2-Chloroethylvinyl ether			U	ND	mg/L					
Acrolein			U	ND	mg/L					
Acrylonitrile			U	ND	mg/L					
Benzene			U	ND	mg/L					
Bromodichloromethane			U	ND	mg/L					
Bromoform			U	ND	mg/L					
Bromomethane			U	ND	mg/L					
Carbon tetrachloride			U	ND	mg/L					
Chlorobenzene			U	ND	mg/L					
Chloroethane			U	ND	mg/L					
Chloroform			U	ND	mg/L					

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QC Summary

Workorder: 86092

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS Federal										
Batch 270943										
Chloromethane			U	ND	mg/L					
Dibromochloromethane			U	ND	mg/L					
Ethylbenzene			U	ND	mg/L					
Methylene chloride			U	ND	mg/L					
Tetrachloroethylene			U	ND	mg/L					
Toluene			U	ND	mg/L					
Trichloroethylene			U	ND	mg/L					
Vinyl chloride			U	ND	mg/L					
cis-1,3-Dichloropropylene			U	ND	mg/L					
trans-1,2-Dichloroethylene			U	ND	mg/L					
trans-1,3-Dichloropropylene			U	ND	mg/L					
*Bromofluorobenzene	0.050			50.4	mg/L		101	(69%-137%)		
*Dibromofluoromethane	0.050			50.9	mg/L		102	(74%-144%)		
*Toluene-d8	0.050			48.4	mg/L		97	(76%-129%)		
QC1200474455 86092002 PS										08/15/03 19:27
1,1,1-Trichloroethane	20.0	U	ND	17.3	ug/L		87			
1,1,2,2-Tetrachloroethane	20.0	U	ND	18.6	ug/L		93			
1,1,2-Trichloroethane	20.0	U	ND	19.4	ug/L		97			
1,1-Dichloroethane	20.0	U	ND	18.6	ug/L		93			
1,1-Dichloroethylene	20.0	U	ND	15.0	ug/L		75	(61%-124%)		
1,2-Dichlorobenzene	20.0	U	ND	17.7	ug/L		89			
1,2-Dichloroethane	20.0	U	ND	18.9	ug/L		95			
1,2-Dichloropropane	20.0	U	ND	18.4	ug/L		92			
1,3-Dichlorobenzene	20.0	U	ND	17.8	ug/L		89			
1,4-Dichlorobenzene	20.0	U	ND	17.3	ug/L		86			
2-Chloroethylvinyl ether	100	U	ND	93.5	ug/L		94			
Benzene	20.0	U	ND	17.3	ug/L		87	(71%-116%)		
Bromodichloromethane	20.0	U	ND	18.7	ug/L		94			
Bromoform	20.0	U	ND	22.0	ug/L		110			
Bromomethane	20.0	U	ND	18.5	ug/L		92			
Carbon tetrachloride	20.0	U	ND	18.3	ug/L		91			
Chlorobenzene	20.0	U	ND	18.9	ug/L		94	(77%-114%)		
Chloroethane	20.0	U	ND	20.0	ug/L		100			
Chloroform	20.0	J	0.655	20.1	ug/L		97			
Chloromethane	20.0	U	ND	17.7	ug/L		88			
Dibromochloromethane	20.0	U	ND	20.6	ug/L		103			
Ethylbenzene	20.0	U	ND	18.4	ug/L		92			
Methylene chloride	20.0	U	ND	16.3	ug/L		82			
Tetrachloroethylene	20.0	U	ND	17.3	ug/L		87			
Toluene	20.0	U	ND	17.8	ug/L		89	(73%-116%)		
Trichloroethylene	20.0	U	ND	17.9	ug/L		90	(74%-122%)		
Vinyl chloride	20.0	U	ND	18.5	ug/L		92			
cis-1,3-Dichloropropylene	20.0	U	ND	18.1	ug/L		91			
trans-1,2-Dichloroethylene	20.0	U	ND	17.1	ug/L		86			
trans-1,3-Dichloropropylene	20.0	U	ND	19.3	ug/L		97			
**Bromofluorobenzene	50.0		49.5	48.7	ug/L		98	(69%-137%)		
**Dibromofluoromethane	50.0		50.6	48.2	ug/L		97	(74%-144%)		
**Toluene-d8	50.0		48.1	45.7	ug/L		92	(76%-129%)		

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QC Summary

Workorder: 86092

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS Federal												
Batch 270943												
QC1200474456 86092002 PSD												
1,1,1-Trichloroethane	20.0	U	ND		19.2	ug/L	10	96			08/15/03	19:54
1,1,2,2-Tetrachloroethane	20.0	U	ND		19.6	ug/L	5	98				
1,1,2-Trichloroethane	20.0	U	ND		20.1	ug/L	4	101				
1,1-Dichloroethane	20.0	U	ND		20.5	ug/L	10	102				
1,1-Dichloroethylene	20.0	U	ND		16.5	ug/L	10	83	(0%-20%)			
1,2-Dichlorobenzene	20.0	U	ND		19.0	ug/L	7	95				
1,2-Dichloroethane	20.0	U	ND		20.9	ug/L	10	104				
1,2-Dichloropropane	20.0	U	ND		20.6	ug/L	12	103				
1,3-Dichlorobenzene	20.0	U	ND		19.5	ug/L	10	98				
1,4-Dichlorobenzene	20.0	U	ND		19.1	ug/L	10	95				
2-Chloroethylvinyl ether	100	U	ND		113	ug/L	19	113				
Benzene	20.0	U	ND		19.0	ug/L	9	95	(0%-20%)			
Bromodichloromethane	20.0	U	ND		20.6	ug/L	10	103				
Bromoform	20.0	U	ND		24.0	ug/L	9	120				
Bromomethane	20.0	U	ND		20.3	ug/L	9	101				
Carbon tetrachloride	20.0	U	ND		20.0	ug/L	9	100				
Chlorobenzene	20.0	U	ND		20.3	ug/L	7	101	(0%-20%)			
Chloroethane	20.0	U	ND		21.4	ug/L	7	107				
Chloroform	20.0	J	0.655		22.3	ug/L	11	108				
Chloromethane	20.0	U	ND		20.2	ug/L	13	101				
romochloromethane	20.0	U	ND		22.1	ug/L	7	110				
ylbenzene	20.0	U	ND		18.8	ug/L	3	94				
Methylene chloride	20.0	U	ND		18.5	ug/L	12	92				
Tetrachloroethylene	20.0	U	ND		18.0	ug/L	4	90				
Toluene	20.0	U	ND		19.3	ug/L	8	97	(0%-20%)			
Trichloroethylene	20.0	U	ND		19.5	ug/L	8	97	(0%-20%)			
Vinyl chloride	20.0	U	ND		19.6	ug/L	6	98				
cis-1,3-Dichloropropylene	20.0	U	ND		19.9	ug/L	9	100				
trans-1,2-Dichloroethylene	20.0	U	ND		18.9	ug/L	10	95				
trans-1,3-Dichloropropylene	20.0	U	ND		19.9	ug/L	3	100				
**Bromofluorobenzene	50.0		49.5		51.5	ug/L		103	(69%-137%)			
**Dibromofluoromethane	50.0		50.6		54.4	ug/L		109	(74%-144%)			
**Toluene-d8	50.0		48.1		48.3	ug/L		97	(76%-129%)			

Notes:
RER is calculated at the 95% confidence level (2-sigma).
The Qualifiers in this report are defined as follows:

- < Result is less than amount reported.
- > Result is greater than amount reported.
- B Target analyte was detected in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration of the target analyte exceeds the instrument calibration range.
- H Analytical holding time exceeded.
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D.

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QC Summary

Workorder: 86092

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

U Indicates the target analyte was analyzed for but not detected above the detection limit.

UI Uncertain identification for gamma spectroscopy.

X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

Y QC Samples were not spiked with this compound.

h Sample preparation or preservation holding time exceeded.

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptence criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

NPDES Industrial Discl ge Monitoring

FORM A

LANL Water Quality and Hydrology (ESH-18)

TSS, COD, metals, Ni (monthly)

(THIS FORM TO ACCOMPANY SAMPLE - THEN RETURN WITH DATA PACKAGE)

860920

Week 2 of 4: **Aug. 10 —Aug. 16, 2003**

FWO-WFM Sample Number
NPDES 0803.11

See attached Rad screening data

COC TRACKING #
N-051A3033

(Use Forms in Numerical Order)

INSTRUCTIONS TO ANALYTICAL LAB:

Week 2 Samples:

EPA Serial No.: EPA 051 TA/Building: TA-50-1 Rm 116

Date Sampled: 8-11-03 Sampled by: Tom Morrison

Flow: _____ (liters/day) ☐ estimated ☑ measured

Discharge Description:

color: Clear foam or floating solids: None odor: None

comments: _____

Weekly Samples ☑ COD and Metals Samples Refrigerated ✓

Analysis	Results/Concentration	Time Collected	Con-tainer	Preserv. Added ✓	Date Began	Time Began	Method	Analyzed By
TSS		1425	2 @ 1 Liter cubi.	NONE			160.2	
C.O.D.			1 Liter cubi.	H_2SO_4 ☑			410.4	
Cd(T)			1 Liter cubi.	HNO_3 ☑			200.8	
Pb(T)			↓	↓			200.8	
Cu(T)							200.8	
Zn(T)							200.8	
Hg(T)							245.1	
Cr(T)							200.8	

☑ Monthly (or indicate NOT SAMPLED)

Analysis	Results/Concentration	Time Collected	Con-tainer	Preserv. Added ✓	Date Began	Time Began	Method	Analyzed B
Ni(T)		1425	Use Metals Sample Above	HNO_3 ☑			200.8	

Chain-of-Custody Record

Relinquished By (Signature) & Org.	Date	Time	Received By (Signature) & Org.
Thomas Morrison FWO-RLW	8-13-03	1358	[signature]
	8-14-03	0915	Mike Lawler

REVIEWED BY _____ DATE _____ (WQH)

CEL NPDES 1-03

FORM C (back)

Outfall No. EPA051

Chain-Of-Custody Record

Relinquished By (Signature) & Org.	Date	Time	Received By (Signature) & Org.
Thomas O Monroe	8-13-03	1358	[illegible]
	8-14-03	0905	Mike [illegible]

Containers

Quantity	Volume/Type	Preservative	Parameter
4	1 liter amber glass	None	TTO (SVOC)
2	40 ml glass vial	HCl	VOC
2	40 ml glass vial	None	2-Chloroethyl-vinyl ether

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 36754
(Version: 1)

14-Sep-2004 09:24 AM

Generator:	WORLAND, VINCENT PETER FWO-WFM	MS : E518
WMC :	TORREZ, STEVE FWO-SWO	MS : E518
FROM:	FWO-SWO	MS : J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 36754 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to FWO-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 36754
YES _____ **NO** X
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
YES _____ **NO** X
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
YES _____ **NO** X
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 36754

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

Extension-> Signed _____ Date _____

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 36754

Void-> Signed V. Peter Worland Date Oct. 23, 2004

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: FWO-SWO ***MS: J595*** ***PHONE: 5-4000***

M

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WASTE PROFILE FORM

ORIGINAL

RECEIVED MAY 1 0 2001

Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: EM-SWO at **MS J595.** For assistance with completing this form, call EM-SWO at **5-4000.**	Reference Number 33739. (For EM-SWO use only.)

Generator's Z Number	Waste Generator's Name (print)	WMC's Z Number	WMC's Name (print)
091973	Wm DAVID Moss	120261	Stephen Kosler

Generator's Telephone	Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room
7-4301	E-518	FWO-WFM	TA-50	2	N

Waste Accumulation (Check only one.)
- ☐ Satellite Accumulation Area — Site no: _____
- ☐ Less-than-90-days Storage Area — Site no: _____
- ☐ TSDF — Site no: _____
- ☐ Universal Waste Storage Area — Site no: _____
- ☒ None of the Above

ER Use Only ☐ ER Site PRS #: _____

Method of Characterization (Check as many as apply.)
- ☒ Analysis/Documents Attached
- SK ☒ Chemical/Physical Analysis — Sample #: _____
- ☐ Radiological Analysis — Sample #: _____
- ☐ PCB Analysis — Sample #: _____
- ☒ Acceptable Knowledge Documentation — Documentation #: See section 3
- ☐ MSDS

Section 1 - Chemical and Physical Information

Waste Type (Check only one.)
- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☒ Process Waste/Spent Chemical/ other (Complete all sections.)
- ☐ Green is Clean Waste (Complete all sections as appropriate.)

Waste Classes

Radiological Information
Was Waste Generated in a RCA? ☒ Yes ☐ No
- ☐ Non-radioactive
- ☒ Radioactive
  - ☒ Low-Level
  - ☐ Transuranic

Wastewater Information
- ☐ Wastewater for SWSC (TA-46) (Complete Attachment 1)
- SK 5/17/01 ☒ Wastewater for RLWTF (TA-50/TA-21) (Complete Attachment 2)
- ☐ Wastewater for TA-16 (HE)

Classification Information
- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check as many as apply.)
- ☒ Inorganic
- ☒ Organic per wmc 5/17/01
- Volatile Organics ☒ < 500 ppm ☐ ≥ 500 ppm
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste residue
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)
- Asbestos ☐ friable ☐ non-friable
- PCB Source Concentration
  - ☐ PCB < 50 ppm
  - ☐ PCB ≥ 50 - < 500 ppm
  - ☐ PCB ≥ 500 ppm
- ☐ Other (Describe below)

* Concentrations 10% or greater before use.

Waste Source (Check only one.)

Routine Waste
- ☐ Decon
- ☐ Materials Processing/Production
- ☒ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup - Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Non-routine Waste
- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping - Non-routine
- ☐ Spill Cleanup - Non-routine
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix (Check only one.)

Gas
- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid
- ☒ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid
- ☐ Powder/Ash
- ☐ Solid
- ☐ Sludge
- ☐ Absorbed liquid

Matrix Type (Check only one.)
- ☒ Homogeneous
- ☐ Heterogeneous (Describe below)

Waste/Process Description (Chemical formulas may be used in this field.)

DISTILATE WATER FROM WATER TREATMENT EVAPORATOR.

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WASTE PROFILE FORM

Section 2 - Characteristics

Ignitability (Check only one.) (°F)	(°C)	Corrosivity (Check only one.) (pH)	Reactivity (Check as many as apply.)	Boiling Point (Check only one (°F)	(°C)
☐ < 73	< 22.8	☐ ≤ 2.0	☐ RCRA Unstable	☐ ≤ 95	≤ 35
☐ 73 - 99	22.8 - 37.2	☐ 2.1 - 4.0	☐ Water Reactive	☐ > 95	> 35
☐ 100 - 139	37.8 - 59.4	☐ 4.1 - 6.0	☐ Cyanide Bearing (> 250 ppm)		
☐ 140 -200	60.0 - 99.3	☒ 6.1 - 9.0	☐ Sulfide Bearing (> 500 ppm)		
☐ > 200	> 99.3	☐ 9.1 - 12.4	☐ Pyrophoric		
☐ EPA Ignitable - Non-liquid		☐ ≥ 12.5	☐ Shock Sensitive		
☐ DOT Flammable Gas		☐ Liquid corrosive to steel	☐ Explosive - DOT Div. _____		
☐ DOT Oxidizer					
☒ Not ignitable		☐ Non-aqueous	☒ Non reactive	☒ Not applicable	

Identify for all contaminants listed.	Characterization Method: AK	TCLP	Total	Concentration of Contaminants: None or Non-detect	Present Below Regulatory Limit	Above Regulatory Limit (Concentration in ppm only.) Minimum	Maximum
Toxicity Characteristic Metals							
Arsenic	☐	☐	☐	☑	☐ < 5.0 ppm	_____ to	_____ ppm
Barium	☐	☐	☐	☐	☑ < 100.0 ppm	_____ to	_____ ppm
Cadmium	☐	☐	☐	☐	☑ < 1.0 ppm	_____ to	_____ ppm
Chromium (Total)	☐	☐	☐	☐	☑ < 5.0 ppm	_____ to	_____ ppm
Lead	☐	☐	☐	☑	☐ < 5.0 ppm	_____ to	_____ ppm
Mercury	☐	☐	☐	☑	☐ < 0.2 ppm	_____ to	_____ ppm
Selenium	☐	☐	☐	☑	☐ < 1.0 ppm	_____ to	_____ ppm
Silver	☐	☐	☐	☑	☐ < 5.0 ppm	_____ to	_____ ppm
Toxicity Characteristic Organics							
Benzene	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
Carbon tetrachloride	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
Chlorodane	☐	☐	☐	☐	☐ < 0.03 ppm	_____ to	_____ ppm
Chlorobenzene	☐	☐	☐	☐	☐ < 100.0 ppm	_____ to	_____ ppm
Chloroform	☐	☐	☐	☐	☐ < 6.0 ppm	_____ to	_____ ppm
o - cresol	☐	☐	☐	☑	☐ < 200.0 ppm	_____ to	_____ ppm
m - cresol	☐	☐	☐	☑	☐ < 200.0 ppm	_____ to	_____ ppm
p - cresol	☐	☐	☐	☑	☐ < 200.0 ppm	_____ to	_____ ppm
Cresol - mixed	☐	☐	☐	☑	☐ < 200.0 ppm	_____ to	_____ ppm
2,4-D	☐	☐	☐	☐	☐ < 10.0 ppm	_____ to	_____ ppm
1,4-Dichlorobenzene	☐	☐	☐	☐	☐ < 7.5 ppm	_____ to	_____ ppm
1,2-Dichloroethane	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
1,1-Dichloroethylene	☐	☐	☐	☐	☐ < 0.7 ppm	_____ to	_____ ppm
2,4-Dinitrotoluene	☐	☐	☐	☐	☐ < 0.13 ppm	_____ to	_____ ppm
Endrin	☐	☐	☐	☐	☐ < 0.02 ppm	_____ to	_____ ppm
Heptachlor (& its epoxide)	☐	☐	☐	☐	☐ < 0.008 ppm	_____ to	_____ ppm
Hexchlorobenzene	☐	☐	☐	☐	☐ < 0.13 ppm	_____ to	_____ ppm
Hexchlorobutadiene	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
Hexchloroethane	☐	☐	☐	☐	☐ < 3.0 ppm	_____ to	_____ ppm
Lindane	☐	☐	☐	☐	☐ < 0.4 ppm	_____ to	_____ ppm
Methoxychlor	☐	☐	☐	☐	☐ < 10.0 ppm	_____ to	_____ ppm
Methyl ethyl ketone	☐	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
Nitrobenzene	☐	☐	☐	☐	☐ < 2.0 ppm	_____ to	_____ ppm
Pentachlorophenol	☐	☐	☐	☐	☐ < 100.0 ppm	_____ to	_____ ppm
Pyridine	☐	☐	☐	☐	☐ < 5.0 ppm	_____ to	_____ ppm
Tetrachloroethylene	☐	☐	☐	☐	☐ < 0.7 ppm	_____ to	_____ ppm
Toxaphene	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
Trichloroethylene	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
2,4,5-Trichlorophenol	☐	☐	☐	☐	☐ < 400.0 ppm	_____ to	_____ ppm
2,4,6-Trichlorophenol	☐	☐	☐	☐	☐ < 2.0 ppm	_____ to	_____ ppm
2,4,5-TP (Silvex)	☐	☐	☐	☐	☐ < 1.0 ppm	_____ to	_____ ppm
Vinyl chloride	☐	☐	☐	☐	☐ < 0.2 ppm	_____ to	_____ ppm

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WASTE PROFILE FORM

Section 3 - Additional Constituents

Additional Constituents and Contaminates. Please account for 100% of waste. Ranges should be given within guidelines of LIG 404-00-03 of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum		Maximum	
	water	99	to	100	%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
	Total of max. ranges of this section	100			in %
	Total of max. ranges from page 2.	0			in ppm

Additional Information (Use additional sheet if necessary.)

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

REACTOR PRODUCED ^3H

AKD: NMT-2: FY01-105 states the waste stream is tritium contaminated water.

The RCRA metal and organic results are from the evaporator bottoms. Since the evaporator bottoms are non-RCRA and the organics are below the regulatory limits, the distillate water is also non-RCRA and below the organic regulatory limits.

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

Signature	Date
William D. [illegible]	04/24/01

WASTE MANAGEMENT COORDINATOR: I have reviewed this form and to the best of my knowledge, the information is complete and accurate.

Signature	Date
Stephen [illegible]	5/8/01

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WASTE PROFILE FORM

Attachment 1 - Wastewater Characteristics for SWSC (TA-46)

For help in completing this section, call ESH-18 at 7-4882. Identify presence of any constituents listed below.
Use of Acceptable Knowledge in lieu of analytical data must be pre-approved by ESH-18.

Microtox Analysis #: _____ NOTE: Microtox analysis **must be** performed. Contact JCI/ENV to schedule analysis.

Are there any detectable levels of gross Alpha, gross Beta, gross Gamma, and/or Tritium? ☐ No ☐ Yes

All methods of analysis must conform to those approved pursuant to 40 CFR 136 unless an alternative method has been approved by ESH-18.
All metal concentrations are for the dissolved fraction present in the sample unless otherwise indicated.

	☐ Flow Rate of 100 gallons/day or less			☐ Flow Rate of greater than 100 gallons/day		
Flow Rate Parameters	None/ Non-detect	Within Regulatory Limits	Above Limit	None/ Non-detect	Within Regulatory Limits	Above Limit
pH		☐ 5 -11 SU	☐		☐ 5 -11 SU	☐
Chemical Oxygen Demand (COD)		☐ ≤ 750 mg/l	☐		☐ ≤ 500 mg/l	☐
Microtox results (a)		☐ < 55% screen	☐		☐ < 50% screen	☐
(b)		☐ > 20% EC50	☐		☐ > 25% EC50	☐
Temperature		☐ ≤ 180 °F	☐		☐ ≤ 140 °F	☐
Cyanide (Total)	☐	☐ < 5.0 mg/l	☐	☐	☐ < 1.0 mg/l	☐
Fluoride	☐	☐ < 200.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Iron	☐	☐ < 100.0 mg/l	☐	☐	☐ < 35.0 mg/l	☐
Magnesium	☐	☐ < 100.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Manganese	☐	☐ < 5.0 mg/l	☐	☐	☐ < 1.0 mg/l	☐
Metals (Total)	☐	☐ < 40.0 mg/l	☐	☐	☐ < 10.0 mg/l	☐
Nickel	☐	☐ < 50.0 mg/l	☐	☐	☐ ≤ 3.0 mg/l	☐
Nitrogen (Total)	☐	☐ ≤ 100.0 mg/l	☐	☐	☐ ≤ 50.0 mg/l	☐
Oil and Greases	☐	☐ < 100.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Phosphorus (Total)	☐	☐ < 100.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Silver	☐	☐ < 5.0 mg/l	☐	☐	☐ < 0.5 mg/l	☐
Total Suspended Solids (TSS)	☐	☐ ≤ 400.0 mg/l	☐	☐	☐ ≤ 300.0 mg/l	☐
Zinc	☐	☐ < 25.0 mg/l	☐	☐	☐ < 5.0 mg/l	☐

Wastewater contaminants Identify for all constituents listed	**None/Non-detect**	**Present within Regulatory Limits**	**Above Limit**
Dissolved Aluminum	☐	☐ < 5.0 mg/l	☐
Dissolved Arsenic	☐	☐ < 0.2 mg/l	☐
Barium	☐	☐ < 100.0 mg/l	☐
Beryllium	☐	☐ < 5.3 mg/l	☐
Dissolved Boron	☐	☐ < 5.0 mg/l	☐
Dissolved Cadmium	☐	☐ < 0.05 mg/l	☐
Chlorine (Total Residual)	☐	☐ < 3.0 mg/l	☐
Dissolved Chromium	☐	☐ < 1.0 mg/l	☐
Dissolved Cobalt	☐	☐ < 1.0 mg/l	☐
Dissolved Copper	☐	☐ < 0.5 mg/l	☐
Dissolved Lead	☐	☐ < 0.1 mg/l	☐
Total Mercury	☐	☐ < 0.01 mg/l	☐
Molybdenum	☐	☐ < 75.0 mg/l	☐
Polychlorinated Biphenyls (PCB)	☐	None Detected	☐
Dissolved Selenium	☐	☐ ≤ 0.05 mg/l	☐
Dissolved Vanadium	☐	☐ < 0.1 mg/l	☐
Dissolved Zinc	☐	☐ < 25.0 mg/l	☐

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WASTE PROFILE FORM

Attachment 2 - Wastewater Characteristics for RLWTF (~~TA-50 & TA-21~~) TA-53

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

Indicate if waste was: ☐ Accelerator produced ☐ Reactor produced ☐ Other (Describe in WPF Section 1 "Waste/Process Description.")

Radionuclide Contaminants

Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min. / Max.	Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min. / Max.
As-74	☐ ≤ 4.0 E -8	/	Rb-84	☐ ≤ 1.0 E -8	/
Be-7	☐ ≤ 1.0 E -6	/	Sc-46	☐ ≤ 2.0 E -8	/
Ce-141	☐ ≤ 5.0 E -8	/	Sc-48	☐ ≤ 2.0 E -8	/
Cs-134	☐ ≤ 2.0 E -9	/	Se-75	☐ ≤ 2.0 E -8	/
Cs-137	☐ ≤ 3.0 E -9	/	Na-22	☐ ≤ 1.0 E -8	/
Co-56	☐ ≤ 1.0 E -8	/	Sr-85	☐ ≤ 7.0 E -8	/
Co-57	☐ ≤ 1.0 E -7	/	Sr-89	☐ ≤ 2.0 E -8	/
Co-58	☐ ≤ 4.0 E -8	/	Sr-90	☐ ≤ 1.0 E -9	/
Co-60	☐ ≤ 5.0 E -9	/	Sn-113	☐ ≤ 5.0 E -8	/
Eu-152	☐ ≤ 2.0 E -8	/	V-48	☐ ≤ 2.0 E -8	/
H-3	☒ ≤ 2.0 E -8	2.0 uci/l / 2.7 uci/l	Y-88	☐ ≤ 3.0 E -8	/
I-133	☐ ≤ 1.0 E -8	/	Zn-65	☐ ≤ 9.0 E -9	/
Mn-52	☐ ≤ 2.0 E -8	/	Am-241	☐ ≤ 0.1 E -6	/
Mn-54	☐ ≤ 5.0 E -8	/	Pu-238	☐ ≤ 0.1 E -6	/
Ra-226 + 228	☐ ≤ 3.0 E -11	/	Pu-239	☐ ≤ 0.1 E -6	/
Rb-83	☐ ≤ 2.0 E -8	/	U-234	☐ ≤ 5.0 E -8	/
Others:			**Others:**		
		/			/
		/			/
		/			/

Other Contaminants

Metal Contaminants	Present Below LOC (in ppm)	Range if above LOC (in ppm) Min. / Max.
Aluminum	☐ ≤ 5.0	to ppm
Boron	☐ ≤ 5.0	to ppm
Cobalt	☐ ≤ 1.0	to ppm
Copper	☐ ≤ 1.0	to ppm
Vanadium	☐ ≤ 0.10	to ppm
Zinc	☐ ≤ 95.40	to ppm

Additional Contaminants	Min. / Max.
Chemical Oxygen Demand (COD)	-0- to mg/l
Total Suspended Solids (TSS)	-0- to mg/l
☐ Total Nitrogen or (only one	-0- to mg/l
☐ Total Nitrates entry needed)	-0- to mg/l

Radioactive Contaminant Totals:

Total Alpha 30e 120 ± 30 pCi/l
Total Beta 0 ~~8.9~~ pCi/l
Total Gamma Ci/l

Per S.K. 5/17/19 C.P.

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

☐ Acid Line ☐ Caustic Line ☐ Industrial Waste Line

☐ Yes ☐ No Scintillation Cocktail Brand Name _____ Volume _____ Unit _____

☐ Yes ☐ No Chemical Treatment for Boilers / Water Chillers

☐ Yes ☐ No Industrial Cleaner Type _____ Volume _____ Unit _____

Average daily volume when discharge occurs: 8000 ☒ Gallons/day ☐ Liters/day

Maximum daily volume when discharge occurs: 2000 ☒ Gallons/day ☐ Liters/day

Estimated number of days per year discharge will occur: one

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-50 / TA-21: 8000 ☒ Gallons ☐ Liters

Attachment 3 – Wastewater Characteristics for the TA-53 RLWTP

For help in completing this section, call 667-4301.

Total Activity Range (in Ci/l):

Min. / Max. _____ Ci/l / _____ Ci/l

Radionuclide Contaminants:

Identify for the following:	Present at or below Concentration Limit (in Ci/l)	≥ 1% of Total Activity Yes/No	Range if ≥ 1% of Total Activity or above Concentration Limit (in Ci/l) (and a half-life of ≥ 30 Days) Min. / Max.
Be-7	☐ ≤ 9.0 E – 4	☐ Yes	_____ / _____
Co-56	☐ ≤ 8.8 E – 6	☐ Yes	_____ / _____
Co-57	☐ ≤ 2.0 E – 5	☐ Yes	_____ / _____
Co-58	☐ ≤ 3.5 E – 5	☐ Yes	_____ / _____
Co-60	☐ ≤ 5.7 E – 6	☐ Yes	_____ / _____
Gd-148	☐ ≤ 3.9 E – 7	☐ Yes	_____ / _____
H-3	☒ ≤ 3.5 E – 3	☐ Yes	_____ / _____
Hf-172	☐ ≤ 9.1 E – 5	☐ Yes	_____ / _____
Hf-173	☐ ≤ 3.3 E – 4	☐ Yes	_____ / _____
Hf-175	☐ ≤ 4.1 E – 4	☐ Yes	_____ / _____
I-125	☐ ≤ 5.7 E – 7	☐ Yes	_____ / _____
I-126	☐ ≤ 1.1 E – 7	☐ Yes	_____ / _____
Lu-170	☐ ≤ 2.6 E – 4	☐ Yes	_____ / _____
Lu-171	☐ ≤ 3.0 E – 4	☐ Yes	_____ / _____
Lu-172	☐ ≤ 1.2 E – 4	☐ Yes	_____ / _____
Mn-54	☐ ≤ 4.2 E – 5	☐ Yes	_____ / _____
Na-22	☐ ≤ 1.2 E – 5	☐ Yes	_____ / _____
Rb-83	☐ ≤ 1.3 E – 6	☐ Yes	_____ / _____
Rb-84	☐ ≤ 1.0 E – 6	☐ Yes	_____ / _____
Sc-46	☐ ≤ 6.0 E – 6	☐ Yes	_____ / _____
Se-75	☐ ≤ 3.4 E – 7	☐ Yes	_____ / _____
Sr-85	☐ ≤ 6.0 E – 8	☐ Yes	_____ / _____
Ta-173	☐ ≤ 2.7 E – 4	☐ Yes	_____ / _____

Identify for the following:	Present at or below Concentration Limit (in Ci/l)	≥ 1% of Total Activity Yes/No	Range if ≥ 1% of Total Activity or above Concentration Limit (in Ci/l) (and a half-life of ≥ 30 Days) Min. / Max.
Ta-174	☐ ≤ 3.1 E – 4	☐ Yes	_____ / _____
Ta-175	☐ ≤ 3.6 E – 4	☐ Yes	_____ / _____
Ta-176	☐ ≤ 4.5 E – 4	☐ Yes	_____ / _____
Ta-177	☐ ≤ 4.7 E – 4	☐ Yes	_____ / _____
Ta-179	☐ ≤ 2.8 E – 4	☐ Yes	_____ / _____
Ta-182	☐ ≤ 1.5 E – 4	☐ Yes	_____ / _____
Tm-166	☐ ≤ 2.0 E – 4	☐ Yes	_____ / _____
W-176	☐ ≤ 2.9 E – 4	☐ Yes	_____ / _____
W-177	☐ ≤ 3.3 E – 4	☐ Yes	_____ / _____
W-178	☐ ≤ 5.6 E – 4	☐ Yes	_____ / _____
W-181	☐ ≤ 1.6 E – 3	☐ Yes	_____ / _____
W-185	☐ ≤ 4.4 E – 3	☐ Yes	_____ / _____
W-187	☐ ≤ 9.0 E – 3	☐ Yes	_____ / _____
Y-88	☐ ≤ 2.4 E – 7	☐ Yes	_____ / _____
Yb-166	☐ ≤ 1.9 E – 4	☐ Yes	_____ / _____
Yb-169	☐ ≤ 2.7 E – 4	☐ Yes	_____ / _____
Zn-65	☐ ≤ 1.5 E – 6	☐ Yes	_____ / _____
Others:			
_____		☐ Yes	_____ / _____
_____		☐ Yes	_____ / _____
_____		☐ Yes	_____ / _____
_____		☐ Yes	_____ / _____
_____		☐ Yes	_____ / _____

Identify for the following:	Present Yes/No	≥ 1% of Total Activity Yes/No	Provide Range in Ci/l Min. / Max.
Am-241	☐ Yes	☐ Yes	_____ / _____
Pu-238	☐ Yes	☐ Yes	_____ / _____
Pu-239	☐ Yes	☐ Yes	_____ / _____
U-234	☐ Yes	☐ Yes	_____ / _____
U-235	☐ Yes	☐ Yes	_____ / _____
Others:			
_____	☐ Yes	☐ Yes	_____ / _____
_____	☐ Yes	☐ Yes	_____ / _____

Identify	Present at or below Concentration Limit (in Ci/l)	≥ 1% of Total Activity Yes/No	Provide Range in Ci/l Min. / Max.
Total TRU	☐ ≤ 1.0 E –8	☐ Yes	_____ / _____

Other Contaminates

Additional Contaminants:	Present at Or Below Concentration Level (in mg/l)	Range in mg/l Min. / Max.
Total Dissolved Solids (TDS)	☐ ≤ 1000	_____ / _____
Total Suspended Solids (TSS)	☐ ≤ 100	_____ / _____
Oils/Grease	☐ ≤ 10	_____ / _____
Surfactants/Detergents	☐ ≤ 10	_____ / _____

Radioactive Contaminant Totals:

Discharge Location:	Present At Or Below Activity Level (in Ci/l)
Collection System	☐ ≤ 3.2 E –2
Tanker Truck	☐ ≤ 2.0 E –6 *
Tuff Tank	☐ ≤ 3.2 E –2
55 Gallon Drum	☐ ≤ 3.2 E –2
Other _____	☐ ≤ 3.2 E –2

* or qualify as "limited quantity" per 40 CFR § 173.425

Temperature:

Discharge Temperature <100 ☒ °F _____ ☐ °C

☐ Yes ☒ No Surfactant/Detergent Brand Name _____ Volume _____ Unit _____

☐ Yes ☒ No Industrial Cleaner Type _____ Volume _____ Unit _____

Average daily volume when discharge occurs: 6000 ☒ Gallons/day ☐ Liters/day

Maximum daily volume when discharge occurs: 2000 ☒ Gallons/day ☐ Liters/day

Estimated number of days per year discharge will occur: 1

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-53: 6000 ☒ Gallons/day ☐ Liters/day

LABORATORY ANALYSES

SAMPLE SUBMITTED BY:	P. Worland					DATE:			
ORIGIN OF SAMPLE(S)	WMU Dist 2/22 & NE 2/22								
DATE SAMPLED		DATE BEGUN	METHOD	ANALYZED BY	DESCRIPTION		DATE BEGUN	METHOD	ANALYZED BY
Test/Analysis	Result/Conc				Test/Analysis	Result/Conc			
WMU Dist 2/22	~~2.~~				NE 2/22				
Gross α	0 ± 30 pCi/l				^3H	2.6 ± .2 μCi/l			
Gross β	8.9 ± .9 nCi/l								
^3H	2.7 ± .3 μCi/l								

REMARKS:

APPROVED: MC7 Chief Chemist DATE: 2/23/1 Lab Copy

H7-LAB-35A

PARAMETER	TYPE OF ANALYSIS (i.e.: "Total Content" or "TCLP" of liquid sample)	Units (unless column heading has units in title)	EVB (Entered by User)	EVB (kg)	EVB (pounds)	TK8 DATA
Waste Quantity in Tanker Load	n/a	Gallons	72	278.4	613.7	28
Specific Gravity	n/a	no units	1.02	n/a	n/a	1.08
TDS	Total	mg/l	34,000	9	20	166,000
TSS	Total	mg/l	2,102	1	1	224
Conductivity	n/a	microS/cm	40 mS/cm	n/a	n/a	122
pH	n/a	no units	6.70	n/a	n/a	8.90
Ag	Total	mg/l	0.116	0.000	0.000	0.016
Al	Total	mg/l	**0.40**	0.000	0.000	0.56
Ammonia Nitrogen (NH_3-N)	Total	mg/l	34.00	0.009	0.020	**2.60**
As	Total	mg/l	**0.044**	0.000	0.000	**0**
Ba	Total	mg/l	0.184	0.000	0.000	0.28
Be	Total	mg/l	**0.00500**	0.000	0.000	**0**
Ca	Total	mg/l	1,900	0.519	1.143	1,340
Cd	Total	mg/l	0.035	0.000	0.000	0.022
Cl	Total	mg/l	9,396.000	2.564	24792.000	24,792.000
Co	Total	mg/l	0.069	0.000	0.017	0.017
COD	Total	mg/l	620	0.169	1270.000	1,270.000
CN Ammenable to Chlorination***	Total	mg/l	0.000	0.000	0.000	0.000
CN, Total***	Total	mg/l	0.000	0.000	0.000	0.000
Cr	Total	mg/l	1.180	0.000	0.133	0.133
Cu	Total	mg/l	2.08	0.001	0.465	0.465
EDTA	Total	mg/l		0.000	0.000	0.000
F	Total	mg/l	16.000	0.004	70.000	70.000
Fe	Total	mg/l	90.3	0.025	0.240	0.240
Hg	Total	mg/l	0.004510	0.000	0.000	0.009
K	Total	mg/l	1,106	0.302	20270.000	20,270.000
Mg	Total	mg/l	333	0.091	343.000	343.000
Mn	Total	mg/l	1.620	0.000	0.131	0.131
Na	Total	mg/l	11,400	3.111	6.859	37,800.000
Ni	Total	mg/l	4.8	0.001	0.003	0.664
NO_3-N	Total	mg/l	1,540.000	0.420	0.927	22,600.000
NO_3-N converted to NO_3	Total	mg/l	1,530.000	0.418	0.920	22,600.000

Pb	Total	mg/l	0.063	0.000	0.000	**0.000**
PO_4	Total	mg/l	**0.000**	0.000	0.000	0.000
Sb	Total	mg/l	0.031	0.000	0.000	**0.000**
Se	Total	mg/l	0.020	0.000	0.000	**0.000**
SiO_2, Reactive	Total		61.000	0.017	0.037	17.000
SiO_2, Total	Total	mg/l	131	0.036	0.079	36.000
SO_4	Total	mg/l	5,024.000	1.371	3.023	2,333.000
TOC	Total	mg/l	68	0.019	0.041	75.000
Tl (Thallium)	Total	mg/l	**0.010**	0.000	0.000	**0.000**
V	Total	mg/l	0.21	0.000	0.000	**0.000**
Zn	Total	mg/l	13.4	0.004	0.008	0.700
Vinyl Chloride	Total	mg/l	**0.02**	0.000	0.000	**0.020**
1,1-Dichloroethene	Total	mg/l	**0.07**	0.000	0.000	**0.070**
2-Butanone	Total	mg/l	**0.01**	0.000	0.000	0.509
Chloroform	Total	mg/l	**0.002**	0.000	0.000	**0.002**
Carbon Tetrachloride	Total	mg/l	**0.002**	0.000	0.000	**0.002**
1,2-Dichloroethane	Total	mg/l	**0.002**	0.000	0.000	**0.002**
Benzene	Total	mg/l	**0.002**	0.000	0.000	**0.002**
Trichloroethene	Total	mg/l	**0.002**	0.000	0.000	**0.002**
Tetrachloroethene	Total	mg/l	**0.002**	0.000	0.000	**0.002**
Chlorobenzene	Total	mg/l	**0.002**	0.000	0.000	**0.002**
Pyridine	Total	mg/l	**0.5**	0.000	0.000	**0.500**
1,4-Dichlorobenzene	Total	mg/l	**0.75**	0.000	0.000	**0.750**
2-Methyphenol	Total	mg/l	**20**	0.005	0.012	**0.000**
3,4-Methylphenol	Total	mg/l	**20**	0.005	0.012	**0.000**
Hexachloroehtane	Total	mg/l	**0.3**	0.000	0.000	**0.300**
Nitrobenzene	Total	mg/l	**0.2**	0.000	0.000	**0.200**
Hexachlorobutadiene	Total	mg/l	**0.002**	0.000	0.000	**0.002**
2,4,6-Trichlorophenol	Total	mg/l	**0.2**	0.000	0.000	**0.200**
2,4,5-Trichlorophenol	Total	mg/l	**40**	0.011	0.024	**40.000**
2,4-Dinitrotoluene	Total	mg/l	**0.13**	0.000	0.000	**0.130**
Hexachlorobenzene	Total	mg/l	**0.13**	0.000	0.000	**0.130**
Pentachlorophenol	Total	mg/l	**10**	0.003	0.006	**10.000**
Lindane	Total	mg/l	**0.04**	0.000	0.000	**0.040**
Heptachlor	Total	mg/l	**0.008**	0.000	0.000	**0.008**

Endrin	Total	mg/l	**0.002**	0.000	0.000	**0.002**
Methoxychlor	Total	mg/l	**1**	0.000	0.001	**1.000**
Toxaphene	Total	mg/l	**0.05**	0.000	0.000	**0.050**
Chlordane	Total	mg/l	**0.003**	0.000	0.000	**0.003**
2,4-D	Total	mg/l	**1**	0.000	0.001	**1.000**
Silvex	Total	mg/l	**0**	0.000	0.000	0.000

EDTA (Amount added to 10,000 gallons of feed TO the evaporator)	n/a	mg/l	n/a	n/a	n/a	n/a

Load Number Counter	1

PARAMETER	**TOTAL Ci/TANKER LOAD** (i.e.: per "Cell J10 gallons")	**TOTAL Ci/gm** (i.e.: per "Cell J7 pounds")	**EVB SPECIFIC ACTIVITY** (picoCi/ml)			**TK8 SPECIFIC ACTIVITY** (picoCi/ml)
Gross Alpha	4.37E-05	1.11E-10	7.10E+01			2.30E+02
Gross Beta	1.85E-06	4.72E-12	3.50E+00			8.50E+00
Gross Gamma	6.80E-06	1.73E-11	2.20E+01			7.50E+00
H3	1.09E-04	2.77E-10	1.31E+02			6.90E+02
Am241	1.12E-05	2.87E-11	2.38E+01			4.50E+01
Co57	1.64E-06	4.17E-12	6.00E+00			**0.00E+00**
Cs137	8.59E-07	2.19E-12	1.60E+00			4.00E+00
Fe55	0.00E+00	0.00E+00	**0.00E+00**			**0.00E+00**
Na22	6.68E-07	1.70E-12	2.10E+00			9.00E-01
Ni-63	0.00E+00	0.00E+00	**0.00E+00**			**0.00E+00**
Np237	0.00E+00	0.00E+00	**0.00E+00**			**0.00E+00**
Pu238	4.72E-06	1.20E-11	1.69E+01			9.92E-01

Pu239	5.89E-06	1.50E-11	2.14E+01			5.11E-01
Rb83	4.37E-07	1.11E-12	1.60E+00			0.00E+00
Rb84	0.00E+00	0.00E+00	**0.00E+00**			**0.00E+00**
Se75	0.00E+00	0.00E+00	**0.00E+00**			**0.00E+00**
Sr85	1.09E-06	2.78E-12	4.00E+00			**0.00E+00**
Sr89	0.00E+00	0.00E+00	**0.00E+00**			**0.00E+00**
Sr90	0.00E+00	0.00E+00	**0.00E+00**			**0.00E+00**
Th228	1.67E-09	4.26E-15	**6.13E-03**			**0.00E+00**
Th230	7.20E-10	1.84E-15	2.64E-03			**0.00E+00**
Th232	3.82E-10	9.74E-16	**1.40E-03**			**0.00E+00**
U234	4.12E-07	1.05E-12	1.51E+00			**0.00E+00**
U235	2.71E-08	6.91E-14	9.93E-02			**0.00E+00**
U238	7.23E-07	1.84E-12	2.65E+00			**0.00E+00**
Y88	0.00E+00	0.00E+00	**0.00E+00**			**0.00E+00**
Am241 (Gamma Spec)	8.73E-06	2.23E-11	3.20E+01			**0.00E+00**
						0.00E+00

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 33739
(Version: 1)

01-May-2002 01:22 PM

Generator:	MOSS, WILLIAM DAVID FWOWFM	MS :	E518
WMC :	TORREZ, STEVE FWOWFM	MS :	E518
FROM :	FWO-SWO	MS :	J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 33739 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to FWO-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 33739
YES _____ NO _____
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
YES _____ NO _____
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
YES _____ NO _____
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 33739

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

Extension-> Signed [signature] Date 05/08/02

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 33739

Void-> Signed _____ Date _____

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: FWO-SWO ***MS: J595*** ***PHONE: 5-4000***

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 33739
(Version: 2)

05-May-2003 10:00 AM

Generator:	MOSS, WILLIAM DAVID FWOWFM	MS:	E518
WMC:	TORREZ, STEVE FWO-SWO	MS:	E518
FROM:	FWO-SWO	MS:	J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 33739 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to FWO-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 33739
YES ✓ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
YES _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
YES _____ **NO** _____
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 33739

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

Extension-> Signed William D. Moss Date 05/08/03

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 33739

Void-> Signed _____ Date _____

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: FWO-SWO ***MS: J595*** ***PHONE: 5-4000***

✓

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 33739
(Version: 3)

13-Apr-2004 02:06 PM

Generator:	MOSS, WILLIAM DAVID FWOWFM	MS :	E518
WMC :	TORREZ, STEVE FWO-SWO	MS :	E518
FROM :	FWO-SWO	MS :	J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 33739 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to FWO-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 33739
YES _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
YES _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
YES _____ **NO** _____
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 33739

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

Extension-> Signed [signature] Date 04/20/04

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 33739

Void-> Signed _____ Date _____

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: FWO-SWO ***MS: J595*** ***PHONE: 5-4000***

√

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 33739
(Version: 4)

13-Apr-2005 10:56 AM

Generator: MOSS, WILLIAM DAVID FWOWFM	MS : E518
WMC: TORREZ, STEVE NWIS-SWO	MS : E518
FROM: FWO-SWO	MS : J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 33739 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to FWO-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 33739
YES _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
YES _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
YES _____ **NO** _____
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 33739

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

Extension-> Signed Wm David Moss Date 04/19/05

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 33739

Void-> Signed _____ Date _____

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: FWO-SWO ***MS: J595*** ***PHONE: 5-4000***

WASTE PROFILE FORM

Los Alamos NATIONAL LABORATORY

WPF #: 33739

18-Apr-2006 12:49 PM (Version: 5)

Generator :	MOSS, WILLIAM DAVID FWOWFM	MS :	E518
WMC :	TORREZ, STEVE NWIS-OS	MS :	E518
FROM :	NWIS-SWO	MS :	J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 33739 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Note: Only the generator can sign for the extension (to renew). Please return the signed questionnaire to NWIS-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. Upon approval of this signed Extension Certification, you will receive a notice indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently the same generator as indicated above?

YES ✓ **NO** _____

Are you currently producing the same type of waste as indicated on WPF#: 33739

YES ✓ **NO** _____

If yes, please sign the Extension Certification below

If no, will you be producing the same type of waste in the near future?

YES _____ **NO** _____

If yes, please sign the Extension Certification below

If no, will you be producing a different type of waste?

YES _____ **NO** _____

If no, sign the Void Approval below to indicate that your WPF should be voided

If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 33739 Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the waste characterization information on this form is correct and that it meets the requirements of the applicable waste acceptance criteria. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Extension-> Signed [signature] Z# 091973 Date 04/21/06

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 33739

Void-> Signed _____ Date _____

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: NWIS-SWO **MS: J595** **PHONE: 5-4000**

GWCP Information

Section 1 - Waste Prevention/Minimization (answer all questions)

Can hazard segregation, elimination, or material substitution be used?	☐ Yes*	☑ No	
Can any of the materials in the waste stream be recycled or reused	☐ Yes*	☑ No	
Has waste minimization been incorporated into procedures or other process controls?	☑ Yes	☐ No	
Can this waste be generated outside a RCA?	☐ Yes*	☑ No	☐ N/A

*Provide Comment

Section 6 - Work Control Documentation (answer all questions)

Do the procedures for this process cover how to manage this waste? ☑ Yes ☐ No (Provide comments)

Do the procedures for this process cover controls to prevent changes to waste constituents and concentrations or addition or removal of waste? ☑ Yes ☐ No (Provide comments)

Section 7 - Package and Storage Control

Describe how the waste will be packaged in according to the applicable WAC: Waste water to be discharged into the RLWCS

Identify the storage management controls that will be used for this waste stream: (check all that apply)

- ☐ Tamper indication devices:
- ☐ Limited use locks with log-in for waste
- ☑ Locked cabinet or building
- ☐ Other (describe)

Section 8 - Waste Certification Statements (check only one)

- ☑ Waste appears to meet WAC chapter for: LANL WAC Chapter 3 (RLWTF)
- ☐ Waste needs exception/exemption for treatment, storage, or disposal at:
- ☐ Waste does not meet the criteria for any known TSDF, (DOE approval is required. Contact the Waste Management Program Office for assistance.)

Estimated Annual Volume (m3): 1060 m^3

280,000 l / year ≈ 1060 m^3

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Certificate of Analysis

Company : Waste Mngmnt Federal Services
Address : 190 Central Park Square
Suite 305
Los Alamos, NM 87544
Contact: Troy Eshleman
Project: LANL

Report Date: April 12, 2001

Client Sample ID: TKSE 020128
Sample ID: 38797001

Project: GTSD00301
Client ID: GTSD001

Parameter	Qualifier	Result		DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics											
TCLP Volatiles in Liquid											
Plutonium-238		992	+/-150	4.38	1.00	pCi/L		TOH2 03/14/01	1731	68190	9
Plutonium-239/240		511	+/-79.1	2.45	1.00	pCi/L					
Plutonium-244	U	ND	+/-1.24	1.86	1.00	pCi/L					
Alphaspec Th, liquid											
Thorium-228	U	ND	+/-2.01	8.04	1.00	pCi/L		HOT1 03/19/01	1115	68192	10
Thorium-230	U	ND	+/-1.27	13.9	1.00	pCi/L					
Thorium-232	U	ND	+/-2.01	7.88	1.00	pCi/L					
Alphaspec U, liquid											
Uranium-233/234		115	+/-33.9	16.2	1.00	pCi/L		HOT1 03/19/01	0940	68191	11
Uranium-235/236	U	ND	+/-4.23	12.5	1.00	pCi/L					
Uranium-238	U	ND	+/-1.36	12.4	1.00	pCi/L					
Rad Liquid Scint											
LSC, Tritium Dist, liquid											
Tritium		1.280E+06	+/-4440	336	700	pCi/L		SGL1 03/11/01	0011	68142	12
Semi-Volatiles-GC/MS											
TCLP BNA H2O 8270C 3510C											
1,4-Dichlorobenzene	U	ND		0.00915	0.750	mg/L	1	TSD 03/20/01	1408	69337	13
2,4,5-Trichlorophenol	U	ND		0.0059	40.0	mg/L	1				
2,4,6-Trichlorophenol	U	ND		0.0056	0.200	mg/L	1				
2,4-Dinitrotoluene	U	ND		0.00485	0.130	mg/L	1				
Hexachlorobenzene	U	ND		0.00535	0.130	mg/L	1				
Hexachlorobutadiene	U	ND		0.0088	0.100	mg/L	1				
Hexachloroethane	U	ND		0.0085	0.300	mg/L	1				
Nitrobenzene	U	ND		0.0071	0.200	mg/L	1				
Pentachlorophenol	U	ND		0.0079	10.0	mg/L	1				
Pyridine	U	ND		0.011	0.500	mg/L	1				
m,p-Cresols	U	ND		0.00535	20.0	mg/L	1				
o-Cresol	U	ND		0.0063	20.0	mg/L	1				
Semi-Volatiles-HERB											
8151A TCLP HERB Liq											
2,4,5-TP	U	ND		0.0188	0.100	mg/L	20	CAK 03/20/01	1220	69587	14
2,4-D	U	ND		0.018	1.00	mg/L	20				
Semi-Volatiles-PEST											
8081A/3510C TCLP PEST Liq											
Chlordane (tech.)	U	ND		0.00213	0.003	mg/L	1	SJ 03/16/01	1725	69173	16
Endrin	U	ND		0.000059	0.002	mg/L	1				
Heptachlor	U	ND		0.000032	0.008	mg/L	1				
Heptachlor epoxide	U	ND		0.000034	0.008	mg/L	1				
Methoxychlor	U	ND		0.000326	1.00	mg/L	1				

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GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Certificate of Analysis

Company : Waste Mngmnt Federal Services
Address : 190 Central Park Square
Suite 305
Los Alamos, NM 87544
Contact: Troy Eshleman
Project: LANL

Report Date: April 12, 2001

Client Sample ID: TKSE 020128
Sample ID: 38797001

Project: GTSD00301
Client ID: GTSD001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatiles-PEST											
8081A/3510C TCLP PEST Liq											
Toxaphene	U	ND	0.00268	0.050	mg/L	1					
gamma-BHC (Lindane)	U	ND	0.000024	0.040	mg/L	1					
TOC Analysis											
EPA 415.1 Total Organic Carbon											
Total Organic Carbon		75.0	0.203	1.00	mg/L	5	MS1	03/15/01	1311	68926	18
TRAACS Nutrient Analysis											
EPA 351.2/353.1 Total Nitrogen											
Total Nitrogen		22600000	56.5	100	ug/L	1	THL	03/22/01	1354	70037	19
EPA 353.1 Nitrogen, (NO3/NO2)											
Nitrogen, Nitrate/Nitrite		22600	69.0	500	mg/L	10000	THL	03/09/01	1309	68138	20
Nitrogen, Total Kjeldahl (TKN)											
Nitrogen, Total Kjeldahl		0.580	0.0565	0.100	mg/L	1	THL	03/12/01	2028	68556	21
Volatile Organics											
TCLP Volatiles in Liquid											
1,1-Dichloroethylene	U	ND	0.0028	0.070	mg/L	10	JEB	03/13/01	1159	68649	22
1,2-Dichloroethane	U	ND	0.0014	0.050	mg/L	10					
1,4-Dichlorobenzene	U	ND	0.0014	0.750	mg/L	10					
2-Butanone	J	0.509	0.0081	20.0	mg/L	10					
Benzene	U	ND	0.0014	0.050	mg/L	10					
Carbon tetrachloride	U	ND	0.0016	0.050	mg/L	10					
Chlorobenzene	U	ND	0.002	10.0	mg/L	10					
Chloroform	U	ND	0.0017	0.600	mg/L	10					
Tetrachloroethylene	U	ND	0.0021	0.070	mg/L	10					
Trichloroethylene	U	ND	0.0016	0.050	mg/L	10					
Vinyl chloride	U	ND	0.0026	0.020	mg/L	10					

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
EPA 351.2	EPA 351.2 Total Kjeldahl Nitrogen	THL	03/12/01	2028	68556
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	TEMP	03/10/01	1640	68086
SW846 1311	SW846 1311 TCLP Leaching	JL	03/12/01	1400	68380
SW846 1311	SW846 1311 TCLP Volatiles Prep	JL	03/12/01	1400	68385
SW846 3005A	ICP-TRACE SW846 3005A	FDG	03/09/01	1000	68074
SW846 3510C	3510C BNA TCLP Prep-8270C Analysis	GMS	03/16/01	0900	69159
SW846 3510C	3510C PEST TCLP Liquid Prep	AEJ	03/15/01	1300	68957
SW846 7470A	EPA 7470 Mercury Prep Liquid	ARD	04/10/01	2000	72442
SW846 8151A Pr	8151A HERB TCLP Prep in Liquid	HDB	03/19/01	0600	69367

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Client Sample ID: TKSE 020128
Sample ID: 38797001

Project: GTSD00301
Client ID: GTSD001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

The following Analytical Methods were performed

Method	Description
1	SW846 7470A
2	SW846 3005/6010B
3	SW846 3005/6010B
4	SW846 3005/6010B
5	SW846 3005/6010B
6	SW846 3005/6010B
7	DOE EML HASL 300
8	DOE EML HASL 300
9	DOE EML HASL 300
10	DOE EML HASL 300
11	DOE EML HASL 300
12	EPA 906.0
13	SW846 8270C
14	SW846 8151A
15	SW846 8151A
16	SW846 8081A
17	SW846 8081A
18	EPA 415.1
19	EPA 351.2/353.1
20	EPA 353.1
21	EPA 351.2
22	SW846 8260B

2,4,6-Tribromophenol	TCLP BNA H2O 8270C 3510C	87%	(33%-121%)
2-Fluorobiphenyl	TCLP BNA H2O 8270C 3510C	81%	(39%-109%)
2-Fluorophenol	TCLP BNA H2O 8270C 3510C	44%	(16%-83%)

Surrogate recovery	Test	Recovery%	Acceptable Limits
Nitrobenzene-d5	TCLP BNA H2O 8270C 3510C	76%	(34%-111%)
Phenol-d5	TCLP BNA H2O 8270C 3510C	26%	(14%-65%)
p-Terphenyl-d14	TCLP BNA H2O 8270C 3510C	101%	(29%-132%)
2,4-Dichlorophenylacetic acid	8151A TCLP HERB Liq	93%	(36%-121%)
4cmx	8081A/3510C TCLP PEST Liq	91%	(43%-113%)
Decachlorobiphenyl	8081A/3510C TCLP PEST Liq	88%	(56%-103%)
Bromofluorobenzene	TCLP Volatiles in Liquid	83%	(58%-137%)

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Sample ID: 38797001

Project: GTSD00301
Client ID: GTSD001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Dibromofluoromethane		TCLP Volatiles in Liquid		89%		(56%-134%)				
Toluene-d8		TCLP Volatiles in Liquid		82%		(52%-134%)				

Notes:
The Qualifiers in this report are defined as follows :

** Indicates the analyte is a surrogate compound.
< Actual result is less than amount reported
> Actual result is greater than amount reported
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
U Indicates the compound was analyzed for but not detected above the detection limit

The above sample is reported on an "as received" basis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, Inc. standard operating procedures. Please direct any questions to your Project Manager, Jake Crook at (843) 556-8171 Ext. 4422.

Reviewed by

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Suite 305
Los Alamos, NM 87544
Contact: Troy Eshleman
Project: LANL

Report Date: March 28, 2001

Client Sample ID:	TKSE 020128	Project:	GTSD00301
Sample ID:	38797001	Client ID:	GTSD001
Matrix:	Misc Liquid		
Collect Date:	28-FEB-01		
Receive Date:	08-MAR-01		
Collector:	Client		

Parameter	Qualifier	Result		DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Metals Analysis-ICP											
6010/3005 Target Analyte List											
Aluminum		559		343	500	ug/L	1	RMJ 03/16/01	2016	68276	1
Antimony	U	ND		38.0	100	ug/L	1				
Arsenic	U	ND		45.7	50.0	ug/L	1				
Barium		281		2.06	50.0	ug/L	1				
Beryllium	U	ND		2.03	50.0	ug/L	1				
Cadmium	J	22.3		2.51	50.0	ug/L	1				
Calcium		1340000		375	1000	ug/L	1				
Chromium		133		7.81	50.0	ug/L	1				
Cobalt	J	17.0		2.95	50.0	ug/L	1				
Copper		465		26.7	50.0	ug/L	1				
Iron		1330		206	500	ug/L	1				
Magnesium		95500		44.9	200	ug/L	1				
Manganese		131		29.4	100	ug/L	1				
Nickel		664		7.43	50.0	ug/L	1				
Selenium	U	ND		30.9	50.0	ug/L	1				
Silica		45800		284	2130	ug/L	1				
Silicon		21600		133	1000	ug/L	1				
Silver	J	16.0		1.97	50.0	ug/L	1				
Thallium	U	ND		41.3	100	ug/L	1				
Vanadium	U	ND		10.9	50.0	ug/L	1				
Zinc		700		28.1	50.0	ug/L	1				
Lead	U	ND		344	500	ug/L	10	HSC 03/20/01	2225	68276	2
Potassium		20500000		7070	100000	ug/L	100	RMJ 03/21/01	1509	68276	4
Sodium		37800000		8130	100000	ug/L	100				
Rad Alpha Spec											
Alphaspec Am241, Cm, liquid											
Americium-241		4060	+/-870	129	1.00	pCi/L		SWM 03/26/01	1930	68189	6
Curium-242	U	ND	+/-2.00	82.3	1.00	pCi/L					
Curium-243/244	U	ND	+/-23.8	185	1.00	pCi/L					
Curium-245/246		114	+/-115	85.3	1.00	pCi/L					
Alphaspec Np, liquid											
Neptunium-237		8.86	+/-3.11	1.60	1.00	pCi/L		SWM 03/15/01	1436	68458	7
Alphaspec Pu, liquid											
Plutonium-238		992	+/-150	4.38	1.00	pCi/L		TOH2 03/14/01	1731	68190	8
Plutonium-239/240		511	+/-79.1	2.45	1.00	pCi/L					
Plutonium-244	U	ND	+/-1.24	1.86	1.00	pCi/L					
Alphaspec Th, liquid											

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Client Sample ID: TKSE 020128
Sample ID: 38797001

Project: GTSD00301
Client ID: GTSD001

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Volatile Organics												
TCLP Volatiles in Liquid												
Thorium-228	U	ND	+/-2.01	8.04	1.00	pCi/L		HOT1	03/19/01	1115	68192	9
Thorium-230	U	ND	+/-1.27	13.9	1.00	pCi/L						
Thorium-232	U	ND	+/-2.01	7.88	1.00	pCi/L						
Alphaspec U, liquid												
Uranium-233/234		115	+/-33.9	16.2	1.00	pCi/L		HOT1	03/19/01	0940	68191	10
Uranium-235/236	U	ND	+/-4.23	12.5	1.00	pCi/L						
Uranium-238	U	ND	+/-1.36	12.4	1.00	pCi/L						
Rad Liquid Scint												
LSC, Tritium Dist, liquid												
Tritium		1.280E+06	+/-4440	336	700	pCi/L		SGL1	03/11/01	0011	68142	11
Semi-Volatiles-GC/MS												
TCLP BNA H2O 8270C 3510C												
1,4-Dichlorobenzene	U	ND		0.00915	0.750	mg/L	1	TSD	03/20/01	1408	69337	12
2,4,5-Trichlorophenol	U	ND		0.0059	40.0	mg/L	1					
2,4,6-Trichlorophenol	U	ND		0.0056	0.200	mg/L	1					
2,4-Dinitrotoluene	U	ND		0.00485	0.130	mg/L	1					
Hexachlorobenzene	U	ND		0.00535	0.130	mg/L	1					
Hexachlorobutadiene	U	ND		0.0088	0.100	mg/L	1					
Hexachloroethane	U	ND		0.0085	0.300	mg/L	1					
Nitrobenzene	U	ND		0.0071	0.200	mg/L	1					
Pentachlorophenol	U	ND		0.0079	10.0	mg/L	1					
Pyridine	U	ND		0.011	0.500	mg/L	1					
m,p-Cresols	U	ND		0.00535	20.0	mg/L	1					
o-Cresol	U	ND		0.0063	20.0	mg/L	1					
Semi-Volatiles-HERB												
8151A TCLP HERB Liq												
2,4,5-TP	U	ND		0.0188	0.100	mg/L	20	CAK	03/20/01	1220	69587	13
2,4-D	U	ND		0.018	1.00	mg/L	20					
Semi-Volatiles-PEST												
8081A/3510C TCLP PEST Liq												
Chlordane (tech.)	U	ND		0.00213	0.003	mg/L	1	SJ	03/16/01	1725	69173	15
Endrin	U	ND		0.000059	0.002	mg/L	1					
Heptachlor	U	ND		0.000032	0.008	mg/L	1					
Heptachlor epoxide	U	ND		0.000034	0.008	mg/L	1					
Methoxychlor	U	ND		0.000326	1.00	mg/L	1					
Toxaphene	U	ND		0.00268	0.050	mg/L	1					
gamma-BHC (Lindane)	U	ND		0.000024	0.040	mg/L	1					
TOC Analysis												
EPA 415.1 Total Organic Carbon												

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Project: LANL

Report Date: March 28, 2001

Client Sample ID: TKSE 020128
Sample ID: 38797001

Project: GTSD00301
Client ID: GTSD001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
TOC Analysis											
EPA 415.1 Total Organic Carbon											
Total Organic Carbon		75.0	0.203	1.00	mg/L	5	MS1	03/15/01	1311	68926	17
TRAACS Nutrient Analysis											
EPA 351.2/353.1 Total Nitrogen											
Total Nitrogen		22600000	56.5	100	ug/L	1	THL	03/22/01	1354	70037	18
EPA 353.1 Nitrogen, (NO3/NO2)											
Nitrogen, Nitrate/Nitrite		22600	69.0	500	mg/L	10000	THL	03/09/01	1309	68138	19
Nitrogen, Total Kjeldahl (TKN)											
Nitrogen, Total Kjeldahl		0.580	0.0565	0.100	mg/L	1	THL	03/12/01	2028	68556	20
Volatile Organics											
TCLP Volatiles in Liquid											
1,1-Dichloroethylene	U	ND	0.0028	0.070	mg/L	10	JEB	03/13/01	1159	68649	21
1,2-Dichloroethane	U	ND	0.0014	0.050	mg/L	10					
1,4-Dichlorobenzene	U	ND	0.0014	0.750	mg/L	10					
2-Butanone	J	0.509	0.0081	20.0	mg/L	10					
Benzene	U	ND	0.0014	0.050	mg/L	10					
Carbon tetrachloride	U	ND	0.0016	0.050	mg/L	10					
Chlorobenzene	U	ND	0.002	10.0	mg/L	10					
Chloroform	U	ND	0.0017	0.600	mg/L	10					
Tetrachloroethylene	U	ND	0.0021	0.070	mg/L	10					
Trichloroethylene	U	ND	0.0016	0.050	mg/L	10					
Vinyl chloride	U	ND	0.0026	0.020	mg/L	10					

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
EPA 351.2	EPA 351.2 Total Kjeldahl Nitrogen	THL	03/12/01	2028	68556
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	TEMP	03/10/01	1640	68086
SW846 1311	SW846 1311 TCLP Leaching	JL	03/12/01	1400	68380
SW846 1311	SW846 1311 TCLP Volatiles Prep	JL	03/12/01	1400	68385
SW846 3005A	ICP-TRACE SW846 3005A	FDG	03/09/01	1000	68074
SW846 3510C	3510C BNA TCLP Prep-8270C Analysis	GMS	03/16/01	0900	69159
SW846 3510C	3510C PEST TCLP Liquid Prep	AEJ	03/15/01	1300	68957
SW846 8151A Pr	8151A HERB TCLP Prep in Liquid	HDB	03/19/01	0600	69367

The following Analytical Methods were performed

Method	Description
1	SW846 3005/6010B
2	SW846 3005/6010B

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Project: GTSD00301
Client ID: GTSD001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
3	SW846 3005/6010B									
4	SW846 3005/6010B									
5	SW846 3005/6010B									
6	DOE EML HASL 300									
7	DOE EML HASL 300									
8	DOE EML HASL 300									
9	DOE EML HASL 300									
10	DOE EML HASL 300									
11	EPA 906.0									
12	SW846 8270C									
13	SW846 8151A									
14	SW846 8151A									
15	SW846 8081A									
16	SW846 8081A									
17	EPA 415.1									
18	EPA 351.2/353.1									
19	EPA 353.1									
20	EPA 351.2									
21	SW846 8260B									

Surrogate recovery	Test	Recovery%	Acceptable Limits
2,4,6-Tribromophenol	TCLP BNA H2O 8270C 3510C	87%	(33%-121%)
2-Fluorobiphenyl	TCLP BNA H2O 8270C 3510C	81%	(39%-109%)
2-Fluorophenol	TCLP BNA H2O 8270C 3510C	44%	(16%-83%)
Nitrobenzene-d5	TCLP BNA H2O 8270C 3510C	76%	(34%-111%)
Phenol-d5	TCLP BNA H2O 8270C 3510C	26%	(14%-65%)
p-Terphenyl-d14	TCLP BNA H2O 8270C 3510C	101%	(29%-132%)
2,4-Dichlorophenylacetic acid	8151A TCLP HERB Liq	93%	(36%-121%)
4cmx	8081A/3510C TCLP PEST Liq	91%	(43%-113%)
Decachlorobiphenyl	8081A/3510C TCLP PEST Liq	88%	(56%-103%)
Bromofluorobenzene	TCLP Volatiles in Liquid	83%	(58%-137%)
Dibromofluoromethane	TCLP Volatiles in Liquid	89%	(56%-134%)
Toluene-d8	TCLP Volatiles in Liquid	82%	(52%-134%)

Notes:
The Qualifiers in this report are defined as follows :

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Sample ID: 38797001

Project: GTSD00301
Client ID: GTSD001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method

** Indicates the analyte is a surrogate compound.
< Actual result is less than amount reported
> Actual result is greater than amount reported
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
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ATTACHMENT D

LOS ALAMOS NATIONAL LABORATORY
WASTE PROFILE SYSTEM

WPF #: 32733

31-Jan-2008 11:45 AM **(Version: 2)**

Generator :	**WOLFSBERG, LAURA**	MS :	**J514**	PH :	**59795**	Z#:	**117048**		
WMC :	**PETERSEN, ROBYN**	MS :	**C925**	PH :	**5056659054**	Z#:	**086572**		
Contact :									
RCRA Rev :	**ELICIO ANDY U**	MS :	**J599**	PH :	**5056676956**	Z#:	**118692**		
Status :	**VOID**	Activation Date :	**10/13/2000**		Expiration Date:		**10/13/2002**		
Group :	**EET**	TA :	**48**	Bldg :	**000001**	Room :	**4**		

You are required to keep a copy of the WPF(s) in your files for at least three years. This WPF(s) is valid for one year or as long as the composition of the waste you have characterized remains the same. Should your waste change, please submit a new WPF to Waste Acceptance Group.

Waste Accumu : **None of the Above Site ID#**

Method of Char : Analysis/Documents Attached
Acceptable Knowledge Documentation Number: JR-2000-22
MSDS

Waste Type : **Process Waste/Spent Chemical/Other**

Waste Classes:
RCA Waste - **Not RCA Waste**
RAD Waste - **Non-rad**
WW Info - **RLWTF**
Classif/Sensi - **N**

Waste Category: **Inorganic**

Waste Sources : **Materials Processing/Production**

Waste Matrix : **Aqueous**

Matrix Type : **Homogeneous**

Process Desc :

2% NITRIC ACID SOLUTION USED IN SAMPLE PROCESSING FOR EXTRACTION OF TRACER CONSTITUENTS. RESIDUAL 2% NITRIC ACID WILL BE DILUTED WITH DI H2O TO REMOVE FROM ROCK SAMPLES AND FILTER PAPER SAMPLES AND PUT DOWN RLWTF. MAXIMUM CONCENTRATION OF NITRIC ACID SOLUTION AFTER DILUTION WILL BE 1% HNO3 DOWN RLWTF. JEFF ROACH 7/10/00

Waste Desc : N/A

Ignitability : **Not ignitable**

Corrosivity : **<= 2.0**

Reactivity : **Non-reactive**

Boiling Point : **> 95 F > 35 C**

Toxicity Characteristic Metals: N/A

Toxicity Characteristic Organic Compounds: N/A

Additional Chemical Constituents and Contaminants:

CAS NO	Constituent	MIN	MAX	UOM
	HNO3	0.5	1	%

WATER	99	99.5	%
2,3,4,5 TETRAFLUOROBENZOIC ACID	0.0000001	0.01	%
2,4 DIFLUOROBENZOIC ACID	0.0000001	0.01	%
2,4,5 TRIFLUOROBENZOIC ACID	0.0000001	0.01	%
2,6 DIFLUOROBENZOIC ACID	0.0000001	0.01	%
CERIUM III CHLORIDE HEPTAHYDRATE	0.0000001	0.005	%
COBALT (II) CHLORIDE HEXAHYDRATE	0.0000001	0.001	%
LITHIUM BROMIDE	0.0000001	0.1	%
MAGANESE CHLORIDE	0.0000001	0.001	%
NICKEL CHLORIDE	0.0000001	0.001	%
PENTAFLUOROBENZOIC ACID	0.0000001	0.1	%
POTASSIUM IODIDE	0.0000001	0.001	%
PYRIDONE	0.0000001	0.01	%
RHODAMINE WT	0.0000001	0.001	%
SAMARIUM III CHLORIDE HEXAHYDRATE	0.0000001	0.005	%
SODIUM HYDROXIDE	0.0000001	0.001	%
URANINE (SODIUM FLUORESCEIN)	0.0000001	0.05	%
POLYSTYRENE LATEX MICROSPERES	0.0000001	0.01	%

Additional Information: PH OF 1% NITRIC SOLUTION WAS MEASURED WITH WHAT MAN PH INDICATOR STRIPS 0-14 PH SCALE. PH-1.0 JEFF ROACH 7/10/00

Waste Water Characteristics for RLWTF
Waste Production: Other
Additional Contaminants:

Contaminant	Limit	Min	Max	Unit	Method
TOTAL NITRATES		**10000**	**10000**	**mg/l**	

Total Alpha: 0.00E+00 Ci/l
Total Beta: 0.00E+00 Ci/l
Total Gamma: 0.00E+00 Ci/l
Average daily flow when discharge occurs: 2 LIT
Maximum daily flow when discharge occurs: 4 LIT
Estimated number of days dicharge will occur: 100
Estimated total volume per year discharged to the RLWC at TA-50: 400 LIT

LDR and Underlying Hazardous Constituents Information
Non-Wastewater/Wastewater Category: **Non Wastewater**

WASTE CHARACTERIZATION INFORMATION

Radioactivity Category : **NON-RAD**

RCRA Category : **HAZARDOUS WASTE**

Secondary Info : N/A

Waste Classification : **HAZARDOUS WASTE**

Waste Acceptances : **TA-50 Acceptance**

EPA Hazardous Waste Code : **D002**
Notification Of Underlying Hazardous Constituents:
Constituents

No Underlying Hazardous Constituents in this waste stream

GWCP Information

Section 1 - Waste Prevention/Minimization (answer all questions)

Can hazard segregation, elimination, or material substitution be used?	☐ Yes*	☐ No	
Can any of the materials in the waste stream be recycled or reused	☐ Yes*	☐ No	
Has waste minimization been incorporated into procedures or other process controls?	☐ Yes	☐ No	
Can this waste be generated outside a RCA?	☐ Yes*	☐ No	☐ N/A

*Provide Comment

Section 6 - Work Control Documentation (answer all questions)

Do the procedures for this process cover how to manage this waste?	☐ Yes	☐ No (Provide comments)
Do the procedures for this process cover controls to prevent changes to waste constituents and concentrations or addition or removal of waste?	☐ Yes	☐ No (Provide comments)

Section 7 - Package and Storage Control

Describe how the waste will be packaged in according to the applicable WAC:

Identify the storage management controls that will be used for this waste stream: (check all that apply)

- ☐ Tamper indication devices:
- ☐ Limited use locks with log-in for waste
- ☐ Locked cabinet or building
- ☐ Other (describe)

Section 8 - Waste Certification Statements (check only one)

- ☐ Waste appears to meet WAC chapter for:
- ☐ Waste needs exception/exemption for treatment, storage, or disposal at:
- ☐ Waste does not meet the criteria for any known TSDF, (DOE approval is required. Contact the Waste Management Program Office for assistance.)

Estimated Annual Volume (m3):

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WASTE PROFILE FORM

ORIGINAL

RECEIVED JUL 1 8 2000

Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: EM-SWO at MS J595. For assistance with completing this form, call EM-SWO at 5-4000.	Reference Number 321733. (For EM-SWO use only.)

Generator's Z Number	Waste Generator's Name (print)	WMC's Z Number	WMC's Name (print)
111738	Jeff Roach	086572	Robin Petersen

Generator's Telephone	Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room
5-9795	J514	E-ET	48	1	4

Waste Accumulation (Check only one.)
- ☐ Satellite Accumulation Area — Site no: _____
- ☐ Less-than-90-days Storage Area — Site no: _____
- ☐ TSDF — Site no: _____
- ☐ Universal Waste Storage Area — Site no: _____
- ☒ None of the Above

ER Use Only ☐ ER Site PRS #: _____

Method of Characterization (Check as many as apply.)
- ☒ Analysis/Documents Attached
- ☐ Chemical/Physical Analysis — Sample #: _____
- ☐ Radiological Analysis — Sample #: _____
- ☐ PCB Analysis — Sample #: _____
- ☒ Acceptable Knowledge Documentation — Documentation #: SR-2000-22
- ☒ MSDS

Section 1 - Chemical and Physical Information

Waste Type (Check only one.)
- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☒ Process Waste/Spent Chemical/ other (Complete all sections.)
- ☐ Green is Clean Waste (Complete all sections as appropriate.)

Waste Classes

Radiological Information
Was Waste Generated in a RCA? ☐ Yes ☒ No
- ☒ Non-radioactive
- ☐ Radioactive
  - ☐ Low-Level
  - ☐ Transuranic

Wastewater Information
- ☐ Wastewater for SWSC (TA-46) (Complete Attachment 1)
- ☒ Wastewater for RLWTF (TA-50/TA-21) (Complete Attachment 2)
- ☐ Wastewater for TA-16 (HE)

Classification Information
- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check as many as apply.)
- ☒ Inorganic
- ☐ Organic
- Volatile Organics ☐ < 500 ppm ☐ ≥ 500 ppm
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste residue
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)
- Asbestos ☐ friable ☐ non-friable
- PCB Source Concentration
  - ☐ PCB < 50 ppm
  - ☐ PCB ≥ 50 - < 500 ppm
  - ☐ PCB ≥ 500 ppm
- ☐ Other (Describe below)

* Concentrations 10% or greater before use.

Waste Source (Check only one.)

Routine Waste
- ☐ Decon
- ☒ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup - Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Non-routine Waste
- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping - Non-routine
- ☐ Spill Cleanup - Non-routine
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix (Check only one.)

Gas
- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid
- ☒ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid
- ☐ Powder/Ash
- ☐ Solid
- ☐ Sludge
- ☐ Absorbed liquid

Matrix Type (Check only one.)
- ☒ Homogeneous
- ☐ Heterogeneous (Describe below)

Waste/Process Description (Chemical formulas may be used in this field.)

2% Nitric Acid Solution used in sample processing for extraction of tracer constituents. Residual 2% Nitric Acid will be diluted with DI H_2O to remove from rock samples and filter paper samples and put down RLWTF. Maximum concentration of Nitric Acid Solution after dilution will be 1% HNO_3 down RLWTF. Jeff Roach 7/10/00

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WASTE PROFILE FORM

Section 2 - Characteristics

Ignitability (Check only one.) (°F)	(°C)	Corrosivity (Check only one.) (pH)	Reactivity (Check as many as apply.)	Boiling Point (Check only one.) (°F)	(°C)
☐ < 73	< 22.8	☒ ≤ 2.0 pH = 1	☐ RCRA Unstable	☐ ≤ 95	≤ 35
☐ 73 - 99	22.8 - 37.2	☒ ~~2.1 - 4.0~~	☐ Water Reactive	☒ > 95	> 35
☐ 100 - 139	37.8 - 59.4	☐ 4.1 - 6.0	☐ Cyanide Bearing (> 250 ppm)		
☐ 140 -200	60.0 - 99.3	☐ 6.1 - 9.0	☐ Sulfide Bearing (> 500 ppm)		
☐ > 200	> 99.3	☐ 9.1 - 12.4	☐ Pyrophoric		
☐ EPA Ignitable - Non-liquid		☐ ≥ 12.5	☐ Shock Sensitive		
☐ DOT Flammable Gas		☐ Liquid corrosive to steel	☐ Explosive - DOT Div. _____		
☐ DOT Oxidizer					
☒ Not ignitable		☐ Non-aqueous	☒ Non-reactive	☐ Not applicable	

Identify for all contaminants listed.	Characterization Method: AK	TCLP	Total	Concentration of Contaminants: None or Non-detect	Present Below Regulatory Limit	Above Regulatory Limit Minimum	Maximum
Toxicity Characteristic Metals						(Concentration in ppm only.)	
Arsenic	☒	☐	☐	☒	☐ < 5.0 ppm	_____ to	_____ ppm
Barium	☐	☐	☐	☐	☐ < 100.0 ppm	_____ to	_____ ppm
Cadmium	☐	☐	☐	☐	☐ < 1.0 ppm	_____ to	_____ ppm
Chromium (Total)	☐	☐	☐	☐	☐ < 5.0 ppm	_____ to	_____ ppm
Lead	☐	☐	☐	☐	☐ < 5.0 ppm	_____ to	_____ ppm
Mercury	☐	☐	☐	☐	☐ < 0.2 ppm	_____ to	_____ ppm
Selenium	☐	☐	☐	☐	☐ < 1.0 ppm	_____ to	_____ ppm
Silver	☐	☐	☐	☐	☐ < 5.0 ppm	_____ to	_____ ppm
Toxicity Characteristic Organics							
Benzene	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
Carbon tetrachloride	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
Chlordane	☐	☐	☐	☐	☐ < 0.03 ppm	_____ to	_____ ppm
Chlorobenzene	☐	☐	☐	☐	☐ < 100.0 ppm	_____ to	_____ ppm
Chloroform	☐	☐	☐	☐	☐ < 6.0 ppm	_____ to	_____ ppm
o - cresol	☐	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
m - cresol	☐	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
p - cresol	☐	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
Cresol - mixed	☐	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
2,4-D	☐	☐	☐	☐	☐ < 10.0 ppm	_____ to	_____ ppm
1,4-Dichlorobenzene	☐	☐	☐	☐	☐ < 7.5 ppm	_____ to	_____ ppm
1,2-Dichloroethane	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
1,1-Dichloroethylene	☐	☐	☐	☐	☐ < 0.7 ppm	_____ to	_____ ppm
2,4-Dinitrotoluene	☐	☐	☐	☐	☐ < 0.13 ppm	_____ to	_____ ppm
Endrin	☐	☐	☐	☐	☐ < 0.02 ppm	_____ to	_____ ppm
Heptachlor (& its epoxide)	☐	☐	☐	☐	☐ < 0.008 ppm	_____ to	_____ ppm
Hexachlorobenzene	☐	☐	☐	☐	☐ < 0.13 ppm	_____ to	_____ ppm
Hexachlorobutadiene	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
Hexachloroethane	☐	☐	☐	☐	☐ < 3.0 ppm	_____ to	_____ ppm
Lindane	☐	☐	☐	☐	☐ < 0.4 ppm	_____ to	_____ ppm
Methoxychlor	☐	☐	☐	☐	☐ < 10.0 ppm	_____ to	_____ ppm
Methyl ethyl ketone	☐	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
Nitrobenzene	☐	☐	☐	☐	☐ < 2.0 ppm	_____ to	_____ ppm
Pentachlorophenol	☐	☐	☐	☐	☐ < 100.0 ppm	_____ to	_____ ppm
Pyridine	☐	☐	☐	☐	☐ < 5.0 ppm	_____ to	_____ ppm
Tetrachloroethylene	☐	☐	☐	☐	☐ < 0.7 ppm	_____ to	_____ ppm
Toxaphene	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
Trichloroethylene	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
2,4,5-Trichlorophenol	☐	☐	☐	☐	☐ < 400.0 ppm	_____ to	_____ ppm
2,4,6-Trichlorophenol	☐	☐	☐	☐	☐ < 2.0 ppm	_____ to	_____ ppm
2,4,5-TP (Silvex)	☐	☐	☐	☐	☐ < 1.0 ppm	_____ to	_____ ppm
Vinyl chloride	☐	☐	☐	☐	☐ < 0.2 ppm	_____ to	_____ ppm

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WASTE PROFILE FORM

Section 3 - Additional Constituents

Additional Constituents and Contaminants. Please account for 100% of waste. Ranges should be given within guidelines of LIO 404-00-03 of individual constituents. List all other constituents (including liquid) not identified above and exceed any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum		Maximum	
	HNO3	0.5	to	1	%
	WATER	49	to	99.5	%
	2,3,4,5 Tetrafluorobenzoic Acid	0.0000001	to	0.01	%
	2,4 difluorobenzoic Acid	0.0000001	to	0.01	%
	2,4,5 trifluorobenzoic Acid	0.0000001	to	0.01	%
	2,6 difluorobenzoic Acid	0.0000001	to	0.01	%
SR 7/24/00	~~Cadmium Hydroxide~~	~~0.0000001~~	~~to~~	~~0.001~~	~~%~~
	Cerium III Chloride Heptahydrate	0.0000001	to	0.005	%
	Cobalt (II) Chloride ~~Hepta~~ Hexahydrate	0.0000001	to	0.001	%
	Lithium Bromide	0.0000001	to	0.1	%
	Magnesse Chloride	0.0000001	to	0.001	%
	Nickel Chloride	0.0000001	to	0.001	%
See Attached	Sheet	Total of max. ranges of this section		100.83 ~~100.5~~	in %
		Total of max. ranges from page 2.		SR 7/24/00	in ppm

Additional Information (Use additional sheet if necessary.)

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

pH of 1% nitric solution was measured with whatman pH indicator strips 0-14 pH scale. pH = 1.0

G M Roach 7/10/00

~~Waste Profile Form # 32527 is attacted and lists constituents that may be extracted from the SJR rock and filter pad samples during processing and thus be contained in the 1% nitric acid solution. All constituents with an "*" asterisk by it are constituents that may be in the 1% nitric solution. Their min. and max. percents are stated in the WPF. The hazards associated with both the nitric acid and the constituents will not change due to their contact. This WPF and WPF 32527 will still account for disposal characteristics/hazards.~~

G M Roach 7/10/00

info. included in section 3 SR 7/24/00

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

Signature G M Roach Date 7/10/00

WASTE MANAGEMENT COORDINATOR: I have reviewed this form and to the best of my knowledge, the information is complete and accurate.

Signature Robyn Petersen Date 7-14-00

Section 3 - Additional Constituents Continued

	min	max	
Pentafluoro benzoic Acid	0.0000001	0.1	
Potassium Iodide	0.0000001	0.001	
PYRIDONE	0.0000001	0.01	
Rhodamine WT	0.0000001	0.001	
Samarium III Chloride hexahydrate	0.0000001	0.005	
Sodium Hydroxide	0.0000001	0.001	
~~Sodium Iodide~~	~~0.0000001~~	~~0.01~~	JR 7/24/00
Uranine (Sodium Fluorescein)	0.0000001	0.05	
Polystyrene Latex Microspheres	0.0000001	0.01	
~~Sodium Fluoride~~	~~0.0000001~~	~~0.01~~	JR 7/24/00

7/25/00

TO: Andy Elicio
7-0735 FAX

FROM: Robyn Petersen

WPF 32733

Additional constituents added. Second WPF attachment removed.

Call with questions. 5-9054

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WASTE PROFILE FORM

Section 3 - Additional Constituents

Additional Constituents and Contaminants. Please account for 100% of waste. Ranges should be given within guidelines of LIG 404-00-03 of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum		Maximum	
	HNO3	0.5	to	1	%
	WATER	99	to	99.5	%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
	Total of max. ranges of this section	100.5			in %
	Total of max. ranges from page 2.				in ppm

Additional Information (Use additional sheet if necessary.)

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

pH of 1% nitric solution was measured with Whatman pH indicator strips 0-14 pH scale. pH = 1.0
G. M. Roach 7/10/00

Waste Profile Form # 32527 is attacted and lists constituents that may be extracted from the ~~J~~SR rock and filter pad samples during processing and thus be contained in the 1% nitric acid solution. All constituents with an "*" asterisk by it are constituents that may be in the 1% nitric solution. Their min. and max. percents are stated in the WPF. The hazards associated with both the nitric acid and the constituents will not change due to their contact. This WPF and WPF 32527 will still account for disposal characteristics/hazards.
G. M. Roach 7/10/00

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

Signature	Date
G. M. Roach	7/10/00

WASTE MANAGEMENT COORDINATOR: I have reviewed this form and to the best of my knowledge, the information is complete and accurate.

Signature	Date
Robyn Petersen	7-14-00

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WASTE PROFILE FORM

Attachment 2 - Wastewater Characteristics for RLWTF (TA-50 & TA-21)

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

Indicate if waste was: ☐ Accelerator produced ☐ Reactor produced ☒ Other (Describe in WPF Section 1 "Waste/Process Description.")

Radionuclide Contaminants NONE

Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min. / Max.	Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min. / Max.
As-74	☐ ≤ 4.0 E -8	____ / ____	Rb-84	☐ ≤ 1.0 E -8	____ / ____
Be-7	☐ ≤ 1.0 E -6	____ / ____	Sc-46	☐ ≤ 2.0 E -8	____ / ____
Ce-141	☐ ≤ 5.0 E -8	____ / ____	Sc-48	☐ ≤ 2.0 E -8	____ / ____
Cs-134	☐ ≤ 2.0 E -9	____ / ____	Se-75	☐ ≤ 2.0 E -8	____ / ____
Cs-137	☐ ≤ 3.0 E -9	____ / ____	Na-22	☐ ≤ 1.0 E -8	____ / ____
Co-56	☐ ≤ 1.0 E -8	____ / ____	Sr-85	☐ ≤ 7.0 E -8	____ / ____
Co-57	☐ ≤ 1.0 E -7	____ / ____	Sr-89	☐ ≤ 2.0 E -8	____ / ____
Co-58	☐ ≤ 4.0 E -8	____ / ____	Sr-90	☐ ≤ 1.0 E -9	____ / ____
Co-60	☐ ≤ 5.0 E -9	____ / ____	Sn-113	☐ ≤ 5.0 E -8	____ / ____
Eu-152	☐ ≤ 2.0 E -8	____ / ____	V-48	☐ ≤ 2.0 E -8	____ / ____
H-3	☐ ≤ 2.0 E -8	____ / ____	Y-88	☐ ≤ 3.0 E -8	____ / ____
I-133	☐ ≤ 1.0 E -8	____ / ____	Zn-65	☐ ≤ 9.0 E -9	____ / ____
Mn-52	☐ ≤ 2.0 E -8	____ / ____	Am-241	☐ ≤ 0.1 E -6	____ / ____
Mn-54	☐ ≤ 5.0 E -8	____ / ____	Pu-238	☐ ≤ 0.1 E -6	____ / ____
Ra-226 + 228	☐ ≤ 3.0 E -11	____ / ____	Pu-239	☐ ≤ 0.1 E -6	____ / ____
Rb-83	☐ ≤ 2.0 E -8	____ / ____	U-234	☐ ≤ 5.0 E -8	____ / ____
Others:			**Others:**		
____		____ / ____	____		____ / ____
____		____ / ____	____		____ / ____
____		____ / ____	____		____ / ____

Other Contaminants NONE

Metal Contaminants	Present Below LOC (in ppm)	Range if above LOC (in ppm) Min. / Max.	Additional Contaminants	Min. / Max
Aluminum	☐ ≤ 5.0	____ to ____ ppm	Chemical Oxygen Demand (COD)	____ to ____ mg/l
Boron	☐ ≤ 5.0	____ to ____ ppm	Total Suspended Solids (TSS)	____ to ____ mg/l
Cobalt	☐ ≤ 1.0	____ to ____ ppm		
Copper	☐ ≤ 1.0	____ to ____ ppm	☐ Total Nitrogen or (only one	____ to ____ mg/l
Vanadium	☐ ≤ 0.10	____ to ____ ppm	☒ Total Nitrates entry needed)	10,000 to 10,000 mg/l
Zinc	☐ ≤ 95.40	____ to ____ ppm		

Radioactive Contaminant Totals: NONE

Total Alpha ____ Ci/l
Total Beta ____ Ci/l
Total Gamma ____ Ci/l

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

☐ Acid Line ☐ Caustic Line ☐ Industrial Waste Line

☐ Yes ☒ No Scintillation Cocktail Brand Name ____ Volume ____ Unit ____

☐ Yes ☒ No Chemical Treatment for Boilers / Water Chillers

☐ Yes ☒ No Industrial Cleaner Type ____ Volume ____ Unit ____

Average daily volume when discharge occurs: JR 7/10/05 ~~4.00~~ 2.00 ☐ Gallons/day ☒ Liters/day

Maximum daily volume when discharge occurs: 4.00 ☐ Gallons/day ☒ Liters/day

Estimated number of days per year discharge will occur: 100

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-50 / TA-21: 400 ☐ Gallons ☒ Liters

Associated WPF Reference Number:

LDR and Underlying Hazardous Constituents Information - Identify presence of any constituents listed below.

Non-Wastewater / Wastewater Category - Check only one.

☒ Non Wastewater ☒ Wastewater [as defined by 40 CFR 268.2(f)]

Notification of California List Applicability - Check all that apply.

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

☐ A D001 thru D043 liquid waste containing 134 mg/L or greater of Nickel and/or 130 mg/L or greater of thallium.

☐ A D001 thru D043 waste containing Halogenated Organic Compounds (HOCs) listed in 40 CFR 268, Appendix III, at 1000 ppm or greater.

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

☒ *No Underlying Hazardous Constituents in this waste stream.* ☐ *HAZCAT Meeting 40 CFR 268.42(c)*

Organic Constituents

☐ A2213	☐ Butyl benzyl phthalate	☐ p,p'-DDE
☐ Acenaphthylene	☐ 2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	☐ o,p'-DDT
☐ Acenaphthene	☐ Carbaryl	☐ p,p'-DDT
☐ Acetone	☐ Carbenzadim	☐ Dibenz(a,h)anthracene
☐ Acetonitrile	☐ Carbofuran	☐ Dibenz(a,e)pyrene
☐ Acetophenone	☐ Carbofuran phenol	☐ 1,2-Dibromo-3-chloropropane
☐ 2-Acetyaminofluorene	☐ Carbon disufide	☐ 1,2-Dibromoethane (Ethylene dibromide)
☐ Acrolein	☐ Carbon tetrachloride	☐ Dibromomethane
☐ Acrylamide	☐ Carbosulfan	☐ m-Dichlorobenzene
☐ Acrylonitrile	☐ Chlordane (alpha & gamma isomers)	☐ o-Dichlorobenzene
☐ Aldicarb sulfone	☐ p-Chloroaniline	☐ p-Dichlorobenzene
☐ Aldrin	☐ Chlorobenzene	☐ Dichlorodifluoromethane
☐ 4-Aminobiphenyl	☐ Chlorobenzilate	☐ 1,1-Dichloroethane
☐ Aniline	☐ 2-Chloro-1,3-butadiene	☐ 1,2-Dichloroethane
☐ Anthracene	☐ Chlorodibromomethane	☐ 1,1-Dichloroethylene
☐ Aramite	☐ Chloroethane	☐ trans-1,2-Dichloroethylene
☐ alpha-BHC	☐ bis(2-Chloroethoxy) methane	☐ 2,4-Dichlorophenol
☐ beta-BHC	☐ bis(2-Chloroethyl) ether	☐ 2,6-Dichlorophenol
☐ delta-BHC	☐ Chloroform	☐ 2,4-Dichlorophenoxyacetic acid (2,4-D)
☐ gamma-BHC	☐ bis(2-Chloroisopropyl) ether	☐ 1,2-Dichloropropane
☐ Barban	☐ p-Chloro-m-cresol	☐ cis-1,3-Dichloropropylene
☐ Bendiocarb	☐ 2-Chloroethyl vinyl ether	☐ trans-1,3-Dichloropropylene
☐ Bendiocarb phenol	☐ Chloromethane (Methyl chloride)	☐ Dieldrin
☐ Benomyl	☐ 2-Chloronaphthalene	☐ Diethylene glycol, dicarbamate
☐ Benzene	☐ 2-Chlorophenol	☐ Diethyl phthalate
☐ Benz(a)anthracene	☐ 1-Chloropropylene	☐ p-Dimethylaminoazobenzene
☐ Benzal chloride	☐ Chrysene	☐ 2-4-Dimethyl phenol
☐ Benzo(b)fluoranthene	☐ o-Cresol	☐ Dimethyl phthalate
☐ Benzo(k)fluoranthene	☐ m-Cresol	☐ Dimetilan
☐ Benzo(g,h,i)perylene	☐ p-Cresol	☐ Di-n-butyl phthalate
☐ Benzo(a)pyrene	☐ m-Cumenyl methylcarbamate	☐ 1,4-Dinitrobenzene
☐ Bromodichloromethane	☐ Cycloate	☐ 4,6-Dinitro-o-cresol
☐ Bromomethane (Methyl bromide)	☐ Cyclohexanone	☐ 2,4-Dinitrophenol
☐ 4-Bromophenyl phenyl ether	☐ o,p'-DDD	☐ 2,4-Dinitrotoluene
☐ n-Butyl alcohol	☐ p,p'-DDD	☐ 2,6-Dinitrotoluene
☐ Butylate	☐ o,p'-DDE	☐ Di-n-octyl phthalate

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

Organic Constituents - continued

- ☐ Di-n-propylnitrosamine
- ☐ 1,4-Dioxane
- ☐ Diphenylamine
- ☐ Diphenylnitrosamine
- ☐ 1,2-Diphenylhydrazine
- ☐ Disulfoton
- ☐ Dithiocarbamates (total)
- ☐ Endosulfan I
- ☐ Endosulfan II
- ☐ Endosulfan sulfate
- ☐ Endrin
- ☐ Endrin aldehyde
- ☐ EPTC
- ☐ Ethyl acetate
- ☐ Ethyl benzene
- ☐ Ethyl cyanide (Propanenitrile)
- ☐ Ethyl ether
- ☐ bis(2-Ethylhexyl) phthalate
- ☐ Ethyl methacrylate
- ☐ Ethylene oxide
- ☐ Famphur
- ☐ Fluoranthene
- ☐ Fluorene
- ☐ Formetanate hydrochloride
- ☐ Formparanate
- ☐ Heptachlor
- ☐ Heptachlor epoxide
- ☐ Hexachlorobenzene
- ☐ Hexachlorobutadiene
- ☐ Hexachlorocyclopentadiene
- ☐ Hexachlorodibenzo-p-dioxins (HxCDDs)
- ☐ Hexachlorodibenzo-furans (HxCDFs)
- ☐ Hexachloroethane
- ☐ Hexachloropropylene
- ☐ Indeno (1,2,3-c,d) pyrene
- ☐ Iodomethane
- ☐ 3-Iodo-2-propynyl n-butylcarbamate
- ☐ Isobutyl alcohol
- ☐ Isodrin
- ☐ Isolan
- ☐ Isosafrole
- ☐ Kepone
- ☐ Methacrylonitrile
- ☐ Methanol
- ☐ Methapyrilene
- ☐ Methiocarb
- ☐ Methomyl
- ☐ Methoxychlor
- ☐ 3-Methylcholanthrene
- ☐ 4,4-Methylene bis(2-chloroaniline)
- ☐ Methylene chloride
- ☐ Methyl ethyl ketone
- ☐ Methyl isobutyl ketone
- ☐ Methyl methacrylate
- ☐ Methyl methansulfonate
- ☐ Methyl parathion
- ☐ Metolcarb
- ☐ Mexacarbate
- ☐ Molinate
- ☐ Naphthalene
- ☐ 2-Naphthylamine
- ☐ o-Nitroaniline
- ☐ p-Nitroaniline
- ☐ Nitrobenzene
- ☐ 5-Nitro-o-toluidine
- ☐ o-Nitrophenol
- ☐ p-Nitrophenol
- ☐ N-Nitrosodiethylamine
- ☐ N-Nitrosodimethylamine
- ☐ N-Nitroso-di-n-butylamine
- ☐ N-Nitrosomethylethylamine
- ☐ N-Nitrosomorpholine
- ☐ N- Nitrosopiperidine
- ☐ N-Nitrosopyrrolidine
- ☐ Oxamyl
- ☐ Parathion
- ☐ PCBs (total)
- ☐ Pebulate
- ☐ Pentachlorobenzene
- ☐ Pentachlorodibenzo-p-dioxins (PeCDDs)
- ☐ Pentachlorodibenzo-furans (PeCDFs)
- ☐ Pentachloroethane
- ☐ Pentachloronitrobenzene
- ☐ Pentachlorophenol
- ☐ Phenacetin
- ☐ Phenanthrene
- ☐ Phenol
- ☐ o-Phenylenediamine
- ☐ Phorate
- ☐ Phthalic acid
- ☐ Phthalic anhydride
- ☐ Physostigmine
- ☐ Physostigmine salicylate
- ☐ Promecarb
- ☐ Pronamide
- ☐ Propham
- ☐ Propoxur
- ☐ Prosulfocarb
- ☐ Pyrene
- ☐ Pyridine
- ☐ Safrole
- ☐ Silvex (2,4,5-TP)
- ☐ 1,2,4,5-Tetrachlorobenzene
- ☐ Tetrachlorodibenzo-p-dioxins (TCDDs)
- ☐ Tetrachlorodibenzofurans (TCDFs)
- ☐ 1,1,1,2-Tetrachloroethane
- ☐ 1,1,2,2-Tetrachloroethane
- ☐ Tetrachloroethylene
- ☐ 2,3,4,6-Tertachlorophenol
- ☐ Thiodicarb
- ☐ Thiophanate-methyl
- ☐ Tirpate
- ☐ Toluene
- ☐ Toxaphene
- ☐ Triallate
- ☐ Tribromomethane (Bromoform)
- ☐ 1,2,4-Trichlorobenzene
- ☐ 1,1,1-Trichloroethane
- ☐ 1,1,2-Trichloroethane
- ☐ Trichloroethylene
- ☐ Trichloromonofluoromethane
- ☐ 2,4,5-Trichlorophenol
- ☐ 2,4,6-Trichlorophenol
- ☐ 2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)
- ☐ 1,2,3-Trichloropropane
- ☐ 1,1,2-Trichloro-1,2,2-trifluoroethane
- ☐ Triethylamine
- ☐ tris-(2,3-Dibromopropyl) phosphate
- ☐ Vernolate
- ☐ Vinyl chloride
- ☐ Xylenes (total)

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

Metal/Inorganic Constituents

☐ Antimony	☐ Cyanides (Amenable)	☐ Selenium
☐ Arsenic	☐ Fluoride	☐ Silver
☐ Barium	☐ Lead	☐ Sulfide
☐ Beryllium	☐ Mercury (Retort residues)	☐ Thallium
☐ Cadmium	☐ Mercury - All others	☐ Vanadium
☐ Chromium (Total)	☐ Nickel	☐ Zinc
☐ Cyanides (Total)		

ACCEPTABLE KNOWLEDGE FOR WASTE CHARACTERIZATION AT TA-48

Name of Generator	Z Number	Date
Jeff Roach	111738	7/10/00

Location of Work: TA-48	Bldg. JR 7/10/00 4 1	Room 4

Process	AK Form number
Nitric Acid tracer extraction for production of sample processing	JR-2000-22

Waste stream statement of Acceptable Knowledge (Generator describe your knowledge of and how you determine the makeup of the waste stream)

Additional documents (if any)

Concentrated Nitric Acid made into a 2% solution with DI H_2O. Diluted with DI H_2O to extract from rocks or filter paper to a maximum of 1% HNO_3. Maximum concentration of Nitrates is 10,000 ppm (mg/L) =1% of 1,000,000 ppm

Generator's signature	Date
Jeff Roach	7/10/00
WMC Initials	**Date**
RP	7-14-00

Completed form shall be forwarded to the WMC

Fisher Scientific

Back to Nitric Acid (TraceMetal)

Material Safety Data Sheet
Nitric Acid

ACC# 16550

Section 1 - Chemical Product and Company Identification

MSDS Name: Nitric Acid
Catalog Numbers: S71972, S71972-1, S75623-2, S75623-3, S76523, A198C 212, A198C-212, A198C212, A198C4X 212, A198C4X212, A200 212, A200 500, A200 612GAL, A200-212, A200-500, A200-612G, A200-612GAL, A200-612GL, A200212, A200500, A200612GAL, A200C-2.5, A200C-212, A200C212EA, A200C4X 212, A200C4X212, A200C4X212 1, A200C4X2121, A200C4X2122, A200C4X212L, A200FP 500, A200FP500, A200J500, A200S 500, A200S-2.5, A200S-212, A200S-500, A200S4X212, A200S4X2123, A200S4X212L, A200S500, A200SI 212, A200SI-21, A200SI-212, A200SI212, A200SI21201, A200SI212LC, A206C 212, A206C-212, A206C212, A206C4X 212, A206C4X212, A467 500, A467-1, A467-2, A467-250, A467-500, A4672, A467500, A483 212, A483-212, A483212, A509 212, A509 212 002, A509 500, A509-212, A509-500, A509212, A509212 002, A509212001, A509212002, A509212003, A509212004, A5092122005, A509212LC, A509500, A509SK212, A510SK212, S71972-1MF*, S719721, S719721MF, S71972MF, S71972MF*, S71972SC
Synonyms: Azotic acid, engravers nitrate, hydrogen nitrate.
Company Identification:
Fisher Scientific
1 Reagent Lane
Fairlawn, NJ 07410
For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7697-37-2	Nitric acid	68-70	231-714-2
7732-18-5	Water	29-31%	231-791-2

Hazard Symbols: O C
Risk Phrases: 35 8

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear to yellow. **Danger!** Strong oxidizer. Contact with othermaterial may cause a fire. Corrosive. Causes eye and skin burns.Causes digestive and respiratory tract burns.
Target Organs: None.

Potential Health Effects

Eye: Causes severe eye burns. May cause irreversible eye injury.
Skin: May cause severe skin irritation. Causes skin burns. May cause deep, penetrating ulcers of the skin.
Ingestion: Causes gastrointestinal tract burns. May cause perforation of the digestive tract.
Inhalation: May be fatal if inhaled. Effects may be delayed. May cause irritation of the respiratory tract with burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema.
Chronic: Repeated inhalation may cause chronic bronchitis. Repeated exposure may cause erosion of teeth.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid immediately. Do NOT allow victim to rub or keep eyes closed.
Skin: Get medical aid immediately. Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.
Ingestion: Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.
Inhalation: Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Firefighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Strong oxidizer. Contact with combustible materials may cause a fire. Use water spray to keep fire-exposed containers cool. Substance is noncombustible.
Extinguishing Media: Substance is noncombustible; use agent most appropriate to extinguish surrounding fire.
Autoignition Temperature: Not available.
Flash Point: Not available.
NFPA Rating: Not published. Explosion Limits, Lower: Not available. Upper: Not available.

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material, (e.g., dry sand or earth), then place into a chemical waste container. Neutralize spill with sodium bicarbonate. A vapor suppressing foam may be used to reduce vapors.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Do not ingest or inhale.
Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Nitric acid	2 ppm ; 5.2 mg/m3; 4 ppm STEL; 10 mg/m3 STEL	2 ppm TWA; 5 mg/m3 TWA 25 ppm IDLH	2 ppm TWA; 5 mg/m3 TWA
Water	none listed	none listed	none listed

OSHA Vacated PELs: Nitric acid: 2 ppm TWA; 5 mg/m3 TWA Water: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves and clothing to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: clear to yellow
Odor: strong odor - acrid odor
pH: 1.0
Vapor Pressure: 6.8 mm Hg
Vapor Density: Not available.
Evaporation Rate:
Viscosity: Not available.
Boiling Point: 186.8 deg F
Freezing/Melting Point:-43.6 deg F
Decomposition Temperature: Not available.
Solubility: Soluble in water.
Specific Gravity/Density:1.50
Molecular Formula:HNO3
Molecular Weight:

Section 10 - Stability and Reactivity

Chemical Stability: Decomposes when in contact with air, light, or organic matter.
Conditions to Avoid: High temperatures, incompatible materials, moisture, reducing agents.
Incompatibilities with Other Materials: Acids (organic, e.g. acetic acid, benzoic acid, formic acid, methanoic acid, oxalic acid), alcohols and glycols (e.g. butyl alcohol, ethanol, methanol, ethylene glycol), aldehydes (e.g. acetaldehyde, acrolein, chloral hydrate, formaldehyde), amides (e.g. butyramide, diethyltoluamide, dimethyl formamide), amines (aliphatic and aromatic, e.g. dimethyl amine, propylamine, pyridine, triethylamine), azo, diazo, and hydrazines (e.g. dimethyl

hydrazine, hydrazine, methyl hydrazine), carbamates (e.g. carbanolate, carbofuran), caustics (e.g. ammonia, ammonium hydrozide, calcium hydroxide, potassium hydroxide, sodium hydroxide), cyanides (e.g. potassium cyanide, sodium cyanide), dithiocarbamates (e.g. ferbam, maneb, metham, thiram), esters (e.g. butyl acetate, ethyl acetate, propyl formate), ethers (e.g. dioxane, furfuran, tetrahydrofuran (THF)), fluorides (inorganic, e.g. ammonium fluoride, calcium fluoride, cesium fluoride), hydrocarbons (aromatic, e.g. benzene, chrysene, cumene, toluene), halogenated organics (e.g. dibromoethane, hexachlorobenzene, methyl chloride, trichloroethylene), isocyanates (e.g. methyl isocyanate), ketones (e.g. acetone, acetophenone, MEK, MIBK), mercaptans and other organic sulfides (e.g. butyl mercaptan, carbon disulfide, methanethiol), metals (alkali and alkaline, e.g. cesium, potassium, sodium), metals as powders (e.g. hafnium, raney nickel), metals as non-powders (e.g. brass, bronze, iron), metals and metal compounds (toxic, e.g. beryllium, lead acetate, nickel carbonyl, tetraethyl lead), nitrides (e.g. potassium nitride, sodium nitride), nitriles (e.g. acetonitrile, methyl cyanide), nitro compounds (organic, e.g. nitrobenzene, nitroglycerine, picric acid, trinitrotoluene), hydrocarbons (aliphatic, unsaturated, e.g. cyclopentene, ethylene, heptene), hydrocarbons (aliphatic, saturated, e.g. butane, heptane, isooctane), peroxides and hydroperoxides (organic, e.g. acetyl peroxide, benzoyl peroxide, butyl peroxide, methyl ethyl ketone peroxide), ph.
Hazardous Decomposition Products: Nitrogen oxides.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 7697-37-2: QU5775000 QU5900000
CAS# 7732-18-5: ZC0110000
LD50/LC50:
CAS# 7697-37-2:
Inhalation, rat: LC50 =67 ppm(NO2)/4H;
CAS# 7732-18-5:
Oral, rat: LD50 = >90 mL/kg;
Carcinogenicity:
CAS# 7697-37-2: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA. CAS# 7732-18-5: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Epidemiology: No information available.
Teratogenicity: Effects on newborn: biochemical and metabolic, Oral-rat TDLo=2345 mg/kg (female 18D post). Fetotoxicity: Stunted fetus, Oral-rat TDLo=21150 mg/kg (female 1-21D post).
Reproductive Effects: No information available.
Neurotoxicity: No information available.
Mutagenicity: No information available.
Other Studies: None.

Section 12 - Ecological Information

Ecotoxicity: Mosquito fish: TLm=72 ppm/96H (fresh water) Cockle: LC50=330-1000 ppm/48H (salt water)
Environmental Fate: No information reported.
Physical/Chemical: No information available.
Other: None.

Section 13 - Disposal Considerations

Dispose of in a manner consistent with federal, state, and local regulations.

RCRA D-Series Maximum Concentration ofContaminants: None listed.
RCRA D-Series Chronic Toxicity ReferenceLevels: None listed.
RCRA F-Series: None listed.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	DOT	IATA	IMDG	IMO	Canada TDG
Shipping Name:	NITRIC ACID	No information available.	No information available.	No information available.	NITRIC ACID
Hazard Class:	8				8(9.2)
UN Number:	UN2031				UN2031
Packing Group:	II				II

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 7697-37-2 is listed on the TSCA inventory.
CAS# 7732-18-5 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
SARA

Section 302 (RQ)
CAS# 7697-37-2: final RQ = 1000 pounds (454 kg)
Section 302 (TPQ)
CAS# 7697-37-2: TPQ = 1000 pounds; RQ = 1000 pounds
SARA Codes
CAS # 7697-37-2: acute, chronic, flammable.
Section 313
This material contains Nitric acid (CAS# 7697-37-2, 68 70%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.
Clean Air Act:
This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
CAS# 7697-37-2 is listed as a Hazardous Substance under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
CAS# 7697-37-2 is considered highly hazardous by OSHA.
STATE
CAS# 7697-37-2 can be found on the following state right to know lists: California, New Jersey,

Florida, Pennsylvania, Minnesota, Massachusetts.
CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.
California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

O C

Risk Phrases:

R 35 Causes severe burns. R 8 Contact with combustible material may cause fire.

Safety Phrases:

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S 36 Wear suitable protective clothing. S 45 In case of accident of if you feel unwell, seek medical advice immediately (show the label where possible). S23B Do not breathe fumes.

WGK (Water Danger/Protection)

CAS# 7697-37-2: 1
CAS# 7732-18-5: No information available.

Canada

CAS# 7697-37-2 is listed on Canada's DSL/NDSL List.
CAS# 7732-18-5 is listed on Canada's DSL/NDSL List.
This product has a WHMIS classification of C, D1A, E.
CAS# 7697-37-2 is not listed on Canada's Ingredient Disclosure List.
CAS# 7732-18-5 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

CAS# 7697-37-2: OEL-ARAB Republic of Egypt:TWA 2 ppm (5 mg/m3) OEL-AUSTRALIA:TWA 2 ppm (5 mg/m3);STEL 4 ppm (10 mg/m3) OEL-BELGIUM:TWA 2 ppm (5.2 mg/m3);STEL 4 ppm (10 mg/m3) OEL-CZECHOSLOVAKIA:TWA 2.5 mg/m3;STEL 5 mg/m3 OEL-DENMARK:TWA 2 ppm (5 mg/m3) OEL-FINLAND:TWA 2 ppm (5 mg/m3);STEL 5 ppm (13 mg/m3);Skin OEL-FRANCE:TWA 2 ppm (5 mg/m3);STEL 4 ppm (10 mg/m3) OEL-GERMANY:TWA 10 ppm (25 mg/m3) OEL-HUNGARY:STEL 5 mg/m3 OEL-JAPAN:TWA 2 ppm (5.2 mg/m3) OEL-THE PHILIPPINES:TWA 2 ppm (5 mg/m3) OEL-POLAND:TWA 10 mg/m3 OEL-RUSSIA:TWA 2 ppm;STEL 2 mg/m3;Skin OEL-SWEDEN:TWA 2 ppm (5 mg/m3);STEL 5 ppm (13 mg/m3) OEL-SWITZERLAND:TWA 2 ppm (5 mg/m3);STEL 4 ppm (1 mg/m3) OEL-THAILAND:TWA 2 ppm (5 mg/m3) OEL-TURKEY:TWA 2 ppm (5 mg/m3) OEL-UNITED KINGDOM:TWA 2 ppm (5 mg/m3);STEL 4 ppm (10 mg/m3) OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

Section 16 - Additional Information

MSDS Creation Date: 12/20/1994
Revision #18 Date: 9/30/1998

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 32733
(Version: 1.1)

30-Oct-2001 01:35 PM

Generator:	ROACH, JEFFREY L EET	MS :	J514
WMC :	PETERSEN, ROBYN CST25	MS :	J519
FROM:	FWO-SWO	MS :	J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 32733 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to FWO-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 32733
YES _____ NO _____
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
YES _____ NO _____
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
YES _____ NO _____
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 32733

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

Extension-> Signed James Wolfsberg 117048 Date 11/13/01

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 32733

Void-> Signed J M Roach Date 11/13/01

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: FWO-SWO ***MS: J595*** ***PHONE: 5-4000***

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 32733
(Version: 1)

19-Sep-2001 07:53 AM

Generator :	ROACH, JEFFREY L EET	MS :	J514
WMC :	PETERSEN, ROBYN CST25	MS :	J519
FROM :	FWO-SWO	MS :	J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 32733 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to FWO-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 32733
YES ✓ **NO** ____
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
YES ____ **NO** ____
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
YES ____ **NO** ____
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 32733

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

Extension-> Signed Laura Wolfsberg Date 10-1-01
LAURA WOLFSBERG

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 32733

Void-> Signed J J Roach Date 10/1/01

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: FWO-SWO ***MS: J595*** ***PHONE: 5-4000***

LOS ALAMOS NATIONAL LABORATORY
WASTE PROFILE SYSTEM

WPF #: 35269

31-Jan-2008 11:46 AM **(Version: 3)**

Generator :	**COSTA, DAVID**	MS :	**E530**	PH :	**58958**	Z#:	**121377**
WMC :	**MCCORMICK, EGAN**	MS :	**E507**	PH :	**5056678158**	Z#:	**093573**
Contact :							
RCRA Rev :	**ELICIO ANDY U**	MS :	**J599**	PH :	**5056676956**	Z#:	**118692**
Status :	**EXPIRE**	Activation Date :	**10/31/2002**		Expiration Date:		**10/31/2005**
Group :	**NMT15**	TA :	**55**	Bldg :	**000004**	Room :	**106**

You are required to keep a copy of the WPF(s) in your files for at least three years. This WPF(s) is valid for one year or as long as the composition of the waste you have characterized remains the same. Should your waste change, please submit a new WPF to Waste Acceptance Group.

Waste Accumu : **None of the Above Site ID#**

Method of Char : Analysis/Documents Attached
Chemical/Physical Analysis
Radiological Analysis
Acceptable Knowledge Documentation

Waste Type : **Process Waste/Spent Chemical/Other**

Waste Classes:
RCA Waste - **RCA Waste**
RAD Waste - **Radioactive-TRU**
WW Info - **RLWTF**
Classif/Sensi - **N**

Waste Category: **Inorganic**

Waste Sources : **Research/Development/Testing**

Waste Matrix : **Aqueous**

Matrix Type : **Homogeneous**

Process Desc :

WASTE AQUEOUS ELECTROCHEMICAL PROCESS SOLUTIONS WITH LOW LEVELS OF URANIUM CONTAMINATION AND LESS THAN 0.1MOL/L SODIUM SULFATE. GROUPS 1-4

Waste Desc : N/A

Ignitability : **Not ignitable**

Corrosivity : **9.1 - 12.4**

Reactivity : **Non-reactive**

Boiling Point : **> 95 F > 35 C**

Toxicity Characteristic Metals:

Contaminant	Method	Limit	Min	Max	Unit
CHROMIUM	**TOTA**		**0**	**6**	**PPM**

Toxicity Characteristic Organic Compounds: N/A

Additional Chemical Constituents and Contaminants:

CAS NO	Constituent	MIN	MAX	UOM
7757-82-6	**SODIUM SULFATE**	**0**	**1.5**	**%**

WATER	95	98.5	%
BERYLLIUM	0	0.00001	%

Additional Information: A SUMMARY OF RESULTS IS INCLUDED AS ATTACHMENT 3.

Waste Water Characteristics for RLWTF
Waste Production: Other
Radionuclide Contaminants :

Contaminant	Limit	Min	Max	Unit	Method
PU-239		**0**	**0.0000349**	**Ci/l**	
U-234		**0**	**0.0000349**	**Ci/l**	
U236		**0**	**0.0000349**	**Ci/l**	
U235 (93.5%)		**0**	**0.0000349**	**Ci/l**	
U238		**0**	**0.0000349**	**Ci/l**	

Metal Contaminants:

Contaminant	Limit	Min	Max	Unit	Method
VANADIUM		**0**	**1.2**	**ppm**	
ZINC	**Y**			**ppm**	

Total Alpha: 3.00E-06 Ci/l
Average daily flow when discharge occurs: 10 LIT
Maximum daily flow when discharge occurs: 30 LIT
Estimated number of days dicharge will occur: 10
Estimated total volume per year discharged to the RLWC at TA-50: 300

LDR and Underlying Hazardous Constituents Information
Non-Wastewater/Wastewater Category: **Non Wastewater**

WASTE CHARACTERIZATION INFORMATION

Radioactivity Category : **RADIOACTIVE-TRU**

RCRA Category : **HAZARDOUS WASTE**

Secondary Info : N/A

Waste Classification : **MIXED TRANSURANIC WASTE**

Waste Acceptances : **TA-50 Acceptance**

EPA Hazardous Waste Code : **D007**
Notification Of Underlying Hazardous Constituents:

Constituents
Beryllium
Chromium (Total)

GWCP Information

Section 1 - Waste Prevention/Minimization (answer all questions)

Can hazard segregation, elimination, or material substitution be used?	☐ Yes*	☐ No	
Can any of the materials in the waste stream be recycled or reused	☐ Yes*	☐ No	
Has waste minimization been incorporated into procedures or other process controls?	☐ Yes	☐ No	
Can this waste be generated outside a RCA?	☐ Yes*	☐ No	☐ N/A

*Provide Comment

Section 6 - Work Control Documentation (answer all questions)

Do the procedures for this process cover how to manage this waste?	☐ Yes	☐ No (Provide comments)
Do the procedures for this process cover controls to prevent changes to waste constituents and concentrations or addition or removal of waste?	☐ Yes	☐ No (Provide comments)

Section 7 - Package and Storage Control

Describe how the waste will be packaged in according to the applicable WAC:

Identify the storage management controls that will be used for this waste stream: (check all that apply)

- ☐ Tamper indication devices:
- ☐ Limited use locks with log-in for waste
- ☐ Locked cabinet or building
- ☐ Other (describe)

Section 8 - Waste Certification Statements (check only one)

- ☐ Waste appears to meet WAC chapter for:
- ☐ Waste needs exception/exemption for treatment, storage, or disposal at:
- ☐ Waste does not meet the criteria for any known TSDF, (DOE approval is required. Contact the Waste Management Program Office for assistance.)

Estimated Annual Volume (m3):

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ORIGINAL

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National Laboratory

WASTE PROFILE FORM

Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: EM-SWO at **MS J595.** For assistance with completing this form, call EM-SWO at **5-4000**.	Reference Number 35269 (For EM-SWO use only.)

Generator's Z Number	Waste Generator's Name (print)	WMC's Z Number	WMC's Name (print)
121377	David Costa	093573	Egan McCormick

Generator's Telephone	Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room
665-8958	E530	NMT-15	TA-55	PF-4	106

Waste Accumulation (Check only one.)
- ☐ Satellite Accumulation Area — Site no: _____
- ☐ Less-than-90-days Storage Area — Site no: _____
- ☐ TSDF — Site no: _____
- ☐ Universal Waste Storage Area — Site no: _____
- ☒ None of the Above

ER Use Only ☐ ER Site — PRS #: _____

Method of Characterization (Check as many as apply.)
- ☒ Analysis/Documents Attached
- ☒ Chemical/Physical Analysis — Sample #: _____
- ☒ Radiological Analysis — Sample #: _____
- ☐ PCB Analysis — Sample #: _____
- ☒ Acceptable Knowledge Documentation — Documentation #: _____
- ☐ MSDS

Section 1 - Chemical and Physical Information

Waste Type (Check only one.)
- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☒ Process Waste/Spent Chemical/ other (Complete all sections.)
- ☐ Green is Clean Waste (Complete all sections as appropriate.)

Waste Classes

Radiological Information
Was Waste Generated in a RCA? ☒ Yes ☐ No
- ☐ Non-radioactive
- ☒ Radioactive
  - ☐ Low-Level
  - ☒ Transuranic

Wastewater Information
- ☐ Wastewater for SWSC (TA-46) (Complete Attachment 1)
- ☒ Wastewater for RLWTF (TA-50/TA-21) (Complete Attachment 2)
- ☐ Wastewater for TA-16 (HE)

Classification Information
- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check as many as apply.)
- ☒ Inorganic
- ☐ Organic
- Volatile Organics ☐ < 500 ppm ☐ ≥ 500 ppm
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste residue
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)
- Asbestos ☐ friable ☐ non-friable
- PCB Source Concentration
  - ☐ PCB < 50 ppm
  - ☐ PCB ≥ 50 - < 500 ppm
  - ☐ PCB ≥ 500 ppm
- ☐ Other (Describe below)

* Concentrations 10% or greater before use.

Waste Source (Check only one.)

Routine Waste
- ☐ Decon
- ☐ Materials Processing/Production
- ☒ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup - Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Non-routine Waste
- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping - Non-routine
- ☐ Spill Cleanup - Non-routine
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix (Check only one.)

Gas
- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid
- ☒ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid
- ☐ Powder/Ash
- ☐ Solid
- ☐ Sludge
- ☐ Absorbed liquid

Matrix Type (Check only one.)
- ☒ Homogeneous
- ☐ Heterogeneous (Describe below)

Waste/Process Description (Chemical formulas may be used in this field.)

Waste aqueous electrochemical process solutions with low levels of uranium contamination and less than 0.1 mol/L sodium sulfate. Groups 1-4

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WASTE PROFILE FORM

Section 2 - Characteristics

Ignitability (Check only one.) (°F)	(°C)	Corrosivity (Check only one.) (pH)	Reactivity (Check as many as apply.)	Boiling Point (Check only one.) (°F)	(°C)
☐ < 73	< 22.8	☐ ≤ 2.0	☐ RCRA Unstable	☐ ≤ 95	≤ 35
☐ 73 - 99	22.8 - 37.2	☐ 2.1 - 4.0	☐ Water Reactive	☒ > 95	> 35
☐ 100 - 139	37.8 - 59.4	☐ 4.1 - 6.0	☐ Cyanide Bearing (> 250 ppm)		
☐ 140 -200	60.0 - 99.3	☐ 6.1 - 9.0	☐ Sulfide Bearing (> 500 ppm)		
☐ > 200	> 99.3	☒ 9.1 - 12.4	☐ Pyrophoric		
☐ EPA Ignitable - Non-liquid		☐ ≥ 12.5	☐ Shock Sensitive		
☐ DOT Flammable Gas		☐ Liquid corrosive to steel	☐ Explosive - DOT Div. _____		
☐ DOT Oxidizer					
☒ Not ignitable		☐ Non-aqueous	☒ Non-reactive	☐ Not applicable	

Identify for all contaminants listed.	Characterization Method: AK	TCLP	Total	Concentration of Contaminants: None or Non-detect	Present Below Regulatory Limit	Above Regulatory Limit Minimum	Maximum
Toxicity Characteristic Metals						(Concentration in ppm only.)	
Arsenic	☐	☐	☒	☒	☐ < 5.0 ppm	_____	_____ ppm
Barium	☐	☐	☒	☒	☐ < 100.0 ppm	_____	_____ ppm
Cadmium	☐	☐	☒	☒	☐ < 1.0 ppm	_____	_____ ppm
Chromium (Total)	☐	☐	☒	☐	☐ < 5.0 ppm	0	6 ppm
Lead	☐	☐	☒	☒	☐ < 5.0 ppm	_____	_____ ppm
Mercury	☐	☐	☒	☒	☐ < 0.2 ppm	_____	_____ ppm
Selenium	☒	☐	☐	☒	☐ < 1.0 ppm	_____	_____ ppm
Silver	☐	☐	☒	☒	☐ < 5.0 ppm	_____	_____ ppm
Toxicity Characteristic Organics							
Benzene	☒	☐	☐	☒	☐ < 0.5 ppm	_____	_____ ppm
Carbon tetrachloride	☒	☐	☐	☒	☐ < 0.5 ppm	_____	_____ ppm
Chlordane	☒	☐	☐	☒	☐ < 0.03 ppm	_____	_____ ppm
Chlorobenzene	☒	☐	☐	☒	☐ < 100.0 ppm	_____	_____ ppm
Chloroform	☒	☐	☐	☒	☐ < 6.0 ppm	_____	_____ ppm
o - cresol	☒	☐	☐	☒	☐ < 200.0 ppm	_____	_____ ppm
m - cresol	☒	☐	☐	☒	☐ < 200.0 ppm	_____	_____ ppm
p - cresol	☒	☐	☐	☒	☐ < 200.0 ppm	_____	_____ ppm
Cresol - mixed	☒	☐	☐	☒	☐ < 200.0 ppm	_____	_____ ppm
2,4-D	☒	☐	☐	☒	☐ < 10.0 ppm	_____	_____ ppm
1,4-Dichlorobenzene	☒	☐	☐	☒	☐ < 7.5 ppm	_____	_____ ppm
1,2-Dichloroethane	☒	☐	☐	☒	☐ < 0.5 ppm	_____	_____ ppm
1,1-Dichloroethylene	☒	☐	☐	☒	☐ < 0.7 ppm	_____	_____ ppm
2,4-Dinitrotoluene	☒	☐	☐	☒	☐ < 0.13 ppm	_____	_____ ppm
Endrin	☒	☐	☐	☒	☐ < 0.02 ppm	_____	_____ ppm
Heptachlor (& its epoxide)	☒	☐	☐	☒	☐ < 0.008 ppm	_____	_____ ppm
Hexachlorobenzene	☒	☐	☐	☒	☐ < 0.13 ppm	_____	_____ ppm
Hexachlorobutadiene	☒	☐	☐	☒	☐ < 0.5 ppm	_____	_____ ppm
Hexachloroethane	☒	☐	☐	☒	☐ < 3.0 ppm	_____	_____ ppm
Lindane	☒	☐	☐	☒	☐ < 0.4 ppm	_____	_____ ppm
Methoxychlor	☒	☐	☐	☒	☐ < 10.0 ppm	_____	_____ ppm
Methyl ethyl ketone	☒	☐	☐	☒	☐ < 200.0 ppm	_____	_____ ppm
Nitrobenzene	☒	☐	☐	☒	☐ < 2.0 ppm	_____	_____ ppm
Pentachlorophenol	☒	☐	☐	☒	☐ < 100.0 ppm	_____	_____ ppm
Pyridine	☒	☐	☐	☒	☐ < 5.0 ppm	_____	_____ ppm
Tetrachloroethylene	☒	☐	☐	☒	☐ < 0.7 ppm	_____	_____ ppm
Toxaphene	☒	☐	☐	☒	☐ < 0.5 ppm	_____	_____ ppm
Trichloroethylene	☒	☐	☐	☒	☐ < 0.5 ppm	_____	_____ ppm
2,4,5-Trichlorophenol	☒	☐	☐	☒	☐ < 400.0 ppm	_____	_____ ppm
2,4,6-Trichlorophenol	☒	☐	☐	☒	☐ < 2.0 ppm	_____	_____ ppm
2,4,5-TP (Silvex)	☒	☐	☐	☒	☐ < 1.0 ppm	_____	_____ ppm
Vinyl chloride	☒	☐	☐	☒	☐ < 0.2 ppm	_____	_____ ppm

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WASTE PROFILE FORM

Section 3 - Additional Constituents

Additional Constituents and Contaminants. Please account for 100% of waste. Ranges should be given within guidelines of LIG 404-00-03 of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum	Maximum	
7757-82-6	sodium sulfate	0	1.5	%
	Water	95	98.5	%
	Beryllium per ume 5/13/02	0	0.00001	%
				%
				%
				%
				%
				%
				%
				%
				%
				%
	Total of max. ranges of this section	100		in %
	Total of max. ranges from page 2.	6		in ppm

Additional Information (Use additional sheet if necessary.)

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

A summary of results is included as Attachment 3.

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

Signature [signature] Date 8/10/02

WASTE MANAGEMENT COORDINATOR: I have reviewed this form and to the best of my knowledge, the information is complete and accurate.

Signature [signature] Date 7/30/02

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WASTE PROFILE FORM

Attachment 1 - Wastewater Characteristics for SWSC (TA-46)

For help in completing this section, call ESH -18 at 7-4882. Identify presence of any constituents listed below.
Use of Acceptable Knowledge in lieu of analytical data must be pre-approved by ESH-18.

Microtox Analysis #: _____ NOTE: Microtox analysis **must be** performed. Contact JCI/ENV to schedule analysis.

Are there any detectable levels of gross Alpha, gross Beta, gross Gamma, and/or Tritium? ☐ No ☐ Yes

All methods of analysis must conform to those approved pursuant to 40 CFR 136 unless an alternative method has been approved by ESH-18.
All metal concentrations are for the dissolved fraction present in the sample unless otherwise indicated.

	☐ **Flow Rate of 100 gallons/day or less**			☐ **Flow Rate of greater than 100 gallons/day**		
Flow Rate Parameters	None/ Non-detect	Within Regulatory Limits	Above Limit	None/ Non-detect	Within Regulatory Limits	Above Limit
pH		☐ 5 -11 SU	☐		☐ 5 -11 SU	☐
Chemical Oxygen Demand (COD)		☐ ≤ 750 mg/l	☐		☐ ≤ 500 mg/l	☐
Microtox results (a)		☐ < 55% screen	☐		☐ < 50% screen	☐
(b)		☐ > 20% EC50	☐		☐ > 25% EC50	☐
Temperature		☐ ≤ 180 °F	☐		☐ ≤ 140 °F	☐
Cyanide (Total)	☐	☐ < 5.0 mg/l	☐	☐	☐ < 1.0 mg/l	☐
Fluoride	☐	☐ < 200.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Iron	☐	☐ < 100.0 mg/l	☐	☐	☐ < 35.0 mg/l	☐
Magnesium	☐	☐ < 100.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Manganese	☐	☐ < 5.0 mg/l	☐	☐	☐ < 1.0 mg/l	☐
Metals (Total)	☐	☐ < 40.0 mg/l	☐	☐	☐ < 10.0 mg/l	☐
Nickel	☐	☐ < 50.0 mg/l	☐	☐	☐ ≤ 3.0 mg/l	☐
Nitrogen (Total)	☐	☐ ≤ 100.0 mg/l	☐	☐	☐ ≤ 50.0 mg/l	☐
Oil and Greases	☐	☐ < 100.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Phosphorus (Total)	☐	☐ < 100.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Silver	☐	☐ < 5.0 mg/l	☐	☐	☐ < 0.5 mg/l	☐
Total Suspended Solids (TSS)	☐	☐ ≤ 400.0 mg/l	☐	☐	☐ ≤ 300.0 mg/l	☐
Zinc	☐	☐ < 25.0 mg/l	☐	☐	☐ < 5.0 mg/l	☐

Wastewater contaminants Identify for all constituents listed	**None/Non-detect**	**Present within Regulatory Limits**	**Above Limit**
Dissolved Aluminum	☐	☐ < 5.0 mg/l	☐
Dissolved Arsenic	☐	☐ < 0.2 mg/l	☐
Barium	☐	☐ < 100.0 mg/l	☐
Beryllium	☐	☐ < 5.3 mg/l	☐
Dissolved Boron	☐	☐ < 5.0 mg/l	☐
Dissolved Cadmium	☐	☐ < 0.05 mg/l	☐
Chlorine (Total Residual)	☐	☐ < 3.0 mg/l	☐
Dissolved Chromium	☐	☐ < 1.0 mg/l	☐
Dissolved Cobalt	☐	☐ < 1.0 mg/l	☐
Dissolved Copper	☐	☐ < 0.5 mg/l	☐
Dissolved Lead	☐	☐ < 0.1 mg/l	☐
Total Mercury	☐	☐ < 0.01 mg/l	☐
Molybdenum	☐	☐ < 75.0 mg/l	☐
Polychlorinated Biphenyls (PCB)	☐	None Detected	☐
Dissolved Selenium	☐	☐ < 0.05 mg/l	☐
Dissolved Vanadium	☐	☐ < 0.1 mg/l	☐
Dissolved Zinc	☐	☐ < 25.0 mg/l	☐

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WASTE PROFILE FORM

Attachment 2 - Wastewater Characteristics for RLWTF (TA-50 & TA-21)

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

Indicate if waste was: ☐ Accelerator produced ☐ Reactor produced ☒ Other (Describe in WPF Section 1 "Waste/Process Description.")

Radionuclide Contaminants

Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min. / Max.	Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min. / Max.
As-74	☐ ≤ 4.0 E -8	/	Rb-84	☐ ≤ 1.0 E -8	/
Be-7	☐ ≤ 1.0 E -6	/	Sc-46	☐ ≤ 2.0 E -8	/
Ce-141	☐ ≤ 5.0 E -8	/	Sc-48	☐ ≤ 2.0 E -8	/
Cs-134	☐ ≤ 2.0 E -9	/	Se-75	☐ ≤ 2.0 E -8	/
Cs-137	☐ ≤ 3.0 E -9	/	Na-22	☐ ≤ 1.0 E -8	/
Co-56	☐ ≤ 1.0 E -8	/	Sr-85	☐ ≤ 7.0 E -8	/
Co-57	☐ ≤ 1.0 E -7	/	Sr-89	☐ ≤ 2.0 E -8	/
Co-58	☐ ≤ 4.0 E -8	/	Sr-90	☐ ≤ 1.0 E -9	/
Co-60	☐ ≤ 5.0 E -9	/	Sn-113	☐ ≤ 5.0 E -8	/
Eu-152	☐ ≤ 2.0 E -8	/	V-48	☐ ≤ 2.0 E -8	/
H-3	☐ ≤ 2.0 E -8	/	Y-88	☐ ≤ 3.0 E -8	/
I-133	☐ ≤ 1.0 E -8	/	Zn-65	☐ ≤ 9.0 E -9	/
Mn-52	☐ ≤ 2.0 E -8	/	Am-241	☐ ≤ 0.1 E -6	/
Mn-54	☐ ≤ 5.0 E -8	/	Pu-238	☐ ≤ 0.1 E -6	/
Ra-226 + 228	☐ ≤ 3.0 E -11	/	Pu-239	☐ ≤ 0.1 E -6	0 / 3.49E-5
Rb-83	☐ ≤ 2.0 E -8	/	U-234	☐ ≤ 5.0 E -8	0 / 3.49E-5
Others:			**Others:**		
		/	U235 (93.5%)		0 / 3.49E-5
		/	U238		0 / 3.49E-5
		/	U236		0 / 3.49E-5

Other Contaminants

Metal Contaminants	Present Below LOC (in ppm)	Range if above LOC (in ppm) Min. / Max.	Additional Contaminants	Min. / Max
Aluminum	☐ ≤ 5.0	to ppm	Chemical Oxygen Demand (COD)	to mg/l
Boron	☐ ≤ 5.0	to ppm	Total Suspended Solids (TSS)	to mg/l
Cobalt	☐ ≤ 1.0	to ppm		
Copper	☐ ≤ 1.0	to ppm	☐ Total Nitrogen or (only one	to mg/l
Vanadium	☐ ≤ 0.10	0 to 1.2 ppm	☐ Total Nitrates entry needed)	to mg/l
Zinc	☒ ≤ 95.40	to ppm		

Radioactive Contaminant Totals:

Total Alpha	3.0E-6	Ci/l
Total Beta		Ci/l
Total Gamma		Ci/l

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

☐ Acid Line ☒ Caustic Line ☐ Industrial Waste Line

☐ Yes ☒ No Scintillation Cocktail Brand Name _____ Volume _____ Unit _____

☐ Yes ☒ No Chemical Treatment for Boilers / Water Chillers

☐ Yes ☒ No Industrial Cleaner Type _____ Volume _____ Unit _____

Average daily volume when discharge occurs: 10 ☐ Gallons/day ☒ Liters/day

Maximum daily volume when discharge occurs: 30 ☐ Gallons/day ☒ Liters/day

Estimated number of days per year discharge will occur: 10

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-50 / TA-21: 300 ☐ Gallons ☒ Liters

Associated WPF Reference Number:

LDR and Underlying Hazardous Constituents Information - Identify presence of any constituents listed below.

Non-Wastewater / Wastewater Category - Check only one.

☐ Non Wastewater ☒ Wastewater [as defined by 40 CFR 268.2(f)]

Notification of California List Applicability - Check all that apply.

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

☐ A D001 thru D043 liquid waste containing 134 mg/L or greater of Nickel and/or 130 mg/L or greater of thallium.

☐ A D001 thru D043 waste containing Halogenated Organic Compounds (HOCs) listed in 40 CFR 268, Appendix III, at 1000 ppm or greater.

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

☐ *No Underlying Hazardous Constituents in this waste stream.* ☐ *HAZCAT Meeting 40 CFR 268.42(c)*

Organic Constituents

☐ A2213	☐ Butyl benzyl phthalate	☐ p,p'-DDE
☐ Acenaphthylene	☐ 2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	☐ o,p'-DDT
☐ Acenaphthene	☐ Carbaryl	☐ p,p'-DDT
☐ Acetone	☐ Carbenzadim	☐ Dibenz(a,h)anthracene
☐ Acetonitrile	☐ Carbofuran	☐ Dibenz(a,e)pyrene
☐ Acetophenone	☐ Carbofuran phenol	☐ 1,2-Dibromo-3-chloropropane
☐ 2-Acetyaminofluorene	☐ Carbon disufide	☐ 1,2-Dibromoethane (Ethylene dibromide)
☐ Acrolein	☐ Carbon tetrachloride	☐ Dibromomethane
☐ Acrylamide	☐ Carbosulfan	☐ m-Dichlorobenzene
☐ Acrylonitrile	☐ Chlordane (alpha & gamma isomers)	☐ o-Dichlorobenzene
☐ Aldicarb sulfone	☐ p-Chloroaniline	☐ p-Dichlorobenzene
☐ Aldrin	☐ Chlorobenzene	☐ Dichlorodifluoromethane
☐ 4-Aminobiphenyl	☐ Chlorobenzilate	☐ 1,1-Dichloroethane
☐ Aniline	☐ 2-Chloro-1,3-butadiene	☐ 1,2-Dichloroethane
☐ Anthracene	☐ Chlorodibromomethane	☐ 1,1-Dichloroethylene
☐ Aramite	☐ Chloroethane	☐ trans-1,2-Dichloroethylene
☐ alpha-BHC	☐ bis(2-Chloroethoxy) methane	☐ 2,4-Dichlorophenol
☐ beta-BHC	☐ bis(2-Chloroethyl) ether	☐ 2,6-Dichlorophenol
☐ delta-BHC	☐ Chloroform	☐ 2,4-Dichlorophenoxyacetic acid (2,4-D)
☐ gamma-BHC	☐ bis(2-Chloroisopropyl) ether	☐ 1,2-Dichloropropane
☐ Barban	☐ p-Chloro-m-cresol	☐ cis-1,3-Dichloropropylene
☐ Bendiocarb	☐ 2-Chloroethyl vinyl ether	☐ trans-1,3-Dichloropropylene
☐ Bendiocarb phenol	☐ Chloromethane (Methyl chloride)	☐ Dieldrin
☐ Benomyl	☐ 2-Chloronaphthalene	☐ Diethylene glycol, dicarbamate
☐ Benzene	☐ 2-Chlorophenol	☐ Diethyl phthalate
☐ Benz(a)anthracene	☐ 1-Chloropropylene	☐ p-Dimethylaminoazobenzene
☐ Benzal chloride	☐ Chrysene	☐ 2-4-Dimethyl phenol
☐ Benzo(b)fluoranthene	☐ o-Cresol	☐ Dimethyl phthalate
☐ Benzo(k)fluoranthene	☐ m-Cresol	☐ Dimetilan
☐ Benzo(g,h,i)perylene	☐ p-Cresol	☐ Di-n-butyl phthalate
☐ Benzo(a)pyrene	☐ m-Cumenyl methylcarbamate	☐ 1,4-Dinitrobenzene
☐ Bromodichloromethane	☐ Cycloate	☐ 4,6-Dinitro-o-cresol
☐ Bromomethane (Methyl bromide)	☐ Cyclohexan ne	☐ 2,4 Dinitrophenol
☐ 4-Bromophenyl phenyl ether	☐ o,p'-DDD	☐ 2,4-Dinitrotoluene
☐ n-Butyl alcohol	☐ p,p'-DDD	☐ 2,6-Dinitrotoluene
☐ Butylate	☐ o,p'-DDE	☐ Di-n-octyl phthalate

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

Organic Constituents - continued

- ☐ Di-n-propylnitrosamine
- ☐ 1,4-Dioxane
- ☐ Diphenylamine
- ☐ Diphenylnitrosamine
- ☐ 1,2-Diphenylhydrazine
- ☐ Disulfoton
- ☐ Dithiocarbamates (total)
- ☐ Endosulfan I
- ☐ Endosulfan II
- ☐ Endosulfan sulfate
- ☐ Endrin
- ☐ Endrin aldehyde
- ☐ EPTC
- ☐ Ethyl acetate
- ☐ Ethyl benzene
- ☐ Ethyl cyanide (Propanenitrile)
- ☐ Ethyl ether
- ☐ bis(2-Ethylhexyl) phthalate
- ☐ Ethyl methacrylate
- ☐ Ethylene oxide
- ☐ Famphur
- ☐ Fluoranthene
- ☐ Fluorene
- ☐ Formetanate hydrochloride
- ☐ Formparanate
- ☐ Heptachlor
- ☐ Heptachlor epoxide
- ☐ Hexachlorobenzene
- ☐ Hexachlorobutadiene
- ☐ Hexachlorocyclopentadiene
- ☐ Hexachlorodibenzo-p-dioxins (HxCDDs)
- ☐ Hexachlorodibenzo-furans (HxCDFs)
- ☐ Hexachloroethane
- ☐ Hexachloropropylene
- ☐ Indeno (1,2,3-c,d) pyrene
- ☐ Iodomethane
- ☐ 3-Iodo-2-propynyl n-butylcarbamate
- ☐ Isobutyl alcohol
- ☐ Isodrin
- ☐ Isolan
- ☐ Isosafrole
- ☐ Kepone
- ☐ Methacrylonitrile
- ☐ Methanol
- ☐ Methapyrilene
- ☐ Methiocarb
- ☐ Methomyl
- ☐ Methoxychlor
- ☐ 3-Methylcholanthrene
- ☐ 4,4-Methylene bis(2-chloroaniline)
- ☐ Methylene chloride
- ☐ Methyl ethyl ketone
- ☐ Methyl isobutyl ketone
- ☐ Methyl methacrylate
- ☐ Methyl methansulfonate
- ☐ Methyl parathion
- ☐ Metolcarb
- ☐ Mexacarbate
- ☐ Molinate
- ☐ Naphthalene
- ☐ 2-Naphthylamine
- ☐ o-Nitroaniline
- ☐ p-Nitroaniline
- ☐ Nitrobenzene
- ☐ 5-Nitro-o-toluidine
- ☐ o-Nitrophenol
- ☐ p-Nitrophenol
- ☐ N-Nitrosodiethylamine
- ☐ N-Nitrosodimethylamine
- ☐ N-Nitroso-di-n-butylamine
- ☐ N-Nitrosomethylethylamine
- ☐ N-Nitrosomorpholine
- ☐ N- Nitrosopiperidine
- ☐ N-Nitrosopyrrolidine
- ☐ Oxamyl
- ☐ Parathion
- ☐ PCBs (total)
- ☐ Pebulate
- ☐ Pentachlorobenzene
- ☐ Pentachlorodibenzo-p-dioxins (PeCDDs)
- ☐ Pentachlorodibenzo-furans (PeCDFs)
- ☐ Pentachloroethane
- ☐ Pentachloronitrobenzene
- ☐ Pentachlorophenol
- ☐ Phenacetin
- ☐ Phenanthrene
- ☐ Phenol
- ☐ o-Phenylenediamine
- ☐ Phorate
- ☐ Phthalic acid
- ☐ Phthalic anhydride
- ☐ Physostigmine
- ☐ Physostigmine salicylate
- ☐ Promecarb
- ☐ Pronamide
- ☐ Propham
- ☐ Propoxur
- ☐ Prosulfocarb
- ☐ Pyrene
- ☐ Pyridine
- ☐ Safrole
- ☐ Silvex (2,4,5-TP)
- ☐ 1,2,4,5-Tetrachlorobenzene
- ☐ Tetrachlorodibenzo-p-dioxins (TCDDs)
- ☐ Tetrachlorodibenzofurans (TCDFs)
- ☐ 1,1,1,2-Tetrachloroethane
- ☐ 1,1,2,2-Tetrachloroethane
- ☐ Tetrachloroethylene
- ☐ 2,3,4,6-Tertachlorophenol
- ☐ Thiodicarb
- ☐ Thiophanate-methyl
- ☐ Tirpate
- ☐ Toluene
- ☐ Toxaphene
- ☐ T[illegible]allate
- ☐ Tribromomethane (Bromoform)
- ☐ 1,2,4-Trichlorobenzene
- ☐ 1,1,1-Trichloroethane
- ☐ 1,1,2-Trichloroethane
- ☐ Trichloroethylene
- ☐ Trichloromonofluoromethane
- ☐ 2,4,5-Trichlorophenol
- ☐ 2,4,6-Trichlorophenol
- ☐ 2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)
- ☐ 1,2,3-Trichloropropane
- ☐ 1,1,2-Trichloro-1,2,2-trifluoroethane
- ☐ Triethylamine
- ☐ tris-(2,3-Dibromopropyl) phosphate
- ☐ Vernolate
- ☐ Vinyl chloride
- ☐ Xylenes (total)

Land Disposal Restriction (LDR) and Underlying Hazardous Constituents Information Form

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001, D002, D003, and D012 - D043 characteristic wastes only)

Metal/Inorganic Constituents

☐ Antimony	☐ Cyanides (Amenable)	☐ Selenium
☐ Arsenic	☐ Fluoride	☐ Silver
☐ Barium	☐ Lead	☐ Sulfide
☒ Beryllium	☐ Mercury (Retort residues)	☐ Thallium
☐ Cadmium	☐ Mercury - All others	☐ Vanadium
☑ Chromium (Total)	☐ Nickel	☐ Zinc
☐ Cyanides (Total)		

per MSC 7/3/02

ATTACHMENT 3
Summary of Analytical Results

The following constituents are not expected in this waste stream: Tritium; Strontium 90; Cesium 137 or Organics.

This waste is residue from Oralloy processing. Oralloy is 93.5 % U235; < 2 % U234; and approx. 5 % U238. Any Pu239 contamination associated with these samples is expected to be very low based on solubility studies.

Group 1 Results:

- **Sample # IMS ID 200142585** [Chromium (0.14 ug/ml); Zinc (0.3 ug/ml)]
- **Sample # IMS ID 200141050** [pH = 13; Activity (Ci/L): 2.68E-06]
- Group 1waste is aqueous electrochemical process solutions with low levels of uranium contamination and less than 0.1 mol/L sodium sulfate. See attached WEF.

Group 2 Results:

- **Sample # IMS ID 200142586** [Chromium (3.1 ug/ml); Nickel (3.8 ug/ml); Vanadium (0.7 ug/ml); Zinc (0.58 ug/ml)]
- **Sample # IMS ID 200141051** [pH = 11; Activity (Ci/L): 3.49E-05]
- Group 2 waste is aqueous electrochemical process solutions with low levels of uranium contamination and less than 0.1 mol/L sodium sulfate.

Group 3 Results:

- **Sample # IMS ID200142587** [Beryllium (0.1 ug/ml); Chromium (0.11 ug/ml); Zinc (0.43 ug/ml)]
- **Sample # IMS ID 200141052** [pH = 10; Activity (Ci/L): 2.68E-06]
- Group 3 waste is aqueous electrochemical process solutions with low levels of uranium contamination and less than 0.1 mol/L sodium sulfate.

Group 4 Results:

- **Sample # IMS ID 200142588** [Beryllium (0.1 ug/ml); Chromium (6 ug/ml); Vanadium (1.2 ug/ml); Zinc (0.34 ug/ml)]
- **Sample # IMS ID 200141053** [pH = 11; Activity (Ci/L): 2.69E-06]
- Group 4 is aqueous electrochemical process solutions with low levels of uranium contamination and less than 0.1 mol/L sodium sulfate.

Waste Exception Form

WEF No.
WPF# WEF1

Completed by Waste Generator

☒ On-going ☐ One-time	WPF No.	CWDR/TWSR No. NA	Item No. NA – RLWTF (TA-50) Liquid Waste

☐ Hazardous/Chemical ☐ Low-Level Waste ☒ Transuranic ☐ Mixed Low-Level Waste
☒ Radioactive Liquid Waste ☐ Other _____

Waste Acceptance Criteria [LANL WAC (February 2002) – Liquid Radioactive Waste Treatment Facility, RLWTF]

1.4.1 Radionuclide Content. The total alpha radionuclide concentration of a waste stream in the "Caustic" waste line may not exceed 4.5E-3 Ci/L.

1.4.2 Chemical Waste. Inorganic wastes with a pH from 12.5 to 14 are also permitted to discharge to RLWTF (RCRA Code D002) in the volume range of 0 to 50 gallons/discharge.

1.4.2 Chemical Waste. Liquid waste streams that contain non-radioactive constituents below the concentration limits in Table 1. 3 are acceptable for discharge to the RLWTF. [Chromium, Allowable Concentration (mg/l) is <5.0]

Reason for Variance and Justification

Small Quantity (average daily volume: 10 liters/day), **Infrequent Generation** (ten times per year), **Characteristic Waste.**

Waste Characteristics:
D002 - Corrosive (pH – 13)
D007 – Toxicity Characteristic Metal - Chromium (6 PPM)
Vanadium (1.2 PPM)

Requested by (Print)	Requested by (Signature)	Z Number	Date
Eugene D McCormick	Eugene D McCormick	93573	7/30/02

Waste Management Facility Approval

Special Instructions and Comments

- **Discharge to the TA-55 Caustic Waste Line** [WPF, Attach. 2 - Wastewater Characteristics for RLWTF (TA-50, TA-21), Page 1]
- **Notify RLWTF prior to discharge of this waste stream.**

Basis for Exemption or Denial

Approved because of the **Small Quantity** and **Infrequent Generation (10 liters, ten discharges per year) and** the waste is a **Characteristic Waste.**

☐ Approved ☐ Rejected	Team Leader (Signature)	Z Number	Date

Los Alamos
NATIONAL LABORATORY

Memorandum

Pit Disassembly and Nuclear Fuels Technologies (NMT-15)

To: Sherry L Evans-Carmichael
From: D.A. Costa, NMT-15, E530
Cc: Brad Schake, NMT-15
Steve Mckee, NMT-15
Phone/Fax: 665-8958/996-1107
Date: May 24, 2002
Symbol # DC-2002-003

Subject: Waste Profile Form (WPF) development for the HEU Electro-decontamination process.

The uranium electro-decontamination WPF should treat the level of VOCs generated during this process as zero using Acceptable Knowledge. There are no organics used in this process, nor are any organics located near this process. The level of plutonium found in the process streams is very low, as quantified by scintillation alpha counting and alpha spectroscopy. The final radioactive alpha constituents in the waste streams measure less than $3x10^{-6}$ Ci/L.. This includes all of the HEU and TRU constituents, combined.

The HEU decontaminated in this process is Oralloy.
Isotopic analysis on the HEU:

U-238	5.35%	3.33x10-7Ci/g
U-236	0.52%	6.34x10-5Ci/g
U-235	93.20%	2.10x10-6Ci/g
U-234	1.02%	6.19x10-3Ci/g

Total specific activity for HEU is 6.54x10-5 Ci/g

If you have any further questions, please feel free to contact either Brad Schake or me.

TA-55 Radiochemistry Analytical Report

IMS Sample ID:	200141050	Date Analyzed:	03/07/01
Cust Samp ID:	GROUP I	Analyst:	Radzinski/CCT
Submitter:	BRAD SCHAKE	Program:	K13Y0000
Instrument:	Alpha III	Total Volume (L):	22
Type of Waste:	**Caustic**		

Analytical Results

Net Counts (cpm): 0

Background (cpm): 9

pH = 13

Activity (Ci/L): 2.68E-06

Comments:

Activity Level: **This sample is below discard limits. (4.5e-3 Ci/L)**

I certify that this sample contains no materials other than the matrix and volume indicated above. This is a representative sample of an individual solution storage device. Current SOPs were followed in the origination of this item and I believe it will meet approved discard limits.

DAVID COSTA 08/2/01

Submitter's printed name and signature

EDC

Process Status

Supervisor's printed name and Group

_____ liters

H2O wash

NMT-7 LWM Inspector

Date ____/____/____ Time ____:____ a.m. p.m.

RC 3.0

Analytical Chemistry Report

Sample ID: 200142585 Group: NMT-15 QA: N Priority: 1
Submission ID: 100048360 Acct: N Logged: 22-May-2001
User sample ID: GROUP 1
Sample Type: EDC SOLUTION - RCRA
Customer Cost Code: K13Y00000000
Requester: DAVE COSTA MS: Phone:

Radioactive Elements: U235, PU239
Radiation: Y

VOL OR WGT:

Approved by: Drake, Lawrence R. 31-May-2001 14:51

Analytical Operation: IC-ANIONS-L Task ID: 300292531
Date Completed: 23-May-2001 17:25 Replicates: 1 Version: 1

DESCRIPTION: IC-ANIONS;F,CL,SO4,N03,H04...

Component	Results	Units
FLUORIDE	< 20 [1]	ug/ml

[1] FLUORIDE:

Could not analyze for fluoride at lower concentrations because the sample contains a large amount of sulfate ion.

Notebook Reference: CAAC-0143, PAGE 74-82

Analyst: VMM, PTM

Approved by: Martinez, Patrick T. 23-May-2001 17:26

Analytical Operation: PSSUR-L Task ID: 300292532
Date Completed: 31-May-2001 13:22 Replicates: 1 Version: 1

DESCRIPTION: PS-ELEMENTAL ANALYSIS IN LIQUIDS

Component	Results	Units
SILVER	< 0.01	ug/ml
ARSENIC	< 0.04	ug/ml
BARIUM	< 0.05	ug/ml
BERYLLIUM	< 0.04	ug/ml
CADMIUM	< 0.01	ug/ml
CHROMIUM	0.14	ug/ml
MERCURY	< 0.1	ug/ml

NICKEL	< 0.05	ug/ml
LEAD	< 0.02	ug/ml
ANTIMONY	< 0.01	ug/ml
THALLIUM	< 0.05	ug/ml
VANADIUM	< 0.3	ug/ml
ZINC	0.3	ug/ml
--PSSUR-L ANALYSIS	AAM/LRD	ANALYST(S)

Notebook Reference: 052901PQS NMT1-0100 PG71

Additional Information:

Analyst: Drake, Lawrence R.

Approved by: Drake, Lawrence R. 31-May-2001 14:51

TA-55 Radiochemistry Analytical Report

IMS Sample ID: 200141051
Cust Samp ID: GROUP 2
Submitter: BRAD SCHAKE
Instrument: Alpha IV
Type of Waste: Acid/HNO3

Date Analyzed: 03/07/01
Analyst: Radzinski/CCT
Program: K13Y0000
Total Volume (L): 4

Caustic

Analytical Results

Net Counts (cpm): 3

Background (cpm): 3

pH = 11 DL 08/21/01

Activity (Ci/L): 3.49E-05

Comments:

Activity Level: **This sample is below discard limits. (6e-5 Ci/L)**

I certify that this sample contains no materials other than the matrix and volume indicated above. This is a representative sample of an individual solution storage device. Current SOPs were followed in the origination of this item and I believe it will meet approved discard limits.

Dave Cass 08/21/01
Submitter's printed name and signature

EOL
Process Status

Supervisor's printed name and Group

_____ liters
H2O wash

NMT-7 LWM Inspector

Date ____/____/____ Time ____:____ a.m. p.m.

RC 3.0

Analytical Chemistry Report

Sample ID: 200142586 Group: NMT-15 QA: N Priority: 1
Submission ID: 100048360 Acct: N Logged: 22-May-2001
User sample ID: GROUP 2
Sample Type: EDC SOLUTION - RCRA
Customer Cost Code: K13Y00000000
Requester: DAVE COSTA MS: Phone:

Radioactive Elements: U235, PU239
Radiation: Y

VOL OR WGT:

Approved by: Drake, Lawrence R. 31-May-2001 14:52

Analytical Operation: IC-ANIONS-L Task ID: 300292534
Date Completed: 23-May-2001 17:25 Replicates: 1 Version: 1

DESCRIPTION: IC-ANIONS:F,CL,SO4,N03,H04...

Component	Results	Units
FLUORIDE	< 20 [1]	ug/ml

[1] FLUORIDE:

Could not analyze for fluoride at lower concentrations because the sample contain a large amount of sulfate ion.

Notebook Reference: CAAC-0143, PAGE 74-82

Analyst: VMM, PTM

Approved by: Martinez, Patrick T. 23-May-2001 17:26

Analytical Operation: PSSUR-L Task ID: 300292535
Date Completed: 31-May-2001 13:22 Replicates: 1 Version: 1

DESCRIPTION: PS-ELEMENTAL ANALYSIS IN LIQUIDS

Component	Results	Units
SILVER	< 0.01	ug/ml
ARSENIC	< 0.04	ug/ml
BARIUM	< 0.05	ug/ml
BERYLLIUM	< 0.04	ug/ml
CADMIUM	< 0.01	ug/ml
CHROMIUM	3.1	ug/ml
MERCURY	< 0.1	ug/ml

NICKEL	3.8	ug/ml
LEAD	< 0.02	ug/ml
ANTIMONY	< 0.01	ug/ml
THALLIUM	< 0.05	ug/ml
VANADIUM	0.7	ug/ml
ZINC	0.58	ug/ml
--PSSUR-L ANALYSIS	AAM/LRD	ANALYST(S)

Notebook Reference: 052901PQS NMT1-0100 PG71

Additional Information:

Analyst: Drake, Lawrence R.

Approved by: Drake, Lawrence R. 31-May-2001 14:52

TA-55 Radiochemistry Analytical Report

IMS Sample ID:	200141052	Date Analyzed:	03/07/01
Cust Samp ID:	GROUP 3	Analyst:	Radzinski/CCT
Submitter:	BRAD SCHAKE	Program:	K13Y0000
Instrument:	Alpha III	Total Volume (L):	2
Type of Waste:	**Caustic**		

Analytical Results

Net Counts (cpm):	0	Background (cpm):	9
pH =	10	Activity (Ci/L):	2.68E-06

Comments:

Activity Level: **This sample is below discard limits. (4.5e-3 Ci/L)**

I certify that this sample contains no materials other than the matrix and volume indicated above. This is a representative sample of an individual solution storage device. Current SOPs were followed in the origination of this item and I believe it will meet approved discard limits.

David Costa 08/21/01
Submitter's printed name and signature

EDC
Process Status

Supervisor's printed name and Group

_____ liters
H2O wash

NMT-7 LWM Inspector

Date ___/___/___ Time ____:____ a.m. p.m.

RC 3.0

Analytical Chemistry Report

Sample ID: 200142587 Group: NMT-15 QA: N Priority: 1
Submission ID: 100048360 Acct: N Logged: 22-May-2001
User sample ID: GROUP 3
Sample Type: EDC SOLUTION - RCRA
Customer Cost Code: K13Y00000000
Requester: DAVE COSTA MS: Phone:

Radioactive Elements: U235, PU239
Radiation: Y

VOL OR WGT:

Approved by: Drake, Lawrence R. 31-May-2001 14:53

Analytical Operation: IC-ANIONS-L Task ID: 300292537
Date Completed: 23-May-2001 17:25 Replicates: 1 Version: 1

DESCRIPTION: IC-ANIONS:F,CL,SO4,N03,H04...

Component	Results	Units
FLUORIDE	< 20 [1]	ug/ml

[1] FLUORIDE:

Could not analyze for fluoride at lower concentrations because the sample contains a large amount of sulfate ion.

Notebook Reference: CAAC-0143, PAGE 74-82

Analyst: VMM, PTM

Approved by: Martinez, Patrick T. 23-May-2001 17:26

Analytical Operation: PSSUR-L Task ID: 300292538
Date Completed: 31-May-2001 13:22 Replicates: 1 Version: 1

DESCRIPTION: PS-ELEMENTAL ANALYSIS IN LIQUIDS

Component	Results	Units
SILVER	< 0.01	ug/ml
ARSENIC	< 0.04	ug/ml
BARIUM	< 0.05	ug/ml
BERYLLIUM	0.1	ug/ml
CADMIUM	< 0.01	ug/ml
CHROMIUM	0.11	ug/ml
MERCURY	< 0.1	ug/ml

NICKEL	< 0.05	ug/ml
LEAD	< 0.02	ug/ml
ANTIMONY	< 0.01	ug/ml
THALLIUM	< 0.05	ug/ml
VANADIUM	< 0.3	ug/ml
ZINC	0.43	ug/ml
--PSSUR-L ANALYSIS	AAM/LRD	ANALYST(S)

Notebook Reference: 052901PQS NMT1-0100 PG71

Additional Information:

Analyst: Drake, Lawrence R.

Approved by: Drake, Lawrence R. 31-May-2001 14:53

TA-55 Radiochemistry Analytical Report

IMS Sample ID:	200141053	Date Analyzed:	03/07/01
Cust Samp ID:	GROUP 4	Analyst:	Radzinski/CCT
Submitter:	BRAD SCHAKE	Program:	K13Y0000
Instrument:	Alpha IV	Total Volume (L):	2
Type of Waste:	**Caustic**		

Analytical Results

Net Counts (cpm):	0	Background (cpm):	3
pH =	11	Activity (Ci/L):	2.69E-06

Comments:

Activity Level: **This sample is below discard limits. (4.5e-3 Ci/L)**

I certify that this sample contains no materials other than the matrix and volume indicated above. This is a representative sample of an individual solution storage device. Current SOPs were followed in the origination of this item and I believe it will meet approved discard limits.

DAVID COSTA 8/21/01
Submitter's printed name and signature

EOC
Process Status

Supervisor's printed name and Group

_____ liters
H2O wash

NMT-7 LWM Inspector

Date ____/____/____ Time ____:____ a.m. p.m.

RC 3.0

Analytical Chemistry Report

Sample ID: 200142588 Group: NMT-15 QA: N Priority: 1
Submission ID: 100048360 Acct: N Logged: 22-May-2001
User sample ID: GROUP 4
Sample Type: EDC SOLUTION - RCRA
Customer Cost Code: K13Y00000000
Requester: DAVE COSTA MS: Phone:

Radioactive Elements: U235, PU239
Radiation: Y

VOL OR WGT:

Approved by: Drake, Lawrence R. 31-May-2001 14:56

Analytical Operation: IC-ANIONS-L Task ID: 300292540
Date Completed: 23-May-2001 17:25 Replicates: 1 Version: 1

DESCRIPTION: IC-ANIONS:F,CL,SO4,N03,H04...

Component	Results	Units
FLUORIDE	< 20 [1]	ug/ml

[1] FLUORIDE:

Could not analyze for fluoride at lower concentrations because the sample contains a large amount of sulfate ion.

Notebook Reference: CAAC-0143, PAGE 74-82

Analyst: VMM, PTM

Approved by: Martinez, Patrick T. 23-May-2001 17:26

Analytical Operation: PSSUR-L Task ID: 300292541
Date Completed: 31-May-2001 13:22 Replicates: 1 Version: 1

DESCRIPTION: PS-ELEMENTAL ANALYSIS IN LIQUIDS

Component	Results	Units
SILVER	< 0.01	ug/ml
ARSENIC	< 0.04	ug/ml
BARIUM	< 0.05	ug/ml
BERYLLIUM	0.1	ug/ml
CADMIUM	< 0.01	ug/ml
CHROMIUM	6	ug/ml
MERCURY	< 0.1	ug/ml

NICKEL	< 0.05	ug/ml
LEAD	< 0.02	ug/ml
ANTIMONY	< 0.01	ug/ml
THALLIUM	< 0.05	ug/ml
VANADIUM	1.2	ug/ml
ZINC	0.34	ug/ml
--PSSUR-L ANALYSIS	AAM/LRD	ANALYST(S)

Notebook Reference: 052901PQS NMT1-0100 PG71

Additional Information:

Analyst: Drake, Lawrence R.

Approved by: Drake, Lawrence R. 31-May-2001 14:56

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 35269
(Version: 1)

11-Sep-2003 10:21 AM

Generator:	COSTA, DAVID NMT15	MS :	E530
WMC:	MCCORMICK, EGAN FWO-SWO	MS :	E507
FROM:	FWO-SWO	MS :	J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 35269 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to FWO-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 35269
YES _____ NO _____
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
YES _____ NO _____
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
YES _____ NO _____
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 35269

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

Extension-> Signed _____ Date 9/22/03

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 35269

Void-> Signed _____ Date _____

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: FWO-SWO ***MS: J595*** ***PHONE: 5-4000***

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 35269
(Version: 2)

14-Sep-2004 09:24 AM

Generator:	COSTA, DAVID NMT15	MS :	E530
WMC :	MCCORMICK, EGAN FWO-SWO	MS :	E507
FROM :	FWO-SWO	MS :	J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 35269 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to FWO-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 35269
YES NO
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
YES NO
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
YES NO
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 35269

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

Extension-> Signed _____ Date 9/23/04

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 35269

Void-> Signed _____ Date _____

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: FWO-SWO ***MS: J595*** ***PHONE: 5-4000***

LOS ALAMOS NATIONAL LABORATORY
WASTE PROFILE SYSTEM

WPF #: 35576

31-Jan-2008 11:47 AM **(Version: 1)**

Generator :	**LUGO, JERRY L**	MS :	**E530**	PH :	**6674304**	Z#:	**087360**
WMC :	**MCCORMICK, EGAN**	MS :	**E507**	PH :	**5056678158**	Z#:	**093573**
Contact :							
RCRA Rev :	**CORIZ MICHELLE L**	MS :	**J599**	PH :	**5056656411**	Z#:	**120950**
Status :	**EXPIRE**	Activation Date :	**01/24/2003**		Expiration Date:		**01/24/2004**
Group :	**NMT15**	TA :	**55**	Bldg :	**000004**	Room :	**105**

You are required to keep a copy of the WPF(s) in your files for at least three years. This WPF(s) is valid for one year or as long as the composition of the waste you have characterized remains the same. Should your waste change, please submit a new WPF to Waste Acceptance Group.

Waste Accumu : **None of the Above Site ID#**
Method of Char : Analysis/Documents Attached
Chemical/Physical Analysis Number: Attached

Waste Type : **Process Waste/Spent Chemical/Other**
Waste Classes: RCA Waste - **RCA Waste**
RAD Waste - **Radioactive-LL**
WW Info - **RLWTF**
Classif/Sensi - **N**

Waste Category: **Inorganic**

Waste Sources : **Materials Processing/Production**

Waste Matrix : **Aqueous**

Matrix Type : **Homogeneous**

Process Desc :

WASTE CAUSTIC SOLUTION GENERATED DURING DECONTAMINATION OF GLOVEBOXES UNDER NMT15-WI-019/006, "DECONTAMINATION OF GB173 AND GB174". ANALYTICAL RESULTS FOR RCRA METALS ATTACHED. RADIOACTIVITY DATA TO BE PROVIDED PRIOR TO DISPOSING SOLUTION TO RLWTF. PH RANGES FROM 11 TO 14 WITH PH 14 BEING PREDOMINANT.

Waste Desc : N/A

Ignitability : **Not ignitable**

Corrosivity : **>= 12.5**

Reactivity : **Non-reactive**

Boiling Point : **Not applicable**

Toxicity Characteristic Metals:

Contaminant	Method	Limit	Min	Max	Unit
ARSENIC	**TOTA**	**Y**			**PPM**
CADMIUM	**TOTA**	**Y**			**PPM**
SILVER	**TOTA**	**Y**			**PPM**
LEAD	**TOTA**	**Y**			**PPM**
MERCURY	**TOTA**	**Y**			**PPM**
SELENIUM	**TOTA**		**1**	**15**	**PPM**
BARIUM	**TOTA**	**Y**			**PPM**

CHROMIUM	**TOTA**	**Y**	**PPM**

Toxicity Characteristic Organic Compounds: N/A

Additional Chemical Constituents and Contaminants:

CAS NO	Constituent	MIN	MAX	UOM
	SPENT CAUSTIC DECONTAMINATION SOLUTION	**95**	**100**	**%**

Waste Water Characteristics for RLWTF
Waste Production: Other
Radionuclide Contaminants :

Contaminant	Limit	Min	Max	Unit	Method
PU-239		**0.00001**	**0.000025**	**Ci/l**	

Total Alpha: 2.50E-05 Ci/l
Average daily flow when discharge occurs: 30 LIT
Maximum daily flow when discharge occurs: 30 LIT
Estimated number of days dicharge will occur: 2
Estimated total volume per year discharged to the RLWC at TA-50: 60 LIT
Wastewater will be discharged through the following: CAUS Line

LDR and Underlying Hazardous Constituents Information
Non-Wastewater/Wastewater Category: **Non Wastewater**

WASTE CHARACTERIZATION INFORMATION

Radioactivity Category : **RADIOACTIVE-LL**

RCRA Category : **HAZARDOUS WASTE**

Secondary Info : N/A

Waste Classification : **MIXED LOW-LEVEL WASTE**

Waste Acceptances : **TA-50 Acceptance**

EPA Hazardous Waste Code : **D002 D010**
Notification Of Underlying Hazardous Constituents:

Constituents
Arsenic
Barium
Cadmium
Chromium (Total)
Lead
Mercury - All Others
Selenium
Silver

GWCP Information

Section 1 - Waste Prevention/Minimization (answer all questions)

Can hazard segregation, elimination, or material substitution be used? ☐ Yes* ☐ No

Can any of the materials in the waste stream be recycled or reused ☐ Yes* ☐ No

Has waste minimization been incorporated into procedures or other process controls? ☐ Yes ☐ No

Can this waste be generated outside a RCA? ☐ Yes* ☐ No ☐ N/A

*Provide Comment

Section 6 - Work Control Documentation (answer all questions)

Do the procedures for this process cover how to manage this waste? ☐ Yes ☐ No (Provide comments)

Do the procedures for this process cover controls to prevent changes to waste constituents and concentrations or addition or removal of waste? ☐ Yes ☐ No (Provide comments)

Section 7 - Package and Storage Control

Describe how the waste will be packaged in according to the applicable WAC:

Identify the storage management controls that will be used for this waste stream: (check all that apply)

- ☐ Tamper indication devices:
- ☐ Limited use locks with log-in for waste
- ☐ Locked cabinet or building
- ☐ Other (describe)

Section 8 - Waste Certification Statements (check only one)

- ☐ Waste appears to meet WAC chapter for:
- ☐ Waste needs exception/exemption for treatment, storage, or disposal at:
- ☐ Waste does not meet the criteria for any known TSDF, (DOE approval is required. Contact the Waste Management Program Office for assistance.)

Estimated Annual Volume (m3):

RECEIVED NOV 1 4 2002

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WASTE PROFILE FORM

ORIGINAL

Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: EM-SWO at **MS J595.** For assistance with completing this form, call EM-SWO at **5-4000**.	Reference Number 35576 (For EM-SWO use only.)

Generator's Z Number	Waste Generator's Name (print)	WMC's Z Number	WMC's Name (print)
087360	Jerry L. Lugo	093573	Egan McCormick

Generator's Telephone	Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room
7-4304	E 530	NMT 15	55	4	105

Waste Accumulation (Check only one.)
- ☐ Satellite Accumulation Area — Site no: _____
- ☐ Less-than-90-days Storage Area — Site no: _____
- ☐ TSDF — Site no: _____
- ☐ Universal Waste Storage Area — Site no: _____
- ☒ None of the Above

ER Use Only ☐ ER Site — PRS #: _____

Method of Characterization (Check as many as apply.)
- ☒ Analysis/Documents Attached
- ☒ Chemical/Physical Analysis — Sample #: Attached
- ☐ Radiological Analysis — Sample #: _____
- ☐ PCB Analysis — Sample #: _____
- ☐ Acceptable Knowledge Documentation — Documentation #: _____
- ☐ MSDS

Section 1 - Chemical and Physical Information

Waste Type (Check only one.)
- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☒ Process Waste/Spent Chemical/ other (Complete all sections.)
- ☐ Green is Clean Waste (Complete all sections as appropriate.)

Waste Classes

Radiological Information
Was Waste Generated in a RCA? ☒ Yes ☐ No
- ☐ Non-radioactive
- ☒ Radioactive
  - ☒ Low-Level
  - ☐ Transuranic

Wastewater Information
- ☐ Wastewater for SWSC (TA-46) (Complete Attachment 1)
- ☒ Wastewater for RLWTF (TA-50/TA-21) (Complete Attachment 2)
- ☐ Wastewater for TA-16 (HE)

Classification Information
- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check as many as apply.)
- ☒ Inorganic
- ☐ Organic
- Volatile Organics ☐ < 500 ppm ☐ ≥ 500 ppm
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste residue
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)
- Asbestos ☐ friable ☐ non-friable
- PCB Source Concentration
  - ☐ PCB < 50 ppm
  - ☐ PCB ≥ 50 - < 500 ppm
  - ☐ PCB ≥ 500 ppm
- ☐ Other (Describe below)

* Concentrations 10% or greater before use.

Waste Source (Check only one.)

Routine Waste
- ☐ Decon
- ☒ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup - Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Non-routine Waste
- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping - Non-routine
- ☐ Spill Cleanup - Non-routine
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix (Check only one.)

Gas
- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid
- ☒ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid
- ☐ Powder/Ash
- ☐ Solid
- ☐ Sludge
- ☐ Absorbed liquid

Matrix Type (Check only one.)
- ☒ Homogeneous
- ☐ Heterogeneous (Describe below)

Waste/Process Description (Chemical formulas may be used in this field.)

Waste caustic solution generated during decontamination of gloveboxes under NMT15-WI-019/006, "Decontamination of GB173 and GB174." Analytical results for RCRA metals attached. Radioactivity data to be provided prior to disposing solution to RLWTF. pH ranges from 11 to 14 with pH 14 being predominant.

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WASTE PROFILE FORM

Section 2 - Characteristics

Ignitability (Check only one.) (°F)	(°C)	Corrosivity (Check only one.) (pH)	Reactivity (Check as many as apply.)	Boiling Point (Check only one.) (°F)	(°C)
☐ < 73	< 22.8	☐ ≤ 2.0	☐ RCRA Unstable	☐ ≤ 95	≤ 35
☐ 73 - 99	22.8 - 37.2	☐ 2.1 - 4.0	☐ Water Reactive	☐ > 95	> 35
☐ 100 - 139	37.8 - 59.4	☐ 4.1 - 6.0	☐ Cyanide Bearing (> 250 ppm)		
☐ 140 -200	60.0 - 99.3	☐ 6.1 - 9.0	☐ Sulfide Bearing (> 500 ppm)		
☐ > 200	> 99.3	☐ 9.1 - 12.4	☐ Pyrophoric		
☐ EPA Ignitable - Non-liquid		☒ ≥ 12.5	☐ Shock Sensitive		
☐ DOT Flammable Gas		☐ Liquid corrosive to steel	☐ Explosive - DOT Div. _____		
☐ DOT Oxidizer					
☒ Not ignitable		☐ Non-aqueous	☒ Non-reactive	☒ Not applicable	

Identify for all contaminants listed.	Characterization Method: AK	TCLP	Total	Concentration of Contaminants: None or Non-detect	Present Below Regulatory Limit	Above Regulatory Limit Minimum	Maximum
Toxicity Characteristic Metals						(Concentration in ppm only.)	
Arsenic	☐	☐	☒	☐	☒ < 5.0 ppm	_____ to	_____ ppm
Barium	☐	☐	☒	☐	☒ < 100.0 ppm	_____ to	_____ ppm
Cadmium	☐	☐	☒	☐	☒ < 1.0 ppm	_____ to	_____ ppm
Chromium (Total)	☐	☐	☒	☐	☒ < 5.0 ppm	_____ to	_____ ppm
Lead	☐	☐	☒	☐	☒ < 5.0 ppm	_____ to	_____ ppm
Mercury	☐	☐	☒	☐	☒ < 0.2 ppm	_____ to	_____ ppm
Selenium	☐	☐	☒	☐	☐ < 1.0 ppm	1.0 to	15 ppm
Silver	☐	☐	☒	☐	☒ < 5.0 ppm	_____ to	_____ ppm
Toxicity Characteristic Organics							
Benzene	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
Carbon tetrachloride	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
Chlordane	☒	☐	☐	☒	☐ < 0.03 ppm	_____ to	_____ ppm
Chlorobenzene	☒	☐	☐	☒	☐ < 100.0 ppm	_____ to	_____ ppm
Chloroform	☒	☐	☐	☒	☐ < 6.0 ppm	_____ to	_____ ppm
o - cresol	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
m - cresol	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
p - cresol	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
Cresol - mixed	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
2,4-D	☒	☐	☐	☒	☐ < 10.0 ppm	_____ to	_____ ppm
1,4-Dichlorobenzene	☒	☐	☐	☒	☐ < 7.5 ppm	_____ to	_____ ppm
1,2-Dichloroethane	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
1,1-Dichloroethylene	☒	☐	☐	☒	☐ < 0.7 ppm	_____ to	_____ ppm
2,4-Dinitrotoluene	☒	☐	☐	☒	☐ < 0.13 ppm	_____ to	_____ ppm
Endrin	☒	☐	☐	☒	☐ < 0.02 ppm	_____ to	_____ ppm
Heptachlor (& its epoxide)	☒	☐	☐	☒	☐ < 0.008 ppm	_____ to	_____ ppm
Hexachlorobenzene	☒	☐	☐	☒	☐ < 0.13 ppm	_____ to	_____ ppm
Hexachlorobutadiene	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
Hexachloroethane	☒	☐	☐	☒	☐ < 3.0 ppm	_____ to	_____ ppm
Lindane	☒	☐	☐	☒	☐ < 0.4 ppm	_____ to	_____ ppm
Methoxychlor	☒	☐	☐	☒	☐ < 10.0 ppm	_____ to	_____ ppm
Methyl ethyl ketone	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
Nitrobenzene	☒	☐	☐	☒	☐ < 2.0 ppm	_____ to	_____ ppm
Pentachlorophenol	☒	☐	☐	☒	☐ < 100.0 ppm	_____ to	_____ ppm
Pyridine	☒	☐	☐	☒	☐ < 5.0 ppm	_____ to	_____ ppm
Tetrachloroethylene	☒	☐	☐	☒	☐ < 0.7 ppm	_____ to	_____ ppm
Toxaphene	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
Trichloroethylene	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
2,4,5-Trichlorophenol	☒	☐	☐	☒	☐ < 400.0 ppm	_____ to	_____ ppm
2,4,6-Trichlorophenol	☒	☐	☐	☒	☐ < 2.0 ppm	_____ to	_____ ppm
2,4,5-TP (Silvex)	☒	☐	☐	☒	☐ < 1.0 ppm	_____ to	_____ ppm
Vinyl chloride	☒	☐	☐	☒	☐ < 0.2 ppm	_____ to	_____ ppm

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WASTE PROFILE FORM

Section 3 - Additional Constituents

Additional Constituents and Contaminants. Please account for 100% of waste. Ranges should be given within guidelines of LIG 404-00-03 of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum		Maximum	
No CAS. No.	SPENT CAUSTIC DECONTAMINATION	95	to	100	%
	SOLUTION		to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
	Total of max. ranges of this section	100			in %
	Total of max. ranges from page 2.	15			in ppm

Additional Information (Use additional sheet if necessary.)

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

WASTE GENERATOR CERTIFICATION: Based on my [illegible] knowledge and [illegible] analysis, I certify that the information on this form is correct. I understand that the information will be made available to [illegible] and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Signature	Date
Jerry L. Lujo	11-12-02

WASTE MANAGEMENT REVIEW: I have reviewed the [illegible] and have determined that the information is complete and accurate.

Signature	Date
[illegible]	11/12/02

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WASTE PROFILE FORM

Attachment 2 - Wastewater Characteristics for RLWTF (TA-50 & TA-21)

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

Indicate if waste was: ☐ Accelerator produced ☐ Reactor produced ☒ Other (Describe in WPF Section 1 "Waste/Process Description.")

Radionuclide Contaminants

Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min. / Max.	Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min. / Max.
As-74	☐ ≤ 4.0 E -8	/	Rb-84	☐ ≤ 1.0 E -8	/
Be-7	☐ ≤ 1.0 E -6	/	Sc-46	☐ ≤ 2.0 E -8	/
Ce-141	☐ ≤ 5.0 E -8	/	Sc-48	☐ ≤ 2.0 E -8	/
Cs-134	☐ ≤ 2.0 E -9	/	Se-75	☐ ≤ 2.0 E -8	/
Cs-137	☐ ≤ 3.0 E -9	/	Na-22	☐ ≤ 1.0 E -8	/
Co-56	☐ ≤ 1.0 E -8	/	Sr-85	☐ ≤ 7.0 E -8	/
Co-57	☐ ≤ 1.0 E -7	/	Sr-89	☐ ≤ 2.0 E -8	/
Co-58	☐ ≤ 4.0 E -8	/	Sr-90	☐ ≤ 1.0 E -9	/
Co-60	☐ ≤ 5.0 E -9	/	Sn-113	☐ ≤ 5.0 E -8	/
Eu-152	☐ ≤ 2.0 E -8	/	V-48	☐ ≤ 2.0 E -8	/
H-3	☐ ≤ 2.0 E -8	/	Y-88	☐ ≤ 3.0 E -8	/
I-133	☐ ≤ 1.0 E -8	/	Zn-65	☐ ≤ 9.0 E -9	/
Mn-52	☐ ≤ 2.0 E -8	/	Am-241	☐ ≤ 0.1 E -6	/
Mn-54	☐ ≤ 5.0 E -8	/	Pu-238	☐ ≤ 0.1 E -6	/
Ra-226 + 228	☐ ≤ 3.0 E -11	/	Pu-239	☐ ≤ 0.1 E -6	1.0 E-5 / 2.5E-5
Rb-83	☐ ≤ 2.0 E -8	/	U-234	☐ ≤ 5.0 E -8	/
Others:			**Others:**		
		/			/
		/			/
		/			/

Other Contaminants

Metal Contaminants	Present Below LOC (in ppm)	Range if above LOC (in ppm) Min. / Max.	Additional Contaminants	Min. / Max
Aluminum	☐ ≤ 5.0	to ppm	Chemical Oxygen Demand (COD)	to mg/l
Boron	☐ ≤ 5.0	to ppm	Total Suspended Solids (TSS)	to mg/l
Cobalt	☐ ≤ 1.0	to ppm		
Copper	☐ ≤ 1.0	to ppm	☐ Total Nitrogen or (only one	to mg/l
Vanadium	☐ ≤ 0.10	to ppm	☐ Total Nitrates entry needed)	to mg/l
Zinc	☐ ≤ 95.40	to ppm		

Radioactive Contaminant Totals:

Total Alpha	2.5E-5	Ci/l
Total Beta		Ci/l
Total Gamma		Ci/l

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

☐ Acid Line ☒ Caustic Line ☐ Industrial Waste Line

☐ Yes ☒ No Scintillation Cocktail Brand Name _____ Volume _____ Unit _____

☐ Yes ☒ No Chemical Treatment for Boilers / Water Chillers

☐ Yes ☒ No Industrial Cleaner Type _____ Volume _____ Unit _____

Average daily volume when discharge occurs: 30 ☐ Gallons/day ☒ Liters/day

Maximum daily volume when discharge occurs: 30 ☐ Gallons/day ☒ Liters/day

Estimated number of days per year discharge will occur: 2

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-50 / TA-21: 60 ☐ Gallons ☒ Liters

aw 01/13/03

Associated WPF Reference Number:

LDR and Underlying Hazardous Constituents Information - Identify presence of any constituents listed below.

Non-Wastewater / Wastewater Category - Check only one.

☒ Non Wastewater ☐ Wastewater [as defined by 40 CFR 268.2(f)]

Notification of California List Applicability - Check all that apply.

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

☐ A D001 thru D043 liquid waste containing 134 mg/L or greater of Nickel and/or 130 mg/L or greater of thallium.

☐ A D001 thru D043 waste containing Halogenated Organic Compounds (HOCs) listed in 40 CFR 268, Appendix III, at 1000 ppm or greater.

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

☐ *No Underlying Hazardous Constituents in this waste stream.* ☐ *HAZCAT Meeting 40 CFR 268.42(c)*

Organic Constituents

☐ A2213	☐ Butyl benzyl phthalate	☐ p,p'-DDE
☐ Acenaphthylene	☐ 2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	☐ o,p'-DDT
☐ Acenaphthene	☐ Carbaryl	☐ p,p'-DDT
☐ Acetone	☐ Carbenzadim	☐ Dibenz(a,h)anthracene
☐ Acetonitrile	☐ Carbofuran	☐ Dibenz(a,e)pyrene
☐ Acetophenone	☐ Carbofuran phenol	☐ 1,2-Dibromo-3-chloropropane
☐ 2-Acetyaminofluorene	☐ Carbon disufide	☐ 1,2-Dibromoethane (Ethylene dibromide)
☐ Acrolein	☐ Carbon tetrachloride	☐ Dibromomethane
☐ Acrylamide	☐ Carbosulfan	☐ m-Dichlorobenzene
☐ Acrylonitrile	☐ Chlordane (alpha & gamma isomers)	☐ o-Dichlorobenzene
☐ Aldicarb sulfone	☐ p-Chloroaniline	☐ p-Dichlorobenzene
☐ Aldrin	☐ Chlorobenzene	☐ Dichlorodifluoromethane
☐ 4-Aminobiphenyl	☐ Chlorobenzilate	☐ 1,1-Dichloroethane
☐ Aniline	☐ 2-Chloro-1,3-butadiene	☐ 1,2-Dichloroethane
☐ Anthracene	☐ Chlorodibromomethane	☐ 1,1-Dichloroethylene
☐ Aramite	☐ Chloroethane	☐ trans-1,2-Dichloroethylene
☐ alpha-BHC	☐ bis(2-Chloroethoxy) methane	☐ 2,4-Dichlorophenol
☐ beta-BHC	☐ bis(2-Chloroethyl) ether	☐ 2,6-Dichlorophenol
☐ delta-BHC	☐ Chloroform	☐ 2,4-Dichlorophenoxyacetic acid (2,4-D)
☐ gamma-BHC	☐ bis(2-Chloroisopropyl) ether	☐ 1,2-Dichloropropane
☐ Barban	☐ p-Chloro-m-cresol	☐ cis-1,3-Dichloropropylene
☐ Bendiocarb	☐ 2-Chloroethyl vinyl ether	☐ trans-1,3-Dichloropropylene
☐ Bendiocarb phenol	☐ Chloromethane (Methyl chloride)	☐ Dieldrin
☐ Benomyl	☐ 2-Chloronaphthalene	☐ Diethylene glycol, dicarbamate
☐ Benzene	☐ 2-Chlorophenol	☐ Diethyl phthalate
☐ Benz(a)anthracene	☐ 1-Chloropropylene	☐ p-Dimethylaminoazobenzene
☐ Benzal chloride	☐ Chrysene	☐ 2-4-Dimethyl phenol
☐ Benzo(b)fluoranthene	☐ o-Cresol	☐ Dimethyl phthalate
☐ Benzo(k)fluoranthene	☐ m-Cresol	☐ Dimetilan
☐ Benzo(g,h,i)perylene	☐ p-Cresol	☐ Di-n-butyl phthalate
☐ Benzo(a)pyrene	☐ m-Cumenyl methylcarbamate	☐ 1,4-Dinitrobenzene
☐ Bromodichloromethane	☐ Cycloate	☐ 4,6-Dinitro-o-cresol
☐ Bromomethane (Methyl bromide)	☐ Cyclohexanone	☐ 2,4-Dinitrophenol
☐ 4-Bromophenyl phenyl ether	☐ o,p'-DDD	☐ 2,4-Dinitrotoluene
☐ n-Butyl alcohol	☐ p,p'-DDD	☐ 2,6-Dinitrotoluene
☐ Butylate	☐ o,p'-DDE	☐ Di-n-octyl phthalate

Land Disposal Restriction (LDR) and Underlying Hazardous Constituents Information Form

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001, D002, D003, and D012 - D043 characteristic wastes only)

Metal/Inorganic Constituents

☐ Antimony	☐ Cyanides (Amenable)	☒ Selenium
☒ Arsenic	☐ Fluoride	☒ Silver
☒ Barium	☒ Lead	☐ Sulfide
☐ Beryllium	☐ Mercury (Retort residues)	☐ Thallium
☒ Cadmium	☒ Mercury - All others	☐ Vanadium
☒ Chromium (Total)	☐ Nickel	☐ Zinc
☐ Cyanides (Total)		

Actinide Analytical Chemistry Report

Sample ID: 200149103 Group: NMT-15 QA: N Priority: 1
Submission ID: 100050077 Acct: Logged: 26-Jun-2002
User sample ID: SOLEDC4
Sample Type: AQUEOUS PROCESSING
Customer Cost Code: K24C00000000
Requester: JERRY LUGO MS: Phone:

Radioactive Elements: PU239
Radiation: Y

VOL OR WGT: 3.5 L

Analytical Operation: R5-WASTE Task ID: 300313116
Date Completed: 26-Jun-2002 00:00 Replicates: 1 Version: 1

Component	Results	Units
pH	11	pH
ACTIVITY	4.56E-06	Ci/L

Analyst: MAA

Approved by: Porterfield, Donivan R. 02-Jul-2002 11:23

Analytical Operation: PSSUR-L Task ID: 300314310
Date Completed: 15-Aug-2002 08:51 Replicates: 1 Version: 1

DESCRIPTION: PS-ELEMENTAL ANALYSIS IN LIQUIDS

Component	Result	Units	Component	Result	Units
SILVER	< 5	ug/ml	ARSENIC	<5	ug/ml
BARIUM	< 1	ug/ml	CADMIUM	< 1	ug/ml
CHROMIUM	4.4	ug/ml	MERCURY	< 0.1	ug/ml
LEAD	<5	ug/ml	SELENIUM	< 10	ug/ml
COMMENTS	[1]				

[1] COMMENTS: HG VALUES ARE FROM CVAF

Notebook Reference: IRIS080702A.RUN PG113 NMT1-0094 CVAF072402A.TXT PG201 ANC34
Additional Information:
Analyst: JBR/JM/DG/LRD

Approved by: Drake, Lawrence R. 15-Aug-2002 09:00

Actinide Analytical Chemistry Report

Sample ID: 200149102 Group: NMT-15 QA: N Priority: 1
Submission ID: 100050077 Acct: N Logged: 26-Jun-2002
User sample ID: SOLEDC3
Sample Type: AQUEOUS PROCESSING
Customer Cost Code: K24C00000000
Requester: JERRY LUGO MS: Phone:

Radioactive Elements: PU239
Radiation: Y

VOL OR WGT: 4 L

Analytical Operation: R5-WASTE Task ID: 300313115
Date Completed: 26-Jun-2002 00:00 Replicates: 1 Version: 1

Component	Results	Units
pH	14	pH
ACTIVITY	1.82E-06	Ci/L

Analyst: MAA

Approved by: Porterfield, Donivan R. 02-Jul-2002 11:22

Analytical Operation: PSSUR-L Task ID: 300314309
Date Completed: 15-Aug-2002 08:51 Replicates: 1 Version: 1

DESCRIPTION: PS-ELEMENTAL ANALYSIS IN LIQUIDS

Component	Result	Units	Component	Result	Units
SILVER	< 5	ug/ml	ARSENIC	< 5	ug/ml
BARIUM	< 1	ug/ml	CADMIUM	< 1	ug/ml
CHROMIUM	4.2	ug/ml	MERCURY	< 0.1	ug/ml
LEAD	<5	ug/ml	SELENIUM	< 10	ug/ml
COMMENTS	[1]				

[1] COMMENTS: HG VALUES ARE FROM CVAF

Notebook Reference: IRIS080702A.RUN PG113 NMT1-0094 CVAF072402A.TXT PG201 ANC34
Additional Information:
Analyst: JBR/JM/DG/LRD

Approved by: Drake, Lawrence R. 15-Aug-2002 08:59

Actinide Analytical Chemistry Report

Sample ID: 200149101 Group: NMT-15 QA: N Priority: 1
Submission ID: 100050077 Acct: N Logged: 26-Jun-2002
User sample ID: SOLEDC2
Sample Type: AQUEOUS PROCESSING
Customer Cost Code: K24C00000000
Requester: JERRY LUGO MS: Phone:

Radioactive Elements: PU239
Radiation: Y

VOL OR WGT: 4 L

Analytical Operation: R5-WASTE Task ID: 300313114
Date Completed: 26-Jun-2002 00:00 Replicates: 1 Version: 1

Component	Results	Units
pH	14	pH
ACTIVITY	1.09E-05	Ci/L

Analyst: MAA

Approved by: Porterfield, Donivan R. 02-Jul-2002 11:21

Analytical Operation: PSSUR-L Task ID: 300314308
Date Completed: 15-Aug-2002 08:51 Replicates: 1 Version: 1

DESCRIPTION: PS-ELEMENTAL ANALYSIS IN LIQUIDS

Component	Result	Units	Component	Result	Units
SILVER	< 5	ug/ml	ARSENIC	<5	ug/ml
BARIUM	< 1	ug/ml	CADMIUM	< 1	ug/ml
CHROMIUM	4.9	ug/ml	MERCURY	< 0.1	ug/ml
LEAD	<5	ug/ml	SELENIUM	11	ug/ml
COMMENTS	[1]				

[1] COMMENTS: HG VALUES ARE FROM CVAF

Notebook Reference: IRIS080702A.RUN PG113 NMT1-0094 CVAF072402A.TXT PG201 ANC34
Additional Information:
Analyst: JBR/JM/DG/LRD

Approved by: Drake, Lawrence R. 15-Aug-2002 08:59

Actinide Analytical Chemistry Report

Sample ID: 200149100 Group: NMT-15 QA: N Priority: 1
Submission ID: 100050077 Acct: N Logged: 26-Jun-2002
User sample ID: SOLEDC1
Sample Type: AQUEOUS PROCESSING
Customer Cost Code: K24C00000000
Requester: JERRY LUGO MS: Phone:

Radioactive Elements: PU239
Radiation: Y

VOL OR WGT: 4 L

Analytical Operation: R5-WASTE Task ID: 300313113
Date Completed: 26-Jun-2002 00:00 Replicates: 1 Version: 1

Component	Results	Units
pH	14	pH
ACTIVITY	2.42E-05	Ci/L

Analyst: MAA

Approved by: Porterfield, Donivan R. 02-Jul-2002 11:20

Analytical Operation: PSSUR-L Task ID: 300314306
Date Completed: 15-Aug-2002 08:51 Replicates: 1 Version: 1

DESCRIPTION: PS-ELEMENTAL ANALYSIS IN LIQUIDS

Component	Result	Units	Component	Result	Units
SILVER	< 5	ug/ml	ARSENIC	<5	ug/ml
BARIUM	< 1	ug/ml	CADMIUM	< 1	ug/ml
CHROMIUM	< 1	ug/ml	MERCURY	< 0.1	ug/ml
LEAD	<5	ug/ml	SELENIUM	< 10	ug/ml
COMMENTS	[1]				

[1] COMMENTS: HG VALUES ARE FROM CVAF

Notebook Reference: IRIS080702A.RUN PG113 NMT1-0094 CVAF072402A.TXT PG201 ANC34
Additional Information:
Analyst: JBR/JM/DG/LRD

Approved by: Drake, Lawrence R. 15-Aug-2002 08:58

Analytical Chemistry Report
Task Report

Sample ID: 200148803 Group: NMT-15 QA: N Priority: 1
Submission ID: 100050010 Acct: N Logged: 04-Jun-2002
User sample ID: SOLEDC176
Sample Type: AQUEOUS PROCESSING
Customer Cost Code: KM9810020000
Requester: JERRY L. LUGO MS: Phone:

Radioactive Elements: PU239
Radiation: Y

VOL OR WGT: 5L

Approved by: Drake, Lawrence R. 18-Jun-2002 06:23

Analytical Operation: PSSUR-L Task ID: 300312011
Date Completed: 18-Jun-2002 06:23 Replicates: 1 Version: 1

DESCRIPTION: PS-ELEMENTAL ANALYSIS IN LIQUIDS

Component	Result	Units	Component	Result	Units
SILVER	< 1	ug/ml	ARSENIC	<5	ug/ml
BARIUM	< 0.1	ug/ml	CADMIUM	< 1	ug/ml
CHROMIUM	<5	ug/ml	MERCURY	< 0.1	ug/ml
LEAD	< 5	ug/ml	SELENIUM	<10	ug/ml
COMMENTS	[1]				

[1] COMMENTS: HG VALUES ARE FROM CVAF

Notebook Reference: IRIS061202A.RUN PG105 NMT1-0094 CVAF061202A.TXT PG298

Additional Information:

Analyst: JBR/JM/LRD

Approved by: Drake, Lawrence R. 18-Jun-2002 06:23

Analytical Chemistry Report
Task Report

Sample ID: 200148896 Group: NMT-15 QA: N Priority: 1
Submission ID: 100050022 Acct: N Logged: 06-Jun-2002
User sample ID: SOLEDC129
Sample Type: WALK-IN LIQUID
Customer Cost Code: 8J1500KM9810020000
Requester: JERRY L. LUGO MS: Phone:

Radiation: Y

Approved by: Drake, Lawrence R. 03-Jul-2002 11:52

Analytical Operation: PSSUR-L Task ID: 300312710
Date Completed: 03-Jul-2002 11:52 Replicates: 1 Version: 1

DESCRIPTION: PS-ELEMENTAL ANALYSIS IN LIQUIDS

Component	Result	Units	Component	Result	Units
SILVER	< 1	ug/ml	ARSENIC	< 5	ug/ml
BARIUM	< 0.1	ug/ml	CADMIUM	< 0.2	ug/ml
CHROMIUM	3.7	ug/ml	MERCURY	< 0.1	ug/ml
LEAD	< 4	ug/ml	SELENIUM	< 10	ug/ml

Notebook Reference: IRIS062102A PG106 NMT1-094 CVAF ANC34 PG299

Additional Information:

Analyst: Drake, Lawrence R.

Approved by: Drake, Lawrence R. 03-Jul-2002 11:52

Material Safety Data Sheet

Potassium Hydroxide Solutions 1 N and 0.1 N

ACC# 40145

Section 1 - Chemical Product and Company Identification

MSDS Name: Potassium Hydroxide Solutions 1 N and 0.1 N
Catalog Numbers: S719793, SLN7120, SP208-500, SP208-500LC, SP214-1, XX71601LI
Synonyms: None
Company Identification:
Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410
For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7732-18-5	Water	94.2-99.	231-791-2
1310-58-3	Potassium hydroxide	0.1-5.8	215-181-3

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: colorless liquid.
Danger! Causes eye burns. Causes digestive tract burns. Corrosive. Harmful if swallowed. Causes skin burns. Causes respiratory tract burns.
Target Organs: Respiratory system, eyes, skin.

Potential Health Effects
Eye: Causes severe eye burns. May cause irreversible eye injury. Contact may cause ulceration of the conjunctiva and cornea. Eye damage may be delayed.
Skin: Causes skin burns. May cause deep, penetrating ulcers of the skin.
Ingestion: Harmful if swallowed. May cause circulatory system failure. May cause perforation of the digestive tract. Causes severe digestive tract burns with abdominal pain, vomiting, and possible death.
Inhalation: Irritation may lead to chemical pneumonitis and pulmonary edema. Causes severe irritation of upper respiratory tract with coughing, burns, breathing difficulty, and possible coma.
Chronic: Prolonged or repeated skin contact may cause dermatitis. Prolonged or repeated eye contact may cause conjunctivitis.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid imme diately.
Skin: Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Discard contaminated clothing in a manner which limits further exposure.
Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.
Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
Notes to Physician: Treat symptomatically and supportively.
Antidote: None reported.

Section 5 - Fire Fighting Measures

General Information: Wear appropriate protective clothing to prevent contact with skin and eyes. Wear a self-contained breathing apparatus (SCBA) to prevent contact with thermal decomposition products. Use water with caution and in flooding amounts. Contact with moisture or water may generate sufficient heat to ignite nearby combustible materials.
Extinguishing Media: For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam.
Flash Point: Not applicable.
Autoignition Temperature: Not applicable.
Explosion Limits, Lower: Not available.
Upper: Not available.
NFPA Rating: (estimated) Health: 3; Flammability: 0; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Neutralize spill with a weak acid such as vinegar or acetic acid. Avoid runoff into storm sewers and ditches which lead to waterways.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Do not allow water to get into the container because of violent reaction. Do not get in eyes, on skin, or on clothing. Do not ingest or inhale.
Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from strong acids.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Water	none listed	none listed	none listed
Potassium hydroxide	2 mg/m3 Ceiling	none listed	none listed

OSHA Vacated PELs: Water: No OSHA Vacated PELs are listed for this chemical. Potassium hydroxide: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: colorless
Odor: none reported
pH: 13.2-13.5
Vapor Pressure: Not available.
Vapor Density: Not available.
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: Not available.
Freezing/Melting Point: Not available.
Decomposition Temperature: Not available.
Solubility: Completely soluble in water.
Specific Gravity/Density:1.3
Molecular Formula: Mixture
Molecular Weight: Not available.

Section 10 - Stability and Reactivity

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.

Conditions to Avoid: Excess heat.

Incompatibilities with Other Materials: Potassium hydroxide reacts with chlorine dioxide, nitrobenzene, nitromethane, nitrogen trichloride, peroxidized tetrahydrofuran, 2,4,6-trinitrotoluene, bromoform+ crown ethers, acids alcohols, sugars, germanium cyclopentadiene, maleic dicarbide. Corrosive to metals such as aluminum, tin, and zinc to cause formation of flammable hydrogen gas.

Hazardous Decomposition Products: Oxides of potassium.

Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 7732-18-5: ZC0110000
CAS# 1310-58-3: TT2100000
LD50/LC50:
CAS# 7732-18-5:
Oral, rat: LD50 = >90 mL/kg;

CAS# 1310-58-3:
Draize test, rabbit, skin: 50 mg/24H Severe;
Oral, rat: LD50 = 273 mg/kg;

Carcinogenicity:
CAS# 7732-18-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.
CAS# 1310-58-3: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No data available.
Teratogenicity: No data available.
Reproductive Effects: No data available.
Mutagenicity: No data available.
Neurotoxicity: No data available.
Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	POTASSIUM HYDROXIDE, SOLUTION	No information available.
Hazard Class:	8	
UN Number:	UN1814	
Packing Group:	II	

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 7732-18-5 is listed on the TSCA inventory.
CAS# 1310-58-3 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
CAS# 1310-58-3: 1000 lb final RQ; 454 kg final RQ
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 1310-58-3: immediate, reactive.
Section 313 No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
CAS# 1310-58-3 is listed as a Hazardous Substance under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.
CAS# 1310-58-3 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives
Hazard Symbols:
C
Risk Phrases:
R 22 Harmful if swallowed.
R 35 Causes severe burns.

Safety Phrases:
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 36/37/39 Wear suitable protective clothing, gloves and eye/face pr otection.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

WGK (Water Danger/Protection)
CAS# 7732-18-5: No information available.
CAS# 1310-58-3: 1

Canada - DSL/NDSL
CAS# 7732-18-5 is listed on Canada's DSL List.
CAS# 1310-58-3 is listed on Canada's DSL List.

Canada - WHMIS
This product has a WHMIS classification of E, D1B.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List
CAS# 1310-58-3 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 12/12/1997
Revision #7 Date: 3/16/2007

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WASTE PROFILE SYSTEM

WPF #: 36237

Generator :	**TESCH, CHUCK**	MS :	**C919**	PH :	**6655602**	Z#:	**152599**		
WMC :	**STADELMAIER, AL**	MS :	**C924**	PH :	**5056679746**	Z#:	**095169**		
Contact :									
RCRA Rev :	**CORIZ MICHELLE L**	MS :	**J599**	PH :	**5056656411**	Z#:	**120950**		
Status :	**VOID**	Activation Date :	**10/23/2003**		Expiration Date:		**10/23/2005**		
Group :	**ESA-TSE**	TA :	**21**	Bldg :	**000155**	Room :	**5501**		

You are required to keep a copy of the WPF(s) in your files for at least three years. This WPF(s) is valid for one year or as long as the composition of the waste you have characterized remains the same. Should your waste change, please submit a new WPF to Waste Acceptance Group.

Waste Accumu : **Less-than-90-days Storage Area Site ID# 2518**

Method of Char : Analysis/Documents Attached
Radiological Analysis Number: ATTACHED
MSDS

Waste Type : **Process Waste/Spent Chemical/Other**

Waste Classes: RCA Waste - **RCA Waste**
RAD Waste - **Radioactive-LL**
WW Info - **RLWTF**
Classif/Sensi - **N**

Waste Category: **Inorganic**

Waste Sources : **Research/Development/Testing**

Waste Matrix : **Aqueous**

Matrix Type : **Homogeneous**

Process Desc :
TRITIUM CONTAMINATED POTASSIUM HYDROXIDE

Waste Desc : N/A

Ignitability : **Not ignitable**

Corrosivity : **>= 12.5**

Reactivity : **Non-reactive**

Boiling Point : **Not applicable**

Toxicity Characteristic Metals: N/A

Toxicity Characteristic Organic Compounds: N/A

Additional Chemical Constituents and Contaminants:

CAS NO	Constituent	MIN	MAX	UOM
	POTASSIUM HYDROXIDE SOLUTION	99	100	%

Waste Water Characteristics for RLWTF
Waste Production: Reactor produced
Radionuclide Contaminants :

Contaminant	Limit	Min	Max	Unit	Method
H-3		**0.0001**	**0.001**	**Ci/l**	

Total Beta: 3.00E-04 Ci/l
Maximum daily flow when discharge occurs: 0.5 GAL
Estimated number of days dicharge will occur: 1
Estimated total volume per year discharged to the RLWC at TA-50: 0.5 GAL

LDR and Underlying Hazardous Constituents Information
Non-Wastewater/Wastewater Category: **Non Wastewater**

WASTE CHARACTERIZATION INFORMATION

Radioactivity Category : **RADIOACTIVE-LL**

RCRA Category : **HAZARDOUS WASTE**

Secondary Info : N/A

Waste Classification : **MIXED LOW-LEVEL WASTE**

Waste Acceptances : **TA-50 Acceptance**

EPA Hazardous Waste Code : **D002**
Notification Of Underlying Hazardous Constituents:
Constituents
No Underlying Hazardous Constituents in this waste stream

GWCP Information

Section 1 - Waste Prevention/Minimization (answer all questions)

Can hazard segregation, elimination, or material substitution be used?	☐ Yes*	☐ No	
Can any of the materials in the waste stream be recycled or reused	☐ Yes*	☐ No	
Has waste minimization been incorporated into procedures or other process controls?	☐ Yes	☐ No	
Can this waste be generated outside a RCA?	☐ Yes*	☐ No	☐ N/A

*Provide Comment

Section 6 - Work Control Documentation (answer all questions)

Do the procedures for this process cover how to manage this waste?	☐ Yes	☐ No (Provide comments)
Do the procedures for this process cover controls to prevent changes to waste constituents and concentrations or addition or removal of waste?	☐ Yes	☐ No (Provide comments)

Section 7 - Package and Storage Control

Describe how the waste will be packaged in according to the applicable WAC:

Identify the storage management controls that will be used for this waste stream: (check all that apply)

- ☐ Tamper indication devices:
- ☐ Limited use locks with log-in for waste
- ☐ Locked cabinet or building
- ☐ Other (describe)

Section 8 - Waste Certification Statements (check only one)

- ☐ Waste appears to meet WAC chapter for:
- ☐ Waste needs exception/exemption for treatment, storage, or disposal at:
- ☐ Waste does not meet the criteria for any known TSDF, (DOE approval is required. Contact the Waste Management Program Office for assistance.)

Estimated Annual Volume (m3):

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WASTE PROFILE FORM

ORIGINAL

Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: EM-SWO at **MS J595.** For assistance with completing this form, call EM-SWO at **5-4000.**	Reference Number 36237 (For EM-SWO use only.)

Generator's Z Number	Waste Generator's Name (print)	WMC's Z Number	WMC's Name (print)
152599	Chuck Tesch	095169	Albert Stadelmaier

Generator's Telephone	Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room
5-5602	C332	ESA-TSE	21	155	5501

Waste Accumulation (Check only one.)

- ☐ Satellite Accumulation Area — Site no: _____
- ☒ Less-than-90-days Storage Area — Site no: 5-20-03 ~~2332~~ UST
- ☐ TSDF — Site no: _____
- ☐ Universal Waste Storage Area — Site no: _____
- ☐ None of the Above

2518 pel WMC

ER Use Only ☐ ER Site PRS #: _____

Method of Characterization (Check as many as apply.)
☒ Analysis/Documents Attached

- ☐ Chemical/Physical Analysis — Sample #: _____
- ☒ Radiological Analysis — Sample #: Attached
- ☐ PCB Analysis — Sample #: _____
- ☐ Acceptable Knowledge Documentation — Documentation #: _____
- ☒ MSDS

Section 1 - Chemical and Physical Information

Waste Type (Check only one.)

- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☒ Process Waste/Spent Chemical/ other (Complete all sections.)
- ☐ Green is Clean Waste (Complete all sections as appropriate.)

Waste Classes

Radiological Information
Was Waste Generated in a RCA? ☒ Yes ☐ No
- ☐ Non-radioactive
- ☒ Radioactive
  - ☒ Low-Level
  - ☐ Transuranic

Wastewater Information
- ☐ Wastewater for SWSC (TA-46) (Complete Attachment 1)
- ☒ Wastewater for RLWTF (TA-50/TA-21) (Complete Attachment 2)
- ☐ Wastewater for TA-16 (HE)

Classification Information
- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check as many as apply.)

- ☒ Inorganic
- ☐ Organic
- Volatile Organics ☐ < 500 ppm ☐ ≥ 500 ppm
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste residue
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)
- Asbestos ☐ friable ☐ non-friable
- PCB Source Concentration
  - ☐ PCB < 50 ppm
  - ☐ PCB ≥ 50 - < 500 ppm
  - ☐ PCB ≥ 500 ppm
- ☐ Other (Describe below)

* Concentrations 10% or greater before use.

Waste Source (Check only one.)

Routine Waste
- ☐ Decon
- ☐ Materials Processing/Production
- ☒ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup - Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Non-routine Waste
- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping - Non-routine
- ☐ Spill Cleanup - Non-routine
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix (Check only one.)

Gas
- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid
- ☒ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid
- ☐ Powder/Ash
- ☐ Solid
- ☐ Sludge
- ☐ Absorbed liquid

Matrix Type (Check only one.)
- ☒ Homogeneous
- ☐ Heterogeneous (Describe below)

Waste/Process Description (Chemical formulas may be used in this field.)

Tritium contaminated potassium hydroxide

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WASTE PROFILE FORM

Section 2 - Characteristics

Ignitability (Check only one.) (°F)	(°C)	Corrosivity (Check only one.) (pH)	Reactivity (Check as many as apply.)	Boiling Point (Check only one.) (°F)	(°C)
☐ < 73	< 22.8	☐ ≤ 2.0	☐ RCRA Unstable	☐ ≤ 95	≤ 35
☐ 73 - 99	22.8 - 37.2	☐ 2.1 - 4.0	☐ Water Reactive	☐ > 95	> 35
☐ 100 - 139	37.8 - 59.4	☐ 4.1 - 6.0	☐ Cyanide Bearing (> 250 ppm)		
☐ 140 -200	60.0 - 99.3	☐ 6.1 - 9.0	☐ Sulfide Bearing (> 500 ppm)		
☐ > 200	> 99.3	☐ 9.1 - 12.4	☐ Pyrophoric		
☐ EPA Ignitable - Non-liquid		☒ ≥ 12.5	☐ Shock Sensitive		
☐ DOT Flammable Gas		☐ Liquid corrosive to steel	☐ Explosive - DOT Div. _____		
☐ DOT Oxidizer					
☒ Not ignitable		☐ Non-aqueous	☒ Non-reactive	☒ Not applicable	

Identify for all contaminants listed.	Characterization Method: AK	TCLP	Total	Concentration of Contaminants: None or Non-detect	Present Below Regulatory Limit	Above Regulatory Limit Minimum	Maximum
Toxicity Characteristic Metals						(Concentration in ppm only.)	
Arsenic	☒	☐	☐	☒	☐ < 5.0 ppm	_____ to	_____ ppm
Barium	☒	☐	☐	☒	☐ < 100.0 ppm	_____ to	_____ ppm
Cadmium	☒	☐	☐	☒	☐ < 1.0 ppm	_____ to	_____ ppm
Chromium (Total)	☒	☐	☐	☒	☐ < 5.0 ppm	_____ to	_____ ppm
Lead	☒	☐	☐	☒	☐ < 5.0 ppm	_____ to	_____ ppm
Mercury	☒	☐	☐	☒	☐ < 0.2 ppm	_____ to	_____ ppm
Selenium	☒	☐	☐	☒	☐ < 1.0 ppm	_____ to	_____ ppm
Silver	☒	☐	☐	☒	☐ < 5.0 ppm	_____ to	_____ ppm
Toxicity Characteristic Organics							
Benzene	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
Carbon tetrachloride	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
Chlordane	☒	☐	☐	☒	☐ < 0.03 ppm	_____ to	_____ ppm
Chlorobenzene	☒	☐	☐	☒	☐ < 100.0 ppm	_____ to	_____ ppm
Chloroform	☒	☐	☐	☒	☐ < 6.0 ppm	_____ to	_____ ppm
o - cresol	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
m - cresol	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
p - cresol	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
Cresol - mixed	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
2,4-D	☒	☐	☐	☒	☐ < 10.0 ppm	_____ to	_____ ppm
1,4-Dichlorobenzene	☒	☐	☐	☒	☐ < 7.5 ppm	_____ to	_____ ppm
1,2-Dichloroethane	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
1,1-Dichloroethylene	☒	☐	☐	☒	☐ < 0.7 ppm	_____ to	_____ ppm
2,4-Dinitrotoluene	☒	☐	☐	☒	☐ < 0.13 ppm	_____ to	_____ ppm
Endrin	☒	☐	☐	☒	☐ < 0.02 ppm	_____ to	_____ ppm
Heptachlor (& its epoxide)	☒	☐	☐	☒	☐ < 0.008 ppm	_____ to	_____ ppm
Hexachlorobenzene	☒	☐	☐	☒	☐ < 0.13 ppm	_____ to	_____ ppm
Hexachlorobutadiene	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
Hexachloroethane	☒	☐	☐	☒	☐ < 3.0 ppm	_____ to	_____ ppm
Lindane	☒	☐	☐	☒	☐ < 0.4 ppm	_____ to	_____ ppm
Methoxychlor	☒	☐	☐	☒	☐ < 10.0 ppm	_____ to	_____ ppm
Methyl ethyl ketone	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
Nitrobenzene	☒	☐	☐	☒	☐ < 2.0 ppm	_____ to	_____ ppm
Pentachlorophenol	☒	☐	☐	☒	☐ < 100.0 ppm	_____ to	_____ ppm
Pyridine	☒	☐	☐	☒	☐ < 5.0 ppm	_____ to	_____ ppm
Tetrachloroethylene	☒	☐	☐	☒	☐ < 0.7 ppm	_____ to	_____ ppm
Toxaphene	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
Trichloroethylene	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
2,4,5-Trichlorophenol	☒	☐	☐	☒	☐ < 400.0 ppm	_____ to	_____ ppm
2,4,6-Trichlorophenol	☒	☐	☐	☒	☐ < 2.0 ppm	_____ to	_____ ppm
2,4,5-TP (Silvex)	☒	☐	☐	☒	☐ < 1.0 ppm	_____ to	_____ ppm
Vinyl chloride	☒	☐	☐	☒	☐ < 0.2 ppm	_____ to	_____ ppm

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WASTE PROFILE FORM

Section 3 - Additional Constituents

Additional Constituents and Contaminants. Please account for 100% of waste. Ranges should be given within guidelines of LIG 404-00-03 of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum		Maximum	
	potassium hydroxide SOLUTION	99	to	100	%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
	Total of max. ranges of this section	100			**in %**
	Total of max. ranges from page 2.				**in ppm**

Additional Information (Use additional sheet if necessary.)

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

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

Signature [signature] Date 5/21/03

WASTE MANAGEMENT COORDINATOR: I have reviewed this form and to the best of my knowledge, the information is complete and accurate.

Signature Albert Stadelmaier Date 5-21-03

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Attachment 1 - Wastewater Characteristics for SWSC (TA-46)

For help in completing this section, call ESH -18 at 7-4882. Identify presence of any constituents listed below.
Use of Acceptable Knowledge in lieu of analytical data must be pre-approved by ESH-18.

Microtox Analysis #: _____ NOTE: Microtox analysis **must be** performed. Contact JCI/ENV to schedule analysis.

Are there any detectable levels of gross Alpha, gross Beta, gross Gamma, and/or Tritium? ☐ No ☐ Yes

All methods of analysis must conform to those approved pursuant to 40 CFR 136 unless an alternative method has been approved by ESH-18.
All metal concentrations are for the dissolved fraction present in the sample unless otherwise indicated.

	☐ Flow Rate of 100 gallons/day or less			☐ Flow Rate of greater than 100 gallons/day		
Flow Rate Parameters	None/ Non-detect	Within Regulatory Limits	Above Limit	None/ Non-detect	Within Regulatory Limits	Above Limit
pH		☐ 5 -11 SU	☐		☐ 5 -11 SU	☐
Chemical Oxygen Demand (COD)		☐ ≤ 750 mg/l	☐		☐ ≤ 500 mg/l	☐
Microtox results (a)		☐ < 55% screen	☐		☐ < 50% screen	☐
(b)		☐ > 20% EC50	☐		☐ > 25% EC50	☐
Temperature		☐ ≤ 180 °F	☐		☐ ≤ 140 °F	☐
Cyanide (Total)	☒	☐ < 5.0 mg/l	☐	☐	☐ < 1.0 mg/l	☐
Fluoride	☒	☐ < 200.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Iron	☒	☐ < 100.0 mg/l	☐	☐	☐ < 35.0 mg/l	☐
Magnesium	☒	☐ < 100.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Manganese	☒	☐ < 5.0 mg/l	☐	☐	☐ < 1.0 mg/l	☐
Metals (Total)	☒	☐ < 40.0 mg/l	☐	☐	☐ < 10.0 mg/l	☐
Nickel	☒	☐ < 50.0 mg/l	☐	☐	☐ ≤ 3.0 mg/l	☐
Nitrogen (Total)	☒	☐ ≤ 100.0 mg/l	☐	☐	☐ ≤ 50.0 mg/l	☐
Oil and Greases	☒	☐ < 100.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Phosphorus (Total)	☒	☐ < 100.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Silver	☒	☐ < 5.0 mg/l	☐	☐	☐ < 0.5 mg/l	☐
Total Suspended Solids (TSS)	☒	☐ ≤ 400.0 mg/l	☐	☐	☐ ≤ 300.0 mg/l	☐
Zinc	☒	☐ < 25.0 mg/l	☐	☐	☐ < 5.0 mg/l	☐

Wastewater contaminants Identify for all constituents listed	None/Non-detect	Present within Regulatory Limits	Above Limit
Dissolved Aluminum	☒	☐ < 5.0 mg/l	☐
Dissolved Arsenic	☒	☐ < 0.2 mg/l	☐
Barium	☒	☐ < 100.0 mg/l	☐
Beryllium	☒	☐ < 5.3 mg/l	☐
Dissolved Boron	☒	☐ < 5.0 mg/l	☐
Dissolved Cadmium	☒	☐ < 0.05 mg/l	☐
Chlorine (Total Residual)	☒	☐ < 3.0 mg/l	☐
Dissolved Chromium	☒	☐ < 1.0 mg/l	☐
Dissolved Cobalt	☒	☐ < 1.0 mg/l	☐
Dissolved Copper	☒	☐ < 0.5 mg/l	☐
Dissolved Lead	☒	☐ < 0.1 mg/l	☐
Total Mercury	☒	☐ < 0.01 mg/l	☐
Molybdenum	☒	☐ < 75.0 mg/l	☐
Polychlorinated Biphenyls (PCB)	☒	None Detected	☐
Dissolved Selenium	☒	☐ < 0.05 mg/l	☐
Dissolved Vanadium	☒	☐ < 0.1 mg/l	☐
Dissolved Zinc	☒	☐ < 25.0 mg/l	☐

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Attachment 2 - Wastewater Characteristics for RLWTF (TA-50 & TA-21)

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

Indicate if waste was: ☐ Accelerator produced ☒ Reactor produced ☐ Other (Describe in WPF Section 1 "Waste/Process Description.")

Radionuclide Contaminants

Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min.	/ Max.	Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min.	/ Max.
As-74	☐ ≤ 4.0 E -8			Rb-84	☐ ≤ 1.0 E -8		
Be-7	☐ ≤ 1.0 E -6			Sc-46	☐ ≤ 2.0 E -8		
Ce-141	☐ ≤ 5.0 E -8			Sc-48	☐ ≤ 2.0 E -8		
Cs-134	☐ ≤ 2.0 E -9			Se-75	☐ ≤ 2.0 E -8		
Cs-137	☐ ≤ 3.0 E -9			Na-22	☐ ≤ 1.0 E -8		
Co-56	☐ ≤ 1.0 E -8			Sr-85	☐ ≤ 7.0 E -8		
Co-57	☐ ≤ 1.0 E -7			Sr-89	☐ ≤ 2.0 E -8		
Co-58	☐ ≤ 4.0 E -8			Sr-90	☐ ≤ 1.0 E -9		
Co-60	☐ ≤ 5.0 E -9			Sn-113	☐ ≤ 5.0 E -8		
Eu-152	☐ ≤ 2.0 E -8			V-48	☐ ≤ 2.0 E -8		
H-3	☐ ≤ 2.0 E -8	1.0 e-4	1.0 e-3	Y-88	☐ ≤ 3.0 E -8		
I-133	☐ ≤ 1.0 E -8			Zn-65	☐ ≤ 9.0 E -9		
Mn-52	☐ ≤ 2.0 E -8			Am-241	☐ ≤ 0.1 E -6		
Mn-54	☐ ≤ 5.0 E -8			Pu-238	☐ ≤ 0.1 E -6		
Ra-226 + 228	☐ ≤ 3.0 E -11			Pu-239	☐ ≤ 0.1 E -6		
Rb-83	☐ ≤ 2.0 E -8			U-234	☐ ≤ 5.0 E -8		
Others:				**Others:**			

Other Contaminants

Metal Contaminants	Present Below LOC (in ppm)	Range if above LOC (in ppm) Min. / Max.
Aluminum	☐ ≤ 5.0	_____ to _____ ppm
Boron	☐ ≤ 5.0	_____ to _____ ppm
Cobalt	☐ ≤ 1.0	_____ to _____ ppm
Copper	☐ ≤ 1.0	_____ to _____ ppm
Vanadium	☐ ≤ 0.10	_____ to _____ ppm
Zinc	☐ ≤ 95.40	_____ to _____ ppm

Additional Contaminants		Min. / Max
Chemical Oxygen Demand (COD)		_____ to _____ mg/l
Total Suspended Solids (TSS)		_____ to _____ mg/l
☐ Total Nitrogen or	(only one	_____ to _____ mg/l
☐ Total Nitrates	entry needed)	_____ to _____ mg/l

Radioactive Contaminant Totals:

Total Alpha		Ci/l
Total Beta	.3 e-3	Ci/l
Total Gamma		Ci/l

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

☐ Acid Line ☐ Caustic Line ☐ Industrial Waste Line

☐ Yes ☒ No Scintillation Cocktail Brand Name _____ Volume _____ Unit _____

☐ Yes ☒ No Chemical Treatment for Boilers / Water Chillers

☐ Yes ☒ No Industrial Cleaner Type _____ Volume _____ Unit _____

Average daily volume when discharge occurs: _____ ☐ Gallons/day ☐ Liters/day

Maximum daily volume when discharge occurs: .5 ☒ Gallons/day ☐ Liters/day

Estimated number of days per year discharge will occur: 1 time generation

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-50 / TA-21: .5 ☒ Gallons ☐ Liters

rotocol #: 8 Name:3H 1600CA 649473 16-May-2003 07:23
egion A: LL-UL= 0.0-18.6 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
egion B: LL-UL= 2.0-18.6 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
egion C: LL-UL= 0.0- 0.0 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
ime = 1.00 QIP = tSIE ES Terminator = Count
onventional DPM
uclide 1 = 234231
uminescence Correction On

S#	TIME	CPMA	CPMB	SIS	tSIE	DPM1	FLAG
1	10.00	99.30	54.00	10.626	171.		B Blank
2	1.00	15149.1	10198.9	9.999	336.	46639.5	std
3	1.00	314949.	252237.	13.355	531.	690064.	— 1ML pot hydroxide

314 uci/l

~ 1 liter

MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE

Trade Name	Electrolyte Solution, DF-E05, DF-E06, DF-E07, DF-E09
Manufacturer	Delta F Corp., 4 Constitution Way, Woburn, MA 01801-1087 USA, Tel + 1-781-935-4600
Emergency Contact	USA: 1-800-424-9300 International: 1-813-979-0626 (collect)
Supplier and contact in UK (for use in the UK only)	

2. COMPOSITION

CAS #	Component	EC Code/class	Concentration	Risk Phrase	Risk Description
1310-58-3	Potassium Hydroxide in aqueous solution	215-181-3 C	1N: 5.6%w/w	R35	Causes severe burns

3. HAZARDS IDENTIFICATION

Main Hazard Corrosive. Causes severe burns on contact with skin, eyes and mucous membrane

CERCLA Ratings (scale 0-3)	Health = 3	Fire = 0	Reactivity = 1	Persistence = 0
NFPA Ratings (scale 0-4)	Health = 3	Fire = 0	Reactivity = 1	

Potential Health Effects:

Eye Contact Causes severe eye burns. May cause irreversible eye injury. Contact may cause ulceration of the conjunctiva and cornea. Eye damage may be delayed.

Skin Contact Causes skin burns. May cause deep, penetrating ulcers of the skin.

Ingestion May cause circulatory system failure. May cause perforation of the digestive tract. Causes severe digestive tract burns with abdominal pain, vomiting, and possible death.

Inhalation Inhalation under normal use would not be expected as this product is supplied as an aqueous solution and no hazardous vapors are emitted. Effects of inhalation are irritation which may lead to chemical pneumonitis and pulmonary edema. Causes severe irritation of upper respiratory tract with coughing, burns, breathing difficulty, and possible coma.

Chronic Prolonged or repeated skin contact may cause dermatitis. Prolonged or repeated eye contact may cause conjunctivitis.

4. FIRST-AID MEASURES

Skin Contact In case of skin contact, remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water for at least 15 minutes. Obtain medical attention immediately.

Eye Contact	If the substance has entered the eyes, wash out with plenty of water for at least 15 - 20 minutes, occasionally lifting the upper and lower lids. Obtain medical attention immediately.
Ingestion	If the chemical has been confined to the mouth, give large quantities of water as a mouthwash. Ensure the mouthwash has not been swallowed. If the chemical has been swallowed, do NOT induce vomiting. Give 470 - 950ml (2 - 4 cups) of water or milk. Never give anything by mouth to an unconscious person. Obtain medical attention immediately
Inhalation	Inhalation under normal use would not be expected as this product is supplied as an aqueous solution and no hazardous vapors are emitted; however, if inhalation should somehow occur, remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical aid immediately.

5. FIRE FIGHTING MEASURES

Special Exposure Hazard	Not applicable
Extinguishing Media	Not Combustible. Select extinguishing media appropriate to the surrounding fire conditions.
Protective Equipment	Wear appropriate protective clothing to prevent contact with skin and eyes. Wear a self-contained breathing apparatus (SCBA) to prevent contact with thermal decomposition products.

6. ACCIDENTAL RELEASE MEASURES

Personal Protection	Use proper personal protective equipment as indicated in Section 8.
Leaks and Spills	Absorb spill with inert material (e.g., dry sand or earth), then place into a chemical waste container. Neutralize spill with a weak acid such as vinegar or acetic acid.
Clean-up Procedures	Wash the spillage site with large amounts of water.

7. HANDLING AND STORAGE

Handling Precautions	Complete eye and face protection, protective clothing, and appropriate gloves must be used. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Do not ingest or inhale.
Storage Precautions	Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from strong acids.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Personal Protection	
Eyes	Wear appropriate protective chemical safety goggles and face shield as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin	Wear appropriate gloves to prevent skin exposure.
Clothing	Wear appropriate protective clothing to prevent skin exposure.
Respirators	Not Applicable. Inhalation under normal use would not be expected as this product is supplied as an aqueous solution and no hazardous

vapors are emitted.

Airborne Exposure	This material is supplied as an aqueous solution and will not be present in the atmosphere in normal use.
Exposure Limits	Potassium Hydroxide UK EH40, OEL (8hr TWA) 2mg/m^3 NIOSH, (8hr TWA) 2mg/m^3 ACGIH, Ceiling 2mg/m^3 OSHA, not listed

9. Physical & Chemical Properties

Molecular Formula	KOH Mixture
Physical State	1N aqueous solution. Colorless, odorless
pH	Alkaline
Solubility	Completely soluble in water
Boiling Point	104.5^{0}C
Melting Point	-3.5^{0}C
Flash Point	Not applicable
Flammability	Not flammable
Explosion Limits	Not applicable
Specific Gravity	1.15
Vapor Pressure	16.1 mm Hg @ 20^{0}C

10. Stability & Reactivity

Chemical Stability	Stable
Conditions/Materials to Avoid	Incompatible materials, acids and metals
Incompatibilities with other Materials	Reacts with chlorine dioxide, nitrobenzene, nitromethane, nitrogen trichloride, peroxidized tetrahydrofuran, 2,4,6-trinitrotoluene, bromoform+ crown ethers, acids alcohols, sugars, germanium cyclopentadiene, maleic dicarbide. Corrosive to metals such as aluminum, tin, and zinc to cause formation of flammable hydrogen gas.
Hazardous Decomposition Products	Oxides of potassium
Hazardous Polymerization	Has not been reported

11. Toxological Information

Toxicity (Potassium Hydroxide)	CAS# 1310-58-3: Oral, rat: LD50 = 273 mg/kg
Carcinogen Status	Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA

Potassium Hydroxide Solution is a severe eye, mucus membrane, and skin irritant.

12. Ecological Information

Mobility	Completely soluble in water
Degradability	Will degrade by reaction with carbon dioxide from the atmosphere to produce a non-hazardous product.
Accumulation	No
Ecotoxicity	Information not available. No long-term effects expected due to

degradation. The preparation is already in dilute solution and adverse aquatic effects are not expected due to further dilution. The preparation is corrosive, and direct contact with fauna will cause burns.

13. Disposal Considerations

Waste Disposal Dispose of in a manner consistent with federal, state, and local regulations.

14. Transportation Information

	Shipping Name	Hazard Class	UN Number	Packaging Group
US DOT	Potassium Hydroxide Solution	8	UN1814	II
IATA	Potassium Hydroxide Solution	8	UN1814	II
ADR/RID	Potassium Hydroxide Solution	8	UN1814	II
IMDG Code	Potassium Hydroxide Solution	8	UN1814	II
Canadian TDG	Potassium Hydroxide Solution	8(9.2)	UN1814	Not Available

15. Regulatory Information

European/International Regulations
European Labeling in Accordance with EC Directives

Classification	Corrosive	
Hazard Symbol	C	
EC Number	215-181-3	
Risk Phrases	R35	Causes severe burns.
Safety Phrases	S1/2	Keep locked up and out of reach of children.
	S26	In case of contact with the eyes, rinse immediately with plenty of water and seek medical advice.
	S36	Wear suitable protective clothing.
	S37/39	Wear suitable gloves and eye/face protection.
	S45	In case of accident or if you feel unwell, seek medical advice immediately (show label where possible).

16. Other Information

MSDS Creation Date: 09/30/94 MSDS Revised: 09/24/98

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information. Liability is expressly disclaimed for loss or injury arising out of use of this information or the use of any materials designated. Users should make their own investigation to determine the suitability of the information for their particular purpose.

Form WX-3-57
Rev 1/15/73

ESA-WMM PRODUCTION CONTROL
PROCESS DELIVERY ORDER

Date: May 15, 2003 Task Order Number: A-46455-02

Deliver the following material located at: TA-16 Bldg 410 Attn: G.J. Maes/L. Walker

To: R. Vigil-D. Roybal/T. Harllow At: TA-16 Bldg 207

Special Instructions: Piece's were made under T.O. 46455

Package and deliver 1 " B" Charge made under 46455
Material is 900-24

SERIAL #
03-A39051-0002 Weight 20 5 lbs

CONTAINS:

X INERT
___ HIGH EXPLOSIVES
___ NUCLEAR MATERIAL
X SECRET RD

Received by: _____

Date: _____

Group _____

Delivered by: _____

Associated WPF Reference Number: 36237

LDR and Underlying Hazardous Constituents Information - Identify presence of any constituents listed below.

Non-Wastewater / Wastewater Category - Check only one.

xx Non Wastewater ☐ Wastewater [as defined by 40 CFR 268.2(f)]

Notification of California List Applicability - Check all that apply.

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

☐ A D001 thru D043 liquid waste containing 134 mg/L or greater of Nickel and/or 130 mg/L or greater of thallium.

☐ A D001 thru D043 waste containing Halogenated Organic Compounds (HOCs) listed in 40 CFR 268, Appendix III, at 1000 ppm or greater.

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

x☒ *No Underlying Hazardous Constituents in this waste stream.* ☐ *HAZCAT Meeting 40 CFR 268.42(c)*

Organic Constituents

☐ A2213	☐ Butyl benzyl phthalate	☐ p,p'-DDE
☐ Acenaphthylene	☐ 2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	☐ o,p'-DDT
☐ Acenaphthene	☐ Carbaryl	☐ p,p'-DDT
☐ Acetone	☐ Carbenzadim	☐ Dibenz(a,h)anthracene
☐ Acetonitrile	☐ Carbofuran	☐ Dibenz(a,e)pyrene
☐ Acetophenone	☐ Carbofuran phenol	☐ 1,2-Dibromo-3-chloropropane
☐ 2-Acetyaminofluorene	☐ Carbon disulfide	☐ 1,2-Dibromoethane (Ethylene dibromide)
☐ Acrolein	☐ Carbon tetrachloride	☐ Dibromomethane
☐ Acrylamide	☐ Carbosulfan	☐ m-Dichlorobenzene
☐ Acrylonitrile	☐ Chlordane (alpha & gamma isomers)	☐ o-Dichlorobenzene
☐ Aldicarb sulfone	☐ p-Chloroaniline	☐ p-Dichlorobenzene
☐ Aldrin	☐ Chlorobenzene	☐ Dichlorodifluoromethane
☐ 4-Aminobiphenyl	☐ Chlorobenzilate	☐ 1,1-Dichloroethane
☐ Aniline	☐ 2-Chloro-1,3-butadiene	☐ 1,2-Dichloroethane
☐ Anthracene	☐ Chlorodibromomethane	☐ 1,1-Dichloroethylene
☐ Aramite	☐ Chloroethane	☐ trans-1,2-Dichloroethylene
☐ alpha-BHC	☐ bis(2-Chloroethoxy) methane	☐ 2,4-Dichlorophenol
☐ beta-BHC	☐ bis(2-Chloroethyl) ether	☐ 2,6-Dichlorophenol
☐ delta-BHC	☐ Chloroform	☐ 2,4-Dichlorophenoxyacetic acid (2,4-D)
☐ gamma-BHC	☐ bis(2-Chloroisopropyl) ether	☐ 1,2-Dichloropropane
☐ Barban	☐ p-Chloro-m-cresol	☐ cis-1,3-Dichloropropylene
☐ Bendiocarb	☐ 2-Chloroethyl vinyl ether	☐ trans-1,3-Dichloropropylene
☐ Bendiocarb phenol	☐ Chloromethane (Methyl chloride)	☐ Dieldrin
☐ Benomyl	☐ 2-Chloronaphthalene	☐ Diethylene glycol, dicarbamate
☐ Benzene	☐ 2-Chlorophenol	☐ Diethyl phthalate
☐ Benz(a)anthracene	☐ 1-Chloropropylene	☐ p-Dimethylaminoazobenzene
☐ Benzal chloride	☐ Chrysene	☐ 2-4-Dimethyl phenol
☐ Benzo(b)fluoranthene	☐ o-Cresol	☐ Dimethyl phthalate
☐ Benzo(k)fluoranthene	☐ m-Cresol	☐ Dimetilan
☐ Benzo(g,h,i)perylene	☐ p-Cresol	☐ Di-n-butyl phthalate
☐ Benzo(a)pyrene	☐ m-Cumenyl methylcarbamate	☐ 1,4-Dinitrobenzene
☐ Bromodichloromethane	☐ Cycloate	☐ 4,6-Dinitro-o-cresol
☐ Bromomethane (Methyl bromide)	☐ Cyclohexanone	☐ 2,4-Dinitrophenol
☐ 4-Bromophenyl phenyl ether	☐ o,p'-DDD	☐ 2,4-Dinitrotoluene
☐ n-Butyl alcohol	☐ p,p'-DDD	☐ 2,6-Dinitrotoluene
☐ Butylate	☐ o,p'-DDE	☐ Di-n-octyl phthalate

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

Organic Constituents - continued

- ☐ Di-n-propylnitrosamine
- ☐ 1,4-Dioxane
- ☐ Diphenylamine
- ☐ Diphenylnitrosamine
- ☐ 1,2-Diphenylhydrazine
- ☐ Disulfoton
- ☐ Dithiocarbamates (total)
- ☐ Endosulfan I
- ☐ Endosulfan II
- ☐ Endosulfan sulfate
- ☐ Endrin
- ☐ Endrin aldehyde
- ☐ EPTC
- ☐ Ethyl acetate
- ☐ Ethyl benzene
- ☐ Ethyl cyanide (Propanenitrile)
- ☐ Ethyl ether
- ☐ bis(2-Ethylhexyl) phthalate
- ☐ Ethyl methacrylate
- ☐ Ethylene oxide
- ☐ Famphur
- ☐ Fluoranthene
- ☐ Fluorene
- ☐ Formetanate hydrochloride
- ☐ Formparanate
- ☐ Heptachlor
- ☐ Heptachlor epoxide
- ☐ Hexachlorobenzene
- ☐ Hexachlorobutadiene
- ☐ Hexachlorocyclopentadiene
- ☐ Hexachlorodibenzo-p-dioxins (HxCDDs)
- ☐ Hexachlorodibenzo-furans (HxCDFs)
- ☐ Hexachloroethane
- ☐ Hexachloropropylene
- ☐ Indeno (1,2,3-c,d) pyrene
- ☐ Iodomethane
- ☐ 3-Iodo-2-propynyl n-butylcarbamate
- ☐ Isobutyl alcohol
- ☐ Isodrin
- ☐ Isolan
- ☐ Isosafrole
- ☐ Kepone
- ☐ Methacrylonitrile
- ☐ Methanol
- ☐ Methapyrilene
- ☐ Methiocarb
- ☐ Methomyl
- ☐ Methoxychlor
- ☐ 3-Methylcholanthrene
- ☐ 4,4-Methylene bis(2-chloroaniline)
- ☐ Methylene chloride
- ☐ Methyl ethyl ketone
- ☐ Methyl isobutyl ketone
- ☐ Methyl methacrylate
- ☐ Methyl methansulfonate
- ☐ Methyl parathion
- ☐ Metolcarb
- ☐ Mexacarbate
- ☐ Molinate
- ☐ Naphthalene
- ☐ 2-Naphthylamine
- ☐ o-Nitroaniline
- ☐ p-Nitroaniline
- ☐ Nitrobenzene
- ☐ 5-Nitro-o-toluidine
- ☐ o-Nitrophenol
- ☐ p-Nitrophenol
- ☐ N-Nitrosodiethylamine
- ☐ N-Nitrosodimethylamine
- ☐ N-Nitroso-di-n-butylamine
- ☐ N-Nitrosomethylethylamine
- ☐ N-Nitrosomorpholine
- ☐ N- Nitrosopiperidine
- ☐ N-Nitrosopyrrolidine
- ☐ Oxamyl
- ☐ Parathion
- ☐ PCBs (total)
- ☐ Pebulate
- ☐ Pentachlorobenzene
- ☐ Pentachlorodibenzo-p-dioxins (PeCDDs)
- ☐ Pentachlorodibenzo-furans (PeCDFs)
- ☐ Pentachloroethane
- ☐ Pentachloronitrobenzene
- ☐ Pentachlorophenol
- ☐ Phenacetin
- ☐ Phenanthrene
- ☐ Phenol
- ☐ o-Phenylenediamine
- ☐ Phorate
- ☐ Phthalic acid
- ☐ Phthalic anhydride
- ☐ Physostigmine
- ☐ Physostigmine salicylate
- ☐ Promecarb
- ☐ Pronamide
- ☐ Propham
- ☐ Propoxur
- ☐ Prosulfocarb
- ☐ Pyrene
- ☐ Pyridine
- ☐ Safrole
- ☐ Silvex (2,4,5-TP)
- ☐ 1,2,4,5-Tetrachlorobenzene
- ☐ Tetrachlorodibenzo-p-dioxins (TCDDs)
- ☐ Tetrachlorodibenzofurans (TCDFs)
- ☐ 1,1,1,2-Tetrachloroethane
- ☐ 1,1,2,2-Tetrachloroethane
- ☐ Tetrachloroethylene
- ☐ 2,3,4,6-Tetrachlorophenol
- ☐ Thiodicarb
- ☐ Thiophanate-methyl
- ☐ Tirpate
- ☐ Toluene
- ☐ Toxaphene
- ☐ Triallate
- ☐ Tribromomethane (Bromoform)
- ☐ 1,2,4-Trichlorobenzene
- ☐ 1,1,1-Trichloroethane
- ☐ 1,1,2-Trichloroethane
- ☐ Trichloroethylene
- ☐ Trichloromonofluoromethane
- ☐ 2,4,5-Trichlorophenol
- ☐ 2,4,6-Trichlorophenol
- ☐ 2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)
- ☐ 1,2,3-Trichloropropane
- ☐ 1,1,2-Trichloro-1,2,2-trifluoroethane
- ☐ Triethylamine
- ☐ tris-(2,3-Dibromopropyl) phosphate
- ☐ Vernolate
- ☐ Vinyl chloride
- ☐ Xylenes (total)

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

Metal/Inorganic Constituents

- ☐ Antimony
- ☐ Arsenic
- ☐ Barium
- ☐ Beryllium
- ☐ Cadmium
- ☐ Chromium (Total)
- ☐ Cyanides (Total)
- ☐ Cyanides (Amenable)
- ☐ Fluoride
- ☐ Lead
- ☐ Mercury (Retort residues)
- ☐ Mercury - All others
- ☐ Nickel
- Selenium
- ☐ Silver
- ☐ Sulfide
- ☐ Thallium
- ☐ Vanadium
- ☐ Zinc

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 36237
(Version: 1)

14-Sep-2004 09:24 AM

Generator:	TESCH, CHUCK ESA-TSE	MS : C348
WMC :	STADELMAIER, AL FWO-SWO	MS : C924
FROM :	FWO-SWO	MS : J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 36237 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to FWO-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 36237
YES _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
YES _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
YES _____ **NO** _____
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 36237

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

Extension-> Signed _____ Date 9/21/04

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 36237

Void-> Signed _____ Date _____

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: FWO-SWO ***MS: J595*** ***PHONE: 5-4000***

✓

WASTE PROFILE FORM

Los Alamos NATIONAL LABORATORY

WPF #: 36237

03-Oct-2005 09:00 AM (Version: 2)

Generator:	TESCH, CHUCK ESA-TSE	MS:	C348
WMC:	STADELMAIER, AL NWIS-SWO	MS:	C924
FROM:	NWIS-SWO	MS:	J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 36237 was submitted approximately one year ago.Please review the attached copy and answer the following questions concerning your waste stream todetermine whether to renew or void your WPF. Please return the completed questionnaire to NWIS-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changesin your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF# 36237

YES NO

If yes, please sign the Extension Certification below

If no, will you be producing the same type of waste in the near future?

YES NO

If yes, please sign the Extension Certification below

If no, will you be producing a different type of waste?

YES NO

If no, sign the Void Approval below to indicate that your WPF should be voided

If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 36237 Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Extension-> Signed _____ Date _____

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 36237

Void-> Signed _____ Date 10/4/05

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: NWIS-SWO **MS: J595** **PHONE: 5-4000**

LOS ALAMOS NATIONAL LABORATORY
WASTE PROFILE SYSTEM

WPF #: 36404

Generator :	**KOWALCZYK, CYNTHIA**	MS :	**E511**	PH :	**6651100**	Z#:	**150520**
WMC :	**MCCORMICK, EGAN**	MS :	**E507**	PH :	**5056678158**	Z#:	**093573**
Contact :							
RCRA Rev :	**LASH TAMMY A**	MS :	**J599**	PH :	**5056653454**	Z#:	**120424**
Status :	**ACTIVE**	Activation Date :	**10/22/2007**		Expiration Date:		**10/22/2008**
Group :	**NMT-2**	TA :	**55**	Bldg :	**000004**	Room :	**209,401,49**

You are required to keep a copy of the WPF(s) in your files for at least three years. This WPF(s) is valid for one year or as long as the composition of the waste you have characterized remains the same. Should your waste change, please submit a new WPF to Waste Acceptance Group.

Waste Accumu : **None of the Above Site ID#**

Method of Char : Chemical/Physical Analysis Number: ATTACHED
Acceptable Knowledge Documentation Number: NMT2-HCP-001

Waste Type : **Process Waste/Spent Chemical/Other**

Waste Classes:
RCA Waste - **RCA Waste**
RAD Waste - **Radioactive-TRU**
WW Info - **RLWTF**
Classif/Sensi - **N**

Waste Category: **Inorganic**
Beryllium

Waste Sources : **Materials Processing/Production**

Waste Matrix : **Aqueous**

Matrix Type : **Homogeneous**

Process Desc :

CAUSTIC FILTRATES FROM HYDROXIDE PRECIPITATION GENERATED UNDER NMT2-HCP-001, AQUEOUS CHLORIDE OPERATIONS, GENERATED HAS A COPY ON FILE. WPF #29309, WAS VOIDED BY CONNIE GERTH (8-25-1999). ACETIC ACID (< OR = TO 25%) USED TO KEEP THE LINE OPEN. WATER USED TO FLUSH THE LINE.

Waste Desc : N/A

Ignitability : **Not ignitable**

Corrosivity : **9.1 - 12.4**

Reactivity : **Non-reactive**

Boiling Point : **> 95 F > 35 C**

Toxicity Characteristic Metals:

Contaminant	Method	Limit	Min	Max	Unit
ARSENIC	**TOTA**		**0**	**32**	**PPM**
BARIUM	**TOTA**	**Y**	**1**	**2**	**PPM**
CADMIUM	**TOTA**	**Y**	**1**	**10**	**PPM**
CHROMIUM	**TOTA**	**Y**	**0.01**	**1**	**PPM**
LEAD	**TOTA**	**Y**			**PPM**
SILVER	**TOTA**	**Y**	**1**	**10**	**PPM**

Toxicity Characteristic Organic Compounds: N/A

Additional Chemical Constituents and Contaminants:

CAS NO	Constituent	MIN	MAX	UOM
	CAUSTIC FILTRATES	5	10	%
7732-18-5	WATER	80	99	%
	BERYLLIUM	0.000087	0.53	%

Additional Information: CAUSTIC FILTRATES INCLUDE: SODIUM HYDROXIDE; POTASSIUM HYDROXIDE; MAGNESIUM HYDROXIDE; SODIUM CHLORIDE; CALCIUM CHLORIDE; BROMOCRESOL PURPLE INDICATOR; OXALIC ACID; HYDROXYLAMINE HYDROCHLORIDE ACID AND NITRATES. Section 7: Secured Facility.

Waste Water Characteristics for RLWTF

Waste Production: Other

Radionuclide Contaminants :

Contaminant	Limit	Min	Max	Unit	Method
AM-241		0	0.0045	Ci/l	
PU-239		0	0.0045	Ci/l	

Metal Contaminants:

Contaminant	Limit	Min	Max	Unit	Method
ZINC		0	5000	ppm	

Additional Contaminants:

Contaminant	Limit	Min	Max	Unit	Method
TOTAL NITRATES		0	1000	mg/l	

Total Alpha: 4.50E-03 Ci/l

Average daily flow when discharge occurs: 100 LIT

Maximum daily flow when discharge occurs: 200 LIT

Estimated number of days dicharge will occur: 40

Estimated total volume per year discharged to the RLWC at TA-50: 4000 LIT

Wastewater will be discharged through the following: CAUS Line

LDR and Underlying Hazardous Constituents Information

Non-Wastewater/Wastewater Category: **Non Wastewater**

WASTE CHARACTERIZATION INFORMATION

Radioactivity Category : **RADIOACTIVE-TRU**

RCRA Category : **HAZARDOUS WASTE**

Secondary Info : **BERYLLIUM**

Waste Classification : **MIXED TRANSURANIC WASTE**

Waste Acceptances : **TA-50 Acceptance**

EPA Hazardous Waste Code : **D004 D006 D011**

Notification Of Underlying Hazardous Constituents:

Constituents
Arsenic
Barium
Beryllium

Cadmium
Chromium (Total)
Lead
Nickel
Silver
Zinc

GWCP Information

Section 1 - Waste Prevention/Minimization (answer all questions)

Can hazard segregation, elimination, or material substitution be used?	☐ Yes*	☒ No	
Can any of the materials in the waste stream be recycled or reused	☐ Yes*	☒ No	
Has waste minimization been incorporated into procedures or other process controls?	☒ Yes	☐ No	
Can this waste be generated outside a RCA?	☐ Yes*	☒ No	☐ N/A

*Provide Comment

Section 6 - Work Control Documentation (answer all questions)

Do the procedures for this process cover how to manage this waste?	☒ Yes	☐ No (Provide comments)
Do the procedures for this process cover controls to prevent changes to waste constituents and concentrations or addition or removal of waste?	☒ Yes	☐ No (Provide comments)

Section 7 - Package and Storage Control

Describe how the waste will be packaged in according to the applicable WAC:

WASTE TRAVELS TO TREATMENT FACILITY THROUGH HARD-PLUMBED LINES

Identify the storage management controls that will be used for this waste stream: (check all that apply)

- ☐ Tamper indication devices:
- ☐ Limited use locks with log-in for waste
- ☐ Locked cabinet or building
- ☒ Other (describe)

Section 8 - Waste Certification Statements (check only one)

- ☒ Waste appears to meet WAC chapter for:
  1.0
- ☐ Waste needs exception/exemption for treatment, storage, or disposal at:
- ☐ Waste does not meet the criteria for any known TSDF, (DOE approval is required. Contact the Waste Management Program Office for assistance.)

Estimated Annual Volume (m3): 18

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Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: EM-SWO at MS J595. For assistance with completing this form, call EM-SWO at 5-4000.	Reference Number 36404 (For EM-SWO use only.)

Generator's Z Number	Waste Generator's Name (print)	WMC's Z Number	WMC's Name (print)
104239	Louis D Schulte	093573	Egan McCormick

Generator's Telephone	Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room
665-1100	E511	NMT-2	TA-55	PF-4	209,401, 420 & 429

Waste Accumulation (Check only one.)
- ☐ Satellite Accumulation Area — Site no: _____
- ☐ Less-than-90-days Storage Area — Site no: _____
- ☐ TSDF — Site no: _____
- ☐ Universal Waste Storage Area — Site no: _____
- ☒ None of the Above

ER Use Only ☐ ER Site PRS #: _____

Method of Characterization (Check as many as apply.)
- ☐ Analysis/Documents Attached
- ☒ Chemical/Physical Analysis — Sample #: ATTACHED
- ☐ Radiological Analysis — Sample #: _____
- ☐ PCB Analysis — Sample #: _____
- ☒ Acceptable Knowledge Documentation — Documentation #: NMT2-HCP-001
- ☐ MSDS

Section 1 - Chemical and Physical Information

Waste Type (Check only one.)
- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☒ Process Waste/Spent Chemical/ other (Complete all sections.)
- ☐ Green is Clean Waste (Complete all sections as appropriate.)

Waste Classes

Radiological Information
Was Waste Generated in a RCA? ☒ Yes ☐ No
- ☐ Non-radioactive
- ☒ Radioactive
  - ☐ Low-Level
  - ☒ Transuranic

Wastewater Information
- ☐ Wastewater for SWSC (TA-46) (Complete Attachment 1)
- ☒ Wastewater for RLWTF (TA-50/TA-21) (Complete Attachment 2)
- ☐ Wastewater for TA-16 (HE)

Classification Information
- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check as many as apply.)
- ☒ Inorganic
- ☐ Organic
- Volatile Organics ☐ < 500 ppm ☐ ≥ 500 ppm
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste residue
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)
- Asbestos ☐ friable ☐ non-friable
- PCB Source Concentration
  - ☐ PCB < 50 ppm
  - ☐ PCB ≥ 50 - < 500 ppm
  - ☐ PCB ≥ 500 ppm
- ☐ Other (Describe below)

* Concentrations 10% or greater before use.

Waste Source (Check only one.)

Routine Waste
- ☐ Decon
- ☒ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup - Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Non-routine Waste
- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping - Non-routine
- ☐ Spill Cleanup - Non-routine
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix (Check only one.)

Gas
- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid
- ☒ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid
- ☐ Powder/Ash
- ☐ Solid
- ☐ Sludge
- ☐ Absorbed liquid

Matrix Type (Check only one.)
- ☒ Homogeneous
- ☐ Heterogeneous (Describe below)

Waste/Process Description (Chemical formulas may be used in this field.)

Caustic Filtrates from hydroxide precipitation generated under NMT2- HCP-001, Aqueous Chloride Operations, generator has a copy on file. WPF # 29309, was voided by Connie Gerth (8-25-1999). Acetic acid (< or = to 25 %) used to keep the line open. Water used to flush the line.

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Section 2 - Characteristics

Ignitability (Check only one.) (°F)	(°C)	Corrosivity (Check only one.) (pH)	Reactivity (Check as many as apply.)	Boiling Point (Check only one.) (°F)	(°C)
☐ < 73	< 22.8	☐ ≤ 2.0	☐ RCRA Unstable	☐ ≤ 95	≤ 35
☐ 73 - 99	22.8 - 37.2	☐ 2.1 - 4.0	☐ Water Reactive	☒ > 95	> 35
☐ 100 - 139	37.8 - 59.4	☐ 4.1 - 6.0	☐ Cyanide Bearing (> 250 ppm)		
☐ 140 -200	60.0 - 99.3	☐ 6.1 - 9.0	☐ Sulfide Bearing (> 500 ppm)		
☐ > 200	> 99.3	☒ 9.1 - 12.4	☐ Pyrophoric		
☐ EPA Ignitable - Non-liquid		☐ ≥ 12.5	☐ Shock Sensitive		
☐ DOT Flammable Gas		☐ Liquid corrosive to steel	☐ Explosive - DOT Div. _____		
☐ DOT Oxidizer					
☒ Not ignitable		☐ Non-aqueous	☒ Non-reactive	☐ Not applicable	

Identify for all contaminants listed.	Characterization Method: AK	TCLP	Total	Concentration of Contaminants: None or Non-detect	Present Below Regulatory Limit	Above Regulatory Limit: Minimum	Maximum
Toxicity Characteristic Metals						(Concentration in ppm only.)	
Arsenic	☐	☐	☒	☐	☐ < 5.0 ppm	0	32 ppm
Barium	☐	☐	☒	☐	☒ < 100.0 ppm		ppm
Cadmium	☐	☐	☒	☐	☒ < 1.0 ppm		ppm
Chromium (Total)	☐	☐	☒	☐	☒ < 5.0 ppm		ppm
Lead	☐	☐	☒	☐	☒ < 5.0 ppm		ppm
Mercury	☐	☐	☒	☒	☐ < 0.2 ppm		ppm
Selenium	☐	☐	☒	☒	☐ < 1.0 ppm		ppm
Silver	☐	☐	☒	☐	☒ < 5.0 ppm		ppm
Toxicity Characteristic Organics							
Benzene	☒	☐	☐	☐	☐ < 0.5 ppm		ppm
Carbon tetrachloride	☒	☐	☐	☐	☐ < 0.5 ppm		ppm
Chlordane	☒	☐	☐	☐	☐ < 0.03 ppm		ppm
Chlorobenzene	☒	☐	☐	☐	☐ < 100.0 ppm		ppm
Chloroform	☒	☐	☐	☐	☐ < 6.0 ppm		ppm
o - cresol	☒	☐	☐	☐	☐ < 200.0 ppm		ppm
m - cresol	☒	☐	☐	☐	☐ < 200.0 ppm		ppm
p - cresol	☒	☐	☐	☐	☐ < 200.0 ppm		ppm
Cresol - mixed	☒	☐	☐	☐	☐ < 200.0 ppm		ppm
2,4-D	☒	☐	☐	☐	☐ < 10.0 ppm		ppm
1,4-Dichlorobenzene	☒	☐	☐	☐	☐ < 7.5 ppm		ppm
1,2-Dichloroethane	☒	☐	☐	☐	☐ < 0.5 ppm		ppm
1,1-Dichloroethylene	☒	☐	☐	☐	☐ < 0.7 ppm		ppm
2,4-Dinitrotoluene	☒	☐	☐	☐	☐ < 0.13 ppm		ppm
Endrin	☒	☐	☐	☐	☐ < 0.02 ppm		ppm
Heptachlor (& its epoxide)	☒	☐	☐	☐	☐ < 0.008 ppm		ppm
Hexachlorobenzene	☒	☐	☐	☐	☐ < 0.13 ppm		ppm
Hexachlorobutadiene	☒	☐	☐	☐	☐ < 0.5 ppm		ppm
Hexachloroethane	☒	☐	☐	☐	☐ < 3.0 ppm		ppm
Lindane	☒	☐	☐	☐	☐ < 0.4 ppm		ppm
Methoxychlor	☒	☐	☐	☐	☐ < 10.0 ppm		ppm
Methyl ethyl ketone	☒	☐	☐	☐	☐ < 200.0 ppm		ppm
Nitrobenzene	☒	☐	☐	☐	☐ < 2.0 ppm		ppm
Pentachlorophenol	☒	☐	☐	☐	☐ < 100.0 ppm		ppm
Pyridine	☒	☐	☐	☐	☐ < 5.0 ppm		ppm
Tetrachloroethylene	☒	☐	☐	☐	☐ < 0.7 ppm		ppm
Toxaphene	☒	☐	☐	☐	☐ < 0.5 ppm		ppm
Trichloroethylene	☒	☐	☐	☐	☐ < 0.5 ppm		ppm
2,4,5-Trichlorophenol	☒	☐	☐	☐	☐ < 400.0 ppm		ppm
2,4,6-Trichlorophenol	☒	☐	☐	☐	☐ < 2.0 ppm		ppm
2,4,5-TP (Silvex)	☒	☐	☐	☐	☐ < 1.0 ppm		ppm
Vinyl chloride	☒	☐	☐	☐	☐ < 0.2 ppm		ppm

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Section 3 - Additional Constituents

Additional Constituents and Contaminants. Please account for 100% of waste. Ranges should be given within guidelines of LIG 404-00-03 of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum		Maximum	
	Caustic Filtrates	5.	to	10.	%
7732-18-5	Water	80.	to	99.	%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
	Total of max. ranges of this section	109			in %
	Total of max. ranges from page 2.				in ppm

Additional Information (Use additional sheet if necessary.)

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

Caustic Filtrates include: Sodium Hydroxide; Potassium Hydroxide; Magnesium Hydroxide; Sodium Chloride; Calcium Chloride; Bromocresol Purple Indicator; Oxalic Acid; Hydroxylamine hydrochloride acid and nitrates.

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

Signature	Date
Louis [illegible]	6/25/03

WASTE MANAGEMENT COORDINATOR: To the best of my knowledge, this form and to the best of my knowledge, the information is complete and accurate.

Signature	Date
[illegible]	07/01/03

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Attachment 1 - Wastewater Characteristics for SWSC (TA-46)

For help in completing this section, call ESH -18 at 7-4882. Identify presence of any constituents listed below.
Use of Acceptable Knowledge in lieu of analytical data must be pre-approved by ESH-18.

Microtox Analysis #: _____ NOTE: Microtox analysis **must be** performed. Contact JCI/ENV to schedule analysis.

Are there any detectable levels of gross Alpha, gross Beta, gross Gamma, and/or Tritium? ☐ No ☐ Yes

All methods of analysis must conform to those approved pursuant to 40 CFR 136 unless an alternative method has been approved by ESH-18.
All metal concentrations are for the dissolved fraction present in the sample unless otherwise indicated.

	☐ Flow Rate of 100 gallons/day or less			☐ Flow Rate of greater than 100 gallons/day		
Flow Rate Parameters	None/ Non-detect	Within Regulatory Limits	Above Limit	None/ Non-detect	Within Regulatory Limits	Above Limit
pH		☐ 5 -11 SU	☐		☐ 5 -11 SU	☐
Chemical Oxygen Demand (COD)		☐ ≤ 750 mg/l	☐		☐ ≤ 500 mg/l	☐
Microtox results (a)		☐ < 55% screen	☐		☐ < 50% screen	☐
(b)		☐ > 20% EC50	☐		☐ > 25% EC50	☐
Temperature		☐ ≤ 180 °F	☐		☐ ≤ 140 °F	☐
Cyanide (Total)	☐	☐ < 5.0 mg/l	☐	☐	☐ < 1.0 mg/l	☐
Fluoride	☐	☐ < 200.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Iron	☐	☐ < 100.0 mg/l	☐	☐	☐ < 35.0 mg/l	☐
Magnesium	☐	☐ < 100.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Manganese	☐	☐ < 5.0 mg/l	☐	☐	☐ < 1.0 mg/l	☐
Metals (Total)	☐	☐ < 40.0 mg/l	☐	☐	☐ < 10.0 mg/l	☐
Nickel	☐	☐ < 50.0 mg/l	☐	☐	☐ ≤ 3.0 mg/l	☐
Nitrogen (Total)	☐	☐ ≤ 100.0 mg/l	☐	☐	☐ ≤ 50.0 mg/l	☐
Oil and Greases	☐	☐ < 100.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Phosphorus (Total)	☐	☐ < 100.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Silver	☐	☐ < 5.0 mg/l	☐	☐	☐ < 0.5 mg/l	☐
Total Suspended Solids (TSS)	☐	☐ ≤ 400.0 mg/l	☐	☐	☐ ≤ 300.0 mg/l	☐
Zinc	☐	☐ < 25.0 mg/l	☐	☐	☐ < 5.0 mg/l	☐

Wastewater contaminants Identify for all constituents listed	None/Non-detect	Present within Regulatory Limits	Above Limit
Dissolved Aluminum	☐	☐ < 5.0 mg/l	☐
Dissolved Arsenic	☐	☐ < 0.2 mg/l	☐
Barium	☐	☐ < 100.0 mg/l	☐
Beryllium	☐	☐ < 5.3 mg/l	☐
Dissolved Boron	☐	☐ < 5.0 mg/l	☐
Dissolved Cadmium	☐	☐ < 0.05 mg/l	☐
Chlorine (Total Residual)	☐	☐ < 3.0 mg/l	☐
Dissolved Chromium	☐	☐ < 1.0 mg/l	☐
Dissolved Cobalt	☐	☐ < 1.0 mg/l	☐
Dissolved Copper	☐	☐ < 0.5 mg/l	☐
Dissolved Lead	☐	☐ < 0.1 mg/l	☐
Total Mercury	☐	☐ < 0.01 mg/l	☐
Molybdenum	☐	☐ < 75.0 mg/l	☐
Polychlorinated Biphenyls (PCB)	☐	None Detected	☐
Dissolved Selenium	☐	☐ < 0.05 mg/l	☐
Dissolved Vanadium	☐	☐ < 0.1 mg/l	☐
Dissolved Zinc	☐	☐ < 25.0 mg/l	☐

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Attachment 2 - Wastewater Characteristics for RLWTF (TA-50 & TA-21)

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

Indicate if waste was: ☐ Accelerator produced ☐ Reactor produced ☒ Other (Describe in WPF Section 1 "Waste/Process Description.")

Radionuclide Contaminants

Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min. / Max.	Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min. / Max.
As-74	☐ ≤ 4.0 E -8	/	Rb-84	☐ ≤ 1.0 E -8	/
Be-7	☐ ≤ 1.0 E -6	/	Sc-46	☐ ≤ 2.0 E -8	/
Ce-141	☐ ≤ 5.0 E -8	/	Sc-48	☐ ≤ 2.0 E -8	/
Cs-134	☐ ≤ 2.0 E -9	/	Se-75	☐ ≤ 2.0 E -8	/
Cs-137	☐ ≤ 3.0 E -9	/	Na-22	☐ ≤ 1.0 E -8	/
Co-56	☐ ≤ 1.0 E -8	/	Sr-85	☐ ≤ 7.0 E -8	/
Co-57	☐ ≤ 1.0 E -7	/	Sr-89	☐ ≤ 2.0 E -8	/
Co-58	☐ ≤ 4.0 E -8	/	Sr-90	☐ ≤ 1.0 E -9	/
Co-60	☐ ≤ 5.0 E -9	/	Sn-113	☐ ≤ 5.0 E -8	/
Eu-152	☐ ≤ 2.0 E -8	/	V-48	☐ ≤ 2.0 E -8	/
H-3	☐ ≤ 2.0 E -8	/	Y-88	☐ ≤ 3.0 E -8	/
I-133	☐ ≤ 1.0 E -8	/	Zn-65	☐ ≤ 9.0 E -9	/
Mn-52	☐ ≤ 2.0 E -8	/	Am-241	☐ ≤ 0.1 E -6	0 / 4.5×10^{-3}
Mn-54	☐ ≤ 5.0 E -8	/	Pu-238	☐ ≤ 0.1 E -6	/
Ra-226 + 228	☐ ≤ 3.0 E -11	/	Pu-239	☐ ≤ 0.1 E -6	0 / 4.5×10^{-3}
Rb-83	☐ ≤ 2.0 E -8	/	U-234	☐ ≤ 5.0 E -8	/
Others:			**Others:**		
		/			/
		/			/
		/			/

Other Contaminants

Metal Contaminants	Present Below LOC (in ppm)	Range if above LOC (in ppm) Min. / Max.
Aluminum	☐ ≤ 5.0	to ppm
Boron	☐ ≤ 5.0	to ppm
Cobalt	☐ ≤ 1.0	to ppm
Copper	☐ ≤ 1.0	to ppm
Vanadium	☐ ≤ 0.10	to ppm
Zinc	☐ ≤ 95.40	0 to 5000 ppm

Additional Contaminants	Min. / Max
Chemical Oxygen Demand (COD)	to mg/l
Total Suspended Solids (TSS)	to mg/l
☐ Total Nitrogen or (only one	to mg/l
☒ Total Nitrates entry needed)	0 to 1000 mg/l

Radioactive Contaminant Totals:

Total Alpha 4.5×10^{-3} Ci/l

Total Beta Ci/l

Total Gamma Ci/l

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

☐ Acid Line ☒ Caustic Line ☐ Industrial Waste Line

☐ Yes ☒ No Scintillation Cocktail Brand Name Volume Unit

☐ Yes ☒ No Chemical Treatment for Boilers / Water Chillers

☐ Yes ☒ No Industrial Cleaner Type Volume Unit

Average daily volume when discharge occurs: 100 ☐ Gallons/day ☒ Liters/day

Maximum daily volume when discharge occurs: 200 ☐ Gallons/day ☒ Liters/day

Estimated number of days per year discharge will occur: 40

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-50 / TA-21: 4000 ☐ Gallons ☒ Liters

Associated WPF Reference Number:

~~LDR and~~ Underlying Hazardous Constituents Information - Identify presence of any constituents listed below.

Non-Wastewater / Wastewater Category - Check only one.

☒ Non Wastewater ☐ Wastewater [as defined by 40 CFR 268.2(f)]

Notification of California List Applicability - Check all that apply.

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

☐ A D001 thru D043 liquid waste containing 134 mg/L or greater of Nickel and/or 130 mg/L or greater of thallium.

☐ A D001 thru D043 waste containing Halogenated Organic Compounds (HOCs) listed in 40 CFR 268, Appendix III, at 1000 ppm or greater.

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

☐ *No Underlying Hazardous Constituents in this waste stream.* ☐ *HAZCAT Meeting 40 CFR 268.42(c)*

Organic Constituents

☐ A2213	☐ Butyl benzyl phthalate	☐ p,p'-DDE
☐ Acenaphthylene	☐ 2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	☐ o,p'-DDT
☐ Acenaphthene	☐ Carbaryl	☐ p,p'-DDT
☐ Acetone	☐ Carbenzadim	☐ Dibenz(a,h)anthracene
☐ Acetonitrile	☐ Carbofuran	☐ Dibenz(a,e)pyrene
☐ Acetophenone	☐ Carbofuran phenol	☐ 1,2-Dibromo-3-chloropropane
☐ 2-Acetyaminofluorene	☐ Carbon disufide	☐ 1,2-Dibromoethane (Ethylene dibromide)
☐ Acrolein	☐ Carbon tetrachloride	☐ Dibromomethane
☐ Acrylamide	☐ Carbosulfan	☐ m-Dichlorobenzene
☐ Acrylonitrile	☐ Chlordane (alpha & gamma isomers)	☐ o-Dichlorobenzene
☐ Aldicarb sulfone	☐ p-Chloroaniline	☐ p-Dichlorobenzene
☐ Aldrin	☐ Chlorobenzene	☐ Dichlorodifluoromethane
☐ 4-Aminobiphenyl	☐ Chlorobenzilate	☐ 1,1-Dichloroethane
☐ Aniline	☐ 2-Chloro-1,3-butadiene	☐ 1,2-Dichloroethane
☐ Anthracene	☐ Chlorodibromomethane	☐ 1,1-Dichloroethylene
☐ Aramite	☐ Chloroethane	☐ trans-1,2-Dichloroethylene
☐ alpha-BHC	☐ bis(2-Chloroethoxy) methane	☐ 2,4-Dichlorophenol
☐ beta-BHC	☐ bis(2-Chloroethyl) ether	☐ 2,6-Dichlorophenol
☐ delta-BHC	☐ Chloroform	☐ 2,4-Dichlorophenoxyacetic acid (2,4-D)
☐ gamma-BHC	☐ bis(2-Chloroisopropyl) ether	☐ 1,2-Dichloropropane
☐ Barban	☐ p-Chloro-m-cresol	☐ cis-1,3-Dichloropropylene
☐ Bendiocarb	☐ 2-Chloroethyl vinyl ether	☐ trans-1,3-Dichloropropylene
☐ Bendiocarb phenol	☐ Chloromethane (Methyl chloride)	☐ Dieldrin
☐ Benomyl	☐ 2-Chloronaphthalene	☐ Diethylene glycol, dicarbamate
☐ Benzene	☐ 2-Chlorophenol	☐ Diethyl phthalate
☐ Benz(a)anthracene	☐ 1-Chloropropylene	☐ p-Dimethylaminoazobenzene
☐ Benzal chloride	☐ Chrysene	☐ 2-4-Dimethyl phenol
☐ Benzo(b)fluoranthene	☐ o-Cresol	☐ Dimethyl phthalate
☐ Benzo(k)fluoranthene	☐ m-Cresol	☐ Dimetilan
☐ Benzo(g,h,i)perylene	☐ p-Cresol	☐ Di-n-butyl phthalate
☐ Benzo(a)pyrene	☐ m-Cumenyl methylcarbamate	☐ 1,4-Dinitrobenzene
☐ Bromodichloromethane	☐ Cycloate	☐ 4,6-Dinitro-o-cresol
☐ Bromomethane (Methyl bromide)	☐ Cyclohexanone	☐ 2,4-Dinitrophenol
☐ 4-Bromophenyl phenyl ether	☐ o,p'-DDD	☐ 2,4-Dinitrotoluene
☐ n-Butyl alcohol	☐ p,p'-DDD	☐ 2,6-Dinitrotoluene
☐ Butylate	☐ o,p'-DDE	☐ Di-n-octyl phthalate

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

Organic Constituents - continued

- ☐ Di-n-propylnitrosamine
- ☐ 1,4-Dioxane
- ☐ Diphenylamine
- ☐ Diphenylnitrosamine
- ☐ 1,2-Diphenylhydrazine
- ☐ Disulfoton
- ☐ Dithiocarbamates (total)
- ☐ Endosulfan I
- ☐ Endosulfan II
- ☐ Endosulfan sulfate
- ☐ Endrin
- ☐ Endrin aldehyde
- ☐ EPTC
- ☐ Ethyl acetate
- ☐ Ethyl benzene
- ☐ Ethyl cyanide (Propanenitrile)
- ☐ Ethyl ether
- ☐ bis(2-Ethylhexyl) phthalate
- ☐ Ethyl methacrylate
- ☐ Ethylene oxide
- ☐ Famphur
- ☐ Fluoranthene
- ☐ Fluorene
- ☐ Formetanate hydrochloride
- ☐ Formparanate
- ☐ Heptachlor
- ☐ Heptachlor epoxide
- ☐ Hexachlorobenzene
- ☐ Hexachlorobutadiene
- ☐ Hexachlorocyclopentadiene
- ☐ Hexachlorodibenzo-p-dioxins (HxCDDs)
- ☐ Hexachlorodibenzo-furans (HxCDFs)
- ☐ Hexachloroethane
- ☐ Hexachloropropylene
- ☐ Indeno (1,2,3-c,d) pyrene
- ☐ Iodomethane
- ☐ 3-Iodo-2-propynyl n-butylcarbamate
- ☐ Isobutyl alcohol
- ☐ Isodrin
- ☐ Isolan
- ☐ Isosafrole
- ☐ Kepone
- ☐ Methacrylonitrile
- ☐ Methanol
- ☐ Methapyrilene
- ☐ Methiocarb
- ☐ Methomyl
- ☐ Methoxychlor
- ☐ 3-Methylcholanthrene
- ☐ 4,4-Methylene bis(2-chloroaniline)
- ☐ Methylene chloride
- ☐ Methyl ethyl ketone
- ☐ Methyl isobutyl ketone
- ☐ Methyl methacrylate
- ☐ Methyl methansulfonate
- ☐ Methyl parathion
- ☐ Metolcarb
- ☐ Mexacarbate
- ☐ Molinate
- ☐ Naphthalene
- ☐ 2-Naphthylamine
- ☐ o-Nitroaniline
- ☐ p-Nitroaniline
- ☐ Nitrobenzene
- ☐ 5-Nitro-o-toluidine
- ☐ o-Nitrophenol
- ☐ p-Nitrophenol
- ☐ N-Nitrosodiethylamine
- ☐ N-Nitrosodimethylamine
- ☐ N-Nitroso-di-n-butylamine
- ☐ N-Nitrosomethylethylamine
- ☐ N-Nitrosomorpholine
- ☐ N- Nitrosopiperidine
- ☐ N-Nitrosopyrrolidine
- ☐ Oxamyl
- ☐ Parathion
- ☐ PCBs (total)
- ☐ Pebulate
- ☐ Pentachlorobenzene
- ☐ Pentachlorodibenzo-p-dioxins (PeCDDs)
- ☐ Pentachlorodibenzo-furans (PeCDFs)
- ☐ Pentachloroethane
- ☐ Pentachloronitrobenzene
- ☐ Pentachlorophenol
- ☐ Phenacetin
- ☐ Phenanthrene
- ☐ Phenol
- ☐ o-Phenylenediamine
- ☐ Phorate
- ☐ Phthalic acid
- ☐ Phthalic anhydride
- ☐ Physostigmine
- ☐ Physostigmine salicylate
- ☐ Promecarb
- ☐ Pronamide
- ☐ Propham
- ☐ Propoxur
- ☐ Prosulfocarb
- ☐ Pyrene
- ☐ Pyridine
- ☐ Safrole
- ☐ Silvex (2,4,5-TP)
- ☐ 1,2,4,5-Tetrachlorobenzene
- ☐ Tetrachlorodibenzo-p-dioxins (TCDDs)
- ☐ Tetrachlorodibenzofurans (TCDFs)
- ☐ 1,1,1,2-Tetrachloroethane
- ☐ 1,1,2,2-Tetrachloroethane
- ☐ Tetrachloroethylene
- ☐ 2,3,4,6-Tertachlorophenol
- ☐ Thiodicarb
- ☐ Thiophanate-methyl
- ☐ Tirpate
- ☐ Toluene
- ☐ Toxaphene
- ☐ Triallate
- ☐ Tribromomethane (Bromoform)
- ☐ 1,2,4-Trichlorobenzene
- ☐ 1,1,1-Trichloroethane
- ☐ 1,1,2-Trichloroethane
- ☐ Trichloroethylene
- ☐ Trichloromonofluoromethane
- ☐ 2,4,5-Trichlorophenol
- ☐ 2,4,6-Trichlorophenol
- ☐ 2,4,5-Trichlorophenoxyacetic acid(2,4,5-T)
- ☐ 1,2,3-Trichloropropane
- ☐ 1,1,2-Trichloro-1,2,2-trifluoroethane
- ☐ Triethylamine
- ☐ tris-(2,3-Dibromopropyl) phosphate
- ☐ Vernolate
- ☐ Vinyl chloride
- ☐ Xylenes (total)

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

Metal/Inorganic Constituents

☐ Antimony	☐ Cyanides (Amenable)	☐ Selenium
☒ Arsenic	☐ Fluoride	☐ Silver
☐ Barium	☒ Lead	☐ Sulfide
☒ Beryllium	☐ Mercury (Retort residues)	☐ Thallium
☐ Cadmium	☐ Mercury - All others	☐ Vanadium
☒ Chromium (Total)	☒ Nickel	☒ Zinc
☐ Cyanides (Total)		

Waste Exception Form

WEF No. 36404
WPF# WEF1

Completed by Waste Generator

☒ On-going ☐ One-time	WPF No. OLD 29309	CWDR/TWSR No. NA	Item No. NA – RLWTF (TA-50) Liquid Waste

☒ Hazardous/Chemical ☐ Low-Level Waste ☒ Transuranic ☐ Mixed Low-Level Waste

☒ Radioactive Liquid Waste ☐ Other _____

Waste Acceptance Criteria [LANL WAC (Dec. 2002) – Liquid Radioactive Waste Treatment Facility, RLWTF]

1.4.4 Physical Characteristics: Volume requirements in Table 1.5 (50 – 250 gallons/discharge). The maximum daily discharge for this effluent could be 200 liters/day or 52.84 gallons/day.

1.4.2 Chemical Waste: Table 1.3 requirements for Total Nitrates (10 mg/l), Zinc (100 mg/l) and Arsenic (<5 mg/l). This effluent could have Total Nitrates (0 – 1000 mg/l), Zinc (0-5000 ppm or 5,500 mg/l, assuming solution density of 1.1) and Arsenic (0-32 ppm or 35.2 mg/l, assuming a solution density of 1.1).

Reason for Variance and Justification

Small Quantity (average daily volume: 100 liters/day), **Infrequent Generation** (40 days/ year), **Characteristic Waste.**

Waste Characteristics:
D004 – Arsenic, Characteristic Waste
Nitrates – (0 – 1000 mg/l)
Zinc – (0-5000 ppm)

Requested by (Print)	Requested by (Signature)	Z Number	Date
Louis Schulte	Louis Schulte	104239	6/25/03

Waste Management Facility Approval

Special Instructions and Comments

- **Notify RLWTF prior to discharge of this waste stream.**
- **Discharge to the TA-55 Caustic Waste Line**

Basis for Exemption or Denial

	Team Leader (Signature)	Z Number	Date
☒ Approved ☐ Rejected	[illegible]	091973	9/25/03

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WASTE PROFILE FORM

Contact(if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: **FWO-SWO at MS J595.** For assistance with completing this form, call FWO-SWO at 5-4000.	Reference Number **36404** (For FWO-SWO use only.)

Generator's Z Number	Waste Generator's Name(print)	WMC's Z Number	WMC's Name(print)
~~104239~~ 150520	~~Schulte, Louis D.~~ KOWALCZYK, CYNTHIA L	093573	Mccormick, Egan

Generator's Telephone	Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room
~~6651100~~ 667-7143	E511	NMT-2	55	000004	209, ~~401,49~~ 420

Waste Accumulation (Check only one)

- [ ] Satellite Accumulation Area — Site no: ____
- [ ] Less-than-90-days Storage Area — Site no: ____
- [ ] TSDF — Site no: ____
- [ ] Universal Waste Storage Area — Site no: ____
- [X] None of the Above

ER Use Only — ER Site — PRS #:

Method of Characterization (Check as many as apply.)

- [X] Chemical/Physical Analysis — Sample #: ATTACHED
- [ ] Radiological Analysis — Sample #: ____
- [ ] PCB Analysis — Sample #: ____
- [X] Acceptable Knowledge Documentation — Documentation #: NMT2-HCP-001
- [ ] MSDS

[ ] Analysis/Documents Attached

Section 1 - Chemical and Physical Information

Waste Type (Check only one.)

- [ ] Unused/Unspent Chemical (Complete all sections as appropriate.)
- [X] Process Waste/Spent Chemical/ other (Complete all sections.)
- [ ] Green is Clean Waste (Complete all sections as appropriate.)

Waste Classes

Radiological Information

Was Waste Generated in a RCA
[X] yes [ ] no

- [ ] Non-radioactive
- [X] Radioactive
  - [ ] Low-Level
  - [X] Transuranic

Wastewater Information

- [ ] Wastewater for SWSC (TA-46)(Complete Attachment 1)
- [X] Wastewater for RLWTF (TA50/TA21 Complete Attachment 2)
- [ ] Wastewater for TA-16(HE)

Classification Information

- [X] Unclassified
- [ ] Classified/Sensitive

Waste Category (Check as many as apply.)

- [X] Inorganic
- [ ] Organic
  - Volatile Organics [ ] < 500 ppm [ ] >= 500 ppm
- [ ] Solvent *
- [ ] Degreaser *
- [ ] Dioxin
- [ ] Electroplation
- [ ] Treated Hazardous waste residue
- [ ] Explosive process
- [ ] Infectious/Medical
- [ ] Biological
- [ ] Beryllium
- [ ] Empty Container(see instructions)
- [ ] Battery(see insructions)

Asbestos [ ] friable [ ] non-friable

PCB Source Concentration
- [ ] PCB < 50 ppm
- [ ] PCB >= 50 - < 500 ppm
- [ ] PCB >= 500 ppm

[ ] Other (Describe below)

*Concentrations 10% or greater before use.

Waste Source (Check only one.)

Routine Waste

- [ ] Decon
- [X] Materials Processing/Production
- [ ] Research/Development/Testing
- [ ] Scheduled Maintenance
- [ ] Housekeeping - Routine
- [ ] Spilll Cleanup - Routine
- [ ] Sampling - Routine Monitoring
- [ ] Other (Describe below)

Non-routine Waste

- [ ] Abatement
- [ ] Construction/Upgrades
- [ ] Demolition
- [ ] Decon/Decom
- [ ] Investigative Derived
- [ ] Orphan/Legacy
- [ ] Remediation/Restoration
- [ ] Repacking (Secondary)
- [ ] Unscheduled Maintenance
- [ ] Housekeeping - Non-routine
- [ ] Spill Cleanup - Non-routine
- [ ] UST - Non-petroleum
- [ ] UST - Petroleum
- [ ] Other (Describe below)

Waste Matrix (Check only one.)

Gas

- [ ] <= 1.5 Atmospheres pressure
- [ ] > 1.5 Atmospheres pressure
- [ ] Liquefied compressed gas

Liquid

- [X] Aqueous
- [ ] Non-aqueous
- [ ] Suspended Solids/Aqueous
- [ ] Suspended Solids/Non-aqueous

Solid

- [ ] Powder/Ash
- [ ] Solid
- [ ] Sludge
- [ ] Absorbed Liquid

Matrix Type (check only one.)

- [X] Homogeneous
- [ ] Heterogeneous (Describe below)

Waste/Process Description (Chemical formulas may be used in this field.)

CAUSTIC FILTRATES FROM HYDROXIDE PRECIPITATION GENERATED UNDER NMT2-HCP-001, AQUEOUS CHLORIDE OPERATIONS, GENERATED HAS A COPY ON FILE. WPF #29309, WAS VOIDED BY CONNIE GERTH (8-25-1999). ACETIC ACID (< OR = TO 25%) USED TO KEEP THE LINE OPEN. WATER USED TO FLUSH THE LINE.

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Attachment 2 - Wastewater Characteristics for RLWTF (TA-50 & TA-21)

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

Indicate if waste was: [ ] Accelerator produced [ ] Reactor produced [X] Other (Describe in WPF Section 1 "Waste/Process Description."

Radionuclide Contaminants

Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min. / Max.	Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min. / Max.
As-74	[ ] <= 4.0E-8	/	Rb-84	[ ] <= 1.0E-8	/
Be-7	[ ] <= 1.0E-6	/	Sc-46	[ ] <= 2.0E-8	/
Ce-141	[ ] <= 5.0E-8	/	Sc-48	[ ] <= 2.0E-8	/
Cs-134	[ ] <= 2.0E-9	/	Se-75	[ ] <= 2.0E-8	/
Cs-137	[ ] <= 3.0E-9	/	Na-22	[ ] <= 1.0E-8	/
Co-56	[ ] <= 1.0E-8	/	Sr-85	[ ] <= 7.0E-8	/
Co-57	[ ] <= 1.0E-7	/	Sr-89	[ ] <= 2.0E-8	/
Co-58	[ ] <= 4.0E-8	/	Sr-90	[ ] <= 1.0E-9	/
Co-60	[ ] <= 5.0E-9	/	Sn-113	[ ] <= 5.0E-8	/
Eu-152	[ ] <= 2.0E-8	/	V-48	[ ] <= 2.0E-8	/
H-3	[ ] <= 2.0E-8	/	Y-88	[ ] <= 3.0E-8	/
I-133	[ ] <= 1.0E-8	/	Zn-65	[ ] <= 9.0E-9	/
Mn-52	[ ] <= 2.0E-8	/	Am-241	[ ] <= 0.1E-6	0.00E+00 / 4.50E-03
Mn-54	[ ] <= 5.0E-8	/	Pu-238	[ ] <= 0.1E-6	/
Ra-226+228	[ ] <= 3.0E-11	/	Pu-239	[ ] <= 0.1E-6	0.00E+00 / 4.50E-03
Rb-83	[ ] <= 2.0E-8	/	U-234	[ ] <= 5.0E-8	/
Others:			**Others:**		
		/			/
		/			/
		/			/

Other Contaminants

Metal Contaminants	Present Below LOC (in ppm)	Range if above LOC (in ppm) Min. to Max.	Additional Contaminants	Min. to Max.
Aluminum	[ ] <= 5.0	to ppm	Chemical Oxygen Demand (DOD)	to mg/l
Boron	[ ] <= 5.0	to ppm	Total Suspended Solids (TSS)	to mg/l
Cobalt	[ ] <= 1.0	to ppm	[ ] Total Nitrogen or (only one	to mg/l
Copper	[ ] <= 1.0	to ppm	[ ] Total Nitrates entry needed)	0 to 1000 mg/l
Vanadium	[ ] <= 0.10	to ppm		
Zinc	[ ] <= 95.4	0 to 5000 ppm		

Radioactive Contaminant Totals:

Total Alpha	4.50E-03	Ci/l
Total Beta		Ci/l
Total Gamma		Ci/l

For TA-35 use only
Wastewater will be discharged through one of the following:
[ ] Acid Line [X] Caustic Line [ ] Industrial Waste Line

[ ] Yes [ ] No Scintillation Cocktail Brand Name _____ Volume _____ Unit _____

[ ] Yes [ ] No Chemical Treatment for Boilers/Water Chillers

[ ] Yes [ ] No Industrial Cleaner Type _____ Volume _____ Unit _____

Average daily volume when discharge occurs: 100 [ ] Gallons/day [X] Liters/day

Maximum daily volume when discharge occurs: 200 [ ] Gallons/day [X] Liters/day

Estimated number of days per year discharge will occur: 40

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-50/TA-21: 4000 [ ] Gallons [X] Liters

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LDR and Underlying Hazardous Constituents Information - Identify presence of any constituents listed below.

Non-Wastewater/Wastewater Category - check only one.

[X] Non Wastewater

[ ] Wastewater [as defined by 40 CFR 268.2(f)]

Notification of California List Applicability - Check all that apply.

- [ ] Liquid hazardous waste containing PCBs at a concentration of 50 ppm or greater.
- [ ] A D001 thru D043 liquid waste containing 134 mg/L or greater of Nickel and/or 130 mg/L or greater of thallium.
- [ ] A D001 thru D043 waste containing Halogenated Organic Compounds (HOCs) listed in 40 CFR 268, Appendix III, at 1000 ppm or greater.

Notification Of Underlying Hazardous Constituents

Check the applicable underlying constituents above the concentration levels for D001, D002, D003, and D012 - D043 characteristic wastes only)

[ ] *No Underlying Hazardous Constituents in this waste stream.* [ ] *HAZCAT Meeting 40 CFR 268.42(c)*

Organic Constituents

- [ ] A2213
- [ ] Acenaphthylene
- [ ] Acenaphthene
- [ ] Acetone
- [ ] Acetonitrile
- [ ] Acetophenone
- [ ] 2-Acetyaminofluorene
- [ ] Acrolein
- [ ] Acrylamide
- [ ] Acrylonitrile
- [ ] Aldicarb sulfone
- [ ] Aldrin
- [ ] 4-Aminobiphenyl
- [ ] Aniline
- [ ] Anthracene
- [ ] Aramite
- [ ] alpha-BHC
- [ ] beta-BHC
- [ ] delta-BHC
- [ ] gamma-BHC
- [ ] Barban
- [ ] Bendiocarb
- [ ] Bendiocarb phenol
- [ ] Benomyl
- [ ] Benzene
- [ ] Benz(a)anthracene
- [ ] Benzal chloride
- [ ] Benzo(b)fluoranthene
- [ ] Benzo(k)fluoranthene
- [ ] Benzo(g,h,i)perylene
- [ ] Benzo(a)pyrene
- [ ] Bromodichloromethane
- [ ] Bromomethane (Methyl bromide)
- [ ] 4-Bromophenyl phenyl ether
- [ ] n-Butyl alcohol
- [ ] Butylate
- [ ] Butyl benzyl phthalate
- [ ] 2-sec-Butyl-4,6-dinitrophenol (Dinoseb)
- [ ] Carbaryl
- [ ] Carbenzadim
- [ ] Carbofuran
- [ ] Carbofuran phenol
- [ ] Carbon disufide
- [ ] Carbon tetrachloride
- [ ] Carbosulfan
- [ ] Chlordane (alpha & gamma isomers)
- [ ] p-Chloroaniline
- [ ] Chlorobenzene
- [ ] Chlorobenzilate
- [ ] 2-Chlor-1,3-butadiene
- [ ] Chlorodibromomethane
- [ ] Chloroethane
- [ ] bis(2-chloroethoxy) methane
- [ ] bis(2-chloroethyl) ether
- [ ] Chloroform
- [ ] bis(2-chloroisopropyl) ether
- [ ] p-Chloro-m-cresol
- [ ] 2-Chloroethyl vinyl ether
- [ ] Chloromethane (Methyl chloride)
- [ ] 2-Chloronaphthalene
- [ ] 2-Chlorophenol
- [ ] 3-Chloropropylene
- [ ] Chrysene
- [ ] o-Cresol
- [ ] m-Cresol
- [ ] p-Cresol
- [ ] m-Cumenyl methylcarbamate
- [ ] Cycloate
- [ ] Cyclohexanone
- [ ] o,p'-DDD
- [ ] p,p'-DDD
- [ ] o,p'-DDE
- [ ] p,p'-DDE
- [ ] o,p'-DDT
- [ ] p,p'-DDT
- [ ] Dibenz(a,h)anthracene
- [ ] Dibenz(a,e)pyrene
- [ ] 1,2-Dibromo-3-chloropropane
- [ ] 1,2-Dibromoethane (Ethylene dibromide)
- [ ] Dibromomethane
- [ ] m-Dichlorobenzene
- [ ] o-Dichlorobenzene
- [ ] p-Dichlorobenzene
- [ ] Dichlorodifluoromethane
- [ ] 1,1-Dichloroethane
- [ ] 1,2-Dichloroethane
- [ ] 1,1-Dichloroethylene
- [ ] trans-1,2-Dichloroethylene
- [ ] 2,4-Dichlorophenol
- [ ] 2,6-Dichlorophenol
- [ ] 2,4-Dichlorophenoxyacetic (2,4-D)
- [ ] 1,2-Dichloropropane
- [ ] cis-1,3-dichloropylene
- [ ] trans-1,3-Dichloropylene
- [ ] Dieldrin
- [ ] Diethylene glycol, dicarbamate
- [ ] Diethyl phthalate
- [ ] p-Dimethylaminoazobenzene
- [ ] 2-4-Dimethyl phenol
- [ ] Dimethyl phthalate
- [ ] Dimetilan
- [ ] Di-n-butyl phthalate
- [ ] 1,4-Dinitrobenzene
- [ ] 4,6-Dinitro-o-cresol
- [ ] 2,4-Dinitrophenol
- [ ] 2,4-Dinitrotoluene
- [ ] 2,6-Dinitrotoluene
- [ ] Di-n-octyl phthalate

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Notification Of Underlying Hazardous Constituents

Check the applicable underlying constituents above the concentration levels for D001, D002, D003, and D012 - D043 characteristic wastes only)

Organic Constituents - continued

- [ ] Di-n-propylnitrosamine
- [ ] 1,4-Dioxane
- [ ] Diphenylamine
- [ ] Diphenylnitrosamine
- [ ] 1,2-Diphenylhydrazine
- [ ] Disulfoton
- [ ] Dithiocarbamates (total)
- [ ] Endosulfan I
- [ ] Endosulfan II
- [ ] Endosulfan sulfate
- [ ] Endrin
- [ ] Endrin aldehyde
- [ ] EPTC
- [ ] Ethyl acetate
- [ ] Ethyl benzene
- [ ] Ethyl cyanide (Propanenitrile)
- [ ] Ethyl ether
- [ ] bis(2-ethylhexyl) phthalate
- [ ] Ethyl methacrylate
- [ ] Ethylene oxide
- [ ] Famphur
- [ ] Fluoranthene
- [ ] Fluorene
- [ ] Formetanate hydrochloride
- [ ] Formparanate
- [ ] Heptachlor
- [ ] Heptachlor epoxide
- [ ] Hexachlorobenzene
- [ ] Hexachlorobutadiene
- [ ] Hexachlorocyclopentadiene
- [ ] Hexachlorodibenzo-p-dioxins (HxCDDs)
- [ ] Hexachlorodibenzo-furans (HxCDFs)
- [ ] Hexachloroethane
- [ ] Hexachloropropylene
- [ ] Indeno (1,2,3-c,d) pyrene
- [ ] Iodomethane
- [ ] 3-Iodo-2-propynyl n-butylcarbamate
- [ ] Isobutyl alcohol
- [ ] Isodrin
- [ ] Isolan
- [ ] Isosafrole
- [ ] Kepone
- [ ] Methacrylonitrile
- [ ] Methanol
- [ ] Methapyrilene
- [ ] Methiocarb
- [ ] Methomyl
- [ ] Methoxychlor
- [ ] 3-Methylchlolanthrene
- [ ] 4,4-Methylene bis(2-chloroanline)
- [ ] Methylene chloride
- [ ] Methyl ethyl ketone
- [ ] Methyl isobutyl ketone
- [ ] Methyl methacrylate
- [ ] Methyl methansulfonate
- [ ] Methyl parathion
- [ ] Metolcarb
- [ ] Mexacarbate
- [ ] Molinate
- [ ] Naphthalene
- [ ] 2-Naphthylamine
- [ ] 0-Nitroaniline
- [ ] p-Nitroaniline
- [ ] Nitrobenzene
- [ ] 5-Nitro-o-toluidine
- [ ] o-Nitrophenol
- [ ] p-Nitrophenol
- [ ] N-Nitrosodiethylamine
- [ ] N-Nitrosodimethylamine
- [ ] N-Nitroso-di-n-butylamine
- [ ] N-Nitrosomethylethylamine
- [ ] N-Nitrosomorpholine
- [ ] N-Nitrosopiperidine
- [ ] N-Nitrosopyrrolidine
- [ ] Oxamyl
- [ ] Parathion
- [ ] PCBs (total)
- [ ] Pebulate
- [ ] Pentachlorobenzene
- [ ] Pentachlorodibenzo-p-dioxins (PeCDDs)
- [ ] Pentachlorodibenzo-furans (PeCDFs)
- [ ] Pentachloroethane
- [ ] Pentachloronitrobenzene
- [ ] Pentachlorophenol
- [ ] Phenacetin
- [ ] Phenanthrene
- [ ] Phenol
- [ ] o-Phenylenediamine
- [ ] Phorate
- [ ] Phthalic acid
- [ ] Phthalic anhydride
- [ ] Physostigmine
- [ ] Physostigmine salicylate
- [ ] Promecarb
- [ ] Pronamide
- [ ] Propham
- [ ] Propoxur
- [ ] Prosulfocarb
- [ ] Pyrene
- [ ] Pyridine
- [ ] Safrole
- [ ] Silvex (2,4,5-TP)
- [ ] 1,2,4,5-Tetrachlorobenzene
- [ ] Tetrachlorodi-benzo-p-dioxins (TCDDs)
- [ ] Tetrachlorodibenzofurans (TCDFs)
- [ ] 1,1,1,2-Tetrachloroethane
- [ ] 1,1,2,2-Tetrachloroethane
- [ ] Tetrachloroethylene
- [ ] 2,3,4,6-Tertachlorophenol
- [ ] Thiodicarb
- [ ] Thiophanate-methyl
- [ ] Tirpate
- [ ] Toluene
- [ ] Toxaphene
- [ ] Triallate
- [ ] Tribromomethane (Bromoform)
- [ ] 1,2,4-Trichlorobenzene
- [ ] 1,1,1-Trichloroethane
- [ ] 1,1,2-Trichloroethane
- [ ] Trichloroethylene
- [ ] Trichloromonofluoromethane
- [ ] 2,4,5-Trichlorophenol
- [ ] 2,4,6-Trichlorophenol
- [ ] 2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)
- [ ] 1,2,3-Trichloropropane
- [ ] 1,1,2-Trichlor-1,2,2-trifluoroethane
- [ ] Triethylamine
- [ ] tris-(2,3-Dibromopropyl) phosphate
- [ ] Vernolate
- [ ] Vinyl chloride
- [ ] Xylenes (total)

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Notification Of Underlying Hazardous Constituents

Check the applicable underlying constituents above the concentration levels for D001, D002, D003, and D012 - D043 characteristic wastes only)

Metal/Inorganic Constituents

[ ]	Antimony	[ ]	Cyanides (Amenable)	[ ]	Selenium
[X]	Arsenic	[ ]	Fluoride	[ ]	Silver
[ ]	Barium	[X]	Lead	[ ]	Sulfide
[X]	Beryllium	[ ]	Mercury (Retort residues)	[ ]	Thallium
[ ]	Cadmium	[ ]	Mercury - All others	[ ]	Vanadium
[X]	Chromium (total)	[X]	Nickel	[X]	Zinc
[ ]	Cyanides (total)				

WASTE PROFILE FORM
WPF #: 36404

For rapid processing, complete all sections in black or blue ink and mail to:
SOLID WASTE OPERATIONS GROUP at MS J595.
For assistance with completing this form, call SOLID WASTE OPERATIONS GROUP at 5-4000

Contact(if other than given below)

Generators Z Number	Waste Generators Name(print)	WMCs Z Number	WMCs Name(print)
150520	Cynthia Kowalczyk	093573	MCCORMICK, EGAN

Cynthia Kowalczyk	Generators Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room	WMC Phone #
6677143	E511	NMT-2	55	000004	209,401,49	6678158

Waste Accumulation (Check only one)

- ☐ Satellite Accumulation Area Site no: ____
- ☐ Less-than-90-days Storage Area Site no: ____
- ☐ TSDF Site no: ____
- ☐ Universal Waste Storage Area Site no: ____
- ☐ Used Oil for Recycle Site no: ____
- ☐ PCBs Storage Area Site no: ____
- ☐ NM Special Waste Site no: ____
- ☐ Rad Staging Area Area Site no: ____
- ☐ Rad Storage Area Area Site no: ____
- ☒ None of the Above

ER Use Only | ER Site | SWMU/AOC #

Method of Characterization (Check as many as apply.)

- ☒ Chemical/Physical Analysis ☐ Attached Samp#: ATTACHED
- ☐ Radiological Analysis ☐ Attached Samp#: ____
- ☐ PCB Analysis ☐ Attached Samp#: ____
- ☒ AKD ☐ Attached Doc#: NMT2-HCP-001
- ☐ MSDS ☐ Attached

Section 1 - Waste Prevention/Minimization (answer all questions)

Can hazard segregation, elimination, or material substitution be used?	☐ Yes*	☒ No	
Can any of the materials in the waste stream be recycled or reused	☐ Yes*	☒ No	
Has waste minimization been incorporated into procedures or other process controls?	☒ Yes	☐ No	
Can this waste be generated outside a RCA?	☐ Yes*	☒ No	☐ N/A

*Provide Comment

Section 2 - Chemical and Physical Information

Waste Type (Check only one.)

- ☐ Unused/Unspent Chemical
- ☒ Process Waste/Spent Chem/ Other
- ☐ Green is Clean Waste

Radiological Information

Was Waste Generated in an RCA?
☒ Yes ☐ No

- ☐ Non-rad
- ☐ Radioactive-LL
- ☒ Radioactive-TRU

Waste Destination (Check only one)

- ☐ SWWS (Complete Attach 1)
- ☒ RLWTF(Complete Attach 2)
- ☐ RLWTP(Complete Attach 3)
- ☐ TA16/HE(Complete Attach 4)

Classification Information

- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category-Chk all that apply

- ☒ Inorganic
- ☐ Organic
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste or residue
- ☐ No Longer Contained-In
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container
- ☐ Battery
- Asbestos ☐ friable ☐ non-friable
- PCB ☐ PCB < 50 ppm ☐ PCB >= 50 - < 500 ppm ☐ PCB >= 500 ppm
- ☐ Hazardous Waste Contaminanted Soil
- ☐ Untreated Hazardous Debris
- ☐ Commercial Solid Waste
- ☐ Other

*See instructions

Waste Source-Check only one

Waste Source A

- ☐ Decon
- ☒ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup - Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Waste Source B

- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping - Non-routine
- ☐ Spill Cleanup - Non-routine
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix-Check only one

Gas

- ☐ Gas <= 1.5 Atmospheres pressure
- ☐ Gas > 1.5 Atmospheres pressure
- ☐ Liquified compressed gas

Liquid

- ☒ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids / Aqueous
- ☐ Suspended Solids / Non-aqueous

Solid

- ☐ Powder/Ash
- ☐ Solid
- ☐ Sludge
- ☐ Absorbed Liquid
- ☐ Debris

Matrix Type (check only one.)

- ☒ Homogeneous
- ☐ Heterogeneous

Estimated Annual Volume (m3)

18

WASTE PROFILE FORM
WPF #: 36404

Section 5 - Additional Constituents and Information

Additional Constituents and Contaminates. Please account for 100% of waste. Ranges should be given within guidelines of LIG 404-00-03 of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum		Maximum
	CAUSTIC FILTRATES	5	to	10 %
7732-18-5	WATER	80	to	99 %
	Beryllium	.0000195	to	.0265 %
			to	%
			to	%
			to	%
			to	%
			to	%
			to	%
			to	%
			to	%
			to	%
			to	%
			to	%
	Total of ranges from this section	85.0000		109.0000 %

per WMC 1/30/07 JD

Additional Information (Use additional sheet if necessary.)

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

Section 6 - Work Control Documentation (answer all questions)

Do the procedures for this process cover how to manage this waste? ☒ Yes ☐ No

Do the procedures for this process cover controls to prevent changes to waste constituents and concentrations or addition or removal of waste? ☒ Yes ☐ No

Section 7 - Package and Storage Control

Describe how the waste will be packaged in according to the applicable WAC: WASTE TRAVELS TO TREATMENT FACILITY THROUGH HARD-PLUMBED LINES

Identify the storage management controls that will be used for this waste stream: (check all that apply)

- ☐ Tamper indication devices:
- ☐ Limited use locks with log-in for waste
- ☐ Locked cabinet or building
- ☒ Other (describe) SECURED FACILITY

Section 8 - Waste Certification Statements (check only one)

- ☒ Waste appears to meet WAC of: 1.0
- ☐ Waste needs exception/exemption for treatment, storage, or disposal at:
- ☐ Waste does not meet the criteria for any known TSDF, (DOE approval is required. Contact the Waste Management Program Office for assistance.)

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

Signature [signature] Date 1 Dec 05

WASTE CERTIFYING OFFICIAL: I have reviewed this form and any associated attachments and the characterization information provided appears to be complete and accurate. I certify, to the best of my knowledge, that the waste characterization information provided by the waste generator meets the requirements of the applicable WAC.

Signature Date

WASTE PROFILE FORM

Los Alamos NATIONAL LABORATORY

WPF #: 36404

01-Jun-2006 07:34 AM (Version: 2)

Generator :	KOWALCZYK, CYNTHIA NMT-2	MS :	E511
WMC :	MCCORMICK, EGAN NWIS-OS	MS :	E507
FROM :	NWIS-SWO	MS :	J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 36404 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Note: Only the generator can sign for the extension (to renew). Please return the signed questionnaire to NWIS-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. Upon approval of this signed Extension Certification, you will receive a notice indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently the same generator as indicated above?

YES X NO ____

Are you currently producing the same type of waste as indicated on WPF#: 36404

YES X NO ____

If yes, please sign the Extension Certification below

If no, will you be producing the same type of waste in the near future?

YES ____ NO ____

If yes, please sign the Extension Certification below

If no, will you be producing a different type of waste?

YES ____ NO ____

If no, sign the Void Approval below to indicate that your WPF should be voided

If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 36404 Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the waste characterization information on this form is correct and that it meets the requirements of the applicable waste acceptance criteria. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Extension-> Signed Cynthia L Kowalczyk Z# 150520 Date 1 JUN 06

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 36404

Void-> Signed Date

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: NWIS-SWO **MS: J595** **PHONE: 5-4000**

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 36404
(Version: 1)

14-Sep-2004 09:24 AM

Generator: ~~SCHULTE, LOUIS D~~ NMT-2 CYNTHIA KOWALCZYK MS : E511
~~WMC: MCCORMICK, EGAN~~ ~~FWO-SWO~~ ~~MS : E507~~
FROM: FWO-SWO MS : J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 36404 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to FWO-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 36404
YES _____ NO _____
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
YES _____ NO _____
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
YES _____ NO _____
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 36404

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

Extension-> Signed [signature] Date 10/4/04

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 36404

Void-> Signed _____ Date _____

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: FWO-SWO ***MS: J595*** ***PHONE: 5-4000***

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 36404
(Version: 1)

14-Sep-2004 09:24 AM

Generator :	SCHULTE, LOUIS D	MS :	E511	PH :	6651100	Z#:	104239
WMC :	MCCORMICK, EGAN	MS :	E507	PH :	6678158	Z#:	093573
RCRA Rev :	LASH, TAMMY	MS :	J595	PH :	54000	Z#:	120424
Status :	ACTIVE	Activation Date :	23-Oct-2003	Expiration Date:			23-Oct-2004
Group :	NMT-2	TA :	55	Bldg :	000004	Room:	209,~~401,49~~ 420

You are required to keep a copy of the WPF(s) in your files for at least three years. This WPF(s) is valid for one year or as long as the composition of the waste you have characterized remains the same and the generator remains the same. Should your waste or generator change, please submit a new WPF to FWO-SWO Customer Service, and attach a copy of the WPF which is being replaced.

WASTE CHARACTERIZATION INFORMATION

Radioactivity Category :	**RADIOACTIVE-TRU**
RCRA Category :	**HAZARDOUS WASTE**
Secondary Info :	**N/A**
Waste Classification :	**MIXED TRANSURANIC WASTE**
Acceptances :	**TA-50 Acceptance**
EPA Hazardous Waste Code :	**D004**

UPDATE
04/02/07

WASTE PROFILE FORM

Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: SOLID WASTE OPERATIONS GROUP at **MS J595.** For assistance with completing this form, call SOLID WASTE OPERATIONS GROUP at **5-4000**.	Reference Number 36404 (For SOLID WASTE OPERATIONS GROUP use only.)

Generator's Z Number	Waste Generator's Name (print)		WMC's Z Number	WMC's Name (print)		
	Kowalczyk, Cynthia		093573	Egan D. McCormick		
Generator's Telephone	**Generator's Mail Stop**	**Waste Generating Group**	**Waste Stream Technical Area**	**Building**	**Room**	**WMC Telephone**
			55			667-8158

Waste Accumulation (Check only one.)

- ☐ Satellite Accumulation Area — Site no: _____
- ☐ Less-than-90-days Storage Area — Site no: _____
- ☐ TSDF — Site no: _____
- ☐ Universal Waste Storage Area — Site no: _____
- ☐ Used Oil for Recycle — Site no: _____
- ☐ PCBs Storage Area — Site no: _____
- ☐ NM Special Waste — Site no: _____
- ☐ Rad Staging Area — Site no: _____
- ☐ Rad Storage Area — Site no: _____
- ☒ None of the Above

ER Use Only

- ☐ ER Site — SWMU/AOC #: _____

Method of Characterization (Check as many as apply.)

- ☒ Chemical/Physical Analysis — ☐ Attached — Sample #: _____
- ☐ Radiological Analysis — ☐ Attached — Sample #: _____
- ☐ PCB Analysis — ☐ Attached — Sample #: _____
- ☒ Acceptable Knowledge Documentation — ☐ Attached — Documentation #: _____
- ☐ MSDS — ☐ Attached

Section 1 – Waste Prevention/Minimization (answer all questions)

Can hazard segregation, elimination, or material substitution be used?	☐ Yes (Provide comments)	☐ No
Can any of the materials in the waste stream be recycled or reused?	☐ Yes (Provide comments)	☐ No
Has waste minimization been incorporated into procedures or other process controls?	☐ Yes	☐ No (Provide comments)
Can this waste be generated outside a RCA?	☐ Yes (Provide comments)	☐ No ☐ N/A

Section 2 - Chemical and Physical Information

Waste Type (Check only one.)

- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☐ Process Waste/Spent Chemical/ Other (Complete all sections.)

Radiological Information

Was Waste Generated in a RCA? ☐ Yes ☐ No

- ☐ Non-radioactive
- ☐ Radioactive – Low Level
- ☐ Radioactive - Transuranic

Waste Destination (Check only one)

- ☐ SWWS (Complete Attachment 1)
- ☐ RLWTF (Complete Attachment 2)
- ☐ RLWTP (Complete Attachment 3)
- ☐ TA-16/HE (Complete Attachment 4)
- ☐ NTS (Complete Attachment 5)

Classification Information

- ☐ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check all that apply.)

- ☐ Inorganic
- ☐ Organic
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste or residue
- ☐ No-Longer Contained-In
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☒ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)

Asbestos ☐ friable ☐ non-friable

PCB Source Concentration

- ☐ PCB < 50 ppm
- ☐ PCB ≥ 50 - <500 ppm
- ☐ PCB ≥ 500 ppm

- ☐ Hazardous Waste Contaminated Soil
- ☐ Untreated Hazardous Debris
- ☐ Commercial Solid Waste
- ☐ Other (Describe below)

* See instructions.

Waste Source (Check only one.)

Waste Source A

- ☐ Decon
- ☐ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup – Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Waste Source B

- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping (Non-routine)
- ☐ Spill Cleanup (Non-routine)
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix (Check only one.)

Gas

- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid

- ☒ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid

- ☐ Powder/Ash/Dust
- ☐ Solid
- ☐ Sludge
- ☐ Absorbed/solidified liquid
- ☐ Debris

Matrix Type (Check only one.)

- ☐ Homogeneous
- ☐ Heterogeneous

(Describe below)

Estimated Annual Volume (m^3):

Section 3 – Process and Waste Descriptions

Process Description:

Waste Description:

Section 4 – Characteristics

Ignitability (Check only one.) (°F)	(°C)	**Corrosivity** (Check only one.) (pH)	**Reactivity** (Check as many as apply.)	**Boiling Point** (Check only one.) (°F)	(°C)
☐ < 73	< 22.8	☐ ≤ 2.0	☐ RCRA Unstable	☐ ≤ 95	≤ 35
☐ 73 - 99	22.8 - 37.2	☐ 2.1 – 4.0	☐ Water Reactive	☐ > 95	> 35
☐ 100 - 139	37.8 - 59.4	☐ 4.1 – 6.0	☐ Cyanide Bearing		
☐ 140 -200	60.0 - 93.3	☐ 6.1 – 9.0	☐ Sulfide Bearing		
☐ > 200	> 93.3	☐ 9.1 - 12.4	☐ Pyrophoric		
☐ EPA Ignitable – Non-liquid		☐ ≥ 12.5	☐ Shock Sensitive		
☐ DOT Flammable Gas		☐ Liquid corrosive to steel	☐ Explosive - DOT Div. _____		
☐ DOT Oxidizer		☐ Non-aqueous	☐ Non-reactive		
☐ Not ignitable				☐ Not applicable	

Identify for all contaminants listed.	**Characterization Method** AK	TCLP	Total	**Concentration of Contaminants** None or Non-detect	Contaminant present at Minimum	Maximum	**Regulatory Limit**
Toxicity Characteristic Metals					(10,000 ppm = 1%)		
Arsenic	☐	☐	☒	☐	5	to 32 ppm	5.0 ppm
Barium	☐	☐	☒	☐	1	to 2 ppm	100.0 ppm
Cadmium	☐	☐	☒	☐	1	to 10 ppm	1.0 ppm
Chromium (Total)	☒	☐	☐	☐	0.1	to 1.0 ppm	5.0 ppm
Lead	☒	☐	☒	☐	0.1	to 5.0 ppm	5.0 ppm
Mercury	☒	☐	☒	☒		to ppm	0.2 ppm
Selenium	☒	☐	☒	☒		to ppm	1.0 ppm
Silver	☐	☐	☒	☐	1	to 10 ppm	5.0 ppm
Toxicity Characteristic Organics							
Benzene	☒	☐	☐	☒		to ppm	0.5 ppm
Carbon tetrachloride	☒	☐	☐	☒		to ppm	0.5 ppm
Chlorobenzene	☒	☐	☐	☒		to ppm	100.0 ppm
Chloroform	☒	☐	☐	☒		to ppm	6.0 ppm
o – cresol	☒	☐	☐	☒		to ppm	200.0 ppm
m – cresol	☒	☐	☐	☒		to ppm	200.0 ppm
p – cresol	☒	☐	☐	☒		to ppm	200.0 ppm
Cresol – mixed	☒	☐	☐	☒		to ppm	200.0 ppm
1,4-Dichlorobenzene	☒	☐	☐	☒		to ppm	7.5 ppm
1,2-Dichloroethane	☒	☐	☐	☒		to ppm	0.5 ppm
1,1-Dichloroethylene	☒	☐	☐	☒		to ppm	0.7 ppm
2,4-Dinitrotoluene	☒	☐	☐	☒		to ppm	0.13 ppm
Hexachlorobenzene	☒	☐	☐	☒		to ppm	0.13 ppm
Hexachlorobutadiene	☒	☐	☐	☒		to ppm	0.5 ppm
Hexachloroethane	☒	☐	☐	☒		to ppm	3.0 ppm
Methyl ethyl ketone	☒	☐	☐	☒		to ppm	200.0 ppm
Nitrobenzene	☒	☐	☐	☒		to ppm	2.0 ppm
Pentachlorophenol	☒	☐	☐	☒		to ppm	100.0 ppm
Pyridine	☒	☐	☐	☒		to ppm	5.0 ppm
Tetrachloroethylene	☒	☐	☐	☒		to ppm	0.7 ppm
Trichloroethylene	☒	☐	☐	☒		to ppm	0.5 ppm
2,4,5-Trichlorophenol	☒	☐	☐	☒		to ppm	400.0 ppm
2,4,6-Trichlorophenol	☒	☐	☐	☒		to ppm	2.0 ppm
Vinyl chloride	☒	☐	☐	☒		to ppm	0.2 ppm
Herbicides and Pesticides							
Chlordane	☒	☐	☐	☒		to ppm	0.03 ppm
2,4-D	☒	☐	☐	☒		to ppm	10.0 ppm
Endrin	☒	☐	☐	☒		to ppm	0.02 ppm
Heptachlor (& its epoxide)	☒	☐	☐	☒		to ppm	0.008 ppm
Lindane	☒	☐	☐	☒		to ppm	0.4 ppm
Methoxychlor	☒	☐	☐	☒		to ppm	10.0 ppm
Toxaphene	☒	☐	☐	☒		to ppm	0.5 ppm
2,4,5-TP (Silvex)	☒	☐	☐	☒		to ppm	0.5 ppm

Section 5 - Additional Constituents and Information

Additional Constituents and Contaminants. Please account for 100% of waste. Ranges should be given within guidelines of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum	Maximum
	Caustic Filtrates	5	10 %
7732-18-5	Water	80	99 %
7440-38-2	Arsenic	.00005	.00052
7440-39-3	Barium	.0001	.0002
7440-43-9	Cadmium	.0001	.001
7440-47-3	Chromium	.00001	.00001
7439-92-1	Lead	.00001	.00005
7440-22-4	Silver	.0001	.001
7440-41-7	Beryllium	.000097	.53%
			%
			%
			%
			%
	Total of max. ranges of this section and page 2	109.5	in %

Deleted WAC 9/20/07 JK

Additional Information (Use additional sheet if necessary.)
If additional information is available on the chemical, physical, or radiological character of the waste not covered on this form, provide it below:

Section 6 - Work Control Documentation (answer all questions)

Do the procedures for this process cover how to manage this waste?	☒ Yes	☐ No (Provide comments)
Do the procedures for this process address controls to prevent changes to waste constituents and concentrations or addition or removal of waste to/from containers?	☒ Yes	☐ No (Provide comments)

Section 7 - Packaging and Storage Control

Describe how the waste will be packaged in according to the applicable WAC: Waste is transported to the treatment facility through hard-plumbed lines.

Identify the storage management controls that will be used for this waste stream: (check all that apply)

☐ Tamper indication devices	☒ Locked cabinet or building
☐ Limited use locks with log-in for waste	☐ Other (describe)

Section 8 - Waste Certification Statements (check only one)

☐ Waste appears to meet WAC chapter for:
☒ Waste stream needs exception/exemption for treatment, storage, or disposal at:
☐ Waste does not meet the criteria for any known TSDF. (DOE approval is required. Contact the Waste Management Program Office for assistance.)

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

Signature Date

WASTE CERTIFYING OFFICIAL: I have reviewed this form and any associated attachments and the characterization information provided appears to be complete and accurate. I certify, to the best of my knowledge, that the waste characterization information provided by the waste generator meets the requirements of the applicable WAC.

Signature Date

Attachment 4 - LDR and UHC Information

Identify category and presence of any constituents listed below (equal to or above limit).

Non-Wastewater / Wastewater Category – Check only one.

☒ Non Wastewater ☐ Wastewater [as defined by 40 CFR 268.2(f)] ☐ Lab Pack [40 CFR 268.42(c) **Sign Certification #1**

NOTIFICATIONS AND CERTIFICATIONS – Check the applicable boxes

GENERATOR REQUIREMENTS:

- ☐ This shipment contains hazardous waste contaminated soil that does not meet treatment standards — **Sign Certification #2**
- ☐ This shipment contains untreated hazardous debris to be treated to 40 CFR 268.45 treatment standards — **(No certification)**
- ☐ Hazardous wastes (except soil) meeting treatment standards at point of generation — **Sign Certification #3**
- ☐ Hazardous wastes contaminated soil meeting treatment standards at point of generation — **Sign Certification #4**

TSDF OR GENERATOR TREATMENT:

- ☐ TSDF Treated hazardous debris meeting the alternative treatment standards of 40 CFR 268.45 — **Sign Certification #5**
- ☐ Generator Treated hazardous debris meeting the alternative treatment standards of 40 CFR 268.45 — **Sign Certification #6**
- ☐ Hazardous wastes contaminated soil treated to 40 CFR 268.49 — **Sign Certification #7**
- ☐ Wastes or Residues from characteristic hazardous waste treatment meeting treatment standards and UTS — **Sign Certification #8**
- ☐ Wastes or Residues from characteristic hazardous waste treatment not meeting UTS — **Sign Certification #9**
- ☐ Other TSDF wastes meeting the more stringent 40 CFR 268.40 treatment standards to be land disposed — **Sign Certification #10**
- ☐ Other Generator wastes meeting the more stringent 40 CFR 268.40 treatment standards to be land disposed — **Sign Certification #11**

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 through D043 characteristic wastes only)

☐ ***No Underlying Hazardous Constituents in this waste stream.***

	Organic constituents			CASRN [1]	Wastewater standard	Non wastewater standard	Hazardous Soil 10Xs UTS Nonwastewater
☐	Acenaphthylene			208-96-8	0.059	3.4	34
☐	Acenaphthene			83-32-9	0.059	3.4	34
☐	Acetone			67-64-1	0.28	160	1600
☐	Acetonitrile			75-05-8	5.6	38	380
☐	Acetophenone			96-86-2	0.010	9.7	97
☐	2-Acetylaminofluorene			53-96-3	0.059	140	1400
☐	Acrolein			107-02-8	0.29	NA	NA
☐	Acrylamide			79-06-1	19	23	230
☐	Acrylonitrile			107-13-1	0.24	84	840
☐	Aldicarb sulfone			1646-88-4	0.056	0.28	2.8
☐	Aldrin			309-00-2	0.021	0.066	0.66
☐	4-Aminobiphenyl			92-67-1	0.13	NA	NA
☐	Aniline			62-53-3	0.81	14	140
☐	Anthracene			120-12-7	0.059	3.4	34
☐	Aramite			140-57-8	0.36	NA	NA
☐	alpha-BHC			319-84-6	0.00014	0.066	0.66
☐	beta-BHC			319-85-7	0.00014	0.066	0.66
☐	delta-BHC			319-86-8	0.023	0.066	0.66
☐	gamma-BHC			58-89-9	0.0017	0.066	0.66
☐	Barban			101-27-9	0.056	1.4	14
☐	Bendiocarb			22781-23-3	0.056	1.4	14
☐	Benomyl			17804-35-2	0.056	1.4	14
☐	Benzene			71-43-2	0.14	10	100
☐	Benz(a)anthracene			56-55-3	0.059	3.4	34
☐	Benzal chloride			98-87-3	0.055	6.0	60
☐	Benzo(b)fluoranthene			205-99-2	0.11	6.8	68
☐	Benzo(k)fluoranthene			207-08-9	0.11	6.8	68

	Organic constituents			CASRN [1]	Wastewater standard	Non wastewater standard	Hazardous Soil 10Xs UTS Nonwastewater
☐	1,2,3-Trichloropropane			96-18-4	0.85	30	300
☐	1,1,2-Trichloro-1,2,2-trifluoroethane			76-13-1	0.057	30	300
☐	Triethylamine			121-44-8	0.081	1.5	15
☐	tris-(2,3-Dibromopropyl) phosphate			126-72-7	0.11	0.10	1.0
☐	Vernolate			1929-77-7	0.042	1.4	14
☐	Vinyl chloride			75-01-4	0.27	6.0	60
☐	Xylenes (total)			1330-20-7	0.32	30	300
	Metal/inorganic Constituents			**CASRN [1]**	**Wastewater standard**	**Non wastewater standard**	**Hazardous Soil 10Xs UTS Nonwastewater**
☐	Antimony			7440-36-0	1.9	1.15 mg/l TCLP	11.5 mg/l TCLP
☒	Arsenic			7440-38-2	1.4	5.0 mg/l TCLP	50 mg/l TCLP
☒	Barium			7440-39-3	1.2	21 mg/l TCLP	210 mg/l TCLP
☒	Beryllium			7440-41-7	0.82	1.22 mg/l TCLP	12.2 mg/l TCLP
☒	Cadmium			7440-43-9	0.69	0.11 mg/l TCLP	1.1 mg/l TCLP
☒	Chromium (Total)			7440-47-3	2.77	0.60 mg/l TCLP	6.0 mg/l TCLP
☐	Cyanides (Total) [4]			57-12-5	1.2	590	5900
☐	Cyanides (Amenable) [4]			57-12-5	0.86	30	300
☐	Fluoride			16984-48-8	35	NA	NA
☒	Lead			7439-92-1	0.69	0.75 mg/l TCLP	7.5 mg/l TCLP
☐	Mercury (Retort residues)			7439-97-6	NA	0.20 mg/l TCLP	2.0 mg/l TCLP
☐	Mercury - All others			7439-97-6	0.15	0.025 mg/l TCLP	0.25 mg/l TCLP
☒	Nickel			7440-02-0	3.98	11 mg/l TCLP	110 mg/l TCLP
☐	Selenium			7782-49-2	0.82	5.7 mg/l TCLP	57 mg/l TCLP
☒	Silver			7440-22-4	0.43	0.14 mg/l TCLP	1.4 mg/l TCLP
☐	Sulfide			18496-25-8	14	NA	NA
☐	Thallium			7440-28-0	1.4	0.20 mg/l TCLP	2.0 mg/l TCLP
☐	Vanadium [5]			7440-62-2	4.3	1.6 mg/l TCLP	16 mg/l TCLP
☐	Zinc [5]			7440-66-6	2.61	4.3 mg/l TCLP	43 mg/l TCLP

RUN NUMBER: CXLF32494 ICP

PARENT LOTS	NET WT.	Pu WT.
PMA 5122	76.4g	60g
PMA 9387	896.4g	884g
combined into		
CXLD32494	972.8g	944g

SAMPLE ID	Volume	SAI	R04 Pu	R04 Am	Ag	As	Ba	Be	Ca	Cd	Cr	Fe	Hg	K	Mg	Na	Ni	Pb	Se	U	Tl	
					ICP RESULTS IN PPM																	
CXLF32494	4.9	941.00	932.00	0.345	10	5	1	1	1100	10	35	250		1000	95	460	63	6.8	8			
CXLF Total					0.05	0.02	0.00	0.00	5.39	0.05	0.17	1.23		4.90	0.47	2.25	0.31	0.03	0.04			
CXL3EL32494	4.8	15g	17g	0.0009	10	5	1	1	28	10	2.5	280		60	9.3	48	5	5	8			
CXL3EL Total					0.05	0.02	0.00	0.00	0.13	0.05	0.01	1.34		0.29	0.04	0.23	0.02	0.02	0.04			
CXLP32494	25.6	855g	880g	0.000497		10	2	2	30	2	2	3.4	10	120	16	750	10	10	20	40		
CXLP Total					0.00	0.05	0.01	0.01	0.15	0.01	0.01	0.02	0.05	0.59	0.08	3.68	0.05	0.05	0.10	0.20		
CXLR32494A	19.6	0g	2.22g	0.154	1	5	1	1	87	1	3	1	5	130	25	4100	5	9.1	8	20		
CXLR32494B	16.0	17g	16.5g	0.193		10	2	2	84	2	7.6	2	10	190	33	6200	10	10	20	40		Column sat overnight leading to
CXLR32492C	16.0	0g	.752g	0.00457	1	5	1	1	30	1	1	1	5	60	8	2900	5	7	8	20		high activity in wash the next morning
CXLR32494D	15.9	0g	.223g	0.001	1	5	1	1	28	1	1	1	5	60	8	2900	5	5	8	20		
CXLR Total	67.50				0.05	0.42	0.08	0.08	3.97	0.08	0.21	0.08	0.42	7.50	1.27	272.07	0.42	0.53	0.73	1.67		
CXLOXF32494A	45.0	0g	3.46g	0.000096	NR	5	1	1	10	1	1	2.3	NR		8	340	5	5	8	20	20	
CXLOXF32494B	24.8	6g	1.40g	0.000065	NR	5	1	1	9.4	1	1	1	NR		8	340	5	5	8	20	20	
CXLOXF32494A2	Repeat for ICP				NR	5	1	1	9.4	1	1	1.9	NR		8	340	5	5	8	20	20	
CXLOXF32494B1	Repeat for ICP				NR	5	1	1	9.4	1	1	1	NR		8	310	5	5	8	20	20	
CXLOX Total																						

	NET WT.	Pu wt. 87%
CXLPROD2	988.2	859.70
CXLPRODS2	4.5	4.00
COMBINED 1 & 2	1803.0	1568.60

CXLOXOH32494B-5	NR	5	1	1	15	1	1	2.7	NR		8	300	5	5	8	20	20
CXL3ELOH32494C-1	NR	5	1	1	40	1	1	2.7	NR		8	380	5	5	8	20	20
JNKCXLOH4694-6	NR	5	1	1	9600	1	1	1	NR		8	1100	5	5	8	20	20
CLNJNK51994-3	NR	5	1	1	140	1	2.8	2.1	NR		8	320	5	5	8	20	20

CXLOH22894-1
CXLOH22894-2
CXLOH22894-3

RUN NUMBER: CXLF81894 ICP

SAMPLE ID	Volume	SAI	Pu (mg/L)	R04 Pu (g)	Am (mg/L)	R04 Am (g)	calc. alpha Ci/L	obs. alpha Ci/L	Ag	As	Ba	Be	Ca	Cd	Cr	Fe	Hg	K	Mg	Na	Ni	Pb	Se	U	Tl
									ICP RESULTS IN PPM																
CXLF081894	?								NR	5	1	5300	250	2	1	440	NR	NR	230	72	59	90	8	NR	20
CXLF+3081894	4.0		50250.00	201.00	49.50	0.198000	4.22E+00		NR	5	1	4800	310	1	1	390	NR	NR	310	130	52	74	20	NR	20
CXLF+3081894 Total (g)										0.02	0.00	19.20	1.24	0.00	0.00	1.56			1.24	0.52	0.21	0.30	0.08		0.08
CXLL3EL081894	2.3		10695.65	24.600	0.44	0.001020	8.65E-01		NR	5	1	62	29	1	1	670	NR	NR	8	16	5	5	8	NR	20
CXLL3EL081894 Total (g)										0.01	0.00	0.14	0.07	0.00	0.00	1.54			0.03	0.06	0.02	0.02	0.03		0.08
CXLLP081894	6.0		28000.00	168.000	0.42	0.002520	2.26E+00		NR	5	1	1	37	1	1	4.3	NR	NR	8	25	6	5	20	NR	20
CXLP Total (g)										0.03	0.01	0.01	0.22	0.01	0.01	0.03			0.05	0.15	0.04	0.03	0.12		0.12
CXLLOXF081894	10.70		146.73	1.57	0.04	0.000381	1.20E-02		NR	5	1	1	17	1	1	2.9	10	NR	8	390	5	5	20	20	20
CXLLOXF081894 Total (g)										0.05	0.01	0.01	0.18	0.01	0.01	0.03	0.11		0.09	4.17	0.05	0.05	0.21	0.21	0.21
CXLLOXFOH081894	14.00							2.24E-04	NR	5	1	2.7	15	1	1	3.1	5	17000	33	260	5	5	8	20	20
CXLLOXFOH081894 Total (g)										0.07	0.01	0.04	0.21	0.01	0.01	0.04	0.07	238.00	0.46	3.64	0.07	0.07	0.11	0.28	0.28
CXLLR081894	10.8		125.00	1.350	18.52	0.200000	7.01E-02		NR	5	1	1900	180	1	1	1	5	NR	150	2000	20	25	20	20	20
CXLR Total (g)										0.05	0.01	20.52	1.94	0.01	0.01	0.01	0.05		1.62	21.60	0.22	0.27	0.22	0.22	0.22
CXLLR081894A	12.5	with line rinse & 1 L prep						4.02E-03	NR	5	1	1700	200	1	1	1	5	NR	220	2000	18	21	8	20	20
CXLLR081894A Total (g)			6.07 M [H+], 7.0 M [Cl]							0.06	0.01	21.25	2.50	0.01	0.01	0.01	0.06		2.75	25.00	0.23	0.26	0.10	0.25	0.25
CXLLROH081894A	22.00							5.45E-04	NR	5	1	900	15	1	1	1	5	60	11	1000	5	11	8	20	20
CXLLROH081894A Total (g)										0.11	0.02	19.80	0.33	0.02	0.02	0.02	0.11	1.32	0.24	22.00	0.11	0.24	0.18	0.44	0.44
CXLLTRUEL081894	1.0		1320.00	1.320	1.42	0.001420	1.11E-01		NR	5	1	1	23	1	1	6.9	NR	NR	8.6	12	5	5	8	NR	20
CXLLTRUEL081894 Total (g)										0.01	0.00	0.00	0.02	0.00	0.00	0.01			0.01	0.01	0.01	0.01	0.01		0.02
DAPEL081894	1.0		606.00	0.606000	157.00	0.157000	5.58E-01		NR	5	1	1	24	1	1	1	5	NR	12	12	5	43	8	NR	20
DAPEL081894 Total (g)										0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.01		0.01	0.01	0.01	0.04	0.01		0.02
DAPELOH081894	1.3							3.43E-04	NR	5	1	1	15	1	1	1	5	NR	8	23	5	5	8	20	20
DAPELOH081894 Total (g)										0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.01		0.01	0.03	0.01	0.01	0.01	0.03	0.03

Waste Polishing DF= 17.4 % alpha removed= 94.268

Redissolved Cake in 900 mL of HCl/H2O. Column Prep added to feed. 2.2 L volume, 7.1 M [H+]

CXLLR081894B	2.2		61.60	0.135520	34.80	0.076560	1.18E-01		1	5	1	1800	680	1	100	1	5	17000	870	140	76	5	8	20	20
CXLLR081894B Total (g)									0.00	0.01	0.00	3.96	1.50	0.00	0.22	0.00	0.01	37.40	1.91	0.31	0.17	0.01	0.02	0.04	0.04
CXLLR081894C	3.8							4.50E-05	1	5	1	1300	460	1	70	1	5	11000	590	110	51	5	8	20	20
CXLLR081894C Total (g)									0.00	0.02	0.00	4.94	1.75	0.00	0.27	0.00	0.02	41.80	2.24	0.42	0.19	0.02	0.03	0.08	0.08
DAPEL081894B	1.1		88.30	0.097130	34.90	0.038390	1.20E-01		1	5	1	5.6	18	1	1	2	5	87	8	13	5	5	8	10	20
DAPEL081894B Total (g)									0.00	0.01	0.00	0.01	0.02	0.00	0.00	0.00	0.01	0.10	0.01	0.01	0.01	0.01	0.01	0.01	0.02

Waste Polishing DF= 2613.5 % alpha removed= 99.962

CST/CMR Oxide analysis in ug/mL (ppm)

SAMPLE ID	Pu %	Fe	Ca	Cr	K	Mg	Be	Na	Ni	Pb	Ag	Ga
CXLPROD 4	87.00	120	190-2500	10	55	20-70	10	135				15
162 g SNM												

U	Np	Am	
30	33	32	on 11/15/94

Pu Isotope

238	239	240	241
0.017	#####	5.890	0.245

RUN NUMBER: 31495

SAMPLE ID		Volume	SAI	Pu (mg/L)	R04 Pu (g)	Am (mg/L)	R04 Am (g)	calc. alpha Ci/L	obs. alpha Ci/L
CXLP 31495		10.2		78431.37	800.000	0.4441	0.004530	6.34E+00	
CXLP 31495	Total (g)								
CXLLPOXF 31495		14.5		4.90	0.071	0.0431	0.000625	5.36E-04	
CXLLPOXF 31495	Total (g)	pH=0-1							
CXLLPOXFOH 31495		17.0		0.62	0.011	0.0003	0.000625	5.14E-05	
CXLLPOXFOH 31495	Total (g)	pH=0-1							
CXLLR 31495		17.9		2407.82	43.100	39.2737	0.703000	3.22E-01	
CXLLR 31495	Total (g)								
CXLLR 31495	A	21.0		39.10	0.821	7.8095	0.164000	2.85E-02	
CXLLR 31495	A Total (g)	6.5 M [H+]							
CXLLTRUEL 31495	A	2.2		5818.18	12.800	238.1818	0.524000	1.24E+00	
CXLLTRUEL 31495	A Total (g)	pH=4		(Eluted TRU-Spec & 30/10 amb. resins together)					
CXLLTRUELOXF 31495	A	3.2		7.06	0.023	0.0584	0.000187	7.60E-04	1.61E-03
CXLLTRUELOXF 31495	A Total (g)								
CXLLR 31495	B	22.4		1.04	0.023	0.0002	0.004640	8.46E-05	1.75E-04
CXLLR 31495	B Total (g)	6.5 M [H+]		(30/10 amb. resin only)					

ICP RESULTS IN PPM

SAMPLE ID	Ag	As	Ba	Be	Ca	Cd	Cr	Fe	Ga	Hg	K	Mg	Na	Ni	Pb	Se	U	Tl
CXLP 31495	NR	5	1	3.9	760	1	1	570	5	5	NR	40	7	220	5	25	750	20
CXLP 31495 Total (g)		0.05	0.01	0.04	7.75	0.01	0.01	5.81	0.05	0.05		0.41	0.07	2.24	0.05	0.26	7.65	0.20
CXLLPOXF 31495	1	5	1	4.8	15	1	1	280	NR	5	60	28	46	5	5	25	20	20
CXLLPOXF 31495 Total (g)	0.01	0.07	0.01	0.07	0.22	0.01	0.01	4.06		0.07	0.87	0.41	0.67	0.07	0.07	0.36	0.29	0.29
CXLLPOXFOH 31495	NR	32	1	87	74	1	1	210	120	5	NR	9400	52	5	5	25	20	20
CXLLPOXFOH 31495 Total (g)		0.54	0.02	1.48	1.26	0.02	0.02	3.57	2.04	0.09		159.80	0.88	0.09	0.09	0.43	0.34	0.34
CXLLR 31495	1	5	1	4500	140	1	1	1	NR	5	NR	440	10000	23	9.6	25	20	20
CXLLR 31495 Total (g)	0.02	0.09	0.02	80.55	2.51	0.02	0.02	0.02		0.09		7.88	179.00	0.41	0.17	0.45	0.36	0.36
CXLLTRUEL 31495																		
CXLLTRUELOXF 31495	NR	5	1	700	15	1	2.1	8.3	5	5		76	870	5.9	5	25	20	20
CXLLTRUELOXF 31495 Total (g)		0.02	0.00	2.24	0.05	0.00	0.01	0.03	0.02	0.02		0.24	2.78	0.02	0.02	0.08	0.06	0.06
CXLLR 31495	NR	5	1	4500	190	1	1	14		5		460	8600	45	19	25	20	20
CXLLR 31495 Total (g)		0.11	0.02	100.80	4.26	0.02	0.02	0.31		0.11		10.30	192.64	1.01	0.43	0.56	0.45	0.45

Waste Polishing DF= 1838.3 % alpha removed= 99.946

RUN NUMBER: 72594

SAMPLE ID	Volume	SAI	Pu (mg/L)	R04 Pu (g)	Am (mg/L)	R04 Am (g)	calc. alpha Ci/L	obs. alpha Ci/L	ICP RESULTS IN PPM Ag	As	Ba	Be	Ca	Cd	Cr	Fe	Hg	Mg	Na	Ni	Pb	Se	U	Tl
CXL+3EL 72594	3.9	.0476 g							1	5	5	1	160	4.2	9.3	5500	5	44	40	5	9.4	8	90	20
CXL+3EL 72594 Total (g)										0.02	0.02	0.00	0.62	0.02	0.02	21.45	0.02	0.17	0.16	0.02	0.04	0.03	0.35	0.08
CXLF 72594	19.0		5047.37	95.900	12.42	0.236000	4.48E-01		NR	5	1	1.7	2800	1	160	1.4	NR	2700	9000	110	13	8	20	40
CXLF 72594 Total (g)										0.10	0.02	0.03	53.20	0.02	3.04	0.03		51.30	171.00	2.09	0.25	0.15	0.38	0.76
CXLP 72594	18.5		5091.89	94.200	0.08	0.001410	4.11E-01		NR	5	1	1	15	1	1	5	NR	8	7	5	5	8	20	20
CXLP 72594 Total (g)										0.09	0.02	0.02	0.28	0.02	0.02	0.09		0.15	0.13	0.09	0.09	0.15	0.37	0.37
CXLLOXF 72594	21.0		206.19	4.330	0.10	0.002000	1.70E-02		NR	5	1	1	18	1	1	18	5	8	250	5	5	8	20	20
CXLLOXF 72594 Total (g)										0.11	0.02	0.02	0.38	0.02	0.02	0.38	0.11	0.17	5.25	0.11	0.11	0.17	0.42	0.42
CXLLOXFOH 72594									NR	5	1	1	77	1	1	4.7	5	3300	390	5	5	8	20	20
CXLLOXFOH 72594 Total (g)																								
CXLLR 72594	31.3		112.14	3.510	8.02	0.251000	3.50E-02		NR	5	1	1	1800	1	110	1	5	1700	7500	69	5	8	20	20
CXLLR 72594 Total (g)										0.16	0.03	0.03	56.34	0.03	3.44	0.03	0.16	53.21	234.75	2.16	0.16	0.25	0.63	0.63
CXLLR 72594 A	32.0		9.38	0.300	1.87	0.059800	6.81E-03	2.96E-03	NR	5	1	1	2.1	1	100	1.5	5	1900	8300	71	5	8	20	20
CXLLR 72594 A Total (g)				5.0 M [H+]						0.16	0.03	0.03	0.07	0.03	3.20	0.05	0.16	60.80	265.60	2.27	0.16	0.26	0.64	0.64
CXLLTRUEL 72594 A	1.3		4192.31	5.450	4.36	0.005670	3.53E-01		NR	5	1	1	330	1	17	38	5	290	1300	20	5	8	75	20
CXLLTRUEL 72594 A Total (g)										0.01	0.00	0.00	0.43	0.00	0.02	0.05	0.01	0.38	1.69	0.03	0.01	0.01	0.10	0.03
CXLLTRUELOH 72594 A	2.0								NR	5	1	1	2200	1	1.9	1	5	8	8.4	5	5	8	20	20
CXLLTRUELOH 72594 A Total (g)										0.01	0.00	0.00	4.40	0.00	0.00	0.00	0.01	0.02	0.02	0.01	0.01	0.02	0.04	0.04
CXLLDAPEL 72594 A	1.5		644.00	0.966	128.67	0.193000	4.69E-01		NR	5	1	1	270	1	13	6.5	5	230	900	8.9	5	8	20	20
CXLLDAPEL 72594 A Total (g)										0.01	0.00	0.00	0.41	0.00	0.02	0.01	0.01	0.35	1.35	0.01	0.01	0.01	0.03	0.03
CXLLDAPELOH 72594 A	2.0								NR	5	1	1	56	1	1	1	5	8	600	5	5	8	20	20
CXLLDAPELOH 72594 A Total (g)										0.01	0.00	0.00	0.11	0.00	0.00	0.00	0.01	0.02	1.20	0.01	0.01	0.02	0.04	0.04
CXLLR 72594 B	45.0							1.79E-05	1	5	1	1	1300	1	74	1	5	1200	5400	51	5	8	20	20
CXLLR 72594 B Total (g)				7.0 M [H+]					0.05	0.23	0.05	0.05	58.50	0.05	3.33	0.05	0.23	54.00	243.00	2.30	0.23	0.36	0.90	0.90
CXLLDAPEL 72594 B	1.0		308.00	0.308	61.50	0.061500	2.24E-01		1	5	1	1	250	1	11	72	5	220	820	9	5	8	20	20
CXLLDAPEL 72594 B Total (g)									0.00	0.01	0.00	0.00	0.25	0.00	0.01	0.07	0.01	0.22	0.82	0.01	0.01	0.01	0.02	0.02
Waste Polishing DF=	1954.4		% alpha removed=		99.949																			
CXLOH 72594 Total (g)	90.0								NR	10	2	2	120	2	2	2	10	11000	56	10	10	20	40	NR
										0.90	0.18	0.18	10.80	0.18	0.18	0.18	0.90	990.00	5.04	0.90	0.90	1.80	3.60	
Redissolved cake samples																								
KOHPPT 72594	1.0								NR	10	2	4.1	1300	2	600	22	1	4300	310	350	18	20	NR	40
KOHPPT 72594 Total (g)										0.01	0.00	0.00	1.30	0.00	0.60	0.02	0.00	4.30	0.31	0.35	0.02	0.02		0.04
MgOHPPT 72594	1.0								NR	10	2	2	150	2	130	43	1	20000	140	68	18	20	NR	40
MgHPPT 72594 Total (g)										0.01	0.00	0.00	0.15	0.00	0.13	0.04	0.00	20.00	0.14	0.07	0.02	0.02		0.04
KOHPPT 72594	1.0								NR	10	2	4.1	1300	2	600	1	22	4300	310	350	18	20	NR	40
KOHPPT 72594 Total (g)										0.01	0.00	0.00	1.30	0.00	0.60	0.00	0.02	4.30	0.31	0.35	0.02	0.02		0.04

Sample Designation	Sample Origin	Date Sampled	Date Analyzed	Date Dumped	pH	Vol. (L)	Alpha CPM/L	Total Cts	Bkgnd	Ag	As	Ba	Cd	Cr	Hg	Ni	Pb	Se	Tl	Sample Designation	Notes of Interest
CXLOH1	water	2/9/94	2/18/94	3/8/94	13	46.0	1.47E+08			0.2	1.0	0.2	0.2	0.3	1.0	1.0	1.0	2.0	4.0	CXLOH1	Sample was neutralized effluent from testing of EXCEL contactors and plumbing
CXLOH2	water	2/9/94	2/18/94	3/8/94	13	46.0	9.91E+07			0.2	1.0	0.2	0.2	0.4	1.0	1.0	1.0	2.0	4.0	CXLOH2	Sample was neutralized effluent from testing of EXCEL contactors and plumbing
CXLOH3	water	2/9/94	2/18/94	3/8/94	13	46.0	7.81E+07			0.2	1.0	0.2	0.2	0.3	1.0	1.0	1.5	2.0	4.0	CXLOH3	Sample was neutralized effluent from testing of EXCEL contactors and plumbing
CXLOH4	water	2/9/94	2/18/94	3/8/94	13	46.0	4.11E+08			0.2	1.0	1.3	0.2	2.2	1.0	3.6	1.0	2.0	4.0	CXLOH4	Sample was neutralized effluent from testing of EXCEL contactors and plumbing
CXLOH5	water	2/9/94	3/24/94	3/28/94	12	34.0	0.00E+00	55	55	2.0	5.0	1.0	1.0	1.9	5.0	3.8	5.0	8.0	20.0	CXLOH5	Sample was neutralized effluent from testing of EXCEL contactors and plumbing
CXLOH22894-1	effluent +4 IX		3/24/94	3/28/94	13	45.0	1.50E+07	30	25	2.0	5.0	1.0	1.0	1.0	5.0	5.0	5.0	8.0	20.0	CXLOH22894-1	Note- KOH calculated to 4.9 N concentration, larger than normal volume increases
CXLOH22894-2	effluent +4 IX		3/24/94	3/28/94	7	45.0	4.50E+08	161	11	2.0	5.0	1.0	1.0	1.2	5.0	2.2	5.0	8.0	20.0	CXLOH22894-2	during CXLOH22894 run. Has gotten better since.
CXLOH22894-3	wash +4 IX		3/24/94	3/28/94	7	45.0	4.74E+08	180	22	2.0	5.0	1.0	1.0	1.3	5.0	2.5	5.0	8.0	20.0	CXLOH22894-3	
CXLOH22894-4	wash +4 IX		3/30/94		8	15.0	3.39E+08	160	47		5.0	1.0	1.0	1.0	5.0	57.0	23.0	8.0	20.0	CXLOH22894-4	
CXLOH22894-5	wash +4 IX		3/30/94		12	28.7	3.00E+07	57	47		5.0	1.0	1.0	1.0	5.0	5.0	5.0	8.0	20.0	CXLOH22894-5	
CXLOH22894-1A	wash +4 IX		3/30/94		5	46.0	3.36E+08	159	47		5.0	1.0	1.0	1.3	5.0	5.0	5.0	8.0	20.0	CXLOH22894-1A	Added a couple mL of 10 M KOH to 1A & 2A to insure pH above 7 before dumping.
CXLOH22894-2A	wash +4 IX		3/30/94		6	46.0	4.20E+07	61	47		5.0	1.0	1.0	1.4	5.0	5.0	5.0	8.0	20.0	CXLOH22894-2A	Bromocresol purple was "violet" (pH above 6.8) before this extra addition.
CXLOHF22894-4	oxalate filt.	4/7/94	4/7/94	4/14/94	12	28.0	8.71E+07	91	62											CXLOHF22894-4	
CXLOHF22894-5	oxalate filt.	4/7/94	4/7/94	4/14/94	13	49.0	2.34E+09	840	62												
CXLOH22894-7	??????	4/7/94	4/7/94	4/14/94	7	23.0	3.90E+08	192	62												
CXLOH32494-1	??????	4/7/94	4/7/94	4/14/94	13	44.0	1.14E+09	441	62												
CXLOH32494A-6	??????	4/7/94	4/7/94	4/14/94	13	35.0	1.44E+08	110	62												
CXLROH32494C-1	wash +4 IX	5/2/94	5/2/94	5/11/94	13	27.0	4.20E+08	157	17												
CXLROH32494D-3	wash +4 IX	5/2/94	5/2/94	5/11/94	13	35.0	0.00E+00	15	15												
CXL3ELOH32494-4	eluate +3	5/2/94	5/2/94	above	13	7.5	1.64E+10	5488	17												
CXLOXOH32494-5	oxalate filt.	5/2/94	5/2/94	5/11/94	13	48.0	1.09E+09	382	19												
JNKCXLOH4494-6	rag water	5/2/94	5/2/94	5/11/94	8	32.0	1.68E+08	73	17		5.0	1.0	1.0	1.0	5.0	5.0	5.0	8.0	20.0		Contains 83,000 ppm Ca, 1000 ppm Na, 130 ppm Mg. Where is Ca from??
CXLF32194F2	MgO Exp.	4/7/94	4/7/94	5/11/94							5.0	1.0	1.0	1.0	5.0	5.0	5.0	8.0	20.0		Multiple filtrations to reduce alpha activity
CXL3ELOH32494C-1	eluate +3 refil.	5/12/94	5/12/94	5/13/94	13	9.0	2.62E+09	956	17												
CLNJNK51994-3	clean ragwater	5/12/94	5/12/94	5/13/94	10	35.0	8.71E+07	48	19												
CXLOXOH32494-5	oxalate filt.	5/12/94	5/12/94	5/13/94	10	33.0	4.59E+08	170	17												
JNKCXLOH4694-6	rag water	5/12/94	5/12/94	5/13/94	12	19.0	8.41E+07	47	19												
CXLOXOH32494B-5										NR	5.0	1.0	1.0	1.0	NR	5.0	5.0	8.0	20.0		
							370.7	Total for 22894													
							305.5	Total for 32494													

ATTACHMENT D

LOS ALAMOS NATIONAL LABORATORY
WASTE PROFILE SYSTEM

WPF #: 32733

31-Jan-2008 11:45 AM **(Version: 2)**

Generator :	**WOLFSBERG, LAURA**	MS :	**J514**	PH :	**59795**	Z#:	**117048**	
WMC :	**PETERSEN, ROBYN**	MS :	**C925**	PH :	**5056659054**	Z#:	**086572**	
Contact :								
RCRA Rev :	**ELICIO ANDY U**	MS :	**J599**	PH :	**5056676956**	Z#:	**118692**	
Status :	**VOID**	Activation Date :	**10/13/2000**		Expiration Date:	**10/13/2002**		
Group :	**EET**	TA :	**48**	Bldg :	**000001**	Room :	**4**	

You are required to keep a copy of the WPF(s) in your files for at least three years. This WPF(s) is valid for one year or as long as the composition of the waste you have characterized remains the same. Should your waste change, please submit a new WPF to Waste Acceptance Group.

Waste Accumu : **None of the Above Site ID#**

Method of Char : Analysis/Documents Attached
Acceptable Knowledge Documentation Number: JR-2000-22
MSDS

Waste Type : **Process Waste/Spent Chemical/Other**

Waste Classes:
RCA Waste - **Not RCA Waste**
RAD Waste - **Non-rad**
WW Info - **RLWTF**
Classif/Sensi - **N**

Waste Category: **Inorganic**

Waste Sources : **Materials Processing/Production**

Waste Matrix : **Aqueous**

Matrix Type : **Homogeneous**

Process Desc :

2% NITRIC ACID SOLUTION USED IN SAMPLE PROCESSING FOR EXTRACTION OF TRACER CONSTITUENTS. RESIDUAL 2% NITRIC ACID WILL BE DILUTED WITH DI H2O TO REMOVE FROM ROCK SAMPLES AND FILTER PAPER SAMPLES AND PUT DOWN RLWTF. MAXIMUM CONCENTRATION OF NITRIC ACID SOLUTION AFTER DILUTION WILL BE 1% HNO3 DOWN RLWTF. JEFF ROACH 7/10/00

Waste Desc : N/A

Ignitability : **Not ignitable**

Corrosivity : **<= 2.0**

Reactivity : **Non-reactive**

Boiling Point : **> 95 F > 35 C**

Toxicity Characteristic Metals: N/A

Toxicity Characteristic Organic Compounds: N/A

Additional Chemical Constituents and Contaminants:

CAS NO	Constituent	MIN	MAX	UOM
	HNO3	0.5	1	%

WATER	99	99.5	%
2,3,4,5 TETRAFLUOROBENZOIC ACID	0.0000001	0.01	%
2,4 DIFLUOROBENZOIC ACID	0.0000001	0.01	%
2,4,5 TRIFLUOROBENZOIC ACID	0.0000001	0.01	%
2,6 DIFLUOROBENZOIC ACID	0.0000001	0.01	%
CERIUM III CHLORIDE HEPTAHYDRATE	0.0000001	0.005	%
COBALT (II) CHLORIDE HEXAHYDRATE	0.0000001	0.001	%
LITHIUM BROMIDE	0.0000001	0.1	%
MAGANESE CHLORIDE	0.0000001	0.001	%
NICKEL CHLORIDE	0.0000001	0.001	%
PENTAFLUOROBENZOIC ACID	0.0000001	0.1	%
POTASSIUM IODIDE	0.0000001	0.001	%
PYRIDONE	0.0000001	0.01	%
RHODAMINE WT	0.0000001	0.001	%
SAMARIUM III CHLORIDE HEXAHYDRATE	0.0000001	0.005	%
SODIUM HYDROXIDE	0.0000001	0.001	%
URANINE (SODIUM FLUORESCEIN)	0.0000001	0.05	%
POLYSTYRENE LATEX MICROSPERES	0.0000001	0.01	%

Additional Information: PH OF 1% NITRIC SOLUTION WAS MEASURED WITH WHAT MAN PH INDICATOR STRIPS 0-14 PH SCALE. PH-1.0 JEFF ROACH 7/10/00

Waste Water Characteristics for RLWTF
Waste Production: Other
Additional Contaminants:

Contaminant	Limit	Min	Max	Unit	Method
TOTAL NITRATES		**10000**	**10000**	**mg/l**	

Total Alpha: 0.00E+00 Ci/l
Total Beta: 0.00E+00 Ci/l
Total Gamma: 0.00E+00 Ci/l
Average daily flow when discharge occurs: 2 LIT
Maximum daily flow when discharge occurs: 4 LIT
Estimated number of days dicharge will occur: 100
Estimated total volume per year discharged to the RLWC at TA-50: 400 LIT

LDR and Underlying Hazardous Constituents Information
Non-Wastewater/Wastewater Category: **Non Wastewater**

WASTE CHARACTERIZATION INFORMATION

Radioactivity Category : **NON-RAD**

RCRA Category : **HAZARDOUS WASTE**

Secondary Info : N/A

Waste Classification : **HAZARDOUS WASTE**

Waste Acceptances : **TA-50 Acceptance**

EPA Hazardous Waste Code : **D002**
Notification Of Underlying Hazardous Constituents:
Constituents

No Underlying Hazardous Constituents in this waste stream

GWCP Information

Section 1 - Waste Prevention/Minimization (answer all questions)

Can hazard segregation, elimination, or material substitution be used?	☐ Yes*	☐ No	
Can any of the materials in the waste stream be recycled or reused	☐ Yes*	☐ No	
Has waste minimization been incorporated into procedures or other process controls?	☐ Yes	☐ No	
Can this waste be generated outside a RCA?	☐ Yes*	☐ No	☐ N/A

*Provide Comment

Section 6 - Work Control Documentation (answer all questions)

Do the procedures for this process cover how to manage this waste?	☐ Yes	☐ No (Provide comments)
Do the procedures for this process cover controls to prevent changes to waste constituents and concentrations or addition or removal of waste?	☐ Yes	☐ No (Provide comments)

Section 7 - Package and Storage Control

Describe how the waste will be packaged in according to the applicable WAC:

Identify the storage management controls that will be used for this waste stream: (check all that apply)

- ☐ Tamper indication devices:
- ☐ Limited use locks with log-in for waste
- ☐ Locked cabinet or building
- ☐ Other (describe)

Section 8 - Waste Certification Statements (check only one)

- ☐ Waste appears to meet WAC chapter for:
- ☐ Waste needs exception/exemption for treatment, storage, or disposal at:
- ☐ Waste does not meet the criteria for any known TSDF, (DOE approval is required. Contact the Waste Management Program Office for assistance.)

Estimated Annual Volume (m3):

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WASTE PROFILE FORM

ORIGINAL

RECEIVED JUL 1 8 2000

Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: EM-SWO at MS J595. For assistance with completing this form, call EM-SWO at 5-4000.	Reference Number 32733. (For EM-SWO use only.)

Generator's Z Number	Waste Generator's Name (print)	WMC's Z Number	WMC's Name (print)
111738	Jeff Roach	086572	Robin Petersen

Generator's Telephone	Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room
5-9795	J514	E-ET	48	1	4

Waste Accumulation (Check only one.)
- ☐ Satellite Accumulation Area — Site no: _____
- ☐ Less-than-90-days Storage Area — Site no: _____
- ☐ TSDF — Site no: _____
- ☐ Universal Waste Storage Area — Site no: _____
- ☒ None of the Above

ER Use Only ☐ ER Site — PRS #: _____

Method of Characterization (Check as many as apply.)
- ☒ Analysis/Documents Attached
- ☐ Chemical/Physical Analysis — Sample #: _____
- ☐ Radiological Analysis — Sample #: _____
- ☐ PCB Analysis — Sample #: _____
- ☒ Acceptable Knowledge Documentation — Documentation #: SR-2000-22
- ☒ MSDS

Section 1 - Chemical and Physical Information

Waste Type (Check only one.)
- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☒ Process Waste/Spent Chemical/ other (Complete all sections.)
- ☐ Green is Clean Waste (Complete all sections as appropriate.)

Waste Classes

Radiological Information
Was Waste Generated in a RCA? ☐ Yes ☒ No
- ☒ Non-radioactive
- ☐ Radioactive
  - ☐ Low-Level
  - ☐ Transuranic

Wastewater Information
- ☐ Wastewater for SWSC (TA-46) (Complete Attachment 1)
- ☒ Wastewater for RLWTF (TA-50/TA-21) (Complete Attachment 2)
- ☐ Wastewater for TA-16 (HE)

Classification Information
- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check as many as apply.)
- ☒ Inorganic
- ☐ Organic
- Volatile Organics ☐ < 500 ppm ☐ ≥ 500 ppm
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste residue
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)
- Asbestos ☐ friable ☐ non-friable
- PCB Source Concentration
  - ☐ PCB < 50 ppm
  - ☐ PCB ≥ 50 - < 500 ppm
  - ☐ PCB ≥ 500 ppm
- ☐ Other (Describe below)

* Concentrations 10% or greater before use.

Waste Source (Check only one.)

Routine Waste
- ☐ Decon
- ☒ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup - Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Non-routine Waste
- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping - Non-routine
- ☐ Spill Cleanup - Non-routine
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix (Check only one.)

Gas
- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid
- ☒ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid
- ☐ Powder/Ash
- ☐ Solid
- ☐ Sludge
- ☐ Absorbed liquid

Matrix Type (Check only one.)
- ☒ Homogeneous
- ☐ Heterogeneous (Describe below)

Waste/Process Description (Chemical formulas may be used in this field.)

2% Nitric Acid Solution used in sample processing for extraction of tracer constituents. Residual 2% Nitric Acid will be diluted with DI H_2O to remove from rock samples and filter paper samples and put down RLWTF. Maximum concentration of Nitric Acid solution after dilution will be 1% HNO_3 down RLWTF. Jeff Roach 7/10/00

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WASTE PROFILE FORM

Section 2 - Characteristics

Ignitability (Check only one.) (°F)	(°C)	Corrosivity (Check only one.) (pH)	Reactivity (Check as many as apply.)	Boiling Point (Check only one.) (°F)	(°C)
☐ < 73	< 22.8	☒ ≤ 2.0 pH = 1	☐ RCRA Unstable	☐ ≤ 95	≤ 35
☐ 73 - 99	22.8 - 37.2	☒ 2.1 - 4.0	☐ Water Reactive	☒ > 95	> 35
☐ 100 - 139	37.8 - 59.4	☐ 4.1 - 6.0	☐ Cyanide Bearing (> 250 ppm)		
☐ 140 -200	60.0 - 99.3	☐ 6.1 - 9.0	☐ Sulfide Bearing (> 500 ppm)		
☐ > 200	> 99.3	☐ 9.1 - 12.4	☐ Pyrophoric		
☐ EPA Ignitable - Non-liquid		☐ ≥ 12.5	☐ Shock Sensitive		
☐ DOT Flammable Gas		☐ Liquid corrosive to steel	☐ Explosive - DOT Div. _____		
☐ DOT Oxidizer					
☒ Not ignitable		☐ Non-aqueous	☒ Non-reactive	☐ Not applicable	

Identify for all contaminants listed.	Characterization Method: AK	TCLP	Total	Concentration of Contaminants: None or Non-detect	Present Below Regulatory Limit	Above Regulatory Limit (Concentration in ppm only.) Minimum	Maximum
Toxicity Characteristic Metals							
Arsenic	☒	☐	☐	☒	☐ < 5.0 ppm	_____ to	_____ ppm
Barium	☐	☐	☐	☐	☐ < 100.0 ppm	_____ to	_____ ppm
Cadmium	☐	☐	☐	☐	☐ < 1.0 ppm	_____ to	_____ ppm
Chromium (Total)	☐	☐	☐	☐	☐ < 5.0 ppm	_____ to	_____ ppm
Lead	☐	☐	☐	☐	☐ < 5.0 ppm	_____ to	_____ ppm
Mercury	☐	☐	☐	☐	☐ < 0.2 ppm	_____ to	_____ ppm
Selenium	☐	☐	☐	☐	☐ < 1.0 ppm	_____ to	_____ ppm
Silver	☐	☐	☐	☐	☐ < 5.0 ppm	_____ to	_____ ppm
Toxicity Characteristic Organics							
Benzene	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
Carbon tetrachloride	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
Chlordane	☐	☐	☐	☐	☐ < 0.03 ppm	_____ to	_____ ppm
Chlorobenzene	☐	☐	☐	☐	☐ < 100.0 ppm	_____ to	_____ ppm
Chloroform	☐	☐	☐	☐	☐ < 6.0 ppm	_____ to	_____ ppm
o - cresol	☐	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
m - cresol	☐	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
p - cresol	☐	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
Cresol - mixed	☐	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
2,4-D	☐	☐	☐	☐	☐ < 10.0 ppm	_____ to	_____ ppm
1,4-Dichlorobenzene	☐	☐	☐	☐	☐ < 7.5 ppm	_____ to	_____ ppm
1,2-Dichloroethane	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
1,1-Dichloroethylene	☐	☐	☐	☐	☐ < 0.7 ppm	_____ to	_____ ppm
2,4-Dinitrotoluene	☐	☐	☐	☐	☐ < 0.13 ppm	_____ to	_____ ppm
Endrin	☐	☐	☐	☐	☐ < 0.02 ppm	_____ to	_____ ppm
Heptachlor (& its epoxide)	☐	☐	☐	☐	☐ < 0.008 ppm	_____ to	_____ ppm
Hexachlorobenzene	☐	☐	☐	☐	☐ < 0.13 ppm	_____ to	_____ ppm
Hexachlorobutadiene	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
Hexachloroethane	☐	☐	☐	☐	☐ < 3.0 ppm	_____ to	_____ ppm
Lindane	☐	☐	☐	☐	☐ < 0.4 ppm	_____ to	_____ ppm
Methoxychlor	☐	☐	☐	☐	☐ < 10.0 ppm	_____ to	_____ ppm
Methyl ethyl ketone	☐	☐	☐	☐	☐ < 200.0 ppm	_____ to	_____ ppm
Nitrobenzene	☐	☐	☐	☐	☐ < 2.0 ppm	_____ to	_____ ppm
Pentachlorophenol	☐	☐	☐	☐	☐ < 100.0 ppm	_____ to	_____ ppm
Pyridine	☐	☐	☐	☐	☐ < 5.0 ppm	_____ to	_____ ppm
Tetrachloroethylene	☐	☐	☐	☐	☐ < 0.7 ppm	_____ to	_____ ppm
Toxaphene	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
Trichloroethylene	☐	☐	☐	☐	☐ < 0.5 ppm	_____ to	_____ ppm
2,4,5-Trichlorophenol	☐	☐	☐	☐	☐ < 400.0 ppm	_____ to	_____ ppm
2,4,6-Trichlorophenol	☐	☐	☐	☐	☐ < 2.0 ppm	_____ to	_____ ppm
2,4,5-TP (Silvex)	☐	☐	☐	☐	☐ < 1.0 ppm	_____ to	_____ ppm
Vinyl chloride	☐	☐	☐	☐	☐ < 0.2 ppm	_____ to	_____ ppm

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National Laboratory

WASTE PROFILE FORM

Section 3 - Additional Constituents

Additional Constituents and Contaminants. Please account for 100% of waste. Ranges should be given within guidelines of LIO 404-10-03 of individual constituents. List all other constituents (including liners) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum		Maximum	
	HNO3	0.5	to	1	%
	WATER	49	to	99.5	%
	2,3,4,5 Tetrafluorobenzoic Acid	0.0000001	to	0.01	%
	2,4 difluorobenzoic Acid	0.0000001	to	0.01	%
	2,4,5 trifluorobenzoic Acid	0.0000001	to	0.01	%
	2,6 difluorobenzoic Acid	0.0000001	to	0.01	%
SR 7/24/00	~~Cadmium Hydroxide~~	~~0.0000001~~	to	~~0.001~~	%
	Cerium III Chloride Heptahydrate	0.0000001	to	0.005	%
	Cobalt (II) Chloride ~~Hepta~~ Hexahydrate	0.0000001	to	0.001	%
	Lithium Bromide	0.0000001	to	0.1	%
	Magnesse Chloride	0.0000001	to	0.001	%
	Nickel Chloride	0.0000001	to	0.001	%
See Attached	Sheet				
	Total of max. ranges of this section	100.83			in %
	Total of max. ranges from page 2.	SR 7/24/00		~~100.5~~	in ppm

Additional Information (Use additional sheet if necessary.)

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

pH of 1% nitric solution was measured with Whatman pH indicator strips 0-14 pH scale. pH = 1.0

J. M. Roach 7/10/00

~~Waste Profile Form # 32527 is attacted and lists constituents that may be extracted from the SJR rock and filter pad samples during processing and thus be contained in the 1% nitric acid solution. All constituents with an "*" asterisk by it are constituents that may be in the 1% nitric solution. Their min. and max. percents are stated in the WPF. The hazards associated with both the nitric acid and the constituents will not change due to their contact. This WPF and WPF 32527 will still account for disposal characteristics/hazards.~~

J. M. Roach 7/10/00

info. included in section 3 SR 7/24/00

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

Signature: J. M. Roach — Date: 7/10/00

WASTE MANAGEMENT COORDINATOR: I have reviewed this form and to the best of my knowledge, the information is complete and accurate.

Signature: Robyn Petersen — Date: 7-14-00

Form 1346 (6/97) Rev. 1.0 (MSW)

Section 3 - Additional Constituents Continued

	min	max	
Pentafluoro benzoic Acid	0.0000001	0.1	
Potassium Iodide	0.0000001	0.001	
PYRIDONE	0.0000001	0.01	
Rhodamine WT	0.0000001	0.001	
Samarium III Chloride hexahydrate	0.0000001	0.005	
Sodium Hydroxide	0.0000001	0.001	
~~Sodium Iodide~~	~~0.0000001~~	~~0.01~~	JR 7/24/00
Uranine (Sodium Fluorescein)	0.0000001	0.05	
Polystyrene Latex Microspheres	0.0000001	0.01	
~~Sodium Fluoride~~	~~0.0000001~~	~~0.01~~	JR 7/24/00

7/25/00

TO: Andy Elicio
7-0735 FAX

FROM: Robyn Petersen

WPF 32733

Additional constituents added. Second WPF attachment removed.

Call with questions. 5-9054

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WASTE PROFILE FORM

Section 3 - Additional Constituents

Additional Constituents and Contaminants. Please account for 100% of waste. Ranges should be given within guidelines of LIG 404-00-03 of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum		Maximum	
	HNO3	0.5	to	1	%
	WATER	99	to	99.5	%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
	Total of max. ranges of this section	100.5			in %
	Total of max. ranges from page 2.				in ppm

Additional Information (Use additional sheet if necessary.)

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

pH of 1% nitric solution was measured with Whatman pH indicator strips 0-14 pH scale. pH = 1.0

G. M. Roach 7/10/00

Waste Profile Form # 32527 is attacted and lists constituents that may be extracted from the ~~5~~ JSR rock and filter pad samples during processing and thus be contained in the 1% nitric acid solution. All constituents with an "*" asterisk by it are constituents that may be in the 1% nitric solution. Their min. and max. percents are stated in the WPF. The hazards associated with both the nitric acid and the constituents will not change due to their contact. This WPF and WPF 32527 will still account for disposal characteristics/hazards.

G. M. Roach 7/10/00

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

Signature	Date
G. M. Roach	7/10/00

WASTE MANAGEMENT COORDINATOR: I have reviewed this form and to the best of my knowledge, the information is complete and accurate.

Signature	Date
Robyn Petersen	7-14-00

LOS ALAMOS
National Laboratory

WASTE PROFILE FORM

Attachment 2 - Wastewater Characteristics for RLWTF (TA-50 & TA-21)

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

Indicate if waste was: ☐ Accelerator produced ☐ Reactor produced ☒ Other (Describe in WPF Section 1 "Waste/Process Description.")

Radionuclide Contaminants NONE

Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min. / Max.	Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min. / Max.
As-74	☐ ≤ 4.0 E -8	____ / ____	Rb-84	☐ ≤ 1.0 E -8	____ / ____
Be-7	☐ ≤ 1.0 E -6	____ / ____	Sc-46	☐ ≤ 2.0 E -8	____ / ____
Ce-141	☐ ≤ 5.0 E -8	____ / ____	Sc-48	☐ ≤ 2.0 E -8	____ / ____
Cs-134	☐ ≤ 2.0 E -9	____ / ____	Se-75	☐ ≤ 2.0 E -8	____ / ____
Cs-137	☐ ≤ 3.0 E -9	____ / ____	Na-22	☐ ≤ 1.0 E -8	____ / ____
Co-56	☐ ≤ 1.0 E -8	____ / ____	Sr-85	☐ ≤ 7.0 E -8	____ / ____
Co-57	☐ ≤ 1.0 E -7	____ / ____	Sr-89	☐ ≤ 2.0 E -8	____ / ____
Co-58	☐ ≤ 4.0 E -8	____ / ____	Sr-90	☐ ≤ 1.0 E -9	____ / ____
Co-60	☐ ≤ 5.0 E -9	____ / ____	Sn-113	☐ ≤ 5.0 E -8	____ / ____
Eu-152	☐ ≤ 2.0 E -8	____ / ____	V-48	☐ ≤ 2.0 E -8	____ / ____
H-3	☐ ≤ 2.0 E -8	____ / ____	Y-88	☐ ≤ 3.0 E -8	____ / ____
I-133	☐ ≤ 1.0 E -8	____ / ____	Zn-65	☐ ≤ 9.0 E -9	____ / ____
Mn-52	☐ ≤ 2.0 E -8	____ / ____	Am-241	☐ ≤ 0.1 E -6	____ / ____
Mn-54	☐ ≤ 5.0 E -8	____ / ____	Pu-238	☐ ≤ 0.1 E -6	____ / ____
Ra-226 + 228	☐ ≤ 3.0 E -11	____ / ____	Pu-239	☐ ≤ 0.1 E -6	____ / ____
Rb-83	☐ ≤ 2.0 E -8	____ / ____	U-234	☐ ≤ 5.0 E -8	____ / ____
Others:			**Others:**		
____		____ / ____	____		____ / ____
____		____ / ____	____		____ / ____
____		____ / ____	____		____ / ____

Other Contaminants NONE

Metal Contaminants	Present Below LOC (in ppm)	Range if above LOC (in ppm) Min. / Max.
Aluminum	☐ ≤ 5.0	____ to ____ ppm
Boron	☐ ≤ 5.0	____ to ____ ppm
Cobalt	☐ ≤ 1.0	____ to ____ ppm
Copper	☐ ≤ 1.0	____ to ____ ppm
Vanadium	☐ ≤ 0.10	____ to ____ ppm
Zinc	☐ ≤ 95.40	____ to ____ ppm

Additional Contaminants		Min. / Max
Chemical Oxygen Demand (COD)		____ to ____ mg/l
Total Suspended Solids (TSS)		____ to ____ mg/l
☐ Total Nitrogen or	(only one	____ to ____ mg/l
☒ Total Nitrates	entry needed)	10,000 to 10,000 mg/l

Radioactive Contaminant Totals: NONE

Total Alpha ____ Ci/l
Total Beta ____ Ci/l
Total Gamma ____ Ci/l

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

☐ Acid Line ☐ Caustic Line ☐ Industrial Waste Line

☐ Yes ☒ No Scintillation Cocktail Brand Name ____ Volume ____ Unit ____

☐ Yes ☒ No Chemical Treatment for Boilers / Water Chillers

☐ Yes ☒ No Industrial Cleaner Type ____ Volume ____ Unit ____

Average daily volume when discharge occurs: JR 7/10/00 ~~4.00~~ 2.00 ☐ Gallons/day ☒ Liters/day

Maximum daily volume when discharge occurs: 4.00 ☐ Gallons/day ☒ Liters/day

Estimated number of days per year discharge will occur: 100

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-50 / TA-21: 400 ☐ Gallons ☒ Liters

Associated WPF Reference Number:

LDR and Underlying Hazardous Constituents Information - Identify presence of any constituents listed below.

Non-Wastewater / Wastewater Category - Check only one.

☒ Non Wastewater ☐ Wastewater [as defined by 40 CFR 268.2(f)]

Notification of California List Applicability - Check all that apply.

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

☐ A D001 thru D043 liquid waste containing 134 mg/L or greater of Nickel and/or 130 mg/L or greater of thallium.

☐ A D001 thru D043 waste containing Halogenated Organic Compounds (HOCs) listed in 40 CFR 268, Appendix III, at 1000 ppm or greater.

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

☒ *No Underlying Hazardous Constituents in this waste stream.* ☐ *HAZCAT Meeting 40 CFR 268.42(c)*

Organic Constituents

☐ A2213	☐ Butyl benzyl phthalate	☐ p,p'-DDE
☐ Acenaphthylene	☐ 2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	☐ o,p'-DDT
☐ Acenaphthene	☐ Carbaryl	☐ p,p'-DDT
☐ Acetone	☐ Carbenzadim	☐ Dibenz(a,h)anthracene
☐ Acetonitrile	☐ Carbofuran	☐ Dibenz(a,e)pyrene
☐ Acetophenone	☐ Carbofuran phenol	☐ 1,2-Dibromo-3-chloropropane
☐ 2-Acetyaminofluorene	☐ Carbon disufide	☐ 1,2-Dibromoethane (Ethylene dibromide)
☐ Acrolein	☐ Carbon tetrachloride	☐ Dibromomethane
☐ Acrylamide	☐ Carbosulfan	☐ m-Dichlorobenzene
☐ Acrylonitrile	☐ Chlordane (alpha & gamma isomers)	☐ o-Dichlorobenzene
☐ Aldicarb sulfone	☐ p-Chloroaniline	☐ p-Dichlorobenzene
☐ Aldrin	☐ Chlorobenzene	☐ Dichlorodifluoromethane
☐ 4-Aminobiphenyl	☐ Chlorobenzilate	☐ 1,1-Dichloroethane
☐ Aniline	☐ 2-Chloro-1,3-butadiene	☐ 1,2-Dichloroethane
☐ Anthracene	☐ Chlorodibromomethane	☐ 1,1-Dichloroethylene
☐ Aramite	☐ Chloroethane	☐ trans-1,2-Dichloroethylene
☐ alpha-BHC	☐ bis(2-Chloroethoxy) methane	☐ 2,4-Dichlorophenol
☐ beta-BHC	☐ bis(2-Chloroethyl) ether	☐ 2,6-Dichlorophenol
☐ delta-BHC	☐ Chloroform	☐ 2,4-Dichlorophenoxyacetic acid (2,4-D)
☐ gamma-BHC	☐ bis(2-Chloroisopropyl) ether	☐ 1,2-Dichloropropane
☐ Barban	☐ p-Chloro-m-cresol	☐ cis-1,3-Dichloropropylene
☐ Bendiocarb	☐ 2-Chloroethyl vinyl ether	☐ trans-1,3-Dichloropropylene
☐ Bendiocarb phenol	☐ Chloromethane (Methyl chloride)	☐ Dieldrin
☐ Benomyl	☐ 2-Chloronaphthalene	☐ Diethylene glycol, dicarbamate
☐ Benzene	☐ 2-Chlorophenol	☐ Diethyl phthalate
☐ Benz(a)anthracene	☐ 1-Chloropropylene	☐ p-Dimethylaminoazobenzene
☐ Benzal chloride	☐ Chrysene	☐ 2-4-Dimethyl phenol
☐ Benzo(b)fluoranthene	☐ o-Cresol	☐ Dimethyl phthalate
☐ Benzo(k)fluoranthene	☐ m-Cresol	☐ Dimetilan
☐ Benzo(g,h,i)perylene	☐ p-Cresol	☐ Di-n-butyl phthalate
☐ Benzo(a)pyrene	☐ m-Cumenyl methylcarbamate	☐ 1,4-Dinitrobenzene
☐ Bromodichloromethane	☐ Cycloate	☐ 4,6-Dinitro-o-cresol
☐ Bromomethane (Methyl bromide)	☐ Cyclohexanone	☐ 2,4-Dinitrophenol
☐ 4-Bromophenyl phenyl ether	☐ o,p'-DDD	☐ 2,4-Dinitrotoluene
☐ n-Butyl alcohol	☐ p,p'-DDD	☐ 2,6-Dinitrotoluene
☐ Butylate	☐ o,p'-DDE	☐ Di-n-octyl phthalate

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

Organic Constituents - continued

- ☐ Di-n-propylnitrosamine
- ☐ 1,4-Dioxane
- ☐ Diphenylamine
- ☐ Diphenylnitrosamine
- ☐ 1,2-Diphenylhydrazine
- ☐ Disulfoton
- ☐ Dithiocarbamates (total)
- ☐ Endosulfan I
- ☐ Endosulfan II
- ☐ Endosulfan sulfate
- ☐ Endrin
- ☐ Endrin aldehyde
- ☐ EPTC
- ☐ Ethyl acetate
- ☐ Ethyl benzene
- ☐ Ethyl cyanide (Propanenitrile)
- ☐ Ethyl ether
- ☐ bis(2-Ethylhexyl) phthalate
- ☐ Ethyl methacrylate
- ☐ Ethylene oxide
- ☐ Famphur
- ☐ Fluoranthene
- ☐ Fluorene
- ☐ Formetanate hydrochloride
- ☐ Formparanate
- ☐ Heptachlor
- ☐ Heptachlor epoxide
- ☐ Hexachlorobenzene
- ☐ Hexachlorobutadiene
- ☐ Hexachlorocyclopentadiene
- ☐ Hexachlorodibenzo-p-dioxins (HxCDDs)
- ☐ Hexachlorodibenzo-furans (HxCDFs)
- ☐ Hexachloroethane
- ☐ Hexachloropropylene
- ☐ Indeno (1,2,3-c,d) pyrene
- ☐ Iodomethane
- ☐ 3-Iodo-2-propynyl n-butylcarbamate
- ☐ Isobutyl alcohol
- ☐ Isodrin
- ☐ Isolan
- ☐ Isosafrole
- ☐ Kepone
- ☐ Methacrylonitrile
- ☐ Methanol
- ☐ Methapyrilene
- ☐ Methiocarb
- ☐ Methomyl
- ☐ Methoxychlor
- ☐ 3-Methylcholanthrene
- ☐ 4,4-Methylene bis(2-chloroaniline)
- ☐ Methylene chloride
- ☐ Methyl ethyl ketone
- ☐ Methyl isobutyl ketone
- ☐ Methyl methacrylate
- ☐ Methyl methansulfonate
- ☐ Methyl parathion
- ☐ Metolcarb
- ☐ Mexacarbate
- ☐ Molinate
- ☐ Naphthalene
- ☐ 2-Naphthylamine
- ☐ o-Nitroaniline
- ☐ p-Nitroaniline
- ☐ Nitrobenzene
- ☐ 5-Nitro-o-toluidine
- ☐ o-Nitrophenol
- ☐ p-Nitrophenol
- ☐ N-Nitrosodiethylamine
- ☐ N-Nitrosodimethylamine
- ☐ N-Nitroso-di-n-butylamine
- ☐ N-Nitrosomethylethylamine
- ☐ N-Nitrosomorpholine
- ☐ N- Nitrosopiperidine
- ☐ N-Nitrosopyrrolidine
- ☐ Oxamyl
- ☐ Parathion
- ☐ PCBs (total)
- ☐ Pebulate
- ☐ Pentachlorobenzene
- ☐ Pentachlorodibenzo-p-dioxins (PeCDDs)
- ☐ Pentachlorodibenzo-furans (PeCDFs)
- ☐ Pentachloroethane
- ☐ Pentachloronitrobenzene
- ☐ Pentachlorophenol
- ☐ Phenacetin
- ☐ Phenanthrene
- ☐ Phenol
- ☐ o-Phenylenediamine
- ☐ Phorate
- ☐ Phthalic acid
- ☐ Phthalic anhydride
- ☐ Physostigmine
- ☐ Physostigmine salicylate
- ☐ Promecarb
- ☐ Pronamide
- ☐ Propham
- ☐ Propoxur
- ☐ Prosulfocarb
- ☐ Pyrene
- ☐ Pyridine
- ☐ Safrole
- ☐ Silvex (2,4,5-TP)
- ☐ 1,2,4,5-Tetrachlorobenzene
- ☐ Tetrachlorodibenzo-p-dioxins (TCDDs)
- ☐ Tetrachlorodibenzofurans (TCDFs)
- ☐ 1,1,1,2-Tetrachloroethane
- ☐ 1,1,2,2-Tetrachloroethane
- ☐ Tetrachloroethylene
- ☐ 2,3,4,6-Tertachlorophenol
- ☐ Thiodicarb
- ☐ Thiophanate-methyl
- ☐ Tirpate
- ☐ Toluene
- ☐ Toxaphene
- ☐ Triallate
- ☐ Tribromomethane (Bromoform)
- ☐ 1,2,4-Trichlorobenzene
- ☐ 1,1,1-Trichloroethane
- ☐ 1,1,2-Trichloroethane
- ☐ Trichloroethylene
- ☐ Trichloromonofluoromethane
- ☐ 2,4,5-Trichlorophenol
- ☐ 2,4,6-Trichlorophenol
- ☐ 2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)
- ☐ 1,2,3-Trichloropropane
- ☐ 1,1,2-Trichloro-1,2,2-trifluoroethane
- ☐ Triethylamine
- ☐ tris-(2,3-Dibromopropyl) phosphate
- ☐ Vernolate
- ☐ Vinyl chloride
- ☐ Xylenes (total)

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

Metal/Inorganic Constituents

☐ Antimony	☐ Cyanides (Amenable)	☐ Selenium
☐ Arsenic	☐ Fluoride	☐ Silver
☐ Barium	☐ Lead	☐ Sulfide
☐ Beryllium	☐ Mercury (Retort residues)	☐ Thallium
☐ Cadmium	☐ Mercury - All others	☐ Vanadium
☐ Chromium (Total)	☐ Nickel	☐ Zinc
☐ Cyanides (Total)		

ACCEPTABLE KNOWLEDGE FOR WASTE CHARACTERIZATION AT TA-48

Name of Generator	Z Number	Date
Jeff Roach	111738	7/10/00

Location of Work: TA-48	Bldg. JR 7/10/00 4 1	Room 4

Process	AK Form number
Nitric Acid tracer extraction for production of sample processing	JR-2000-22

Waste stream statement of Acceptable Knowledge (Generator describe your knowledge of and how you determine the makeup of the waste stream)

Additional documents (if any)

Concentrated Nitric Acid made into a 2% solution with DI H_2O. Diluted with DI H_2O to extract from rocks or filter paper to a maximum of 1% HNO_3. Maximum concentration of Nitrates is 10,000 ppm (mg/L) = 1% of 1,000,000 ppm

Generator's signature Jeff Roach	Date 7/10/00
WMC Initials RP	Date 7-14-00

Completed form shall be forwarded to the WMC

Fisher Scientific

Back to Nitric Acid (TraceMetal)

Material Safety Data Sheet
Nitric Acid

ACC# 16550

Section 1 - Chemical Product and Company Identification

MSDS Name: Nitric Acid
Catalog Numbers: S71972, S71972-1, S75623-2, S75623-3, S76523, A198C 212, A198C-212, A198C212, A198C4X 212, A198C4X212, A200 212, A200 500, A200 612GAL, A200-212, A200-500, A200-612G, A200-612GAL, A200-612GL, A200212, A200500, A200612GAL, A200C-2.5, A200C-212, A200C212EA, A200C4X 212, A200C4X212, A200C4X212 1, A200C4X2121, A200C4X2122, A200C4X212L, A200FP 500, A200FP500, A200J500, A200S 500, A200S-2.5, A200S-212, A200S-500, A200S4X212, A200S4X2123, A200S4X212L, A200S500, A200SI 212, A200SI-21, A200SI-212, A200SI212, A200SI21201, A200SI212LC, A206C 212, A206C-212, A206C212, A206C4X 212, A206C4X212, A467 500, A467-1, A467-2, A467-250, A467-500, A4672, A467500, A483 212, A483-212, A483212, A509 212, A509 212 002, A509 500, A509-212, A509-500, A509212, A509212 002, A509212001, A509212002, A509212003, A509212004, A5092122005, A509212LC, A509500, A509SK212, A510SK212, S71972-1MF*, S719721, S719721MF, S71972MF, S71972MF*, S71972SC
Synonyms: Azotic acid, engravers nitrate, hydrogen nitrate.
Company Identification:
Fisher Scientific
1 Reagent Lane
Fairlawn, NJ 07410
For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7697-37-2	Nitric acid	68-70	231-714-2
7732-18-5	Water	29-31%	231-791-2

Hazard Symbols: O C
Risk Phrases: 35 8

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear to yellow. **Danger!** Strong oxidizer. Contact with othermaterial may cause a fire. Corrosive. Causes eye and skin burns.Causes digestive and respiratory tract burns.
Target Organs: None.

Potential Health Effects

Eye: Causes severe eye burns. May cause irreversible eye injury.
Skin: May cause severe skin irritation. Causes skin burns. May cause deep, penetrating ulcers of the skin.
Ingestion: Causes gastrointestinal tract burns. May cause perforation of the digestive tract.
Inhalation: May be fatal if inhaled. Effects may be delayed. May cause irritation of the respiratory tract with burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema.
Chronic: Repeated inhalation may cause chronic bronchitis. Repeated exposure may cause erosion of teeth.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid immediately. Do NOT allow victim to rub or keep eyes closed.
Skin: Get medical aid immediately. Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.
Ingestion: Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.
Inhalation: Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Firefighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Strong oxidizer. Contact with combustible materials may cause a fire. Use water spray to keep fire-exposed containers cool. Substance is noncombustible.
Extinguishing Media: Substance is noncombustible; use agent most appropriate to extinguish surrounding fire.
Autoignition Temperature: Not available.
Flash Point: Not available.
NFPA Rating: Not published. Explosion Limits, Lower: Not available. Upper: Not available.

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material, (e.g., dry sand or earth), then place into a chemical waste container. Neutralize spill with sodium bicarbonate. A vapor suppressing foam may be used to reduce vapors.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Do not ingest or inhale.
Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Nitric acid	2 ppm ; 5.2 mg/m3; 4 ppm STEL; 10 mg/m3 STEL	2 ppm TWA; 5 mg/m3 TWA 25 ppm IDLH	2 ppm TWA; 5 mg/m3 TWA
Water	none listed	none listed	none listed

OSHA Vacated PELs: Nitric acid: 2 ppm TWA; 5 mg/m3 TWA Water: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves and clothing to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: clear to yellow
Odor: strong odor - acrid odor
pH: 1.0
Vapor Pressure: 6.8 mm Hg
Vapor Density: Not available.
Evaporation Rate:
Viscosity: Not available.
Boiling Point: 186.8 deg F
Freezing/Melting Point:-43.6 deg F
Decomposition Temperature: Not available.
Solubility: Soluble in water.
Specific Gravity/Density:1.50
Molecular Formula:HNO3
Molecular Weight:

Section 10 - Stability and Reactivity

Chemical Stability: Decomposes when in contact with air, light, or organic matter.
Conditions to Avoid: High temperatures, incompatible materials, moisture, reducing agents.
Incompatibilities with Other Materials: Acids (organic, e.g. acetic acid, benzoic acid, formic acid, methanoic acid, oxalic acid), alcohols and glycols (e.g. butyl alcohol, ethanol, methanol, ethylene glycol), aldehydes (e.g. acetaldehyde, acrolein, chloral hydrate, formaldehyde), amides (e.g. butyramide, diethyltoluamide, dimethyl formamide), amines (aliphatic and aromatic, e.g. dimethyl amine, propylamine, pyridine, triethylamine), azo, diazo, and hydrazines (e.g. dimethyl

hydrazine, hydrazine, methyl hydrazine), carbamates (e.g. carbanolate, carbofuran), caustics (e.g. ammonia, ammonium hydrozide, calcium hydroxide, potassium hydroxide, sodium hydroxide), cyanides (e.g. potassium cyanide, sodium cyanide), dithiocarbamates (e.g. ferbam, maneb, metham, thiram), esters (e.g. butyl acetate, ethyl acetate, propyl formate), ethers (e.g. dioxane, furfuran, tetrahydrofuran (THF)), fluorides (inorganic, e.g. ammonium fluoride, calcium fluoride, cesium fluoride), hydrocarbons (aromatic, e.g. benzene, chrysene, cumene, toluene), halogenated organics (e.g. dibromoethane, hexachlorobenzene, methyl chloride, trichloroethylene), isocyanates (e.g. methyl isocyanate), ketones (e.g. acetone, acetophenone, MEK, MIBK), mercaptans and other organic sulfides (e.g. butyl mercaptan, carbon disulfide, methanethiol), metals (alkali and alkaline, e.g. cesium, potassium, sodium), metals as powders (e.g. hafnium, raney nickel), metals as non-powders (e.g. brass, bronze, iron), metals and metal compounds (toxic, e.g. beryllium, lead acetate, nickel carbonyl, tetraethyl lead), nitrides (e.g. potassium nitride, sodium nitride), nitriles (e.g. acetonitrile, methyl cyanide), nitro compounds (organic, e.g. nitrobenzene, nitroglycerine, picric acid, trinitrotoluene), hydrocarbons (aliphatic, unsaturated, e.g. cyclopentene, ethylene, heptene), hydrocarbons (aliphatic, saturated, e.g. butane, heptane, isooctane), peroxides and hydroperoxides (organic, e.g. acetyl peroxide, benzoyl peroxide, butyl peroxide, methyl ethyl ketone peroxide), ph.
Hazardous Decomposition Products: Nitrogen oxides.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 7697-37-2: QU5775000 QU5900000
CAS# 7732-18-5: ZC0110000
LD50/LC50:
CAS# 7697-37-2:
Inhalation, rat: LC50 =67 ppm(NO2)/4H;
CAS# 7732-18-5:
Oral, rat: LD50 = >90 mL/kg;
Carcinogenicity:
CAS# 7697-37-2: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA. CAS# 7732-18-5: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Epidemiology: No information available.
Teratogenicity: Effects on newborn: biochemical and metabolic, Oral-rat TDLo=2345 mg/kg (female 18D post). Fetotoxicity: Stunted fetus, Oral-rat TDLo=21150 mg/kg (female 1-21D post).
Reproductive Effects: No information available.
Neurotoxicity: No information available.
Mutagenicity: No information available.
Other Studies: None.

Section 12 - Ecological Information

Ecotoxicity: Mosquito fish: TLm=72 ppm/96H (fresh water) Cockle: LC50=330-1000 ppm/48H (salt water)
Environmental Fate: No information reported.
Physical/Chemical: No information available.
Other: None.

Section 13 - Disposal Considerations

Dispose of in a manner consistent with federal, state, and local regulations.

RCRA D-Series Maximum Concentration ofContaminants: None listed.
RCRA D-Series Chronic Toxicity ReferenceLevels: None listed.
RCRA F-Series: None listed.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transportation Information

	US DOT	IATA	RID/ADR	IMO	Canada TDG
Shipping Name:	NITRIC ACID	No information available.	No information available.	No information available.	NITRIC ACID
Hazard Class:	8				8(9.2)
UN Number:	UN2031				UN2031
Packing Group:	II				II

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 7697-37-2 is listed on the TSCA inventory.
CAS# 7732-18-5 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
SARA

Section 302 (RQ)
CAS# 7697-37-2: final RQ = 1000 pounds (454 kg)
Section 302 (TPQ)
CAS# 7697-37-2: TPQ = 1000 pounds; RQ = 1000 pounds
SARA Codes
CAS # 7697-37-2: acute, chronic, flammable.
Section 313
This material contains Nitric acid (CAS# 7697-37-2, 68 70%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.
Clean Air Act:
This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
CAS# 7697-37-2 is listed as a Hazardous Substance under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
CAS# 7697-37-2 is considered highly hazardous by OSHA.
STATE
CAS# 7697-37-2 can be found on the following state right to know lists: California, New Jersey,

Florida, Pennsylvania, Minnesota, Massachusetts.
CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.
California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

O C

Risk Phrases:

R 35 Causes severe burns. R 8 Contact with combustible material may cause fire.

Safety Phrases:

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S 36 Wear suitable protective clothing. S 45 In case of accident of if you feel unwell, seek medical advice immediately (show the label where possible). S23B Do not breathe fumes.

WGK (Water Danger/Protection)

CAS# 7697-37-2: 1
CAS# 7732-18-5: No information available.

Canada

CAS# 7697-37-2 is listed on Canada's DSL/NDSL List.
CAS# 7732-18-5 is listed on Canada's DSL/NDSL List.
This product has a WHMIS classification of C, D1A, E.
CAS# 7697-37-2 is not listed on Canada's Ingredient Disclosure List.
CAS# 7732-18-5 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

CAS# 7697-37-2: OEL-ARAB Republic of Egypt:TWA 2 ppm (5 mg/m3) OEL-AUSTRALIA:TWA 2 ppm (5 mg/m3);STEL 4 ppm (10 mg/m3) OEL-BELGIUM:TWA 2 ppm (5.2 mg/m3);STEL 4 ppm (10 mg/m3) OEL-CZECHOSLOVAKIA:TWA 2.5 mg/m3;STEL 5 mg/m3 OEL-DENMARK:TWA 2 ppm (5 mg/m3) OEL-FINLAND:TWA 2 ppm (5 mg/m3);STEL 5 ppm (13 mg/m3);Skin OEL-FRANCE:TWA 2 ppm (5 mg/m3);STEL 4 ppm (10 mg/m3) OEL-GERMANY:TWA 10 ppm (25 mg/m3) OEL-HUNGARY:STEL 5 mg/m3 OEL-JAPAN:TWA 2 ppm (5.2 mg/m3) OEL-THE PHILIPPINES:TWA 2 ppm (5 mg/m3) OEL-POLAND:TWA 10 mg/m3 OEL-RUSSIA:TWA 2 ppm;STEL 2 mg/m3;Skin OEL-SWEDEN:TWA 2 ppm (5 mg/m3);STEL 5 ppm (13 mg/m3) OEL-SWITZERLAND:TWA 2 ppm (5 mg/m3);STEL 4 ppm (1 mg/m3) OEL-THAILAND:TWA 2 ppm (5 mg/m3) OEL-TURKEY:TWA 2 ppm (5 mg/m3) OEL-UNITED KINGDOM:TWA 2 ppm (5 mg/m3);STEL 4 ppm (10 mg/m3) OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

Section 16 - Additional Information

MSDS Creation Date: 12/20/1994
Revision #18 Date: 9/30/1998

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 32733
(Version: 1.1)

30-Oct-2001 01:35 PM

Generator: ROACH, JEFFREY L EET — MS: J514
WMC: PETERSEN, ROBYN CST25 — MS: J519
FROM: FWO-SWO — MS: J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 32733 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to FWO-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 32733
YES _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
YES _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
YES _____ **NO** _____
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification
I am producing or will produce the same type of waste as indicated in WPF# 32733
Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Extension-> Signed James Wolfsberg 117048 Date 11/13/01

Void Approval
I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 32733

Void-> Signed J. M. Roach Date 11/13/01

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: FWO-SWO ***MS: J595*** ***PHONE: 5-4000***

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 32733
(Version: 1)

19-Sep-2001 07:53 AM

Generator: ROACH, JEFFREY L EET — MS: J514
WMC: PETERSEN, ROBYN CST25 — MS: J519
FROM: FWO-SWO — MS: J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 32733 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to FWO-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 32733
YES ✓ NO ____
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
YES ____ NO ____
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
YES ____ NO ____
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 32733

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

Extension-> Signed Laura Wolfberg Date 10-1-01
LAURA WOLFSBERG

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 32733

Void-> Signed J. L. Roach Date 10/1/01

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: FWO-SWO ***MS: J595*** ***PHONE: 5-4000***

LOS ALAMOS NATIONAL LABORATORY
WASTE PROFILE SYSTEM

WPF #: 35269

31-Jan-2008 11:46 AM **(Version: 3)**

Generator :	**COSTA, DAVID**	MS :	**E530**	PH :	**58958**	Z#:	**121377**
WMC :	**MCCORMICK, EGAN**	MS :	**E507**	PH :	**5056678158**	Z#:	**093573**
Contact :							
RCRA Rev :	**ELICIO ANDY U**	MS :	**J599**	PH :	**5056676956**	Z#:	**118692**
Status :	**EXPIRE**	Activation Date :	**10/31/2002**		Expiration Date:		**10/31/2005**
Group :	**NMT15**	TA :	**55**	Bldg :	**000004**	Room :	**106**

You are required to keep a copy of the WPF(s) in your files for at least three years. This WPF(s) is valid for one year or as long as the composition of the waste you have characterized remains the same. Should your waste change, please submit a new WPF to Waste Acceptance Group.

Waste Accumu : **None of the Above Site ID#**

Method of Char : Analysis/Documents Attached
Chemical/Physical Analysis
Radiological Analysis
Acceptable Knowledge Documentation

Waste Type : **Process Waste/Spent Chemical/Other**

Waste Classes:
RCA Waste - **RCA Waste**
RAD Waste - **Radioactive-TRU**
WW Info - **RLWTF**
Classif/Sensi - **N**

Waste Category: **Inorganic**

Waste Sources : **Research/Development/Testing**

Waste Matrix : **Aqueous**

Matrix Type : **Homogeneous**

Process Desc :

WASTE AQUEOUS ELECTROCHEMICAL PROCESS SOLUTIONS WITH LOW LEVELS OF URANIUM CONTAMINATION AND LESS THAN 0.1MOL/L SODIUM SULFATE. GROUPS 1-4

Waste Desc : N/A

Ignitability : **Not ignitable**

Corrosivity : **9.1 - 12.4**

Reactivity : **Non-reactive**

Boiling Point : **> 95 F > 35 C**

Toxicity Characteristic Metals:

Contaminant	Method	Limit	Min	Max	Unit
CHROMIUM	**TOTA**		**0**	**6**	**PPM**

Toxicity Characteristic Organic Compounds: N/A

Additional Chemical Constituents and Contaminants:

CAS NO	Constituent	MIN	MAX	UOM
7757-82-6	**SODIUM SULFATE**	**0**	**1.5**	**%**

WATER	95	98.5	%
BERYLLIUM	0	0.00001	%

Additional Information: A SUMMARY OF RESULTS IS INCLUDED AS ATTACHMENT 3.

Waste Water Characteristics for RLWTF
Waste Production: Other
Radionuclide Contaminants :

Contaminant	Limit	Min	Max	Unit	Method
PU-239		0	0.0000349	Ci/l	
U-234		0	0.0000349	Ci/l	
U236		0	0.0000349	Ci/l	
U235 (93.5%)		0	0.0000349	Ci/l	
U238		0	0.0000349	Ci/l	

Metal Contaminants:

Contaminant	Limit	Min	Max	Unit	Method
VANADIUM		0	1.2	ppm	
ZINC	Y			ppm	

Total Alpha: 3.00E-06 Ci/l
Average daily flow when discharge occurs: 10 LIT
Maximum daily flow when discharge occurs: 30 LIT
Estimated number of days dicharge will occur: 10
Estimated total volume per year discharged to the RLWC at TA-50: 300

LDR and Underlying Hazardous Constituents Information
Non-Wastewater/Wastewater Category: **Non Wastewater**

WASTE CHARACTERIZATION INFORMATION

Radioactivity Category : **RADIOACTIVE-TRU**

RCRA Category : **HAZARDOUS WASTE**

Secondary Info : N/A

Waste Classification : **MIXED TRANSURANIC WASTE**

Waste Acceptances : **TA-50 Acceptance**

EPA Hazardous Waste Code : **D007**
Notification Of Underlying Hazardous Constituents:

Constituents
Beryllium
Chromium (Total)

GWCP Information

Section 1 - Waste Prevention/Minimization (answer all questions)

Can hazard segregation, elimination, or material substitution be used?	☐ Yes*	☐ No	
Can any of the materials in the waste stream be recycled or reused	☐ Yes*	☐ No	
Has waste minimization been incorporated into procedures or other process controls?	☐ Yes	☐ No	
Can this waste be generated outside a RCA?	☐ Yes*	☐ No	☐ N/A

*Provide Comment

Section 6 - Work Control Documentation (answer all questions)

Do the procedures for this process cover how to manage this waste?	☐ Yes	☐ No (Provide comments)
Do the procedures for this process cover controls to prevent changes to waste constituents and concentrations or addition or removal of waste?	☐ Yes	☐ No (Provide comments)

Section 7 - Package and Storage Control

Describe how the waste will be packaged in according to the applicable WAC:

Identify the storage management controls that will be used for this waste stream: (check all that apply)

- ☐ Tamper indication devices:
- ☐ Limited use locks with log-in for waste
- ☐ Locked cabinet or building
- ☐ Other (describe)

Section 8 - Waste Certification Statements (check only one)

- ☐ Waste appears to meet WAC chapter for:
- ☐ Waste needs exception/exemption for treatment, storage, or disposal at:
- ☐ Waste does not meet the criteria for any known TSDF, (DOE approval is required. Contact the Waste Management Program Office for assistance.)

Estimated Annual Volume (m3):

RECEIVED AUG 1 9 2002

ORIGINAL

LOS ALAMOS
National Laboratory

WASTE PROFILE FORM

Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: EM-SWO at **MS J595.** For assistance with completing this form, call EM-SWO at **5-4000.**	Reference Number 35269 (For EM-SWO use only.)

Generator's Z Number	Waste Generator's Name (print)	WMC's Z Number	WMC's Name (print)
121377	David Costa	093573	Egan McCormick

Generator's Telephone	Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room
665-8958	E530	NMT-15	TA-55	PF-4	106

Waste Accumulation (Check only one.)
- ☐ Satellite Accumulation Area — Site no: _____
- ☐ Less-than-90-days Storage Area — Site no: _____
- ☐ TSDF — Site no: _____
- ☐ Universal Waste Storage Area — Site no: _____
- ☒ None of the Above

ER Use Only ☐ ER Site — PRS #: _____

Method of Characterization (Check as many as apply.)
- ☒ Analysis/Documents Attached
- ☒ Chemical/Physical Analysis — Sample #: _____
- ☒ Radiological Analysis — Sample #: _____
- ☐ PCB Analysis — Sample #: _____
- ☒ Acceptable Knowledge Documentation — Documentation #: _____
- ☐ MSDS

Section 1 - Chemical and Physical Information

Waste Type (Check only one.)
- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☒ Process Waste/Spent Chemical/ other (Complete all sections.)
- ☐ Green is Clean Waste (Complete all sections as appropriate.)

Waste Classes

Radiological Information
Was Waste Generated in a RCA? ☒ Yes ☐ No
- ☐ Non-radioactive
- ☒ Radioactive
  - ☐ Low-Level
  - ☒ Transuranic

Wastewater Information
- ☐ Wastewater for SWSC (TA-46) (Complete Attachment 1)
- ☒ Wastewater for RLWTF (TA-50/TA-21) (Complete Attachment 2)
- ☐ Wastewater for TA-16 (HE)

Classification Information
- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check as many as apply.)
- ☒ Inorganic
- ☐ Organic
- Volatile Organics ☐ < 500 ppm ☐ ≥ 500 ppm
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste residue
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)
- Asbestos ☐ friable ☐ non-friable
- PCB Source Concentration
  - ☐ PCB < 50 ppm
  - ☐ PCB ≥ 50 - < 500 ppm
  - ☐ PCB ≥ 500 ppm
- ☐ Other (Describe below)

* Concentrations 10% or greater before use.

Waste Source (Check only one.)

Routine Waste
- ☐ Decon
- ☐ Materials Processing/Production
- ☒ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup - Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Non-routine Waste
- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping - Non-routine
- ☐ Spill Cleanup - Non-routine
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix (Check only one.)

Gas
- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid
- ☒ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid
- ☐ Powder/Ash
- ☐ Solid
- ☐ Sludge
- ☐ Absorbed liquid

Matrix Type (Check only one.)
- ☒ Homogeneous
- ☐ Heterogeneous (Describe below)

Waste/Process Description (Chemical formulas may be used in this field.)

Waste aqueous electrochemical process solutions with low levels of uranium contamination and less than 0.1 mol/L sodium sulfate. Groups 1-4

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WASTE PROFILE FORM

Section 2 - Characteristics

Ignitability (Check only one.) (°F)	(°C)	Corrosivity (Check only one.) (pH)	Reactivity (Check as many as apply.)	Boiling Point (Check only one.) (°F)	(°C)
☐ < 73	< 22.8	☐ ≤ 2.0	☐ RCRA Unstable	☐ ≤ 95	≤ 35
☐ 73 - 99	22.8 - 37.2	☐ 2.1 - 4.0	☐ Water Reactive	☒ > 95	> 35
☐ 100 - 139	37.8 - 59.4	☐ 4.1 - 6.0	☐ Cyanide Bearing (> 250 ppm)		
☐ 140 -200	60.0 - 99.3	☐ 6.1 - 9.0	☐ Sulfide Bearing (> 500 ppm)		
☐ > 200	> 99.3	☒ 9.1 - 12.4	☐ Pyrophoric		
☐ EPA Ignitable - Non-liquid		☐ ≥ 12.5	☐ Shock Sensitive		
☐ DOT Flammable Gas		☐ Liquid corrosive to steel	☐ Explosive - DOT Div. _____		
☐ DOT Oxidizer					
☒ Not ignitable		☐ Non-aqueous	☒ Non-reactive	☐ Not applicable	

Identify for all contaminants listed.	Characterization Method: AK	TCLP	Total	Concentration of Contaminants: None or Non-detect	Present Below Regulatory Limit	Above Regulatory Limit Minimum	Maximum
Toxicity Characteristic Metals						(Concentration in ppm only.)	
Arsenic	☐	☐	☒	☒	☐ < 5.0 ppm	_____ to	_____ ppm
Barium	☐	☐	☒	☒	☐ < 100.0 ppm	_____ to	_____ ppm
Cadmium	☐	☐	☒	☒	☐ < 1.0 ppm	_____ to	_____ ppm
Chromium (Total)	☐	☐	☒	☐	☐ < 5.0 ppm	0 to	6 ppm
Lead	☐	☐	☒	☒	☐ < 5.0 ppm	_____ to	_____ ppm
Mercury	☐	☐	☒	☒	☐ < 0.2 ppm	_____ to	_____ ppm
Selenium	☒	☐	☐	☒	☐ < 1.0 ppm	_____ to	_____ ppm
Silver	☐	☐	☒	☒	☐ < 5.0 ppm	_____ to	_____ ppm
Toxicity Characteristic Organics							
Benzene	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
Carbon tetrachloride	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
Chlordane	☒	☐	☐	☒	☐ < 0.03 ppm	_____ to	_____ ppm
Chlorobenzene	☒	☐	☐	☒	☐ < 100.0 ppm	_____ to	_____ ppm
Chloroform	☒	☐	☐	☒	☐ < 6.0 ppm	_____ to	_____ ppm
o - cresol	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
m - cresol	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
p - cresol	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
Cresol - mixed	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
2,4-D	☒	☐	☐	☒	☐ < 10.0 ppm	_____ to	_____ ppm
1,4-Dichlorobenzene	☒	☐	☐	☒	☐ < 7.5 ppm	_____ to	_____ ppm
1,2-Dichloroethane	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
1,1-Dichloroethylene	☒	☐	☐	☒	☐ < 0.7 ppm	_____ to	_____ ppm
2,4-Dinitrotoluene	☒	☐	☐	☒	☐ < 0.13 ppm	_____ to	_____ ppm
Endrin	☒	☐	☐	☒	☐ < 0.02 ppm	_____ to	_____ ppm
Heptachlor (& its epoxide)	☒	☐	☐	☒	☐ < 0.008 ppm	_____ to	_____ ppm
Hexachlorobenzene	☒	☐	☐	☒	☐ < 0.13 ppm	_____ to	_____ ppm
Hexachlorobutadiene	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
Hexachloroethane	☒	☐	☐	☒	☐ < 3.0 ppm	_____ to	_____ ppm
Lindane	☒	☐	☐	☒	☐ < 0.4 ppm	_____ to	_____ ppm
Methoxychlor	☒	☐	☐	☒	☐ < 10.0 ppm	_____ to	_____ ppm
Methyl ethyl ketone	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
Nitrobenzene	☒	☐	☐	☒	☐ < 2.0 ppm	_____ to	_____ ppm
Pentachlorophenol	☒	☐	☐	☒	☐ < 100.0 ppm	_____ to	_____ ppm
Pyridine	☒	☐	☐	☒	☐ < 5.0 ppm	_____ to	_____ ppm
Tetrachloroethylene	☒	☐	☐	☒	☐ < 0.7 ppm	_____ to	_____ ppm
Toxaphene	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
Trichloroethylene	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
2,4,5-Trichlorophenol	☒	☐	☐	☒	☐ < 400.0 ppm	_____ to	_____ ppm
2,4,6-Trichlorophenol	☒	☐	☐	☒	☐ < 2.0 ppm	_____ to	_____ ppm
2,4,5-TP (Silvex)	☒	☐	☐	☒	☐ < 1.0 ppm	_____ to	_____ ppm
Vinyl chloride	☒	☐	☐	☒	☐ < 0.2 ppm	_____ to	_____ ppm

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Section 3 - Additional Constituents

Additional Constituents and Contaminants. Please account for 100% of waste. Ranges should be given within guidelines of LIG 404-00-03 of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum	Maximum	
7757-82-6	sodium sulfate	0	1.5	%
	Water	95	98.5	%
	Beryllium per memo 5/13/02	0	0.00001	%
				%
				%
				%
				%
				%
				%
				%
				%
				%
				%
	Total of max. ranges of this section	100		in %
	Total of max. ranges from page 2.	6		in ppm

Additional Information (Use additional sheet if necessary.)

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

A summary of results is included as Attachment 3.

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

Signature [signature] Date 8/10/02

WASTE MANAGEMENT COORDINATOR: I have reviewed this form and to the best of my knowledge, the information is complete and accurate.

Signature [signature] Date 7/30/02

Form 1346 (6/97) Rev. 1.0 (MSW)

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Attachment 1 - Wastewater Characteristics for SWSC (TA-46)

For help in completing this section, call ESH -18 at 7-4882. Identify presence of any constituents listed below.
Use of Acceptable Knowledge in lieu of analytical data must be pre-approved by ESH-18.

Microtox Analysis #: _____ NOTE: Microtox analysis **must be** performed. Contact JCI/ENV to schedule analysis.

Are there any detectable levels of gross Alpha, gross Beta, gross Gamma, and/or Tritium? ☐ No ☐ Yes

All methods of analysis must conform to those approved pursuant to 40 CFR 136 unless an alternative method has been approved by ESH-18.
All metal concentrations are for the dissolved fraction present in the sample unless otherwise indicated.

	☐ **Flow Rate of 100 gallons/day or less**			☐ **Flow Rate of greater than 100 gallons/day**		
Flow Rate Parameters	None/ Non-detect	Within Regulatory Limits	Above Limit	None/ Non-detect	Within Regulatory Limits	Above Limit
pH		☐ 5 -11 SU	☐		☐ 5 -11 SU	☐
Chemical Oxygen Demand (COD)		☐ ≤ 750 mg/l	☐		☐ ≤ 500 mg/l	☐
Microtox results (a)		☐ < 55% screen	☐		☐ < 50% screen	☐
(b)		☐ > 20% EC50	☐		☐ > 25% EC50	☐
Temperature		☐ ≤ 180 °F	☐		☐ ≤ 140 °F	☐
Cyanide (Total)	☐	☐ < 5.0 mg/l	☐	☐	☐ < 1.0 mg/l	☐
Fluoride	☐	☐ < 200.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Iron	☐	☐ < 100.0 mg/l	☐	☐	☐ < 35.0 mg/l	☐
Magnesium	☐	☐ < 100.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Manganese	☐	☐ < 5.0 mg/l	☐	☐	☐ < 1.0 mg/l	☐
Metals (Total)	☐	☐ < 40.0 mg/l	☐	☐	☐ < 10.0 mg/l	☐
Nickel	☐	☐ < 50.0 mg/l	☐	☐	☐ ≤ 3.0 mg/l	☐
Nitrogen (Total)	☐	☐ ≤ 100.0 mg/l	☐	☐	☐ ≤ 50.0 mg/l	☐
Oil and Greases	☐	☐ < 100.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Phosphorus (Total)	☐	☐ < 100.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Silver	☐	☐ < 5.0 mg/l	☐	☐	☐ < 0.5 mg/l	☐
Total Suspended Solids (TSS)	☐	☐ ≤ 400.0 mg/l	☐	☐	☐ ≤ 300.0 mg/l	☐
Zinc	☐	☐ < 25.0 mg/l	☐	☐	☐ < 5.0 mg/l	☐

Wastewater contaminants **Identify for all constituents listed**	**None/Non-detect**	**Present within Regulatory Limits**	**Above Limit**
Dissolved Aluminum	☐	☐ < 5.0 mg/l	☐
Dissolved Arsenic	☐	☐ < 0.2 mg/l	☐
Barium	☐	☐ < 100.0 mg/l	☐
Beryllium	☐	☐ < 5.3 mg/l	☐
Dissolved Boron	☐	☐ < 5.0 mg/l	☐
Dissolved Cadmium	☐	☐ < 0.05 mg/l	☐
Chlorine (Total Residual)	☐	☐ < 3.0 mg/l	☐
Dissolved Chromium	☐	☐ < 1.0 mg/l	☐
Dissolved Cobalt	☐	☐ < 1.0 mg/l	☐
Dissolved Copper	☐	☐ < 0.5 mg/l	☐
Dissolved Lead	☐	☐ < 0.1 mg/l	☐
Total Mercury	☐	☐ < 0.01 mg/l	☐
Molybdenum	☐	☐ < 75.0 mg/l	☐
Polychlorinated Biphenyls (PCB)	☐	None Detected	☐
Dissolved Selenium	☐	☐ < 0.05 mg/l	☐
Dissolved Vanadium	☐	☐ < 0.1 mg/l	☐
Dissolved Zinc	☐	☐ < 25.0 mg/l	☐

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Attachment 2 - Wastewater Characteristics for RLWTF (TA-50 & TA-21)

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

Indicate if waste was: ☐ Accelerator produced ☐ Reactor produced ☒ Other (Describe in WPF Section 1 "Waste/Process Description.")

Radionuclide Contaminants

Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min. / Max.
As-74	☐ ≤ 4.0 E -8	/
Be-7	☐ ≤ 1.0 E -6	/
Ce-141	☐ ≤ 5.0 E -8	/
Cs-134	☐ ≤ 2.0 E -9	/
Cs-137	☐ ≤ 3.0 E -9	/
Co-56	☐ ≤ 1.0 E -8	/
Co-57	☐ ≤ 1.0 E -7	/
Co-58	☐ ≤ 4.0 E -8	/
Co-60	☐ ≤ 5.0 E -9	/
Eu-152	☐ ≤ 2.0 E -8	/
H-3	☐ ≤ 2.0 E -8	/
I-133	☐ ≤ 1.0 E -8	/
Mn-52	☐ ≤ 2.0 E -8	/
Mn-54	☐ ≤ 5.0 E -8	/
Ra-226 + 228	☐ ≤ 3.0 E -11	/
Rb-83	☐ ≤ 2.0 E -8	/
Others:		
		/
		/
		/

Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min. / Max.
Rb-84	☐ ≤ 1.0 E -8	/
Sc-46	☐ ≤ 2.0 E -8	/
Sc-48	☐ ≤ 2.0 E -8	/
Se-75	☐ ≤ 2.0 E -8	/
Na-22	☐ ≤ 1.0 E -8	/
Sr-85	☐ ≤ 7.0 E -8	/
Sr-89	☐ ≤ 2.0 E -8	/
Sr-90	☐ ≤ 1.0 E -9	/
Sn-113	☐ ≤ 5.0 E -8	/
V-48	☐ ≤ 2.0 E -8	/
Y-88	☐ ≤ 3.0 E -8	/
Zn-65	☐ ≤ 9.0 E -9	/
Am-241	☐ ≤ 0.1 E -6	/
Pu-238	☐ ≤ 0.1 E -6	/
Pu-239	☐ ≤ 0.1 E -6	0 / 3.49E-5
U-234	☐ ≤ 5.0 E -8	0 / 3.49E-5
Others:		
U235 (93.5%)		0 / 3.49E-5
U238		0 / 3.49E-5
U236		0 / 3.49E-5

Other Contaminants

Metal Contaminants	Present Below LOC (in ppm)	Range if above LOC (in ppm) Min. / Max.
Aluminum	☐ ≤ 5.0	to ppm
Boron	☐ ≤ 5.0	to ppm
Cobalt	☐ ≤ 1.0	to ppm
Copper	☐ ≤ 1.0	to ppm
Vanadium	☐ ≤ 0.10	0 to 1.2 ppm
Zinc	☒ ≤ 95.40	to ppm

Additional Contaminants	Min. / Max
Chemical Oxygen Demand (COD)	to mg/l
Total Suspended Solids (TSS)	to mg/l
☐ Total Nitrogen or (only one	to mg/l
☐ Total Nitrates entry needed)	to mg/l

Radioactive Contaminant Totals:

Total Alpha	3.0E-6	Ci/l
Total Beta		Ci/l
Total Gamma		Ci/l

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

☐ Acid Line ☒ Caustic Line ☐ Industrial Waste Line

☐ Yes ☒ No Scintillation Cocktail Brand Name _____ Volume _____ Unit _____

☐ Yes ☒ No Chemical Treatment for Boilers / Water Chillers

☐ Yes ☒ No Industrial Cleaner Type _____ Volume _____ Unit _____

Average daily volume when discharge occurs: 10 ☐ Gallons/day ☒ Liters/day

Maximum daily volume when discharge occurs: 30 ☐ Gallons/day ☒ Liters/day

Estimated number of days per year discharge will occur: 10

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-50 / TA-21: 300 ☐ Gallons ☒ Liters

Associated WPF Reference Number:

LDR and Underlying Hazardous Constituents Information - Identify presence of any constituents listed below.

Non-Wastewater / Wastewater Category - Check only one.

☐ Non Wastewater ☒ Wastewater [as defined by 40 CFR 268.2(f)]

Notification of California List Applicability - Check all that apply.

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

☐ A D001 thru D043 liquid waste containing 134 mg/L or greater of Nickel and/or 130 mg/L or greater of thallium.

☐ A D001 thru D043 waste containing Halogenated Organic Compounds (HOCs) listed in 40 CFR 268, Appendix III, at 1000 ppm or greater.

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

☐ *No Underlying Hazardous Constituents in this waste stream.* ☐ *HAZCAT Meeting 40 CFR 268.42(c)*

Organic Constituents

☐ A2213	☐ Butyl benzyl phthalate	☐ p,p'-DDE
☐ Acenaphthylene	☐ 2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	☐ o,p'-DDT
☐ Acenaphthene	☐ Carbaryl	☐ p,p'-DDT
☐ Acetone	☐ Carbenzadim	☐ Dibenz(a,h)anthracene
☐ Acetonitrile	☐ Carbofuran	☐ Dibenz(a,e)pyrene
☐ Acetophenone	☐ Carbofuran phenol	☐ 1,2-Dibromo-3-chloropropane
☐ 2-Acetyaminofluorene	☐ Carbon disufide	☐ 1,2-Dibromoethane (Ethylene dibromide)
☐ Acrolein	☐ Carbon tetrachloride	☐ Dibromomethane
☐ Acrylamide	☐ Carbosulfan	☐ m-Dichlorobenzene
☐ Acrylonitrile	☐ Chlordane (alpha & gamma isomers)	☐ o-Dichlorobenzene
☐ Aldicarb sulfone	☐ p-Chloroaniline	☐ p-Dichlorobenzene
☐ Aldrin	☐ Chlorobenzene	☐ Dichlorodifluoromethane
☐ 4-Aminobiphenyl	☐ Chlorobenzilate	☐ 1,1-Dichloroethane
☐ Aniline	☐ 2-Chloro-1,3-butadiene	☐ 1,2-Dichloroethane
☐ Anthracene	☐ Chlorodibromomethane	☐ 1,1-Dichloroethylene
☐ Aramite	☐ Chloroethane	☐ trans-1,2-Dichloroethylene
☐ alpha-BHC	☐ bis(2-Chloroethoxy) methane	☐ 2,4-Dichlorophenol
☐ beta-BHC	☐ bis(2-Chloroethyl) ether	☐ 2,6-Dichlorophenol
☐ delta-BHC	☐ Chloroform	☐ 2,4-Dichlorophenoxyacetic acid (2,4-D)
☐ gamma-BHC	☐ bis(2-Chloroisopropyl) ether	☐ 1,2-Dichloropropane
☐ Barban	☐ p-Chloro-m-cresol	☐ cis-1,3-Dichloropropylene
☐ Bendiocarb	☐ 2-Chloroethyl vinyl ether	☐ trans-1,3-Dichloropropylene
☐ Bendiocarb phenol	☐ Chloromethane (Methyl chloride)	☐ Dieldrin
☐ Benomyl	☐ 2-Chloronaphthalene	☐ Diethylene glycol, dicarbamate
☐ Benzene	☐ 2-Chlorophenol	☐ Diethyl phthalate
☐ Benz(a)anthracene	☐ 1-Chloropropylene	☐ p-Dimethylaminoazobenzene
☐ Benzal chloride	☐ Chrysene	☐ 2-4-Dimethyl phenol
☐ Benzo(b)fluoranthene	☐ o-Cresol	☐ Dimethyl phthalate
☐ Benzo(k)fluoranthene	☐ m-Cresol	☐ Dimetilan
☐ Benzo(g,h,i)perylene	☐ p-Cresol	☐ Di-n-butyl phthalate
☐ Benzo(a)pyrene	☐ m-Cumenyl methylcarbamate	☐ 1,4-Dinitrobenzene
☐ Bromodichloromethane	☐ Cycloate	☐ 4,6-Dinitro-o-cresol
☐ Bromomethane (Methyl bromide)	☐ Cyclohexan ne	☐ 2,4 Dinitrophenol
☐ 4-Bromophenyl phenyl ether	☐ o,p'-DDD	☐ 2,4-Dinitrotoluene
☐ n-Butyl alcohol	☐ p,p'-DDD	☐ 2,6-Dinitrotoluene
☐ Butylate	☐ o,p'-DDE	☐ Di-n-octyl phthalate

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

Organic Constituents - continued

- ☐ Di-n-propylnitrosamine
- ☐ 1,4-Dioxane
- ☐ Diphenylamine
- ☐ Diphenylnitrosamine
- ☐ 1,2-Diphenylhydrazine
- ☐ Disulfoton
- ☐ Dithiocarbamates (total)
- ☐ Endosulfan I
- ☐ Endosulfan II
- ☐ Endosulfan sulfate
- ☐ Endrin
- ☐ Endrin aldehyde
- ☐ EPTC
- ☐ Ethyl acetate
- ☐ Ethyl benzene
- ☐ Ethyl cyanide (Propanenitrile)
- ☐ Ethyl ether
- ☐ bis(2-Ethylhexyl) phthalate
- ☐ Ethyl methacrylate
- ☐ Ethylene oxide
- ☐ Famphur
- ☐ Fluoranthene
- ☐ Fluorene
- ☐ Formetanate hydrochloride
- ☐ Formparanate
- ☐ Heptachlor
- ☐ Heptachlor epoxide
- ☐ Hexachlorobenzene
- ☐ Hexachlorobutadiene
- ☐ Hexachlorocyclopentadiene
- ☐ Hexachlorodibenzo-p-dioxins (HxCDDs)
- ☐ Hexachlorodibenzo-furans (HxCDFs)
- ☐ Hexachloroethane
- ☐ Hexachloropropylene
- ☐ Indeno (1,2,3-c,d) pyrene
- ☐ Iodomethane
- ☐ 3-Iodo-2-propynyl n-butylcarbamate
- ☐ Isobutyl alcohol
- ☐ Isodrin
- ☐ Isolan
- ☐ Isosafrole
- ☐ Kepone
- ☐ Methacrylonitrile
- ☐ Methanol
- ☐ Methapyrilene
- ☐ Methiocarb
- ☐ Methomyl
- ☐ Methoxychlor
- ☐ 3-Methylcholanthrene
- ☐ 4,4-Methylene bis(2-chloroaniline)
- ☐ Methylene chloride
- ☐ Methyl ethyl ketone
- ☐ Methyl isobutyl ketone
- ☐ Methyl methacrylate
- ☐ Methyl methansulfonate
- ☐ Methyl parathion
- ☐ Metolcarb
- ☐ Mexacarbate
- ☐ Molinate
- ☐ Naphthalene
- ☐ 2-Naphthylamine
- ☐ o-Nitroaniline
- ☐ p-Nitroaniline
- ☐ Nitrobenzene
- ☐ 5-Nitro-o-toluidine
- ☐ o-Nitrophenol
- ☐ p-Nitrophenol
- ☐ N-Nitrosodiethylamine
- ☐ N-Nitrosodimethylamine
- ☐ N-Nitroso-di-n-butylamine
- ☐ N-Nitrosomethylethylamine
- ☐ N-Nitrosomorpholine
- ☐ N- Nitrosopiperidine
- ☐ N-Nitrosopyrrolidine
- ☐ Oxamyl
- ☐ Parathion
- ☐ PCBs (total)
- ☐ Pebulate
- ☐ Pentachlorobenzene
- ☐ Pentachlorodibenzo-p-dioxins (PeCDDs)
- ☐ Pentachlorodibenzo-furans (PeCDFs)
- ☐ Pentachloroethane
- ☐ Pentachloronitrobenzene
- ☐ Pentachlorophenol
- ☐ Phenacetin
- ☐ Phenanthrene
- ☐ Phenol
- ☐ o-Phenylenediamine
- ☐ Phorate
- ☐ Phthalic acid
- ☐ Phthalic anhydride
- ☐ Physostigmine
- ☐ Physostigmine salicylate
- ☐ Promecarb
- ☐ Pronamide
- ☐ Propham
- ☐ Propoxur
- ☐ Prosulfocarb
- ☐ Pyrene
- ☐ Pyridine
- ☐ Safrole
- ☐ Silvex (2,4,5-TP)
- ☐ 1,2,4,5-Tetrachlorobenzene
- ☐ Tetrachlorodibenzo-p-dioxins (TCDDs)
- ☐ Tetrachlorodibenzofurans (TCDFs)
- ☐ 1,1,1,2-Tetrachloroethane
- ☐ 1,1,2,2-Tetrachloroethane
- ☐ Tetrachloroethylene
- ☐ 2,3,4,6-Tertachlorophenol
- ☐ Thiodicarb
- ☐ Thiophanate-methyl
- ☐ Tirpate
- ☐ Toluene
- ☐ Toxaphene
- ☐ Triallate
- ☐ Tribromomethane (Bromoform)
- ☐ 1,2,4-Trichlorobenzene
- ☐ 1,1,1-Trichloroethane
- ☐ 1,1,2-Trichloroethane
- ☐ Trichloroethylene
- ☐ Trichloromonofluoromethane
- ☐ 2,4,5-Trichlorophenol
- ☐ 2,4,6-Trichlorophenol
- ☐ 2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)
- ☐ 1,2,3-Trichloropropane
- ☐ 1,1,2-Trichloro-1,2,2-trifluoroethane
- ☐ Triethylamine
- ☐ tris-(2,3-Dibromopropyl) phosphate
- ☐ Vernolate
- ☐ Vinyl chloride
- ☐ Xylenes (total)

Land Disposal Restriction (LDR) and Underlying Hazardous Constituents Information Form

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001, D002, D003, and D012 - D043 characteristic wastes only)

Metal/Inorganic Constituents

☐ Antimony	☐ Cyanides (Amenable)	☐ Selenium
☐ Arsenic	☐ Fluoride	☐ Silver
☐ Barium	☐ Lead	☐ Sulfide
☒ Beryllium	☐ Mercury (Retort residues)	☐ Thallium
☐ Cadmium	☐ Mercury - All others	☐ Vanadium
☑ Chromium (Total)	☐ Nickel	☐ Zinc
☐ Cyanides (Total)		

BS/mac 7/3/02

ATTACHMENT 3
Summary of Analytical Results

The following constituents are not expected in this waste stream: Tritium; Strontium 90; Cesium 137 or Organics.

This waste is residue from Oralloy processing. Oralloy is 93.5 % U235; < 2 % U234; and approx. 5 % U238. Any Pu239 contamination associated with these samples is expected to be very low based on solubility studies.

Group 1 Results:

- **Sample # IMS ID 200142585** [Chromium (0.14 ug/ml); Zinc (0.3 ug/ml)]
- **Sample # IMS ID 200141050** [pH = 13; Activity (Ci/L): 2.68E-06]
- Group 1waste is aqueous electrochemical process solutions with low levels of uranium contamination and less than 0.1 mol/L sodium sulfate. See attached WEF.

Group 2 Results:

- **Sample # IMS ID 200142586** [Chromium (3.1 ug/ml); Nickel (3.8 ug/ml); Vanadium (0.7 ug/ml); Zinc (0.58 ug/ml)]
- **Sample # IMS ID 200141051** [pH = 11; Activity (Ci/L): 3.49E-05]
- Group 2 waste is aqueous electrochemical process solutions with low levels of uranium contamination and less than 0.1 mol/L sodium sulfate.

Group 3 Results:

- **Sample # IMS ID200142587** [Beryllium (0.1 ug/ml); Chromium (0.11 ug/ml); Zinc (0.43 ug/ml)]
- **Sample # IMS ID 200141052** [pH = 10; Activity (Ci/L): 2.68E-06]
- Group 3 waste is aqueous electrochemical process solutions with low levels of uranium contamination and less than 0.1 mol/L sodium sulfate.

Group 4 Results:

- **Sample # IMS ID 200142588** [Beryllium (0.1 ug/ml); Chromium (6 ug/ml); Vanadium (1.2 ug/ml); Zinc (0.34 ug/ml)]
- **Sample # IMS ID 200141053** [pH = 11; Activity (Ci/L): 2.69E-06]
- Group 4 is aqueous electrochemical process solutions with low levels of uranium contamination and less than 0.1 mol/L sodium sulfate.

Waste Exception Form

WEF No.
WPF# WEF1

Completed by Waste Generator

☒ On-going ☐ One-time	WPF No.	CWDR/TWSR No. NA	Item No. NA – RLWTF (TA-50) Liquid Waste

☐ Hazardous/Chemical ☐ Low-Level Waste ☒ Transuranic ☐ Mixed Low-Level Waste
☒ Radioactive Liquid Waste ☐ Other _____

Waste Acceptance Criteria [LANL WAC (February 2002) – Liquid Radioactive Waste Treatment Facility, RLWTF]

1.4.1 Radionuclide Content. The total alpha radionuclide concentration of a waste stream in the "Caustic" waste line may not exceed 4.5E-3 Ci/L.

1.4.2 Chemical Waste. Inorganic wastes with a pH from 12.5 to 14 are also permitted to discharge to RLWTF (RCRA Code D002) in the volume range of 0 to 50 gallons/discharge.

1.4.2 Chemical Waste. Liquid waste streams that contain non-radioactive constituents below the concentration limits in Table 1. 3 are acceptable for discharge to the RLWTF. [Chromium, Allowable Concentration (mg/l) is <5.0]

Reason for Variance and Justification

Small Quantity (average daily volume: 10 liters/day), **Infrequent Generation** (ten times per year), **Characteristic Waste.**

Waste Characteristics:
D002 - Corrosive (pH – 13)
D007 – Toxicity Characteristic Metal - Chromium (6 PPM)
Vanadium (1.2 PPM)

Requested by (Print)	Requested by (Signature)	Z Number	Date
Evan D McCormick	Evan D McCormick	93573	7/30/02

Waste Management Facility Approval

Special Instructions and Comments

- **Discharge to the TA-55 Caustic Waste Line** [WPF, Attach. 2 - Wastewater Characteristics for RLWTF (TA-50, TA-21), Page 1]
- **Notify RLWTF prior to discharge of this waste stream.**

Basis for Exemption or Denial

Approved because of the **Small Quantity** and **Infrequent Generation (10 liters, ten discharges per year) and** the waste is a **Characteristic Waste.**

☐ Approved ☐ Rejected	Team Leader (Signature)	Z Number	Date

Los Alamos
NATIONAL LABORATORY

Memorandum

Pit Disassembly and Nuclear Fuels Technologies (NMT-15)

To: Sherry L Evans-Carmichael
From: D.A. Costa, NMT-15, E530
Cc: Brad Schake, NMT-15
Steve Mckee, NMT-15
Phone/Fax: 665-8958/996-1107

Date: May 24, 2002
Symbol # DC-2002-003

Subject: Waste Profile Form (WPF) development for the HEU Electro-decontamination process.

The uranium electro-decontamination WPF should treat the level of VOCs generated during this process as zero using Acceptable Knowledge. There are no organics used in this process, nor are any organics located near this process. The level of plutonium found in the process streams is very low, as quantified by scintillation alpha counting and alpha spectroscopy. The final radioactive alpha constituents in the waste streams measure less than $3x10^{-6}$ Ci/L.. This includes all of the HEU and TRU constituents, combined.

The HEU decontaminated in this process is Oralloy.
Isotopic analysis on the HEU:

U-238	5.35%	3.33x10-7Ci/g
U-236	0.52%	6.34x10-5Ci/g
U-235	93.20%	2.10x10-6Ci/g
U-234	1.02%	6.19x10-3Ci/g

Total specific activity for HEU is 6.54x10-5 Ci/g

If you have any further questions, please feel free to contact either Brad Schake or me.

TA-55 Radiochemistry Analytical Report

IMS Sample ID:	200141050	Date Analyzed:	03/07/01
Cust Samp ID:	GROUP I	Analyst:	Radzinski/CCT
Submitter:	BRAD SCHAKE	Program:	K13Y0000
Instrument:	Alpha III	Total Volume (L):	22
Type of Waste:	**Caustic**		

Analytical Results

Net Counts (cpm): 0

Background (cpm): 9

pH = 13

Activity (Ci/L): 2.68E-06

Comments:

Activity Level: **This sample is below discard limits. (4.5e-3 Ci/L)**

I certify that this sample contains no materials other than the matrix and volume indicated above. This is a representative sample of an individual solution storage device. Current SOPs were followed in the origination of this item and I believe it will meet approved discard limits.

DAVID COSTA 08/2/01

Submitter's printed name and signature

EDC

Process Status

Supervisor's printed name and Group

_____ liters

H2O wash

NMT-7 LWM Inspector

Date ____/____/____ Time ____:____ a.m. p.m.

RC 3.0

Analytical Chemistry Report

Sample ID: 200142585 Group: NMT-15 QA: N Priority: 1
Submission ID: 100048360 Acct: N Logged: 22-May-2001
User sample ID: GROUP 1
Sample Type: EDC SOLUTION - RCRA
Customer Cost Code: K13Y00000000
Requester: DAVE COSTA MS: Phone:

Radioactive Elements: U235, PU239
Radiation: Y

VOL OR WGT:

Approved by: Drake, Lawrence R. 31-May-2001 14:51

Analytical Operation: IC-ANIONS-L Task ID: 300292531
Date Completed: 23-May-2001 17:25 Replicates: 1 Version: 1

DESCRIPTION: IC-ANIONS;F,CL,SO4,N03,H04...

Component	Results	Units
FLUORIDE	< 20 [1]	ug/ml

[1] FLUORIDE:

Could not analyze for fluoride at lower concentrations because the sample contains a large amount of sulfate ion.

Notebook Reference: CAAC-0143, PAGE 74-82

Analyst: VMM, PTM

Approved by: Martinez, Patrick T. 23-May-2001 17:26

Analytical Operation: PSSUR-L Task ID: 300292532
Date Completed: 31-May-2001 13:22 Replicates: 1 Version: 1

DESCRIPTION: PS-ELEMENTAL ANALYSIS IN LIQUIDS

Component	Results	Units
SILVER	< 0.01	ug/ml
ARSENIC	< 0.04	ug/ml
BARIUM	< 0.05	ug/ml
BERYLLIUM	< 0.04	ug/ml
CADMIUM	< 0.01	ug/ml
CHROMIUM	0.14	ug/ml
MERCURY	< 0.1	ug/ml

NICKEL	< 0.05	ug/ml
LEAD	< 0.02	ug/ml
ANTIMONY	< 0.01	ug/ml
THALLIUM	< 0.05	ug/ml
VANADIUM	< 0.3	ug/ml
ZINC	0.3	ug/ml
--PSSUR-L ANALYSIS	AAM/LRD	ANALYST(S)

Notebook Reference: 052901PQS NMT1-0100 PG71

Additional Information:

Analyst: Drake, Lawrence R.

Approved by: Drake, Lawrence R. 31-May-2001 14:51

TA-55 Radiochemistry Analytical Report

IMS Sample ID: 200141051
Cust Samp ID: GROUP 2
Submitter: BRAD SCHAKE
Instrument: Alpha IV
Type of Waste: Acid/HNO3

Date Analyzed: 03/07/01
Analyst: Radzinski/CCT
Program: K13Y0000
Total Volume (L): 4

Caustic

Analytical Results

Net Counts (cpm): 3

Background (cpm): 3

pH = 2 11 DL 08/21/01

Activity (Ci/L): 3.49E-05

Comments:

Activity Level: **This sample is below discard limits. (6e-5 Ci/L)**

I certify that this sample contains no materials other than the matrix and volume indicated above. This is a representative sample of an individual solution storage device. Current SOPs were followed in the origination of this item and I believe it will meet approved discard limits.

Dave Cass 08/21/01
Submitter's printed name and signature

EOL
Process Status

Supervisor's printed name and Group

_____ liters
H2O wash

NMT-7 LWM Inspector

Date ____/____/____ Time ____:____ a.m. p.m.

RC 3.0

Analytical Chemistry Report

Sample ID: 200142586 Group: NMT-15 QA: N Priority: 1
Submission ID: 100048360 Acct: N Logged: 22-May-2001
User sample ID: GROUP 2
Sample Type: EDC SOLUTION - RCRA
Customer Cost Code: K13Y00000000
Requester: DAVE COSTA MS: Phone:

Radioactive Elements: U235, PU239
Radiation: Y

VOL OR WGT:

Approved by: Drake, Lawrence R. 31-May-2001 14:52

Analytical Operation: IC-ANIONS-L Task ID: 300292534
Date Completed: 23-May-2001 17:25 Replicates: 1 Version: 1

DESCRIPTION: IC-ANIONS:F,CL,SO4,N03,H04...

Component	Results	Units
FLUORIDE	< 20 [1]	ug/ml

[1] FLUORIDE:

Could not analyze for fluoride at lower concentrations because the sample contain a large amount of sulfate ion.

Notebook Reference: CAAC-0143, PAGE 74-82

Analyst: VMM, PTM

Approved by: Martinez, Patrick T. 23-May-2001 17:26

Analytical Operation: PSSUR-L Task ID: 300292535
Date Completed: 31-May-2001 13:22 Replicates: 1 Version: 1

DESCRIPTION: PS-ELEMENTAL ANALYSIS IN LIQUIDS

Component	Results	Units
SILVER	< 0.01	ug/ml
ARSENIC	< 0.04	ug/ml
BARIUM	< 0.05	ug/ml
BERYLLIUM	< 0.04	ug/ml
CADMIUM	< 0.01	ug/ml
CHROMIUM	3.1	ug/ml
MERCURY	< 0.1	ug/ml

NICKEL	3.8	ug/ml
LEAD	< 0.02	ug/ml
ANTIMONY	< 0.01	ug/ml
THALLIUM	< 0.05	ug/ml
VANADIUM	0.7	ug/ml
ZINC	0.58	ug/ml
--PSSUR-L ANALYSIS	AAM/LRD	ANALYST(S)

Notebook Reference: 052901PQS NMT1-0100 PG71

Additional Information:

Analyst: Drake, Lawrence R.

Approved by: Drake, Lawrence R. 31-May-2001 14:52

TA-55 Radiochemistry Analytical Report

IMS Sample ID:	200141052	Date Analyzed:	03/07/01
Cust Samp ID:	GROUP 3	Analyst:	Radzinski/CCT
Submitter:	BRAD SCHAKE	Program:	K13Y0000
Instrument:	Alpha III	Total Volume (L):	2
Type of Waste:	**Caustic**		

Analytical Results

Net Counts (cpm):	0	Background (cpm):	9
pH =	10	Activity (Ci/L):	2.68E-06

Comments:

Activity Level: **This sample is below discard limits. (4.5e-3 Ci/L)**

I certify that this sample contains no materials other than the matrix and volume indicated above. This is a representative sample of an individual solution storage device. Current SOPs were followed in the origination of this item and I believe it will meet approved discard limits.

David Costa 08/21/01
Submitter's printed name and signature

EDC
Process Status

Supervisor's printed name and Group

_____ liters
H2O wash

NMT-7 LWM Inspector

Date ___/___/___ Time ____:____ a.m. p.m.

RC 3.0

Analytical Chemistry Report

Sample ID: 200142587 Group: NMT-15 QA: N Priority: 1
Submission ID: 100048360 Acct: N Logged: 22-May-2001
User sample ID: GROUP 3
Sample Type: EDC SOLUTION - RCRA
Customer Cost Code: K13Y00000000
Requester: DAVE COSTA MS: Phone:

Radioactive Elements: U235, PU239
Radiation: Y

VOL OR WGT:

Approved by: Drake, Lawrence R. 31-May-2001 14:53

Analytical Operation: IC-ANIONS-L Task ID: 300292537
Date Completed: 23-May-2001 17:25 Replicates: 1 Version: 1

DESCRIPTION: IC-ANIONS:F,CL,SO4,N03,H04...

Component	Results	Units
FLUORIDE	< 20 [1]	ug/ml

[1] FLUORIDE:

Could not analyze for fluoride at lower concentrations because the sample contains a large amount of sulfate ion.

Notebook Reference: CAAC-0143, PAGE 74-82

Analyst: VMM, PTM

Approved by: Martinez, Patrick T. 23-May-2001 17:26

Analytical Operation: PSSUR-L Task ID: 300292538
Date Completed: 31-May-2001 13:22 Replicates: 1 Version: 1

DESCRIPTION: PS-ELEMENTAL ANALYSIS IN LIQUIDS

Component	Results	Units
SILVER	< 0.01	ug/ml
ARSENIC	< 0.04	ug/ml
BARIUM	< 0.05	ug/ml
BERYLLIUM	0.1	ug/ml
CADMIUM	< 0.01	ug/ml
CHROMIUM	0.11	ug/ml
MERCURY	< 0.1	ug/ml

NICKEL	< 0.05	ug/ml
LEAD	< 0.02	ug/ml
ANTIMONY	< 0.01	ug/ml
THALLIUM	< 0.05	ug/ml
VANADIUM	< 0.3	ug/ml
ZINC	0.43	ug/ml
--PSSUR-L ANALYSIS	AAM/LRD	ANALYST(S)

Notebook Reference: 052901PQS NMT1-0100 PG71

Additional Information:

Analyst: Drake, Lawrence R.

Approved by: Drake, Lawrence R. 31-May-2001 14:53

TA-55 Radiochemistry Analytical Report

IMS Sample ID:	200141053	Date Analyzed:	03/07/01
Cust Samp ID:	GROUP 4	Analyst:	Radzinski/CCT
Submitter:	BRAD SCHAKE	Program:	K13Y0000
Instrument:	Alpha IV	Total Volume (L):	2
Type of Waste:	**Caustic**		

Analytical Results

Net Counts (cpm):	0	Background (cpm):	3
pH =	11	Activity (Ci/L):	2.69E-06

Comments:

Activity Level: **This sample is below discard limits. (4.5e-3 Ci/L)**

I certify that this sample contains no materials other than the matrix and volume indicated above. This is a representative sample of an individual solution storage device. Current SOPs were followed in the origination of this item and I believe it will meet approved discard limits.

DAVID COSTA 8/21/01
Submitter's printed name and signature

EOC
Process Status

Supervisor's printed name and Group

_____ liters
H2O wash

NMT-7 LWM Inspector

Date ____/____/____ Time ____:____ a.m. p.m.

RC 3.0

Analytical Chemistry Report

Sample ID: 200142588 Group: NMT-15 QA: N Priority: 1
Submission ID: 100048360 Acct: N Logged: 22-May-2001
User sample ID: GROUP 4
Sample Type: EDC SOLUTION - RCRA
Customer Cost Code: K13Y00000000
Requester: DAVE COSTA MS: Phone:

Radioactive Elements: U235, PU239
Radiation: Y

VOL OR WGT:

Approved by: Drake, Lawrence R. 31-May-2001 14:56

Analytical Operation: IC-ANIONS-L Task ID: 300292540
Date Completed: 23-May-2001 17:25 Replicates: 1 Version: 1

DESCRIPTION: IC-ANIONS:F,CL,SO4,N03,H04...

Component	Results	Units
FLUORIDE	< 20 [1]	ug/ml

[1] FLUORIDE:

Could not analyze for fluoride at lower concentrations because the sample contains a large amount of sulfate ion.

Notebook Reference: CAAC-0143, PAGE 74-82

Analyst: VMM, PTM

Approved by: Martinez, Patrick T. 23-May-2001 17:26

Analytical Operation: PSSUR-L Task ID: 300292541
Date Completed: 31-May-2001 13:22 Replicates: 1 Version: 1

DESCRIPTION: PS-ELEMENTAL ANALYSIS IN LIQUIDS

Component	Results	Units
SILVER	< 0.01	ug/ml
ARSENIC	< 0.04	ug/ml
BARIUM	< 0.05	ug/ml
BERYLLIUM	0.1	ug/ml
CADMIUM	< 0.01	ug/ml
CHROMIUM	6	ug/ml
MERCURY	< 0.1	ug/ml

NICKEL	< 0.05	ug/ml
LEAD	< 0.02	ug/ml
ANTIMONY	< 0.01	ug/ml
THALLIUM	< 0.05	ug/ml
VANADIUM	1.2	ug/ml
ZINC	0.34	ug/ml
--PSSUR-L ANALYSIS	AAM/LRD	ANALYST(S)

Notebook Reference: 052901PQS NMT1-0100 PG71

Additional Information:

Analyst: Drake, Lawrence R.

Approved by: Drake, Lawrence R. 31-May-2001 14:56

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 35269
(Version: 1)

11-Sep-2003 10:21 AM

Generator:	COSTA, DAVID NMT15	MS :	E530
WMC:	MCCORMICK, EGAN FWO-SWO	MS :	E507
FROM:	FWO-SWO	MS :	J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 35269 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to FWO-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 35269
YES _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
YES _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
YES _____ **NO** _____
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 35269

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

Extension-> Signed _____ Date 9/22/03

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 35269

Void-> Signed _____ Date _____

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: FWO-SWO ***MS: J595*** ***PHONE: 5-4000***

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 35269
(Version: 2)

14-Sep-2004 09:24 AM

Generator: COSTA, DAVID NMT15
WMC: MCCORMICK, EGAN FWO-SWO
FROM: FWO-SWO

MS: E530
MS: E507
MS: J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 35269 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to FWO-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 35269
YES _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
YES _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
YES _____ **NO** _____
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 35269

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

Extension-> Signed _____ Date 9/23/04

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 35269

Void-> Signed _____ Date _____

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: FWO-SWO ***MS: J595*** ***PHONE: 5-4000***

✓

LOS ALAMOS NATIONAL LABORATORY
WASTE PROFILE SYSTEM

WPF #: 35576

31-Jan-2008 11:47 AM **(Version: 1)**

Generator :	**LUGO, JERRY L**	MS :	**E530**	PH :	**6674304**	Z#:	**087360**
WMC :	**MCCORMICK, EGAN**	MS :	**E507**	PH :	**5056678158**	Z#:	**093573**
Contact :							
RCRA Rev :	**CORIZ MICHELLE L**	MS :	**J599**	PH :	**5056656411**	Z#:	**120950**
Status :	**EXPIRE**	Activation Date :	**01/24/2003**		Expiration Date:		**01/24/2004**
Group :	**NMT15**	TA :	**55**	Bldg :	**000004**	Room :	**105**

You are required to keep a copy of the WPF(s) in your files for at least three years. This WPF(s) is valid for one year or as long as the composition of the waste you have characterized remains the same. Should your waste change, please submit a new WPF to Waste Acceptance Group.

Waste Accumu : **None of the Above Site ID#**

Method of Char : Analysis/Documents Attached

Chemical/Physical Analysis Number: Attached

Waste Type : **Process Waste/Spent Chemical/Other**

Waste Classes:
- RCA Waste - **RCA Waste**
- RAD Waste - **Radioactive-LL**
- WW Info - **RLWTF**
- Classif/Sensi - **N**

Waste Category: **Inorganic**

Waste Sources : **Materials Processing/Production**

Waste Matrix : **Aqueous**

Matrix Type : **Homogeneous**

Process Desc :

WASTE CAUSTIC SOLUTION GENERATED DURING DECONTAMINATION OF GLOVEBOXES UNDER NMT15-WI-019/006, "DECONTAMINATION OF GB173 AND GB174". ANALYTICAL RESULTS FOR RCRA METALS ATTACHED. RADIOACTIVITY DATA TO BE PROVIDED PRIOR TO DISPOSING SOLUTION TO RLWTF. PH RANGES FROM 11 TO 14 WITH PH 14 BEING PREDOMINANT.

Waste Desc : N/A

Ignitability : **Not ignitable**

Corrosivity : **>= 12.5**

Reactivity : **Non-reactive**

Boiling Point : **Not applicable**

Toxicity Characteristic Metals:

Contaminant	Method	Limit	Min	Max	Unit
ARSENIC	**TOTA**	**Y**			**PPM**
CADMIUM	**TOTA**	**Y**			**PPM**
SILVER	**TOTA**	**Y**			**PPM**
LEAD	**TOTA**	**Y**			**PPM**
MERCURY	**TOTA**	**Y**			**PPM**
SELENIUM	**TOTA**		**1**	**15**	**PPM**
BARIUM	**TOTA**	**Y**			**PPM**

CHROMIUM	**TOTA**	**Y**	**PPM**

Toxicity Characteristic Organic Compounds: N/A

Additional Chemical Constituents and Contaminants:

CAS NO	Constituent	MIN	MAX	UOM
	SPENT CAUSTIC DECONTAMINATION SOLUTION	**95**	**100**	**%**

Waste Water Characteristics for RLWTF
Waste Production: Other
Radionuclide Contaminants :

Contaminant	Limit	Min	Max	Unit	Method
PU-239		**0.00001**	**0.000025**	**Ci/l**	

Total Alpha: 2.50E-05 Ci/l
Average daily flow when discharge occurs: 30 LIT
Maximum daily flow when discharge occurs: 30 LIT
Estimated number of days dicharge will occur: 2
Estimated total volume per year discharged to the RLWC at TA-50: 60 LIT
Wastewater will be discharged through the following: CAUS Line

LDR and Underlying Hazardous Constituents Information
Non-Wastewater/Wastewater Category: **Non Wastewater**

WASTE CHARACTERIZATION INFORMATION

Radioactivity Category : **RADIOACTIVE-LL**

RCRA Category : **HAZARDOUS WASTE**

Secondary Info : N/A

Waste Classification : **MIXED LOW-LEVEL WASTE**

Waste Acceptances : **TA-50 Acceptance**

EPA Hazardous Waste Code : **D002 D010**
Notification Of Underlying Hazardous Constituents:

Constituents
Arsenic
Barium
Cadmium
Chromium (Total)
Lead
Mercury - All Others
Selenium
Silver

GWCP Information

Section 1 - Waste Prevention/Minimization (answer all questions)

Can hazard segregation, elimination, or material substitution be used? ☐ Yes* ☐ No

Can any of the materials in the waste stream be recycled or reused ☐ Yes* ☐ No

Has waste minimization been incorporated into procedures or other process controls? ☐ Yes ☐ No

Can this waste be generated outside a RCA? ☐ Yes* ☐ No ☐ N/A

*Provide Comment

Section 6 - Work Control Documentation (answer all questions)

Do the procedures for this process cover how to manage this waste? ☐ Yes ☐ No (Provide comments)

Do the procedures for this process cover controls to prevent changes to waste constituents and concentrations or addition or removal of waste? ☐ Yes ☐ No (Provide comments)

Section 7 - Package and Storage Control

Describe how the waste will be packaged in according to the applicable WAC:

Identify the storage management controls that will be used for this waste stream: (check all that apply)

- ☐ Tamper indication devices:
- ☐ Limited use locks with log-in for waste
- ☐ Locked cabinet or building
- ☐ Other (describe)

Section 8 - Waste Certification Statements (check only one)

- ☐ Waste appears to meet WAC chapter for:
- ☐ Waste needs exception/exemption for treatment, storage, or disposal at:
- ☐ Waste does not meet the criteria for any known TSDF, (DOE approval is required. Contact the Waste Management Program Office for assistance.)

Estimated Annual Volume (m3):

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WASTE PROFILE FORM

ORIGINAL

Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: EM-SWO at **MS J595.** For assistance with completing this form, call EM-SWO at **5-4000**.	Reference Number 35576 (For EM-SWO use only.)

Generator's Z Number	Waste Generator's Name (print)	WMC's Z Number	WMC's Name (print)
087360	Jerry L. Lugo	093573	Egan McCormick

Generator's Telephone	Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room
7-4304	E 530	NMT 15	55	4	105

Waste Accumulation (Check only one.)
- ☐ Satellite Accumulation Area — Site no: _____
- ☐ Less-than-90-days Storage Area — Site no: _____
- ☐ TSDF — Site no: _____
- ☐ Universal Waste Storage Area — Site no: _____
- ☒ None of the Above

ER Use Only ☐ ER Site PRS #: _____

Method of Characterization (Check as many as apply.)
☒ Analysis/Documents Attached

- ☒ Chemical/Physical Analysis — Sample #: Attached
- ☐ Radiological Analysis — Sample #: _____
- ☐ PCB Analysis — Sample #: _____
- ☐ Acceptable Knowledge Documentation — Documentation #: _____
- ☐ MSDS

Section 1 - Chemical and Physical Information

Waste Type (Check only one.)
- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☒ Process Waste/Spent Chemical/ other (Complete all sections.)
- ☐ Green is Clean Waste (Complete all sections as appropriate.)

Waste Classes

Radiological Information
Was Waste Generated in a RCA? ☒ Yes ☐ No
- ☐ Non-radioactive
- ☒ Radioactive
  - ☒ Low-Level
  - ☐ Transuranic

Wastewater Information
- ☐ Wastewater for SWSC (TA-46) (Complete Attachment 1)
- ☒ Wastewater for RLWTF (TA-50/TA-21) (Complete Attachment 2)
- ☐ Wastewater for TA-16 (HE)

Classification Information
- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check as many as apply.)
- ☒ Inorganic
- ☐ Organic
- Volatile Organics ☐ < 500 ppm ☐ ≥ 500 ppm
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste residue
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)
- Asbestos ☐ friable ☐ non-friable
- PCB Source Concentration
  - ☐ PCB < 50 ppm
  - ☐ PCB ≥ 50 - < 500 ppm
  - ☐ PCB ≥ 500 ppm
- ☐ Other (Describe below)

* Concentrations 10% or greater before use.

Waste Source (Check only one.)

Routine Waste
- ☐ Decon
- ☒ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup - Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Non-routine Waste
- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping - Non-routine
- ☐ Spill Cleanup - Non-routine
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix (Check only one.)

Gas
- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid
- ☒ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid
- ☐ Powder/Ash
- ☐ Solid
- ☐ Sludge
- ☐ Absorbed liquid

Matrix Type (Check only one.)
- ☒ Homogeneous
- ☐ Heterogeneous (Describe below)

Waste/Process Description (Chemical formulas may be used in this field.)

Waste caustic solution generated during decontamination of gloveboxes under NMT15-WI-019/006, "Decontamination of GB173 and GB174." Analytical results for RCRA metals attached. Radioactivity data to be provided prior to disposing solution to RLWTF. pH ranges from 11 to 14 with pH 14 being predominant.

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WASTE PROFILE FORM

Section 2 - Characteristics

Ignitability (Check only one.) (°F)	(°C)	Corrosivity (Check only one.) (pH)	Reactivity (Check as many as apply.)	Boiling Point (Check only one.) (°F)	(°C)
☐ < 73	< 22.8	☐ ≤ 2.0	☐ RCRA Unstable	☐ ≤ 95	≤ 35
☐ 73 - 99	22.8 - 37.2	☐ 2.1 - 4.0	☐ Water Reactive	☐ > 95	> 35
☐ 100 - 139	37.8 - 59.4	☐ 4.1 - 6.0	☐ Cyanide Bearing (> 250 ppm)		
☐ 140 -200	60.0 - 99.3	☐ 6.1 - 9.0	☐ Sulfide Bearing (> 500 ppm)		
☐ > 200	> 99.3	☐ 9.1 - 12.4	☐ Pyrophoric		
☐ EPA Ignitable - Non-liquid		☒ ≥ 12.5	☐ Shock Sensitive		
☐ DOT Flammable Gas		☐ Liquid corrosive to steel	☐ Explosive - DOT Div. _____		
☐ DOT Oxidizer					
☒ Not ignitable		☐ Non-aqueous	☒ Non-reactive	☒ Not applicable	

Identify for all contaminants listed.	Characterization Method: AK	TCLP	Total	Concentration of Contaminants: None or Non-detect	Present Below Regulatory Limit	Above Regulatory Limit Minimum	Maximum
Toxicity Characteristic Metals						(Concentration in ppm only.)	
Arsenic	☐	☐	☒	☐	☒ < 5.0 ppm	_____ to	_____ ppm
Barium	☐	☐	☒	☐	☒ < 100.0 ppm	_____ to	_____ ppm
Cadmium	☐	☐	☒	☐	☒ < 1.0 ppm	_____ to	_____ ppm
Chromium (Total)	☐	☐	☒	☐	☒ < 5.0 ppm	_____ to	_____ ppm
Lead	☐	☐	☒	☐	☒ < 5.0 ppm	_____ to	_____ ppm
Mercury	☐	☐	☒	☐	☒ < 0.2 ppm	_____ to	_____ ppm
Selenium	☐	☐	☒	☐	☐ < 1.0 ppm	1.0 to	15 ppm
Silver	☐	☐	☒	☐	☒ < 5.0 ppm	_____ to	_____ ppm
Toxicity Characteristic Organics							
Benzene	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
Carbon tetrachloride	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
Chlordane	☒	☐	☐	☒	☐ < 0.03 ppm	_____ to	_____ ppm
Chlorobenzene	☒	☐	☐	☒	☐ < 100.0 ppm	_____ to	_____ ppm
Chloroform	☒	☐	☐	☒	☐ < 6.0 ppm	_____ to	_____ ppm
o - cresol	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
m - cresol	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
p - cresol	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
Cresol - mixed	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
2,4-D	☒	☐	☐	☒	☐ < 10.0 ppm	_____ to	_____ ppm
1,4-Dichlorobenzene	☒	☐	☐	☒	☐ < 7.5 ppm	_____ to	_____ ppm
1,2-Dichloroethane	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
1,1-Dichloroethylene	☒	☐	☐	☒	☐ < 0.7 ppm	_____ to	_____ ppm
2,4-Dinitrotoluene	☒	☐	☐	☒	☐ < 0.13 ppm	_____ to	_____ ppm
Endrin	☒	☐	☐	☒	☐ < 0.02 ppm	_____ to	_____ ppm
Heptachlor (& its epoxide)	☒	☐	☐	☒	☐ < 0.008 ppm	_____ to	_____ ppm
Hexachlorobenzene	☒	☐	☐	☒	☐ < 0.13 ppm	_____ to	_____ ppm
Hexachlorobutadiene	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
Hexachloroethane	☒	☐	☐	☒	☐ < 3.0 ppm	_____ to	_____ ppm
Lindane	☒	☐	☐	☒	☐ < 0.4 ppm	_____ to	_____ ppm
Methoxychlor	☒	☐	☐	☒	☐ < 10.0 ppm	_____ to	_____ ppm
Methyl ethyl ketone	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
Nitrobenzene	☒	☐	☐	☒	☐ < 2.0 ppm	_____ to	_____ ppm
Pentachlorophenol	☒	☐	☐	☒	☐ < 100.0 ppm	_____ to	_____ ppm
Pyridine	☒	☐	☐	☒	☐ < 5.0 ppm	_____ to	_____ ppm
Tetrachloroethylene	☒	☐	☐	☒	☐ < 0.7 ppm	_____ to	_____ ppm
Toxaphene	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
Trichloroethylene	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
2,4,5-Trichlorophenol	☒	☐	☐	☒	☐ < 400.0 ppm	_____ to	_____ ppm
2,4,6-Trichlorophenol	☒	☐	☐	☒	☐ < 2.0 ppm	_____ to	_____ ppm
2,4,5-TP (Silvex)	☒	☐	☐	☒	☐ < 1.0 ppm	_____ to	_____ ppm
Vinyl chloride	☒	☐	☐	☒	☐ < 0.2 ppm	_____ to	_____ ppm

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WASTE PROFILE FORM

Section 3 - Additional Constituents

Additional Constituents and Contaminants. Please account for 100% of waste. Ranges should be given within guidelines of LIG 404-00-03 of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum	Maximum	
No CAS. No.	SPENT CAUSTIC DECONTAMINATION SOLUTION	95	100	%
				%
				%
				%
				%
				%
				%
				%
				%
				%
				%
				%
	Total of max. ranges of this section	100		in %
	Total of max. ranges from page 2.	15		in ppm

Additional Information (Use additional sheet if necessary.)

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

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

Signature	Date
Jerry L. Lugo	11-12-02

WASTE MANAGEMENT COORDINATOR: I have reviewed the waste profile form and to the best of my knowledge, the information is complete and accurate.

Signature	Date
[illegible]	11/12/02

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WASTE PROFILE FORM

Attachment 2 - Wastewater Characteristics for RLWTF (TA-50 & TA-21)

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

Indicate if waste was: ☐ Accelerator produced ☐ Reactor produced ☒ Other (Describe in WPF Section 1 "Waste/Process Description.")

Radionuclide Contaminants

Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min. / Max.	Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min. / Max.
As-74	☐ ≤ 4.0 E -8	/	Rb-84	☐ ≤ 1.0 E -8	/
Be-7	☐ ≤ 1.0 E -6	/	Sc-46	☐ ≤ 2.0 E -8	/
Ce-141	☐ ≤ 5.0 E -8	/	Sc-48	☐ ≤ 2.0 E -8	/
Cs-134	☐ ≤ 2.0 E -9	/	Se-75	☐ ≤ 2.0 E -8	/
Cs-137	☐ ≤ 3.0 E -9	/	Na-22	☐ ≤ 1.0 E -8	/
Co-56	☐ ≤ 1.0 E -8	/	Sr-85	☐ ≤ 7.0 E -8	/
Co-57	☐ ≤ 1.0 E -7	/	Sr-89	☐ ≤ 2.0 E -8	/
Co-58	☐ ≤ 4.0 E -8	/	Sr-90	☐ ≤ 1.0 E -9	/
Co-60	☐ ≤ 5.0 E -9	/	Sn-113	☐ ≤ 5.0 E -8	/
Eu-152	☐ ≤ 2.0 E -8	/	V-48	☐ ≤ 2.0 E -8	/
H-3	☐ ≤ 2.0 E -8	/	Y-88	☐ ≤ 3.0 E -8	/
I-133	☐ ≤ 1.0 E -8	/	Zn-65	☐ ≤ 9.0 E -9	/
Mn-52	☐ ≤ 2.0 E -8	/	Am-241	☐ ≤ 0.1 E -6	/
Mn-54	☐ ≤ 5.0 E -8	/	Pu-238	☐ ≤ 0.1 E -6	/
Ra-226 + 228	☐ ≤ 3.0 E -11	/	Pu-239	☐ ≤ 0.1 E -6	1.0 E-5 / 2.5E-5
Rb-83	☐ ≤ 2.0 E -8	/	U-234	☐ ≤ 5.0 E -8	/
Others:			**Others:**		
		/			/
		/			/
		/			/

Other Contaminants

Metal Contaminants	Present Below LOC (in ppm)	Range if above LOC (in ppm) Min. / Max.	Additional Contaminants	Min. / Max
Aluminum	☐ ≤ 5.0	to ppm	Chemical Oxygen Demand (COD)	to mg/l
Boron	☐ ≤ 5.0	to ppm	Total Suspended Solids (TSS)	to mg/l
Cobalt	☐ ≤ 1.0	to ppm		
Copper	☐ ≤ 1.0	to ppm	☐ Total Nitrogen or (only one	to mg/l
Vanadium	☐ ≤ 0.10	to ppm	☐ Total Nitrates entry needed)	to mg/l
Zinc	☐ ≤ 95.40	to ppm		

Radioactive Contaminant Totals:

Total Alpha	2.5E-5	Ci/l
Total Beta		Ci/l
Total Gamma		Ci/l

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

☐ Acid Line ☒ Caustic Line ☐ Industrial Waste Line

☐ Yes ☒ No Scintillation Cocktail Brand Name _____ Volume _____ Unit _____

☐ Yes ☒ No Chemical Treatment for Boilers / Water Chillers

☐ Yes ☒ No Industrial Cleaner Type _____ Volume _____ Unit _____

Average daily volume when discharge occurs: 30 ☐ Gallons/day ☒ Liters/day

Maximum daily volume when discharge occurs: 30 ☐ Gallons/day ☒ Liters/day

Estimated number of days per year discharge will occur: 2

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-50 / TA-21: 60 ☐ Gallons ☒ Liters

ASW 01/13/03

Associated WPF Reference Number:

LDR and Underlying Hazardous Constituents Information - Identify presence of any constituents listed below.

Non-Wastewater / Wastewater Category - Check only one.

☒ Non Wastewater ☐ Wastewater [as defined by 40 CFR 268.2(f)]

Notification of California List Applicability - Check all that apply.

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

☐ A D001 thru D043 liquid waste containing 134 mg/L or greater of Nickel and/or 130 mg/L or greater of thallium.

☐ A D001 thru D043 waste containing Halogenated Organic Compounds (HOCs) listed in 40 CFR 268, Appendix III, at 1000 ppm or greater.

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

☐ *No Underlying Hazardous Constituents in this waste stream.* ☐ *HAZCAT Meeting 40 CFR 268.42(c)*

Organic Constituents

☐ A2213	☐ Butyl benzyl phthalate	☐ p,p'-DDE
☐ Acenaphthylene	☐ 2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	☐ o,p'-DDT
☐ Acenaphthene	☐ Carbaryl	☐ p,p'-DDT
☐ Acetone	☐ Carbenzadim	☐ Dibenz(a,h)anthracene
☐ Acetonitrile	☐ Carbofuran	☐ Dibenz(a,e)pyrene
☐ Acetophenone	☐ Carbofuran phenol	☐ 1,2-Dibromo-3-chloropropane
☐ 2-Acetyaminofluorene	☐ Carbon disufide	☐ 1,2-Dibromoethane (Ethylene dibromide)
☐ Acrolein	☐ Carbon tetrachloride	☐ Dibromomethane
☐ Acrylamide	☐ Carbosulfan	☐ m-Dichlorobenzene
☐ Acrylonitrile	☐ Chlordane (alpha & gamma isomers)	☐ o-Dichlorobenzene
☐ Aldicarb sulfone	☐ p-Chloroaniline	☐ p-Dichlorobenzene
☐ Aldrin	☐ Chlorobenzene	☐ Dichlorodifluoromethane
☐ 4-Aminobiphenyl	☐ Chlorobenzilate	☐ 1,1-Dichloroethane
☐ Aniline	☐ 2-Chloro-1,3-butadiene	☐ 1,2-Dichloroethane
☐ Anthracene	☐ Chlorodibromomethane	☐ 1,1-Dichloroethylene
☐ Aramite	☐ Chloroethane	☐ trans-1,2-Dichloroethylene
☐ alpha-BHC	☐ bis(2-Chloroethoxy) methane	☐ 2,4-Dichlorophenol
☐ beta-BHC	☐ bis(2-Chloroethyl) ether	☐ 2,6-Dichlorophenol
☐ delta-BHC	☐ Chloroform	☐ 2,4-Dichlorophenoxyacetic acid (2,4-D)
☐ gamma-BHC	☐ bis(2-Chloroisopropyl) ether	☐ 1,2-Dichloropropane
☐ Barban	☐ p-Chloro-m-cresol	☐ cis-1,3-Dichloropropylene
☐ Bendiocarb	☐ 2-Chloroethyl vinyl ether	☐ trans-1,3-Dichloropropylene
☐ Bendiocarb phenol	☐ Chloromethane (Methyl chloride)	☐ Dieldrin
☐ Benomyl	☐ 2-Chloronaphthalene	☐ Diethylene glycol, dicarbamate
☐ Benzene	☐ 2-Chlorophenol	☐ Diethyl phthalate
☐ Benz(a)anthracene	☐ 1-Chloropropylene	☐ p-Dimethylaminoazobenzene
☐ Benzal chloride	☐ Chrysene	☐ 2-4-Dimethyl phenol
☐ Benzo(b)fluoranthene	☐ o-Cresol	☐ Dimethyl phthalate
☐ Benzo(k)fluoranthene	☐ m-Cresol	☐ Dimetilan
☐ Benzo(g,h,i)perylene	☐ p-Cresol	☐ Di-n-butyl phthalate
☐ Benzo(a)pyrene	☐ m-Cumenyl methylcarbamate	☐ 1,4-Dinitrobenzene
☐ Bromodichloromethane	☐ Cycloate	☐ 4,6-Dinitro-o-cresol
☐ Bromomethane (Methyl bromide)	☐ Cyclohexanone	☐ 2,4-Dinitrophenol
☐ 4-Bromophenyl phenyl ether	☐ o,p'-DDD	☐ 2,4-Dinitrotoluene
☐ n-Butyl alcohol	☐ p,p'-DDD	☐ 2,6-Dinitrotoluene
☐ Butylate	☐ o,p'-DDE	☐ Di-n-octyl phthalate

Land Disposal Restriction (LDR) and Underlying Hazardous Constituents Information Form

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001, D002, D003, and D012 - D043 characteristic wastes only)

Metal/Inorganic Constituents

☐ Antimony	☐ Cyanides (Amenable)	☒ Selenium
☒ Arsenic	☐ Fluoride	☒ Silver
☒ Barium	☒ Lead	☐ Sulfide
☐ Beryllium	☐ Mercury (Retort residues)	☐ Thallium
☒ Cadmium	☒ Mercury - All others	☐ Vanadium
☒ Chromium (Total)	☐ Nickel	☐ Zinc
☐ Cyanides (Total)		

Actinide Analytical Chemistry Report

Sample ID: 200149103 Group: NMT-15 QA: N Priority: 1
Submission ID: 100050077 Acct: Logged: 26-Jun-2002
User sample ID: SOLEDC4
Sample Type: AQUEOUS PROCESSING
Customer Cost Code: K24C00000000
Requester: JERRY LUGO MS: Phone:

Radioactive Elements: PU239
Radiation: Y

VOL OR WGT: 3.5 L

Analytical Operation: R5-WASTE Task ID: 300313116
Date Completed: 26-Jun-2002 00:00 Replicates: 1 Version: 1

Component	Results	Units
pH	11	pH
ACTIVITY	4.56E-06	Ci/L

Analyst: MAA

Approved by: Porterfield, Donivan R. 02-Jul-2002 11:23

Analytical Operation: PSSUR-L Task ID: 300314310
Date Completed: 15-Aug-2002 08:51 Replicates: 1 Version: 1

DESCRIPTION: PS-ELEMENTAL ANALYSIS IN LIQUIDS

Component	Result	Units	Component	Result	Units
SILVER	< 5	ug/ml	ARSENIC	<5	ug/ml
BARIUM	< 1	ug/ml	CADMIUM	< 1	ug/ml
CHROMIUM	4.4	ug/ml	MERCURY	< 0.1	ug/ml
LEAD	<5	ug/ml	SELENIUM	< 10	ug/ml
COMMENTS	[1]				

[1] COMMENTS: HG VALUES ARE FROM CVAF

Notebook Reference: IRIS080702A.RUN PG113 NMT1-0094 CVAF072402A.TXT PG201 ANC34
Additional Information:
Analyst: JBR/JM/DG/LRD

Approved by: Drake, Lawrence R. 15-Aug-2002 09:00

Actinide Analytical Chemistry Report

Sample ID: 200149102 Group: NMT-15 QA: N Priority: 1
Submission ID: 100050077 Acct: N Logged: 26-Jun-2002
User sample ID: SOLEDC3
Sample Type: AQUEOUS PROCESSING
Customer Cost Code: K24C00000000
Requester: JERRY LUGO MS: Phone:

Radioactive Elements: PU239
Radiation: Y

VOL OR WGT: 4 L

Analytical Operation: R5-WASTE Task ID: 300313115
Date Completed: 26-Jun-2002 00:00 Replicates: 1 Version: 1

Component	Results	Units
pH	14	pH
ACTIVITY	1.82E-06	Ci/L

Analyst: MAA

Approved by: Porterfield, Donivan R. 02-Jul-2002 11:22

Analytical Operation: PSSUR-L Task ID: 300314309
Date Completed: 15-Aug-2002 08:51 Replicates: 1 Version: 1

DESCRIPTION: PS-ELEMENTAL ANALYSIS IN LIQUIDS

Component	Result	Units	Component	Result	Units
SILVER	< 5	ug/ml	ARSENIC	< 5	ug/ml
BARIUM	< 1	ug/ml	CADMIUM	< 1	ug/ml
CHROMIUM	4.2	ug/ml	MERCURY	< 0.1	ug/ml
LEAD	<5	ug/ml	SELENIUM	< 10	ug/ml
COMMENTS	[1]				

[1] COMMENTS: HG VALUES ARE FROM CVAF

Notebook Reference: IRIS080702A.RUN PG113 NMT1-0094 CVAF072402A.TXT PG201 ANC34
Additional Information:
Analyst: JBR/JM/DG/LRD

Approved by: Drake, Lawrence R. 15-Aug-2002 08:59

Actinide Analytical Chemistry Report

Sample ID: 200149101 Group: NMT-15 QA: N Priority: 1
Submission ID: 100050077 Acct: N Logged: 26-Jun-2002
User sample ID: SOLEDC2
Sample Type: AQUEOUS PROCESSING
Customer Cost Code: K24C00000000
Requester: JERRY LUGO MS: Phone:

Radioactive Elements: PU239
Radiation: Y

VOL OR WGT: 4 L

Analytical Operation: R5-WASTE Task ID: 300313114
Date Completed: 26-Jun-2002 00:00 Replicates: 1 Version: 1

Component	Results	Units
pH	14	pH
ACTIVITY	1.09E-05	Ci/L

Analyst: MAA

Approved by: Porterfield, Donivan R. 02-Jul-2002 11:21

Analytical Operation: PSSUR-L Task ID: 300314308
Date Completed: 15-Aug-2002 08:51 Replicates: 1 Version: 1

DESCRIPTION: PS-ELEMENTAL ANALYSIS IN LIQUIDS

Component	Result	Units	Component	Result	Units
SILVER	< 5	ug/ml	ARSENIC	<5	ug/ml
BARIUM	< 1	ug/ml	CADMIUM	< 1	ug/ml
CHROMIUM	4.9	ug/ml	MERCURY	< 0.1	ug/ml
LEAD	<5	ug/ml	SELENIUM	11	ug/ml
COMMENTS	[1]				

[1] COMMENTS: HG VALUES ARE FROM CVAF

Notebook Reference: IRIS080702A.RUN PG113 NMT1-0094 CVAF072402A.TXT PG201 ANC34
Additional Information:
Analyst: JBR/JM/DG/LRD

Approved by: Drake, Lawrence R. 15-Aug-2002 08:59

Actinide Analytical Chemistry Report

Sample ID: 200149100 Group: NMT-15 QA: N Priority: 1
Submission ID: 100050077 Acct: N Logged: 26-Jun-2002
User sample ID: SOLEDC1
Sample Type: AQUEOUS PROCESSING
Customer Cost Code: K24C00000000
Requester: JERRY LUGO MS: Phone:

Radioactive Elements: PU239
Radiation: Y

VOL OR WGT: 4 L

Analytical Operation: R5-WASTE Task ID: 300313113
Date Completed: 26-Jun-2002 00:00 Replicates: 1 Version: 1

Component	Results	Units
pH	14	pH
ACTIVITY	2.42E-05	Ci/L

Analyst: MAA

Approved by: Porterfield, Donivan R. 02-Jul-2002 11:20

Analytical Operation: PSSUR-L Task ID: 300314306
Date Completed: 15-Aug-2002 08:51 Replicates: 1 Version: 1

DESCRIPTION: PS-ELEMENTAL ANALYSIS IN LIQUIDS

Component	Result	Units	Component	Result	Units
SILVER	< 5	ug/ml	ARSENIC	<5	ug/ml
BARIUM	< 1	ug/ml	CADMIUM	< 1	ug/ml
CHROMIUM	< 1	ug/ml	MERCURY	< 0.1	ug/ml
LEAD	<5	ug/ml	SELENIUM	< 10	ug/ml
COMMENTS	[1]				

[1] COMMENTS: HG VALUES ARE FROM CVAF

Notebook Reference: IRIS080702A.RUN PG113 NMT1-0094 CVAF072402A.TXT PG201 ANC34
Additional Information:
Analyst: JBR/JM/DG/LRD

Approved by: Drake, Lawrence R. 15-Aug-2002 08:58

Analytical Chemistry Report
Task Report

Sample ID: 200148803 Group: NMT-15 QA: N Priority: 1
Submission ID: 100050010 Acct: N Logged: 04-Jun-2002
User sample ID: SOLEDC176
Sample Type: AQUEOUS PROCESSING
Customer Cost Code: KM9810020000
Requester: JERRY L. LUGO MS: Phone:

Radioactive Elements: PU239
Radiation: Y

VOL OR WGT: 5L

Approved by: Drake, Lawrence R. 18-Jun-2002 06:23

Analytical Operation: PSSUR-L Task ID: 300312011
Date Completed: 18-Jun-2002 06:23 Replicates: 1 Version: 1

DESCRIPTION: PS-ELEMENTAL ANALYSIS IN LIQUIDS

Component	Result	Units	Component	Result	Units
SILVER	< 1	ug/ml	ARSENIC	<5	ug/ml
BARIUM	< 0.1	ug/ml	CADMIUM	< 1	ug/ml
CHROMIUM	<5	ug/ml	MERCURY	< 0.1	ug/ml
LEAD	< 5	ug/ml	SELENIUM	<10	ug/ml
COMMENTS	[1]				

[1] COMMENTS: HG VALUES ARE FROM CVAF

Notebook Reference: IRIS061202A.RUN PG105 NMT1-0094 CVAF061202A.TXT PG298

Additional Information:

Analyst: JBR/JM/LRD

Approved by: Drake, Lawrence R. 18-Jun-2002 06:23

Analytical Chemistry Report
Task Report

Sample ID: 200148896 Group: NMT-15 QA: N Priority: 1
Submission ID: 100050022 Acct: N Logged: 06-Jun-2002
User sample ID: SOLEDC129
Sample Type: WALK-IN LIQUID
Customer Cost Code: 8J1500KM9810020000
Requester: JERRY L. LUGO MS: Phone:

Radiation: Y

Approved by: Drake, Lawrence R. 03-Jul-2002 11:52

Analytical Operation: PSSUR-L Task ID: 300312710
Date Completed: 03-Jul-2002 11:52 Replicates: 1 Version: 1

DESCRIPTION: PS-ELEMENTAL ANALYSIS IN LIQUIDS

Component	Result	Units	Component	Result	Units
SILVER	< 1	ug/ml	ARSENIC	< 5	ug/ml
BARIUM	< 0.1	ug/ml	CADMIUM	< 0.2	ug/ml
CHROMIUM	3.7	ug/ml	MERCURY	< 0.1	ug/ml
LEAD	< 4	ug/ml	SELENIUM	< 10	ug/ml

Notebook Reference: IRIS062102A PG106 NMT1-094 CVAF ANC34 PG299

Additional Information:

Analyst: Drake, Lawrence R.

Approved by: Drake, Lawrence R. 03-Jul-2002 11:52

Material Safety Data Sheet

Potassium Hydroxide Solutions 1 N and 0.1 N

ACC# 40145

Section 1 - Chemical Product and Company Identification

MSDS Name: Potassium Hydroxide Solutions 1 N and 0.1 N
Catalog Numbers: S719793, SLN7120, SP208-500, SP208-500LC, SP214-1, XX71601LI
Synonyms: None
Company Identification:
Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410
For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7732-18-5	Water	94.2-99.	231-791-2
1310-58-3	Potassium hydroxide	0.1-5.8	215-181-3

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: colorless liquid.
Danger! Causes eye burns. Causes digestive tract burns. Corrosive. Harmful if swallowed. Causes skin burns. Causes respiratory tract burns.
Target Organs: Respiratory system, eyes, skin.

Potential Health Effects
Eye: Causes severe eye burns. May cause irreversible eye injury. Contact may cause ulceration of the conjunctiva and cornea. Eye damage may be delayed.
Skin: Causes skin burns. May cause deep, penetrating ulcers of the skin.
Ingestion: Harmful if swallowed. May cause circulatory system failure. May cause perforation of the digestive tract. Causes severe digestive tract burns with abdominal pain, vomiting, and possible death.
Inhalation: Irritation may lead to chemical pneumonitis and pulmonary edema. Causes severe irritation of upper respiratory tract with coughing, burns, breathing difficulty, and possible coma.
Chronic: Prolonged or repeated skin contact may cause dermatitis. Prolonged or repeated eye contact may cause conjunctivitis.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid imme diately.
Skin: Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Discard contaminated clothing in a manner which limits further exposure.
Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.
Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
Notes to Physician: Treat symptomatically and supportively.
Antidote: None reported.

Section 5 - Fire Fighting Measures

General Information: Wear appropriate protective clothing to prevent contact with skin and eyes. Wear a self-contained breathing apparatus (SCBA) to prevent contact with thermal decomposition products. Use water with caution and in flooding amounts. Contact with moisture or water may generate sufficient heat to ignite nearby combustible materials.
Extinguishing Media: For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam.
Flash Point: Not applicable.
Autoignition Temperature: Not applicable.
Explosion Limits, Lower: Not available.
Upper: Not available.
NFPA Rating: (estimated) Health: 3; Flammability: 0; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Neutralize spill with a weak acid such as vinegar or acetic acid. Avoid runoff into storm sewers and ditches which lead to waterways.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Do not allow water to get into the container because of violent reaction. Do not get in eyes, on skin, or on clothing. Do not ingest or inhale.
Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from strong acids.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Water	none listed	none listed	none listed
Potassium hydroxide	2 mg/m3 Ceiling	none listed	none listed

OSHA Vacated PELs: Water: No OSHA Vacated PELs are listed for this chemical. Potassium hydroxide: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: colorless
Odor: none reported
pH: 13.2-13.5
Vapor Pressure: Not available.
Vapor Density: Not available.
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: Not available.
Freezing/Melting Point: Not available.
Decomposition Temperature: Not available.
Solubility: Completely soluble in water.
Specific Gravity/Density:1.3
Molecular Formula: Mixture
Molecular Weight: Not available.

Section 10 - Stability and Reactivity

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.

Conditions to Avoid: Excess heat.

Incompatibilities with Other Materials: Potassium hydroxide reacts with chlorine dioxide, nitrobenzene, nitromethane, nitrogen trichloride, peroxidized tetrahydrofuran, 2,4,6-trinitrotoluene, bromoform+ crown ethers, acids alcohols, sugars, germanium cyclopentadiene, maleic dicarbide. Corrosive to metals such as aluminum, tin, and zinc to cause formation of flammable hydrogen gas.

Hazardous Decomposition Products: Oxides of potassium.

Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 7732-18-5: ZC0110000
CAS# 1310-58-3: TT2100000
LD50/LC50:
CAS# 7732-18-5:
Oral, rat: LD50 = >90 mL/kg;

CAS# 1310-58-3:
Draize test, rabbit, skin: 50 mg/24H Severe;
Oral, rat: LD50 = 273 mg/kg;

Carcinogenicity:
CAS# 7732-18-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.
CAS# 1310-58-3: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No data available.
Teratogenicity: No data available.
Reproductive Effects: No data available.
Mutagenicity: No data available.
Neurotoxicity: No data available.
Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	POTASSIUM HYDROXIDE, SOLUTION	No information available.
Hazard Class:	8	
UN Number:	UN1814	
Packing Group:	II	

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 7732-18-5 is listed on the TSCA inventory.
CAS# 1310-58-3 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
CAS# 1310-58-3: 1000 lb final RQ; 454 kg final RQ
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 1310-58-3: immediate, reactive.
Section 313 No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
CAS# 1310-58-3 is listed as a Hazardous Substance under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.
CAS# 1310-58-3 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives
Hazard Symbols:
C
Risk Phrases:
R 22 Harmful if swallowed.
R 35 Causes severe burns.

Safety Phrases:
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 36/37/39 Wear suitable protective clothing, gloves and eye/face pr otection.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

WGK (Water Danger/Protection)

CAS# 7732-18-5: No information available.
CAS# 1310-58-3: 1

Canada - DSL/NDSL

CAS# 7732-18-5 is listed on Canada's DSL List.
CAS# 1310-58-3 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of E, D1B.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 1310-58-3 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 12/12/1997
Revision #7 Date: 3/16/2007

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

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WASTE PROFILE SYSTEM

WPF #: 36237

Generator :	**TESCH, CHUCK**	MS :	**C919**	PH :	**6655602**	Z#:	**152599**		
WMC :	**STADELMAIER, AL**	MS :	**C924**	PH :	**5056679746**	Z#:	**095169**		
Contact :									
RCRA Rev :	**CORIZ MICHELLE L**	MS :	**J599**	PH :	**5056656411**	Z#:	**120950**		
Status :	**VOID**	Activation Date :	**10/23/2003**		Expiration Date:		**10/23/2005**		
Group :	**ESA-TSE**	TA :	**21**	Bldg :	**000155**	Room :	**5501**		

You are required to keep a copy of the WPF(s) in your files for at least three years. This WPF(s) is valid for one year or as long as the composition of the waste you have characterized remains the same. Should your waste change, please submit a new WPF to Waste Acceptance Group.

Waste Accumu : **Less-than-90-days Storage Area Site ID# 2518**

Method of Char : Analysis/Documents Attached
Radiological Analysis Number: ATTACHED
MSDS

Waste Type : **Process Waste/Spent Chemical/Other**

Waste Classes: RCA Waste - **RCA Waste**
RAD Waste - **Radioactive-LL**
WW Info - **RLWTF**
Classif/Sensi - **N**

Waste Category: **Inorganic**

Waste Sources : **Research/Development/Testing**

Waste Matrix : **Aqueous**

Matrix Type : **Homogeneous**

Process Desc :
TRITIUM CONTAMINATED POTASSIUM HYDROXIDE

Waste Desc : N/A

Ignitability : **Not ignitable**

Corrosivity : **>= 12.5**

Reactivity : **Non-reactive**

Boiling Point : **Not applicable**

Toxicity Characteristic Metals: N/A

Toxicity Characteristic Organic Compounds: N/A

Additional Chemical Constituents and Contaminants:

CAS NO	Constituent	MIN	MAX	UOM
	POTASSIUM HYDROXIDE SOLUTION	99	100	%

Waste Water Characteristics for RLWTF
Waste Production: Reactor produced
Radionuclide Contaminants :

Contaminant	Limit	Min	Max	Unit	Method
H-3		**0.0001**	**0.001**	**Ci/l**	

Total Beta: 3.00E-04 Ci/l
Maximum daily flow when discharge occurs: 0.5 GAL
Estimated number of days dicharge will occur: 1
Estimated total volume per year discharged to the RLWC at TA-50: 0.5 GAL

LDR and Underlying Hazardous Constituents Information
Non-Wastewater/Wastewater Category: **Non Wastewater**

WASTE CHARACTERIZATION INFORMATION

Radioactivity Category : **RADIOACTIVE-LL**

RCRA Category : **HAZARDOUS WASTE**

Secondary Info : N/A

Waste Classification : **MIXED LOW-LEVEL WASTE**

Waste Acceptances : **TA-50 Acceptance**

EPA Hazardous Waste Code : **D002**
Notification Of Underlying Hazardous Constituents:
Constituents
No Underlying Hazardous Constituents in this waste stream

GWCP Information

Section 1 - Waste Prevention/Minimization (answer all questions)

Can hazard segregation, elimination, or material substitution be used?	☐ Yes*	☐ No	
Can any of the materials in the waste stream be recycled or reused	☐ Yes*	☐ No	
Has waste minimization been incorporated into procedures or other process controls?	☐ Yes	☐ No	
Can this waste be generated outside a RCA?	☐ Yes*	☐ No	☐ N/A

*Provide Comment

Section 6 - Work Control Documentation (answer all questions)

Do the procedures for this process cover how to manage this waste?	☐ Yes	☐ No (Provide comments)
Do the procedures for this process cover controls to prevent changes to waste constituents and concentrations or addition or removal of waste?	☐ Yes	☐ No (Provide comments)

Section 7 - Package and Storage Control

Describe how the waste will be packaged in according to the applicable WAC:

Identify the storage management controls that will be used for this waste stream: (check all that apply)

- ☐ Tamper indication devices:
- ☐ Limited use locks with log-in for waste
- ☐ Locked cabinet or building
- ☐ Other (describe)

Section 8 - Waste Certification Statements (check only one)

- ☐ Waste appears to meet WAC chapter for:
- ☐ Waste needs exception/exemption for treatment, storage, or disposal at:
- ☐ Waste does not meet the criteria for any known TSDF, (DOE approval is required. Contact the Waste Management Program Office for assistance.)

Estimated Annual Volume (m3):

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WASTE PROFILE FORM

ORIGINAL

Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: EM-SWO at MS J595. For assistance with completing this form, call EM-SWO at 5-4000.	Reference Number 36237 (For EM-SWO use only.)

Generator's Z Number	Waste Generator's Name (print)	WMC's Z Number	WMC's Name (print)
152599	Chuck Tesch	095169	Albert Stadelmaier

Generator's Telephone	Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room
5-5602	C332	ESA-TSE	21	155	5501

Waste Accumulation (Check only one.)
- ☐ Satellite Accumulation Area — Site no: _____
- ☒ Less-than-90-days Storage Area — Site no: 5-20-03 ~~2332~~ WT
- ☐ TSDF — Site no: _____ 2518 pel WMC
- ☐ Universal Waste Storage Area — Site no: _____
- ☐ None of the Above

ER Use Only ☐ ER Site — PRS #: _____

Method of Characterization (Check as many as apply.)
☒ Analysis/Documents Attached

- ☐ Chemical/Physical Analysis — Sample #: _____
- ☒ Radiological Analysis — Sample #: Attached
- ☐ PCB Analysis — Sample #: _____
- ☐ Acceptable Knowledge Documentation — Documentation #: _____
- ☒ MSDS

Section 1 - Chemical and Physical Information

Waste Type (Check only one.)
- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☒ Process Waste/Spent Chemical/ other (Complete all sections.)
- ☐ Green is Clean Waste (Complete all sections as appropriate.)

Waste Classes

Radiological Information
Was Waste Generated in a RCA? ☒ Yes ☐ No
- ☐ Non-radioactive
- ☒ Radioactive
  - ☒ Low-Level
  - ☐ Transuranic

Wastewater Information
- ☐ Wastewater for SWSC (TA-46) (Complete Attachment 1)
- ☒ Wastewater for RLWTF (TA-50/TA-21) (Complete Attachment 2)
- ☐ Wastewater for TA-16 (HE)

Classification Information
- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check as many as apply.)
- ☒ Inorganic
- ☐ Organic
- Volatile Organics ☐ < 500 ppm ☐ ≥ 500 ppm
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste residue
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)
- Asbestos ☐ friable ☐ non-friable
- PCB Source Concentration
  - ☐ PCB < 50 ppm
  - ☐ PCB ≥ 50 - < 500 ppm
  - ☐ PCB ≥ 500 ppm
- ☐ Other (Describe below)

* Concentrations 10% or greater before use.

Waste Source (Check only one.)

Routine Waste
- ☐ Decon
- ☐ Materials Processing/Production
- ☒ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup - Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Non-routine Waste
- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping - Non-routine
- ☐ Spill Cleanup - Non-routine
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix (Check only one.)

Gas
- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid
- ☒ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid
- ☐ Powder/Ash
- ☐ Solid
- ☐ Sludge
- ☐ Absorbed liquid

Matrix Type (Check only one.)
- ☒ Homogeneous
- ☐ Heterogeneous (Describe below)

Waste/Process Description (Chemical formulas may be used in this field.)

Tritium contaminated potassium hydroxide

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WASTE PROFILE FORM

Section 2 - Characteristics

Ignitability (Check only one.) (°F)	(°C)	Corrosivity (Check only one.) (pH)	Reactivity (Check as many as apply.)	Boiling Point (Check only one.) (°F)	(°C)
☐ < 73	< 22.8	☐ ≤ 2.0	☐ RCRA Unstable	☐ ≤ 95	≤ 35
☐ 73 - 99	22.8 - 37.2	☐ 2.1 - 4.0	☐ Water Reactive	☐ > 95	> 35
☐ 100 - 139	37.8 - 59.4	☐ 4.1 - 6.0	☐ Cyanide Bearing (> 250 ppm)		
☐ 140 -200	60.0 - 99.3	☐ 6.1 - 9.0	☐ Sulfide Bearing (> 500 ppm)		
☐ > 200	> 99.3	☐ 9.1 - 12.4	☐ Pyrophoric		
☐ EPA Ignitable - Non-liquid		☒ ≥ 12.5	☐ Shock Sensitive		
☐ DOT Flammable Gas		☐ Liquid corrosive to steel	☐ Explosive - DOT Div. _____		
☐ DOT Oxidizer					
☒ Not ignitable		☐ Non-aqueous	☒ Non-reactive	☒ Not applicable	

Identify for all contaminants listed.	Characterization Method: AK	TCLP	Total	Concentration of Contaminants: None or Non-detect	Present Below Regulatory Limit	Above Regulatory Limit Minimum	Maximum
Toxicity Characteristic Metals						(Concentration in ppm only.)	
Arsenic	☒	☐	☐	☒	☐ < 5.0 ppm	_____ to	_____ ppm
Barium	☒	☐	☐	☒	☐ < 100.0 ppm	_____ to	_____ ppm
Cadmium	☒	☐	☐	☒	☐ < 1.0 ppm	_____ to	_____ ppm
Chromium (Total)	☒	☐	☐	☒	☐ < 5.0 ppm	_____ to	_____ ppm
Lead	☒	☐	☐	☒	☐ < 5.0 ppm	_____ to	_____ ppm
Mercury	☒	☐	☐	☒	☐ < 0.2 ppm	_____ to	_____ ppm
Selenium	☒	☐	☐	☒	☐ < 1.0 ppm	_____ to	_____ ppm
Silver	☒	☐	☐	☒	☐ < 5.0 ppm	_____ to	_____ ppm
Toxicity Characteristic Organics							
Benzene	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
Carbon tetrachloride	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
Chlordane	☒	☐	☐	☒	☐ < 0.03 ppm	_____ to	_____ ppm
Chlorobenzene	☒	☐	☐	☒	☐ < 100.0 ppm	_____ to	_____ ppm
Chloroform	☒	☐	☐	☒	☐ < 6.0 ppm	_____ to	_____ ppm
o - cresol	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
m - cresol	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
p - cresol	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
Cresol - mixed	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
2,4-D	☒	☐	☐	☒	☐ < 10.0 ppm	_____ to	_____ ppm
1,4-Dichlorobenzene	☒	☐	☐	☒	☐ < 7.5 ppm	_____ to	_____ ppm
1,2-Dichloroethane	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
1,1-Dichloroethylene	☒	☐	☐	☒	☐ < 0.7 ppm	_____ to	_____ ppm
2,4-Dinitrotoluene	☒	☐	☐	☒	☐ < 0.13 ppm	_____ to	_____ ppm
Endrin	☒	☐	☐	☒	☐ < 0.02 ppm	_____ to	_____ ppm
Heptachlor (& its epoxide)	☒	☐	☐	☒	☐ < 0.008 ppm	_____ to	_____ ppm
Hexachlorobenzene	☒	☐	☐	☒	☐ < 0.13 ppm	_____ to	_____ ppm
Hexachlorobutadiene	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
Hexachloroethane	☒	☐	☐	☒	☐ < 3.0 ppm	_____ to	_____ ppm
Lindane	☒	☐	☐	☒	☐ < 0.4 ppm	_____ to	_____ ppm
Methoxychlor	☒	☐	☐	☒	☐ < 10.0 ppm	_____ to	_____ ppm
Methyl ethyl ketone	☒	☐	☐	☒	☐ < 200.0 ppm	_____ to	_____ ppm
Nitrobenzene	☒	☐	☐	☒	☐ < 2.0 ppm	_____ to	_____ ppm
Pentachlorophenol	☒	☐	☐	☒	☐ < 100.0 ppm	_____ to	_____ ppm
Pyridine	☒	☐	☐	☒	☐ < 5.0 ppm	_____ to	_____ ppm
Tetrachloroethylene	☒	☐	☐	☒	☐ < 0.7 ppm	_____ to	_____ ppm
Toxaphene	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
Trichloroethylene	☒	☐	☐	☒	☐ < 0.5 ppm	_____ to	_____ ppm
2,4,5-Trichlorophenol	☒	☐	☐	☒	☐ < 400.0 ppm	_____ to	_____ ppm
2,4,6-Trichlorophenol	☒	☐	☐	☒	☐ < 2.0 ppm	_____ to	_____ ppm
2,4,5-TP (Silvex)	☒	☐	☐	☒	☐ < 1.0 ppm	_____ to	_____ ppm
Vinyl chloride	☒	☐	☐	☒	☐ < 0.2 ppm	_____ to	_____ ppm

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WASTE PROFILE FORM

Section 3 - Additional Constituents

Additional Constituents and Contaminants. Please account for 100% of waste. Ranges should be given within guidelines of LIG 404-00-03 of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum		Maximum	
	potassium hydroxide SOLUTION	99	to	100	%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
	Total of max. ranges of this section	100			**in %**
	Total of max. ranges from page 2.				**in ppm**

Additional Information (Use additional sheet if necessary.)

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

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

Signature [signature] Date 5/21/03

WASTE MANAGEMENT COORDINATOR: I have reviewed this form and to the best of my knowledge, the information is complete and accurate.

Signature Albert Stadelmaier Date 5-21-03

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WASTE PROFILE FORM

Attachment 1 - Wastewater Characteristics for SWSC (TA-46)

For help in completing this section, call ESH -18 at 7-4882. Identify presence of any constituents listed below.
Use of Acceptable Knowledge in lieu of analytical data must be pre-approved by ESH-18.

Microtox Analysis #: _____ NOTE: Microtox analysis **must be** performed. Contact JCI/ENV to schedule analysis.

Are there any detectable levels of gross Alpha, gross Beta, gross Gamma, and/or Tritium? ☐ No ☐ Yes

All methods of analysis must conform to those approved pursuant to 40 CFR 136 unless an alternative method has been approved by ESH-18.
All metal concentrations are for the dissolved fraction present in the sample unless otherwise indicated.

	☐ Flow Rate of 100 gallons/day or less			☐ Flow Rate of greater than 100 gallons/day		
Flow Rate Parameters	None/ Non-detect	Within Regulatory Limits	Above Limit	None/ Non-detect	Within Regulatory Limits	Above Limit
pH		☐ 5 -11 SU	☐		☐ 5 -11 SU	☐
Chemical Oxygen Demand (COD)		☐ ≤ 750 mg/l	☐		☐ ≤ 500 mg/l	☐
Microtox results (a)		☐ < 55% screen	☐		☐ < 50% screen	☐
(b)		☐ > 20% EC50	☐		☐ > 25% EC50	☐
Temperature		☐ ≤ 180 °F	☐		☐ ≤ 140 °F	☐
Cyanide (Total)	☒	☐ < 5.0 mg/l	☐	☐	☐ < 1.0 mg/l	☐
Fluoride	☒	☐ < 200.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Iron	☒	☐ < 100.0 mg/l	☐	☐	☐ < 35.0 mg/l	☐
Magnesium	☒	☐ < 100.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Manganese	☒	☐ < 5.0 mg/l	☐	☐	☐ < 1.0 mg/l	☐
Metals (Total)	☒	☐ < 40.0 mg/l	☐	☐	☐ < 10.0 mg/l	☐
Nickel	☒	☐ < 50.0 mg/l	☐	☐	☐ ≤ 3.0 mg/l	☐
Nitrogen (Total)	☒	☐ ≤ 100.0 mg/l	☐	☐	☐ ≤ 50.0 mg/l	☐
Oil and Greases	☒	☐ < 100.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Phosphorus (Total)	☒	☐ < 100.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Silver	☒	☐ < 5.0 mg/l	☐	☐	☐ < 0.5 mg/l	☐
Total Suspended Solids (TSS)	☒	☐ ≤ 400.0 mg/l	☐	☐	☐ ≤ 300.0 mg/l	☐
Zinc	☒	☐ < 25.0 mg/l	☐	☐	☐ < 5.0 mg/l	☐

Wastewater contaminants Identify for all constituents listed	None/Non-detect	Present within Regulatory Limits	Above Limit
Dissolved Aluminum	☒	☐ < 5.0 mg/l	☐
Dissolved Arsenic	☒	☐ < 0.2 mg/l	☐
Barium	☒	☐ < 100.0 mg/l	☐
Beryllium	☒	☐ < 5.3 mg/l	☐
Dissolved Boron	☒	☐ < 5.0 mg/l	☐
Dissolved Cadmium	☒	☐ < 0.05 mg/l	☐
Chlorine (Total Residual)	☒	☐ < 3.0 mg/l	☐
Dissolved Chromium	☒	☐ < 1.0 mg/l	☐
Dissolved Cobalt	☒	☐ < 1.0 mg/l	☐
Dissolved Copper	☒	☐ < 0.5 mg/l	☐
Dissolved Lead	☒	☐ < 0.1 mg/l	☐
Total Mercury	☒	☐ < 0.01 mg/l	☐
Molybdenum	☒	☐ < 75.0 mg/l	☐
Polychlorinated Biphenyls (PCB)	☒	None Detected	☐
Dissolved Selenium	☒	☐ < 0.05 mg/l	☐
Dissolved Vanadium	☒	☐ < 0.1 mg/l	☐
Dissolved Zinc	☒	☐ < 25.0 mg/l	☐

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WASTE PROFILE FORM

Attachment 2 - Wastewater Characteristics for RLWTF (TA-50 & TA-21)

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

Indicate if waste was: ☐ Accelerator produced ☒ Reactor produced ☐ Other (Describe in WPF Section 1 "Waste/Process Description.")

Radionuclide Contaminants

Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min.	/ Max.	Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min.	/ Max.
As-74	☐ ≤ 4.0 E -8			Rb-84	☐ ≤ 1.0 E -8		
Be-7	☐ ≤ 1.0 E -6			Sc-46	☐ ≤ 2.0 E -8		
Ce-141	☐ ≤ 5.0 E -8			Sc-48	☐ ≤ 2.0 E -8		
Cs-134	☐ ≤ 2.0 E -9			Se-75	☐ ≤ 2.0 E -8		
Cs-137	☐ ≤ 3.0 E -9			Na-22	☐ ≤ 1.0 E -8		
Co-56	☐ ≤ 1.0 E -8			Sr-85	☐ ≤ 7.0 E -8		
Co-57	☐ ≤ 1.0 E -7			Sr-89	☐ ≤ 2.0 E -8		
Co-58	☐ ≤ 4.0 E -8			Sr-90	☐ ≤ 1.0 E -9		
Co-60	☐ ≤ 5.0 E -9			Sn-113	☐ ≤ 5.0 E -8		
Eu-152	☐ ≤ 2.0 E -8			V-48	☐ ≤ 2.0 E -8		
H-3	☐ ≤ 2.0 E -8	1.0 e-4	1.0 e-3	Y-88	☐ ≤ 3.0 E -8		
I-133	☐ ≤ 1.0 E -8			Zn-65	☐ ≤ 9.0 E -9		
Mn-52	☐ ≤ 2.0 E -8			Am-241	☐ ≤ 0.1 E -6		
Mn-54	☐ ≤ 5.0 E -8			Pu-238	☐ ≤ 0.1 E -6		
Ra-226 + 228	☐ ≤ 3.0 E -11			Pu-239	☐ ≤ 0.1 E -6		
Rb-83	☐ ≤ 2.0 E -8			U-234	☐ ≤ 5.0 E -8		
Others:				**Others:**			

Other Contaminants

Metal Contaminants	Present Below LOC (in ppm)	Range if above LOC (in ppm) Min. / Max.
Aluminum	☐ ≤ 5.0	_____ to _____ ppm
Boron	☐ ≤ 5.0	_____ to _____ ppm
Cobalt	☐ ≤ 1.0	_____ to _____ ppm
Copper	☐ ≤ 1.0	_____ to _____ ppm
Vanadium	☐ ≤ 0.10	_____ to _____ ppm
Zinc	☐ ≤ 95.40	_____ to _____ ppm

Additional Contaminants	Min. / Max
Chemical Oxygen Demand (COD)	_____ to _____ mg/l
Total Suspended Solids (TSS)	_____ to _____ mg/l
☐ Total Nitrogen or (only one	_____ to _____ mg/l
☐ Total Nitrates entry needed)	_____ to _____ mg/l

Radioactive Contaminant Totals:

Total Alpha		Ci/l
Total Beta	.3 e-3	Ci/l
Total Gamma		Ci/l

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

☐ Acid Line ☐ Caustic Line ☐ Industrial Waste Line

☐ Yes ☒ No Scintillation Cocktail Brand Name _____ Volume _____ Unit _____

☐ Yes ☒ No Chemical Treatment for Boilers / Water Chillers

☐ Yes ☒ No Industrial Cleaner Type _____ Volume _____ Unit _____

Average daily volume when discharge occurs: _____ ☐ Gallons/day ☐ Liters/day

Maximum daily volume when discharge occurs: .5 _____ ☒ Gallons/day ☐ Liters/day

Estimated number of days per year discharge will occur: 1 time generation _____

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-50 / TA-21: .5 _____ ☒ Gallons ☐ Liters

rotocol #: 8 Name:3H 1600CA 649473 16-May-2003 07:23
egion A: LL-UL= 0.0-18.6 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
egion B: LL-UL= 2.0-18.6 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
egion C: LL-UL= 0.0- 0.0 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
ime = 1.00 QIP = tSIE ES Terminator = Count
onventional DPM
uclide 1 = 234231
uminescence Correction On

S#	TIME	CPMA	CPMB	SIS	tSIE	DPM1	FLAG
1	10.00	99.30	54.00	10.626	171.		B Blank
2	1.00	15149.1	10198.9	9.999	336.	46639.5	Std
3	1.00	314949.	252237.	13.355	531.	690064.	— 1ml pot hydroxide

314 uci/l

2 liter

MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE

Trade Name	Electrolyte Solution, DF-E05, DF-E06, DF-E07, DF-E09
Manufacturer	Delta F Corp., 4 Constitution Way, Woburn, MA 01801-1087, USA, Tel + 1-781-935-4600
Emergency Contact	USA: 1-800-424-9300 International: 1-813-979-0626 (collect)
Supplier and contact in UK (for use in the UK only)	

2. COMPOSITION

CAS #	Component	EC Code/class	Concentration	Risk Phrase	Risk Description
1310-58-3	Potassium Hydroxide in aqueous solution	215-181-3 C	1N: 5.6%w/w	R35	Causes severe burns

3. HAZARDS IDENTIFICATION

Main Hazard Corrosive. Causes severe burns on contact with skin, eyes and mucous membrane

CERCLA Ratings (scale 0-3)	Health = 3	Fire = 0	Reactivity = 1	Persistence = 0
NFPA Ratings (scale 0-4)	Health = 3	Fire = 0	Reactivity = 1	

Potential Health Effects:

Eye Contact Causes severe eye burns. May cause irreversible eye injury. Contact may cause ulceration of the conjunctiva and cornea. Eye damage may be delayed.

Skin Contact Causes skin burns. May cause deep, penetrating ulcers of the skin.

Ingestion May cause circulatory system failure. May cause perforation of the digestive tract. Causes severe digestive tract burns with abdominal pain, vomiting, and possible death.

Inhalation Inhalation under normal use would not be expected as this product is supplied as an aqueous solution and no hazardous vapors are emitted. Effects of inhalation are irritation which may lead to chemical pneumonitis and pulmonary edema. Causes severe irritation of upper respiratory tract with coughing, burns, breathing difficulty, and possible coma.

Chronic Prolonged or repeated skin contact may cause dermatitis. Prolonged or repeated eye contact may cause conjunctivitis.

4. FIRST-AID MEASURES

Skin Contact In case of skin contact, remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water for at least 15 minutes. Obtain medical attention immediately.

Eye Contact	If the substance has entered the eyes, wash out with plenty of water for at least 15 - 20 minutes, occasionally lifting the upper and lower lids. Obtain medical attention immediately.
Ingestion	If the chemical has been confined to the mouth, give large quantities of water as a mouthwash. Ensure the mouthwash has not been swallowed. If the chemical has been swallowed, do NOT induce vomiting. Give 470 - 950ml (2 - 4 cups) of water or milk. Never give anything by mouth to an unconscious person. Obtain medical attention immediately
Inhalation	Inhalation under normal use would not be expected as this product is supplied as an aqueous solution and no hazardous vapors are emitted; however, if inhalation should somehow occur, remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical aid immediately.

5. FIRE FIGHTING MEASURES

Special Exposure Hazard	Not applicable
Extinguishing Media	Not Combustible. Select extinguishing media appropriate to the surrounding fire conditions.
Protective Equipment	Wear appropriate protective clothing to prevent contact with skin and eyes. Wear a self-contained breathing apparatus (SCBA) to prevent contact with thermal decomposition products.

6. ACCIDENTAL RELEASE MEASURES

Personal Protection	Use proper personal protective equipment as indicated in Section 8.
Leaks and Spills	Absorb spill with inert material (e.g., dry sand or earth), then place into a chemical waste container. Neutralize spill with a weak acid such as vinegar or acetic acid.
Clean-up Procedures	Wash the spillage site with large amounts of water.

7. HANDLING AND STORAGE

Handling Precautions	Complete eye and face protection, protective clothing, and appropriate gloves must be used. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Do not ingest or inhale.
Storage Precautions	Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from strong acids.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Personal Protection

Eyes	Wear appropriate protective chemical safety goggles and face shield as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin	Wear appropriate gloves to prevent skin exposure.
Clothing	Wear appropriate protective clothing to prevent skin exposure.
Respirators	Not Applicable. Inhalation under normal use would not be expected as this product is supplied as an aqueous solution and no hazardous

vapors are emitted.

Airborne Exposure	This material is supplied as an aqueous solution and will not be present in the atmosphere in normal use.
Exposure Limits	Potassium Hydroxide UK EH40, OEL (8hr TWA) 2mg/m^3 NIOSH, (8hr TWA) 2mg/m^3 ACGIH, Ceiling 2mg/m^3 OSHA, not listed

9. Physical & Chemical Properties

Molecular Formula	KOH Mixture
Physical State	1N aqueous solution. Colorless, odorless
pH	Alkaline
Solubility	Completely soluble in water
Boiling Point	104.5^{0}C
Melting Point	-3.5^{0}C
Flash Point	Not applicable
Flammability	Not flammable
Explosion Limits	Not applicable
Specific Gravity	1.15
Vapor Pressure	16.1 mm Hg @ 20^{0}C

10. Stability & Reactivity

Chemical Stability	Stable
Conditions/Materials to Avoid	Incompatible materials, acids and metals
Incompatibilities with other Materials	Reacts with chlorine dioxide, nitrobenzene, nitromethane, nitrogen trichloride, peroxidized tetrahydrofuran, 2,4,6-trinitrotoluene, bromoform+ crown ethers, acids alcohols, sugars, germanium cyclopentadiene, maleic dicarbide. Corrosive to metals such as aluminum, tin, and zinc to cause formation of flammable hydrogen gas.
Hazardous Decomposition Products	Oxides of potassium
Hazardous Polymerization	Has not been reported

11. Toxological Information

Toxicity (Potassium Hydroxide)	CAS# 1310-58-3: Oral, rat: LD50 = 273 mg/kg
Carcinogen Status	Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA

Potassium Hydroxide Solution is a severe eye, mucus membrane, and skin irritant.

12. Ecological Information

Mobility	Completely soluble in water
Degradability	Will degrade by reaction with carbon dioxide from the atmosphere to produce a non-hazardous product.
Accumulation	No
Ecotoxicity	Information not available. No long-term effects expected due to

degradation. The preparation is already in dilute solution and adverse aquatic effects are not expected due to further dilution. The preparation is corrosive, and direct contact with fauna will cause burns.

13. Disposal Considerations

Waste Disposal Dispose of in a manner consistent with federal, state, and local regulations.

14. Transportation Information

	Shipping Name	Hazard Class	UN Number	Packaging Group
US DOT	Potassium Hydroxide Solution	8	UN1814	II
IATA	Potassium Hydroxide Solution	8	UN1814	II
ADR/RID	Potassium Hydroxide Solution	8	UN1814	II
IMDG Code	Potassium Hydroxide Solution	8	UN1814	II
Canadian TDG	Potassium Hydroxide Solution	8(9.2)	UN1814	Not Available

15. Regulatory Information

European/International Regulations
European Labeling in Accordance with EC Directives

Classification	Corrosive	
Hazard Symbol	C	
EC Number	215-181-3	
Risk Phrases	R35	Causes severe burns.
Safety Phrases	S1/2	Keep locked up and out of reach of children.
	S26	In case of contact with the eyes, rinse immediately with plenty of water and seek medical advice.
	S36	Wear suitable protective clothing.
	S37/39	Wear suitable gloves and eye/face protection.
	S45	In case of accident or if you feel unwell, seek medical advice immediately (show label where possible).

16. Other Information

MSDS Creation Date: 09/30/94 MSDS Revised: 09/24/98

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information. Liability is expressly disclaimed for loss or injury arising out of use of this information or the use of any materials designated. Users should make their own investigation to determine the suitability of the information for their particular purpose.

Form WX-3-57
Rev 1/15/73

ESA-WMM PRODUCTION CONTROL
PROCESS DELIVERY ORDER

Date: May 15, 2003 Task Order Number: A-46455-02

Deliver the following material located at: TA-16 Bldg 410 Attn: G.J. Maes/L. Walker

To: R. Vigil-D. Roybal/T. Harllow At: TA-16 Bldg 207

Special Instructions: Piece's were made under T.O. 46455

Package and deliver 1 " B" Charge made under 46455
Material is 900-24

SERIAL #
03-A39051-0002 Weight 20 5 lbs

CONTAINS:

X INERT
___ HIGH EXPLOSIVES
___ NUCLEAR MATERIAL
X SECRET RD

Received by: _____

Date: _____

Group _____

Delivered by: _____

Associated WPF Reference Number: 36237

LDR and Underlying Hazardous Constituents Information - Identify presence of any constituents listed below.

Non-Wastewater / Wastewater Category - Check only one.

xx Non Wastewater ☐ Wastewater [as defined by 40 CFR 268.2(f)]

Notification of California List Applicability - Check all that apply.

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

☐ A D001 thru D043 liquid waste containing 134 mg/L or greater of Nickel and/or 130 mg/L or greater of thallium.

☐ A D001 thru D043 waste containing Halogenated Organic Compounds (HOCs) listed in 40 CFR 268, Appendix III, at 1000 ppm or greater.

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

x ☒ *No Underlying Hazardous Constituents in this waste stream.* ☐ *HAZCAT Meeting 40 CFR 268.42(c)*

Organic Constituents

☐ A2213	☐ Butyl benzyl phthalate	☐ p,p'-DDE
☐ Acenaphthylene	☐ 2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	☐ o,p'-DDT
☐ Acenaphthene	☐ Carbaryl	☐ p,p'-DDT
☐ Acetone	☐ Carbenzadim	☐ Dibenz(a,h)anthracene
☐ Acetonitrile	☐ Carbofuran	☐ Dibenz(a,e)pyrene
☐ Acetophenone	☐ Carbofuran phenol	☐ 1,2-Dibromo-3-chloropropane
☐ 2-Acetyaminofluorene	☐ Carbon disulfide	☐ 1,2-Dibromoethane (Ethylene dibromide)
☐ Acrolein	☐ Carbon tetrachloride	☐ Dibromomethane
☐ Acrylamide	☐ Carbosulfan	☐ m-Dichlorobenzene
☐ Acrylonitrile	☐ Chlordane (alpha & gamma isomers)	☐ o-Dichlorobenzene
☐ Aldicarb sulfone	☐ p-Chloroaniline	☐ p-Dichlorobenzene
☐ Aldrin	☐ Chlorobenzene	☐ Dichlorodifluoromethane
☐ 4-Aminobiphenyl	☐ Chlorobenzilate	☐ 1,1-Dichloroethane
☐ Aniline	☐ 2-Chloro-1,3-butadiene	☐ 1,2-Dichloroethane
☐ Anthracene	☐ Chlorodibromomethane	☐ 1,1-Dichloroethylene
☐ Aramite	☐ Chloroethane	☐ trans-1,2-Dichloroethylene
☐ alpha-BHC	☐ bis(2-Chloroethoxy) methane	☐ 2,4-Dichlorophenol
☐ beta-BHC	☐ bis(2-Chloroethyl) ether	☐ 2,6-Dichlorophenol
☐ delta-BHC	☐ Chloroform	☐ 2,4-Dichlorophenoxyacetic acid (2,4-D)
☐ gamma-BHC	☐ bis(2-Chloroisopropyl) ether	☐ 1,2-Dichloropropane
☐ Barban	☐ p-Chloro-m-cresol	☐ cis-1,3-Dichloropropylene
☐ Bendiocarb	☐ 2-Chloroethyl vinyl ether	☐ trans-1,3-Dichloropropylene
☐ Bendiocarb phenol	☐ Chloromethane (Methyl chloride)	☐ Dieldrin
☐ Benomyl	☐ 2-Chloronaphthalene	☐ Diethylene glycol, dicarbamate
☐ Benzene	☐ 2-Chlorophenol	☐ Diethyl phthalate
☐ Benz(a)anthracene	☐ 1-Chloropropylene	☐ p-Dimethylaminoazobenzene
☐ Benzal chloride	☐ Chrysene	☐ 2-4-Dimethyl phenol
☐ Benzo(b)fluoranthene	☐ o-Cresol	☐ Dimethyl phthalate
☐ Benzo(k)fluoranthene	☐ m-Cresol	☐ Dimetilan
☐ Benzo(g,h,i)perylene	☐ p-Cresol	☐ Di-n-butyl phthalate
☐ Benzo(a)pyrene	☐ m-Cumenyl methylcarbamate	☐ 1,4-Dinitrobenzene
☐ Bromodichloromethane	☐ Cycloate	☐ 4,6-Dinitro-o-cresol
☐ Bromomethane (Methyl bromide)	☐ Cyclohexanone	☐ 2,4-Dinitrophenol
☐ 4-Bromophenyl phenyl ether	☐ o,p'-DDD	☐ 2,4-Dinitrotoluene
☐ n-Butyl alcohol	☐ p,p'-DDD	☐ 2,6-Dinitrotoluene
☐ Butylate	☐ o,p'-DDE	☐ Di-n-octyl phthalate

Jun 10 03 02:03p p.2

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

Organic Constituents - continued

- ☐ Di-n-propylnitrosamine
- ☐ 1,4-Dioxane
- ☐ Diphenylamine
- ☐ Diphenylnitrosamine
- ☐ 1,2-Diphenylhydrazine
- ☐ Disulfoton
- ☐ Dithiocarbamates (total)
- ☐ Endosulfan I
- ☐ Endosulfan II
- ☐ Endosulfan sulfate
- ☐ Endrin
- ☐ Endrin aldehyde
- ☐ EPTC
- ☐ Ethyl acetate
- ☐ Ethyl benzene
- ☐ Ethyl cyanide (Propanenitrile)
- ☐ Ethyl ether
- ☐ bis(2-Ethylhexyl) phthalate
- ☐ Ethyl methacrylate
- ☐ Ethylene oxide
- ☐ Famphur
- ☐ Fluoranthene
- ☐ Fluorene
- ☐ Formetanate hydrochloride
- ☐ Formparanate
- ☐ Heptachlor
- ☐ Heptachlor epoxide
- ☐ Hexachlorobenzene
- ☐ Hexachlorobutadiene
- ☐ Hexachlorocyclopentadiene
- ☐ Hexachlorodibenzo-p-dioxins (HxCDDs)
- ☐ Hexachlorodibenzo-furans (HxCDFs)
- ☐ Hexachloroethane
- ☐ Hexachloropropylene
- ☐ Indeno (1,2,3-c,d) pyrene
- ☐ Iodomethane
- ☐ 3-Iodo-2-propynyl n-butylcarbamate
- ☐ Isobutyl alcohol
- ☐ Isodrin
- ☐ Isolan
- ☐ Isosafrole
- ☐ Kepone
- ☐ Methacrylonitrile
- ☐ Methanol
- ☐ Methapyrilene
- ☐ Methiocarb
- ☐ Methomyl
- ☐ Methoxychlor
- ☐ 3-Methylcholanthrene
- ☐ 4,4-Methylene bis(2-chloroaniline)
- ☐ Methylene chloride
- ☐ Methyl ethyl ketone
- ☐ Methyl isobutyl ketone
- ☐ Methyl methacrylate
- ☐ Methyl methansulfonate
- ☐ Methyl parathion
- ☐ Metolcarb
- ☐ Mexacarbate
- ☐ Molinate
- ☐ Naphthalene
- ☐ 2-Naphthylamine
- ☐ o-Nitroaniline
- ☐ p-Nitroaniline
- ☐ Nitrobenzene
- ☐ 5-Nitro-o-toluidine
- ☐ o-Nitrophenol
- ☐ p-Nitrophenol
- ☐ N-Nitrosodiethylamine
- ☐ N-Nitrosodimethylamine
- ☐ N-Nitroso-di-n-butylamine
- ☐ N-Nitrosomethylethylamine
- ☐ N-Nitrosomorpholine
- ☐ N- Nitrosopiperidine
- ☐ N-Nitrosopyrrolidine
- ☐ Oxamyl
- ☐ Parathion
- ☐ PCBs (total)
- ☐ Pebulate
- ☐ Pentachlorobenzene
- ☐ Pentachlorodibenzo-p-dioxins (PeCDDs)
- ☐ Pentachlorodibenzo-furans (PeCDFs)
- ☐ Pentachloroethane
- ☐ Pentachloronitrobenzene
- ☐ Pentachlorophenol
- ☐ Phenacetin
- ☐ Phenanthrene
- ☐ Phenol
- ☐ o-Phenylenediamine
- ☐ Phorate
- ☐ Phthalic acid
- ☐ Phthalic anhydride
- ☐ Physostigmine
- ☐ Physostigmine salicylate
- ☐ Promecarb
- ☐ Pronamide
- ☐ Propham
- ☐ Propoxur
- ☐ Prosulfocarb
- ☐ Pyrene
- ☐ Pyridine
- ☐ Safrole
- ☐ Silvex (2,4,5-TP)
- ☐ 1,2,4,5-Tetrachlorobenzene
- ☐ Tetrachlorodibenzo-p-dioxins (TCDDs)
- ☐ Tetrachlorodibenzofurans (TCDFs)
- ☐ 1,1,1,2-Tetrachloroethane
- ☐ 1,1,2,2-Tetrachloroethane
- ☐ Tetrachloroethylene
- ☐ 2,3,4,6-Tetrachlorophenol
- ☐ Thiodicarb
- ☐ Thiophanate-methyl
- ☐ Tirpate
- ☐ Toluene
- ☐ Toxaphene
- ☐ Triallate
- ☐ Tribromomethane (Bromoform)
- ☐ 1,2,4-Trichlorobenzene
- ☐ 1,1,1-Trichloroethane
- ☐ 1,1,2-Trichloroethane
- ☐ Trichloroethylene
- ☐ Trichloromonofluoromethane
- ☐ 2,4,5-Trichlorophenol
- ☐ 2,4,6-Trichlorophenol
- ☐ 2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)
- ☐ 1,2,3-Trichloropropane
- ☐ 1,1,2-Trichloro-1,2,2-trifluoroethane
- ☐ Triethylamine
- ☐ tris-(2,3-Dibromopropyl) phosphate
- ☐ Vernolate
- ☐ Vinyl chloride
- ☐ Xylenes (total)

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

Metal/Inorganic Constituents

☐ Antimony	☐ Cyanides (Amenable)	Selenium
☐ Arsenic	☐ Fluoride	☐ Silver
☐ Barium	☐ Lead	☐ Sulfide
☐ Beryllium	☐ Mercury (Retort residues)	☐ Thallium
☐ Cadmium	☐ Mercury - All others	☐ Vanadium
☐ Chromium (Total)	☐ Nickel	☐ Zinc
☐ Cyanides (Total)		

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 36237
(Version: 1)

14-Sep-2004 09:24 AM

Generator:	TESCH, CHUCK ESA-TSE	MS : C348
WMC:	STADELMAIER, AL FWO-SWO	MS : C924
FROM:	FWO-SWO	MS : J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 36237 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to FWO-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 36237
YES _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
YES _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
YES _____ **NO** _____
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 36237

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

Extension-> Signed _____ Date 9/21/04

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 36237

Void-> Signed _____ Date _____

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: FWO-SWO ***MS: J595*** ***PHONE: 5-4000***

✓

WASTE PROFILE FORM

Los Alamos NATIONAL LABORATORY

WPF #: 36237

03-Oct-2005 09:00 AM (Version: 2)

Generator:	TESCH, CHUCK ESA-TSE	MS:	C348
WMC:	STADELMAIER, AL NWIS-SWO	MS:	C924
FROM:	NWIS-SWO	MS:	J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 36237 was submitted approximately one year ago.Please review the attached copy and answer the following questions concerning your waste stream todetermine whether to renew or void your WPF. Please return the completed questionnaire to NWIS-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changesin your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF# 36237

YES NO

If yes, please sign the Extension Certification below

If no, will you be producing the same type of waste in the near future?

YES NO

If yes, please sign the Extension Certification below

If no, will you be producing a different type of waste?

YES NO

If no, sign the Void Approval below to indicate that your WPF should be voided

If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 36237 Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Extension-> Signed _____ Date _____

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 36237

Void-> Signed _____ Date 10/4/05

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: NWIS-SWO **MS: J595** **PHONE: 5-4000**

LOS ALAMOS NATIONAL LABORATORY
WASTE PROFILE SYSTEM

WPF #: 36404

Generator :	**KOWALCZYK, CYNTHIA**	MS :	**E511**	PH :	**6651100**	Z#:	**150520**
WMC :	**MCCORMICK, EGAN**	MS :	**E507**	PH :	**5056678158**	Z#:	**093573**
Contact :							
RCRA Rev :	**LASH TAMMY A**	MS :	**J599**	PH :	**5056653454**	Z#:	**120424**
Status :	**ACTIVE**	Activation Date :	**10/22/2007**		Expiration Date:		**10/22/2008**
Group :	**NMT-2**	TA :	**55**	Bldg :	**000004**	Room :	**209,401,49**

You are required to keep a copy of the WPF(s) in your files for at least three years. This WPF(s) is valid for one year or as long as the composition of the waste you have characterized remains the same. Should your waste change, please submit a new WPF to Waste Acceptance Group.

Waste Accumu : **None of the Above Site ID#**

Method of Char : Chemical/Physical Analysis Number: ATTACHED
Acceptable Knowledge Documentation Number: NMT2-HCP-001

Waste Type : **Process Waste/Spent Chemical/Other**

Waste Classes:
RCA Waste - **RCA Waste**
RAD Waste - **Radioactive-TRU**
WW Info - **RLWTF**
Classif/Sensi - **N**

Waste Category: **Inorganic**
Beryllium

Waste Sources : **Materials Processing/Production**

Waste Matrix : **Aqueous**

Matrix Type : **Homogeneous**

Process Desc :

CAUSTIC FILTRATES FROM HYDROXIDE PRECIPITATION GENERATED UNDER NMT2-HCP-001, AQUEOUS CHLORIDE OPERATIONS, GENERATED HAS A COPY ON FILE. WPF #29309, WAS VOIDED BY CONNIE GERTH (8-25-1999). ACETIC ACID (< OR = TO 25%) USED TO KEEP THE LINE OPEN. WATER USED TO FLUSH THE LINE.

Waste Desc : N/A

Ignitability : **Not ignitable**

Corrosivity : **9.1 - 12.4**

Reactivity : **Non-reactive**

Boiling Point : **> 95 F > 35 C**

Toxicity Characteristic Metals:

Contaminant	Method	Limit	Min	Max	Unit
ARSENIC	**TOTA**		**0**	**32**	**PPM**
BARIUM	**TOTA**	**Y**	**1**	**2**	**PPM**
CADMIUM	**TOTA**	**Y**	**1**	**10**	**PPM**
CHROMIUM	**TOTA**	**Y**	**0.01**	**1**	**PPM**
LEAD	**TOTA**	**Y**			**PPM**
SILVER	**TOTA**	**Y**	**1**	**10**	**PPM**

Toxicity Characteristic Organic Compounds: N/A

Additional Chemical Constituents and Contaminants:

CAS NO	Constituent	MIN	MAX	UOM
	CAUSTIC FILTRATES	5	10	%
7732-18-5	WATER	80	99	%
	BERYLLIUM	0.000087	0.53	%

Additional Information: CAUSTIC FILTRATES INCLUDE: SODIUM HYDROXIDE; POTASSIUM HYDROXIDE; MAGNESIUM HYDROXIDE; SODIUM CHLORIDE; CALCIUM CHLORIDE; BROMOCRESOL PURPLE INDICATOR; OXALIC ACID; HYDROXYLAMINE HYDROCHLORIDE ACID AND NITRATES. Section 7: Secured Facility.

Waste Water Characteristics for RLWTF

Waste Production: Other

Radionuclide Contaminants :

Contaminant	Limit	Min	Max	Unit	Method
AM-241		0	0.0045	Ci/l	
PU-239		0	0.0045	Ci/l	

Metal Contaminants:

Contaminant	Limit	Min	Max	Unit	Method
ZINC		0	5000	ppm	

Additional Contaminants:

Contaminant	Limit	Min	Max	Unit	Method
TOTAL NITRATES		0	1000	mg/l	

Total Alpha: 4.50E-03 Ci/l

Average daily flow when discharge occurs: 100 LIT

Maximum daily flow when discharge occurs: 200 LIT

Estimated number of days dicharge will occur: 40

Estimated total volume per year discharged to the RLWC at TA-50: 4000 LIT

Wastewater will be discharged through the following: CAUS Line

LDR and Underlying Hazardous Constituents Information

Non-Wastewater/Wastewater Category: **Non Wastewater**

WASTE CHARACTERIZATION INFORMATION

Radioactivity Category : **RADIOACTIVE-TRU**

RCRA Category : **HAZARDOUS WASTE**

Secondary Info : **BERYLLIUM**

Waste Classification : **MIXED TRANSURANIC WASTE**

Waste Acceptances : **TA-50 Acceptance**

EPA Hazardous Waste Code : **D004 D006 D011**

Notification Of Underlying Hazardous Constituents:

Constituents
Arsenic
Barium
Beryllium

Cadmium
Chromium (Total)
Lead
Nickel
Silver
Zinc

GWCP Information

Section 1 - Waste Prevention/Minimization (answer all questions)

Can hazard segregation, elimination, or material substitution be used?	☐ Yes*	☒ No	
Can any of the materials in the waste stream be recycled or reused	☐ Yes*	☒ No	
Has waste minimization been incorporated into procedures or other process controls?	☒ Yes	☐ No	
Can this waste be generated outside a RCA?	☐ Yes*	☒ No	☐ N/A

*Provide Comment

Section 6 - Work Control Documentation (answer all questions)

Do the procedures for this process cover how to manage this waste?	☒ Yes	☐ No (Provide comments)
Do the procedures for this process cover controls to prevent changes to waste constituents and concentrations or addition or removal of waste?	☒ Yes	☐ No (Provide comments)

Section 7 - Package and Storage Control

Describe how the waste will be packaged in according to the applicable WAC:

WASTE TRAVELS TO TREATMENT FACILITY THROUGH HARD-PLUMBED LINES

Identify the storage management controls that will be used for this waste stream: (check all that apply)

- ☐ Tamper indication devices:
- ☐ Limited use locks with log-in for waste
- ☐ Locked cabinet or building
- ☒ Other (describe)

Section 8 - Waste Certification Statements (check only one)

- ☒ Waste appears to meet WAC chapter for:
  1.0
- ☐ Waste needs exception/exemption for treatment, storage, or disposal at:
- ☐ Waste does not meet the criteria for any known TSDF, (DOE approval is required. Contact the Waste Management Program Office for assistance.)

Estimated Annual Volume (m3): 18

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ORIGINAL

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WASTE PROFILE FORM

Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: EM-SWO at MS J595. For assistance with completing this form, call EM-SWO at 5-4000.	Reference Number 36404 (For EM-SWO use only.)

Generator's Z Number	Waste Generator's Name (print)	WMC's Z Number	WMC's Name (print)
104239	Louis D Schulte	093573	Egan McCormick

Generator's Telephone	Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room
665-1100	E511	NMT-2	TA-55	PF-4	209,401, 420 & 429

Waste Accumulation (Check only one.)
- ☐ Satellite Accumulation Area — Site no: _____
- ☐ Less-than-90-days Storage Area — Site no: _____
- ☐ TSDF — Site no: _____
- ☐ Universal Waste Storage Area — Site no: _____
- ☒ None of the Above

ER Use Only ☐ ER Site PRS #: _____

Method of Characterization (Check as many as apply.)
- ☐ Analysis/Documents Attached
- ☒ Chemical/Physical Analysis — Sample #: ATTACHED
- ☐ Radiological Analysis — Sample #: _____
- ☐ PCB Analysis — Sample #: _____
- ☒ Acceptable Knowledge Documentation — Documentation #: NMT2-HCP-001
- ☐ MSDS

Section 1 - Chemical and Physical Information

Waste Type (Check only one.)
- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☒ Process Waste/Spent Chemical/ other (Complete all sections.)
- ☐ Green is Clean Waste (Complete all sections as appropriate.)

Waste Classes

Radiological Information
Was Waste Generated in a RCA? ☒ Yes ☐ No
- ☐ Non-radioactive
- ☒ Radioactive
  - ☐ Low-Level
  - ☒ Transuranic

Wastewater Information
- ☐ Wastewater for SWSC (TA-46) (Complete Attachment 1)
- ☒ Wastewater for RLWTF (TA-50/TA-21) (Complete Attachment 2)
- ☐ Wastewater for TA-16 (HE)

Classification Information
- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check as many as apply.)
- ☒ Inorganic
- ☐ Organic
- Volatile Organics ☐ < 500 ppm ☐ ≥ 500 ppm
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste residue
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)
- Asbestos ☐ friable ☐ non-friable
- PCB Source Concentration
  - ☐ PCB < 50 ppm
  - ☐ PCB ≥ 50 - < 500 ppm
  - ☐ PCB ≥ 500 ppm
- ☐ Other (Describe below)

* Concentrations 10% or greater before use.

Waste Source (Check only one.)

Routine Waste
- ☐ Decon
- ☒ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup - Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Non-routine Waste
- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping - Non-routine
- ☐ Spill Cleanup - Non-routine
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix (Check only one.)

Gas
- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid
- ☒ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid
- ☐ Powder/Ash
- ☐ Solid
- ☐ Sludge
- ☐ Absorbed liquid

Matrix Type (Check only one.)
- ☒ Homogeneous
- ☐ Heterogeneous (Describe below)

Waste/Process Description (Chemical formulas may be used in this field.)

Caustic Filtrates from hydroxide precipitation generated under NMT2- HCP-001, Aqueous Chloride Operations, generator has a copy on file. WPF # 29309, was voided by Connie Gerth (8-25-1999). Acetic acid (< or = to 25 %) used to keep the line open. Water used to flush the line.

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WASTE PROFILE FORM

Section 2 - Characteristics

Ignitability (Check only one.) (°F)	(°C)	Corrosivity (Check only one.) (pH)	Reactivity (Check as many as apply.)	Boiling Point (Check only one.) (°F)	(°C)
☐ < 73	< 22.8	☐ ≤ 2.0	☐ RCRA Unstable	☐ ≤ 95	≤ 35
☐ 73 - 99	22.8 - 37.2	☐ 2.1 - 4.0	☐ Water Reactive	☒ > 95	> 35
☐ 100 - 139	37.8 - 59.4	☐ 4.1 - 6.0	☐ Cyanide Bearing (> 250 ppm)		
☐ 140 -200	60.0 - 99.3	☐ 6.1 - 9.0	☐ Sulfide Bearing (> 500 ppm)		
☐ > 200	> 99.3	☒ 9.1 - 12.4	☐ Pyrophoric		
☐ EPA Ignitable - Non-liquid		☐ ≥ 12.5	☐ Shock Sensitive		
☐ DOT Flammable Gas		☐ Liquid corrosive to steel	☐ Explosive - DOT Div. _____		
☐ DOT Oxidizer					
☒ Not ignitable		☐ Non-aqueous	☒ Non-reactive	☐ Not applicable	

Identify for all contaminants listed.	Characterization Method: AK	TCLP	Total	Concentration of Contaminants: None or Non-detect	Present Below Regulatory Limit	Above Regulatory Limit Minimum	Maximum
						(Concentration in ppm only.)	
Toxicity Characteristic Metals							
Arsenic	☐	☐	☒	☐	☐ < 5.0 ppm	0	32 ppm
Barium	☐	☐	☒	☐	☒ < 100.0 ppm		ppm
Cadmium	☐	☐	☒	☐	☒ < 1.0 ppm		ppm
Chromium (Total)	☐	☐	☒	☐	☒ < 5.0 ppm		ppm
Lead	☐	☐	☒	☐	☒ < 5.0 ppm		ppm
Mercury	☐	☐	☒	☒	☐ < 0.2 ppm		ppm
Selenium	☐	☐	☒	☒	☐ < 1.0 ppm		ppm
Silver	☐	☐	☒	☐	☒ < 5.0 ppm		ppm
Toxicity Characteristic Organics							
Benzene	☒	☐	☐	☐	☐ < 0.5 ppm		ppm
Carbon tetrachloride	☒	☐	☐	☐	☐ < 0.5 ppm		ppm
Chlordane	☒	☐	☐	☐	☐ < 0.03 ppm		ppm
Chlorobenzene	☒	☐	☐	☐	☐ < 100.0 ppm		ppm
Chloroform	☒	☐	☐	☐	☐ < 6.0 ppm		ppm
o - cresol	☒	☐	☐	☐	☐ < 200.0 ppm		ppm
m - cresol	☒	☐	☐	☐	☐ < 200.0 ppm		ppm
p - cresol	☒	☐	☐	☐	☐ < 200.0 ppm		ppm
Cresol - mixed	☒	☐	☐	☐	☐ < 200.0 ppm		ppm
2,4-D	☒	☐	☐	☐	☐ < 10.0 ppm		ppm
1,4-Dichlorobenzene	☒	☐	☐	☐	☐ < 7.5 ppm		ppm
1,2-Dichloroethane	☒	☐	☐	☐	☐ < 0.5 ppm		ppm
1,1-Dichloroethylene	☒	☐	☐	☐	☐ < 0.7 ppm		ppm
2,4-Dinitrotoluene	☒	☐	☐	☐	☐ < 0.13 ppm		ppm
Endrin	☒	☐	☐	☐	☐ < 0.02 ppm		ppm
Heptachlor (& its epoxide)	☒	☐	☐	☐	☐ < 0.008 ppm		ppm
Hexachlorobenzene	☒	☐	☐	☐	☐ < 0.13 ppm		ppm
Hexachlorobutadiene	☒	☐	☐	☐	☐ < 0.5 ppm		ppm
Hexachloroethane	☒	☐	☐	☐	☐ < 3.0 ppm		ppm
Lindane	☒	☐	☐	☐	☐ < 0.4 ppm		ppm
Methoxychlor	☒	☐	☐	☐	☐ < 10.0 ppm		ppm
Methyl ethyl ketone	☒	☐	☐	☐	☐ < 200.0 ppm		ppm
Nitrobenzene	☒	☐	☐	☐	☐ < 2.0 ppm		ppm
Pentachlorophenol	☒	☐	☐	☐	☐ < 100.0 ppm		ppm
Pyridine	☒	☐	☐	☐	☐ < 5.0 ppm		ppm
Tetrachloroethylene	☒	☐	☐	☐	☐ < 0.7 ppm		ppm
Toxaphene	☒	☐	☐	☐	☐ < 0.5 ppm		ppm
Trichloroethylene	☒	☐	☐	☐	☐ < 0.5 ppm		ppm
2,4,5-Trichlorophenol	☒	☐	☐	☐	☐ < 400.0 ppm		ppm
2,4,6-Trichlorophenol	☒	☐	☐	☐	☐ < 2.0 ppm		ppm
2,4,5-TP (Silvex)	☒	☐	☐	☐	☐ < 1.0 ppm		ppm
Vinyl chloride	☒	☐	☐	☐	☐ < 0.2 ppm		ppm

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WASTE PROFILE FORM

Section 3 - Additional Constituents

Additional Constituents and Contaminants. Please account for 100% of waste. Ranges should be given within guidelines of LIG 404-00-03 of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum		Maximum	
	Caustic Filtrates	5.	to	10.	%
7732-18-5	Water	80.	to	99.	%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
	Total of max. ranges of this section	109			in %
	Total of max. ranges from page 2.				in ppm

Additional Information (Use additional sheet if necessary.)

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

Caustic Filtrates include: Sodium Hydroxide; Potassium Hydroxide; Magnesium Hydroxide; Sodium Chloride; Calcium Chloride; Bromocresol Purple Indicator; Oxalic Acid; Hydroxylamine hydrochloride acid and nitrates.

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

Signature	Date
Louis [illegible]	6/25/03

WASTE MANAGEMENT COORDINATOR: I have reviewed this form and to the best of my knowledge the information is complete and accurate.

Signature	Date
[illegible]	07/01/03

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WASTE PROFILE FORM

Attachment 1 - Wastewater Characteristics for SWSC (TA-46)

For help in completing this section, call ESH -18 at 7-4882. Identify presence of any constituents listed below.
Use of Acceptable Knowledge in lieu of analytical data must be pre-approved by ESH-18.

Microtox Analysis #: _____ NOTE: Microtox analysis **must be** performed. Contact JCI/ENV to schedule analysis.

Are there any detectable levels of gross Alpha, gross Beta, gross Gamma, and/or Tritium? ☐ No ☐ Yes

All methods of analysis must conform to those approved pursuant to 40 CFR 136 unless an alternative method has been approved by ESH-18.
All metal concentrations are for the dissolved fraction present in the sample unless otherwise indicated.

Flow Rate Parameters	☐ Flow Rate of 100 gallons/day or less			☐ Flow Rate of greater than 100 gallons/day		
	None/ Non-detect	Within Regulatory Limits	Above Limit	None/ Non-detect	Within Regulatory Limits	Above Limit
pH		☐ 5 -11 SU	☐		☐ 5 -11 SU	☐
Chemical Oxygen Demand (COD)		☐ ≤ 750 mg/l	☐		☐ ≤ 500 mg/l	☐
Microtox results (a)		☐ < 55% screen	☐		☐ < 50% screen	☐
(b)		☐ > 20% EC50	☐		☐ > 25% EC50	☐
Temperature		☐ ≤ 180 °F	☐		☐ ≤ 140 °F	☐
Cyanide (Total)	☐	☐ < 5.0 mg/l	☐	☐	☐ < 1.0 mg/l	☐
Fluoride	☐	☐ < 200.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Iron	☐	☐ < 100.0 mg/l	☐	☐	☐ < 35.0 mg/l	☐
Magnesium	☐	☐ < 100.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Manganese	☐	☐ < 5.0 mg/l	☐	☐	☐ < 1.0 mg/l	☐
Metals (Total)	☐	☐ < 40.0 mg/l	☐	☐	☐ < 10.0 mg/l	☐
Nickel	☐	☐ < 50.0 mg/l	☐	☐	☐ ≤ 3.0 mg/l	☐
Nitrogen (Total)	☐	☐ ≤ 100.0 mg/l	☐	☐	☐ ≤ 50.0 mg/l	☐
Oil and Greases	☐	☐ < 100.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Phosphorus (Total)	☐	☐ < 100.0 mg/l	☐	☐	☐ < 50.0 mg/l	☐
Silver	☐	☐ < 5.0 mg/l	☐	☐	☐ < 0.5 mg/l	☐
Total Suspended Solids (TSS)	☐	☐ ≤ 400.0 mg/l	☐	☐	☐ ≤ 300.0 mg/l	☐
Zinc	☐	☐ < 25.0 mg/l	☐	☐	☐ < 5.0 mg/l	☐

Wastewater contaminants Identify for all constituents listed	None/Non-detect	Present within Regulatory Limits	Above Limit
Dissolved Aluminum	☐	☐ < 5.0 mg/l	☐
Dissolved Arsenic	☐	☐ < 0.2 mg/l	☐
Barium	☐	☐ < 100.0 mg/l	☐
Beryllium	☐	☐ < 5.3 mg/l	☐
Dissolved Boron	☐	☐ < 5.0 mg/l	☐
Dissolved Cadmium	☐	☐ < 0.05 mg/l	☐
Chlorine (Total Residual)	☐	☐ < 3.0 mg/l	☐
Dissolved Chromium	☐	☐ < 1.0 mg/l	☐
Dissolved Cobalt	☐	☐ < 1.0 mg/l	☐
Dissolved Copper	☐	☐ < 0.5 mg/l	☐
Dissolved Lead	☐	☐ < 0.1 mg/l	☐
Total Mercury	☐	☐ < 0.01 mg/l	☐
Molybdenum	☐	☐ < 75.0 mg/l	☐
Polychlorinated Biphenyls (PCB)	☐	None Detected	☐
Dissolved Selenium	☐	☐ < 0.05 mg/l	☐
Dissolved Vanadium	☐	☐ < 0.1 mg/l	☐
Dissolved Zinc	☐	☐ < 25.0 mg/l	☐

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WASTE PROFILE FORM

Attachment 2 - Wastewater Characteristics for RLWTF (TA-50 & TA-21)

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

Indicate if waste was: ☐ Accelerator produced ☐ Reactor produced ☒ Other (Describe in WPF Section 1 "Waste/Process Description.")

Radionuclide Contaminants

Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min. / Max.	Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min. / Max.
As-74	☐ ≤ 4.0 E -8	/	Rb-84	☐ ≤ 1.0 E -8	/
Be-7	☐ ≤ 1.0 E -6	/	Sc-46	☐ ≤ 2.0 E -8	/
Ce-141	☐ ≤ 5.0 E -8	/	Sc-48	☐ ≤ 2.0 E -8	/
Cs-134	☐ ≤ 2.0 E -9	/	Se-75	☐ ≤ 2.0 E -8	/
Cs-137	☐ ≤ 3.0 E -9	/	Na-22	☐ ≤ 1.0 E -8	/
Co-56	☐ ≤ 1.0 E -8	/	Sr-85	☐ ≤ 7.0 E -8	/
Co-57	☐ ≤ 1.0 E -7	/	Sr-89	☐ ≤ 2.0 E -8	/
Co-58	☐ ≤ 4.0 E -8	/	Sr-90	☐ ≤ 1.0 E -9	/
Co-60	☐ ≤ 5.0 E -9	/	Sn-113	☐ ≤ 5.0 E -8	/
Eu-152	☐ ≤ 2.0 E -8	/	V-48	☐ ≤ 2.0 E -8	/
H-3	☐ ≤ 2.0 E -8	/	Y-88	☐ ≤ 3.0 E -8	/
I-133	☐ ≤ 1.0 E -8	/	Zn-65	☐ ≤ 9.0 E -9	/
Mn-52	☐ ≤ 2.0 E -8	/	Am-241	☐ ≤ 0.1 E -6	0 / 4.5×10^{-3}
Mn-54	☐ ≤ 5.0 E -8	/	Pu-238	☐ ≤ 0.1 E -6	/
Ra-226 + 228	☐ ≤ 3.0 E -11	/	Pu-239	☐ ≤ 0.1 E -6	0 / 4.5×10^{-3}
Rb-83	☐ ≤ 2.0 E -8	/	U-234	☐ ≤ 5.0 E -8	/
Others:			**Others:**		
		/			/
		/			/
		/			/

Other Contaminants

Metal Contaminants	Present Below LOC (in ppm)	Range if above LOC (in ppm) Min. / Max.
Aluminum	☐ ≤ 5.0	to ppm
Boron	☐ ≤ 5.0	to ppm
Cobalt	☐ ≤ 1.0	to ppm
Copper	☐ ≤ 1.0	to ppm
Vanadium	☐ ≤ 0.10	to ppm
Zinc	☐ ≤ 95.40	0 to 5000 ppm

Additional Contaminants	Min. / Max
Chemical Oxygen Demand (COD)	to mg/l
Total Suspended Solids (TSS)	to mg/l
☐ Total Nitrogen or (only one	to mg/l
☒ Total Nitrates entry needed)	0 to 1000 mg/l

Radioactive Contaminant Totals:

Total Alpha 4.5×10^{-3} Ci/l

Total Beta Ci/l

Total Gamma Ci/l

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

☐ Acid Line ☒ Caustic Line ☐ Industrial Waste Line

☐ Yes ☒ No Scintillation Cocktail Brand Name Volume Unit

☐ Yes ☒ No Chemical Treatment for Boilers / Water Chillers

☐ Yes ☒ No Industrial Cleaner Type Volume Unit

Average daily volume when discharge occurs: 100 ☐ Gallons/day ☒ Liters/day

Maximum daily volume when discharge occurs: 200 ☐ Gallons/day ☒ Liters/day

Estimated number of days per year discharge will occur: 40

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-50 / TA-21: 4000 ☐ Gallons ☒ Liters

Associated WPF Reference Number:

~~LDR and~~ Underlying Hazardous Constituents Information - Identify presence of any constituents listed below.

Non-Wastewater / Wastewater Category - Check only one.

☒ Non Wastewater ☐ Wastewater [as defined by 40 CFR 268.2(f)]

Notification of California List Applicability - Check all that apply.

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

☐ A D001 thru D043 liquid waste containing 134 mg/L or greater of Nickel and/or 130 mg/L or greater of thallium.

☐ A D001 thru D043 waste containing Halogenated Organic Compounds (HOCs) listed in 40 CFR 268, Appendix III, at 1000 ppm or greater.

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

☐ *No Underlying Hazardous Constituents in this waste stream.* ☐ *HAZCAT Meeting 40 CFR 268.42(c)*

Organic Constituents

☐ A2213	☐ Butyl benzyl phthalate	☐ p,p'-DDE
☐ Acenaphthylene	☐ 2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	☐ o,p'-DDT
☐ Acenaphthene	☐ Carbaryl	☐ p,p'-DDT
☐ Acetone	☐ Carbenzadim	☐ Dibenz(a,h)anthracene
☐ Acetonitrile	☐ Carbofuran	☐ Dibenz(a,e)pyrene
☐ Acetophenone	☐ Carbofuran phenol	☐ 1,2-Dibromo-3-chloropropane
☐ 2-Acetyaminofluorene	☐ Carbon disufide	☐ 1,2-Dibromoethane (Ethylene dibromide)
☐ Acrolein	☐ Carbon tetrachloride	☐ Dibromomethane
☐ Acrylamide	☐ Carbosulfan	☐ m-Dichlorobenzene
☐ Acrylonitrile	☐ Chlordane (alpha & gamma isomers)	☐ o-Dichlorobenzene
☐ Aldicarb sulfone	☐ p-Chloroaniline	☐ p-Dichlorobenzene
☐ Aldrin	☐ Chlorobenzene	☐ Dichlorodifluoromethane
☐ 4-Aminobiphenyl	☐ Chlorobenzilate	☐ 1,1-Dichloroethane
☐ Aniline	☐ 2-Chloro-1,3-butadiene	☐ 1,2-Dichloroethane
☐ Anthracene	☐ Chlorodibromomethane	☐ 1,1-Dichloroethylene
☐ Aramite	☐ Chloroethane	☐ trans-1,2-Dichloroethylene
☐ alpha-BHC	☐ bis(2-Chloroethoxy) methane	☐ 2,4-Dichlorophenol
☐ beta-BHC	☐ bis(2-Chloroethyl) ether	☐ 2,6-Dichlorophenol
☐ delta-BHC	☐ Chloroform	☐ 2,4-Dichlorophenoxyacetic acid (2,4-D)
☐ gamma-BHC	☐ bis(2-Chloroisopropyl) ether	☐ 1,2-Dichloropropane
☐ Barban	☐ p-Chloro-m-cresol	☐ cis-1,3-Dichloropropylene
☐ Bendiocarb	☐ 2-Chloroethyl vinyl ether	☐ trans-1,3-Dichloropropylene
☐ Bendiocarb phenol	☐ Chloromethane (Methyl chloride)	☐ Dieldrin
☐ Benomyl	☐ 2-Chloronaphthalene	☐ Diethylene glycol, dicarbamate
☐ Benzene	☐ 2-Chlorophenol	☐ Diethyl phthalate
☐ Benz(a)anthracene	☐ 1-Chloropropylene	☐ p-Dimethylaminoazobenzene
☐ Benzal chloride	☐ Chrysene	☐ 2-4-Dimethyl phenol
☐ Benzo(b)fluoranthene	☐ o-Cresol	☐ Dimethyl phthalate
☐ Benzo(k)fluoranthene	☐ m-Cresol	☐ Dimetilan
☐ Benzo(g,h,i)perylene	☐ p-Cresol	☐ Di-n-butyl phthalate
☐ Benzo(a)pyrene	☐ m-Cumenyl methylcarbamate	☐ 1,4-Dinitrobenzene
☐ Bromodichloromethane	☐ Cycloate	☐ 4,6-Dinitro-o-cresol
☐ Bromomethane (Methyl bromide)	☐ Cyclohexanone	☐ 2,4-Dinitrophenol
☐ 4-Bromophenyl phenyl ether	☐ o,p'-DDD	☐ 2,4-Dinitrotoluene
☐ n-Butyl alcohol	☐ p,p'-DDD	☐ 2,6-Dinitrotoluene
☐ Butylate	☐ o,p'-DDE	☐ Di-n-octyl phthalate

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

Organic Constituents - continued

- ☐ Di-n-propylnitrosamine
- ☐ 1,4-Dioxane
- ☐ Diphenylamine
- ☐ Diphenylnitrosamine
- ☐ 1,2-Diphenylhydrazine
- ☐ Disulfoton
- ☐ Dithiocarbamates (total)
- ☐ Endosulfan I
- ☐ Endosulfan II
- ☐ Endosulfan sulfate
- ☐ Endrin
- ☐ Endrin aldehyde
- ☐ EPTC
- ☐ Ethyl acetate
- ☐ Ethyl benzene
- ☐ Ethyl cyanide (Propanenitrile)
- ☐ Ethyl ether
- ☐ bis(2-Ethylhexyl) phthalate
- ☐ Ethyl methacrylate
- ☐ Ethylene oxide
- ☐ Famphur
- ☐ Fluoranthene
- ☐ Fluorene
- ☐ Formetanate hydrochloride
- ☐ Formparanate
- ☐ Heptachlor
- ☐ Heptachlor epoxide
- ☐ Hexachlorobenzene
- ☐ Hexachlorobutadiene
- ☐ Hexachlorocyclopentadiene
- ☐ Hexachlorodibenzo-p-dioxins (HxCDDs)
- ☐ Hexachlorodibenzo-furans (HxCDFs)
- ☐ Hexachloroethane
- ☐ Hexachloropropylene
- ☐ Indeno (1,2,3-c,d) pyrene
- ☐ Iodomethane
- ☐ 3-Iodo-2-propynyl n-butylcarbamate
- ☐ Isobutyl alcohol
- ☐ Isodrin
- ☐ Isolan
- ☐ Isosafrole
- ☐ Kepone
- ☐ Methacrylonitrile
- ☐ Methanol
- ☐ Methapyrilene
- ☐ Methiocarb
- ☐ Methomyl
- ☐ Methoxychlor
- ☐ 3-Methylcholanthrene
- ☐ 4,4-Methylene bis(2-chloroaniline)
- ☐ Methylene chloride
- ☐ Methyl ethyl ketone
- ☐ Methyl isobutyl ketone
- ☐ Methyl methacrylate
- ☐ Methyl methansulfonate
- ☐ Methyl parathion
- ☐ Metolcarb
- ☐ Mexacarbate
- ☐ Molinate
- ☐ Naphthalene
- ☐ 2-Naphthylamine
- ☐ o-Nitroaniline
- ☐ p-Nitroaniline
- ☐ Nitrobenzene
- ☐ 5-Nitro-o-toluidine
- ☐ o-Nitrophenol
- ☐ p-Nitrophenol
- ☐ N-Nitrosodiethylamine
- ☐ N-Nitrosodimethylamine
- ☐ N-Nitroso-di-n-butylamine
- ☐ N-Nitrosomethylethylamine
- ☐ N-Nitrosomorpholine
- ☐ N- Nitrosopiperidine
- ☐ N-Nitrosopyrrolidine
- ☐ Oxamyl
- ☐ Parathion
- ☐ PCBs (total)
- ☐ Pebulate
- ☐ Pentachlorobenzene
- ☐ Pentachlorodibenzo-p-dioxins (PeCDDs)
- ☐ Pentachlorodibenzo-furans (PeCDFs)
- ☐ Pentachloroethane
- ☐ Pentachloronitrobenzene
- ☐ Pentachlorophenol
- ☐ Phenacetin
- ☐ Phenanthrene
- ☐ Phenol
- ☐ o-Phenylenediamine
- ☐ Phorate
- ☐ Phthalic acid
- ☐ Phthalic anhydride
- ☐ Physostigmine
- ☐ Physostigmine salicylate
- ☐ Promecarb
- ☐ Pronamide
- ☐ Propham
- ☐ Propoxur
- ☐ Prosulfocarb
- ☐ Pyrene
- ☐ Pyridine
- ☐ Safrole
- ☐ Silvex (2,4,5-TP)
- ☐ 1,2,4,5-Tetrachlorobenzene
- ☐ Tetrachlorodibenzo-p-dioxins (TCDDs)
- ☐ Tetrachlorodibenzofurans (TCDFs)
- ☐ 1,1,1,2-Tetrachloroethane
- ☐ 1,1,2,2-Tetrachloroethane
- ☐ Tetrachloroethylene
- ☐ 2,3,4,6-Tertachlorophenol
- ☐ Thiodicarb
- ☐ Thiophanate-methyl
- ☐ Tirpate
- ☐ Toluene
- ☐ Toxaphene
- ☐ Triallate
- ☐ Tribromomethane (Bromoform)
- ☐ 1,2,4-Trichlorobenzene
- ☐ 1,1,1-Trichloroethane
- ☐ 1,1,2-Trichloroethane
- ☐ Trichloroethylene
- ☐ Trichloromonofluoromethane
- ☐ 2,4,5-Trichlorophenol
- ☐ 2,4,6-Trichlorophenol
- ☐ 2,4,5-Trichlorophenoxyacetic acid(2,4,5-T)
- ☐ 1,2,3-Trichloropropane
- ☐ 1,1,2-Trichloro-1,2,2-trifluoroethane
- ☐ Triethylamine
- ☐ tris-(2,3-Dibromopropyl) phosphate
- ☐ Vernolate
- ☐ Vinyl chloride
- ☐ Xylenes (total)

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 - D043 characteristic wastes only)

Metal/Inorganic Constituents

☐ Antimony	☐ Cyanides (Amenable)	☐ Selenium
☒ Arsenic	☐ Fluoride	☐ Silver
☐ Barium	☒ Lead	☐ Sulfide
☒ Beryllium	☐ Mercury (Retort residues)	☐ Thallium
☐ Cadmium	☐ Mercury - All others	☐ Vanadium
☒ Chromium (Total)	☒ Nickel	☒ Zinc
☐ Cyanides (Total)		

Waste Exception Form

WEF No. 36404
WPF# WEF1

Completed by Waste Generator

☒ On-going ☐ One-time	WPF No. OLD 29309	CWDR/TWSR No. NA	Item No. NA – RLWTF (TA-50) Liquid Waste

☒ Hazardous/Chemical ☐ Low-Level Waste ☒ Transuranic ☐ Mixed Low-Level Waste

☒ Radioactive Liquid Waste ☐ Other _____

Waste Acceptance Criteria [LANL WAC (Dec. 2002) – Liquid Radioactive Waste Treatment Facility, RLWTF]

1.4.4 Physical Characteristics: Volume requirements in Table 1.5 (50 – 250 gallons/discharge). The maximum daily discharge for this effluent could be 200 liters/day or 52.84 gallons/day.

1.4.2 Chemical Waste: Table 1.3 requirements for Total Nitrates (10 mg/l), Zinc (100 mg/l) and Arsenic (<5 mg/l). This effluent could have Total Nitrates (0 – 1000 mg/l), Zinc (0-5000 ppm or 5,500 mg/l, assuming solution density of 1.1) and Arsenic (0-32 ppm or 35.2 mg/l, assuming a solution density of 1.1).

Reason for Variance and Justification

Small Quantity (average daily volume: 100 liters/day), **Infrequent Generation** (40 days/ year), **Characteristic Waste.**

Waste Characteristics:
D004 – Arsenic, Characteristic Waste
Nitrates – (0 – 1000 mg/l)
Zinc – (0-5000 ppm)

Requested by (Print)	Requested by (Signature)	Z Number	Date
Louis Schulte	Louis Schulte	104239	6/25/03

Waste Management Facility Approval

Special Instructions and Comments

- **Notify RLWTF prior to discharge of this waste stream.**
- **Discharge to the TA-55 Caustic Waste Line**

Basis for Exemption or Denial

	Team Leader (Signature)	Z Number	Date
☒ Approved ☐ Rejected	[illegible]	091973	9/25/03

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WASTE PROFILE FORM

Contact(if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: **FWO-SWO at MS J595.** For assistance with completing this form, call FWO-SWO at 5-4000.	Reference Number **36404** (For FWO-SWO use only.)

Generator's Z Number	Waste Generator's Name(print)	WMC's Z Number	WMC's Name(print)
~~104239~~ 150520	~~Schulte, Louis D.~~ KOWALCZYK, CYNTHIA L	093573	Mccormick, Egan

Generator's Telephone	Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room
~~6651100~~ 667-7143	E511	NMT-2	55	000004	209, ~~401,49~~ 420

Waste Accumulation (Check only one)

- [ ] Satellite Accumulation Area — Site no: ____
- [ ] Less-than-90-days Storage Area — Site no: ____
- [ ] TSDF — Site no: ____
- [ ] Universal Waste Storage Area — Site no: ____
- [X] None of the Above

ER Use Only — ER Site — PRS #:

Method of Characterization (Check as many as apply.)

- [ ] Analysis/Documents Attached
- [X] Chemical/Physical Analysis — Sample #: ATTACHED
- [ ] Radiological Analysis — Sample #: ____
- [ ] PCB Analysis — Sample #: ____
- [X] Acceptable Knowledge Documentation — Documentation #: NMT2-HCP-001
- [ ] MSDS

Section 1 - Chemical and Physical Information

Waste Type (Check only one.)

- [ ] Unused/Unspent Chemical (Complete all sections as appropriate.)
- [X] Process Waste/Spent Chemical/ other (Complete all sections.)
- [ ] Green is Clean Waste (Complete all sections as appropriate.)

Waste Classes

Radiological Information

Was Waste Generated in a RCA
[X] yes [ ] no

- [ ] Non-radioactive
- [X] Radioactive
  - [ ] Low-Level
  - [X] Transuranic

Wastewater Information

- [ ] Wastewater for SWSC (TA-46)(Complete Attachment 1)
- [X] Wastewater for RLWTF (TA50/TA21 Complete Attachment 2)
- [ ] Wastewater for TA-16(HE)

Classification Information

- [X] Unclassified
- [ ] Classified/Sensitive

Waste Category (Check as many as apply.)

- [X] Inorganic
- [ ] Organic
  - Volatile Organics [ ] < 500 ppm [ ] >= 500 ppm
- [ ] Solvent *
- [ ] Degreaser *
- [ ] Dioxin
- [ ] Electroplation
- [ ] Treated Hazardous waste residue
- [ ] Explosive process
- [ ] Infectious/Medical
- [ ] Biological
- [ ] Beryllium
- [ ] Empty Container(see instructions)
- [ ] Battery(see insructions)
- Asbestos [ ] friable [ ] non-friable
- PCB Source Concentration
  - [ ] PCB < 50 ppm
  - [ ] PCB >= 50 - < 500 ppm
  - [ ] PCB >= 500 ppm
- [ ] Other (Describe below)

*Concentrations 10% or greater before use.

Waste Source (Check only one.)

Routine Waste

- [ ] Decon
- [X] Materials Processing/Production
- [ ] Research/Development/Testing
- [ ] Scheduled Maintenance
- [ ] Housekeeping - Routine
- [ ] Spilll Cleanup - Routine
- [ ] Sampling - Routine Monitoring
- [ ] Other (Describe below)

Non-routine Waste

- [ ] Abatement
- [ ] Construction/Upgrades
- [ ] Demolition
- [ ] Decon/Decom
- [ ] Investigative Derived
- [ ] Orphan/Legacy
- [ ] Remediation/Restoration
- [ ] Repacking (Secondary)
- [ ] Unscheduled Maintenance
- [ ] Housekeeping - Non-routine
- [ ] Spill Cleanup - Non-routine
- [ ] UST - Non-petroleum
- [ ] UST - Petroleum
- [ ] Other (Describe below)

Waste Matrix (Check only one.)

Gas

- [ ] <= 1.5 Atmospheres pressure
- [ ] > 1.5 Atmospheres pressure
- [ ] Liquefied compressed gas

Liquid

- [X] Aqueous
- [ ] Non-aqueous
- [ ] Suspended Solids/Aqueous
- [ ] Suspended Solids/Non-aqueous

Solid

- [ ] Powder/Ash
- [ ] Solid
- [ ] Sludge
- [ ] Absorbed Liquid

Matrix Type (check only one.)

- [X] Homogeneous
- [ ] Heterogeneous (Describe below)

Waste/Process Description (Chemical formulas may be used in this field.)

CAUSTIC FILTRATES FROM HYDROXIDE PRECIPITATION GENERATED UNDER NMT2-HCP-001, AQUEOUS CHLORIDE OPERATIONS, GENERATED HAS A COPY ON FILE. WPF #29309, WAS VOIDED BY CONNIE GERTH (8-25-1999). ACETIC ACID (< OR = TO 25%) USED TO KEEP THE LINE OPEN. WATER USED TO FLUSH THE LINE.

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WASTE PROFILE FORM

Reference Number
36404
(For FWO-SWO use only.)

Attachment 2 - Wastewater Characteristics for RLWTF (TA-50 & TA-21)

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

Indicate if waste was: [ ] Accelerator produced [ ] Reactor produced [X] Other (Describe in WPF Section 1 "Waste/Process Description."

Radionuclide Contaminants

Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min.	Max.	Identify for the following:	Present At Or Below LOC (in Ci/l)	Range if above LOC in Ci/l Min.	Max.
As-74	[ ] <= 4.0E-8			Rb-84	[ ] <= 1.0E-8		
Be-7	[ ] <= 1.0E-6			Sc-46	[ ] <= 2.0E-8		
Ce-141	[ ] <= 5.0E-8			Sc-48	[ ] <= 2.0E-8		
Cs-134	[ ] <= 2.0E-9			Se-75	[ ] <= 2.0E-8		
Cs-137	[ ] <= 3.0E-9			Na-22	[ ] <= 1.0E-8		
Co-56	[ ] <= 1.0E-8			Sr-85	[ ] <= 7.0E-8		
Co-57	[ ] <= 1.0E-7			Sr-89	[ ] <= 2.0E-8		
Co-58	[ ] <= 4.0E-8			Sr-90	[ ] <= 1.0E-9		
Co-60	[ ] <= 5.0E-9			Sn-113	[ ] <= 5.0E-8		
Eu-152	[ ] <= 2.0E-8			V-48	[ ] <= 2.0E-8		
H-3	[ ] <= 2.0E-8			Y-88	[ ] <= 3.0E-8		
I-133	[ ] <= 1.0E-8			Zn-65	[ ] <= 9.0E-9		
Mn-52	[ ] <= 2.0E-8			Am-241	[ ] <= 0.1E-6	0.00E+00	4.50E-03
Mn-54	[ ] <= 5.0E-8			Pu-238	[ ] <= 0.1E-6		
Ra-226+228	[ ] <= 3.0E-11			Pu-239	[ ] <= 0.1E-6	0.00E+00	4.50E-03
Rb-83	[ ] <= 2.0E-8			U-234	[ ] <= 5.0E-8		
Others:				**Others:**			

Other Contaminants

Metal Contaminants	Present Below LOC (in ppm)	Range if above LOC (in ppm) Min.	Max.	Additional Contaminants	Min.	Max.
Aluminum	[ ] <= 5.0		ppm	Chemical Oxygen Demand (DOD)		mg/l
Boron	[ ] <= 5.0		ppm	Total Suspended Solids (TSS)		mg/l
Cobalt	[ ] <= 1.0		ppm	[ ] Total Nitrogen or (only one		mg/l
Copper	[ ] <= 1.0		ppm	[ ] Total Nitrates entry needed)	0	1000 mg/l
Vanadium	[ ] <= 0.10		ppm			
Zinc	[ ] <= 95.4	0	5000 ppm			

Radioactive Contaminant Totals:

Total Alpha	4.50E-03	Ci/l
Total Beta		Ci/l
Total Gamma		Ci/l

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

[ ] Acid Line [X] Caustic Line [ ] Industrial Waste Line

[ ] Yes [ ] No Scintillation Cocktail Brand Name _____ Volume _____ Unit _____

[ ] Yes [ ] No Chemical Treatment for Boilers/Water Chillers

[ ] Yes [ ] No Industrial Cleaner Type _____ Volume _____ Unit _____

Average daily volume when discharge occurs: 100 [ ] Gallons/day [X] Liters/day

Maximum daily volume when discharge occurs: 200 [ ] Gallons/day [X] Liters/day

Estimated number of days per year discharge will occur: 40

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-50/TA-21: 4000 [ ] Gallons [X] Liters

Los Alamos
National Laboratory

WASTE PROFILE FORM

Reference Number
36404
(For FWO-SWO use only.)

LDR and Underlying Hazardous Constituents Information - Identify presence of any constituents listed below.

Non-Wastewater/Wastewater Category - check only one.

[X] Non Wastewater

[ ] Wastewater [as defined by 40 CFR 268.2(f)]

Notification of California List Applicability - Check all that apply.

[ ] Liquid hazardous waste containing PCBs at a concentration of 50 ppm or greater.
[ ] A D001 thru D043 liquid waste containing 134 mg/L or greater of Nickel and/or 130 mg/L or greater of thallium.
[ ] A D001 thru D043 waste containing Halogenated Organic Compounds (HOCs) listed in 40 CFR 268, Appendix III, at 1000 ppm or greater.

Notification Of Underlying Hazardous Constituents

Check the applicable underlying constituents above the concentration levels for D001, D002, D003, and D012 - D043 characteristic wastes only)

[ ] *No Underlying Hazardous Constituents in this waste stream.* [ ] *HAZCAT Meeting 40 CFR 268.42(c)*

Organic Constituents

[ ] A2213
[ ] Acenaphthylene
[ ] Acenaphthene
[ ] Acetone
[ ] Acetonitrile
[ ] Acetophenone
[ ] 2-Acetyaminofluorene
[ ] Acrolein
[ ] Acrylamide
[ ] Acrylonitrile
[ ] Aldicarb sulfone
[ ] Aldrin
[ ] 4-Aminobiphenyl
[ ] Aniline
[ ] Anthracene
[ ] Aramite
[ ] alpha-BHC
[ ] beta-BHC
[ ] delta-BHC
[ ] gamma-BHC
[ ] Barban
[ ] Bendiocarb
[ ] Bendiocarb phenol
[ ] Benomyl
[ ] Benzene
[ ] Benz(a)anthracene
[ ] Benzal chloride
[ ] Benzo(b)fluoranthene
[ ] Benzo(k)fluoranthene
[ ] Benzo(g,h,i)perylene
[ ] Benzo(a)pyrene
[ ] Bromodichloromethane
[ ] Bromomethane (Methyl bromide)
[ ] 4-Bromophenyl phenyl ether
[ ] n-Butyl alcohol
[ ] Butylate
[ ] Butyl benzyl phthalate
[ ] 2-sec-Butyl-4,6-dinitrophenol (Dinoseb)
[ ] Carbaryl
[ ] Carbenzadim
[ ] Carbofuran
[ ] Carbofuran phenol
[ ] Carbon disufide
[ ] Carbon tetrachloride
[ ] Carbosulfan
[ ] Chlordane (alpha & gamma isomers)
[ ] p-Chloroaniline
[ ] Chlorobenzene
[ ] Chlorobenzilate
[ ] 2-Chlor-1,3-butadiene
[ ] Chlorodibromomethane
[ ] Chloroethane
[ ] bis(2-chloroethoxy) methane
[ ] bis(2-chloroethyl) ether
[ ] Chloroform
[ ] bis(2-chloroisopropyl) ether
[ ] p-Chloro-m-cresol
[ ] 2-Chloroethyl vinyl ether
[ ] Chloromethane (Methyl chloride)
[ ] 2-Chloronaphthalene
[ ] 2-Chlorophenol
[ ] 3-Chloropropylene
[ ] Chrysene
[ ] o-Cresol
[ ] m-Cresol
[ ] p-Cresol
[ ] m-Cumenyl methylcarbamate
[ ] Cycloate
[ ] Cyclohexanone
[ ] o,p'-DDD
[ ] p,p'-DDD
[ ] o,p'-DDE
[ ] p,p'-DDE
[ ] o,p'-DDT
[ ] p,p'-DDT
[ ] Dibenz(a,h)anthracene
[ ] Dibenz(a,e)pyrene
[ ] 1,2-Dibromo-3-chloropropane
[ ] 1,2-Dibromoethane (Ethylene dibromide)
[ ] Dibromomethane
[ ] m-Dichlorobenzene
[ ] o-Dichlorobenzene
[ ] p-Dichlorobenzene
[ ] Dichlorodifluoromethane
[ ] 1,1-Dichloroethane
[ ] 1,2-Dichloroethane
[ ] 1,1-Dichloroethylene
[ ] trans-1,2-Dichloroethylene
[ ] 2,4-Dichlorophenol
[ ] 2,6-Dichlorophenol
[ ] 2,4-Dichlorophenoxyacetic (2,4-D)
[ ] 1,2-Dichloropropane
[ ] cis-1,3-dichloropylene
[ ] trans-1,3-Dichloropylene
[ ] Dieldrin
[ ] Diethylene glycol, dicarbamate
[ ] Diethyl phthalate
[ ] p-Dimethylaminoazobenzene
[ ] 2-4-Dimethyl phenol
[ ] Dimethyl phthalate
[ ] Dimetilan
[ ] Di-n-butyl phthalate
[ ] 1,4-Dinitrobenzene
[ ] 4,6-Dinitro-o-cresol
[ ] 2,4-Dinitrophenol
[ ] 2,4-Dinitrotoluene
[ ] 2,6-Dinitrotoluene
[ ] Di-n-octyl phthalate

Los Alamos
National Laboratory

WASTE PROFILE FORM

Reference Number
36404
(For EWO-SWO use only.)

Notification Of Underlying Hazardous Constituents

Check the applicable underlying constituents above the concentration levels for D001, D002, D003, and D012 - D043 characteristic wastes only)

Organic Constituents - continued

- [ ] Di-n-propylnitrosamine
- [ ] 1,4-Dioxane
- [ ] Diphenylamine
- [ ] Diphenylnitrosamine
- [ ] 1,2-Diphenylhydrazine
- [ ] Disulfoton
- [ ] Dithiocarbamates (total)
- [ ] Endosulfan I
- [ ] Endosulfan II
- [ ] Endosulfan sulfate
- [ ] Endrin
- [ ] Endrin aldehyde
- [ ] EPTC
- [ ] Ethyl acetate
- [ ] Ethyl benzene
- [ ] Ethyl cyanide (Propanenitrile)
- [ ] Ethyl ether
- [ ] bis(2-ethylhexyl) phthalate
- [ ] Ethyl methacrylate
- [ ] Ethylene oxide
- [ ] Famphur
- [ ] Fluoranthene
- [ ] Fluorene
- [ ] Formetanate hydrochloride
- [ ] Formparanate
- [ ] Heptachlor
- [ ] Heptachlor epoxide
- [ ] Hexachlorobenzene
- [ ] Hexachlorobutadiene
- [ ] Hexachlorocyclopentadiene
- [ ] Hexachlorodibenzo-p-dioxins (HxCDDs)
- [ ] Hexachlorodibenzo-furans (HxCDFs)
- [ ] Hexachloroethane
- [ ] Hexachloropropylene
- [ ] Indeno (1,2,3-c,d) pyrene
- [ ] Iodomethane
- [ ] 3-Iodo-2-propynyl n-butylcarbamate
- [ ] Isobutyl alcohol
- [ ] Isodrin
- [ ] Isolan
- [ ] Isosafrole
- [ ] Kepone
- [ ] Methacrylonitrile
- [ ] Methanol
- [ ] Methapyrilene
- [ ] Methiocarb
- [ ] Methomyl
- [ ] Methoxychlor
- [ ] 3-Methylchlolanthrene
- [ ] 4,4-Methylene bis(2-chloroanline)
- [ ] Methylene chloride
- [ ] Methyl ethyl ketone
- [ ] Methyl isobutyl ketone
- [ ] Methyl methacrylate
- [ ] Methyl methansulfonate
- [ ] Methyl parathion
- [ ] Metolcarb
- [ ] Mexacarbate
- [ ] Molinate
- [ ] Naphthalene
- [ ] 2-Naphthylamine
- [ ] 0-Nitroaniline
- [ ] p-Nitroaniline
- [ ] Nitrobenzene
- [ ] 5-Nitro-o-toluidine
- [ ] o-Nitrophenol
- [ ] p-Nitrophenol
- [ ] N-Nitrosodiethylamine
- [ ] N-Nitrosodimethylamine
- [ ] N-Nitroso-di-n-butylamine
- [ ] N-Nitrosomethylethylamine
- [ ] N-Nitrosomorpholine
- [ ] N-Nitrosopiperidine
- [ ] N-Nitrosopyrrolidine
- [ ] Oxamyl
- [ ] Parathion
- [ ] PCBs (total)
- [ ] Pebulate
- [ ] Pentachlorobenzene
- [ ] Pentachlorodibenzo-p-dioxins (PeCDDs)
- [ ] Pentachlorodibenzo-furans (PeCDFs)
- [ ] Pentachloroethane
- [ ] Pentachloronitrobenzene
- [ ] Pentachlorophenol
- [ ] Phenacetin
- [ ] Phenanthrene
- [ ] Phenol
- [ ] o-Phenylenediamine
- [ ] Phorate
- [ ] Phthalic acid
- [ ] Phthalic anhydride
- [ ] Physostigmine
- [ ] Physostigmine salicylate
- [ ] Promecarb
- [ ] Pronamide
- [ ] Propham
- [ ] Propoxur
- [ ] Prosulfocarb
- [ ] Pyrene
- [ ] Pyridine
- [ ] Safrole
- [ ] Silvex (2,4,5-TP)
- [ ] 1,2,4,5-Tetrachlorobenzene
- [ ] Tetrachlorodi-benzo-p-dioxins (TCDDs)
- [ ] Tetrachlorodibenzofurans (TCDFs)
- [ ] 1,1,1,2-Tetrachloroethane
- [ ] 1,1,2,2-Tetrachloroethane
- [ ] Tetrachloroethylene
- [ ] 2,3,4,6-Tertachlorophenol
- [ ] Thiodicarb
- [ ] Thiophanate-methyl
- [ ] Tirpate
- [ ] Toluene
- [ ] Toxaphene
- [ ] Triallate
- [ ] Tribromomethane (Bromoform)
- [ ] 1,2,4-Trichlorobenzene
- [ ] 1,1,1-Trichloroethane
- [ ] 1,1,2-Trichloroethane
- [ ] Trichloroethylene
- [ ] Trichloromonofluoromethane
- [ ] 2,4,5-Trichlorophenol
- [ ] 2,4,6-Trichlorophenol
- [ ] 2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)
- [ ] 1,2,3-Trichloropropane
- [ ] 1,1,2-Trichlor-1,2,2-trifluoroethane
- [ ] Triethylamine
- [ ] tris-(2,3-Dibromopropyl) phosphate
- [ ] Vernolate
- [ ] Vinyl chloride
- [ ] Xylenes (total)

Los Alamos
National Laboratory

WASTE PROFILE FORM

Reference Number
36404
(For FWO-SWO use only.)

Notification Of Underlying Hazardous Constituents

Check the applicable underlying constituents above the concentration levels for D001, D002, D003, and D012 - D043 characteristic wastes only)

Metal/Inorganic Constituents

[ ]	Antimony	[ ]	Cyanides (Amenable)	[ ]	Selenium
[X]	Arsenic	[ ]	Fluoride	[ ]	Silver
[ ]	Barium	[X]	Lead	[ ]	Sulfide
[X]	Beryllium	[ ]	Mercury (Retort residues)	[ ]	Thallium
[ ]	Cadmium	[ ]	Mercury - All others	[ ]	Vanadium
[X]	Chromium (total)	[X]	Nickel	[X]	Zinc
[ ]	Cyanides (total)				

WASTE PROFILE FORM
WPF #: 36404

For rapid processing, complete all sections in black or blue ink and mail to:
SOLID WASTE OPERATIONS GROUP at MS J595.
For assistance with completing this form, call SOLID WASTE OPERATIONS GROUP at 5-4000

Contact(if other than given below)

Generators Z Number	Waste Generators Name(print)	WMCs Z Number	WMCs Name(print)
150520	Cynthia Kowalczyk	093573	MCCORMICK, EGAN

Cynthia Kowalczyk	Generators Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room	WMC Phone #
6677143	E511	NMT-2	55	000004	209,401,49	6678158

Waste Accumulation (Check only one)

- ☐ Satellite Accumulation Area Site no: ____
- ☐ Less-than-90-days Storage Area Site no: ____
- ☐ TSDF Site no: ____
- ☐ Universal Waste Storage Area Site no: ____
- ☐ Used Oil for Recycle Site no: ____
- ☐ PCBs Storage Area Site no: ____
- ☐ NM Special Waste Site no: ____
- ☐ Rad Staging Area Area Site no: ____
- ☐ Rad Storage Area Area Site no: ____
- ☒ None of the Above

ER Use Only | ER Site | SWMU/AOC #:

Method of Characterization (Check as many as apply.)

- ☒ Chemical/Physical Analysis ☐ Attached Samp#: ATTACHED
- ☐ Radiological Analysis ☐ Attached Samp#: ____
- ☐ PCB Analysis ☐ Attached Samp#: ____
- ☒ AKD ☐ Attached Doc#: NMT2-HCP-001
- ☐ MSDS ☐ Attached

Section 1 - Waste Prevention/Minimization (answer all questions)

Can hazard segregation, elimination, or material substitution be used?	☐ Yes*	☒ No	
Can any of the materials in the waste stream be recycled or reused	☐ Yes*	☒ No	
Has waste minimization been incorporated into procedures or other process controls?	☒ Yes	☐ No	
Can this waste be generated outside a RCA?	☐ Yes*	☒ No	☐ N/A

*Provide Comment

Section 2 - Chemical and Physical Information

Waste Type (Check only one.)

- ☐ Unused/Unspent Chemical
- ☒ Process Waste/Spent Chem/ Other
- ☐ Green is Clean Waste

Radiological Information

Was Waste Generated in an RCA? ☒ Yes ☐ No

- ☐ Non-rad
- ☐ Radioactive-LL
- ☒ Radioactive-TRU

Waste Destination (Check only one)

- ☐ SWWS (Complete Attach 1)
- ☒ RLWTF(Complete Attach 2)
- ☐ RLWTP(Complete Attach 3)
- ☐ TA16/HE(Complete Attach 4)

Classification Information

- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category-Chk all that apply

- ☒ Inorganic
- ☐ Organic
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste or residue
- ☐ No Longer Contained-In
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container
- ☐ Battery
- Asbestos ☐ friable ☐ non-friable
- PCB ☐ PCB < 50 ppm ☐ PCB >= 50 - < 500 ppm ☐ PCB >= 500 ppm
- ☐ Hazardous Waste Contaminanted Soil
- ☐ Untreated Hazardous Debris
- ☐ Commercial Solid Waste
- ☐ Other

*See instructions

Waste Source-Check only one

Waste Source A

- ☐ Decon
- ☒ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup - Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Waste Source B

- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping - Non-routine
- ☐ Spill Cleanup - Non-routine
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix-Check only one

Gas

- ☐ Gas <= 1.5 Atmospheres pressure
- ☐ Gas > 1.5 Atmospheres pressure
- ☐ Liquified compressed gas

Liquid

- ☒ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids / Aqueous
- ☐ Suspended Solids / Non-aqueous

Solid

- ☐ Powder/Ash
- ☐ Solid
- ☐ Sludge
- ☐ Absorbed Liquid
- ☐ Debris

Matrix Type (check only one.)

- ☒ Homogeneous
- ☐ Heterogeneous

Estimated Annual Volume (m3)

18

WASTE PROFILE FORM
WPF #: 36404

Section 5 - Additional Constituents and Information

Additional Constituents and Contaminates. Please account for 100% of waste. Ranges should be given within guidelines of LIG 404-00-03 of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum		Maximum
	CAUSTIC FILTRATES	5	to	10 %
7732-18-5	WATER	80	to	99 %
	Beryllium	.0000195	to	.0265 %
			to	%
			to	%
			to	%
			to	%
			to	%
			to	%
			to	%
			to	%
			to	%
			to	%
			to	%
	Total of ranges from this section	85.0000		109.0000 %

Perwmc 1/30/07

Additional Information

(Use additional sheet if necessary.)

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

Section 6 - Work Control Documentation (answer all questions)

Do the procedures for this process cover how to manage this waste? ☒ Yes ☐ No

Do the procedures for this process cover controls to prevent changes to waste constituents and concentrations or addition or removal of waste? ☒ Yes ☐ No

Section 7 - Package and Storage Control

Describe how the waste will be packaged in according to the applicable WAC: WASTE TRAVELS TO TREATMENT FACILITY THROUGH HARD-PLUMBED LINES

Identify the storage management controls that will be used for this waste stream: (check all that apply)

- ☐ Tamper indication devices:
- ☐ Limited use locks with log-in for waste
- ☐ Locked cabinet or building
- ☒ Other (describe) SECURED FACILITY

Section 8 - Waste Certification Statements (check only one)

- ☒ Waste appears to meet WAC of: 1.0
- ☐ Waste needs exception/exemption for treatment, storage, or disposal at:
- ☐ Waste does not meet the criteria for any known TSDF, (DOE approval is required. Contact the Waste Management Program Office for assistance.)

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

Signature [signature] Date 1 Dec 05

WASTE CERTIFYING OFFICIAL: I have reviewed this form and any associated attachments and the characterization information provided appears to be complete and accurate. I certify, to the best of my knowledge, that the waste characterization information provided by the waste generator meets the requirements of the applicable WAC.

Signature Date

WASTE PROFILE FORM

Los Alamos NATIONAL LABORATORY

WPF #: 36404

01-Jun-2006 07:34 AM (Version: 2)

Generator :	KOWALCZYK, CYNTHIA NMT-2	MS :	E511
WMC :	MCCORMICK, EGAN NWIS-OS	MS :	E507
FROM :	NWIS-SWO	MS :	J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 36404 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Note: Only the generator can sign for the extension (to renew). Please return the signed questionnaire to NWIS-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. Upon approval of this signed Extension Certification, you will receive a notice indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently the same generator as indicated above?

YES X NO ____

Are you currently producing the same type of waste as indicated on WPF#: 36404

YES X NO ____

If yes, please sign the Extension Certification below

If no, will you be producing the same type of waste in the near future?

YES ____ NO ____

If yes, please sign the Extension Certification below

If no, will you be producing a different type of waste?

YES ____ NO ____

If no, sign the Void Approval below to indicate that your WPF should be voided

If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 36404 Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the waste characterization information on this form is correct and that it meets the requirements of the applicable waste acceptance criteria. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Extension-> Signed Cynthia L Kowalczyk Z# 150520 Date 1 JUN 06

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 36404

Void-> Signed Date

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: NWIS-SWO **MS: J595** **PHONE: 5-4000**

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 36404
(Version: 1)

14-Sep-2004 09:24 AM

Generator: ~~SCHULTE, LOUIS D~~ NMT-2 CYNTHIA KOWALCZYK MS : E511
~~WMC: MCCORMICK, EGAN~~ ~~FWO-SWO~~ ~~MS : E507~~
FROM: FWO-SWO MS : J595/5-4000

WASTE PROFILE (WPF) EXTENSION QUESTIONNAIRE

Our files indicate that your WPF#: 36404 was submitted approximately one year ago. Please review the attached copy and answer the following questions concerning your waste stream to determine whether to renew or void your WPF. Please return the completed questionnaire to FWO-SWO at the address listed below. If your waste stream remains the same, your WPF will be extended for another year. If the original generator is no longer with the generating group or generating this waste, a new WPF will need to be filled out with a new generator. Upon receipt of this questionnaire with a signed Extension Certification, we will send you a return receipt indicating that your WPF is valid for another year. If there are changes in your waste stream, a new WPF will need to be completed.

Are you currently producing the same type of waste as indicated on your WPF#: 36404
YES _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing the same type of waste in the near future?
YES _____ **NO** _____
If yes, please sign the Extension Certification below
If no, will you be producing a different type of waste?
YES _____ **NO** _____
If no, sign the Void Approval below to indicate that your WPF should be voided
If yes, please submit a new WPF, along with this memo. We will then void your previous WPF and process a new one

Extension Certification

I am producing or will produce the same type of waste as indicated in WPF# 36404

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

Extension-> Signed _____ Date 10/4/04

Void Approval

I will no longer be generating or will be producing a different type or composition (a new WPF will be submitted) of waste as indicated in WPF# 36404

Void-> Signed _____ Date _____

NOTE: PLEASE FOLD AND STAPLE THE FORM TO THE LINE BELOW AND RETURN TO ADDRESS PROVIDED

TO: FWO-SWO ***MS: J595*** ***PHONE: 5-4000***

Los Alamos
National Laboratory

WASTE PROFILE FORM

WPF #: 36404
(Version: 1)

14-Sep-2004 09:24 AM

Generator :	SCHULTE, LOUIS D	MS :	E511	PH :	6651100	Z#:	104239
WMC :	MCCORMICK, EGAN	MS :	E507	PH :	6678158	Z#:	093573
RCRA Rev :	LASH, TAMMY	MS :	J595	PH :	54000	Z#:	120424
Status :	ACTIVE	Activation Date :	23-Oct-2003	Expiration Date:			23-Oct-2004
Group :	NMT-2	TA :	55	Bldg :	000004	Room:	209, ~~401, 49~~ 42b

You are required to keep a copy of the WPF(s) in your files for at least three years. This WPF(s) is valid for one year or as long as the composition of the waste you have characterized remains the same and the generator remains the same. Should your waste or generator change, please submit a new WPF to FWO-SWO Customer Service, and attach a copy of the WPF which is being replaced.

WASTE CHARACTERIZATION INFORMATION

Radioactivity Category :	**RADIOACTIVE-TRU**
RCRA Category :	**HAZARDOUS WASTE**
Secondary Info :	**N/A**
Waste Classification :	**MIXED TRANSURANIC WASTE**
Acceptances :	**TA-50 Acceptance**
EPA Hazardous Waste Code :	**D004**

UPDATE
04/02/07

WASTE PROFILE FORM

Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: SOLID WASTE OPERATIONS GROUP at **MS J595**. For assistance with completing this form, call SOLID WASTE OPERATIONS GROUP at **5-4000**.	Reference Number 36404 (For SOLID WASTE OPERATIONS GROUP use only.)

Generator's Z Number	Waste Generator's Name (print)		WMC's Z Number	WMC's Name (print)		
	Kowalczyk, Cynthia		093573	Egan D. McCormick		
Generator's Telephone	**Generator's Mail Stop**	**Waste Generating Group**	**Waste Stream Technical Area**	**Building**	**Room**	**WMC Telephone**
			55			667-8158

Waste Accumulation (Check only one.)

- ☐ Satellite Accumulation Area — Site no: _____
- ☐ Less-than-90-days Storage Area — Site no: _____
- ☐ TSDF — Site no: _____
- ☐ Universal Waste Storage Area — Site no: _____
- ☐ Used Oil for Recycle — Site no: _____
- ☐ PCBs Storage Area — Site no: _____
- ☐ NM Special Waste — Site no: _____
- ☐ Rad Staging Area — Site no: _____
- ☐ Rad Storage Area — Site no: _____
- ☒ None of the Above

ER Use Only

- ☐ ER Site — SWMU/AOC #: _____

Method of Characterization (Check as many as apply.)

- ☒ Chemical/Physical Analysis — ☐ Attached — Sample #: _____
- ☐ Radiological Analysis — ☐ Attached — Sample #: _____
- ☐ PCB Analysis — ☐ Attached — Sample #: _____
- ☒ Acceptable Knowledge Documentation — ☐ Attached — Documentation #: _____
- ☐ MSDS — ☐ Attached

Section 1 – Waste Prevention/Minimization (answer all questions)

Can hazard segregation, elimination, or material substitution be used?	☐ Yes (Provide comments)	☐ No	
Can any of the materials in the waste stream be recycled or reused?	☐ Yes (Provide comments)	☐ No	
Has waste minimization been incorporated into procedures or other process controls?	☐ Yes	☐ No (Provide comments)	
Can this waste be generated outside a RCA?	☐ Yes (Provide comments)	☐ No	☐ N/A

Section 2 – Chemical and Physical Information

Waste Type (Check only one.)

- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☐ Process Waste/Spent Chemical/ Other (Complete all sections.)

Radiological Information

Was Waste Generated in a RCA? ☐ Yes ☐ No

- ☐ Non-radioactive
- ☐ Radioactive – Low Level
- ☐ Radioactive - Transuranic

Waste Destination (Check only one)

- ☐ SWWS (Complete Attachment 1)
- ☐ RLWTF (Complete Attachment 2)
- ☐ RLWTP (Complete Attachment 3)
- ☐ TA-16/HE (Complete Attachment 4)
- ☐ NTS (Complete Attachment 5)

Classification Information

- ☐ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check all that apply.)

- ☐ Inorganic
- ☐ Organic
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste or residue
- ☐ No-Longer Contained-In
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☒ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)

Asbestos ☐ friable ☐ non-friable

PCB Source Concentration

- ☐ PCB < 50 ppm
- ☐ PCB ≥ 50 - <500 ppm
- ☐ PCB ≥ 500 ppm

- ☐ Hazardous Waste Contaminated Soil
- ☐ Untreated Hazardous Debris
- ☐ Commercial Solid Waste
- ☐ Other (Describe below)

* See instructions.

Waste Source (Check only one.)

Waste Source A

- ☐ Decon
- ☐ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup – Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Waste Source B

- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping (Non-routine)
- ☐ Spill Cleanup (Non-routine)
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix (Check only one.)

Gas

- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid

- ☒ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid

- ☐ Powder/Ash/Dust
- ☐ Solid
- ☐ Sludge
- ☐ Absorbed/solidified liquid
- ☐ Debris

Matrix Type (Check only one.)

- ☐ Homogeneous
- ☐ Heterogeneous

(Describe below)

Estimated Annual Volume (m^3)

Section 3 – Process and Waste Descriptions

Process Description:

Waste Description:

Section 4 – Characteristics

Ignitability (Check only one.) (°F)	(°C)	**Corrosivity** (Check only one.) (pH)	**Reactivity** (Check as many as apply.)	**Boiling Point** (Check only one.) (°F)	(°C)
☐ < 73	< 22.8	☐ ≤ 2.0	☐ RCRA Unstable	☐ ≤ 95	≤ 35
☐ 73 - 99	22.8 - 37.2	☐ 2.1 – 4.0	☐ Water Reactive	☐ > 95	> 35
☐ 100 - 139	37.8 - 59.4	☐ 4.1 – 6.0	☐ Cyanide Bearing		
☐ 140 -200	60.0 - 93.3	☐ 6.1 – 9.0	☐ Sulfide Bearing		
☐ > 200	> 93.3	☐ 9.1 - 12.4	☐ Pyrophoric		
☐ EPA Ignitable – Non-liquid		☐ ≥ 12.5	☐ Shock Sensitive		
☐ DOT Flammable Gas		☐ Liquid corrosive to steel	☐ Explosive - DOT Div. _____		
☐ DOT Oxidizer		☐ Non-aqueous	☐ Non-reactive		
☐ Not ignitable				☐ Not applicable	

Identify for all contaminants listed.	**Characterization Method** AK	TCLP	Total	**Concentration of Contaminants** None or Non-detect	Contaminant present at Minimum	Maximum	**Regulatory Limit**
Toxicity Characteristic Metals					(10,000 ppm = 1%)		
Arsenic	☐	☐	☒	☐	5 ppm	to 32 ppm	5.0 ppm
Barium	☐	☐	☒	☐	1 ppm	to 2 ppm	100.0 ppm
Cadmium	☐	☐	☒	☐	1 ppm	to 10 ppm	1.0 ppm
Chromium (Total)	☒	☐	☐	☐	0.1 ppm	to 1.0 ppm	5.0 ppm
Lead	☒	☐	☒	☐	0.1 ppm	to 5.0 ppm	5.0 ppm
Mercury	☒	☐	☒	☒	____ ppm	to ____ ppm	0.2 ppm
Selenium	☒	☐	☒	☒	____ ppm	to ____ ppm	1.0 ppm
Silver	☐	☐	☒	☐	1 ppm	to 10 ppm	5.0 ppm
Toxicity Characteristic Organics							
Benzene	☒	☐	☐	☒	____ ppm	to ____ ppm	0.5 ppm
Carbon tetrachloride	☒	☐	☐	☒	____ ppm	to ____ ppm	0.5 ppm
Chlorobenzene	☒	☐	☐	☒	____ ppm	to ____ ppm	100.0 ppm
Chloroform	☒	☐	☐	☒	____ ppm	to ____ ppm	6.0 ppm
o – cresol	☒	☐	☐	☒	____ ppm	to ____ ppm	200.0 ppm
m – cresol	☒	☐	☐	☒	____ ppm	to ____ ppm	200.0 ppm
p – cresol	☒	☐	☐	☒	____ ppm	to ____ ppm	200.0 ppm
Cresol – mixed	☒	☐	☐	☒	____ ppm	to ____ ppm	200.0 ppm
1,4-Dichlorobenzene	☒	☐	☐	☒	____ ppm	to ____ ppm	7.5 ppm
1,2-Dichloroethane	☒	☐	☐	☒	____ ppm	to ____ ppm	0.5 ppm
1,1-Dichloroethylene	☒	☐	☐	☒	____ ppm	to ____ ppm	0.7 ppm
2,4-Dinitrotoluene	☒	☐	☐	☒	____ ppm	to ____ ppm	0.13 ppm
Hexachlorobenzene	☒	☐	☐	☒	____ ppm	to ____ ppm	0.13 ppm
Hexachlorobutadiene	☒	☐	☐	☒	____ ppm	to ____ ppm	0.5 ppm
Hexachloroethane	☒	☐	☐	☒	____ ppm	to ____ ppm	3.0 ppm
Methyl ethyl ketone	☒	☐	☐	☒	____ ppm	to ____ ppm	200.0 ppm
Nitrobenzene	☒	☐	☐	☒	____ ppm	to ____ ppm	2.0 ppm
Pentachlorophenol	☒	☐	☐	☒	____ ppm	to ____ ppm	100.0 ppm
Pyridine	☒	☐	☐	☒	____ ppm	to ____ ppm	5.0 ppm
Tetrachloroethylene	☒	☐	☐	☒	____ ppm	to ____ ppm	0.7 ppm
Trichloroethylene	☒	☐	☐	☒	____ ppm	to ____ ppm	0.5 ppm
2,4,5-Trichlorophenol	☒	☐	☐	☒	____ ppm	to ____ ppm	400.0 ppm
2,4,6-Trichlorophenol	☒	☐	☐	☒	____ ppm	to ____ ppm	2.0 ppm
Vinyl chloride	☒	☐	☐	☒	____ ppm	to ____ ppm	0.2 ppm
Herbicides and Pesticides							
Chlordane	☒	☐	☐	☒	____ ppm	to ____ ppm	0.03 ppm
2,4-D	☒	☐	☐	☒	____ ppm	to ____ ppm	10.0 ppm
Endrin	☒	☐	☐	☒	____ ppm	to ____ ppm	0.02 ppm
Heptachlor (& its epoxide)	☒	☐	☐	☒	____ ppm	to ____ ppm	0.008 ppm
Lindane	☒	☐	☐	☒	____ ppm	to ____ ppm	0.4 ppm
Methoxychlor	☒	☐	☐	☒	____ ppm	to ____ ppm	10.0 ppm
Toxaphene	☒	☐	☐	☒	____ ppm	to ____ ppm	0.5 ppm
2,4,5-TP (Silvex)	☒	☐	☐	☒	____ ppm	to ____ ppm	0.5 ppm

Section 5 - Additional Constituents and Information

Additional Constituents and Contaminants. Please account for 100% of waste. Ranges should be given within guidelines of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum	Maximum
	Caustic Filtrates	5	10 %
7732-18-5	Water	80	99 %
7440-38-2	Arsenic	.00005	.00032
7440-39-3	Barium	.0001	.0002
7440-43-9	Cadmium	.0001	.001
7440-47-3	Chromium	.00001	.00001
7439-92-1	Lead	.00001	.00005
7440-22-4	Silver	.0001	.001
7440-41-7	Beryllium	.000097	.53%
			%
			%
			%
			%
	Total of max. ranges of this section and page 2	109.5	in %

Decrease WAC 4/2/07 JK

Additional Information (Use additional sheet if necessary.)
If additional information is available on the chemical, physical, or radiological character of the waste not covered on this form, provide it below:

Section 6 - Work Control Documentation (answer all questions)

Do the procedures for this process cover how to manage this waste?	☒ Yes	☐ No (Provide comments)
Do the procedures for this process address controls to prevent changes to waste constituents and concentrations or addition or removal of waste to/from containers?	☒ Yes	☐ No (Provide comments)

Section 7 - Packaging and Storage Control

Describe how the waste will be packaged in according to the applicable WAC: Waste is transported to the treatment facility through hard-plumbed lines.

Identify the storage management controls that will be used for this waste stream: (check all that apply)

☐ Tamper indication devices ☒ Locked cabinet or building
☐ Limited use locks with log-in for waste ☐ Other (describe)

Section 8 - Waste Certification Statements (check only one)

☐ Waste appears to meet WAC chapter for:
☒ Waste stream needs exception/exemption for treatment, storage, or disposal at:
☐ Waste does not meet the criteria for any known TSDF. (DOE approval is required. Contact the Waste Management Program Office for assistance.)

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

Signature Date

WASTE CERTIFYING OFFICIAL: I have reviewed this form and any associated attachments and the characterization information provided appears to be complete and accurate. I certify, to the best of my knowledge, that the waste characterization information provided by the waste generator meets the requirements of the applicable WAC.

Signature Date

Attachment 4 - LDR and UHC Information

Identify category and presence of any constituents listed below (equal to or above limit).

Non-Wastewater / Wastewater Category – Check only one.

☒ Non Wastewater ☐ Wastewater [as defined by 40 CFR 268.2(f)] ☐ Lab Pack [40 CFR 268.42(c) **Sign Certification #1**

NOTIFICATIONS AND CERTIFICATIONS – **Check the applicable boxes**

GENERATOR REQUIREMENTS:

- ☐ This shipment contains hazardous waste contaminated soil that does not meet treatment standards — **Sign Certification #2**
- ☐ This shipment contains untreated hazardous debris to be treated to 40 CFR 268.45 treatment standards — **(No certification)**
- ☐ Hazardous wastes (except soil) meeting treatment standards at point of generation — **Sign Certification #3**
- ☐ Hazardous wastes contaminated soil meeting treatment standards at point of generation — **Sign Certification #4**

TSDF OR GENERATOR TREATMENT:

- ☐ TSDF Treated hazardous debris meeting the alternative treatment standards of 40 CFR 268.45 — **Sign Certification #5**
- ☐ Generator Treated hazardous debris meeting the alternative treatment standards of 40 CFR 268.45 — **Sign Certification #6**
- ☐ Hazardous wastes contaminated soil treated to 40 CFR 268.49 — **Sign Certification #7**
- ☐ Wastes or Residues from characteristic hazardous waste treatment meeting treatment standards and UTS — **Sign Certification #8**
- ☐ Wastes or Residues from characteristic hazardous waste treatment not meeting UTS — **Sign Certification #9**
- ☐ Other TSDF wastes meeting the more stringent 40 CFR 268.40 treatment standards to be land disposed — **Sign Certification #10**
- ☐ Other Generator wastes meeting the more stringent 40 CFR 268.40 treatment standards to be land disposed — **Sign Certification #11**

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 through D043 characteristic wastes only)

☐ ***No Underlying Hazardous Constituents in this waste stream.***

	Organic constituents			CASRN [1]	Wastewater standard	Non wastewater standard	Hazardous Soil 10Xs UTS Nonwastewater
☐	Acenaphthylene			208-96-8	0.059	3.4	34
☐	Acenaphthene			83-32-9	0.059	3.4	34
☐	Acetone			67-64-1	0.28	160	1600
☐	Acetonitrile			75-05-8	5.6	38	380
☐	Acetophenone			96-86-2	0.010	9.7	97
☐	2-Acetylaminofluorene			53-96-3	0.059	140	1400
☐	Acrolein			107-02-8	0.29	NA	NA
☐	Acrylamide			79-06-1	19	23	230
☐	Acrylonitrile			107-13-1	0.24	84	840
☐	Aldicarb sulfone			1646-88-4	0.056	0.28	2.8
☐	Aldrin			309-00-2	0.021	0.066	0.66
☐	4-Aminobiphenyl			92-67-1	0.13	NA	NA
☐	Aniline			62-53-3	0.81	14	140
☐	Anthracene			120-12-7	0.059	3.4	34
☐	Aramite			140-57-8	0.36	NA	NA
☐	alpha-BHC			319-84-6	0.00014	0.066	0.66
☐	beta-BHC			319-85-7	0.00014	0.066	0.66
☐	delta-BHC			319-86-8	0.023	0.066	0.66
☐	gamma-BHC			58-89-9	0.0017	0.066	0.66
☐	Barban			101-27-9	0.056	1.4	14
☐	Bendiocarb			22781-23-3	0.056	1.4	14
☐	Benomyl			17804-35-2	0.056	1.4	14
☐	Benzene			71-43-2	0.14	10	100
☐	Benz(a)anthracene			56-55-3	0.059	3.4	34
☐	Benzal chloride			98-87-3	0.055	6.0	60
☐	Benzo(b)fluoranthene			205-99-2	0.11	6.8	68
☐	Benzo(k)fluoranthene			207-08-9	0.11	6.8	68

	Organic constituents			CASRN [1]	Wastewater standard	Non wastewater standard	Hazardous Soil 10Xs UTS Nonwastewater
☐	1,2,3-Trichloropropane			96-18-4	0.85	30	300
☐	1,1,2-Trichloro-1,2,2-trifluoroethane			76-13-1	0.057	30	300
☐	Triethylamine			121-44-8	0.081	1.5	15
☐	tris-(2,3-Dibromopropyl) phosphate			126-72-7	0.11	0.10	1.0
☐	Vernolate			1929-77-7	0.042	1.4	14
☐	Vinyl chloride			75-01-4	0.27	6.0	60
☐	Xylenes (total)			1330-20-7	0.32	30	300
	Metal/inorganic Constituents			**CASRN [1]**	**Wastewater standard**	**Non wastewater standard**	**Hazardous Soil 10Xs UTS Nonwastewater**
☐	Antimony			7440-36-0	1.9	1.15 mg/l TCLP	11.5 mg/l TCLP
☒	Arsenic			7440-38-2	1.4	5.0 mg/l TCLP	50 mg/l TCLP
☒	Barium			7440-39-3	1.2	21 mg/l TCLP	210 mg/l TCLP
☒	Beryllium			7440-41-7	0.82	1.22 mg/l TCLP	12.2 mg/l TCLP
☒	Cadmium			7440-43-9	0.69	0.11 mg/l TCLP	1.1 mg/l TCLP
☒	Chromium (Total)			7440-47-3	2.77	0.60 mg/l TCLP	6.0 mg/l TCLP
☐	Cyanides (Total) [4]			57-12-5	1.2	590	5900
☐	Cyanides (Amenable) [4]			57-12-5	0.86	30	300
☐	Fluoride			16984-48-8	35	NA	NA
☒	Lead			7439-92-1	0.69	0.75 mg/l TCLP	7.5 mg/l TCLP
☐	Mercury (Retort residues)			7439-97-6	NA	0.20 mg/l TCLP	2.0 mg/l TCLP
☐	Mercury - All others			7439-97-6	0.15	0.025 mg/l TCLP	0.25 mg/l TCLP
☒	Nickel			7440-02-0	3.98	11 mg/l TCLP	110 mg/l TCLP
☐	Selenium			7782-49-2	0.82	5.7 mg/l TCLP	57 mg/l TCLP
☒	Silver			7440-22-4	0.43	0.14 mg/l TCLP	1.4 mg/l TCLP
☐	Sulfide			18496-25-8	14	NA	NA
☐	Thallium			7440-28-0	1.4	0.20 mg/l TCLP	2.0 mg/l TCLP
☐	Vanadium [5]			7440-62-2	4.3	1.6 mg/l TCLP	16 mg/l TCLP
☐	Zinc [5]			7440-66-6	2.61	4.3 mg/l TCLP	43 mg/l TCLP

RUN NUMBER: CXLF32494 ICP

PARENT LOTS	NET WT.	Pu WT.
PMA 5122	76.4g	60g
PMA 9387	896.4g	884g
combined into		
CXLD32494	972.8g	944g

SAMPLE ID	Volume	SAI	R04 Pu	R04 Am	Ag	As	Ba	Be	Ca	Cd	Cr	Fe	Hg	K	Mg	Na	Ni	Pb	Se	U	Tl	
					ICP RESULTS IN PPM																	
CXLF32494	4.9	941.00	932.00	0.345	10	5	1	1	1100	10	35	250		1000	95	460	63	6.8	8			
CXLF Total					0.05	0.02	0.00	0.00	5.39	0.05	0.17	1.23		4.90	0.47	2.25	0.31	0.03	0.04			
CXL3EL32494	4.8	15g	17g	0.0009	10	5	1	1	28	10	2.5	280		60	9.3	48	5	5	8			
CXL3EL Total					0.05	0.02	0.00	0.00	0.13	0.05	0.01	1.34		0.29	0.04	0.23	0.02	0.02	0.04			
CXLP32494	25.6	855g	880g	0.000497		10	2	2	30	2	2	3.4	10	120	16	750	10	10	20	40		
CXLP Total					0.00	0.05	0.01	0.01	0.15	0.01	0.01	0.02	0.05	0.59	0.08	3.68	0.05	0.05	0.10	0.20		
CXLR32494A	19.6	0g	2.22g	0.154	1	5	1	1	87	1	3	1	5	130	25	4100	5	9.1	8	20		
CXLR32494B	16.0	17g	16.5g	0.193		10	2	2	84	2	7.6	2	10	190	33	6200	10	10	20	40		Column sat overnight leading to
CXLR32492C	16.0	0g	.752g	0.00457	1	5	1	1	30	1	1	1	5	60	8	2900	5	7	8	20		high activity in wash the next morning
CXLR32494D	15.9	0g	.223g	0.001	1	5	1	1	28	1	1	1	5	60	8	2900	5	5	8	20		
CXLR Total	67.50				0.05	0.42	0.08	0.08	3.97	0.08	0.21	0.08	0.42	7.50	1.27	272.07	0.42	0.53	0.73	1.67		
CXLOXF32494A	45.0	0g	3.46g	0.000096	NR	5	1	1	10	1	1	2.3	NR		8	340	5	5	8	20	20	
CXLOXF32494B	24.8	6g	1.40g	0.000065	NR	5	1	1	9.4	1	1	1	NR		8	340	5	5	8	20	20	
CXLOXF32494A2	Repeat for ICP				NR	5	1	1	9.4	1	1	1.9	NR		8	340	5	5	8	20	20	
CXLOXF32494B1	Repeat for ICP				NR	5	1	1	9.4	1	1	1	NR		8	310	5	5	8	20	20	
CXLOX Total																						

	NET WT.	Pu wt. 87%
CXLPROD2	988.2	859.70
CXLPRODS2	4.5	4.00
COMBINED 1 & 2	1803.0	1568.60

CXLOXOH32494B-5	NR	5	1	1	15	1	1	2.7	NR		8	300	5	5	8	20	20
CXL3ELOH32494C-1	NR	5	1	1	40	1	1	2.7	NR		8	380	5	5	8	20	20
JNKCXLOH4694-6	NR	5	1	1	9600	1	1	1	NR		8	1100	5	5	8	20	20
CLNJNK51994-3	NR	5	1	1	140	1	2.8	2.1	NR		8	320	5	5	8	20	20

CXLOH22894-1
CXLOH22894-2
CXLOH22894-3

RUN NUMBER: CXLF81894 ICP

SAMPLE ID	Volume	SAI	Pu (mg/L)	R04 Pu (g)	Am (mg/L)	R04 Am (g)	calc. alpha Ci/L	obs. alpha Ci/L	Ag	As	Ba	Be	Ca	Cd	Cr	Fe	Hg	K	Mg	Na	Ni	Pb	Se	U	Tl
									ICP RESULTS IN PPM																
CXLF081894	?								NR	5	1	5300	250	2	1	440	NR	NR	230	72	59	90	8	NR	20
CXLF+3081894	4.0		50250.00	201.00	49.50	0.198000	4.22E+00		NR	5	1	4800	310	1	1	390	NR	NR	310	130	52	74	20	NR	20
CXLF+3081894 Total (g)										0.02	0.00	19.20	1.24	0.00	0.00	1.56			1.24	0.52	0.21	0.30	0.08		0.08
CXLL3EL081894	2.3		10695.65	24.600	0.44	0.001020	8.65E-01		NR	5	1	62	29	1	1	670	NR	NR	8	16	5	5	8	NR	20
CXLL3EL081894 Total (g)										0.01	0.00	0.14	0.07	0.00	0.00	1.54			0.03	0.06	0.02	0.02	0.03		0.08
CXLLP081894	6.0		28000.00	168.000	0.42	0.002520	2.26E+00		NR	5	1	1	37	1	1	4.3	NR	NR	8	25	6	5	20	NR	20
CXLP Total (g)										0.03	0.01	0.01	0.22	0.01	0.01	0.03			0.05	0.15	0.04	0.03	0.12		0.12
CXLLOXF081894	10.70		146.73	1.57	0.04	0.000381	1.20E-02		NR	5	1	1	17	1	1	2.9	10	NR	8	390	5	5	20	20	20
CXLLOXF081894 Total (g)										0.05	0.01	0.01	0.18	0.01	0.01	0.03	0.11		0.09	4.17	0.05	0.05	0.21	0.21	0.21
CXLLOXFOH081894	14.00							2.24E-04	NR	5	1	2.7	15	1	1	3.1	5	17000	33	260	5	5	8	20	20
CXLLOXFOH081894 Total (g)										0.07	0.01	0.04	0.21	0.01	0.01	0.04	0.07	238.00	0.46	3.64	0.07	0.07	0.11	0.28	0.28
CXLLR081894	10.8		125.00	1.350	18.52	0.200000	7.01E-02		NR	5	1	1900	180	1	1	1	5	NR	150	2000	20	25	20	20	20
CXLR Total (g)										0.05	0.01	20.52	1.94	0.01	0.01	0.01	0.05		1.62	21.60	0.22	0.27	0.22	0.22	0.22
CXLLR081894A	12.5	with line rinse & 1 L prep						4.02E-03	NR	5	1	1700	200	1	1	1	5	NR	220	2000	18	21	8	20	20
CXLLR081894A Total (g)			6.07 M [H+], 7.0 M [Cl]							0.06	0.01	21.25	2.50	0.01	0.01	0.01	0.06		2.75	25.00	0.23	0.26	0.10	0.25	0.25
CXLLROH081894A	22.00							5.45E-04	NR	5	1	900	15	1	1	1	5	60	11	1000	5	11	8	20	20
CXLLROH081894A Total (g)										0.11	0.02	19.80	0.33	0.02	0.02	0.02	0.11	1.32	0.24	22.00	0.11	0.24	0.18	0.44	0.44
CXLLTRUEL081894	1.0		1320.00	1.320	1.42	0.001420	1.11E-01		NR	5	1	1	23	1	1	6.9	NR	NR	8.6	12	5	5	8	NR	20
CXLLTRUEL081894 Total (g)										0.01	0.00	0.00	0.02	0.00	0.00	0.01			0.01	0.01	0.01	0.01	0.01		0.02
DAPEL081894	1.0		606.00	0.606000	157.00	0.157000	5.58E-01		NR	5	1	1	24	1	1	1	5	NR	12	12	5	43	8	NR	20
DAPEL081894 Total (g)										0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.01		0.01	0.01	0.01	0.04	0.01		0.02
DAPELOH081894	1.3							3.43E-04	NR	5	1	1	15	1	1	1	5	NR	8	23	5	5	8	20	20
DAPELOH081894 Total (g)										0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.01		0.01	0.03	0.01	0.01	0.01	0.03	0.03

Waste Polishing DF= 17.4 % alpha removed= 94.268

Redissolved Cake in 900 mL of HCl/H2O. Column Prep added to feed. 2.2 L volume, 7.1 M [H+]

CXLLR081894B	2.2		61.60	0.135520	34.80	0.076560	1.18E-01		1	5	1	1800	680	1	100	1	5	17000	870	140	76	5	8	20	20
CXLLR081894B Total (g)									0.00	0.01	0.00	3.96	1.50	0.00	0.22	0.00	0.01	37.40	1.91	0.31	0.17	0.01	0.02	0.04	0.04
CXLLR081894C	3.8							4.50E-05	1	5	1	1300	460	1	70	1	5	11000	590	110	51	5	8	20	20
CXLLR081894C Total (g)									0.00	0.02	0.00	4.94	1.75	0.00	0.27	0.00	0.02	41.80	2.24	0.42	0.19	0.02	0.03	0.08	0.08
DAPEL081894B	1.1		88.30	0.097130	34.90	0.038390	1.20E-01		1	5	1	5.6	18	1	1	2	5	87	8	13	5	5	8	10	20
DAPEL081894B Total (g)									0.00	0.01	0.00	0.01	0.02	0.00	0.00	0.00	0.01	0.10	0.01	0.01	0.01	0.01	0.01	0.01	0.02

Waste Polishing DF= 2613.5 % alpha removed= 99.962

CST/CMR Oxide analysis in ug/mL (ppm)

SAMPLE ID	Pu %	Fe	Ca	Cr	K	Mg	Be	Na	Ni	Pb	Ag	Ga
CXLPROD 4	87.00	120	190-2500	10	55	20-70	10	135				15
162 g SNM												

U	Np	Am	
30	33	32	on 11/15/94

Pu Isotope

238	239	240	241
0.017	#####	5.890	0.245

RUN NUMBER: 31495

SAMPLE ID		Volume	SAI	Pu (mg/L)	R04 Pu (g)	Am (mg/L)	R04 Am (g)	calc. alpha Ci/L	obs. alpha Ci/L
CXLP 31495		10.2		78431.37	800.000	0.4441	0.004530	6.34E+00	
CXLP 31495	Total (g)								
CXLLPOXF 31495		14.5		4.90	0.071	0.0431	0.000625	5.36E-04	
CXLLPOXF 31495	Total (g)	pH=0-1							
CXLLPOXFOH 31495		17.0		0.62	0.011	0.0003	0.000625	5.14E-05	
CXLLPOXFOH 31495	Total (g)	pH=0-1							
CXLLR 31495		17.9		2407.82	43.100	39.2737	0.703000	3.22E-01	
CXLLR 31495	Total (g)								
CXLLR 31495	A	21.0		39.10	0.821	7.8095	0.164000	2.85E-02	
CXLLR 31495	A Total (g)	6.5 M [H+]							
CXLLTRUEL 31495	A	2.2		5818.18	12.800	238.1818	0.524000	1.24E+00	
CXLLTRUEL 31495	A Total (g)	pH=4		(Eluted TRU-Spec & 30/10 amb. resins together)					
CXLLTRUELOXF 31495	A	3.2		7.06	0.023	0.0584	0.000187	7.60E-04	1.61E-03
CXLLTRUELOXF 31495	A Total (g)								
CXLLR 31495	B	22.4		1.04	0.023	0.0002	0.004640	8.46E-05	1.75E-04
CXLLR 31495	B Total (g)	6.5 M [H+]		(30/10 amb. resin only)					

Waste Polishing DF= 1838.3 % alpha removed= 99.946

ICP RESULTS IN PPM

SAMPLE ID	Ag	As	Ba	Be	Ca	Cd	Cr	Fe	Ga	Hg	K	Mg	Na	Ni	Pb	Se	U	Tl
CXLP 31495	NR	5	1	3.9	760	1	1	570	5	5	NR	40	7	220	5	25	750	20
CXLP 31495 Total (g)		0.05	0.01	0.04	7.75	0.01	0.01	5.81	0.05	0.05		0.41	0.07	2.24	0.05	0.26	7.65	0.20
CXLLPOXF 31495	1	5	1	4.8	15	1	1	280	NR	5	60	28	46	5	5	25	20	20
CXLLPOXF 31495 Total (g)	0.01	0.07	0.01	0.07	0.22	0.01	0.01	4.06		0.07	0.87	0.41	0.67	0.07	0.07	0.36	0.29	0.29
CXLLPOXFOH 31495	NR	32	1	87	74	1	1	210	120	5	NR	9400	52	5	5	25	20	20
CXLLPOXFOH 31495 Total (g)		0.54	0.02	1.48	1.26	0.02	0.02	3.57	2.04	0.09		159.80	0.88	0.09	0.09	0.43	0.34	0.34
CXLLR 31495	1	5	1	4500	140	1	1	1	NR	5	NR	440	10000	23	9.6	25	20	20
CXLLR 31495 Total (g)	0.02	0.09	0.02	80.55	2.51	0.02	0.02	0.02		0.09		7.88	179.00	0.41	0.17	0.45	0.36	0.36
CXLLR 31495 A																		
CXLLR 31495 A Total (g)																		
CXLLTRUEL 31495 A																		
CXLLTRUEL 31495 A Total (g)																		
CXLLTRUELOXF 31495 A	NR	5	1	700	15	1	2.1	8.3	5	5		76	870	5.9	5	25	20	20
CXLLTRUELOXF 31495 A Total (g)		0.02	0.00	2.24	0.05	0.00	0.01	0.03	0.02	0.02		0.24	2.78	0.02	0.02	0.08	0.06	0.06
CXLLR 31495 B	NR	5	1	4500	190	1	1	14		5		460	8600	45	19	25	20	20
CXLLR 31495 B Total (g)		0.11	0.02	100.80	4.26	0.02	0.02	0.31		0.11		10.30	192.64	1.01	0.43	0.56	0.45	0.45

RUN NUMBER: 72594

SAMPLE ID	Volume	SAI	Pu (mg/L)	R04 Pu (g)	Am (mg/L)	R04 Am (g)	calc. alpha Ci/L	obs. alpha Ci/L	ICP RESULTS IN PPM Ag	As	Ba	Be	Ca	Cd	Cr	Fe	Hg	Mg	Na	Ni	Pb	Se	U	Tl
CXL+3EL 72594	3.9	.0476 g							1	5	5	1	160	4.2	9.3	5500	5	44	40	5	9.4	8	90	20
CXL+3EL 72594 Total (g)										0.02	0.02	0.00	0.62	0.02	0.02	21.45	0.02	0.17	0.16	0.02	0.04	0.03	0.35	0.08
CXLF 72594	19.0		5047.37	95.900	12.42	0.236000	4.48E-01		NR	5	1	1.7	2800	1	160	1.4	NR	2700	9000	110	13	8	20	40
CXLF 72594 Total (g)										0.10	0.02	0.03	53.20	0.02	3.04	0.03		51.30	171.00	2.09	0.25	0.15	0.38	0.76
CXLP 72594	18.5		5091.89	94.200	0.08	0.001410	4.11E-01		NR	5	1	1	15	1	1	5	NR	8	7	5	5	8	20	20
CXLP 72594 Total (g)										0.09	0.02	0.02	0.28	0.02	0.02	0.09		0.15	0.13	0.09	0.09	0.15	0.37	0.37
CXLLOXF 72594	21.0		206.19	4.330	0.10	0.002000	1.70E-02		NR	5	1	1	18	1	1	18	5	8	250	5	5	8	20	20
CXLLOXF 72594 Total (g)										0.11	0.02	0.02	0.38	0.02	0.02	0.38	0.11	0.17	5.25	0.11	0.11	0.17	0.42	0.42
CXLLOXFOH 72594									NR	5	1	1	77	1	1	4.7	5	3300	390	5	5	8	20	20
CXLLOXFOH 72594 Total (g)																								
CXLLR 72594	31.3		112.14	3.510	8.02	0.251000	3.50E-02		NR	5	1	1	1800	1	110	1	5	1700	7500	69	5	8	20	20
CXLLR 72594 Total (g)										0.16	0.03	0.03	56.34	0.03	3.44	0.03	0.16	53.21	234.75	2.16	0.16	0.25	0.63	0.63
CXLLR 72594 A	32.0		9.38	0.300	1.87	0.059800	6.81E-03	2.96E-03	NR	5	1	1	2.1	1	100	1.5	5	1900	8300	71	5	8	20	20
CXLLR 72594 A Total (g)				5.0 M [H+]						0.16	0.03	0.03	0.07	0.03	3.20	0.05	0.16	60.80	265.60	2.27	0.16	0.26	0.64	0.64
CXLLTRUEL 72594 A	1.3		4192.31	5.450	4.36	0.005670	3.53E-01		NR	5	1	1	330	1	17	38	5	290	1300	20	5	8	75	20
CXLLTRUEL 72594 A Total (g)										0.01	0.00	0.00	0.43	0.00	0.02	0.05	0.01	0.38	1.69	0.03	0.01	0.01	0.10	0.03
CXLLTRUELOH 72594 A	2.0								NR	5	1	1	2200	1	1.9	1	5	8	8.4	5	5	8	20	20
CXLLTRUELOH 72594 A Total (g)										0.01	0.00	0.00	4.40	0.00	0.00	0.00	0.01	0.02	0.02	0.01	0.01	0.02	0.04	0.04
CXLLDAPEL 72594 A	1.5		644.00	0.966	128.67	0.193000	4.69E-01		NR	5	1	1	270	1	13	6.5	5	230	900	8.9	5	8	20	20
CXLLDAPEL 72594 A Total (g)										0.01	0.00	0.00	0.41	0.00	0.02	0.01	0.01	0.35	1.35	0.01	0.01	0.01	0.03	0.03
CXLLDAPELOH 72594 A	2.0								NR	5	1	1	56	1	1	1	5	8	600	5	5	8	20	20
CXLLDAPELOH 72594 A Total (g)										0.01	0.00	0.00	0.11	0.00	0.00	0.00	0.01	0.02	1.20	0.01	0.01	0.02	0.04	0.04
CXLLR 72594 B	45.0							1.79E-05	1	5	1	1	1300	1	74	1	5	1200	5400	51	5	8	20	20
CXLLR 72594 B Total (g)				7.0 M [H+]					0.05	0.23	0.05	0.05	58.50	0.05	3.33	0.05	0.23	54.00	243.00	2.30	0.23	0.36	0.90	0.90
CXLLDAPEL 72594 B	1.0		308.00	0.308	61.50	0.061500	2.24E-01		1	5	1	1	250	1	11	72	5	220	820	9	5	8	20	20
CXLLDAPEL 72594 B Total (g)									0.00	0.01	0.00	0.00	0.25	0.00	0.01	0.07	0.01	0.22	0.82	0.01	0.01	0.01	0.02	0.02
Waste Polishing DF=	1954.4		% alpha removed=		99.949																			
CXLOH 72594 Total (g)	90.0								NR	10	2	2	120	2	2	2	10	11000	56	10	10	20	40	NR
										0.90	0.18	0.18	10.80	0.18	0.18	0.18	0.90	990.00	5.04	0.90	0.90	1.80	3.60	
Redissolved cake samples																								
KOHPPT 72594	1.0								NR	10	2	4.1	1300	2	600	22	1	4300	310	350	18	20	NR	40
KOHPPT 72594 Total (g)										0.01	0.00	0.00	1.30	0.00	0.60	0.02	0.00	4.30	0.31	0.35	0.02	0.02		0.04
MgOHPPT 72594	1.0								NR	10	2	2	150	2	130	43	1	20000	140	68	18	20	NR	40
MgHPPT 72594 Total (g)										0.01	0.00	0.00	0.15	0.00	0.13	0.04	0.00	20.00	0.14	0.07	0.02	0.02		0.04
KOHPPT 72594	1.0								NR	10	2	4.1	1300	2	600	1	22	4300	310	350	18	20	NR	40
KOHPPT 72594 Total (g)										0.01	0.00	0.00	1.30	0.00	0.60	0.00	0.02	4.30	0.31	0.35	0.02	0.02		0.04

Sample Designation	Sample Origin	Date Sampled	Date Analyzed	Date Dumped	pH	Vol. (L)	Alpha CPM/L	Total Cts	Bkgnd	Ag	As	Ba	Cd	Cr	Hg	Ni	Pb	Se	Tl	Sample Designation	Notes of Interest
CXLOH1	water	2/9/94	2/18/94	3/8/94	13	46.0	1.47E+08			0.2	1.0	0.2	0.2	0.3	1.0	1.0	1.0	2.0	4.0	CXLOH1	Sample was neutralized effluent from testing of EXCEL contactors and plumbing
CXLOH2	water	2/9/94	2/18/94	3/8/94	13	46.0	9.91E+07			0.2	1.0	0.2	0.2	0.4	1.0	1.0	1.0	2.0	4.0	CXLOH2	Sample was neutralized effluent from testing of EXCEL contactors and plumbing
CXLOH3	water	2/9/94	2/18/94	3/8/94	13	46.0	7.81E+07			0.2	1.0	0.2	0.2	0.3	1.0	1.0	1.5	2.0	4.0	CXLOH3	Sample was neutralized effluent from testing of EXCEL contactors and plumbing
CXLOH4	water	2/9/94	2/18/94	3/8/94	13	46.0	4.11E+08			0.2	1.0	1.3	0.2	2.2	1.0	3.6	1.0	2.0	4.0	CXLOH4	Sample was neutralized effluent from testing of EXCEL contactors and plumbing
CXLOH5	water	2/9/94	3/24/94	3/28/94	12	34.0	0.00E+00	55	55	2.0	5.0	1.0	1.0	1.9	5.0	3.8	5.0	8.0	20.0	CXLOH5	Sample was neutralized effluent from testing of EXCEL contactors and plumbing
CXLOH22894-1	effluent +4 IX		3/24/94	3/28/94	13	45.0	1.50E+07	30	25	2.0	5.0	1.0	1.0	1.0	5.0	5.0	5.0	8.0	20.0	CXLOH22894-1	Note- KOH calculated to 4.9 N concentration, larger than normal volume increases
CXLOH22894-2	effluent +4 IX		3/24/94	3/28/94	7	45.0	4.50E+08	161	11	2.0	5.0	1.0	1.0	1.2	5.0	2.2	5.0	8.0	20.0	CXLOH22894-2	during CXLOH22894 run. Has gotten better since.
CXLOH22894-3	wash +4 IX		3/24/94	3/28/94	7	45.0	4.74E+08	180	22	2.0	5.0	1.0	1.0	1.3	5.0	2.5	5.0	8.0	20.0	CXLOH22894-3	
CXLOH22894-4	wash +4 IX		3/30/94		8	15.0	3.39E+08	160	47		5.0	1.0	1.0	1.0	5.0	57.0	23.0	8.0	20.0	CXLOH22894-4	
CXLOH22894-5	wash +4 IX		3/30/94		12	28.7	3.00E+07	57	47		5.0	1.0	1.0	1.0	5.0	5.0	5.0	8.0	20.0	CXLOH22894-5	
CXLOH22894-1A	wash +4 IX		3/30/94		5	46.0	3.36E+08	159	47		5.0	1.0	1.0	1.3	5.0	5.0	5.0	8.0	20.0	CXLOH22894-1A	Added a couple mL of 10 M KOH to 1A & 2A to insure pH above 7 before dumping.
CXLOH22894-2A	wash +4 IX		3/30/94		6	46.0	4.20E+07	61	47		5.0	1.0	1.0	1.4	5.0	5.0	5.0	8.0	20.0	CXLOH22894-2A	Bromocresol purple was "violet" (pH above 6.8) before this extra addition.
CXLOHF22894-4	oxalate filt.	4/7/94	4/7/94	4/14/94	12	28.0	8.71E+07	91	62											CXLOHF22894-4	
CXLOHF22894-5	oxalate filt.	4/7/94	4/7/94	4/14/94	13	49.0	2.34E+09	840	62												
CXLOH22894-7	??????	4/7/94	4/7/94	4/14/94	7	23.0	3.90E+08	192	62												
CXLOH32494-1	??????	4/7/94	4/7/94	4/14/94	13	44.0	1.14E+09	441	62												
CXLOH32494A-6	??????	4/7/94	4/7/94	4/14/94	13	35.0	1.44E+08	110	62												
CXLROH32494C-1	wash +4 IX	5/2/94	5/2/94	5/11/94	13	27.0	4.20E+08	157	17												
CXLROH32494D-3	wash +4 IX	5/2/94	5/2/94	5/11/94	13	35.0	0.00E+00	15	15												
CXL3ELOH32494-4	eluate +3	5/2/94	5/2/94	above	13	7.5	1.84E+10	5488	17												
CXLOXOH32494-5	oxalate filt.	5/2/94	5/2/94	5/11/94	13	48.0	1.09E+09	382	19												
JNKCXLOH4494-6	rag water	5/2/94	5/2/94	5/11/94	8	32.0	1.68E+08	73	17		5.0	1.0	1.0	1.0	5.0	5.0	5.0	8.0	20.0		Contains 83,000 ppm Ca, 1000 ppm Na, 130 ppm Mg. Where is Ca from??
CXLF32194F2	MgO Exp.	4/7/94	4/7/94	5/11/94							5.0	1.0	1.0	1.0	5.0	5.0	5.0	8.0	20.0		Multiple filtrations to reduce alpha activity
CXL3ELOH32494C-1	eluate +3 refil.	5/12/94	5/12/94	5/13/94	13	9.0	2.62E+09	956	17												
CLNJNK51994-3	clean ragwater	5/12/94	5/12/94	5/13/94	10	35.0	8.71E+07	48	19												
CXLOXOH32494-5	oxalate filt.	5/12/94	5/12/94	5/13/94	10	33.0	4.59E+08	170	17												
JNKCXLOH4694-6	rag water	5/12/94	5/12/94	5/13/94	12	19.0	8.41E+07	47	19	NR	5.0	1.0	1.0	1.0	NR	5.0	5.0	8.0	20.0		
CXLOXOH32494B-5																					
							370.7	Total for 22894													
							305.5	Total for 32494													

Appendix 2

Documents Supporting Comment 10, Mixed Waste Venting

Los Alamos
NATIONAL LABORATORY
EST. 1943

Environmental Protection Division
Water Quality & RCRA Group (ENV-RCRA)
P.O. Box 1663, Mail Stop K490
Los Alamos, New Mexico 87545
(505) 667-0666/FAX: (505) 667-5224

Date: July 29, 2009
Refer To: ENV-RCRA-09-139
LA-UR: 09-04682, 09-04801

Mr. James Bearzi, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

Dear Mr. Bearzi:

SUBJECT: TRANSMITTAL OF WASTE CHARACTERIZATION AND ACCEPTANCE DOCUMENTS, LOS ALAMOS NATIONAL LABORATORY (LANL), EPA NO. NM0890010515

The purpose of this letter is to transmit the enclosed documents discussed in the permit condition meeting of July 24, 2009 at your office. They are related to the applicability of the venting condition in Section 2.8.1 of the second revised draft hazardous waste facility permit released for public comment on July 6, 2009. A response to the questions asked by Don Hancock of the Southwest Research and Information Center on July 9, 2009 is included. The documents also include waste characterization procedures utilized by LANL to support the determination whether venting is required for mixed waste containers managed under the permit.

The documents include the latest versions of:

- Enclosure 1: Response to Questions by Don Hancock
- Enclosure 2: LANL Waste Acceptance Criteria, P930-1, Rev. 2
- Enclosure 3: Waste Generator Instruction for Completing the Waste Profile Form (WPF), TL-001, Rev. 0
- Enclosure 4: Waste Profile Form, Form 1346 (9/08)
- Enclosure 5: User Manual for the Waste Disposal Request (WDR) Form, Rev. 0
- Enclosure 6: Waste Generator Guidance for Completing the TRU Waste Storage Record (TWSR), TL-002, Rev. 0
- Enclosure 7: TRU Waste Storage Record, Form 1971 (4/08)

Two additional documents related to the safety basis determinations for some unvented containers discussed in Enclosure 1 will be submitted at a later date after they can be obtained and reviewed for

compliance with security procedures for release of public documents. We felt that it was important to provide the enclosed documents in a timely manner.

Enclosed is a hard copy and an electronic copy of the procedures. If you have questions regarding this submittal, please contact Jack Ellvinger at (505) 667-0633 or Gene Turner at (505) 667-5794.

Sincerely,

Ria Marie Sandoval DGL

for Anthony R. Grieggs
Group Leader
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ENCLOSURE 1

Response to Questions by Don Hancock

LANL RESPONSE TO QUESTIONS BY DON HANCOCK
JULY 23, 2009

1. What mixed TRU waste and TRU waste containers at LANL do not have WIPP-approved vents? Why are they not vented?

   There are 21 drums and more than 300 oversized boxes with TRU and mixed TRU waste that are stored above grade at Technical Area 54 Area G and do not have WIPP-approved vents. LANL has made a decision to delay venting these 21 legacy waste drums until a new venting system with better engineered controls is obtained. In February 2008, LANL implemented an addendum to the TA-54 Area G Documented Safety Analysis with approved controls for handling and storage of unvented TRU waste drums. These controls included storage in a configuration that is isolated from other TRU waste operations, overpacking the unvented drum, application of lid-restraining devices, and prescribed distances between the drums in storage. The controls were imposed to reduce the likelihood of a deflagration occurring during storage or container handling. With the additional controls, the residual risk of storing an unvented drum until it could be safely vented was evaluated and deemed acceptable. Routine inspections of the unvented drums are conducted to look for any signs of pressurization, leaks, or other issues with container integrity.

   The oversized boxes (constructed from either fiberglass-reinforced plywood or metal) contain items such as gloveboxes and large items of equipment that must be size-reduced before they can be shipped to WIPP. During processing, they will be placed into containers such as standard waste boxes with vents that meet WIPP waste acceptance requirements. Solid inorganic materials have also been shown historically to not generate amounts of flammable gas that are of concern.

   LANL also has approximately 12,000 55-gallon drum equivalents of TRU waste that were "retrievably stored" below grade in pits, trenches, and shafts that were excavated into the ground at TA-54 Area G during the 1970s and 1980s. Container types include unvented drums, oversized boxes, and corrugated metal pipes with cemented wastewater treatment sludge. Drums that are retrieved will be vented as the first step in the waste preparation process for shipping the drums to WIPP. Oversized containers that are retrieved will be size-reduced and the resulting TRU waste will be packaged into vented containers that meet WIPP waste acceptance requirements.

   Five shafts at TA-54 Area G contain unvented TRU waste containers with tritium contamination. These containers are sealed to prevent release of tritium to the environment, and will remain in storage at LANL until tritium has decayed sufficiently that they can be processed for shipment to WIPP.

2. Are any mixed waste containers vented that LANL doesn't consider to be covered by #1? If so, approximately how many are vented and why?

   A significant fraction of legacy mixed TRU and TRU waste drums are determined to have an activity less than 100 nanocuries per gram during the characterization process for shipment to WIPP. Drums that assay less than this value are reclassified as mixed low-level waste (MLLW), and shipped for commercial treatment to RCRA land disposal restriction standards and ultimate disposal in the MLLW area at the Nevada Test Site. About 3,000 drums will be reclassified to MLLW and shipped for treatment and disposal this fiscal year. These drums were vented while part of the TRU inventory and remain vented while managed as MLLW.

   Venting of mixed waste containers is not a requirement in the waste acceptance criteria for mixed waste treatment and disposal facilities, it is not a nuclear safety basis requirement, it is not a requirement under RCRA, and it is not a worker safety requirement.

3. Have any mixed waste containers had leaks, spills or releases in the past ten years? If so, how many, were they vented, what were the cause(s), what remedial actions were taken?

   No MLLW waste containers at LANL had spills, leaks or releases during the past ten years. (LANL has managed the equivalent of more than 5,000 55-gallon containers of MLLW during this period.) However, in 2005 one container of amalgamated mercury waste developed a leak of small drops of elemental mercury into the bed of a truck after being transported for additional treatment to a facility in Tennessee. No release to the environment occurred because the shipping truck was designed to carry liquids and was equipped with a full metal bed with a lip. This container was not vented. The causes were determined to be (1) corrosion of the metal drum by liquid mercury, which had apparently separated from the amalgamation by heat during storage and vibration during transport; and (2) failure to inspect the bottom of the drum before shipment because it was not anticipated that the drum would have significant corrosion. Remedial actions that were taken consisted of (1) review of all waste drums in storage at LANL to identify those used for mercury storage, inspection of the drums, and placing the drums on containment pallets; (2) revision of the LANL Waste Acceptance Criteria to require use of polyethylene containers for mercury waste; (3) notification of all Waste Management Coordinators to use polyethylene drums for packaging of all waste containing mercury; (4) revision of the procedure used for preparing off-site waste shipments and (5) training of personnel qualified to use the procedure. Stress was placed on inspecting the bottom of each container thoroughly and documenting each load by digital photographs that are filed by shipment number.

   Most of the TRU waste containers stored above-grade at TA-54 contain legacy wastes that were generated as long as 30 years ago. Hundreds of TRU waste drums have been overpacked into larger drums over the past ten years because they were suspected to have pinhole leaks or other issues with container integrity that were

identified during routine weekly container inspections. Whether a drum that was overpacked was vented or not was not documented, but we believe that all or almost all of these drums were vented because most drums were vented as they were retrieved from soil-covered storage pads in the 1998 to 2001 period. (Any unvented drums in overpacks are protected by the overpack, and these drums are safe to handle. The drum venting system will be used to vent these drums as well.)

Whether the drums were vented is not a root or contributing cause to these issues. Most drums that are currently in above-grade storage were previously stored on asphalt pads under a cover of soil and some rusting of drums occurred. Some drums also contain cemented sludges that may cause corrosion of the internal surface of drums if there is a problem with the drum liner. Only a few of these drums that were overpacked had detectable external contamination, but were overpacked into new drums to ensure no leaks or release occurred

4. For mixed waste containers that are not vented, what are the specific measures that are taken to ensure that they contain no ignitable, reactive, or incompatible wastes?

LANL has comprehensive Waste Acceptance Criteria for all types of hazardous and radioactive wastes, required training for all waste generators, and an extensive process for review, acceptance, and verification of wastes before they are placed into storage. Nearly 30 Waste Management Coordinators are deployed to various LANL facilities to advise waste generators and certify regulatory compliance for every container into the respective local storage areas. LANL has a team that reviews waste container documentation to ensure that waste characterization methods are adequate, waste packages meet the waste acceptance criteria of the intended treatment, storage, or disposal facility, and other regulatory requirements are achieved. Furthermore, the local storage areas are audited at least quarterly by institutional auditors (independent of waste management coordinators). Any issues identified are addressed by the respective waste coordinators and timely corrective actions are implemented (usually within a week.) These processes ensure that containers placed into permitted storage areas do not contain incompatible wastes and that incompatible wastes are not stored in the same area. Copies of the current LANL Waste Acceptance Criteria and forms used to profile waste streams and for acceptance of specific waste shipments will be provided and discussed.

Transuranic wastes that are reclassified to MLLW and soils contaminated with low levels of hazardous and radioactive constituents make up 99% of the total volume of MLLW currently managed at LANL. However, MLLW generated in science and technology activities (operational MLLW) may include most types of hazardous waste and also have low-levels of radioactive contamination. Mixed low-level wastes may include RCRA characteristic hazardous wastes that are considered ignitable, corrosive, reactive, and those wastes with RCRA listed hazardous waste constituents. They may also include compressed gases. All MLLW must meet RCRA and State hazardous waste requirements and US Department of Transportation (DOT) requirements for hazardous wastes, and DOE and DOT requirements that are

applicable to that type of radioactive waste. Tritium wastes have special container requirements that depend on the activity of tritium. Many MLLW containers must be sealed to prevent release of waste materials or vapors that may cause safety problems. MLLW are treated before disposal as required by RCRA and by applicable requirements for radioactive waste disposal.

Newly-generated TRU waste drums and standard waste boxes are vented and must meet waste acceptance criteria for WIPP characterization and certification, DOT requirements, and TA-54 nuclear safety requirements. Newly-generated oversized TRU waste containers (containing waste such as glove-boxes) are placed into large metal boxes that are not vented, but these do not contain wastes that are ignitable, reactive, or incompatible. They must meet all LANL waste acceptance/certification requirements. The oversized TRU waste items such as glove-boxes are decontaminated to reduce radiological and residual chemical contamination as much as possible, and are wrapped in plastic for contamination control before being packaged into the metal boxes. These will be size reduced and packaged into vented containers for shipment to WIPP.

Although not as robust in the past as at present, LANL has always had some form of Waste Acceptance Criteria and waste documentation. Records for TRU wastes that are to be retrieved from below-grade storage are available and are being used to develop plans for retrieval and for management of the wastes after retrieval. DOE nuclear safety requirements dictate internal and external reviews of procedures, qualification and training of employees, and readiness to perform the work safely so that releases of radioactive materials do not occur. LANL successfully retrieved about 17,000 55-gallon drum equivalents of TRU waste from soil-covered storage pads from 1998 to 2001 without incident.

ENCLOSURE 2

LANL Waste Acceptance Criteria, P930-1, Rev. 2

No: P930-1
Revision: 2

Issued: 07/13/09
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LANL Waste Acceptance Criteria

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LANL Waste Acceptance Criteria

1.0 PURPOSE

This document describes ten recycling, waste storage, treatment, and disposal paths and the specific Waste Acceptance Criteria (WAC) for each.

- Radioactive Liquid Waste Treatment Facility (RLWTF)
- Radioactive Liquid Waste Treatment Plant (RLWTP)
- Technical Area 54, Area G
- Technical Area 54, Area L
- Consolidated <90-day storage areas
- Infectious waste direct off-site shipments
- Los Alamos National Laboratory (LANL or the Laboratory) Material Recycling Facility (MRF) for dumpster waste
- Sanitary Wastewater System (SWWS) Plant
- Nevada Test Site (NTS)
- Scrap metal recycling or disposal

LANL's waste management requirements are consistent with applicable United States (US) Department of Energy (DOE) orders and state and federal regulations. For information on LANL's waste management requirements, see P409, *Waste Management*. For information on LANL's radioactive waste certification, see P930-2, *Waste Certification Program*.

The DOE, through DOE O 435.1, *Radioactive Waste Management*, and the Environmental Protection Agency (EPA), through Resource Conservation and Recovery Act (RCRA) regulations, both require waste to be characterized and certified. DOE O 435.1 requires radioactive waste management facilities to implement waste acceptance programs. RCRA requires Treatment, Storage, and/or Disposal Facilities (TSDFs) to know what is in the waste containers it accepts. The WAC specifies what waste types can be accepted and how they must be containerized and labeled. Waste generating processes should be preplanned to ensure that waste management funding is available, waste is minimized, and a waste disposal path exists.

2.0 AUTHORITY AND APPLICABILITY

2.1 Authority

This document is issued under the authority of the Laboratory Director to direct the management and operation of the Laboratory, as delegated to the Associate Director for Environmental Programs (ADEP) as provided in the Prime Contract. This document derives from the Laboratory Governing Policies, particularly the section on Environment.

- Issuing Authority (IA): Associate Director for Environmental Programs (ADEP)
- Responsible Manager (RM): Waste and Environmental Services (WES) Division Leader
- Responsible Office (RO): Waste and Environmental Services-Waste Acceptance (WES-WA) Group

2.2 Applicability

This document applies to all persons managing, planning, generating, characterizing, handling, processing, transporting, or otherwise involved with waste at the Laboratory.

3.0 PROCEDURE DESCRIPTION

3.1 Waste Acceptance Program

LANL's WES-WA provides the system through which generators of radioactive waste and nonradioactive waste request waste acceptance.

WES-WA implements its acceptance program through the use of the Waste Management Database Applications using the set of current waste documentation listed below.

1. Form 1346, *Waste Profile Form (WPF)*, provides WES-WA with the generator's expectations of waste type, form, and content. Instructions for completing the WPF (Form 1346) are in TL-001, *Waste Generator Instruction for Completing the Waste Profile Form (WPF)*.

   The waste generator completes a WPF (Form 1346). The generator's Waste Management Coordinator (WMC) can assist with completing the WPF (Form 1346). This process is detailed in the WPF (Form 1346) identification, activation, or reactivation tool.

2. With assistance from the WMC, the waste generator completes the on-line Waste Profile Charge Code Form after the WPF (Form 1346) has been approved. LANL waste cost recovery initiatives require tracking and costing of waste disposal. The on-line Waste Profile Charge Code Form is where the waste generator assigns valid cost codes to the approved WPF (Form 1346). This needs to be completed before submittal of the on-line Waste Disposal Request (WDR) Form. For instructions on completing the on-line Waste Profile Charge Code Form, see MAN-5001, *User Manual for Waste Profile Charge Code Form*.

3. The WMC completes the on-line Waste Disposal Request (WDR) Form and the appropriate forms for the type of waste as follows:

   - For Low-Level Waste (LLW), Mixed Low-Level Waste (MLLW) and nonradioactive waste, the waste generator completes an electronic Waste Item Inventory (WII) Form with assistance from the WMC. For instructions on completing the WII Form, see MAN-5002, *User Manual for the Waste Item Inventory (WII) Form*.

   - The WII form is used for identifying and tracking waste item characteristics and cost information before submittal on an on-line Waste Disposal Request (WDR) Form. The waste generator initiates the waste item identification process using WAF 09-02-08, *Waste Acceptance Form*, or a similar tool, and enters the information electronically in the WII Form. The WAF 09-02-08 can be found on the Waste Customer Support webpage under the Forms tab and clicking on the "Waste Acceptance Form."

   - The WMC then completes an on-line Waste Disposal Request (WDR) Form and submits it electronically for review and approval. For instructions on completing the on-line Waste Disposal Request (WDR) Form, see MAN-5003, *User Manual for the Waste Disposal Request (WDR) Form*.

   - Information regarding the WII and on-line Waste Disposal Request (WDR) Form can be obtained by sending an e-mail to wastehelp@lanl.gov or calling the waste help call center at 665-2494. A ticket will be created for responding to the inquiry coming into the waste help lines.

- Form 1971, *TRU Waste Storage Record*, is used for Transuranic (TRU) waste to be stored at Technical Area (TA)-54 prior to certification for shipment to the Waste Isolation Pilot Project. Instructions for completing Form 1971 are in TL-002*, Waste Generator Guidance for Completing the TRU Waste Storage Record (TWSR).*
- Form A: SOP-5199, *TRU Waste Storage Record Change Form*, must be used to document and authorize changes made to data initially recorded on Form 1971, *TRU Waste Storage Record*. Instructions for completing Form A: SOP-5199 are in SOP-5199, *Use of the TRU Waste Storage Record Change Form*. Accessing the form and the instructions requires a CRYPTOCard.

4. WES-WA personnel assess incoming forms for completeness and consistency. WES-WA personnel review and approve or reject the forms and may request additional information.

3.2 Waste Types and Waste Management Facilities

If you know which attachment you need, click on the attachment number below to take you to the specific WAC attachment. Read the waste type description in the opening paragraphs of the attachment to verify you have selected the correct attachment for your waste type. If the waste type description does not match your waste, use the link in the attachment to return to the attachment listing below. Whenever there is doubt in the identification of a waste type or an acceptance criteria requirement for a waste type, consult your WMC, Generator Support Services or the TSDF.

- 3.2.1.1 Radioactive Liquid Waste Treatment Facility (RLWTF)
- 3.2.1.2 Contact-Handled Transuranic (TRU) Waste
- 3.2.1.3 Solid Low-Level Waste (LLW)
- 3.2.1.4 Compactable Solid Low-Level Waste (LLW)
- 3.2.1.5 Tritium-Contaminated Waste
- 3.2.1.6 Hazardous and Universal Waste
- 3.2.1.7 Mixed Low-Level Waste (MLLW)
- 3.2.1.8 Other Low-Level Waste (LLW)
- 3.2.1.9 Asbestos Waste
- 3.2.1.10 Infectious/Medical/Biological Waste
- 3.2.1.11 Polychlorinated Biphenyl (PCB) Waste
- 3.2.1.12 Green is Clean Waste
- 3.2.1.13 New Mexico Special Waste
- 3.2.1.14 Non-Hazardous Waste
- 3.2.1.15 Dumpster Waste
- 3.2.1.16 Sanitary Wastewater System (SWWS)
- 3.2.1.17 Low-Level Waste Disposal (LLWD) at the Nevada Test Site (NTS)
- 3.2.1.18 TA-53 Radioactive Liquid Waste Treatment Plant (RLWTP)
- 3.2.1.19 Non-Hazardous, Non-Radioactive Scrap Metal

Radioactive waste generators must ensure their waste is certified for storage and shipment by complying with P930-2, *Waste Certification Program*.

4.0 RESPONSIBILITIES

Waste Management Coordinators (WMCs)

- Assist with and complete waste documents
- Assist waste generators with the waste criteria

Waste-Generating Facilities

- Ensure adequacy of waste characterization methods
- Maintain waste characterization documentation

Generator Support Services

- Review and approve waste documentation for waste acceptance into the appropriate TSDFs

Treatment, Storage, and/or Disposal Facilities (TSDFs)—Waste Management

- Perform a final check for waste being received at the facility.

5.0 IMPLEMENTATION

WAC requirements have been in existence since the early 1990s. New requirements are not being issued and an implementation plan is not needed.

6.0 TRAINING

Waste generators who sign WPF (Form 1346, *Waste Profile Form*) must be current with required training (see P409, *Waste Management*). Waste disposal and storage requests will be rejected unless the WPF is approved ("active"). WPFs are active for one year at a time and can be renewed. WPF (extension must be requested before the expiration date).

7.0 EXCEPTION OR VARIANCE

To obtain an exception or variance to this document, follow these instructions:

- Managers may request an exception or variance from the IA through the RM.
- At the IA's request, the RM will provide a recommendation or supporting information.
- The IA or his or her designee will provide the requestor with a written response and copy the RM.

The requesting organization must maintain the official copy of record of the approved correspondence granting the exception or variance.

Exemptions and Exceptions

Waste generators may request exemptions from or exceptions to the WAC by using Form 1973, *Waste Acceptance Criteria Exception Form (WEF)*. Exemptions or exceptions are requested when a generator cannot comply with a specific WAC or certification requirement, or when a requirement is not applicable.

In completing Form 1973, the following items must be provided:

- the WAC or certification requirement that cannot be met or is not applicable;

- the procedures, requirements, or methodology that will be used in lieu of the WAC or certification requirement; and
- the justification or documentation that demonstrates the equivalency of the method or the rationale for the use of the alternative methodology.

All exemptions or exceptions must be identified as pertaining to a one-time waste stream or an ongoing waste stream. Exemptions for ongoing waste streams must be maintained as part of the generator's certification documentation. Form 1973, must be signed by the WMC. After the form is signed, it is submitted to the Waste Acceptance group for processing. The affected TSDF will evaluate the request and either approve or reject the request based on the results of the evaluation. Exemptions are normally returned within 30 days. However, more time may be required to evaluate complex issues. If the exemption or exception is not approved, the TSDF will provide an explanation on Form 1973. The TSDF may also provide on the form any special instructions or conditions to be used in the management of the affected waste. The original forms will be maintained by the TSDF. A copy of the request and the disposition will be returned to the WMC. A copy of the approved request must accompany all Chemical Waste Disposal Request (CWDR) forms or (TWSRs describing the affected waste).

8.0 DOCUMENTS AND RECORDS

Office of Record

The Policy Office is the Laboratory Office of Record for this Institutional Document and maintains the administrative record.

WES-WA is the office of records (includes WPF and TWSRs) generated in the execution of this document.

9.0 DEFINITIONS AND ACRONYMS

9.1 Definitions

See LANL *Definition of Terms*.

See the glossary associated with P409, *Waste Management*.

9.2 Acronyms

See LANL *Acronyms and Names*

See the acronym list associated with P409, *Waste Management.*

ACM	Asbestos Containing Material
ADEP	Associate Director for Environmental Program
ALARA	As-Low-As-Reasonably Achievable
CFR	Code of Federal Regulation
CH-TRAMPAC	Contact-Handled Transuranic Waste Authorized Methods for Payload Control
COD	Chemical Oxygen Demand
CRWSSWDR	Consolidated Remote Waste Storage Sites Waste Disposal Request
CWDR	Chemical Waste Disposal Request
DOE	Department of Energy

DOT	Department of Transportation
DP	Defense Program
DQP	Data Quality Objective
ENV-PP	Environmental Protection-Pollution Prevention Program
ENV-RCRA	Environmental Protection-Resource Conservation and Recovery Act
ENV-RRO	Environmental Protection-Risk Reduction Office
EPA	Environmental Protection Agency
FGE	Fissile Gram Equivalent
GIC	Green-Is-Clean
GTCC	Greater-than-Class-C
HEPA	High Efficiency Particulate Air
HPR	Health Physics Release
HRI	Human Readable Interpretation
IA	Issuing Authority
LANL	Los Alamos National Laboratory
LANS	Los Alamos National Security, LLC
LANSCE	Los Alamos Neutron Science Center
LCS	Laboratory Control Standard
LDR	Land Disposal Restriction
LIR	Laboratory Implementation Requirement
LLHB	Low-Level Hydrocarbon Burdened
LLW	Low-Level Waste
LLWD	Low-Level Waste Disposition
LRAD	Long-Range Alpha Detector
LSA	Low Specific Activity
MAR	Material-at-Risk
MCE	Mercury Containing Equipment
MLLW	Mixed Low-Level Waste
MRF	Material Recycling Facility
NCSE	Nuclear Criticality Safety Evaluation
NFPA	National Fire Protection Association
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NNSA	National Nuclear Security Administration
NPDES	National Pollutant Discharge Elimination System
NSO	Nevada Site Office
NTS	Nevada Test Site
PCB	Polychlorinated Biphenyl
PE-Ci	Plutonium Equivalent Curies
PE-g	Plutonium Equivalent Gram
PPE	Personal Protective Equipment
PSDR	Package Storage and Disposal Request
RALLW	Regulated Asbestos LLW

RCRA	Resource Conservation and Recovery Act
RCT	Radiological Control Technician
RLW	Radioactive Liquid Waste
RLWCS	Radioactive Liquid Waste Collection System
RLWTF	Radioactive Liquid Waste Treatment Facility
RLWTP	Radioactive Liquid Waste Treatment Plant
RM	Responsible Manager
RO	Responsible Office
RQ	Reportable Quantity
RTR	Real-Time Radiography
RWAP	Radioactive Waste Acceptance Program
SCO	Surface Contaminated Object
SSS	Support Services Subcontractor
STP	Site Treatment Plan
SVOC	Semivolatile Organic Compound
SWB	Standard Waste Box
SWMR	Solid Waste Management Regulation
SWWS	Sanitary Wastewater System
TA	Technical Area
TCLP	Toxicity Characteristic Leaching Procedure
TFCHW	Treated, Formerly Characteristic Hazardous Waste
TRU	Transuranic
TSCA	Toxic Substance Control Act
TSDF	Treatment, Storage, and/or Disposal Facility
TSR	Technical Safety Requirement
TSS	Total Suspended Solids
TTO	Total Toxic Organic
TWSR	Transuranic Waste Storage Record
UCNI	Unclassified Controlled Nuclear Information
UN	United Nations
US	United States
USQD	Unreviewed Safety Question Determination
VOC	Volatile Organic Compound
WAC	Waste Acceptance Criteria
WAP	Waste Analysis Plan
WCO	Waste Certification Official
WDP	Waste Disposition Project
WDP-HMWO	Waste Disposition Project-Hazardous & Mixed Waste Operations
WDR	Waste Disposal Request
WEF	Waste Acceptance Criteria Exception Form (Form 1973)
WES	Waste and Environmental Services
WES-WA	Waste and Environmental Services-Waste Acceptance
WGI	Waste Generator Instruction

WIPP	Waste Isolation Pilot Plant
WMC	Waste Management Coordinator
WMP	Waste Management Plan
WP	Waste Profile
WPF	Waste Profile Form (Form 1346)

10.0 HISTORY

This document supersedes and cancels ISD 931-1, *LANL Waste Acceptance Criteria*.

Revision History		
06/05/08	P930-1	Initial Issue
03/31/09	P930-1, Rev. 1	Changes in this revision include: Attachment 3, limitation of 3.5 watts per cubic meter of waste (Section 3.1.6), changes to disposal pit and shaft limits (Table 3-1 and Section 3.2.3), and new waste container size limits (3.3); Attachment 6, non-radioactive aerosol cans are now Universal Waste (Section 6.0); Attachment 7, MLLW packages must be received by Waste and Environmental Services (WES) no later than five months before the one year storage period is exceeded (Section 7.8); Attachment 17, for the Nevada Test Site (NTS) WAC, changes to radionuclides and their limits (Table 17-1), removal of emanation limits for radon and tritium-emanating radionuclides (limits tables were deleted), waste management requirements for PCBs (Section 17.1.5), new waste package criticality safety limits (Section 17.2.1), waste package plutonium-equivalent gram limits (Section 17.2.2), packaging handling requirements (Section 17.2.5), and new waste container and shipping configuration requirements (Section 17.2.16); Attachment 18, new Waste Exception Form requirements (Section 18.3).
07/13/09	P930-1, Rev. 2	Revisions to Table 17-1. Removal of all references to Mixed Low-Level Waste (MLLW) and classified waste, both of which are prohibited for disposition at Nevada Test Site (NTS). Low-Level Waste (LLW) containers with Polychlorinated Biphenyls (PCBs) shall be at least 90% full. Roll-off boxes may not contain laboratory trash or Personal Protective Equipment (PPE). Added to acceptable for roll-offs: PCB bulk product waste meeting 40 CFR 761.62(b)(1). Section 17.2.7: Box weight exception added. Fixed links, titles, and acronyms.

11.0 REFERENCES

Prime Contract:

- DOE O 435.1, *Radioactive Waste Management*
- DOE M 435.1, *Radioactive Waste Management Manual*
- DOE O 5400.5, *Radiation Protection of the Public and the Environment*

Other References:

- P409, *Waste Management*
- P930-2, *Waste Certification Program*
- TL-001, *Waste Generator Instruction for Completing the Waste Profile Form (WPF)*
- MAN-5001, *User Manual for Waste Profile Charge Code Form*
- MAN-5002, *User Manual for the Waste Item Inventory (WII) Form*
- Waste Customer Support webpage
- MAN-5003, *User Manual for the Waste Disposal Request (WDR) Form*
- TL-002*, Waste Generator Guidance for Completing the TRU Waste Storage Record (TWSR)*
- SOP-5199, *Use of the TRU Waste Storage Record Change Form*
- glossary associated with P409, *Waste Management*
- acronym list associated with P409, *Waste Management*
- 49 CFR, *Transportation*
- EM/RLW-FDR-01, *Pipeline Design Requirements for the LANL Radioactive Liquid Waste Collection System*
- New Mexico Administrative Code (NMAC) 20, *Environmental Protection*, Chapter 4, Part 1, *Hazardous Waste Management*
- 40 CFR 261.21, *Identification and Listing of Hazardous Waste, Characteristic of ignitability*
- 40 CFR 261.23, *Identification and Listing of Hazardous Waste, Characteristic of reactivity*
- 40 CFR 261.22, *Identification and Listing of Hazardous Waste, Characteristic of corrosivity*
- 40 CFR 261.24, *Identification and Listing of Hazardous Waste, Toxicity characteristic*
- 40 CFR 261.31, *Identification and Listing of Hazardous Waste, Hazardous wastes from non-specific sources*
- 40 CFR 261.32, *Identification and Listing of Hazardous Waste, Hazardous wastes from specific sources*
- 40 CFR 261.33, *Identification and Listing of Hazardous Waste, Discarded commercial chemical products, off-specification species, container residues, and spill residues thereof*
- DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*
- 40 CFR 261, *Identification and Listing of Hazardous Waste*
- 49 CFR 173.134, *Shippers—General Requirements for Shipments and Packagings—Definitions and exceptions*

- 40 CFR 82, *Protection of Stratospheric Ozone*, Subpart F
- 10 CFR 61.55, *Waste Classification*
- 49 CFR 173.433(f), *Requirements for determining basic radionuclide values, and for the listing of radionuclides on shipping papers and labels*
- 49 CFR 173, Subpart B, *Preparation of Hazardous Materials for Transportation*
- ABD-WFM-002, Appendix B
- P121, *Radiation Protection*
- 49 CFR 173.453 *Shippers—General Requirements for Shipments and Packagings—Fissile materials – exceptions*
- 40 CFR 261.3, *Definition of Hazardous Waste*
- 40 CFR 273, *Standards for Universal Waste Management*
- NMAC 20.4.1.1001, *Modifications, Exceptions and Omissions*
- 49 CFR 173.50, *Shippers—General Requirements for Shipments and Packagings, Class 1—Definitions*
- 49 CFR 178, Subpart C*, Specifications for Cylinders*
- 49 CFR 173.12, *Exceptions for Shipment of Waste Materials*
- 49 CFR 173.24, *General Requirements For Packagings and Packages*, (h)
- 49 CFR 172.101, *Purpose and Use of Hazardous Materials Table*, Appendix A in Table 2
- Appendix B of 40 CFR 302.4, *Designation of Hazardous Substances*
- 40 CFR 268, *Land Disposal Restrictions*
- 40 CFR 268.2, *Land Disposal Restrictions, Definitions Applicable in this Part*
- 49 CFR 173.12(b), *Exceptions for Shipment of Waste Materials, Lab Packs*
- 40 CFR 763.83, *Definitions*
- 49 CFR 173, *Shippers—General Requirements for Shipments and Packagings*
- NMAC 20.9.8.12 F, *Asbestos Waste*
- CDC Office of Health and Safety
- NMAC 20.9.8.13.B, *Infectious Waste*
- 49 CFR 178.609, *Test Requirements for Packaging for Infectious Substances*
- 49 CFR 173.196, *Category A Infectious Substances*
- 49 CFR 173.202, *Non-Bulk Packagings for Liquid Hazardous Materials in Packing Group I*
- 49 CFR 173.212, *Non-Bulk Packagings for Solid Hazardous Materials in Packing Group II*
- 49 CFR 173.197, *Regulated Medical Waste*
- 49 CFR 172.432, *Infectious Substance Label*
- 49 CFR 172.323, *Infectious Substances*
- 40 CFR 761.75, *Chemical Waste Landfills*, (b)(8)(ii)
- 49 CFR 172, *Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements*

- 49 CFR 178, *Specifications for Packagings*
- P101-17, *Excavation/Fill/Soil Disturbance*
- Nevada Test Site, Waste Acceptance Criteria (NTS WAC)
- 40 CFR, *Protection of Environment*
- 40 CFR 268.40, *Applicability of Treatment Standards*
- *Position Paper for High Moisture Content Waste*
- 40 CFR 761, *Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions*
- NAC 444.9452, *Adoption by reference of certain federal regulations*
- 40 CFR 761.61, *PCB Remediation Waste*
- 40 CFR 761.62, *Disposal of PCB Bulk Product Waste*
- *Position Paper on the Proper Characterization and Disposal of Sealed Radioactive Sources*
- 10 CFR, *Energy*
- 10 CFR 835, *Occupational Radiation Protection*, Appendix D, *Surface Contamination Values*
- DOE-STD-1090, Current Publication*, Hoisting & Rigging Standard*
- 49 CFR 173.410, *General Design Requirements*
- 49 CFR 173.411, *Industrial Packagings*
- 40 CFR 766, *Dibenzo-Para-Dioxins/Dibenzofurans*
- 49 CFR 173.425, *Table of Activity Limits—Excepted Quantities and Articles*
- P151-1, *LANL Packaging and Transportation Program Procedure*
- PD311, *Requirements System and Hierarchy*
- 1989/1995 Hazardous Waste Facility Permit

12.0 FORMS

Form 1346, *Waste Profile Form (WPF)*
Waste Profile Charge Code Form
Waste Disposal Request (WDR) Form
Waste Item Inventory (WII) Form
WAF 09-02-08, *Waste Acceptance Form*
Form 1971, *TRU Waste Storage Record*
Form A: SOP-5199, *TRU Waste Storage Record Change Form*
Form 1973, *Waste Acceptance Criteria Exception Form (WEF)*
FMU64-F224, R1, *Green is Clean Material Disposal Request Form*
Sanitary Portable Toilet Request Form

13.0 ATTACHMENTS

Attachment 1. *Radioactive Liquid Waste Treatment Facility (RLWTF)*
Attachment 2. *Contact-Handled Transuranic (TRU) Waste*
Attachment 3. *Solid Low-Level Waste (LLW)*
Attachment 4. *Compactable Solid Low-Level Waste (LLW)*
Attachment 5. *Tritium-Contaminated Waste*
Attachment 6. *Hazardous and Universal Waste*
Attachment 7. *Mixed Low-Level Waste (MLLW)*

Attachment 8. *Other Low-Level Waste (LLW)*
Attachment 9. *Asbestos Waste*
Attachment 10. *Infectious/Medical/Biological Waste*
Attachment 11. *Polychlorinated Biphenyl (PCB) Waste*
Attachment 12. *Green is Clean Waste*
Attachment 13. *New Mexico Special Waste*
Attachment 14. *Non-Hazardous Waste*
Attachment 15. *Dumpster Waste*
Attachment 16. *Sanitary Wastewater System (SWWS)*
Attachment 17. *Low-Level Waste Disposal (LLWD) at the Nevada Test Site (NTS)*
Attachment 18. *TA-53 Radioactive Liquid Waste Treatment Plant (RLWTP)*
Attachment 19. *Non-Hazardous, Non-Radioactive Scrap Metal*

14.0 CONTACT

Waste and Environmental Services-Waste Acceptance Group (WES-WA)
Telephone: (505) 664-0140
Fax: (505) 667-9710
E-mail: arleen@lanl.gov
Website: http://int.lanl.gov/orgs/ws/wa/index.shtml

No: P930-1 LANL Waste Acceptance Criteria [Back]
Attachment 1. Radioactive Liquid Waste Treatment Facility (RLWTF) (Page 1 of 9)

The Technical Area (TA)-50 Radioactive Liquid Waste Treatment Facility (RLWTF) receives and treats radioactive and industrial wastewaters with a radionuclide concentration of 500 nanocuries per liter or less (not including tritium) and with a reactor-produced tritium concentration of 20 nanocuries per liter or less. These wastewaters cannot contain Resource Conservation and Recovery Act (RCRA)-regulated toxic organic constituents, RCRA-regulated listed constituents, or (except for small volumes) RCRA-regulated characteristic constituents. Certain other contaminants are also prohibited, as set forth in this attachment.

The Waste Acceptance Criteria (WAC) in this attachment apply to industrial wastewaters being sent for processing at the TA-50 RLWTF. This WAC does not apply to the “acid” and “caustic” process wastewaters generated at the Plutonium Complex (TA-55). A separate WAC pertaining to the “acid” and “caustic” process wastewaters can be obtained from the TA-55 Plutonium Complex Waste Management Coordinator (WMC).

The RLWTF receives and treats aqueous radioactive wastewater generated at LANL to meet the discharge criteria specified in a National Pollutant Discharge Elimination System (NPDES) permit. The majority of this wastewater is received at the RLWTF through a network of buried pipelines, known as the “Radioactive Liquid Waste Collection System” (RLWCS). Other wastewater is transported to the RLWTF by truck.

The WAC outlined in this attachment are applicable to all wastewaters that are conveyed to the TA-50 RLWTF, whether by the RLWCS or by truck.

These WAC are based on the following:

- Department of Energy (DOE) O 435.1, *Radioactive Waste Management*, and its associated DOE M 435.1, *Radioactive Waste Management Manual.*
- DOE O 5400.5, *Radiation Protection of the Public and the Environment.*
- US Department of Transportation (DOT) regulations, 49 Code of Federal Regulation (CFR), *Transportation*, Parts 106-180.
- New Mexico hazardous waste management regulations (New Mexico Administrative Code (NMAC) 20, *Environmental Protection*, Chapter 4, Part 1, *Hazardous Waste Management*), which implement the federal RCRA.
- New Mexico Water Quality Control Commission regulations and standards, and LANL’s NPDES permit.

1.1 Facility Requirements for Connection to the Radioactive Liquid Waste Treatment Facility (RLWTF)

Buildings connected to the RLWTF by the RLWCS must meet the following criteria:

- The pipelines and associated telemetry must comply with the standards established in the EM/RLW-FDR-01, *Pipeline Design Requirements for the LANL Radioactive Liquid Waste Collection System*. A copy of this document can be obtained from the RLWTF Operations Manager at 667-4301.
- Pipelines within buildings that are part of the RLWCS must be labeled “Radioactive Waste Line.” Labels can be obtained from the RLWTF at (505) 667-4301.

- Each sink connected to the RLWCS must be posted with a sign informing users of the requirements for disposing of wastewater down the drain. Signs may be obtained from the RLWTF at (505) 667-4301.

In addition, the drains listed in Table 1-1 must be plugged or have administrative controls to minimize the inadvertent introduction of large volumes of volatile organic liquids (e.g., gasoline) into the RLWCS.

Table 1-1. Controls for the Radioactive Liquid Waste Treatment Facility (RLWTF) Drains

Building	Room	Description	Control
03-29	Wing 9	Drain closest to rollup door	Plug the drain
03-66	B100N	Two floor drains	Administrative control*
03-102	119	Drain closest to rollup door	Administrative control*
03-1264	– – –	Only floor drain	Administrative control*
35-213	B-29	Three floor drains	Plug the drain closest to the rollup door
48-01	244	Two floor drains	Administrative control*
48-01	322	Only floor drain	Plug the drain
50-01	34B	Only floor drain	Administrative control*
50-01	Outside	Drain at the caustic unload station	Jersey barrier to preclude vehicle entry into bermed area
50-37	116	Drain closest to rollup door	Administrative control*

* Administrative Control includes (1) gasoline vehicles not permitted entry; (2) gasoline vehicles braked and chocked outside before rollup door is opened; and (3) sign posted.

Note: The RLWCS begins at the first connection point of the collection system with the facility piping that is outside the facility.

1.2 Waste Profile Form (WPF)

Only wastewater having an approved WPF (*Waste Profile Form*) may be discharged to the RLWTF. Instructions for completing the WPF (Form 1346) are in TL-001, *Waste Generator Instruction for Completing the Waste Profile Form (WPF).* Assistance in completing the WPF can be obtained by calling the Waste Acceptance group.

Upon completion, the WPF is to be sent to the Waste Acceptance group. A copy of the WPF will be sent to the generator's WMC upon acceptance or rejection of the wastewater at the RLWTF. Contact your WMC for specific information related to the status of a WPF.

No: P930-1 LANL Waste Acceptance Criteria
Attachment 1. Radioactive Liquid Waste Treatment Facility (RLWTF) (Cont.) (Page 3 of 9)

1.3 Waste Acceptance Criteria Exception Form (WEF)

Some waste streams that do not meet the WAC may be acceptable for treatment at the RLWTF. Also, a temporary change in the waste stream may require that the RLWTF be notified. The documentation for handling both of these situations is a WEF (Form 1973, *Waste Acceptance Criteria Exception Form*). RLWTF personnel will work with the generator to fill out a WEF. The WEF will need to be approved by RLWTF personnel before the new waste stream or the modified waste stream can be sent to the RLWTF. The WEF (Form 1973) may be obtained by clicking on the link or contacting your WMC.

1.4 Radioactive Liquid Waste Acceptance Criteria (WAC)

To be acceptable for treatment at the RLWTF, wastewater streams must meet the criteria outlined in this section. Specifically, certain wastes, listed in Table 1-2, are unacceptable for treatment at the RLWTF, and wastes must not have concentrations of radioactive or nonradioactive contaminants in excess of amounts given in Tables 1-3 and 1-4.

If a waste stream includes any of the material listed in Table 1-2 or exceeds concentrations set forth in Tables 1-3 and 1-4, the generator may complete a WEF (Form 1973, *Waste Acceptance Criteria Exception Form*) and submit the WEF (Form 1973) along with the WPF (Form 1346, *Waste Profile Form*). The RLWTF Process Engineer will then determine if the waste stream can be accepted for treatment.

Table 1-2. Wastes that are Unacceptable for Treatment at the Radioactive Liquid Waste Treatment Facility (RLWTF)

Radionuclides	Accelerator-Produced Tritium
Nonradioactive Constituents	Resource Conservation and Recovery Act (RCRA)-regulated characteristic waste (D001 for ignitability, D003 for reactivity, as defined in 40 CFR 261.21, *Identification and Listing of Hazardous Waste, Characteristic of ignitability*, and 40 CFR 261.23, *Identification and Listing of Hazardous Waste, Characteristic of reactivity*.)
	RCRA-regulated characteristic waste (D002 for corrosivity, as defined in 40 CFR 261.22, *Identification and Listing of Hazardous Waste, Characteristic of corrosivity*) in volumes greater than 50 gallons per discharge.
	RCRA-regulated toxic metal waste (D004 – D011) (40 CFR 261.24, *Identification and Listing of Hazardous Waste, Toxicity characteristic*)
	RCRA-regulated toxic organic waste (D012 – D043) (40 CFR 261.24)
	RCRA-regulated listed waste (F-, K-, P-, U-listed) (40 CFR 261.31, *Identification and Listing of Hazardous Waste, Hazardous wastes from non-specific sources*, 40 CFR 261.32, *Identification and Listing of Hazardous Waste, Hazardous wastes from specific sources*, and 40 CFR 261.33, *Identification and Listing of Hazardous Waste, Discarded commercial chemical products, off-specification species, container residues, and spill residues thereof*)
	DDT, dioxins, or pesticides at any detectable concentration determined by an approved Environmental Protection Agency (EPA) method
	Biological or microorganism waste
	Samples and wastes from analytical operations with no associated WPF (*Waste Profile Form*) (Analytical operations are not exempt from the WPF process.)
	Polychlorinated Biphenyls (PCBs) at any detectable concentration determined by an approved EPA method or suspected concentration
Other	Sanitary waste (except for rad decontamination showers and sinks)
	Detergents and surfactants
	Boiler or chiller waters containing rust, scale, or other inhibitors
	Sludges or solids
	Dyes and scintillation cocktails

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Attachment 1. Radioactive Liquid Waste Treatment Facility (RLWTF) (Cont.) (Page 4 of 9)

Table 1-3. Limits on Radionuclides Acceptable for Discharge to the Radioactive Liquid Waste Treatment Facility (RLWTF)

Limit	Concentration (Ci/L)
Total Radionuclide Concentration (sum of gross alpha, beta, gamma, or the sum of nuclides known to be in the waste)	5.0E–07
Alpha Emitters	
Am-241 Pu-240 Pu-238 U-234 Pu-239	1.0E–07
U-235 U-238 Np-237	1.0E–08
Th-232	1.0E–10
Beta Emitters	
As-74 Rb-83 Be-7 Sc-46 Ce-141 Sc-48 Co-57 Se-75 Co-58 Sn-113 Eu-152 Sr-85 Mn-52 Sr-89 Mn-54 V-48 Y-88	1.0E–07
I-133 Na-22 Rb-84	5.0E–08
Zn-65	4.0E–08
Co-60	2.0E–08
Cs-134 Cs-137 Co-56	1.0E–08
Sr-90	5.0E–09
H-3 (accelerator-produced)	0 (none allowed)
H-3 (reactor-produced)	2.0E–08
Ra-226 + Ra-228	5.0E–10
Other Radionuclides	1.0E–08

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Attachment 1. Radioactive Liquid Waste Treatment Facility (RLWTF) (Cont.) (Page 5 of 9)

Table 1-4. Limits on Nonradioactive Constituents Acceptable for Discharge to the Radioactive Liquid Waste Treatment Facility (RLWTF)

Constituent	Maximum Allowable Concentration (mg/L except where noted)
Aluminum	50
Ammonia-Nitrogen	5
Arsenic (D004)	<5
Barium (D005)	<100
Beryllium	1
Boron	50
Cadmium (D006)	<1
Chromium	<5
Chlorine (Free)	1
Cobalt	5
Copper	2
Cyanide	5
Fluoride	1
Lead (D008)	<5
Mercury (D009)	<0.2
Nitrate-Nitrogen	70
Perchlorate	1
Selenium (D010)	<1
Silver (D011)	<5
Vanadium	1.0
Zinc	50
Chemical Oxygen Demand (COD)	250
Total Suspended Solids (TSS)	10,000
Total Toxic Organics (TTOs)*	25

* See Table 1-5 containing TTO list.

1.4.1 Radionuclide Content

The total radionuclide concentration [defined as the sum of gross alpha, gross beta (not including tritium), and gross gamma **or** the sum of individual alpha-, beta-, and gamma-emitting nuclides known to be in the waste] of a waste stream sent to the RLWTF may not exceed the value listed in Table 1-3. Limits on individual radionuclides are listed in Table 1-3.

The activity of the four predominant radionuclides must be listed on the WPF (Form 1346, *Waste Profile Form*). Radionuclides (in any concentration) that are known to be in the waste stream must also be listed on the WPF (Form 1346).

1.4.2 Nonradioactive Constituents

Liquid waste streams that contain nonradioactive constituents below the concentration limits in Table 1-4 and with a pH between 2 and 12.5 are acceptable for discharge to the RLWTF. A listing of the Total Toxic Organics (TTOs) is shown in Table 1-5.

Inorganic wastes with a pH from 0 to 2 and from 12.5 to 14 are also permitted for discharge to the RLWTF (Environmental Protection Agency [EPA] Hazardous Waste Number of D002) in the volume range of 0 to 50 gallons per discharge with an approved WPF (*Waste Profile Form)* and adequate flush water used to minimize corrosion in the RLWCS.

1.4.3 Industrial Soaps and Nonsolvent Cleaners

Janitorial wastewaters, such as mop water, are acceptable in the volume range of 0 to 25 gallons per discharge. Wastewater from lab glassware, laundry, and respirator washing machines is acceptable in discharges of less than 100 gallons per discharge. The concentration of industrial cleaner must be less than 0.2% by weight. Wastewater with soaps or cleaners from machinery and/or equipment cleaning operations is acceptable in discharges of less than 100 gallons per discharge and containing industrial cleaners in concentrations of less than 0.2% by weight. Such waste streams may not have any detectable sheen or emulsions from oil, grease, rust inhibitor, or other petrochemicals.

1.4.4 Physical Characteristics

Wastewater temperature must be less than or equal to 60°C (140°F). Temperatures above 60°C (140°F) will cause expansion and damage to the RLWCS. The generator must provide waste stream flow-rate data on the WPF (Form 1346, *Waste Profile Form)*. Volume increases beyond the limits specified by the generator on the WPF (Form 1346) are not allowed.

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Attachment 1. Radioactive Liquid Waste Treatment Facility (RLWTF) (Cont.) (Page 7 of 9)

Table 1-5. Total Toxic Organics (TTO)

Semivolatiles (Method 625A)	Semivolatiles (Method 625B)	Volatile Organics (Method 624)
Parachlorometa cresol	Acenaphthene	Acrolein
2-Chlorophenol	Acenaphthylene	Acrylonitrile
2,4-Dichlorophenol	Anthracene	Benzene
2,4-Dimethylphenol	Benzidine	Dichlorobromomethane
2,4-Dinitrophenol	Benzo (a) anthracene	Bromoform
2-Methyl-4,6-dinitrophenol	Benzo (b) fluoranthene	Bromomethane
2-Nitrophenol	Benzo (k) fluoranthene	Carbon tetrachloride
4-Nitrophenol	Benzo (a) pyrene	Chlorobenzene
Pentachlorophenol	Benzo (g,h,i) Perylene	Chloroethane
Phenol	Benzyl butyl phthalate	2-Chloroethyl vinyl ether
2,4,6-Trichlorophenol	Bis (2-Chloroethyl) ether	Chloroform
	Bis (2-Chloroethoxy) Methane	Chloromethane
	Bis (2-Ethylhexyl) phthalate	Chlorodibromomethane
	Bis (2-Chloroisoprophyl) ether	1,2-Dichlorobenzene
	4-Bromophenyl phenyl ether	1,3-Dichlorobenzene
	2-Chloronaphthalene	1,4-Dichlorobenzene
	4-Chlorophenyl phenyl ether	1,1-Dichloroethane
	Chrysene	1,2-Dichloroethane
	Dibenzo (a,h) Anthracene	1,1-Dichloroethylene
	Di-N-Butylphthalate	1,2-Trans-chloroethylene
	3,3'-Dichlorobenzidine	1,2-Dichloropropane
	Diethyl phthalate	1,3-Dichloropropene
	Dimethyl phthalate	Ethyl benzene
	2,4-Dinitrotoluene	Methylene chloride
	2,6-Dinitrotoluene	1,1,2,2-Tetrachloroethane
	Di-n-octyl phthalate	Tetrachloroethylene
	1,2-Diphenylhydrazine	1,1,1-Trichloroethane
	Fluoranthene	Trichloroethylene
	Fluorene	1,1,2-Trichloroethane
	Hexachlorobenzene	Toluene
	Hexachlorobutadiene	Vinyl chloride
	Hexachlorocyclopentadiene	
	Hexachloroethane	
	Indeno (1,2,3-cd) pyrene	
	Isophorone	
	Napthalene	
	Nitrobenzene	
	N-Nitrosodimethylamine	
	N-Nitrosodi-n-propylamine	
	N-Nitrosodiphenylamine	
	Phenanthrene	
	Pyrene	
	1,2,4-Trichlorobenzene	

1.5 Transported Waste Requirements

An on-line Waste Disposal Request (WDR) Form needs to be submitted in order for wastewater to be transported to the RLWTF using a vehicle. Contact your WMC.

The RLWTF does not treat solid waste or sludge. Any solid particles in excess of the value listed in Table 1-4 that have settled to the bottom of the liquid waste container will not be accepted for treatment at the RLWTF. The generator is responsible for the solid particles left over in the liquid waste container.

1.5.1 Tanker Truck Operations

Waste transported in the RLWTF tanker truck must

- qualify as a DOT Exempt Classification or as a limited quantity per DOT definition, and must
- be located in an area accessible by a tanker truck.

For waste transported in the RLWTF tanker truck, the generating group must

- coordinate the date, time, and location with the RLWTF WMC (667-4301),
- ensure that either the waste generator or the waste generator's WMC is present at the time and place of pickup;
- provide any equipment required for safely transferring the waste (for example, forklifts); and
- incur the cost of transportation.

1.5.2 Flatbed Truck Operations

Waste generator organizations are responsible for their waste containers. After waste is disposed of at the RLWTF, RLWTF personnel triple-rinse the containers and survey them for surface contamination. The generator is responsible for retrieval and disposal of the empty containers.

Waste transported to the RLWTF in containers by flatbed truck must be transported in any of the following containers:

- Tuff Tanks™ or other DOT-approved portable containers. Tuff Tanks™ are not to be filled above the maximum fill line. If there is no maximum fill line, they must be filled to at least 60% and no more than 90% of capacity.
- DOT-approved, 55-gal. or 35-gal. metal, closed-head drums. Drums are to be filled to at least 60% and no more than 90% of capacity.
- Glass bottles or plastic carboys (not to exceed 5-gal. capacity) with fitted, screw-type caps.

Glass bottles or plastic carboys must not have any bottom outlets and must be overpacked in accordance with the appropriate DOT packaging authorization and packing group. If a liquid waste is not regulated by DOT, liquid waste transported in these containers must still be overpacked in a metal or plastic drum. The overpack must contain enough absorbent to absorb all of the liquid waste.

For waste transported to the RLWTF by flatbed truck, the generating group must

- Coordinate a date and time with the RLWTF WMC (667-4301),
- Ensure compliance with applicable packaging and transportation criteria,
- Ensure that each container has a completed "Health Physics Radioactive Materials Survey Tag,"
- Incur the cost of RLWTF waste handling operations, and
- Make arrangements to retrieve containers after they are emptied.

1.6 Nonconformances

The RLWTF Process Engineer will issue a nonconformance report to any generating group that discharges or transports a waste stream to the RLWTF that does not meet the criteria outlined in this attachment and for which a WAC exception was not approved by the RLWTF. Environmental Protection-Water Quality (ENV-WQ) and RCRA will also be notified of the nonconformance.

RLWTF personnel will periodically audit generator documentation, such as WPFs (*Waste Profile Form)* and WEFs (*Waste Acceptance Criteria Exception Form*), against actual discharges to the RLWCS. RLTWF personnel will also annually inspect generator facilities for compliance with Section 1.1, including inspection of drains identified as having the possibility for inadvertent introduction of large volumes of volatile organic liquids (e.g., gasoline) into the RLWCS. In addition, RLWTF personnel reserve the right to perform scheduled or non-scheduled monitoring of discharges from radioactive wastewater-generating facilities.

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Attachment 2. Contact-Handled Transuranic (TRU) Waste (Page 1 of 9)

Contact-handled Transuranic (TRU) waste is waste containing alpha-emitting TRU radionuclides having atomic numbers greater than 92 and half-lives that exceed 20 years, at concentrations greater than 100 nCi/g of waste. The Waste Acceptance Criteria (WAC) for TRU waste are based on the following:

- The most recent WAC for the Waste Isolation Pilot Plant (WIPP),
- US Department of Transportation (DOT) regulations,
- Technical Area (TA)-54, Area G, Safety Analysis Report results and/or Technical Safety Requirements (TSRs),
- Resource Conservation and Recovery Act (RCRA) permit requirements,
- ALARA considerations, and
- Contact-Handled TRU waste authorized methods for payload control (CH-TRAMPAC).

Contact-Handled TRU waste generators must be approved to package Contact-Handled TRU waste and must provide acceptable knowledge to the Contact-Handled TRU Waste Disposition Project (WDP) for review and approval as defined in the Waste Generator Instructions (WGIs) document (e.g., packaging configuration, acceptable knowledge) before waste generation. Approval to package Contact-Handled TRU waste includes

- Implementation of a WGI document, and
- Implementation of TRU-WDP-approved packaging and quality-assurance procedures

This document will be developed by the generators with assistance and approval by the WDP-TWPS. All Contact-Handled TRU waste generated for disposition will be reviewed and approved under a WGI document. The following sections describe the general WIPP WAC requirements. Any waste outside of these parameters must have a WGI document approved *before* generation and packaging of the waste for disposition and an approved WEF (Form 1973, *Waste Acceptance Criteria Exception Form*) before the waste is shipped to TA-54.

Newly generated TRU waste must be generated and packaged to meet the requirements shown in this section. Newly generated TRU waste is intended to be characterized and certified for disposal in WIPP with no additional repackaging being performed. Any TRU waste failing to meet the WIPP waste certification requirements, at the discretion of the Waste Disposition Project (WDP) manager, may be returned to the waste generator to have the unacceptable condition remediated. If the WDP remediates and repackages the waste, the costs of the remediation will be charged to the sending organization. TA-54 is not obligated to repackage newly generated TRU waste that does not meet the WIPP waste certification requirements.

2.1 Waste Form

TRU waste must be in solid form. Waste that complies with the following criteria meets this restriction.

2.1.1 Free Liquids

Liquid waste is prohibited at WIPP. Residual liquids containing Polychlorinated Biphenyls (PCBs) are prohibited at WIPP. Waste must contain as little residual liquid as is reasonably achievable by pouring, pumping, and/or aspirating. Internal containers must contain less than 1 in. or 2.5 cm liquid in the bottom of the container. The total residual liquid in any payload container (e.g., 55-gal. drum or Standard Waste Box [SWB]) must be less than 1% by volume of that container.

Free liquids must be solidified in accordance with WIPP requirements as specified by the WGI document.

2.1.2 Explosives, Corrosives, and Compressed Gases

Waste must contain no explosives, corrosives, or compressed gases (pressurized containers). Empty gas cylinders are acceptable if each cylinder is punctured or if the valve is held open with a wire through it. See Section 3.5.3 of the current version of Department of Energy/Waste Isolation Pilot Plant (DOE/WIPP)-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant* for requirements for identifying materials that meet the definition of explosives, corrosives, and compressed gases.

2.1.3 Restricted Constituents

The following prohibitions and limitations apply to TRU waste:

- *Sealed containers.* All waste containers greater than 4 liters must be vented before being overpackaged in an outer waste container. This includes payload containers smaller than 55-gal. (e.g., 30-gal. and 15-gal. drums) that are overpacked in 55-gal. drums. Because of limitations associated with the real-time radiography (RTR) characterization technique, any containers larger than three liters should be equipped with appropriate filters. RTR cannot distinguish whether a can has been taped, which makes it meet the definition of a sealed container. Any can is assumed to be sealed unless it is filtered.
- *Pyrophoric material*. Pyrophoric radioactive materials must be present only in small residual amounts (less than 1% by weight) in payload containers and must be generally dispersed in the waste. Radioactive pyrophorics in concentrations greater than or equal to 1% by weight and all nonradioactive pyrophorics must be reacted (or oxidized) and/or otherwise rendered nonreactive before placement in the payload container. Nonradionuclide pyrophoric materials are not acceptable at WIPP.
- Classified wastes are prohibited from being stored at TA-54, Area G.

2.2 Package Contents

2.2.1 Transuranic (TRU) Radionuclides

TRU radionuclides known to be in a waste package must be identified and reported by total curie content and equivalent gram quantity. The following radionuclides, if present in the waste, must be reported, regardless of quantity:

- Pu-238 U-233
- Pu-239 U-234
- Pu-240 U-238
- Pu-242 Sr-90
- Am-241 Cs-137

The reported activity for each TRU radionuclide must include the measurement error with 1-sigma confidence.

In addition, all radionuclides that contribute to 95% of the radioactive hazard for the payload container must be reported.

2.2.2 Plutonium-239 Equivalent Activity

The TRU-radionuclide content of any single container of solidified or vitrified TRU waste must not exceed 1,800 Pu-239 Equivalent Curies (PE-Ci). The plutonium-239 equivalent limits for each type of container are shown in Table 2-1. These values are based on reported radionuclide results. There is no requirement to report uncertainty associated with the reported radionuclide results.

Table 2-1. Plutonium-239 Equivalent Curie (PE-Ci) Limits

Payload Container	Package Configuration	PE-Ci Limit
55-, 85-, and 100-gal. drum	Direct loaded—all approved waste forms other than solidified or vitrified waste	≤80 PE-Ci
Standard Waste Box (SWB)	Direct loaded (or a bin)—all approved waste forms other than solidified or vitrified waste	≤560 PE-Ci
Standard Waste Box	Overpacked assembly of undamaged 55- or 85-gal. drums that have intact drum lids, locking rings, and vent filters	≤1,100 PE-Ci
Pipe Overpacks (standard, S100, S200, and S300)	All approved wastes forms	≤1,800 PE-Ci
All Types	Solidified or vitrified waste	≤1,800 PE-Ci

Generators must use the PE-Ci values in Table 2-2 to determine the plutonium equivalent activity limits for TRU-waste packages.

Table 2-2. Pu-239 Fissile Gram Equivalents (FGE) and Pu-239 Curie Equivalents (PE-Ci) Limits*

Isotope	Fissile Gram Equivalents	PE-Ci Equivalent
U-233	1.00	3.9
Np-237	0.015	1.0
U-235	1.00	
Pu-236		3.2
Pu-238	0.113	1.1
Pu-239	1.00	1.0
Pu-240	0.0225	1.0
Pu-241	2.25	51.0
Pu-242	0.0075	1.1
Am-241	0.0187	1.0
Am-242m	34.60	
Am-243	0.0129	1.0
Cm-242		30.0
Cm-243	5.00	
Cm-244	0.09	1.9
Cm-245	15.0	
Cm-247	0.50	
Cf-249	45.0	
Cf-251	90.0	
Cf-252		3.9

Source: DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*

* Guidance for using Table 2-2:

1. Multiply the number of grams of a given radionuclide by the number in the "FGE" column to obtain Pu-239 fissile gram equivalents (FGE).
2. Divide the number of Curies of a given radionuclide by the number in the "PE-Ci 239 Equivalent" column to obtain Pu-239 equivalent Curies.

2.2.3 Fissile Radionuclides

The fissile or fissionable isotope content (plus two standard deviations) of individual TRU-waste containers with less than 1% beryllium by weight must not exceed the following values in Pu-239 Fissile Gram Equivalent (FGE):

- 55-gal. drum—the total FGE must not exceed 200 g.
- 55-gal. drum configured as a pipe overpack—the total FGE must not exceed 200 g.
- SWB—the total FGE must not exceed 325 g.
- Generators must use the FGE values in Table 2-2 to determine the fissile limits for TRU-waste packages (Section 3.1.2 of the CH-TRAMPAC).

2.2.4 Hazardous Constituents/Characteristics

Waste generators must provide TRU-waste characterization information based on the hazardous characteristics and constituents listed in 40 CFR 261, *Identification and Listing of Hazardous Waste,* Subparts C and D, and Appendix VIII. TRU mixed waste must be characterized according to the requirements established in the applicable waste analysis plan of the Laboratory mixed-waste Part B permit application. TRU wastes must not exhibit the hazardous characteristics of ignitability (D001), corrosivity (D002), and/or reactivity (D003) identified in 40 CFR 261, Subpart C. In addition, only the Environmental Protection Agency (EPA) hazardous waste codes listed in Table 2-3 are acceptable for disposal at WIPP.

Table 2-3. WIPP/Area G Acceptable Resource Conservation and Recovery Act (RCRA) Hazardous Waste Codes

D004	D032	F009	U079
D005	D033	P015	U103
D006	D034	P030	U105
D007	D035	P098	U108
D008	D036	P099	U122
D009	D037	P106	U133*
D010	D038	P120	U134*
D011	D039	U002*	U151
D018	D040	U003*	U154*
D019	D043	U019*	U159*
D021	F001	U037	U196
D022	F002	U043	U209
D026	F003	U044	U210
D027	F004	U052	U220
D028	F005	U070	U226
D029	F006	U072	U228
D030	F007	U078	U239*

* Acceptance of U-numbered waste listed for reactivity, ignitability, or corrosivity characteristics is contingent upon a demonstration that the wastes in their final waste form no longer exhibit the RCRA characteristic of reactivity, ignitability, or corrosivity.

2.2.5 Tritium-Contaminated Transuranic (TRU) Waste

TRU waste that is contaminated with tritium must be packaged as specified by the Treatment, Storage, and/or Disposal Facility (TSDF). Material Disposal Area G TSDF requirements are specified in Attachment 5, *Tritium-Contaminated Waste*. A WEF (Form 1973, *Waste Acceptance Criteria Exception Form*) must be submitted to and approved by the TSDF before packaging any tritium-contaminated TRU waste that contains tritium in concentrations of 10 Ci/m^3 or more. The TSDF will evaluate each tritium-contaminated waste stream and specify packaging requirements that limit the potential release of tritium. The packaging requirements are documented on the WGI.

2.2.6 Decay Heat

The decay heat (plus its total measurement uncertainty expressed in terms of one standard deviation) must be less than or equal to the limit of the assigned shipping category specified in the CH-TRAMPAC in Section 5.2.2. Waste packaged in this manner will not fail the WIPP WAC for decay heat. The WGI will specify the decay heat limit in terms of an activity limit for each container. If a TRU waste container fails the test category criteria in the TRAMPAC, that package must be repackaged to reduce the decay heat to acceptable levels.

2.3 Container Requirements

TRU-waste containers must be free from damage and securely closed for the waste to be accepted at Area G. Before using an approved container, the waste generator must inspect it for any damage that would prevent it from meeting DOT regulations and document this inspection. To ensure efficient use of storage capacity, waste containers must be as full as possible without compromising other requirements.

Containers used for packaging TRU waste must meet DOT specifications 7A, Type A, such as United Nations (UN) packagings UN1A1 or UN1A2. Currently approved containers include the following:

- White 55-gal. steel drums
- White 55-gal. steel drums (containing a pipe component)
- 85-gal. steel drums used for overpacks
- 71 in. × 54.25 in. × 37 in. steel SWBs

Other containers may be used for packaging TRU waste, but their use must be requested by the generator on a WGI and approved by the TRU-WDP.

2.3.1 Drum Closure

Drum heads (lids) must be closed and secured with the bolt of the bolt ring placed over the drum seam. This procedure must be used for all TRU-waste drums, including drums used for overpacks.

2.3.2 Venting

TRU-waste containers must be vented using WIPP-approved filters. Venting must be accomplished according to the applicable WGI for each particular waste stream. In general, drums require at least one WIPP-approved filter, and SWBs require at least two WIPP-approved filters. The number of filters required for approved nonstandard containers is determined by the WDP-TWPS.

2.3.3 Interior Packaging

Interior packaging layers must have a filter. Interior metal containers must be vented to reduce gas accumulation. The tops of rigid drum liners must be punctured with a hole at least 0.8 cm (0.3 in.) in diameter or have a WIPP-approved filter installed.

Interior packaging must comply with the applicable WGI for the particular waste stream.

2.3.4 Heavy or Sharp Items

Heavy or sharp waste items must be securely blocked, braced, or packaged to prevent damage to the liner or container during handling and shipping.

2.4 Package Weight

The package weight must not exceed the rated capacity of the container based on DOT-specified package certification tests for the contained material or the following limits:

- 387 kg (853 lb) for 55-gal. drums
- 387 kg (853 lb) for 85-gal. overpacks
- 1,814 kg (4,000 lb) for SWBs
- 248 kg (547 lb) for pipe overpack (12-in. diameter)

2.5 External Package Contamination

Removable contamination on TRU-waste containers must not exceed 20 dpm/100 cm^2 alpha and 200 dpm/100 cm^2 beta-gamma. Painting over waste packages that exceed the contamination limits is prohibited.

The unshielded total surface dose rate of Contact-Handled TRU waste packages may not exceed 200 mrem/h. If the unshielded total surface dose rate exceeds 20 mrem/h, the generator must notify the WDP-TWPS *before* arranging for the waste to be transported to Area G.

2.6 Package Marking and Labeling

2.6.1 Marking and Labeling Requirements

TRU-waste packages must be marked and labeled according to DOT regulations. In addition, each TRU-waste package must include the following:

- A Health Physics radioactive material tag completed and signed by a Radiological Control Technician (RCT);
- The gross weight of the container, in whole pounds, written in a minimum of one-half inch-high letters with waterproof ink;
- A yellow radioactive-waste marking;
- A blue nonregulated waste marking or a yellow hazardous-waste marking;
- A “Non-DP” marking on all containers of waste generated as a result of Non-Defense Program (DP)-funded activities; and

- A unique package number displayed on five white barcode labels, generated and supplied by Waste and Environmental Services-Waste Acceptance (WES-WA).

If the waste requires the hazardous waste marking, this marking must contain the following:

- The generator's name and address,
- The manifest number, and
- The DOT proper shipping name and identification number.

The container must also be marked with the contents of the waste and the accumulation start date.

2.6.2 Marking and Labeling Placement on Drums

Drums must have the following markings placed immediately adjacent to the drum seam between the top two rolling hoops:

- Radioactive waste marking,
- Non-regulated waste marking or hazardous waste marking, and
- One barcode label.

The following markings must be placed approximately 6 in. above the bottom of the drum:

- Three barcodes, with the first placed immediately adjacent to the drum seam and the other two barcode labels spaced evenly around the circumference of the drum.
- Non-DP marking placed immediately adjacent to the seam.
- The final barcode must be placed near the center of the drum lid.

An example of the placement of labels and markings on a drum is shown in Fig. 2-1.

Fig. 2-1. Drum labeling.

2.6.3 Marking and Labeling Placement on Standard Waste Boxes (SWBs)

The following labels and markings must be placed near the center on each curved side either above or below the raised bars of the SWB:

- Radioactive waste marking
- One barcode label
- Non-DP marking

One barcode label must be placed near the center of the top of the SWB. A non-regulated waste marking or hazardous waste marking must be placed near the center of one of the curved sides. An example of a properly labeled and marked SWB is shown in Fig. 2-2.

Fig. 2-2. Standard waste-box labeling.

2.7 Additional Requirements

For mixed TRU waste stored in a less-than-90-day storage area, a completed Form 1971, *TRU Waste Storage Record*, must be submitted to the WES-WA for review on or before day 60.

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Attachment 3. Solid Low-Level Waste (LLW) (Page 1 of 14)

Low-Level Waste (LLW) is waste that contains radioactivity and is not classified as high-level waste, Transuranic (TRU) waste, spent nuclear fuel, or tailings from the milling of uranium or thorium ore. LLW may include test specimens of fissionable material if it was irradiated for research and development purposes but not if it was used for producing power or plutonium, provided that the concentration of alpha-emitting TRU radionuclides with half lives greater than 20 years is less than 100 nCi of activity per gram of waste.

These Waste Acceptance Criteria (WAC) apply only to LLW destined for disposal at Technical Area (TA)-54, Area G. If waste is destined for Nevada Test Site (NTS), refer to Attachment 17, *Low-Level Waste Disposal (LLWD) at the Nevada Test Site (NTS)*.

3.1 Waste Form

LLW received at TA-54, Area G, must be in a solid form to minimize the potential for dispersion during handling or migration into and through the environment after burial. The requirements of this section restrict the physical, chemical, and biological contents of LLW in order to ensure that the long-term performance objectives of the Area G disposal site are met.

3.1.1 Residual Liquids

Containers of solid LLW must contain as little residual liquid as is reasonably achievable. Internal containers (cans, bottles, etc.) must be well drained, but may contain residual liquids. The total residual liquids must not exceed 1% of the volume of the external LLW container when the volume of the external container is less than 100 gal. For external containers greater than 100 gallons, the total volume of residual liquids must not exceed 0.1% of the volume of the external LLW container. Liquids present in quantities greater than 1% by volume (or 0.1% for containers greater than 100 gal.) must be absorbed or stabilized. The absorbed liquid must not exceed 0.5% by volume (or 0.05% for containers greater than 100 gal.) after the waste is processed into a stabilized form.

3.1.2 Powders and Particulates

LLW containing powders, ashes, and other particulates of respirable size must be packaged in such a manner that the particulate portion of the waste will not be a hazard if the container is breached during handling operations. High Efficiency Particulate Air (HEPA) filters are exempted from these criteria.

3.1.3 Pressurized Containers

Empty pressurized containers and gas cylinders can be disposed of if the container or cylinder is punctured or if the valve is open and has a wire inserted through it.

3.1.4 Irradiation Sources

Irradiation sources of 1 μCi or less may be disposed of without additional packaging. Additional information on irradiation sources is in Section 3.3.2 of this attachment.

3.1.5 Uranium Chips and Turnings

Uranium chips and turnings packaged in mineral oil are acceptable for treatment. The packaging requirements for uranium chips and turnings include the following:

- No compaction of chips or turnings by mechanical or other means;
- Mineral oil is to be used as the protective fluid; ethanol and other flammable liquids are not to be used; and
- Liquids in the waste other than mineral oil used as a protectorant, such as oil or water, should be minimized to the extent practical.

Additional container packaging requirements for chips and turnings are specified in Section 3.3.6. of this attachment. Uranium chips and turnings will be accepted on a case-by-case basis at TA-54, Area G. The LLWD group leader will have to approve the waste stream *before* waste generation to determine a path forward for the waste.

3.1.6 Thermal Power Limits

The amount of radioactive material in a waste package must be limited so that the heat generated by radiolysis will not exceed 3.5 watts per cubic meter of waste. Wastes exceeding this wattage need to be evaluated to ensure that this heat does not affect the waste container or surrounding waste containers.

3.1.7 Complexing and Chelating Agents

Complexing and chelating agents (e.g., ethylenediaminetetraacetic acid [EDTA], diethylenetriaminepentaacetic acid [DTPA], citric acid, acetic acid) must not be present at concentrations greater than 1% total (sum of all weight percents of complexing and chelating agents) by weight of the waste form.

3.1.8 Beryllium and Carbon

The LLW matrix shall not contain beryllium and/or carbon in amounts greater than 20% by weight of the total waste weight in a package (criticality requirement).

3.1.9 Restrictions

The following waste types or materials must not be packaged with solid LLW destined for disposal at Area G:

- Explosives
- Hazardous waste
- Pathogens, infectious wastes, or other etiologic agents as defined in 49 CFR 173.134, *Shippers—General Requirements for Shipments and Packagings—Definitions and exceptions*.
- Pyrophorics
- Greater-than-Class-C (GTCC) waste
- TRU waste
- Polychlorinated Biphenyl (PCB) waste

In addition, LLW must not contain or be capable of generating by radiolysis or biodegradation, quantities of toxic gases, vapors, or fumes harmful to the public or workers or disposal facility personnel, or harmful to the long-term performance of the disposal site.

3.1.10 Appliances Containing Refrigerants

Refrigerants must be evacuated from appliances before disposal at Area G. The generator must provide a signed statement that all refrigerants that had not leaked previously have been recovered from the appliance by an Environmental Protection Agency (EPA)-certified technician in accordance with EPA requirements (40 CFR 82, *Protection of Stratospheric Ozone*, Subpart F). The statement must include

- The name and address of the person who recovered the refrigerant, and
- The date the refrigerant was recovered.

This statement must be submitted with the CWDR.

3.1.11 Classified Waste

Classified waste is waste made up of classified items that have been determined by a generator to be no longer needed. Classified waste includes documents, film, parts or assemblies, safe- or vault-locking devices, computer tape, degaussed magnetic tape, metal parts, security and controlled administrative keys, and certain shapes of any material. All attempts must be made to declassify radioactively contaminated classified waste before disposal at Area G. If it is not possible to declassify the waste, the criteria described in Sections 3.3.4 and 3.7.5 of this attachment must be met.

3.2 Package Content

General restrictions on radionuclide content relate to the following:

- The exclusion of TRU waste,
- The exclusion GTCC waste,
- Criticality safety,
- Radionuclide limits defined by Tables 3-1 through 3-3, and
- ALARA considerations for personnel exposure.

Table 3-4 provides a description of radiological assay detection methods that are appropriate and recommended for identifying and quantifying radionuclides in LLW.

3.2.1 Transuranic (TRU) Radionuclides

For waste to be classified as LLW, the concentration of alpha-emitting TRU radionuclides with half-lives greater than 20 years must not exceed 100 nCi/g of waste. TRU-contaminated waste cannot be disposed of at TA-54, Area G, when the activity concentrations exceed 100 nCi/g. The WAC for TRU waste may be found in Attachment 2, *Contact-Handled Transuranic (TRU) Waste*, of this document.

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Attachment 3. Solid Low-Level Waste (LLW) (Cont.) (Page 4 of 14)

Table 3-1. Reportable Radionuclides and Upper Limits

Radionuclide	Disposal Pit Limit (Ci/m^3)	Disposal Shaft Limit (Ci/m^3)
Ac-227	1.8E+00	2.1E+01
Ag-108m	6.8E–02	8.7E–01
Al-26	3.1E–02	4.2E–01
Am-241	1.2E–01	1.4E–01[a,b]
Am-243	7.9E–02	1.4E–01[a,b]
Ba-133	4.2E+03	4.2E+04
Be-10	4.8E+01	6.4E+02
Bi-207	1.4E+00	1.6E+01
Bk-247	7.2E–02	1.4E–01[a,b]
C-14	1.3E+00	8.0E+00[a]
Ca-41	2.2E+00	6.9E+01
Cf-249	7.6E–02	1.4E–01[a,b]
Cf-251	7.2E–02	1.4E–01[a,b]
Cf-252	3.2E+03	4.0E+04
Cl-36	1.2E–03	1.2E–01
Cm-243	1.4E–01a,b	1.4E–01[a,b]
Cm-244	1.4E–01a,b	1.4E–01[a,b]
Cm-245	8.4E–02	1.4E–01[a,b]
Co-60	6.1E+06	4.8E+07
Cs-135	4.4E+00	6.8E+01
Cs-137	3.9E+00	4.4E+01
Eu-152	1.6E+02	1.6E+03
Eu-154	9.8E+03	9.1E+04
Gd-148	1.8E+00	2.2E+01
H-3	4.9E+02	4.5E+04
Ho-166m	5.7E–02	7.3E–01
I-129	8.0E–02a	8.0E–02[a]
K-40	6.3E–02	2.0E+00
Kr-85	2.2E+15	4.6E+06
Lu-176	1.9E–01	2.5E+00
Mo-93	3.7E+00	6.2E+01
Nb-93m	1.3E+05	1.4E+06
Nb-94	4.9E–02	2.0E–01[a]
Ni-59	1.0E+02	2.2E+02[a]
Ni-63	2.0E+02	7.0E+02[a]
Np-237	3.6E–02	1.4E–01[a,b]
Os-194	1.3E+07	1.0E+08
Pa-231	9.9E–03	1.3E–01
Pb-210	3.2E+00	3.6E+01
Pm-145	5.1E+03	5.5E+04
Pu-236	1.7E+00	1.8E+00
Pu-238	1.4E–01[a,b]	1.4E–01[a,b]
Pu-239	9.5E–02	1.4E–01[a,b]
Pu-240	9.6E–02	1.4E–01[a,b]
Pu-241	3.4E+00	4.9E+00[a,b]
Pu-242	9.9E–02	1.4E–01[a,b]
Pu-244	6.7E–02	1.4E–01[a,b]
Ra-226	1.6E–02	9.2E–02

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Attachment 3. Solid Low-Level Waste (LLW) (Cont.) (Page 5 of 14)

Table 3-1. Reportable Radionuclides and Upper Limits (Cont.)

Radionuclide	Disposal Pit Limit (Ci/m^3)	Disposal Shaft Limit (Ci/m^3)
Ra-228	7.7E+05	6.1E+06
Si-32	8.6E+00	1.1E+02
Sm-146	5.7E–01	7.9E+00
Sm-151	1.2E+03	1.4E+04
Sn-121m	5.0E+02	6.1E+03
Sn-126	8.1E–01	1.9E+01
Sr-90	2.2E+00	2.6E+01
Tb-157	6.3E+02	7.6E+03
Tc-97	7.6E–01	5.2E+01
Tc-99	9.1E–02	6.2E+00
Th-228	5.4E+20	1.3E+21
Th-229	5.5E–02	6.8E–01
Th-230	3.5E–02	2.3E–01
Th-232	2.0E–02	2.5E–01
Ti-44	2.4E–01	2.8E+00
U-232	1.6E–01	1.9E+00
U-233	2.7E–01	3.7E+00
U-234	5.3E–01	7.6E+00
U-235	1.8E–01	2.5E+00
U-236	6.2E–01	8.9E+00
U-238	5.3E–01	7.5E+00
Zr-93	8.6E+01	1.1E+03

[a] Indicates that the disposal limit is based on the Class-C waste concentration limits listed in Table 3-3; the radionuclide concentration limit estimated for the radionuclide on the basis of the intruder analysis is higher.
[b] The listed concentration limit given in Table 3-3 was converted to an activity per volume basis using a waste density of 1,400 kg/m3.

Table 3-2. LANL Waste Acceptance Criteria for Solid Low-Level Waste (LLW) Disposal in Pit 37, 38, and 39 Headspace

Radionuclide	Concentration Limit (Ci/m^3)
Ac-227	1.2E–02
Ag-108m	1.0E–04
Al-26	2.8E–05
Am-241	8.5E–04
Am-243	4.8E–04
Ba-133	8.9E+00
Be-10	3.4E–01
Bi-207	1.7E–03
Bk-247	5.2E–04
C-14	1.5E–02
Ca-41	3.5E–02
Cf-249	3.6E–04
Cf-251	4.9E–04
Cf-252	2.1E+01
Cl-36	3.7E–05

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Attachment 3. Solid Low-Level Waste (LLW) (Cont.) (Page 6 of 14)

Table 3-2. LANL Waste Acceptance Criteria for Solid Low-Level Waste (LLW) Disposal in Pit 37, 38, and 39 Headspace (Cont.)

Radionuclide	Concentration Limit (Ci/m^3)
Cm-243	2.3E–02
Cm-244	1.4E–01
Cm-245	5.7E–04
Co-60	6.0E+03
Cs-135	3.9E–02
Cs-137	6.7E–03
Eu-152	1.7E–01
Eu-154	9.9E+00
Gd-148	1.3E–02
H-3	8.6E+01
Ho-166m	8.2E–05
I-129	1.7E–03
K-40	3.4E–04
Kr-85	7.8E+02
Lu-176	1.3E–03
Mo-93	3.7E–02
Nb-93m	9.2E+02
Nb-94	7.1E–05
Ni-59	1.4E+00
Ni-63	1.7E+00
Np-237	2.5E–04
Os-194	2.4E+04
Pa-231	6.7E–05
Pb-210	2.3E–02
Pm-145	3.7E+01
Pu-236	5.5E–03
Pu-238	2.4E–03
Pu-239	6.3E–04
Pu-240	6.7E–04
Pu-241	2.5E–02
Pu-242	6.5E–04
Pu-244	2.1E–04
Ra-226	4.2E–05
Ra-228	1.0E+03
Si-32	6.3E–02
Sm-146	4.3E–03
Sm-151	8.9E+00
Sn-121m	3.8E+00
Sn-126	1.0E–02
Sr-90	1.7E–02
Tb-157	4.6E+00
Tc-97	2.3E–02
Tc-99	2.7E–03

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Attachment 3. Solid Low-Level Waste (LLW) (Cont.) (Page 7 of 14)

Table 3-2. LANL Waste Acceptance Criteria for Solid Low-Level Waste (LLW) Disposal in Pit 37, 38, and 39 Headspace (Cont.)

Radionuclide	Concentration Limit (Ci/m^3)
Th-228	6.2E+17
Th-229	2.7E–04
Th-230	9.8E–05
Th-232	3.2E–05
Ti-44	3.1E–04
U-232	2.4E–04
U-233	1.7E–03
U-234	3.7E–03
U-235	9.1E–04
U-236	4.9E–03
U-238	2.7E–03
Zr-93	6.0E–01

Table 3-3. Class-C Concentration Limits for Radionuclides in Volume-Contaminated Solid Low-Level Waste (LLW)

Radionuclide	Concentration (Ci/m^3)
C-14	8.0E+00
C-14 in activated metal	8.0E+01
Ni-59 in activated metal	2.2E+02
Ni-63	7.0E+02
Ni-63 in activated metal	7.0E+03
Sr-90	7.0E+03
Nb-94 in activated metal	2.0E–01
Tc-99	3.0E+00
I-129	8.0E–02
Cs-137	4.6E+03
Alpha-emitting transuranic nuclides with half-life greater than five years	1.0E+02[a]
Pu-241	3.5E+03 [a]
Cm-242	2.0E+04 [a]

Source: (10 CFR 61.55, *Waste Classification*)
[a] Units are nCi/g

Table 3-4. Radiological Assay Methods for Characterization of Low-Level Waste (LLW)

Radiation Type	Typical Radionuclides	Contamination	Appropriate Detection Instrumentation
Alpha[a]	Isotopes of Am, Pu, U, Th, Ra, Po	Volume	Gas proportional (i.e., gross alpha/beta), liquid scintillation, alpha spectroscopy
Alpha	Isotopes of Am, Pu, U, Th, Ra, Po	Surface	Gas proportional, liquid scintillation, alpha spectroscopy, portable survey meter[b], smear counter[b], Long-Range Alpha Detector (LRAD)[c]
Beta[a]	H-3, C-14, Sr-90 Y-90, Tc-99, fission products	Volume	Liquid scintillation, gas proportional
Beta	H-3, C-14, Sr-90 Y-90, Tc-99, fission products	Surface	Liquid scintillation, gas proportional, portable survey meter, smear counter
Gamma	Most activation and fission Products, U-235, U-238, Am-241	Volume or Surface	Gamma spectroscopy (NaI, GeLi, HPGe)
Neutron	U-233, U-235, Pu-238, Pu-239, Cf-252	Volume or Surface	Passive/active neutron scanner

[a] Many radionuclides that are primarily alpha or beta emitters will also emit gamma-rays and/or x-rays a significant fraction of the time, making gamma spectroscopy an appropriate assay method.
[b] Portable survey meters and smear counters are designed for detecting radioactive contamination and not for quantifying activity; however, they can be used to infer the total activity when the waste stream has been well characterized by other methods. Direct surveys with portable meters and smear counters should be used to determine the activity in waste only when contamination levels are relatively low (i.e., activity is inferred to be less than 10 nCi/g) and when appropriate characterization methods are not readily available.
[c] LRAD is a detection technology that can be used to determine the alpha activity of a surface-contaminated waste stream. Applications for the LRAD are being developed at LANL by NIS-6, Advanced Nuclear Technology group.

3.2.2 Greater-than-Class-C (GTCC) Radionuclides

GTCC waste, as defined by 10 CFR 61.55, *Waste Classification*, generated by United States (US) Nuclear Regulatory Commission (NRC) licensees shall not be accepted for disposal at Area G.

3.2.3 Radionuclide Disposal Limits

Concentration limits for radionuclides included in the TA-54, Area G PA performance assessment and composite analysis are listed in Tables 3-1 and 3-3. It is important that the Low-Level Waste Disposition-Low-Level Waste Disposition Group (WDP-LLWD) receives accurate characterization data for these radionuclides. Therefore, Table 3-4 should be used to determine the preferred radiological assay method. LLW contaminated with tritium greater than 20 mCi/m^3 must also meet the requirements of Attachment 5, *Tritium-Contaminated Waste*.

Operational waste that is disposed of a minimum of 3 m (9.8 ft.) below operational (current) grade must comply with the radionuclide concentration limits listed in Table 3-1. Low-activity waste that consists of bulk soils and debris and that is generated as a result of environmental restoration and decontamination and decommissioning activities may be disposed of within pits 37, 38, and 39 between a plane that lies 3 m (9.8 ft) below operational grade and a plane that lies 0.3 m (1 ft.) below the interface of site surface soils (crushed tuff) and the underlying intact tuff, to the extent that radionuclide concentrations in the waste do not exceed the limits listed in Table 3-2.

3.2.4 Fissile Radionuclides

The fissile or fissionable isotope content in Pu-239 FGE of LLW packages must not exceed the values shown in Table 3-5 (Criticality requirement):

Note: Generators must use the FGE values in Table 2-2 of Attachment 2, *Contact-Handled Transuranic (TRU) Waste*, to determine fissile quantities in LLW containers.

Note: Generators are not required to count the FGE content of natural and/or depleted uranium (i.e., uranium enriched to <0.93 wt% U-235) toward the criticality safety limits.

Table 3-5. Fissile Gram Equivalent (FGE) Content for Low-Level Waste (LLW) Packages

If	Then
Packages are smaller than 55 gal.	The total FGE must not exceed 10 g.
Drums are 55 gal. or larger, but are smaller than 90 ft^3	The total FGE must not exceed 275 g.
Metal boxes are 90 ft^3 or larger	The total FGE must not exceed 350 g.
The container is a dumpster (total of all packages)	The total FGE must not exceed 350 g.
Un-containerized Low-Level Waste (LLW)	The average FGE loading must not exceed 0.1 g/L.

Note: If more than 15 g of fissile isotopes are packaged together, they may constitute a fissile material under Department of Transportation (DOT) regulations and may not be acceptable for transport in a DOT Industrial Package (IP).

3.2.5 Radionuclide Reporting Requirements

If reporting radionuclides for waste destined for NTS, refer to P930-1, LANL WAC, Attachment 17, *Low-Level Waste Disposal (LLWD) at the Nevada Test Site (NTS)*.

Generators must report all radionuclides that meet the following criteria:

- They make up greater than 1% of the total activity,
- They are listed in either Section 3.2.1 or Table 3-1 and are present in quantities greater than 1% of the upper limit, or
- They are required to be reported on a shipping paper in accordance with 49 CFR 173.433(f), *Requirements for determining basic radio-nuclide values, and for the listing of radionuclides on shipping papers and labels*.

Daughter radionuclides known to be in secular equilibrium with a longer-lived parent at the time of assay are not reported. Other daughter radionuclides must be reported if they meet the criteria above. If more than one of the radionuclides in Section 3.2.1 and Table 3-1 are known to be in the waste, the sum-of-the-fractions rule applies. The generator should consult Waste Disposition Project (WDP) personnel if the following equation cannot be met:

$$\sum_{i=1}^{n} \frac{C_i}{L_i} \leq 1$$

where

i = radionuclide

Ci = concentration (Ci/g) of the ith radionuclide

Li = concentration limit from Tables 3-1 or 3-2 (*Ci/g*)

n = total number of radionuclides present

See Table 3-4 for preferred radiological assay methods.

3.3 Container Requirements

Shipments of LLW destined for disposal must comply with applicable DOT specifications in 49 CFR 173, Subpart B, *Preparation of Hazardous Materials for Transportation*.

Due to limited remaining disposal capacity within TA-54, Area G, the size of containers acceptable for disposal must be limited. Containers with heights less than 9 ft will be accepted for disposal without special considerations. Containers that must be disposed such that their height exceeds 9 ft, must be preapproved for disposal by the LLWD Team.

3.3.1 General Requirements

Waste must be packaged so that it does not present a hazard during handling or disposal operations. Packages used for waste must meet all of the following requirements (according to ABD-WFM-002, Appendix B):

- Be made of a material that will not react with the waste.
- Be in good condition, with no leaks, rusting, dents, bulges, or other structural defects that could impair the integrity or safe handling of the container.
- Be as full as possible with minimum void space. The void space within the waste or the waste package must not exceed 10%.
- Be capable of withstanding stresses associated with loading, handling, stacking and shipping of wastes.

LLW must be packaged in the following:

- Metal boxes,
- Metal or polyethylene drums,
- Bulk packaging, or
- Super sacks or soft-sided containers.

Generators must contact LLWD personnel for guidance if they find it difficult to package items and/or minimize the void space.

The following sections describe the packaging requirements for routine LLW. This is followed by unique requirements for specific waste types.

3.3.2 Irradiation Sources

Many irradiation sources require special packaging because of their high activity concentration and/or their high external dose rates. For this reason, generators who wish to dispose of irradiation sources with activities in excess of 1 µCi must to notify LLWD personnel before submitting the CWDR for approval.

3.3.3 Beryllium and/or Carbon

Beryllium waste must be double-bagged or double wrapped and placed in approved DOT containers. The waste generator shall contact LLWD personnel for further instructions if the characteristics (i.e. size) of the waste prohibit packaging into an approved DOT container.

Waste must not have beryllium and/or carbon totaling greater than 20% by weight in the waste matrix (criticality requirements).

3.3.4 Classified Waste

Containers used for packaging classified waste must have a diameter of less than 0.9 m (3 ft) to facilitate shaft disposal. Items that do not meet this size requirement will be handled on a case-by-case basis.

3.3.5 Uranium Chips and Turnings

Containers used for packaging uranium chips and turnings must meet the following requirements:

- Each package of chips and turnings must be in a 30-gal. drum with a 55-gal. drum overpack,
- Each 30-gal. drum must be filled only to 2/3 capacity, and
- The annulus between the 30-gal. drum and 55-gal. drum must be filled with vermiculite.

3.4 Package Weight

Packages must not exceed the rated capacity of the container based on DOT-specified package certification tests for the contained material.

3.4.1 Lead Shielding

The use of lead for shielding (radioactively contaminated or radioactively uncontaminated) in containers for the disposal of LLW is an acceptable practice. Generators must include the following with the WPF (*Waste Profile Form)*:

- Documentation demonstrating that standard packaging without lead shielding would not reduce the exposure rate to less than 0.005 rem/h (5 mrem/h) at 30 cm and that the shielding is necessary for radiation protection; and
- Documentation demonstrating that the amount of lead used for shielding is not excessive for each specific container of LLW. The documentation shall include calculations demonstrating the amount of lead (thickness and quantity) in the container is not excessive by justifying the quantity of lead required in each given container, or on a container-by-container basis

3.5 External Package Contamination/Dose Rate

Removable surface contamination must not exceed the limits established by P121, *Radiation Protection.*

3.6 Package Marking and Labeling

Packages of LLW must be marked and labeled according to DOT requirements. In addition, each package must be marked with the following:

- A Health Physics Radioactive Material Tag displayed on each outer waste container or included with the shipping package.
- ”C” for compactable waste or “NC” for noncompactable waste.
- “CAUTION—RADIOACTIVE WASTE” tape.
- The item identification number (barcode) provided by Waste Environmental Services–Waste Acceptance.
- The Technical Area (TA), building, and room number where the waste originated.
- The package weight in kilograms.
- The contact and 1-m exposure rates in mrem/h written on the receiving report and on the Health Physics Radioactive Material Tag.
- Major radionuclides in the waste.
- The radioactive waste sealed date.

Note: The label provided by Waste Environmental Services-Waste Acceptance includes all of the required information EXCEPT for the date sealed and the item identification number. Item identification labels are not to be altered in any way.

Beryllium waste must be marked with the following warning shown in Fig. 3-1.

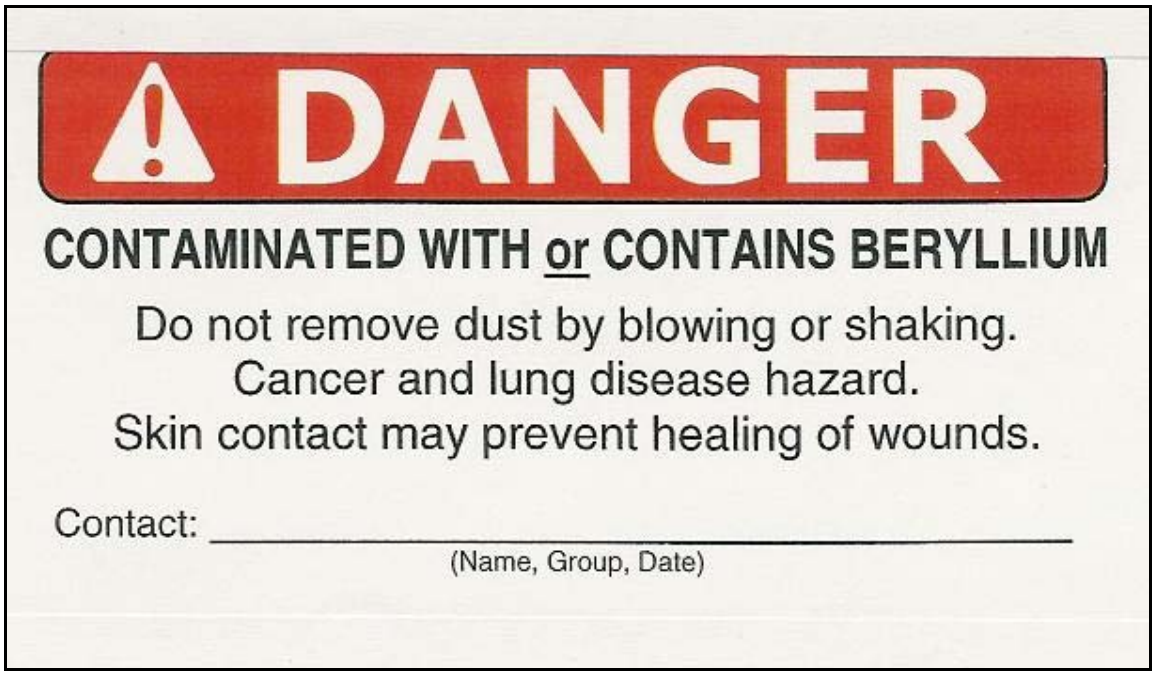

Fig. 3-1. Warning sign for beryllium waste.

3.7 Additional Requirements

3.7.1 Waste Handling

Area G has equipment available for the off-loading and handling of waste containers weighing 13,500 kg (15 tons) or less. If the weight of the waste exceeds the capacity of the equipment available at Area G, the generator must provide the means to off-load the waste.

3.7.2 Center of Gravity

LLW packages that have abnormal centers of gravity must be clearly marked with the center of gravity. Top-heavy loads are severely discouraged, and bulk waste shipments with complex geometries must be loaded in the most stable configuration.

3.7.3 Scheduling

Generators must schedule shipments of LLW to TA-54, Area G, at least five (5) working days in advance. Shipments may be scheduled for receipt at Area G on Tuesday or Thursday from 8:00 to 11:30 am, and from 1:00 to 3:00 pm. Waste shipped under a road closure may be scheduled for receipt at Area G on Wednesdays at either 9:00 am or 2:00 pm. If gate times cannot be met, rescheduling or cancellation needs to take place with at least one day of notice before the shipping date. Shipments not received within 30 minutes of scheduled gate time will not be accepted and must be rescheduled for a later date. Contact (505) 665-0957 or e-mail lowlevel@lanl.gov to schedule shipments.

3.7.4 Documentation

LLW must be approved before shipment to Area G. Form 1346, *Waste Profile Form,* and the on-line Waste Disposal Request (WDR) Form, must be completed and approved by Waste and Environmental Services-Waste Acceptance (WES-WA). A copy of the on-line Waste Disposal Request (WDR) Form, an Area G Receiving Report, and a waste manifest must accompany the shipment, which then becomes the shipping package. The Area G Receiving Report must include contact and 1 meter exposure rates in mrem/h and have a Radiological Control Technician's (RCTs) signature and date. If these items are not included on the Area G Receiving Report the waste may not be accepted until the necessary information is obtained. If an exemption or exception is received, the approved WEF (Form 1973, *Waste Acceptance Criteria Exception Form*) must also accompany the shipment. For LLW, an on-line Waste Disposal Request (WDR) Form describes a shipment; therefore, an on-line Waste Disposal Request (WDR) Form must not be split into multiple loads. An on-line Waste Disposal Request (WDR) Form is only valid for six (6) months from the date of approval.

3.7.5 Classified Waste

If it is not possible to declassify LLW before disposal, the generator must submit a memo to the LLWD group authorizing the disposal of the waste. Generators must also develop the following:

- Documentation demonstrating that it is either impossible or unfeasible to declassify the LLW before disposal. Where possible, this documentation should be developed in such a manner that it does not include classified information. When the documentation does not include classified information, it shall be submitted with the WPF (Form 1346, *Waste Profile Form)*. If the documentation cannot be developed without including classified information, it shall not be submitted with the WPF (Form 1346) but must instead be maintained in the waste generator's files.

Upon approval from the LLWD group, the generator must transport the classified waste to the disposal site at Area G and provide two Q-cleared personnel, one of whom must be a Los Alamos National Security, LLC (LANS) employee, to witness the disposal.

3.7.6 Criticality Requirements

Specific criticality requirements and safety practices for disposal of LLW at TA-54, Area G, are identified throughout this WAC section. These requirements are based on the *Criticality Safety Evaluation for the TA-54 Low Level Waste (LLW) Burial Pits with Normal LLW Matrices and Specific TA-18 Relocation Project Materials*, NCS-CSED-07-046, November 13, 2007.

3.7.7 Waste Transfer Requirements

Waste may be staged for 90 days, and then must be moved to storage or to a Treatment, Storage, and/or Disposal Facility (TSDF). Radioactive waste must be shipped from a registered radioactive waste area to maintain certification.

No: P930-1 LANL Waste Acceptance Criteria [Back]
Attachment 4. Compactable Solid Low-Level Waste (LLW) (Page 1 of 3)

Compactable LLW is solid waste that contains radioactivity and is not classified as high-level waste, Transuranic (TRU) waste, spent nuclear fuel, or tailings from the milling of uranium or thorium ore and is capable of volume reduction by compaction. These Waste Acceptance Criteria (WAC) apply only to Low-Level Waste (LLW) destined for the compactor at Technical Area (TA)-54, Area G.

4.1 Waste Form

Small amounts of noncompactable waste material such as metal, concrete, or soil may be included in a container of compactable waste. Compactable waste must also meet the requirements of Section 3.1 of Attachment 3, *Solid Low-Level Waste (LLW)*, of this document.

4.1.1 Empty Containers

Empty metal drums are acceptable for compaction if the criteria of this attachment are met. Section 4.3 of this attachment does not apply to empty drums.

4.1.2 Restrictions

LLW destined for the compactor must not contain any of the following:

- Hazardous waste
- Asbestos
- Polychlorinated Biphenyl (PCB) waste
- Beryllium
- Infectious and/or medical and/or biological waste
- Irradiation sources
- Absorbed liquids
- Immobilized powders
- Aerosol cans or gas cylinders
- Tritium greater than 20 mCi/m^3
- Carbon totaling greater than 20% by weight in the waste matrix (criticality requirement)

4.2 Package Content—Fissile Radionuclides

LLW to be compacted must meet the packaging requirements of Section 3.2 of Attachment 3, *Solid Low-Level Waste (LLW)*. In addition, compactable LLW must meet the radionuclide limits in Tables 3-1, 3-3, and 3-5 of Attachment 3, *Solid Low-Level Waste (LLW)*.

Waste generators must ensure that the total fissile or fissionable isotope content of LLW packages submitted to TA-54 for compaction do not exceed the values specified in Section 3.2.4 of Attachment 3, *Solid Low-Level Waste (LLW)* (according to ABD-WFM-002).

Note: Generators must use the FGE values in Table 2-2 of Attachment 2, *Contact-Handled Transuranic (TRU) Waste,* to determine fissile quantities in LLW containers.

Note: If more than 15 g of fissile isotopes are packaged together, they may constitute a fissile material under DOT regulations, and may not be acceptable for transport in a strong, tight container such as a metal compactor box (49 CFR 173.453 *Shippers—General Requirements for Shipments and Packagings—Fissile materials - exceptions*).

4.3 Container Requirements

Containers used for compactable LLW must meet the requirements of Section 3.3.1 of Attachment 3, *Solid Low-Level Waste (LLW)*. Compactable LLW (e.g., laboratory trash and miscellaneous plastic or glass items) must be packaged in one of the following:

- Plastic bags
- Metal drums
- Metal compactor boxes

4.3.1 Reusable Laundry Boxes

Compactable waste may be placed in a reusable laundry box for transport to TA-54, Area G. Waste placed in reusable boxes must be packaged in plastic bags. Items placed in reusable boxes must not be so large as to resist or interfere with the unloading of the waste. Noncompactable waste must not be mixed with compactable waste in a reusable box. Items placed in the reusable box must not include any items on the list in Section 4.1.2 of this attachment.

4.3.2 High-Efficiency Particulate Air (HEPA) Filters

HEPA filters must be double wrapped in plastic and placed in a cardboard box, a metal compactor box, or a reusable white box.

4.3.3 Bulk Waste

Bulk waste is generally considered noncompactable; however, it can be evaluated for compaction.

4.3.4 Large Items

Large compactable items (e.g., cabinets, toolboxes) that do not meet the weight requirements of Section 4.4 of this document may be packaged in 96-ft^3 or smaller soft-sided polypropylene disposable liners. Contact the LLWD group for size requirements of large items and to obtain disposable liners.

4.4 Package Weight

Plastic bags containing compactable LLW must not weigh over 16 kg (35 lb). Metal drums must not weigh over 34 kg (75 lb). Other packages must not exceed the rated capacity of the container based on DOT-specified package certification tests for the contained material.

4.5 External Package Contamination and Dose Rate

Removable surface contamination must not exceed the limits established in P121, *Radiation Protection*. The external surface dose rate of a package of compactable waste may not exceed 100 mrem/h, nor must waste packages be shielded internally to meet this requirement.

No: P930-1 LANL Waste Acceptance Criteria
Attachment 4. Compactable Solid Low-Level Waste (LLW) (Cont.) (Page 3 of 3)

4.6 Package Marking and Labeling

Packages of compactable LLW must meet be marked and labeled as described Section 3.6 of Attachment 3, *Solid Low-Level Waste (LLW)*.

4.7 Additional Requirements

LLW destined for Area G must meet the requirements of Section 3.7 of Attachment 3, *Solid Low-Level Waste (LLW)*.

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Attachment 5. Tritium-Contaminated Waste (Page 1 of 4)

Tritium-contaminated waste consists of any matrix that contains tritium, a radioactive isotope of hydrogen. The Waste Acceptance Criteria (WAC) in this attachment apply to tritium-contaminated waste containing tritium concentrations greater than 20 mCi/m^3 that is destined for storage or disposal at Technical Area (TA)-54. Tritium-contaminated wastes with tritium concentrations less than or equal to 20 mCi/m^3 are exempt from the requirements of this attachment. All tritium-contaminated solid wastes must meet the applicable requirements in the following attachments:

- Attachment 2, *Contact-Handled Transuranic (TRU) Waste*
- Attachment 3, *Solid Low-Level Waste (LLW)*
- Attachment 4, *Compactable Solid Low-Level Waste (LLW)*
- Attachment 7, *Mixed Low-Level Waste (MLLW)*

5.1 Container Requirements and Package Contents

Because of its high environmental mobility, tritium-contaminated waste must be packaged according to a unique set of requirements. Adequate packaging of tritium-contaminated waste must address the following:

- the form of the tritium (gas or water vapor),
- the activity concentration of the tritium, and
- the potential for generating gases.

These requirements are summarized in Table 5-1 of this attachment.

5.1.1 Package Weight

The package weight must not exceed the rated capacity of the container based on DOT-specified package certification tests for the contained material.

Containers that are designed to handle over-pressurization from gas generation will normally have enough structural integrity to handle the weight of the package contents.

5.1.2 External Package Contamination

Removable surface contamination must not exceed the limits established in P121, *Radiation Protection*.

5.1.3 Package Marking and Labeling

Packages of tritium-contaminated LLW must be marked and labeled as described in Section 3.6 of Attachment 3, *Solid Low-Level Waste (LLW)*. Packages of tritium-contaminated mixed LLW must be marked and labeled as described in Section 7.6 of Attachment 7, *Mixed Low-Level Waste (MLLW)*. Packages of tritium-contaminated TRU waste must be marked and labeled as described in Section 2.6 of Attachment 2, *Contact-Handled Transuranic (TRU) Waste*.

No: P930-1 LANL Waste Acceptance Criteria
Attachment 5. Tritium-Contaminated Waste (Cont.) (Page 2 of 4)

Table 5-1. Tritiated Waste Packaging Requirements

Package Concentration	Waste Description	Packaging Requirements
Less than or equal to 20 mCi/m^3	Low-activity solid waste	These wastes are exempt from the requirements of this attachment but must meet the applicable requirements of Attachments 2, 3, 4, and 7 of this document.
Greater than 20 mCi/m^3 and less than or equal to 40 Ci/m^3	Low-activity solid wastes or absorbed liquids	DOT-approved metal boxes or metal drums must be used. Total residual liquids must meet the requirements specified in Section 5.2 of this attachment. Tritiated water must be absorbed on molecular sieve or equivalent zeolite material. Water loading must not exceed 25% by weight of molecular sieve. Tritium loading must be limited to prevent over-pressurization of the primary container beyond the design pressure rating. Acceptable absorbents for oil include vermiculite or other inorganic absorbent material. The total volume of tritium-contaminated oil must not exceed 20% of the volume of absorbent material.
Greater than 40 Ci/m^3 and less than 500 Ci/pkg	Moderate-activity solid waste	Stainless-steel drums or containers must be used. Waste form must be intrinsically stable or be stabilized by the generator. Tritium loading must be limited to prevent over-pressurization of the primary container beyond the design pressure rating. The tritium off-gassing rate must be evaluated to ensure that its annual release fraction will remain below 1E–02.
Greater than or equal to 500 Ci/pkg and less than 100,000 Ci/pkg	High-activity waste	Welded stainless-steel containers or stainless steel containers with machined metal flanges and metal gaskets must be used. A high-density polyethylene (HDPE) or stainless steel overpack must be used. Total residual liquids must be less than 1% of the waste volume. Acceptable absorbents for oils include vermiculite or other inorganic absorbent material. The total volume of tritium-contaminated oil must not exceed 20% of the volume of absorbent material. Tritiated water must be absorbed on molecular sieve or equivalent zeolite material. Water loading must not exceed 25% by weight of molecular sieve. Tritium loading must be limited to prevent over-pressurization of the primary container beyond the design pressure rating. Tritium off-gassing rate must be evaluated to ensure that its annual release fraction will remain below 1E–04.

5.1.4 General Requirements

Containers used to package tritium waste must meet the following general packaging requirements:

- Be made of a material that will not react with the waste,
- Be in good condition, with no leaks, rusting, dents, bulges, or other structural defects that could impair the integrity or safe handling of the container, and
- Be capable of withstanding stresses associated with loading, stacking and shipping of wastes.

5.2 Low-Activity, Tritium-Contaminated Waste

Wastes with tritium concentrations greater than 20 mCi/m^3 but less than 40 Ci/m^3 are suitable for shallow land burial and must be placed in DOT-approved metal drums or metal boxes. If the waste is absorbed oil, the total volume of residual liquids must be as low as reasonably achievable and in no case exceed 1% of the volume of the primary waste container, when the volume of the container is less than 100 gal. For containers greater than 100 gal., the total volume of residual liquids must not exceed 0.1% of the volume of the primary LLW container. Vermiculite or other inorganic absorbent materials must be used for tritium-contaminated oil.

5.3 Moderate-Activity Tritium-Contaminated Waste

Wastes with tritium concentrations greater than 40 Ci/m^3 and a total tritium activity of less than 500 Ci per package must be packaged in stainless-steel drums. Absorbed liquids with tritium concentrations greater than 40 Ci/m^3 and less than 500 Ci per package must be packaged in stainless-steel drums or containers with manufacturer-supplied O-rings or elastomer seals. The average annual leak fraction for each container must be demonstrated to be less than 1.0E–02 at the time of disposal.

Moderate-activity tritium-contaminated waste must be intrinsically stable or be stabilized by the generator. If the waste is absorbed oil, the total volume of residual liquids must be as low as reasonably achievable and in no case greater than 1% by volume. Vermiculite or other inorganic absorbent materials are acceptable absorbents for tritium-contaminated oil. The total volume of tritium-contaminated oil must not exceed 20% of the volume of absorbent material.

5.4 High-Activity Tritium-Contaminated Waste

The generator must take special precautions to ensure that high-activity tritium waste (absorbed tritiated water greater than 500 Ci per package and less than 100,000 Ci per package) does not easily migrate from its container. The generator must use welded stainless steel containers or stainless steel containers with machined metal flanges and metal gaskets. The generator must also use an HDPE or stainless steel overpack. The pressure capacity of the primary containers should be rated to handle the over-pressurization expected from gas generation within the container. The average annual leak fraction for each container must be demonstrated to be less than 1.0E–04 at the time of disposal. High-activity, tritium-contaminated waste is usually in the form of tritiated water (H_3O) in water (H_2O) absorbed on molecular sieve beds. The weight fraction of the total water content on the molecular sieve (or equivalent zeolite material) must not exceed 25% of the weight of the molecular sieve. The total activity of tritium on the molecular sieve must be limited to an amount that will not cause the container to pressurize above its design pressure rating during the first 10 half-lives of tritium (124 yr). The total pressurization of

the container must include the pressure expected from both tritium decay and the radiolysis of hydrogen gas off the molecular sieve. Containers will not be accepted for disposal if the hydrogen gas concentration in the container void volume exceeds 4% at the time of disposal.

5.5 Tritium-Contaminated Mixed Waste

The generator must take into account the hazards involved with both the tritium and the hazardous components when packaging mixed waste. To ensure proper packaging of the hazardous component, the generator must comply with Attachment 7, *Mixed Low-Level Waste (MLLW)*, of this document. To ensure the proper packaging of the tritium component, the generator must comply with the above requirements. Packaging requirements for moderate-and high-activity, tritium-contaminated mixed wastes are determined on a case-by-case basis by WDP-HMWO.

5.6 Tritium-Contaminated Transuranic (TRU) Waste

The generator must package tritium-contaminated TRU waste according to the requirements in Attachments 2 and 5 of this document. The generator should isolate the radioactive contents from any hydrogenous materials in the waste container. Low-activity, tritium-contaminated TRU wastes (i.e., those with less than 10 Ci/m^3) can simply be packaged as TRU waste with no additional requirements. Packaging requirements for moderate- and high-activity, tritium-contaminated TRU wastes are determined on a case-by-case basis by WDP-TRU Waste Project Support personnel.

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Attachment 6. Hazardous and Universal Waste (Page 1 of 4)

Hazardous waste, in a general sense and for the purpose of this document, is nonradioactive waste that exhibits any of the characteristics listed in 40 CFR 261, *Identification and Listing of Hazardous Waste,* Subpart C; or is identified as hazardous waste as specified in 40 CFR 261.3, *Definition of Hazardous Waste*.

Universal waste includes nonradioactive hazardous waste batteries, pesticides, Mercury Containing Equipment (MCE), mercury thermostats, mercury thermometers, and lamps, and is defined in 40 CFR 273, *Standards for Universal Waste Management*. Universal waste is managed under the universal waste requirements specified in 40 CFR 273. These requirements were adopted by the New Mexico Environment Department (NMED) as New Mexico Administrative Code (NMAC) 20, *Environmental Protection*, Chapter 4, Part 1, *Hazardous Waste Management*. Aerosol cans that are not radioactively contaminated can now be managed as universal waste in accordance with NMAC 20.4.1.1001, *Modifications, Exceptions and Omissions*. Hazardous and universal wastes are both regulated by NMED through the Hazardous Waste Management Regulations and the Hazardous Waste Act. If hazardous waste will be stored in a permitted storage Area at Technical Area (TA)-54, it must meet the permitted Waste Analysis Plan *before* being shipped to the storage area. In addition, once LANL's draft Hazardous Waste Facility Permit becomes final, the waste acceptance requirements may change. Contact the hazardous and mixed waste permitting personnel at Environmental Protection-Resource Conservation and Recovery Act (ENV-RCRA) for assistance with waste acceptance relative to permitted storage units.

6.1 Waste Form Restrictions

There are no restrictions on the forms of hazardous and universal waste that can be stored at TA-54. Solid, liquid, gas, semi-solid, suspended solids, sludge, and any other physical form of hazardous and universal waste can be stored at TA-54.

DOT Class 1 materials or any type of Resource Conservation and Recovery Act (RCRA)-regulated waste not listed in Attachment 8, *Other Low-Level Waste (LLW)*, of LANL's Hazardous Waste Facility Permit will not be accepted for storage at TA-54. There is no on-site disposal option for nonradioactive classified waste. Generators must declassify the items so that the material can be salvaged or disposed of off-site. Unacceptable waste includes the following:

- Dioxins (case-by-case determination)
- DOT Class 1 as defined in 49 CFR 173.50, *Shippers—General Requirements for Shipments and Packagings, Class 1—Definitions*
- Classified nonradioactive waste
- Unknowns
- Waste containing >10 ppm peroxide and >1% explosive solid or >10% explosive in solution

6.2 Package Contents

Unknown wastes will not be accepted for storage at TA-54. A waste profile must be completed and approved before waste acceptance at TA-54. Small quantities of unknown waste (4 liters [1 gal.] or less for liquids; 300 g [0.66 lb] or less for solids) may be eligible for the hazardous waste categorization program. In this program, unidentified waste can be characterized using field kits. Contact the ENV-RCRA group for assistance with the hazardous waste categorization program.

Solid and liquid wastes must not be combined in one container, except in the case of non-RCRA and non-DOT regulated material. In addition, each waste type placed or accumulated in a container must be compatible with all other waste types in the container. Universal waste batteries must be segregated by type (e.g., lead-acid, nickel-cadmium, mercury, lithium). Incompatible wastes must be segregated regardless of whether they are hazardous or universal waste.

6.3 Container Requirements

Hazardous and universal waste must be packaged according to DOT regulations for the hazardous properties of the waste. The container must be in good condition, without severe rust, dents, deep scratches, bulges, or other structural defects. The container must be compatible with the waste it contains and must be closed according to DOT specifications.

Gas cylinders must also meet specific criteria to be accepted for transport. The cylinders must not have welded seams, must have the appropriate valve, and must be DOT-approved for the contained material. Specific criteria for gas cylinders are identified in 49 CFR 178, Subpart C, *Specifications for Cylinders*.

Universal waste lamps may be packaged in strong fiberboard boxes, or containers, or the original manufacturer's container with no more than 1% of the shipment containing broken bulbs. These boxes must have all seams and joints sealed with self-adhesive, pressure-sensitive tape. Universal waste boxes containing universal lamps must have a Universal Waste Label attached to one end of the box. MCE must be packaged to prevent breakage. If mercury spills or leaks from broken ampules, the resulting waste must be managed in accordance with P409, *Waste Management*. All mercury in liquid form must be packaged in a polyethylene outer container.

6.3.1 Container Capacity

Each waste container must comply with the following capacity criteria, as applicable:

- Waste must be prepackaged to meet DOT specifications.
- Containers with a volume of less than 19 liters (5 gal.) or 50 lb must be placed in DOT-approved combination packaging or a lab-pack container in accordance with 49 CFR 173.12, *Exceptions for Shipment of Waste Materials*.
- Containers with a volume greater than 5 gal. must be packaged in DOT-approved single packaging (no combination packaging).

6.3.2 Lab Pack Criteria

For waste to be considered for lab packing, the criteria of 49 CFR 173.12 must be met. The generator must repackage any waste or overpack any waste container that does not meet the applicable acceptance criteria.

6.3.3 Headspace in Containers with Liquid

According to 49 CFR 173.24, *General Requirements For Packagings and Packages*, (h), sufficient ullage (outage or headspace) must be left when filling receptacles with liquids. Liquids may expand due to temperature changes during transportation. Headspace must be sufficient to prevent leakage or permanent distortion of the packaging or receptacle resulting from this expansion. Liquids must not completely fill a receptacle at a temperature of 131ºF or

less (49 CFR 173.24a[d]). Containers must not be filled with liquids to more than 85% of their rated capacity. For example, Hazardous Materials and Waste Operations (WDP-HMWO) group has determined that a 6-in. headspace should be left in a 55-gal. drum.

6.4 Package Weight

The maximum acceptable net weight is the rated capacity of the container based on DOT-specified package certification tests for the contained material. The maximum acceptable gross weight for lab-packed waste is 205 kg (452 lb) or the rated capacity of the container, whichever is less.

6.5 External Chemical Contamination of Package

There must be no external chemical contamination on any waste package. Contaminated packages must be overpacked, or the waste must be repackaged.

6.6 Package Marking and Labeling

Each container of hazardous or universal waste must have

- A hazardous or universal waste marking,
- The universal waste marking must be placed on one end of each 4-ft or 8-ft lamp box, and
- The DOT-required labels.

The hazardous or universal waste marking must contain

- The generator's name and address,
- The accumulation start date if coming from a <90 day, universal, NM special waste, or Polychlorinated Biphenyl (PCB) storage area, and
- The DOT proper shipping name and identification number.

Note: It is the generator's and/or Waste Management Coordinator's (WMC's) responsibility to fill in the correct starting accumulation date on the universal waste label.

6.7 Additional Requirements

For hazardous waste stored in a less-than-90-day storage Area destined for permitted storage at TA-54, Area L or Area G, the disposal request for the waste must be submitted on or before day 45. A WAC exception form can be used if the generator does not meet the deadline.
If hazardous waste is destined for permitted storage at TA-54, Area L, two disposal request forms must be prepared: (1) the CWDR in the permitted Waste Analysis Plan (WAP), and (2) the current on-line Waste Disposal Request (WDR) Form.

For hazardous waste stored at a LANL Treatment, Storage, and/or Disposal Facility (TSDF) outside TA-54, the disposal request for the waste must be submitted at least six months before exceeding the storage requirement to be shipped directly off-site to an approved TSDF.

For universal waste stored in a universal waste storage area, the disposal request for the waste must be submitted at least six months before exceeding the storage time requirement limit of one year.

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Attachment 6. Hazardous and Universal Waste (Cont.) (Page 4 of 4)

In all instances, the oldest accumulation start date must be reflected when there are multiple containers listed on the disposal request.

For hazardous waste stored at a satellite accumulation area, the on-line Waste Disposal Request (WDR) Form must be submitted before exceeding 45 gal. of RCRA hazardous waste or 1 qt of acutely hazardous waste.

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Attachment 7. Mixed Low-Level Waste (MLLW) (Page 1 of 13)

Mixed Low-Level Waste (MLLW) is Low-Level Waste (LLW) that contains a Resource Conservation and Recovery Act (RCRA)-listed or characteristic hazardous waste as identified in 40 CFR 261, *Identification and Listing of Hazardous Waste*. Both the Atomic Energy Act and RCRA regulate this type of waste. MLLW in liquid, solid, and gaseous physical form may be stored at Technical Area (TA)-54. MLLW with a significant radioactive component must be stored at Area G, which is a nuclear facility. A significant radioactive component is an amount equivalent to 1/1,000 of the DOT Reportable Quantity (RQ) for any radionuclide. The DOT RQ is found in 49 CFR 172.101, *Purpose and Use of Hazardous Materials Table*, Appendix A in Table 2.

MLLW must be stored, treated and disposed of in accordance with RCRA regulations. With the exception of limited quantities of MLLW used in on-site treatability studies and technology demonstrations, MLLW accepted for storage at TA-54 will eventually be treated off-site at either commercial facilities or other Department of Energy (DOE) sites. These facilities have intensive and prescriptive Waste Acceptance Criteria (WAC) and waste characterization requirements. For example, waste destined for Energy Solutions of Utah must have analytical data from a State of Utah-certified analytical laboratory.

Newly generated MLLW must be adequately characterized for off-site treatment and disposal so that the TA-54 MLLW long-term storage facility can be operated in a turn-key mode (MLLW is received and shipped without further consolidation, bulking, packaging, or characterization). DOE expects the generator of MLLW to prepare and characterize MLLW, as necessary.

7.1 Waste Form and Other Restrictions

There are no restrictions on the physical form of acceptable MLLW. However, there are prohibitions and restrictions on the chemical and radiological characteristics of the waste, including the following.

- Explosives are prohibited.
- Class-4 oxidizers are prohibited.
- Waste items with flammable liquids of volumes greater than 55 gal. are prohibited.
- Class-3 oxidizers are restricted to a volume of 1 liter per waste item.
- Class-3 oxidizers are restricted to an insignificant radiological component.
- Flammable gases are restricted to an insignificant radiological component.
- Flammable liquids are restricted to an insignificant radiological component.
- External package contamination and dose rates are restricted, as discussed in Section 9.5.

An insignificant radiological component is defined as less than 0.1% of the activity listed in Appendix B of 40 CFR 302.4, *Designation of Hazardous Substances*

A Class-3 oxidizer is “[an] oxidizer that will cause a severe increase in the burning rate of combustible materials with which it comes in contact or that will undergo vigorous self-sustained decomposition due to contamination or exposure to heat” (National Fire Protection Association [NFPA] Standard Number 430). Typical Class-3 oxidizers are:

- Ammonium dichromate
- Calcium hypochlorite (over 50% by weight)

- Chloric acid (10% maximum concentration)
- Hydrogen peroxide solution (greater than 52% but not exceeding 91%)
- Mono-(trichloro)-tetra-(monopotassium dichloro)-penta-s-traizinetrione
- Fuming nitric acid (more than 86% concentration)
- Perchloric acid solutions (60% to 72% by weight)
- Potassium bromate
- Potassium chlorate
- Potassium dichloro-s-triazinetrione (potassium dichloroisocyanurate)
- Sodium bromate
- Sodium chlorate
- Sodium chlorite
- Sodium dichloro-s-trizinetrione

A Class-4 oxidizer is "[a]n oxidizer that can undergo an explosive reaction due to contamination or exposure to thermal or physical shock. In addition, the oxidizer will enhance the burning rate and can cause spontaneous ignition of combustibles" (NFPA 430). Typical Class-4 oxidizers are:

- Ammonium perchlorate (particle size greater than 15 µm)
- Ammonium permanganate
- Guanidine nitrate
- Hydrogen peroxide solution (greater than 91%)
- Tetranitromethane

Note: If the particle size of ammonium perchlorate is less than 15 µm, it is classified as an explosive.

A WAC Exception may be requested for restricted waste; however, the acceptability of a restricted waste will depend on the current storage capacity and the overall radiological and physical inventory of the storage area. Exceptions will be considered on a case-by-case basis. Exceptions will not be approved for explosives or Class-4 oxidizers. In addition, exceptions will not be approved for flammable liquids, flammable gases, or Class-3 oxidizers where the radiological component exceeds 100% of the RQ.

7.2 Package Contents

Solid and liquid waste must not be combined in one container. All wastes placed or accumulated in a container must be compatible; incompatible wastes must be segregated.

High explosives and high-explosive residues are not acceptable in MLLW unless they are rendered inert and this process is documented. Biological wastes, biohazardous wastes, and other infectious or potentially infectious wastes are not acceptable in MLLW unless they are sterilized and this process is documented. This documentation must be submitted with the WPF (Form 1346, *Waste Profile Form*).

Classified MLLW will not be accepted for storage at TA-54. Generators must declassify the item so that the material can be disposed of off-site.

Unknown MLLW will not be accepted for storage at TA-54. See Section 7.2.11 for information on no-owner waste.

For MLLW, a complete and specific characterization of the chemical and radiological content of the waste must be provided, including underlying hazardous constituents, if applicable (40 CFR 268, *Land Disposal Restrictions*). The description must include the waste matrix, each constituent of the waste (chemical and radioactive), each constituent's concentration or activity and limits of detection, and the hazardous properties of the waste (e.g., characteristic hazardous waste under RCRA). For MLLW, chemical and radiological characterization requires analytical results with detection limits below regulatory limits, as stated in subsequent sections. Acceptable Knowledge is appropriate only for certain waste streams (as stated in subsequent sections) and for describing the physical characteristics of the waste.

Because of the requirements of the off-site facilities, only chemical and radiological analytical results from approved laboratories will be accepted. To verify laboratory approvals, contact Hazardous & Mixed Waste Operations (WDP-HMWO) group. The only allowable exceptions to this requirement are listed below.

Only MLLW with fully characterized radioactive components will be acceptable at TA-54. Estimates or assumptions regarding the amount of radioactive contamination will not be accepted. As stated in the foregoing sections, the amount of radioactive contamination must be determined by laboratory analysis.

Generators should contact Waste and Environmental Services–Waste Acceptance for guidance if their RCRA mixed wastes are approaching the 90-day RCRA storage limit but have not received the analytical results necessary for completion of the WPF (Form 1346, *Waste Profile Form)* and the on-line Waste Disposal Request (WDR) Form. The generator will need to notify Environmental Protection-Resource Conservation and Recovery Act (ENV-RCRA) by day 70 if they know they will exceed the 90-day storage limit. The extension shall contain the following information: justification of why the extension is required, what has been done to date to move the waste, and a written action plan that ensures that the waste will be moved before the 30-day extension ends.

7.2.1 Non-Transuranic (TRU) Radionuclides

Any non-TRU radionuclides known to be present in the waste must be identified and quantified. Tritium-contaminated MLLW must also meet the requirements of Attachment 5, *Tritium-Contaminated Waste*, with the exception that all MLLW containers must meet DOT requirements for shipment. To the extent possible, Chapter 14, Contamination Control, of P121, *Radiation Protection*, must be implemented for waste generated within a radiation control Area to eliminate the category of "suspect MLLW." Suspect MLLW will not be accepted; the generator must radiologically characterize the waste. These efforts must include documented acceptable knowledge, sampling and analysis, and direct reading measurements (for example, gamma measurements with high-purity germanium detectors).

7.2.2 Transuranic (TRU) Radionuclides

Any TRU radionuclides known or suspected to be present in MLLW must be identified and quantified on the on-line Waste Disposal Request (WDR) Form, along with measurement uncertainties. Concentrations of TRU radionuclides in MLLW must not exceed 100 nCi/g of waste. Mixed waste having concentrations exceeding this limit is TRU waste (see Attachment 2, *Contact-Handled Transuranic (TRU) Waste*). It is especially important to minimize measurement uncertainties when the radioactive concentrations approach the TRU limit of 100 nCi/g.
See Table 3-4 of Attachment 3, *Solid Low-Level Waste (LLW)*, for the preferred radiological assay methods.

7.2.3 Fissile Radionuclides

The Technical Safety Requirements (TSRs) for TA-54, Area G, impose package limits for fissile material. These package limits are shown in Table 7-1.

Table 7-1. Package Limits for Fissile Material

If	Then
Packages are smaller than 55 gal.	The total FGE must not exceed 5 g/gal. of package volume.
Packages are 55 gal. or larger	The total FGE must not exceed 275 g.

7.2.4 Special Nuclear Material and Tritium

The generator must ensure that all nuclear material accountability records and approvals are completed before the shipment of MLLW containing accountable quantities of special nuclear material (SNM) and tritium. Limitations may exist for waste containing greater than 1 gram of SNM or 1 curie of tritium. Contact WDP-HMWO for guidance.

7.2.5 Greater Than Class C (GTCC) Limitations

MLLW with GTCC concentrations of radionuclides, which are prescribed in 10 CFR 61.55, *Waste Classification*, and presented in Table 3-3 of Attachment 3, *Solid Low-Level Waste (LLW)*,of this document, will not be accepted for storage at TA-54, Area G, nor Area L.

7.2.6 Reporting Requirements

Suspect MLLW must not be accepted; the generator must radiologically characterize the waste. If no contamination is detected, the waste should be evaluated for free release. If the material cannot be free released and suspect radionuclides cannot be quantified, then the on-line Waste Disposal Request (WDR) Form must indicate an activity of the minimum detectable activity for each of the suspected radionuclides, along with an uncertainty derived from the analytical process, instrument critical level, or other measure of the uncertainty. The on-line Waste Disposal Request (WDR) Form will also be annotated to indicate that this waste has no detectable activity and will record the basis for the uncertainty. This means that “less than” values will not be accepted.

7.2.7 Chemical Characterization

Chemical constituents and characteristics must be identified and quantified using analytical methods; documented acceptable knowledge is acceptable only as noted below. See below for specific requirements for certain waste streams. Hazardous waste characteristics, along with hazardous waste constituents and their concentrations in MLLW, must be specifically identified and documented. The WPF (Form 1346, *Waste Profile Form)* must be completed to document the chemical characterization and hazardous waste characteristics and constituents. Analytical results must have detection limits less than regulatory limits. Because the ultimate destination for most MLLW is Utah, a Utah-certified laboratory must be used for all chemical analysis.

7.2.8 Physical Characteristics

The physical characteristics must be documented on the WPF (Form 1346, *Waste Profile Form)*.

7.2.9 Generating Process

The waste-generating process must be described on the WPF (Form 1346, *Waste Profile Form)*. If necessary, provide additional text on the WPF (Form 1346) to thoroughly describe the process.

7.2.10 Debris Waste and Radioactive Lead Solids

Mixed waste meeting the RCRA definition of “debris” (see 40 CFR 268.2, *Land Disposal Restrictions, Definitions Applicable in this Part*) and radioactive lead solids that are unsuitable for recycling are presently disposed of at Energy Solutions of Utah. Sampling and analysis must be performed in accordance with Environmental Protection Agency (EPA) document SW-846. Gamma spectroscopy is mandatory, and isotopic analysis is required as necessary. Additional analysis of hazardous constituents may be required, and the analyses must be done by a Utah-certified laboratory. Energy Solutions’ analytical uncertainty limits for SNM must be met. Contact WDP-HMWO for guidance.

The description on the WPF (Form 1346, *Waste Profile Form)* and the on-line Waste Disposal Request (WDR) Form must explicitly describe the physical form (e.g., lead bricks, lead wool). Lead-contaminated debris must be segregated from lead metal waste. The term “lead shielding” is not an acceptable description of the lead waste.

Radioactive sources must be removed from lead pigs unless the source itself is the waste material and the lead pig is shielding for radiation protection purposes. In this case, the WPF (Form 1346) and on-line Waste Disposal Request (WDR) Form must clearly indicate that the waste is the radioactive source and the lead pig is for the purpose of shielding.

Other contaminated metals are possible candidates for recycling and may require segregation. Contact WDP-HMWO for further information.

7.2.11 No-Owner Waste

Waste with no identifiable owner must be fully characterized as described above. Gross alpha, beta, and gamma measurements are not acceptable for radiological characterization. These types of measurements may be acceptable as part of documented acceptable knowledge. Contact WDP-HMWO for additional information. Chemical characteristics must be determined by either analytical measurements or documented acceptable knowledge for selected small-volume (less than 1 qt) waste streams such as lab packs (for example, Material Safety Data Sheet for unused no-owner waste that is still in the container marked by the manufacturer’s label). MLLW must be segregated from LLW and nonhazardous waste.

7.2.12 Small-Volume MLLW and Lab Packs

For small volumes of MLLW (less than 1 gal.), radioactive and chemical characterization information may be based on documented analytical results or documented acceptable knowledge. In order to minimize costs, the generator should combine small volumes of compatible waste. Lab packs must be packaged in compliance with the requirements in Section 7.3.3. Conservative assumptions are not acceptable for characterization information. One item number must not be used for multiple items. All items within a container must be tracked individually.

7.2.13 Soils and Soil-Like Material

Soils and soil-like material (e.g., soils, ash, dirt, powder, vermiculite) require full physical, chemical, and radiological characterization. Because the waste may be sent to Energy Solutions of Utah, the analyses must be done by a Utah-certified laboratory. Contact WDP-HMWO for guidance. Sampling must be performed in accordance with EPA document SW-846. Physical analyses required include density, material size, color, and moisture content (standard Proctor method ASTM D-698). Specific chemical analyses required by Energy Solutions of Utah are as follows, with possible exceptions:

- Volatile Organic Compounds (VOCs)
- Semivolatile Organic Compounds (SVOCs)
- RCRA metals
- Soil pH
- Paint filter test
- Reactive cyanide
- Reactive sulfide

Contact WDP–Hazardous Materials Waste Operations (HWMO) for more information regarding exceptions.

Radiological parameters include gamma spectral analysis (required) and radiochemistry for non-gamma-emitting nuclides (as necessary).

Soil and soil-like material that is suspected to have only characteristic hazardous properties may not require all of the sampling listed above. Furthermore, it may not require that samples be analyzed by a Utah-certified laboratory. In cases where the generator determines that a waste stream may be only characteristic (D-coded), relaxation of the above listed requirements is possible. Contact WDP-HMWO for guidance, and where applicable, submit a written exception to sampling and analysis requirements.

7.2.14 Samples

Radioactively contaminated liquid and solid samples that are also RCRA hazardous wastes require full physical, chemical and radiological characterization (see Section 7.2.13, *Soils and Soil-Like Materials*) and must be segregated and packaged in accordance with the off-site facility's requirements. Samples with listed RCRA constituents in concentrations above Land Disposal Restriction (LDR) standards must not be commingled, packaged, or in any other manner mixed with other samples. Listed waste meeting LDR requires no further treatment. Listed with constituents above LDR requires treatment to LDR before disposal. Therefore these wastes should be separated and are sent to separate facilities. Samples containing Polychlorinated Biphenyls (PCBs) in any concentration must not be commingled, packaged, or in any other manner mixed with other samples. All samples must be bulked (contents removed from the plastic or glass bottles) into metal drums in accordance with the segregation scheme mentioned above (i.e., RCRA-listed soils above LDR standards, PCB-contaminated soils, and other RCRA soils are all bulked separately). Whenever possible, samples should be returned to the requester of the analysis and ultimately to the original waste material. This is consistent with industry-accepted practices.

7.2.15 Printed Circuit Boards and Other Soldered Materials

Note: Suspect contaminated printed circuit boards may be recycled. Contact WDP-HMWO for guidance.

Radioactively contaminated printed circuit boards, copper and brass fittings, and electronic equipment are typically managed as MLLW because of the heavy metals present in the soldered connections. Printed circuit boards must be packaged in 55-gal. or 30-gal. steel drums without absorbent and should not be commingled with other debris such as lead shielding or other electronic components containing mercury switches. Other types of containers require approval by the WDP-HMWO group leader. The boards must be characterized for radiological contaminants using gamma spectral analysis plus isotopic analysis for non-gamma emitters as necessary.

7.2.16 Liquid Wastes with Resource Conservation and Recovery Act (RCRA) Hazardous Constituents, Flammable Liquids, and Other Organic Liquids

To comply with off-site facility waste acceptance requirements, full chemical, physical, and radiological characterization is required. Chemical analyses generally include:

- VOCs
- SVOCs
- Total metals
- Chlorides
- Fluorides
- Total sulfur
- Ignitability
- pH
- BTU value
- Water content
- PCBs

Physical parameters generally include specific gravity, viscosity, and total suspended solids. Radiological characterization must include beta and/or gamma emitters greater than 1 pCi/g and alpha emitters greater than 0.1 pCi/g. In general, generators should contact WDP-HMWO to ensure that proposed sampling and analysis regimes will meet the requirements of the off-site facility. WPFs (Form 1346, *Waste Profile Form)* that do not contain the characterization information required by the off-site facility can be categorized as a "No Path" waste.

7.2.17 Aqueous Wastes with Heavy Metals

The aqueous wastes with heavy metals will be treated off-site by stabilization methods. Chemical, physical, and radiological parameters are identical to those presented in Section 7.2.16 of this document.

7.2.18 Shreddable Solids Contaminated with Resource Conservation and Recovery Act (RCRA) Hazardous Constituents

Waste forms in this category include Personal Protective Equipment (PPE) and cellulosic materials contaminated with RCRA constituents. Waste streams that are suspected to be contaminated with F-Listed organic materials will be analyzed for RCRA hazardous constituents by a Utah-certified laboratory. At a minimum, radiological characterization must include both gamma spectroscopic analysis and the appropriate isotopic analyses for the radionuclides believed to be present. PPE and other contact waste can be conservatively characterized based on the analytical results of the waste. It may also be sampled if it is stained or wet. Representative pieces can be cut out for analysis. Alternatively, if the contact waste is not visibly contaminated, it may be demonstrated to be non-hazardous by referencing rad swipes that show no radioactive contamination. Contact WDP-HMWO for guidance.

7.2.19 Resource Conservation and Recovery Act (RCRA) Scintillation Cocktails and RCRA Hazardous Liquids

To package and manage RCRA scintillation cocktails and hazardous liquids contained within vials, place the undrained vials inside a polyethylene drum liner. The drum liner is then packed with vermiculite and placed inside another drum liner that is also packed with vermiculite. Finally, the nested drum liners are packed in a 55-gal. steel open-top drum.

For characterization requirements, see Section 7.2.16, *Liquid Wastes with RCRA Hazardous Constituents, Flammable Liquids, and Other Organic Liquids*. These characterization requirements apply to both bulk fluids and fluids in vials. For fluids in vials, the number of vials to be analyzed depends upon the variability of the materials in the vials. MLLW scintillation cocktails are no longer generated, but may be encountered during legacy cleanup or decontamination and decommissioning operations. The number of vials to be analyzed may depend on the volume of sample required for a specific analysis or analyses under SW-846, *EPA Sampling Requirement for Characterizing Waste*.

7.2.20 Mercury Waste

Mercury mixed waste, including elemental mercury, mercury salts, and mercury-contaminated debris, must be fully characterized. Wastes consisting of radioactively contaminated elemental mercury (e.g., thermostats, thermometers, switches, fluorescent tubes, liquid mercury in glass jars) may be characterized for radiological contaminants only. Gamma spectral analysis combined with isotopic analysis must be performed for suspected non-gamma emitters, such as tritium. Mercury-contaminated debris waste (e.g., floor tile, sink traps, hoses, spent filters, insulation) must be analyzed for total metals, VOCs, SVOCs, and radionuclides, as necessary. Other forms of mercury waste (thiocyanate waste, aqueous mercury, scrap salts) must be analyzed for total metals, VOCs, SVOCs, and radionuclides, as necessary.

For mercury-contaminated oil, see Section 7.2.16, *Liquids Wastes Contaminated with F-listed Solvents, Flammable Liquids, and Other Organic Liquids*, for analytical requirements. Because mercury can corrode steel, all mercury in liquid form must be packaged in a polyethylene outer container.

7.3 Container Requirements

Containers for MLLW must meet DOT requirements for shipment. Pinhole leaks, dents, ill-fitting lids, excessive rust or other signs of damage are not DOT compatible. Acceptable containers are listed in Section 7.3.2. Because most MLLW is eventually shipped off-site, containers for MLLW must not be selected so that road closures will be necessary when shipping the waste to TA-54. Use of non-standard or non-DOT containers must be approved by WDP-HMWO *before* packaging the waste.

The waste should be packaged in the smallest container possible, and the container must be in good condition, without severe rust, dents, deep scratches, bulges, or other structural defects. Defective or deteriorating containers are not acceptable.

The generator must repackage the waste into containers that are not defective or deteriorating.

Mercury in liquid form must be packaged in a polyethylene outer container.

The container must be compatible with the waste it contains and must be closed according to DOT and manufacturer's specifications.

Waste classified as a DOT Class 7 material cannot be packaged using the lab pack exception, 49 CFR 173.12(b), *Exceptions for Shipment of Waste Materials, Lab Packs*. Gas cylinders must also meet specific criteria identified in 49 CFR 178, Subpart C*, Specifications for Cylinders*, to be accepted for transport. The cylinders must not have welded seams, must have the appropriate valves, and must be approved by the DOT for the contained material.

7.3.1 Department of Transportation (DOT) Class 7

Personnel or contractors from WDP-HMWO are not authorized to package DOT Class 7 material at the generator's location. Therefore, if the MLLW is DOT Class 7, the generating organization must either package it in accordance with DOT regulations or arrange for Operations Support–Packaging and Transportation to package the waste.

7.3.2 Acceptable Containers

Non-flammable bulk liquids of greater than 110 gal. destined for Area G may be packaged in polyethylene tanks. The tanks must meet DOT requirements; in addition, the generating organization must provide secondary containment (e.g., integral secondary containment). Non-DOT-compliant tanks may be used only with previous authorization of WDP-HMWO.

Liquid MLLW, including flammable liquids without a significant radioactive component destined for storage at TA-54, Area L, may be packaged in any of the following containers:

- Open-head polyethylene 5-, 14-, and 30-gal. drums.
- Closed-head polyethylene drums with a 55-gal. or smaller capacity.
- Metal 30- and 55-gal. drums.

Non-lab pack liquids should be packaged in closed-head drums for safety reasons during transport and during subsequent storage. Bulk liquids destined for Area L may be packaged in polyethylene tanks that meet DOT requirements. Note that in addition the generating organization must provide secondary containment (e.g., integral secondary containment). Non-DOT-compliant tanks may be used only with previous authorization of WDP-HMWO. Liquid MLLW must be packaged so that the container can be overpacked, if necessary, into a metal drum no larger than 85 gal. This ensures that a routine capability exists for overpacking a container of liquid MLLW during an emergency situation (e.g., a leaking drum).

Each waste container must comply with the following capacity criteria, as they apply:

- If packaged by the generator, MLLW must be packaged into the smallest possible size of acceptable container (Section 7.3) that meets DOT requirements.
- If not packaged by the generator, MLLW must be in a form that can be placed into a 55-gal. or smaller DOT-compliant drum.
- Containers must be selected to minimize void space (including any absorbent) in the container. As appropriate, the generator must consolidate identical wastes to maximize container efficiency.

7.3.3 Lab Pack Criteria

For waste to be considered for lab packing, the criteria in 49 CFR 173.12, *Exceptions for Shipment of Waste Materials,* must be met.

The generator must repackage any waste or overpack any waste container that does not meet the applicable acceptance criteria.

7.3.4 Items Larger than 55-Gallon Drums

MLLW items larger than 55-gal. drums (e.g., gloveboxes) are not acceptable for storage at TA-54 unless the waste meets the packaging and physical dimension requirements of the off-site facility. For example, lead-lined gloveboxes must be processed so that they meet the WAC of the off-site destination facility. Generators of nonstandard-sized items should contact WDP-HMWO group on a case-by-case basis for guidance on acceptable packaging and possible waste reconfiguration, such as decontamination or lead removal.

Decontamination and recycling or removal of the lead lining is a preferred approach to handling items such as lead-lined gloveboxes. The radioactively contaminated portions of the glovebox that are not RCRA hazardous waste and that are not recyclable can be disposed of as LLW. Assistance with removal of lead lining is available. Contact WDP-HMWO for further information.

7.3.5 Headspace in Containers with Liquid

According to 49 CFR 173.24, *General Requirements For Packagings and Packages*, (h), sufficient ullage (outage or headspace) must be left when filling receptacles with liquids. Liquids may expand because of temperature changes during transportation. Headspace must be sufficient to prevent leakage or permanent distortion of the packaging or receptacle resulting from this expansion. Liquids must not completely fill a receptacle at a temperature of 131ºF or less (49 CFR 173.24a[d]). Containers must not be filled with liquids to more than 85% of their rated capacity. For example, WDP-HMWO has determined that a 6-in. headspace should be left in a 55-gal. drum.

7.4 Package Weight

The maximum net acceptable weight for any size drum of waste is 400 kg (882 lb) or the rated capacity of the container based on DOT-specified package certification tests for the contained material, whichever is less. The maximum acceptable gross weight for lab-packed waste is 204 kg (450 lb) or the rated capacity of the container, whichever is less. It is the generator's responsibility to document container tare weights and net waste weights accurately. A discrepancy of ±15% of the container weight is not acceptable and the container may be returned. To avoid problems associated with movement of heavy drums, the drum size should be selected and the drum filled so that the gross weight is less than 600 lb. For other containers such as ST90s, the maximum acceptable weight is the rated capacity, which should be stamped on the surface of the container. If in doubt, contact the manufacturer.

7.5 External Package Contamination and Dose Rate

Removable and fixed-surface radiological contamination may not exceed the limits established in Chapter 14, *Contamination Control*, of P121, *Radiation Protection*. The external dose rate of a package containing MLLW may not exceed 200 mrem/h on contact, or 10 mrem/h at 1 m (3.3 ft) from the surface of the package. The generator must notify the waste management facility in advance if the package dose rate exceeds 100 mrem/h on contact, or 5 mrem/h at 30 cm (12 in.) from the surface. Packages having a surface dose rate greater than 10 mrem/h must be highlighted on the shipping paper. Packages must not have any external chemical contamination. Contaminated packages must be overpacked.

7.6 Package Marking and Labeling

MLLW packages must be marked and labeled according to DOT requirements for the contained waste. Additionally, containers of MLLW must also have the following:

- A completed hazardous waste marking,
- A completed Health Physics Radioactive Material Tag or equivalent,
- A barcode marking,
- The up arrows marking, and
- "CAUTION – RADIOACTIVE WASTE" tape or marking.

The hazardous waste marking must contain the following:

- The generator's name and address,
- The manifest document number,
- The accumulation start date, and
- The DOT proper shipping name and identification number.

The proper shipping name must include technical names, if applicable.

The Health Physics Radioactive Material Survey Tag or equivalent (e.g., multiple survey label or sticker) must contain the external dose rate on contact with and at 1 m from the package and is recommended to contain the dose rate at 30 cm (12 in.) from the surface. The maximum external dose rate should be recorded. Contamination smear results must be recorded. The tag or equivalent must be completed, signed, and dated by a Radiological Control Technician (RCT) in accordance with P121, *Radiation Protection*.

7.7 Additional Requirements

MLLW with a significant radioactive component may have characteristics not previously analyzed in the Safety Analysis Report for Area G. In this case, an Unreviewed Safety Question Determination (USQD) must be prepared. If the USQD is positive, then a safety analysis must be prepared. These efforts require greater than 90 days to complete; therefore, the generator of MLLW with a significant radioactive component must be aware that this MLLW may require an extended time period before acceptance of this waste for storage at TA-54. The responsibility for storing MLLW with a significant radioactive component in accordance with RCRA (e.g., extending the 90-day storage limit) before acceptance at TA-54 resides with the generator. The generator has to notify ENV-RCRA by day 70 if they know they will exceed the 90-day storage limit. The extension shall contain the following information: justification of why the extension is required, what has been done to date to move the waste, and a written action plan that ensures that the waste will be moved before the 30-day extension ends. The generator of MLLW with a significant radioactive component should contact WDP-HMWO before the generation of this MLLW to ensure that long-term storage capability is available for this MLLW.

Note: Flammable liquids with a significant radioactive component are not acceptable for storage at TA-54.

Generators sending MLLW to TA-54 that violates any of the requirements in this attachment will be issued a nonconformance report in accordance with Waste and Environmental Services-Waste Acceptance (WES-WA) procedures.

7.8 Time Limits on MLLW

- For MLLW stored in a less-than-90-day storage area, the on-line Waste Disposal Request (WDR) Form for the waste must be submitted on or before day 45.
- For MLLW stored at a Treatment, Storage, and/or Disposal Facility (TSDF), the on-line WDR for the waste must be submitted at least six months before exceeding the one-year MLLW storage requirement. In addition, the waste must be inventoried and the on-line Waste Disposal Request (WDR) Form tracked through Waste Acceptance so that the waste is received at TA-54 no later than five months before exceeding the one-year limit from the accumulation start date.

This ensures sufficient time for reviews of Material-at-Risk (MAR) limits, quality assurance, and consolidation of shipments for economies of scale. Generators should notify their Waste Management Coordinator (WMC) immediately when an item is declared waste. It is the responsibility of the generator to get the assistance needed to ensure that these limits are not exceeded.

7.9 Recharge and Costs

With the initiation of the recharge system, all costs of the management, shipping, treatment, and disposal of MLLW will be charged to the generating organization, using the cost codes attached to the waste. Additional costs incurred for exceptional or nonconforming waste are also the responsibility of the generating organization until the waste is accepted off-site for treatment and disposal. The waste recharge rates can be found on this link or contact WDP-HMWO for recharges.

MLLW and LLW destined for off-site treatment will be based on three broad categories, as follows:

- Bulk waste for straight disposal (e.g., F-listed soils meeting LDR)
- Bulk wastes for basic treatment (e.g., RCRA debris for macroencapsulation, liquids for incineration, soils for stabilization)
- Chemical waste (e.g., lab packs, elemental mercury, reactives)

The recharge costs reflect the actual costs from the off-site TSDFs, and are based on the total volume of the container in which the waste is shipped. Reactive waste shipped in a 5-gal. bucket has cost as much as $15,000 at a commercial TSDF. The bucket may also have a minimum charge of several thousand dollars. Therefore, significant cost savings are possible by consolidating similar wastes. Every effort should be made to fill each container with similar items.

7.10 No-Disposal Path Waste

All MLL Waste Profiles and on-line Waste Disposal Request (WDR) Forms are reviewed for disposal options. If waste is determined to have no reasonable disposal option (i.e., “No-Path” waste), the generator and WMC will be notified by Waste Services–Waste Acceptance and must follow the guidance in P409, *Waste Management*.

Once the paperwork is complete, the waste can be received at TA-54 for storage until a disposal option is available. At that time, the charge codes from the on-line Waste Disposal Request (WDR) Form will be used to pay for the shipping, treatment, and disposal. There is currently a nominal annual storage fee to ensure the codes are active.

Disposal options have been developed for most MLLW, including all forms of mercury. No-disposal-path waste items include gas cylinders with internal radioactive contamination, dioxins, explosives, highly radioactive items, and other items that do not meet the TSDF WAC. Certain MLLW items, such as externally contaminated aerosol cans and gas cylinders, are prohibitively expensive to treat. Unless there is evidence of internal radioactivity, the generator must have these swiped and released as hazardous waste.

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Attachment 8. Other Low-Level Waste (LLW) (Page 1 of 2)

Non-Environmental Protection-Resource Conservation and Recovery Act (RCRA) LLW not acceptable for disposal at Technical Area (TA)-54, Area G, or for treatment at the Radioactive Liquid Waste Treatment Facility (RLWTF) will be accepted for storage on a case-by-case basis.

Conditions for acceptance of these types of wastes are defined in this attachment.

To the extent possible, liquids should be absorbed or solidified by the generator to make the waste acceptable for burial. Contact Waste and Environmental Services–Waste Acceptance to initiate this acceptance process. Low-level radioactive liquids may be sent off-site for incineration, but the generating organization will be billed the recharge rate for Mixed Low-Level Waste (MLLW) (approximately $250 per gal.).

8.1 Waste Form

The waste must meet the requirements of Section 7.1 of Attachment 7, *Mixed Low-Level Waste (MLLW)*.

8.2 Package Contents

Liquids and solids must be segregated and packaged separately. In addition, other Low-Level Waste (LLW) must be segregated from RCRA-regulated waste. The waste must meet the requirements of Section 7.2.

8.3 Container Requirements

Waste containers must meet the requirements of Section 7.3 of Attachment 7, *Mixed Low-Level Waste (MLLW)*.

8.4 Package Weight

The gross package weight must meet the requirements of Section 7.4 of Attachment 7, *Mixed Low-Level Waste (MLLW)*.

8.5 External Package Contamination and Dose Rate

The external package contamination and dose rates must meet the requirements of Section 7.5 of Attachment 7, *Mixed Low-Level Waste (MLLW)*.

8.6 Non-Resource Conservation and Recovery Act (RCRA) Scintillation Vials and Nonhazardous Combustible Liquids

Nonhazardous combustible liquids must be bulked, as necessary, by the generator. Scintillation fluid cocktails and combustible liquids that are not RCRA hazardous wastes must be absorbed or solidified and disposed of as LLW (see Attachment 3, *Solid Low-Level Waste (LLW)*). Bulk fluids that are not RCRA hazardous wastes must be packaged in United Nations (UN)-rated containers in accordance with the requirements of 49 CFR, *Transportation*.

8.7 Package Marking and Labeling

The waste package must be marked and labeled in accordance with the requirements of Section 7.6.

No: P930-1 LANL Waste Acceptance Criteria
Attachment 8. Other Low-Level Waste (LLW) (Cont.) (Page 2 of 2)

8.8 Scrap Metal for Recycle

Lead and steel with radioactive contamination should be assessed for possible recycle, which is allowable within the Department of Energy (DOE) complex. The material can be profiled as MLLW or as non-mixed, Low-level scrap metal for recycle, and can be shipped directly off-site after completion of the WPF (Form 1346, *Waste Profile Form)* and on-line Waste Disposal Request (WDR) Form. Contact Waste and Environmental Services–Waste Acceptance for guidance.

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Attachment 9. Asbestos Waste (Page 1 of 3)

Asbestos is a generic term that describes naturally occurring crystalline minerals and encompasses the following six minerals: chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite. Friable asbestos is any asbestos material applied to ceilings, walls, structural members, piping, ductwork, or any other part of the building structure that, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure (40 CFR 763.83, *Definitions*. Nonfriable asbestos is that which is completely encapsulated in a manufactured article such as a safe or file cabinet. Identify asbestos as a New Mexico special waste.

9.1 Nonradioactive Asbestos Waste

Nonradioactive asbestos waste is stored at Technical Area (TA)-54, until shipped off-site for disposal. The Laboratory's asbestos abatement personnel perform the abatement, packaging, and transporting operations.

9.1.1 Waste Form

Friable asbestos must be wetted down sufficiently to prevent fiber release. There are no special requirements for nonfriable asbestos.

9.1.2 Package Contents

There are no restrictions on the contents of the waste packages. Both friable and nonfriable asbestos are accepted for storage at TA-54. However, friable asbestos and nonfriable asbestos must not be placed in the same container.

9.1.3 Container Requirements

Friable asbestos must be packaged in accordance with 49 CFR 173, *Shippers—General Requirements for Shipments and Packagings*. Friable asbestos must be packaged in double plastic bags with a minimum thickness of 6 mil. The bags must be sealed in such a way as to be leak proof; the amount of void space or air in the bags must be minimized. Asbestos waste slurries must be packaged in leak-proof drums if they are too heavy for the bags. Cardboard, poly, or metal containers lined with 6-mil plastic may also be used to package asbestos, provided the sealed container is leak proof. Large items, such as piping removed from a facility without first removing the asbestos, must be double-wrapped in plastic with a minimum thickness of 6 mil and sufficient to create a leak-proof container.

Nonfriable asbestos does not require any special packaging unless the integrity of the article containing the asbestos is in any way impaired, in which case the article must be packaged as friable asbestos.

9.1.4 Package Weight

Package weight limitations are based on the strength and capacity of the containers in which the asbestos is packaged. Containers must be capable of holding the asbestos waste during moving, lifting, and transporting. Package weight must not exceed the rated capacity of the container based on DOT-specified package certification tests for the contained material.

9.1.5 External Package Contamination

The exterior of the packages of asbestos waste must be free of asbestos debris. Contaminated packages must be overpacked.

9.1.6 Package Marking and Labeling

Each container of friable asbestos waste must be marked with the warnings shown in Fig. 9-1.

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

PELIGRO
CONTIENE FIBRAS DE ASBESTO
EVITAR LA FORMACION DE
POLVO - PELIGRO DE ENFERMEDAD
DE LOS PULMONES Y CANCER

Fig. 9-1. Warning labels for friable asbestos containers.

All regulated asbestos containers, including individually wrapped facility components or pipes, must have a warning label specified by the United States (US). Environmental Protection Agency (EPA) or the Occupational Safety and Health Administration. Labels must be printed in both English and Spanish in accordance with NMAC 20.9.8.12 F, *Asbestos Waste*. Containers must be marked with the Environmental Protection-Resource Conservation and Recovery Act (ENV-RCRA) special waste label. Contact geri@lanl.gov for the label.

9.2 Radioactive Asbestos Waste

The following sections apply only to radioactive asbestos waste that is destined for disposal at TA-54, Area G,

9.2.1 Waste Form

Radioactive friable asbestos must be wetted down sufficiently to prevent fiber release. Asbestos waste must also comply with the requirements listed in Section 3.1 of Attachment 3, *Solid Low-Level Waste (LLW)*.

9.2.2 Package Contents

The package contents must comply with the requirements listed in Section 3.2 of Attachment 3, *Solid Low-Level Waste (LLW)*.

Nonfriable asbestos does not require any special packaging unless the integrity of the article containing the asbestos is impaired. If such is the case, the article must be packaged as friable asbestos. Friable asbestos must be segregated from nonfriable asbestos to the extent possible.

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Attachment 9. Asbestos Waste (Cont.) (Page 3 of 3)

9.2.3 Container Requirements

Containers used for asbestos must meet the container requirements of Section 3.3 of Attachment 3, *Solid Low-Level Waste (LLW)*.

Friable asbestos must be packaged in plastic-lined metal containers. The bags must be sealed in such a way as to be leak-proof. Large items (such as piping) removed from a facility without first removing the asbestos must be double-wrapped in plastic with a minimum thickness of 6 mil and sufficient to create a leak-proof container.

Nonfriable asbestos does not require any special packaging unless the integrity of the article containing the asbestos is impaired. If such is the case, the article must be packaged as friable asbestos. Friable asbestos must be segregated from nonfriable asbestos to the extent possible.

9.2.4 Package Weight

Package weight limitations are based on the strength and capacity of the containers in which the asbestos is packaged. The containers must be capable of holding the asbestos waste during moving, lifting, and transporting. Package weight must not exceed the rated capacity of the container based on DOT-specified package certification tests for the contained material.

9.2.5 External Package Contamination

Removable surface radiological contamination must not exceed the limits established in P121, *Radiation Protection*. The package must be free of external asbestos contamination. Packages externally contaminated with asbestos must be overpacked.

9.2.6 Package Marking and Labeling

Each container must be labeled and marked according to DOT regulations for the radiological properties of the waste (if applicable) and marked with one of the warnings described and depicted in Section 9.1.6.

9.2.7 Additional Requirements

Radioactively contaminated asbestos waste must also meet the requirements of Section 3.7 of Attachment 3, *Solid Low-Level Waste (LLW)*.

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Attachment 10. Infectious/Medical/Biological Waste (Page 1 of 4)

For the purpose of these Waste Acceptance Criteria (WAC), the definitions and acceptance criteria for infectious waste, infectious substances, and regulated medical waste are based on the New Mexico Solid Waste Management Regulation (SWMR-4) and the DOT definitions and requirements for these materials. Infectious waste includes all materials defined as infectious substances or regulated medical waste. An infectious substance (etiological agent) is a viable microorganism, or its toxin, that causes or may cause disease in humans or animals, and includes those agents listed in CDC Office of Health and Safety of the regulations of the United States (US) Department of Health and Human Services and any other agent that causes or may cause severe, disabling, or fatal disease (49 CFR 173.134, *Shippers—General Requirements for Shipments and Packagings—Definitions and exceptions* [a][1]). Regulated medical waste is a waste or reusable material, other than a culture or stock of an infectious substance, that contains an infectious substance and is generated in (1) The diagnosis, treatment, or immunization of human beings or animals; (2) research pertaining to the diagnosis, treatment, or immunization of human beings or animals; or (3) the production or testing of biological products (49 CFR 173.134[a][4]). Clean-up debris from accidents involving blood or human waste would also be considered as regulated medical waste. Infectious or regulated medical nonhazardous and nonradioactive wastes are identified as New Mexico Special Waste.

Biological waste consists of any animal material that does not meet the definition of regulated medical waste, infectious waste, or infectious substance.

Material that has been rendered noninfectious may be managed as nonhazardous noninfectious waste, provided it is not otherwise regulated, hazardous, special, or radioactive waste. The sterilization process used to render the material noninfectious must comply with NMAC 20.9.8.13.B, *Infectious Waste*.

10.1 Nonradioactive Infectious and/or Medical Waste

Nonradioactive infectious wastes are packaged compliantly by the waste generator and/or the WMC and transported off-site by a LANL-approved commercial waste transporter. The commercial waste transporter does not enter Technical Area (TA)-54. The WAC established in the following sections comply with and are based on SWMR-4, US Department of Health and Human Services, and DOT regulations.

10.1.1 Waste Form

Biological tissue, including animal carcasses, must be frozen at the time of waste pickup.

10.1.2 Package Contents

If the infectious substance is contained in individual, sealed containers, each container must be wrapped to prevent contact with other containers, placed in a red plastic bag with enough absorbent material to absorb the entire contents of the containers, and placed in a rigid outer container.

All other infectious substances must be double-bagged in red plastic bags, with at least 1 cm^3 of absorbent material or enough absorbent material placed in the outer bag to absorb the entire contents of the inner bag, and placed in a rigid outer container. An itemized list of the contents must be enclosed in a water-resistant envelope between the secondary plastic bag and the outer container.

Based on the regulations established by the US Department of Health and Human Services in 49 CFR, *Transportation,* Parts 171–178, if the volume of the infectious substance within the inner plastic bag exceeds 50 mL (1.7 oz), a shock-absorbent material of a volume at least equal to that of the absorbent material between the primary and secondary containers must be placed at the top, bottom, and sides between the secondary container and the outer shipping container. Single primary containers may not contain more than 1,000 mL (33.8 oz) of material. Two or more primary containers whose combined volumes do not exceed 1,000 mL (33.8 oz) may be placed in a single secondary container. The amount of an infectious substance that may be enclosed within a single outer shipping container may not exceed 4,000 mL (135 oz).

10.1.3 Container Requirements

Infectious substances must be packaged in double 3-mil red plastic bags inside a rigid container. The bags and the outer container must be sealed to be watertight, leak proof, and to prevent release of material during handling and transport. The rigid outer container used to package any infectious waste must be of adequate size and mass, appropriate for its intended use, and must be capable of passing the test specified by the DOT in 49 CFR 178.609, *Test Requirements for Packaging for Infectious Substances*. These criteria meet both New Mexico Environmental Protection/Solid Waste/Special Waste Requirements (NMAC 20.9.8.13), and DOT regulations (49 CFR 173.196, *Category A Infectious Substances*).

Liquid, regulated medical waste must be packaged according to the requirements of 49 CFR 173.202, *Non-Bulk Packagings for Liquid Hazardous Materials in Packing Group I*. Solid regulated medical waste must be packaged according to the requirements of 49 CFR 173.212, *Non-Bulk Packagings for Solid Hazardous Materials in Packing Group II*. The packaging must meet specific criteria established in 49 CFR 173.197, *Regulated Medical Waste*. The package must be

- Rigid,
- Leak resistant,
- Impervious to moisture,
- Sufficiently strong to prevent tearing or bursting under normal conditions of use and handling,
- Sealed to prevent leakage during transport,
- Puncture-resistant for sharps and sharps with residual fluids, and
- Break resistant and tightly lidded or stoppered, for fluids in quantities greater than 20 cc (0.7 oz).

Sharps must be packaged in leak-proof, rigid, puncture-resistant containers manufactured specifically for containing sharps. These containers must be taped closed or tightly lidded and placed within a red plastic bag and a rigid outer container.

10.1.4 Package Weight

Package weight must not exceed the rated capacity of the container based on DOT-specified package certification tests for the contained material.

10.1.5 External Package Contamination

There must be no external contamination on the packages of waste. Contaminated packages must be overpacked.

10.1.6 Package Marking and Labeling

The red plastic bags must be labeled with the universal biohazard symbol and the word "BIOHAZARD." The external rigid containers holding infectious waste must be labeled with the DOT-specified infectious substance label (designated in 49 CFR 172.432, *Infectious Substance Label),* the biohazard symbol, and the word "BIOHAZARD." The container must also be marked with the DOT proper shipping names, identification number, and the technical name of the infectious substance. Regulated medical waste does not require the technical name.

External rigid containers holding infectious substances must also bear the etiological agent label described and illustrated in 49 CFR 172.323, *Infectious Substances*.

The outer container must be clearly marked with Environmental Protection-Resource Conservation and Recovery Act (ENV-RCRA) New Mexico Special Waste marking with the following information:

- Generator name
- Group
- Location (TA, Building, and Room)
- Telephone number

Contact geri@lanl.gov for the label.

If required by DOT, the outer container must bear the infectious substance label.

If the package contains a liquid, orientation arrows must be marked on the outer container.

10.1.7 Additional Requirements and/or Restrictions

Infectious substances that are also regulated by Resource Conservation and Recovery Act (RCRA) as hazardous wastes must be packaged, labeled, marked, and transported according to the regulations for infectious substances. However, the waste itself must be managed as a hazardous waste in that all Treatment, Storage, and/or Disposal (TSD) processes must comply with the RCRA regulations for hazardous wastes.

Medical waste that is also a RCRA-regulated hazardous waste must be packaged, labeled, marked, transported, stored, treated, and/or disposed of according to the RCRA regulations for the hazardous characteristic or constituent contained in the waste.

All infectious and/or medical on-line Waste Disposal Request (WDR) Forms must be submitted at least 45 days before exceeding the storage limitation.

10.2 Radioactive, Medical, and/or Biological Waste

Radioactively contaminated medical and biological waste may be disposed of at TA-54, Area G, provided it complies with the criteria listed in Sections 10.2.1 through 10.2.6 of this document. Radioactively contaminated regulated medical waste, biological waste containing a hazardous constituent, and infectious substances are managed on a case-by-case basis.

No: P930-1 LANL Waste Acceptance Criteria
Attachment 10. Infectious/Medical/Biological Waste (Cont.) (Page 4 of 4)

10.2.1 Waste Form

To be acceptable for disposal at TA-54, Area G, regulated medical waste must

- Conform to the requirements of Section 3.4 of Attachment 3, *Solid Low-Level Waste (LLW)*,
- Be frozen,
- Be certified as a non-biohazard, and
- Be packaged in slaked lime if containing animal tissue.

Biological waste must meet the requirements of Section 3.1 of Attachment 3, *Solid Low-Level Waste (LLW)*.

10.2.2 Package Contents

Packages of radioactively contaminated medical and biological waste must conform to the requirements of Section 3.2 of Attachment 3, *Solid Low-Level Waste (LLW)* and the DOT requirements described in Section 10.1.3.

10.2.3 Container Requirements

Radiological medical waste must be bagged in double red plastic bags and placed in a leak-proof outer container. This waste must also be packaged according to the DOT container requirements described in Section 10.1.3 for medical waste. Containers of radiological biological waste must meet the requirements of Section 3.3 of Attachment 3, *Solid Low-Level Waste (LLW)*.

10.2.4 Package Weight

Package weight must not exceed the rated capacity of the container based on DOT-specified package certification tests for the contained material.

10.2.5 External Package Contamination

Removable surface radiological contamination must not exceed the limits established in P121, *Radiation Protection*. There must be no external contamination of infectious material on the exterior surfaces of the packages of waste.

10.2.6 Package Marking and Labeling

Packages must be marked and labeled according to Section 10.1.6 and Section 3.6 of Attachment 3, *Solid Low-Level Waste (LLW)*.

10.2.7 Additional Requirements

Radioactively contaminated medical and/or biological waste must also meet the requirements of Section 3.7 of Attachment 3, *Solid Low-Level Waste (LLW)*.

No: P930-1 LANL Waste Acceptance Criteria [Back]
Attachment 11. Polychlorinated Biphenyl (PCB) Waste (Page 1 of 5)

Polychlorinated Biphenyls (PCBs), a family of over 200 variously chlorinated biphenyl isomers, can vary in form from oily liquids to white crystalline solids or black, tar-like resins. Many electrical devices contain PCBs for their dielectric or insulating properties.

The Toxic Substance Control Act (TSCA) regulates in-use and waste materials containing PCB concentrations equal to or greater than 50 ppm. For the purposes of this document, the term PCB waste refers to waste from a source containing 50 ppm or more PCBs. Also, waste that was diluted to less than 50 ppm PCBs must still be managed as waste having PCBs equal to or greater than 50 ppm. However, it should be noted that some LANL waste treatment facilities, such as the Sanitary Wastewater System (SWWS) Plant and the Radioactive Liquid Waste Treatment Facility (RLWTF), will not accept wastes with any detectable PCBs.

PCB waste can include, but is not limited to, voltage regulators, vacuum pumps, oils, fluorescent light ballasts, spill cleanup debris, hydraulic systems, capacitors, transformers, rags, and protective equipment. The generator should contact the PCB Management Program at (505) 667-4715 to determine the classification of PCB waste based on PCB concentration.

11.1 Nonradioactive Polychlorinated Biphenyl (PCB) Waste

Nonradioactive PCB waste is stored at Technical Area (TA)-54 until it can be shipped to an off-site disposal facility. Nonradioactive PCB waste must be disposed of within one year of the date of waste generation.

11.1.1 Waste Form

Equipment that contains or has contained PCBs is regulated, and therefore managed, as though it contains PCBs at the original concentration. Pumps, lathes, and other equipment (except capacitors) must be drained of all fluids. Generators should contact the Laboratory's services contractor to drain the equipment. The PCB Management Program (dyea@lanl.gov) should be notified of any PCB item that is removed for disposal.

Transformers with PCB concentrations of 50 ppm and above must also be drained by the Laboratory's services contractor before shipment.

11.1.2 Package Contents

The concentration of PCBs in the waste must be identified and documented on the on-line Waste Disposal Request (WDR) Form or the Consolidated Remote Waste Storage Site Disposal Request (CRWSSDR). The concentration is determined either by analysis (for oils) or by identification number (for capacitors). The article or equipment from which PCB oil is drained retains the PCB concentration of the oil.

If the PCB waste contains a hazardous constituent, the constituent and its concentration must also be identified and documented.

11.1.3 Container Requirements

Nonradioactive PCB waste must be packaged according to the requirements in P409, *Waste Management*. Solid PCB waste, such as contaminated debris, capacitors, and other PCB articles or equipment, must be packaged according to DOT regulations. Drums containing leaking PCB equipment must contain sufficient absorbent material to absorb the contents of the equipment. The presence of leaking PCB equipment must be documented on the on-line Waste Disposal Request (WDR) Form. Liquid PCB waste, such as oil drained from transformers, must be packaged in accordance with DOT regulations.

The packaging requirements for a transformer containing PCBs depend on the size, type, and contents of the transformer. The generator should contact Waste Services–Hazardous and Mixed Waste Operations (WS-HMWO) for assistance in packaging and handling transformers.

The containers must be in good condition, without severe rust, dents, deep scratches, bulges, or other structural defects. The container must be compatible with the waste it contains. If the PCB waste contains a Resource Conservation and Recovery Act (RCRA)-regulated hazardous constituent, the container must also be appropriate for the RCRA-regulated hazardous constituent.

11.1.4 Headspace in Containers with Liquid

According to 49 CFR 173.24, *General Requirements For Packagings and Packages*, (h), sufficient ullage (outage or headspace) must be left when filling receptacles with liquids. Liquids may expand because of temperature changes during transportation. Headspace must be sufficient to eliminate leakage or permanent distortion of the packaging or receptacle resulting from this expansion. Liquids must not completely fill a receptacle at a temperature of 131ºF or less (49 CFR 173.24a[d]). Containers must not be filled with liquids to more than 85% of their rated capacity. For example, WDP-HMWO has determined that a 6-in. headspace should be left in a 55-gal. drum.

11.1.5 Package Weight

The maximum acceptable net weight for bulk (55-gal.) PCB waste is the rated capacity of the container based on DOT-specified package certification tests for the contained material.

11.1.6 External Package Contamination

There must be no PCB contamination on the exterior of the package. Contaminated packages must be overpacked in either 55-gal. or 83-gal. overpack containers.

11.1.7 Package Marking and Labeling

Except for small (less than 1.4 kg [3 lb] dielectric fluid) PCB capacitors and light ballasts, each PCB item placed inside a container must have a PCB marking and a PCB identification number assigned by the PCB Management Program. Containers of waste having less than 50 ppm PCBs must have the blue and white label certifying that the fluid in or drained from the equipment or article is not classified as a PCB waste. Note that this classification does not mean that the level of PCBs in the waste is below detection; detectable PCBs disqualify any waste material for treatment at SWWS or the RLWTF. Containers of waste having from 50 ppm or more PCBs must have the label stating “Caution—Contains PCBs. The label is yellow and black with a black border and measures 15.24 cm (6 in.) square (Laboratory Stock No. CM 3842). Contact the PCB Management Program, dyea@lanl.gov for PCB labels.

The outer container must also be marked with the date the waste was taken out of service and into storage, a PCB identification number, if applicable, obtained from the PCB Management Program, and a non-RCRA marking as provided by the pickup crew. PCB waste containing a RCRA-regulated hazardous component must be marked and labeled according to the requirements for that component (e.g., the hazardous waste marking and the DOT-required label). All labels and markings must be placed on the outer container so that they are readily visible to an inspector. Contact the PCB Management Program, dyea@lanl.gov for PCB labels.

11.1.8 Additional Requirements

The PCB identification number of the container and the individual PCB items and the out-of-service date must be included on the CWDR.

If PCB waste is coming from a temporary PCB storage area, (<30 days), the disposal request must be submitted 20 days before exceeding the storage limitation.

If PCB waste is coming from a general PCB storage area, (<90 days), the disposal request must be submitted 45 days before exceeding the storage limitation.

If PCB waste is coming from a long-term PCB storage area, (<one year), the disposal request must be submitted three months before exceeding the storage limitation.

11.2 Radioactive Polychlorinated Biphenyl (PCB) Waste

Radioactive PCB waste is stored at TA-54 until it can be shipped to an off-site disposal facility. Radioactive PCB waste having treatment/disposal options must be disposed within one year of the date of waste generation. Radioactive PCB waste with no disposal path forward may be stored for more than one year provided a written record documenting all continuing attempts to secure that disposal is maintained until the waste is disposed of.

11.2.1 Liquid

Liquid radioactive PCB waste with greater than or equal to 500 ppm PCBs cannot be solidified for disposal.

Generators of liquid radioactive PCB waste must subject their waste to the chemical analyses for the following:

- Volatile Organic Compounds (VOCs)
- Semivolatile Organic Compounds (SVOCs)
- total metals
- chlorides
- fluorides
- total sulfur
- total phosphorous
- reactive cyanide
- reactive sulfide
- ash content

- BTU content
- ignitability
- pH
- corrosivity
- water content

The following physical parameters are required:

- total suspended solids
- specific gravity
- viscosity
- boiling point
- freezing point

Each waste stream must be analyzed for all radionuclides considered to be potentially present based on the waste generator's process knowledge. Packaging requirements are presented in Section 11.1.1 through Section 11.1.6 of this document.

PCB waste that is also a MLLW may be acceptable for treatment. The analytical and packaging requirements for PCB waste with RCRA components are identical to the requirements presented in this section for liquid radioactive PCB waste. In addition, liquid radioactive PCB waste must meet the characterization requirements for MLLW, as given in Section 7.2. Liquid radioactive waste with any detectable PCBs cannot be treated at the RLWTF.

11.2.2 Solid Polychlorinated Biphenyl (PCB) Waste

Solid, radioactive PCB waste is disposed off-site. In addition to meeting the definition of a LLW, the waste must meet the criteria below.

11.2.2.1 Waste Form

The waste must conform to the criteria listed in Section 3.1 of Attachment 3, *Solid Low-Level Waste (LLW)*. PCB waste must be stabilized in accordance with 40 CFR 761.75, *Chemical Waste Landfills*, (b)(8)(ii).

11.2.2.2 Package Contents

The package contents must be identified as to the PCB concentration and type of radioactive contamination, and must conform to the requirements listed in Section 3.2 of this document.

11.2.2.3 Container Requirements

Containers used to package solid PCB waste must meet the requirements of Section 3.3 of this document. Bulk shipments of PCB-contaminated soil may be transported in plastic-lined trucks.

11.2.2.4 Package Weight

Package weight must not exceed the rated capacity of the container based on DOT-specified package certification tests for the contained material.

11.2.2.5 External Package Contamination

Removable surface radiological contamination must not exceed the limits established by P121, *Radiation Protection*. There must be no PCB contamination on the exterior of the waste package.

11.2.2.6 Package Marking and Labeling

The PCB waste packages must be marked in accordance with Section 3.6 and with the "Caution—Contains PCBs" label described in Section 11.1.7 of this document.

11.2.2.7 Additional Requirements

Radioactively contaminated PCB waste must also meet the requirements of Sections 11.1.8 and 3.7 of this document.

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Attachment 12. Green is Clean Waste (Page 1 of 6)

Green-Is-Clean (GIC) waste generated in radiological control areas includes all non-regulated waste that has been actively segregated as "clean" (that is, non-radioactive) through the use of waste-generator acceptable knowledge. This attachment defines the acceptance criteria for GIC wastes

The Waste Acceptance Criteria (WAC) in this section apply to waste sent to Low-Level Waste Disposition's (WDP-LLWD) Green-Is-Clean (GIC) Operations for GIC verification. Waste sent to Technical Area (TA)-54's Decontamination Facility is covered in WAC Attachment 2, *Contact-Handled Transuranic (TRU) Waste*. Waste sent directly from the generator site for recycling or disposal is governed by P121, *Radiation Protection*.

For WAC-specific to low-density materials, see Section 12.1; for WAC-specific to high-density materials, see Section 12.2. Guidance for recycling or disposal of all types of GIC waste is provided by the Environmental Protection-Pollution Risk Reduction Office (ENV-RRO), Pollution Prevention Program (P2).

The LANL GIC program is supported by

- GIC Verification Operations (GIC Operations) at TA-54, Area G (WPD–LLWD), and
- ENV-RRO Pollution Prevention Program.

Waste accepted by GIC Operations for verification requires a previous site-specific evaluation of applicable waste streams by ENV-RRO.

Acceptable knowledge is a waste stream characterization method that can be used to meet all or part of the waste analysis requirements appropriate for the waste media. The method may include documented process knowledge, supplemental waste analysis data, and/or facility records of analysis. Process knowledge is knowledge based on operational experience and can be used to evaluate whether materials have been located or used in a way that could have caused radiological contamination.

Properly segregated GIC waste, supported by generator acceptable knowledge, has a high probability of being free of radioactive contamination. GIC Operations provides a verification check on the acceptable knowledge-based determination that low-density and certain high-density GIC wastes are free of radioactive contamination.

12.1 Low-Density Materials

Segregated low-density materials are verified to be free of Department of Energy (DOE)–added radioactivity by GIC Operations by using high-sensitivity measurement systems optimized to detect very small quantities of common LANL radionuclides.

12.1.1 Waste Form

GIC waste received by GIC Operations must be in a solid form to minimize the potential for dispersion of materials during handling. The physical, chemical, and biological contents of GIC waste are restricted as noted below.

Small amounts of high-density material such as dirt, dust, or other debris incidentally associated with low-density GIC waste are acceptable. However, dirt and dust contain natural radioactivity that may prevent the waste from passing the verification check.

12.1.2 Package Contents

GIC low-density packages may contain any combination of the following approved materials:

- paper products and cardboard,
- pieces of low-density wood (for example, pine) small enough to fit into the approved containers described in Section 12.1.4,
- plastic products, including common Personal Protective Equipment (PPE) (e.g., gloves, Tyvek™ coveralls), and/or
- cloth or rags, including nylon and other low-density synthetic fabrics.

Paper to be processed through the shredder (e.g., procedures, documents that may contain Unclassified Controlled Nuclear Information [UCNI]) should be packaged separately from items that cannot be shredded. Staples and paper clips attached to paper are acceptable, as is used tape. Thick catalogs, books, or journals (like phone books) should be separated at the binding into sections of 50 pages or less.

12.1.3 Restrictions

The following materials are specifically excluded from processing at the GIC Operations low-density material verification facility:

- metal products, including otherwise low-density items that have metal pieces (for example, three-ring binders);
- other high-density materials, including polyvinyl chloride, concrete, and soil;
- all Resource Conservation and Recovery Act (RCRA)-regulated hazardous waste;
- any material potentially contaminated with tritium and/or C-14;
- classified material;
- absorbed or free liquids;
- immobilized powders;
- aerosol cans or pressurized containers of any kind;
- asbestos;
- Polychlorinated Biphenyl (PCB) waste;
- beryllium;
- infectious and/or medical and/or biological waste;
- explosives; and
- pyrophorics

Certain materials of moderate density (like very small amounts of glass) may be acceptable for verification measurement, depending upon the potential radioactive contaminants and the total fraction of moderate-density material in the waste container. For materials that are neither specifically approved nor excluded from GIC waste in the LANL WAC, approval for verification must be obtained from the GIC Operations Systems Engineer before shipment to TA-54.

12.1.4 Container Requirements

Low-density GIC waste for verification by GIC Operations must be packaged so that the materials present no hazard during shipping, handling, and verification measurement. Low-density waste may be packaged in any of the following:

- GIC green-striped bags
- 2-ft^3 cardboard boxes (with or without plastic lining)
- Other plastic bags or cardboard boxes as approved by the GIC Operations system engineer

Note: The verification instrument utilizes a 30-gallon plastic drum to hold items in position; items that do not fit within the drum will be rejected.

12.1.5 Package Weight

To avoid breakage, low-density GIC packages (boxes, plastic bags, etc.) should not be overburdened. The upper weight limit is 15 kg per package (33 lb), but 10 to 12 kg (22 to 26.5 lb) package limits are optimal for the assay instruments.

12.1.6 External Package Contamination/Dose Rate

GIC packages must exhibit no measurable surface contamination (removable or fixed), and external surface dose rates must not exceed the generating facility's background radiation dose rate.

12.1.7 Package Marking and Labeling

All packages of low-density GIC waste must exhibit a green GIC barcode sticker.
See Section 12.4, Quick Reference for Waste Generators, for information on obtaining barcode stickers.

12.1.8 GIC Low-Density Waste Shipment Documentation

As indicated on FMU64-F224, R1, *Green is Clean Material Disposal Request Form*, GIC shipments are exempt from DOT regulation by meeting DOT exempt classification standards.

FMU64-F224, R1, which documents acceptable knowledge of material shipped for verification, is to be sent to GIC Operations before shipment for approval by the GIC Operations Systems Engineer.

See Section 12.4, Quick Reference for Waste Generators, for information on obtaining required forms and approvals.

12.2 High-Density Waste

By using the Long-Range Alpha Detector (LRAD) to rule out the presence of alpha-emitting radionuclides, GIC operations verifies that segregated, small, high-density wastes (circuit boards, pipe joints, tools, etc.) are free of DOE-added alpha contamination. Only waste items with the potential for alpha contamination are acceptable for this verification program; waste items with the potential for gamma and/or beta contamination only are not acceptable for LRAD verification.

12.2.1 Waste Form

GIC waste received by GIC Operations must be in a solid form to minimize the potential for dispersion of materials during handling. The physical, chemical, and biological contents of GIC waste are restricted as noted herein.

Small amounts of material such as dirt, dust, or other debris incidentally associated with high-density GIC waste are acceptable.

12.2.2 Package Contents

GIC Operations high-density material packages may contain any combination of the following approved materials:

- iron or steel,
- aluminum or other nonhazardous metals,
- copper, including copper with lead solder,
- circuit boards and other high-density materials such as plastics or glass capacitors (these should be packaged separately for safety purposes and for media control), and
- cathode ray tubes.

The LRAD operates on the principle of moving ionized air near the object being assayed to detectors at the far end of the LRAD instrument. Therefore, items that have potentially contaminated surfaces inaccessible to the air movement (such as the insides of closed containers) are ineligible for this type of verification assay. Items acceptable for verification assay by the LRAD are limited by the size of the LRAD airflow chamber, which is comparable to the size of a large microwave oven (17 in. × 22 in. × 13 in.).

12.2.3 Restrictions

The following materials are specifically excluded from processing at the GIC Operations high-density material verification facility:

- low-density materials such as paper,
- soil,
- RCRA-regulated hazardous waste (except recycled materials such as circuit boards and lead pipe joints),
- any material potentially contaminated with non-alpha-emitting radionuclides,

- classified material,
- absorbed or free liquids,
- immobilized powders,
- aerosol cans or pressurized containers of any kind,
- asbestos,
- PCB waste,
- beryllium,
- infectious and/or medical and/or biological waste,
- explosives, and
- pyrophorics.

For materials that are neither specifically approved nor excluded from GIC waste in the LANL WAC, approval for verification must be obtained from the GIC system engineer before shipment to TA-54.

12.2.4 Container Requirements

High-density GIC waste for verification through GIC Operations must be packaged so that the materials present no hazard during shipping, handling, or verification operations.

12.2.5 Package Weight

There are no specific package weight limits for high-density GIC material other than the weight limit of the chosen shipping container. However, smaller packages are preferable for ease of handling and to prevent the spread of contamination within a package if one item in the package is contaminated.

12.2.6 External Package Contamination and Dose Rate

GIC packages must exhibit no measurable surface contamination (removable or fixed), and external surface dose rates must not exceed the generating facility's background radiation dose rate.

12.2.7 Package Marking and Labeling

Packages of high-density GIC waste must exhibit a green GIC barcode sticker. See Section 12.4 for information on obtaining barcode stickers.

12.2.8 GIC High-Density Waste Shipment Documentation

As indicated on the FMU64-F224, R1, *Green is Clean Material Disposal Request Form*, GIC shipments are exempt from DOT regulation by meeting DOT exempt classification standards.

FMU64-F224, R1, documenting acceptable knowledge of material shipped for verification, is to be sent to GIC Operations before shipment for approval by the GIC Operations systems engineer.

See Section 12.4 for information on obtaining required forms and approvals.

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Attachment 12. Green is Clean Waste (Cont.) (Page 6 of 6)

12.3 Documenting Generator Participation in the LANL Green is Clean Effort

Generators preparing GIC shipments for local Radiological Control Technician (RCT) survey and direct release from their facility are encouraged to send their completed FMU64-F224, R1, *Green is Clean Material Disposal Request Form*, to GIC Operations for entry into the database. Whether generators release GIC materials directly or send their GIC materials to GIC Operations at TA-54 for verification, each shipment entered into the GIC database documents a generator's participation in the LANL GIC effort.

Note: Although there is no charge for entering generator-direct-released GIC shipment information into the database, the generator's complete "Cost Center/Program Code/Account Code/Work Package" must be included on the FMU64-F224, R1 because this is the participant's identifier in the database.

12.4 Quick Reference for Waste Generators

Obtain a blank copy of FMU64-F224, R1, *Green is Clean Material Disposal Request Form*, directly from the web page, or for general assistance call the GIC Operations system engineer at (505) 665-4356.

Generators preparing GIC shipments may obtain GIC green barcode stickers from their WMC or by calling the GIC Operations system engineer at (505) 665-4356.

For FMU64-F224, R1 approval before shipment, fax the completed form to the GIC Operations system engineer at Fax No. (505) 665-8347.

Reminder: The waste generator's Cost Center, Program Code, Account Code, and Work Package are required because this is the generator's identifier in the database.

Before waste is accepted by GIC Operations, the following will be verified:

- A completed FMU64-F224, R1 is approved by the GIC Operations System Engineer, and
- Containers display green GIC barcode stickers.

Shipments for which it is shown that documentation is not in accordance with the LANL WAC must be refused by the GIC Operations system engineer or designee and will be returned to the waste generator or WMC.

After GIC waste verification is complete and the results have been entered into the GIC database, the GIC Operations System Engineer or designee will notify the waste originator or WMC if any of the GIC waste has failed to meet the acceptance criteria or has failed the verification check. The generator is responsible for disposition of waste that fails the verification check.

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Attachment 13. New Mexico Special Waste (Page 1 of 2)

This section describes the requirements for the storage of New Mexico special waste at Technical Area (TA)-54.

For the purpose of this document, New Mexico "special waste" refers to the following types of waste:

- treated, Formerly Characteristic Hazardous Waste (TFCHW);
- industrial process waste, which is solid waste resulting from industrial processes, such as factories, processing plants, and repair and cleaning establishments, and waste that, unless specially handled or disposed, may harm the environment or endanger the public health or safety;
- residue from a spill of a chemical substance or commercial product (including contaminated soils) that, unless specially handled or disposed, may harm the environment or endanger the public health or safety;
- ash; and
- petroleum-contaminated soil, that has a sum of benzene, toluene, ethylbenzene, and xylene isomer concentrations of greater than 50 mg/kg, or benzene concentration individually greater than 10 mg/kg, or a total petroleum hydrocarbon concentration of greater than 100 mg/kg.

13.1 Waste Form

TFCHW must have been treated according to the applicable operating procedure to eliminate the Resource Conservation and Recovery Act (RCRA) characteristic by neutralizing the pH, reducing the reactivity or the ignitability of the waste, or by reducing the extractable concentration of the metallic or organic toxic component of the waste as determined by the Toxicity Characteristic Leaching Procedure (TCLP). The treated waste must then be solidified. New Mexico special waste destined for TA-54 may not contain free liquids. Free liquids must be absorbed sufficiently to pass the paint-filter test.

The physical, chemical, and hazardous characteristics of the waste must be documented. New Mexico special wastes must be evaluated for ignitability, corrosivity, reactivity, toxicity, free liquids, other applicable parameters, RCRA Subtitle C listed wastes (40 CFR 261, *Identification and Listing of Hazardous Waste*) TSCA-regulated constituents, and other applicable regulated constituents. If applicable, based on acceptable knowledge, petroleum-contaminated soils must also be analyzed for total petroleum hydrocarbons, benzene, toluene, ethylbenzene, xylene, and any other applicable contaminants.

Noncontaminated sand and ash from high-explosive operations must be segregated from barium-contaminated sand and ash, based on knowledge of the chemical composition of the material and analysis, if performed.

13.2 Package Contents

Packaging must comply with DOT specifications.

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Attachment 13. New Mexico Special Waste (Cont.) (Page 2 of 2)

13.3 Container Requirements

New Mexico special waste that is considered a hazardous material by the DOT must be packaged according to DOT regulations. The waste should be packaged in the smallest container possible. The container must be in good condition, without severe rust, dents, deep scratches, bulges, or other structural defects. The container must be compatible with the waste it contains, meet DOT specifications, and be closed according to DOT specifications.

Each waste container must comply with the following capacity criteria, as they apply:

- Waste must be prepackaged to meet DOT specifications.
- Containers having a volume greater than 5 gal. must be packed in DOT single packaging (no combination packaging).
- Overpack drums with more than a 55-gal. capacity may be used only to contain defective waste containers.

The generator must repackage any waste or overpack any waste container that does not meet these Waste Acceptance Criteria (WAC).

13.4 Package Weight

The maximum acceptable net weight for bulk (55-gal.) waste containers is the rated capacity of the container based on DOT-specified package certification tests for the contained material.

13.5 External Package Contamination

There must be no chemical contamination on the exterior of the package. Contaminated packaging must be overpacked.

13.6 Package Marking and Labeling

Containers of New Mexico special waste must have a marking describing the contents and potential health, safety, and environmental hazards associated with the waste. The container must also be marked with a LANL-approved New Mexico Special Waste label. Contact geri@lanl.gov for the label. For TFCHW, the marking must indicate that no hazards are associated with the waste. If the waste is also regulated by DOT, the marking must include the DOT proper shipping name and identification number, and the container must have the appropriate DOT label.

13.7 Additional Requirements

Disposal requests for NM special waste must be submitted at least 45 days before exceeding the storage requirement.

For the purpose of these Waste Acceptance Criteria (WAC), nonhazardous waste is any waste managed at Technical Area (TA)-54 that does not fit into any other waste category listed in this document. Nonhazardous waste may be described as any nonradioactive waste that is not regulated by the Environmental Protection Agency (EPA) through RCRA or through the Toxic Substance Control Act (TSCA). Nonhazardous waste may still be regulated by DOT as a hazardous material.

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Attachment 14. Non-Hazardous Waste (Page 1 of 2)

14.1 Waste Form

There are no restrictions on the form of nonhazardous waste that can be stored in TA-54.

14.2 Package Contents

Unknown wastes will not be accepted for storage at TA-54. An approved WPF (Form 1346, *Waste Profile Form)* must be provided before acceptance at TA-54. Each container of waste may contain both liquid waste and solid waste if the waste is non-Resource Conservation and Recovery Act (RCRA) and non-DOT material. All wastes placed or accumulated in a container must be compatible with each other. Incompatible wastes must be segregated.

Small quantities of unknown wastes (4 liters [1 gal.] or less for liquids and 4.5 kg [10 lb] or less for solids) may be eligible for the hazardous categorization program. In this program, unidentified waste can be characterized using field tests. Contact Environmental Protection-Resource Conservation and Recovery Act (ENV-RCRA) for guidance on the hazardous categorization program.

14.3 Container Requirements

If the nonhazardous waste is regulated by the DOT, the container must comply with the regulations established in 49 CFR 172, *Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements*, 49 CFR 173, *Shippers—General Requirements For Shipments and Packagings*, and 49 CFR 178, *Specifications for Packagings*. The container must be in good condition, without severe rust, dents, deep scratches, bulges, or other structural defects. The container must be compatible with the waste it contains and must be closed according to DOT specifications.

Gas cylinders must also meet specific criteria of 49 CFR 178, Subpart C, to be accepted for transport. The cylinders must not have welded seams, must have the appropriate valve, and must be approved by the DOT for the contained material. The gas cylinder's DOT specification number must be included on the CWDR.

14.3.1 Container Capacity

Each waste container must comply with the following capacity criteria, as they apply:

- Waste must be prepackaged to meet DOT specifications.
- Containers of a volume less than 19 liters (5 gal.) or 50 lb must be placed in a DOT approved combination packaging or in a lab-pack container per 49 CFR 173.12, *Exceptions for Shipment of Waste Materials.*
- Containers of a volume greater than 5 gal. must be packaged in a DOT single packaging (no combination packaging).
- Overpack drums with more than a 55-gal. capacity may be used only to contain defective waste containers.

14.3.2 Lab Pack Criteria

For waste to be considered for lab packing, the criteria of 49 CFR 173.12 must be met.
The generator must repackage any waste or overpack any waste container that does not meet the applicable acceptance criteria.

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Attachment 14. Non-Hazardous Waste (Cont.) (Page 2 of 2)

14.3.3 Headspace in Containers with Liquid

According to 49 CFR 173.24, *General Requirements For Packagings and Packages*, (h), sufficient ullage (outage or headspace) must be left when filling receptacles with liquids. Liquids may expand because of temperature changes during transportation. Headspace must be sufficient to prevent leakage or permanent distortion of the packaging or receptacle resulting from this expansion. Liquids must not completely fill a receptacle at a temperature of 131ºF or less (49 CFR 173.24a[d]). Containers must not be filled with liquids to more than 85% of their rated capacity. For example, WDP-HMWO has determined that a 6-in. headspace should be left in a 55-gal. drum.

14.3.4 Beryllium

Beryllium waste must be double-bagged or double-wrapped.

14.4 Package Weight

The maximum acceptable net weight for bulk (55-gal.) waste is the rated capacity of the container based on DOT-specified package certification tests for the contained material, whichever is less. The maximum acceptable gross weight for lab-packed waste is 205 kg (452 lb), or the rated capacity of the container, whichever is less.

14.5 External Package Contamination

There must be no external chemical contamination on any waste package. Externally contaminated packages must be overpacked, or the waste must be repackaged.

14.6 Package Marking and Labeling

Each container of nonhazardous waste must have a non-regulated waste marking and any other DOT-required labels. The non-regulated waste marking must contain the DOT proper shipping name and identification number. The proper shipping name must include technical names of the hazardous components, if applicable. Beryllium waste must be marked with the warning shown in Fig. 14-1.

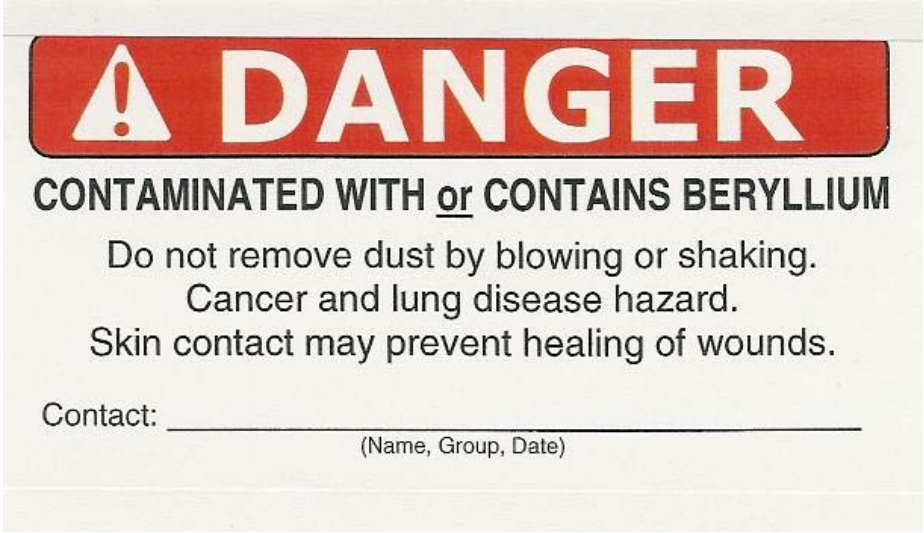

Fig. 14-1. Warning label required for beryllium packages.

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Attachment 15. Dumpster Waste (Page 1 of 3)

LANL has many dumpsters on-site that are designated for sanitary waste trash only. These dumpsters are sent directly to the Los Alamos County Landfill. The following items should never be placed into a trash dumpster at LANL:

- radioactive waste;
- TSCA-regulated Polychlorinated Biphenyl (PCB) waste (e.g., equipment, tar impregnated wire, PCB-contaminated oil-stained equipment);
- hazardous or mixed waste;
- New Mexico special waste;
- universal waste;
- used oil;
- ammunition or explosives;
- asbestos or asbestos-containing material;
- PCB-containing items;
- infectious or biological waste;
- rodents or droppings (except debris from the KSL rodent control program);
- respirator cartridges;
- oil filters;
- chemical or product containers (such as paint cans, glass chemical bottles containing the product or containers that held P- or U-listed chemicals);
- aerosol cans;
- gas cylinders;
- classified, sensitive, personal identifiable information, or Unclassified Controlled Nuclear Information (UCNI) labeled materials;
- radioactive, hazardous, or classified labels;
- light bulbs and ballasts;
- batteries, including NiCad, gel cell, lithium, lead acid batteries; small alkaline batteries are permissible;
- smoke detectors;
- tritium exit signs;
- electronics;
- construction and demolition debris;
- wood scraps and pallets (refer to Section 15.1.1 for more information on how to manage wood scraps and pallets);
- circuit boards;
- thermometers;
- flammables or material that can spontaneously combust;

- corrosives;
- pharmaceuticals;
- poison;
- metal (refer to Attachment 19, *Non-Hazardous, Non-Radioactive Scrap Metal*, for how to recycle or dispose of metal); or
- recyclable material, such as paper products, aluminum cans, and plastic bottles.

Contact a WMC for assistance with disposal of any of these items.

15.1 Recycling at LANL

LANL has a recycling program in place for many types of materials. It is environmentally and financially beneficial to recycle whenever possible, as long as the materials are not chemically or radioactively contaminated. For more information, see the LANL recycle website at http://int.lanl.gov/recycle.

15.1.1 Types of Recyclables

Cardboard dumpsters exist at almost every LANL Technical Area (TA). Remove internal plastic and Styrofoam™ packing materials and flatten cardboard as much as possible before placing into the dumpster. Contact Roads and Grounds at (505) 667-6111 if the dumpster in your Area is full before the regularly scheduled pickup.

Roll carts are available for aluminum cans and plastic containers. Clean aluminum cans, steel cans, and plastic bottles (no food debris) with recycling codes 1 and 2 can be placed in these bins. E-mail wastenot@lanl.gov if you need a bin or if the bin in your Area is full before the regularly scheduled pickup.

Mixed-paper roll carts are available in every building at LANL. Place only non-classified, non-sensitive paper products in these bins. For a full list of acceptable recycled paper products, visit http:/int.lanl.gov/recycle/mixed_paper.shtml. Plastic bags of shredded paper can be placed into or next to these bins as well. E-mail wastenot@lanl.gov if the roll cart in your Area is full before the regularly scheduled pickup.

Office items such as batteries, aerosol cans, and light bulbs can be recycled. Contact your group's WMC for assistance with management of these items.

Non-contaminated, non-radioactive concrete, asphalt, and soil can all be recycled. Generators who want to recycle concrete, asphalt, and soil off-site have to obtain approval from Environmental Protection-Resource Conservation and Recovery Act (ENV-RCRA) in accordance with P101-17, *Excavation/Fill/Soil Disturbance,* before off-site disposition. Contact ENV-RCRA at (505) 667-0666 for instructions on handling these materials for recycling.

Transparencies that do not contain classified or sensitive information can be recycled by putting the transparencies into an interoffice envelope marked "A1000–transparencies."

Toner cartridges can be recycled by placing the toner cartridge into a box, marking the box "A1000–toner cartridge," and placing the box in the designated area for your group.

Scrap metal that is not radioactively or chemically contaminated can be recycled through the LANL recycle program. You can request a 15- or 30-yard roll-off bin by e-mailing wastenot@lanl.gov. Please refer to the Department of Energy (DOE) moratorium on metal recycling for further information, http://int.lanl.gov/recycle/docs/PR-00-182.pdf (See Attachment 19, *Non-Hazardous, Non-Radioactive Scrap Metal*, of this document for more information on recycling non-hazardous, non-radioactive metals.)

Wood scraps, such as broken wood pallets, are managed through the Material Recycling Facility (MRF). Pallets that are in good, reusable condition should be taken to Salvage. E-mail salvage@lanl.gov for information. Generators should request a 30-yard roll-off bin for collection of broken wood pallets and other wood products. To request a roll-off bin, e-mail wastenot@lanl.gov.

15.2 Salvage

Usable office equipment and furniture can be sent to the LANL Salvage operation for internal reuse or public resale. Usable and broken electronics also can be sent to LANL Salvage for auction. You must contact your group's property administrator for assistance. If you need LANL Salvage to pick up non-barcoded equipment, furniture, or electronics, e-mail salvage@lanl.gov.

For more information, see the LANL recycle website at http://int.lanl.gov/recycle.

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Attachment 16. Sanitary Wastewater System (SWWS) (Page 1 of 7)

16.1 Facility Requirements

The purpose of the Waste Acceptance Criteria (WAC) for the Technical Area (TA)-46 Sanitary Wastewater System (SWWS) Plant is to ensure compliance with the Laboratory's National Pollutant Discharge Elimination System (NPDES) Outfall Permit and the SWWS Plant's Groundwater Discharge Permit and to assure against operational upsets of the physical and biological processes of the plant caused by incompatible waste streams.

Sanitary sewer waste, including bathroom waste, kitchen waste, janitorial waste from non-rad areas, and de minimus quantities of cooling and boiler blowdown from equipment rooms and from other sources, is acceptable for discharge into the SWWS Plant. Industrial wastewater, including radioactive waste, chemical waste, high explosives waste, and other industrial waste is not acceptable for discharge into the SWWS Plant.

The SWWS WAC Committee is responsible for the review of proposals to discharge new waste streams into the SWWS Plant. The SWWS WAC Committee includes four members: the SWWS plant superintendent; the Support Services Subcontractor (SSS) environmental group leader; the SWWS plant leader for the Laboratory's Utilities and Infrastructure Organization; and, the NPDES Outfall Permit leader for the Laboratory's Water Quality and Resource Conservation and Recovery Act (RCRA) Organization.

Sanitary sewer waste acceptable for treatment at the SWWS Plant is usually discharged into drains or sinks. Before discharging treated effluent to the environment, the SWWS Plant treats the sanitary sewer waste to meet the effluent limits specified in the Laboratory's National Pollutant Discharge Elimination System (NPDES) Permit No. NM0028355. Most sanitary sewer waste is discharged directly into the SWWS Plant through the sanitary sewer collection system. A smaller volume is transported to the SWWS Plant from sanitary holding tanks, septic tank systems, wastewater containers, and portable toilets. SWWS Plant personnel periodically pump these sources and truck the waste to the SWWS Plant.

SWWS Plant WAC are based on the following requirements:

- ALARA Laboratory policy
- Clean Water Act (The Federal Water Pollution Control Act)
- DOT Regulations
- Department of Energy (DOE) O 5400.5, *Radiation Protection of the Public and the Environment*
- New Mexico Solid Waste Regulations (disposal of sludge, grit, and screenings)
- New Mexico Water Quality Act
- New Mexico Water Quality Control Commission (WQCC) Regulations
- NPDES Outfall Permit No. NM0028355
- RCRA
- TSCA
- Water Quality Standards for Interstate and Intrastate Streams in New Mexico
- Groundwater Discharge Permit for the SWWS Plant, DP-857
- New Mexico Liquid Waste Disposal Regulations

16.2 Transportation Requirements

Typically, sanitary sewer waste is transferred to the SWWS Plant through the sanitary sewer collection system; however, SWWS Plant personnel transport some sanitary sewer waste to the SWWS Plant from waste generation points where the sanitary collection system is unavailable. SWWS Plant personnel have been instructed not to transport wastewater to the SWWS Plant until after a WPF (Form 1346, *Waste Profile Form)* has been completed and approved.

Waste generators must notify SWWS Plant personnel at least 48 h before pickup and transport of wastewater to the SWWS Plant. Before pickup, SWWS Plant personnel will contact the waste generator to coordinate the time and location of the pickup. The waste generator or the WMC must be present at the time and location of pickup to ensure that the correct tanks are pumped. Failure to have a waste generator or WMC at the designated site and time may result in the delay of wastewater pickup.

All sanitary sewer waste will be hauled by the SWWS vacuum truck to the SWWS, no exceptions.

16.3 Waste Profile Form (WPF)

All new waste streams (excluding sanitary wastewater from restrooms, drinking water fountains, showers, and office-type kitchens) to be discharged or transported to the SWWS Plant must be evaluated by the SWWS WAC Committee using a WPF (*Waste Profile Form*). The waste generator is responsible for completing a WPF for a new waste stream. Instructions for completing the WPF (Form 1346) are included in TL-001, *Waste Generator Instruction for Completing the Waste Profile Form (WPF)*.

Acceptable knowledge criteria may be used to complete the WPF instead of analytical data for new waste streams originating from new buildings and facilities (with previous approval from the SWWS WAC Committee). All waste streams originating from existing holding tanks, septic tank systems, and containers must have an approved WPF on file with the waste services coordinator before transport of sewer waste to the SWWS Plant. WPFs for sanitary sewer waste from holding tanks, septic tank systems, and other sources are valid for one year and may be extended by the waste generator annually if the waste stream has not changed up to maximum of three years.

If a change is planned to a waste stream discharged into the sanitary sewer collection system or transported to the SWWS Plant, the waste generator must notify the Water Quality and RCRA group and complete a new WPF before discharge or transport. Examples of changes include both changes in contaminant loading and volume of sanitary sewer waste. All sampling of waste streams at LANL must be sampled by an approved independent and experienced entity in accordance with the SWWS Committee requirements.

16.4 Waste Acceptance Criteria (WAC)

All sanitary sewer waste discharged or transported to the SWWS Plant must meet the WAC described in this section. If a waste generator is planning a new waste stream or believes that a planned change is likely to exceed the limits set forth in Tables 16-1, 16-2, or 16-3, the waste generator must complete a WPF (Form 1346, *Waste Profile Form)* and obtain approval from the SWWS WAC Committee *before* discharge or transport.

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Attachment 16. Sanitary Wastewater System (SWWS) (Cont.) (Page 3 of 7)

Table 16-1. Waste Acceptance Criteria (WAC) for Discharges to the Sanitary Wastewater System (SWWS) Plant
(All metal concentrations are for the total metal concentrations present in the sample.)

Contaminant	Limits at a Flow Rate of 100 gal./day or Less	Limits at a Flow Rate Greater than 100 gal./day
pH	5–11 SU	5.5–11 SU
Chemical Oxygen Demand (COD)	≤750 mg/L	≤500 mg/L
Microtox® results	<55% screen >20% EC50	<50% screen >25% EC50
Temperature	≤180°F	≤140°F
Total Suspended Solids (TSS)	≤330 mg/L	≤330 mg/L
Total Dissolved Solids (TDS)	≤1,000 mg/L	≤1,000 mg/L
Oil and grease	<100.0 mg/L	<50.0 mg/L
Aluminum	<5.0 mg/L	<5.0 mg/L
Arsenic	<0.2 mg/L	<0.1 mg/L
Barium	<40.0 mg/L	<20.0 mg/L
Beryllium	<0.01 mg/L	<0.01 mg/L
Boron	<2.0 mg/L	<1.0 mg/L
Cadmium	<0.1 mg/L	<0.05 mg/L
Chromium	<3.8 mg/L	<1.9 mg/L
Cobalt	<2.2 mg/L	<1.1 mg/L
Copper	<1.0 mg/L	<0.5 mg/L
Cyanide (total)	<5.0 mg/L	<0.34 mg/L
Fluoride	<180.0 mg/L	<80.0 mg/L
Iron	<100.0 mg/L	<35.0 mg/L
Lead	<0.4 mg/L	<0.2 mg/L
Magnesium	<100.0 mg/L	<50.0 mg/L
Manganese	≤10.0 mg/L	<7.5 mg/L
Mercury (total)	<1.5 µg/L	<0.77 µg/L
Molybdenum	<4.0 mg/L	<2.0 mg/L
Nickel	<0.5 mg/L	≤0.25 mg/L
Nitrogen (total)	≤100 mg/L	≤50 mg/L
Phosphorus (total)	<80.0 mg/L	<40.0 mg/L
Polychlorinated Biphenyls (PCBs)	none detected	none detected
Selenium	<5.0 µg/L	<5.0 µg/L
Silver	<5.0 mg/L	<1.0 mg/L
Vanadium	<0.2 mg/L	<0.1 mg/L
Zinc	<10.0 mg/L	<0.5 mg/L

Table 16-2. Limits for Radioactivity (Drinking Water Limits)

Parameter	Limit (pCi/L)
Gross Alpha	15
Gross Beta	50
Tritium	20,000

Radionuclides—Sanitary sewer waste exceeding the drinking water limits for radioactivity shown in Table 16-2 cannot be discharged into the SWWS Plant. A radioactive source facility may not discharge a radioactive waste stream into the sanitary sewer collection system for treatment at the SWWS Plant.

pH—Sanitary sewer waste with a pH less than 5.5 or greater than 11.0 standard units is not acceptable for treatment at the SWWS Plant.

Chemical Waste—The SWWS Plant is regulated under NPDES Outfall Permit No. NM0028355 and under Groundwater Discharge Permit No. DP-857. The SWWS Plant is not a permitted facility under the Laboratory's RCRA permit. Wastes regulated under RCRA (such as acetone, methyl-ethyl-ketone [MEK], 1,1,1-trichloroethane [TCA], and electroplating wastes) are not accepted for treatment at the SWWS Plant. For additional information concerning the disposal of RCRA waste, contact the ENV-RCRA group. Sanitary sewer waste not regulated by RCRA may be accepted for treatment at the SWWS Plant on a case-by-case basis depending on the chemical constituents, concentrations, and volumes generated. All sanitary sewer waste must meet the SWWS Plant WAC listed in Table 16-1, unless a WEF (Form 1973, *Waste Acceptance Criteria Exception Form*) is completed by the waste generator and approved by the SWWS WAC Committee.

Nitrogen—Total nitrogen concentrations in sanitary sewer waste must not exceed 100 mg/L for flow rates less than or equal to 100 gallons per day and must not exceed 50 mg/L for flow rates greater than 100 gallons per day. Waste streams containing nitrogen in excess of the SWWS Plant WAC will be evaluated on a case-by-case basis.

Metals—Sanitary sewer waste containing metals at levels regulated by RCRA (See Table 1-4 of Attachment 1, *Radioactive Liquid Waste Treatment Facility (RLWTF)*) are not accepted for treatment at the SWWS; therefore, the metal concentrations shall not exceed the limits shown in Table 1-4. A WEF (Form 1973, *Waste Acceptance Criteria Exception Form)* must be completed by the waste generator and approved by the SWWS WAC Committee for any exceptions.

Temperature—The temperature of sanitary sewer waste discharged into the sanitary sewer collection system shall not exceed 60°C (140°F) unless the flow rate of the waste is less than 100 gallons per day, in which case the temperature shall not exceed 82.2°C (180°F).

Toxicity—All wastes must meet the Microtox® requirements for toxicity before discharge to the SWWS Plant at a dilution representing the actual dilution of the liquid waste discharged into the sanitary collection system.

Microtox® Measures the Toxicity of Aqueous Solutions—The light output of the Microtox® reagent, a suspension of luminescent bacteria, is measured before and after the reagent is exposed to the sample being tested. When toxic materials inhibit bacterial metabolism, light output drops in proportion to the toxicity. The Microtox® testing method has been included in the 19th Edition of *Standard Methods for the Analysis of Water and Wastewater*.

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Attachment 16. Sanitary Wastewater System (SWWS) (Cont.) (Page 5 of 7)

Chlorine from Disinfection of Water Supply Facilities—Sanitary sewer waste volumes of less than 20 gal. may be discharged directly to the SWWS Plant without regard to chlorine concentration. Volumes greater than 20 gal. but less than 1,000 gal. must be de-chlorinated to less than 3 ppm before discharge to the SWWS Plant. Volumes greater than 1,000 gal. must be reviewed and approved by the SWWS WAC Committee on a case-by-case basis before discharge.

Sample Location—Samples for evaluation of contaminants must be taken as close to the point of discharge into the sanitary sewer collection system as possible. When sampling cannot be completed at the point of discharge, samples should be taken at the first available manhole or sampling port downstream of the point of discharge.

Prohibited Waste—Table 16-3 lists the categories of waste that are not acceptable for discharge or transport to the SWWS Plant.

Table 16-3. Waste Prohibited at the Sanitary Wastewater System (SWWS) Plant
Resource Conservation and Recovery Act (RCRA) Regulated Waste
Waste exhibiting the characteristic of ignitability as defined in 40 CFR 261.21, *Identification and Listing of Hazardous Waste, Characteristic of ignitability* Waste exhibiting the characteristic of reactivity as defined in 40 CFR 261.23, *Identification and Listing of Hazardous Waste, Characteristic of reactivity* Waste exhibiting the characteristic of toxicity as defined in 40 CFR 261.24, *Identification and Listing of Hazardous Waste, Toxicity characteristic* F-listed waste as defined in 40 CFR 261.31, *Identification and Listing of Hazardous Waste, Hazardous wastes from non-specific sources* K-listed waste as defined in 40 CFR 261.32, *Identification and Listing of Hazardous Waste, Hazardous wastes from specific sources* P-listed waste as defined in 40 CFR 261.33, *Identification and Listing of Hazardous Waste, Discarded commercial chemical products, off-specification species, container residues, and spill residues thereof* U-listed waste as defined in 40 CFR 261.33
Other Prohibited Waste
Cooling tower and boiler blowdown in excess of 500 gal. per day Polychlorinated Biphenyls (PCBs) Sanitary sewer at temperatures >140°F for flows >100 gal./day Sanitary sewer at temperatures >180°F Non-aqueous waste Medical waste Radioactive waste Toxic waste (as defined by Microtox® methodology) Non-characterized holding tank or septic tank system Surface drainage Roof drainage Surface-active agents, excessive detergents, or other substances that may cause excessive foaming in the SWWS Plant Dilution water added to achieve compliance with any of requirements of the SWWS/WAC

16.5 Holding Tank and Septic Tank Systems

Holding tank and septic-tank systems must have approved WPFs (Form 1346, *Waste Profile Form)* on file with the waste services coordinator before transport of sanitary sewer waste to the SWWS Plant. Sanitary sewer wastes from holding tank and septic tank systems are subject to the WAC requirements listed in Table 16-4. As needed, sanitary sewer waste from septic tank systems will receive additional pretreatment and low-flow discharge into the SWWS Plant at the discretion of the SWWS Plant superintendent to ensure that the sanitary sewer wastes do not cause plant upsets or non-compliances.

Table 16-4. Waste Acceptance Criteria (WAC) for Holding Tank and Septic Tank Systems

	Holding Tank	Septic Tank Systems
Chemical Oxygen Demand (COD)	1,500 mg/L	8,000 mg/L
Total Suspended Solids (TSS)	5,000 mg/L	15,000 mg/L
TDS	10,000 mg/L	N/A
Total N	300 mg/L	500 mg/L
Total P	200 mg/L	N/A
Oil and grease	200 mg/L	350 mg/L
Microtox® test	<55% (screen) and >20% (EC50)	N/A
RDX	0.0 mg/L	0.2 mg/L

A sign designating the holding tank or septic tank system number must be provided at the tank location. Waste generators must provide for roadways to on-site holding tank and septic tank systems that are adequate for pump truck use with no restrictions to access. Tanks must have adequate capacity to contain the sanitary flow from connected buildings. The facility operations director must ensure that new or upgraded installations must be equipped with high-level alarms for holding tanks. The alarm light must be visible to building residents. All holding tanks and septic tanks without an approved WPF (Form 1346, *Waste Profile Form)* must be characterized before any pumping activities. It is the waste generator's responsibility that all WAC requirements for holding tank and septic tank systems are met before pumping and transport of sanitary sewer waste to the SWWS Plant. Waste generators must provide at least a 48 h notice to SWWS Plant personnel before sanitary sewer waste transport.

To ensure the integrity of the SWWS Plant and to maintain compliance with the Laboratory's NPDES permit, additional sampling (including, but not limited to SWWS WAC parameters, RCRA parameters, and various metals) may be required for holding tank and septic tank systems that have not been pumped within the past three years.

The facility operations director is required to have annual inspections conducted to document the facility conditions in accordance with the New Mexico Environment Department (NMED) Liquid Waste Disposal and Treatment Regulations. These inspections will cover the service lines, tanks, access road, alarms, and effluent disposal system (if present). Inspections must be performed by a level II wastewater operator certified by NMED or a person meeting the certification regulations when certification regulations are promulgated by the NMED.

No: P930-1 LANL Waste Acceptance Criteria
Attachment 16. Sanitary Wastewater System (SWWS) (Cont.) (Page 7 of 7)

16.6 Portable Toilets

Sanitary sewer waste from portable toilets used at construction sites or for other activities at the Laboratory may be transported to the SWWS Plant for treatment and disposal. Please contact the SWWS Plant personnel in order to make arrangements for this service. The Sanitary Portable Toilet Request Form must be completed in advance by the requester and faxed to the SWWS Plant at (505) 667-7746.

16.7 Additional Requirements

16.7.1 Posting of Sinks and Drains Connected to the Sanitary Wastewater System (SWWS) Plant

Each sink or drain connected to the sanitary sewer collection system or to a holding tank or septic tank system must be posted with a sign informing the user of the requirements for disposing of sanitary sewer waste down the sink or drain. The approved sign may be obtained from the ENV-RCRA group. The waste generator is responsible for ensuring that all sinks are posted with the most current sign.

16.7.2 Labeling of Sanitary Sewer Lines

Sanitary sewer lines that are visible inside buildings are the responsibility of the building manager and must be labeled “Sanitary Sewer.”

16.7.3 Waste Acceptance Criteria (WAC) Non-Compliance and Monitoring

Non-compliance with SWWS Plant WAC requirements may result in termination of SWWS Plant treatment and disposal services upon recommendation of the SWWS WAC Committee and approval by the Utilities and Infrastructure Organization. It is then the waste generator’s responsibility to find alternative means and methods of disposal that comply with federal and state environmental regulations. Waste stream monitoring must be conducted by Laboratory and SSS environmental personnel as required to ensure compliance with the SWWS WAC.

16.8 Waste Acceptance Criteria Exception Form (WEF)

Some waste streams that do not meet all of the requirements of the SWWS Plant WAC may be acceptable for treatment at the SWWS Plant. An exception from a WAC requirement may be requested by a waste generator by completing the WEF (Form 1973, *Waste Acceptance Criteria Exception Form*) and submitting it to the waste services coordinator and SWWS WAC Committee. The Committee will evaluate the WEF and approve or disapprove the proposed exception. Conditions of approval may include pretreatment and/or low-flow discharge into the SWWS Plant. Decisions of the Committee may be appealed to the Utilities and Infrastructure Organization. The decision of the Utilities and Infrastructure Organization is final.

No: P930-1 LANL Waste Acceptance Criteria [Back]
Attachment 17. Low-Level Waste Disposal (LLWD) at the Nevada Test Site (NTS) (Page 1 of 33)

Solid Low-Level Waste (LLW) that is intended for disposal at the Nevada Test Site (NTS) must follow the requirements stated in this attachment. Generators must ensure that waste is handled, stored, and shipped in accordance with applicable Department of Energy (DOE), Department of Transportation (DOT), Environmental Protection Agency (EPA), state, and local regulations and requirements. Before the waste is generated and/or packaged, the generator and WDP-LLWD must consult and agree on which waste streams must be prepared for disposal at NTS. This Waste Acceptance Criteria (WAC) attachment applies only to LLW destined for disposal at NTS. The majority of the requirements outlined in this attachment are retrieved or derived from the NTS, Waste Acceptance Criteria (WAC).

LANL waste generators are responsible for providing complete and accurate waste information as required by this attachment. Waste generators will document this information using WPF (Form 1346, *Waste Profile Form,* including Attachment 5), and the on-line Waste Disposal Request (WDR) Form. Low-Level Waste Disposition (WDP-LLWD) personnel will complete the Nevada Test Site-Waste Profile (NTS-WP) and the PSDR based on information provided by the waste generator on the WPF and the on-line Waste Disposal Request (WDR) Form.

17.1 Waste Form

17.1.1 Radionuclides

Radionuclide concentrations must be reported on the NTS-WP and the Package Storage and Disposal Request (PSDR) in accordance with the requirements listed below and Table 17-1, Radionuclide Action Levels for Waste Characterization and Reporting.

Table 17-1. Radionuclide Action Levels for Waste Characterization and Reporting

Radionuclide	Upper Limit (Bq/m^3)	Upper Limit (Ci/m^3)
H-3	6.20E+11	1.68E+01
C-14	5.40E+15	1.46E+05
Al-26	9.70E+07	2.62E-03
Cl-36	1.90E+08	5.14E-03
Ar-39	9.90E+20	2.68E+10
K-40	9.40E+10	2.54E+00
Ca-41	2.80E+12	7.57E+01
Ni-59	1.70E+14	4.59E+03
Ni-63	3.20E+14	8.65E+03
Co-60	1.60E+12	4.32E+01
Kr-85	2.00E+20	5.41E+09
Sr-90	4.30E+11	1.16E+01
Zr-93	1.10E+14	2.97E+03
Nb-93m	4.60E+15	1.24E+05
Nb-94	1.20E+10	3.24E-01
Tc-99	3.20E+09	8.65E-02
Pd-107	2.90E+14	7.84E+03

No: P930-1 LANL Waste Acceptance Criteria
Attachment 17. Low-Level Waste Disposal (LLWD) at the Nevada Test Site (NTS) (Cont.)
(Page 2 of 33)

Table 17-1. Radionuclide Action Levels for Waste Characterization and Reporting (Cont.)

Radionuclide	Upper Limit (Bq/m^3)	Upper Limit (Ci/m^3)
Cd-113m	6.20E+12	1.68E+02
Sn-121m	2.10E+14	5.68E+03
Sn-126	1.10E+10	2.97E-01
I-129	3.40E+09	9.19E-02
Ba-133	5.40E+12	1.46E+02
Cs-135	2.80E+12	7.57E+01
Cs-137	2.50E+11	6.76E+00
Eu-150	9.40E+10	2.54E+00
Sm-151	2.40E+15	6.49E+04
Eu-152	4.70E+11	1.27E+01
Eu-154	1.70E+12	4.59E+01
Pb-210	3.50E+11	9.46E+00
Ho-166m	1.20E+10	3.24E-01
Bi-207	1.10E+11	2.97E+00
Ra-226	2.10E+07	5.68E-04
Ra-228	1.70E+12	4.59E+01
Ac-227	1.70E+11	4.59E+00
Th-228	4.30E+13	1.16E+03
Th-229	2.80E+10	7.57E-01
Th-230	6.00E+07	1.62E-03
Th-232	8.10E+09	2.19E-01
Pa-231	1.00E+10	2.70E-01
U-232	4.30E+10	1.16E+00
U-233	8.20E+10	2.22E+00
U-234	1.30E+10	3.51E-01
U-235	1.10E+11	2.97E+00
U-236	2.80E+11	7.57E+00
U-238	3.50E+11	9.46E+00
Np-237	3.40E+10	9.19E-01
Pu-238	1.80E+12	4.86E+01
Pu-239	5.10E+11	1.38E+01
Pu-240	5.20E+11	1.41E+01
Pu-241	5.80E+11	1.57E+01
Pu-242	3.70E+11	1.00E+01
Pu-244	4.80E+10	1.30E+00
Am-241	1.70E+11	4.59E+00
Am-243	5.80E+10	1.57E+00

Table 17-1. Radionuclide Action Levels for Waste Characterization and Reporting (Cont.)

Radionuclide	Upper Limit (Bq/m^3)	Upper Limit (Ci/m^3)
Cm-243	8.30E+11	2.24E+01
Cm-244	3.40E+12	9.19E+01
Cm-245	4.60E+10	1.24E+00
Cm-246	9.20E+10	2.49E+00
Cm-248	2.90E+10	7.84E-01
Cf-250	1.50E+12	4.05E+01
Source: Nevada Test Site (NTS) WAC, Appendix E, Radiological Waste Characterization and Reporting Requirements		

Radionuclides known or reasonably expected to be present in a waste stream must be reported as follows:

1. The activity concentration of the radionuclides in the final waste form exceeds 1% of the Action Levels (Table 17-1). These radionuclides require rigorous waste characterization and must be reported on the WPF (Form 1346, *Waste Profile Form)* and on-line Waste Disposal Request (WDR) Form.
2. Radionuclides that are alpha-emitting and Transuranic (TRU) with a half-life greater than 20 years and that exceed 10 pCi/g shall be reported on the WPF and on-line Waste Disposal Request (WDR) Form. TRU waste radionuclides with concentrations that exceed 1 nCi/g require rigorous waste-characterization methods and must be reported on the WPF and on-line Waste Disposal Request (WDR) Form.
3. Activity concentrations in the final waste form that exceed 1% of the total activity concentration must be reported on the WPF and on-line Waste Disposal Request (WDR) Form. The total activity concentration must include the activity of all radionuclides except for those that are exempt from the reporting requirements as specified below. For these radionuclides and for those present at a level less than the detection limit of industry-accepted characterization methods, Process Knowledge (PK) should be sufficient for characterization.

17.1.1.1 Transuranic (TRU) Radionuclides

The concentration of alpha-emitting TRU nuclides with half-lives greater than 20 years must not exceed 100 nCi/g. The net weight of the waste (excluding the weight of the container and shielding) must be used to calculate the specific activity of the waste in each container.
The activity concentration of TRU radionuclides in units of nCi/g shall be based on the mass of the contents of a single waste container, excluding the mass of the container and any shielding present.

The following isotopes shall be considered when making the TRU waste determination:

Np-237, Pu-238, Pu-239, Pu-240, Pu-242, Pu-244, Am-241, Am-242m, Am-243,

Cm-243, Cm-245, Cm-246, Cm-247, Cm-248, Cm-250, Bk-247, Cf-249 and Cf-251.

17.1.2 Hazardous Waste

Waste regulated solely under 40 CFR, *Protection of Environment*, Parts 261–268, and State of Nevada hazardous waste regulations are not acceptable for disposal at NTS. State of Nevada regulations require that waste regulated as "hazardous" in the state-of-generation must be regulated as hazardous when brought into the State of Nevada; therefore, such waste must not be accepted for disposal.

Environmental media from cleanup activities may be acceptable for disposal if the New Mexico Environment Department (NMED) makes a "Contained-In Determination" for LLW environmental media that was in contact with "listed" wastes. The generator must submit this determination to WDP-LLWD for formal submission to the National Nuclear Security Administration/Nevada Site Office (NNSA/NSO) for evaluation.

The generator must also provide and demonstrate the following:

- Documentation that the waste is primarily environmental media (not debris). For the purpose of this determination, environmental media is defined as materials found in the natural environment, such as soil, ground water, surface water, and sediments, or a mixture of such liquids, sludges, or solids that are inseparable by simple mechanical removal processes.
- Documentation that the media was representatively sampled and evaluated for total contaminant concentrations (mg/kg) and Toxicity Characteristic Leaching Procedure (TCLP) concentrations (mg/L), where applicable.
- If the treatment standard is provided in "mg/kg" (totals), the "listed" constituents must be less than one-tenth of the concentration of the Resource Conservation and Recovery Act (RCRA) Land Disposal Restrictions (LDRs) (40 CFR 268.40, *Applicability of Treatment Standards*). If the treatment standard is provided in "mg/l TCLP," the TCLP concentration must be less than the Safe Drinking Water Act Standard Maximum Contaminant Level.
- Laboratory data, including quality-assurance and quality-control data.

17.1.3 Free Liquids

Liquid waste and waste containing free liquids must be converted into a form that contains as little freestanding and non-corrosive liquid as is reasonably achievable. Liquid waste and waste containing free liquids should be processed to a solid form or packaged in sufficient absorbent for twice the volume of the liquids. The free liquid must not exceed 1% of the volume of the waste when the waste is in a disposal container or 0.5% of the volume of the waste processed to a solidified form.

Waste must be evaluated to determine its potential to release liquid during handling, storage, and transportation. High moisture content waste is defined as waste that has the potential to release moisture from its final waste form in excess of the NTS WAC. Generators must document the decision made when characterizing and determining sorbents for high-moisture-content waste. The LANL Waste Certification Official must independently review and approve the absorbent determinations and use of absorbents for stabilizing liquids.

Additional guidance regarding liquids in LLW for disposal at NTS can be found in the *Position Paper for High Moisture Content Waste*,

17.1.4 Particulates

Fine particulate wastes must be immobilized so that the waste package contains no more than 1 weight percent of less-than-10-micrometer-diameter particles or 15 weight percent of less-than-200-micrometer-diameter particles. Waste that is known to be in a fine particulate form or in a form that could mechanically or chemically be transformed to a particulate during handling and interim storage must be immobilized.

Secure packaging may be used in place of immobilization. The following are examples of acceptable packaging: overpacking, steel boxes, drums with a seal and a minimum 6-mil or equivalent liner, and wooden boxes with a sealed, minimum 6-mil or equivalent liner. Disposal containers with contents individually wrapped and sealed in plastic are also acceptable. Fine particulates must not be packaged in an intermodal (roll-off box) container.

17.1.5 Polychlorinated Biphenyls (PCBs)

LLW containing PCBs that meet the requirements for disposal in a solid waste or permitted hazardous waste landfill as specified in 40 CFR 761, *Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions,* and NAC 444.9452, *Adoption by reference of certain federal regulations (NTS WAC)*, shall be accepted for disposal at NTS. PCB-contaminated LLW shall be packaged, marked, and labeled in accordance with the requirements of 40 CFR, *Protection of Environment*, and 49 CFR, *Transportation* and meet the applicable shipping requirements for the radioactive content of the package.

LLW containing PCBs that meet the requirements for disposal in a permitted hazardous waste landfill shall be segregated into a separate waste stream and profiled and packaged separately from other waste streams. These types of PCB wastes shall also meet the following requirements:

- Free liquids shall be absorbed, stabilized, or otherwise removed from the waste. Containerized free liquids such as ampoules, small articles that contain free liquids required for the article to function (e.g., batteries or capacitors), are acceptable.
- Sorbents shall be non-biodegradable and identified on the WPF (Form 1346, *Waste Profile Form).*
- Containers shall be at least 90% full.
- Incompatible wastes, or incompatible wastes and materials, shall not be placed in the same container if such placement:
  - generates extreme heat or pressure, fire or explosion, or violent reaction;
  - produces uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health;
  - produces uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;
  - damages the structural integrity of the device or facility containing the waste, or
  - through other like means threaten human health or the environment.

In accordance with the NTS WAC, WDP-LLWD shall provide written notice a minimum of 15 days in advance of the first shipment of each waste stream containing PCB remediation waste or bulk product waste. The notice shall be faxed to the NTS at (702) 295--6852 and should contain information specified in 40 CFR 761.61, *PCB Remediation Waste*, for PCB remediation waste and/or 40 CFR 761.62, *Disposal of PCB Bulk Product Waste*, for PCB bulk product waste.

17.1.6 Stabilization

Where practical, waste must be treated to reduce volume and provide a more stable waste form. Wastes must not react with other wastes or the packaging during storage, shipping, handling, and disposal. Structural stability can be accomplished by crushing, shredding, or placing a smaller piece inside an opening of a larger piece, such as nesting pipes. Chemical stability and compatibility must be demonstrated to ensure that no reactions occur and that significant quantities of harmful gases, vapors, or liquids are not generated (specifically when different waste forms are combined in a single waste container.)

17.1.7 Sealed Sources

Sources containing TRU nuclides must be evaluated individually against the TRU criteria in Section 17.1.1.1 of this attachment, considering only the mass of the source and any component integral to the source.

Sealed sources that have an activity of less than 3.7 MBq (100 μCi) can be a component of waste streams, such as contaminated trash. The total volume of the waste can be used for waste classification and for determination of the radionuclide concentration. Characterization of non-TRU sources (i.e., less than 3.7 MBq [100 μCi]) on an individual source basis is not required, provided the characterization method used is adequate to ensure compliance with the radionuclide reporting criteria.

Sealed sources that have an activity of 3.7 MBq (100 μCi) or greater must be segregated from other waste and profiled as a separate waste stream. These sealed sources must be characterized on an individual basis using the volume or mass of the source to determine the radionuclide concentration. Sealed sources may be co-packaged with other waste streams, provided the waste criteria of this section are met. Sealed sources must not be packaged in an intermodal (roll-off box) container.

Additional guidance on the definition, proper packaging, and characterization of sealed sources can be found in the *Position Paper on the Proper Characterization and Disposal of Sealed Radioactive Sources*.

If the source does not meet the above requirements, contact WDP–LLWD for information on the encapsulation of sealed sources.

17.1.8 Low-Level Waste (LLW) Containing Asbestos

Regulated Asbestiform LLW (RALLW) is any LLW containing friable asbestos material; Category I non-friable Asbestos Containing Material (ACM) that has become friable; Category I non-friable ACM that will be or has been subject to sanding, grinding, cutting, or abrading; or Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder.

RALLW must be packaged, marked, and labeled in accordance with the requirements of 40 CFR, *Protection of Environment*, State of Nevada solid waste disposal site permit (SW1300001), state of generation, and the NTS "Management Plan for the Disposal of LLW with Regulated Asbestos Waste." Packages containing RALLW must meet the applicable shipping requirements for the radioactive content of the package. RALLW must be wetted with a water and surfactant mixture and packaged in a plastic bag that is not less than 6 mil in thickness, a combination of plastic bags that equal at least 6 mil in thickness, or a container that is lined with plastic. RALLW must not be packaged in an intermodal (roll-off box) container.

If free liquid is present, an absorbent must be added to ensure that the waste meets the requirements of Section 17.1.3 of this attachment. Sharp edges and corners must be padded or protected to prevent damage to the plastic bag during handling, shipping, and disposal.

Each container used for the disposal of RALLW must be labeled with one of the labels shown in Fig. 17-1.

RALLW must be segregated into a separate waste stream. Because of Nevada state notification requirements and disposal cell capacity, RALLW must be packaged separately from other waste streams. A preshipment notification must be faxed by WDP-LLWD to NNSA/NSO at least seven days before shipment arrival.

17.1.9 Beryllium Waste

Beryllium is defined as elemental beryllium and any insoluble beryllium compound or alloy containing 0.1 or higher percent beryllium that may be released as an air-borne particulate. Beryllium-containing waste and beryllium-contaminated equipment must be packaged in sealed, impermeable bags (minimum 6-mil thickness), containers, or enclosure to prevent the release of beryllium dust during handling and transportation. Particulate beryllium waste must not be packaged in an intermodal (roll-off box) container. The bags, containers, and enclosures must be labeled with the following information shown on the label in Fig. 17-2.

CAUTION: CONTAINS ASBESTOS FIBERS AVOID OPENING OR BREAKING CONTAINER BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH

or

CAUTION: CONTAINS ASBESTOS FIBERS AVOID CREATING DUST MAY CAUSE SERIOUS BODILY HARM

or

DANGER: CONTAINS ASBESTOS FIBERS AVOID CREATING DUST CANCER AND LUNG DISEASE HAZARD

Fig. 17-1. Labels for RALLW containers.

DANGER: CONTAMINATED WITH BERYLLIUM DO NOT REMOVE DUST BY BLOWING OR SHAKING CANCER AND LUNG DISEASE HAZARD

Fig. 17-2. Label showing information that must be on bags, containers, and enclosures containing beryllium.

17.1.10 Animal Carcasses

Animal carcasses containing, or contained in, radioactive materials shall be packaged with the biological material, layered with lime, and placed in a metal container that meets the requirements of Section 17.2 of this attachment. If the resultant waste matrix is capable of gas generation, the container must be vented with a carbon-composite high-efficiency particulate air filter. NNSA/NSO may require analysis of the waste decomposition gases. Animal carcasses preserved with formaldehyde must not be offered for disposal at NTS.

17.1.11 Gases

LLW gases must be packaged at a pressure that does not exceed 1.5 atm absolute at 20°C. Compressed gases as defined by 49 CFR, *Transportation,* must not be accepted. Examples of compliance methods include puncturing aerosol cans and removing the valve mechanism from expended gas cylinders. LLW-containing gas cylinders, fire extinguishers, or aerosol cans must not be packaged in an intermodal (roll-off box) container.

17.1.12 Waste Packaged in Intermodals

The following waste should be considered for packaging in intermodal containers:

- Soil and gravel
- Concrete rubble
- Scrap metal
- Building rubble

Intermodal (roll-off) containers used for the disposal of bulk LLW must meet the criteria listed in this section. These criteria are specific to intermodal roll-off containers that will be unloaded and returned to the generator site.

Requirements for Intermodal (Roll-off boxes) Low-Level Waste Disposal (LLWD)

Intermodal (roll-up) containers used for the disposal of bulk LLW must meet the following criteria. These criteria are specific to intermodal roll-off containers that will be unloaded and returned to the generator site. These criteria are in addition to the other NTS WAC requirements.

1. Prohibited Waste Types:
   a. Asbestiform LLW (regulated)
   b. Low-Level Hydrocarbon Burdened (LLHB) waste
   c. PCB waste
   d. Fine particulates that could become airborne
   e. Gas cylinders, fire extinguishers, aerosol cans (pressurized or not)
   f. LLW beryllium waste (particulate)
   g. Sealed sources
2. Acceptable Waste Types
   a. Soil and gravel
   b. Concrete rubble
   c. Scrap metal
   d. Building rubble
   e. Other materials may be acceptable (with previous approval on a case-by-case basis)
   f. PCB bulk product waste meeting 40 CFR 761.62(b)(1)

3. Dose rates and Radiological Concerns
   a. Dose rates should be less than 5 mrem/h on contact of the loaded intermodal container.
   b. Dose rates must be less than 5 mrem/h @ 30 cm from the waste.
   c. Return survey requirements must be clearly communicated to NTS waste operations upon profile submission

4. Radionuclide Activities
   a. Activities must be less than 300 Plutonium Equivalent Gram (PE-g) based on conversions covered in Section 17.2.2 of this attachment.

5. Size, Weight, and Loading
   a. All pieces within container must be reduced to no larger than 3 ft in any dimension.
   b. Soils need to be free of scrap metals, large rocks, or debris.
   c. Maintain a clearance of at least 18 inches between the top of the waste and the bottom of the top header brace located near the door end of the container.
   d. Waste must fit in the intermodal container without wedging into any area of the container.
   e. The load must be prepared to prevent movement during transportation and allow the waste to exit under the header and through the rear door with sufficient clearance to prevent jamming.
   f. Precaution must be taken during loading to ensure that the weight is not resting against the door.

6. Weights
   a. The weight of the intermodal may not exceed 35,000 lb.
   b. The weight must be evenly distributed. Waste must be placed in a liner within the roll-off container.

7. Liners—Waste must be placed in a liner within the roll-off container.
   a. Liners must be at least 18 mil for scrap metals and debris.
   b. Liners must be at least 12 mil for contaminated soils.
   c. Liners must be secured around the waste package and cannot be attached to the inside of the intermodal container.
   d. Sufficient absorbent material needs to be added to prevent any accumulation of free liquids inside the container, either from precipitation penetration or from condensation.

8. Marking and Labeling
   a. All markings and labels not intended for NTS or DOT use must be obliterated.
   b. All placards must be removable by the transporter.

9. Container Design
   a. No top-hinged tailgate intermodals will be accepted for disposal.
   b. There must be no need for NTS Operations to open the top lid of the container for any reason.
   c. There must be attachments to secure the door in the open position during off-loading.
   d. Containers must be at least standard 6 ft × 8 ft × 20 ft IP-1 intermodals with hard-lid covers.
10. Off–Loading
   a. Any container that does not off-load successfully will be buried intact.

17.1.13 Prohibited Items

The following waste types or materials must not be packaged with solid LLW destined for disposal at NTS:

- Waste containing un-reacted explosives shall not be accepted at the NTS. Such waste may have RCRA characteristics and shall be treated to meet LDRs before being acceptable for disposal at NTS;
- Hazardous waste;
- Classified items;
- Pathogens, infectious wastes, or other etiologic agents as defined in 49 CFR 173.134, *Shippers—General Requirements for Shipments and Packagings—Definitions and exceptions*;
- Pyrophorics; (Pyrophoric materials contained in the waste shall be treated, prepared, and packaged to be nonflammable. Pyrophoric materials that are blended in a hardened concrete matrix are considered to be treated to be nonflammable.);
- Chelating agents; LLW packages containing chelating or complexing agents in amounts greater than one percent of the waste shall not be accepted unless stabilized or solidified;
- Greater than Class C (GTCC) waste as defined by 10 CFR 61.55, *Waste Classification,* generated by US NRC licensees; and
- TRU waste.

17.2 Waste Package Criteria

Waste packages must meet applicable DOE Orders, and 10 CFR, *Energy*, 40 CFR, *Protection of Environment,* and 49 CFR, *Transportation,* requirements (i.e., design, nuclear safety, radiation levels, activity limits, nuclear heating, and multiple hazards). Waste packages must be capable of withstanding stress associated with loading, handling, stacking, and shipping. External contamination levels for waste packages and transport vehicles must meet the release limits specified in 10 CFR 835, *Occupational Radiation Protection*, Appendix D, *Surface Contamination Values*.

Only packages procured through the LANL Waste Certification Official (WCO) will be acceptable for disposal at NTS. Generators must notify the WCO at least two months in advance of package needs to allow time for package orders. Contact the WCO for a list of approved packages.

17.2.1 Nuclear Criticality Safety

The quantity of fissile material in a waste package must be limited so that an infinite array of such packages will remain subcritical under "as packaged" conditions, including the potential that the array could become flooded with water to any credible degree. Compliance with the fissile material limits is required to be documented in the WPF (Form 1346, *Waste Profile Form)*. The quantity of fissile material in a waste package acceptable for disposal must be demonstrated to meet any of the following:

- Does not exceed 15 g of U-235 FGE per package. Uranium-235 FGE is determined by completing Table 17-2.
- Does not exceed 350 g of U-235 FGE per package, nor does it exceed 2 g of U-235 FGE per kilogram of waste (mass of the package is not included in the mass of the waste). Graphite and beryllium must not exceed 1% by mass of the waste. Both limits must not be exceeded. These criteria apply to 55-gallon metal drums or larger containers (i.e. 85-gallon drums, 4 ft. × 4 ft. × 6 ft. metal boxes) and are not applicable to drums less than 55-gallon or soft sided, wood, or plastic containers.
- Does not exceed the limits and the waste package meets the conditions as specified in
  - Table 17-3, Allowable Package Fissile Loading for Various Package Steel Weights;
- Does not exceed the limits and the waste package meets the conditions as specified in
  - Table 17-4, Criticality Safety Restrictions for the Use of the Fissile Limits in Table 17-5; and
  - Table 17-5, Maximum Grams of U-235 as a Function of Enrichment.
- If the waste stream contains enriched uranium (U-235 weight percent >0.90), U-233, Pu-239, Pu-241, AM-242m, Cm-243, Cm-245, Cf-249, or Cf-251, the U-235 FGE and U-235 effective enrichment is required to be reported with the profile by completing Table 17-2. The waste shall not exceed the total FGE as specified for the effective enrichment.

  Note: Waste containing uranium with an enrichment of less than 0.90% U-235 by weight and those nuclides listed in Table 17-2 so that their FGE is 1% or less of the grams of U-235, does not provide a fissile material concern.

If the waste does not comply with any of the above, then a waste-specific Nuclear Criticality Safety Evaluation (NCSE) may be necessary for acceptance of the waste. If the primary fissile nuclide in the waste is U-235, the "Calculation of U-235 Fissile Gram Equivalence and Effective U-235 Enrichment for LLW Packages" form must be completed. This form is included in Table 17-2. The waste must not exceed the total FGE, as specified for the effective enrichment.

If the waste stream contains enriched uranium, effective enrichment is required to be reported with the profile by completing Table 17-2 for each enrichment range. The waste shall not exceed the total FGE as specified for the effective enrichment.

WDP-LLWD personnel may need to contact the Radioactive Waste Acceptance Program (RWAP) Task Manager for further information on the criteria for performing an NCSE.

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Table 17-2. Calculation of U-235 Fissile Gram Equivalence and Effective U-235 Enrichment for LLW Packages

Nuclide (A)	High Activity Conc. (Bq/m^3) (B)	Volume of Package (m^3) (C)	Activity (Bq) (D)	Specific Activity (Bq/g) (E)	Mass of Nuclide (g) (D/E=F)	U-235 FGE Factors (G)	U-235 FGE (F×G=H)	If FGE is >1% of U-235 Mass, then include (I)
U-233				3.6E+08		1.4E+00		
U-235				8.1E+04		1.0E+00		
Pu-239				2.3E+09		1.6E+00		
Pu-241				3.8E+12		3.5E+00		
Am-242m				3.6E+11		5.4E+01		
Cm-243				1.9E+12		7.8E+00		
Cm-245				6.4E+09		2.3E+01		
Cm-247				3.5E+06		7.8E–01		
Cf-249				1.5E+11		7.0E+01		
Cf-251				5.9E+10		1.4E+02		
Effective U-235 Enrichment = $\frac{\text{Total U-235 FGE}}{\text{Total U}}$							Total U-235 FGE	
Effective U-235 Enrichment =								

Instructions for completing this table are as follows:

1. Multiply high activity range of the waste stream (Bq/m^3) by volume of waste to determine the maximum activity that could be present in a waste package for the nuclides listed above, resulting in Bq (Column D). For U-235, the activity is required to be included only if the U-235 enrichment is equal to or greater than 0.90% by weight of total U.
2. Divide activity (Bq) (Column D) by the specific activity of the nuclide (Bq/g) (Column E) to determine the mass of the nuclide (Column F).
3. Multiply the mass (g) (Column F) of each nuclide by the U-235 FGE factor (Column G) to determine FGE (Column H).
4. If the FGE value is greater than 1% of the U-235 mass, then include in Column I to determine the total U-235 FGE for a waste package.
5. Effective U-235 enrichment (weight %) is calculated by dividing the total U-235 FGE by the total mass (g) of uranium and multiplying by 100.

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Table 17-3. Allowable Package Fissile Loading for Various Package Steel Weights

U-235 Enrichment Weight %	Maximum Grams of U-235 per Package			
	35 Pounds (16 kg) Steel	50 Pounds (23 kg) Steel	70 Pounds (32 kg) Steel	105 Pounds (48 kg) Steel
80-100	54	66	82	103
60-80	55	67	83	105
40-60	56	68	85	107
20-40	60	73	90	110
15-20	65	78	95	120
10-15	70	3	100	130
8-10	75	90	110	140
7-8	80	98	120	150
6-7	85	104	130	160
5-6	90	109	135	170
4.5-5.0	100	121	150	190
4.0-4.5	105	129	160	200
3.5-4.0	110	136	170	210
3.0-3.5	120	146	180	230
2.5-3.0	140	170	210	270
2.0-2.5	170	209	260	330
1.9-2.0	220	271	340	440
1.8-1.9	240	296	370	480
1.7-1.8	260	324	410	530
1.6-1.7	290	363	460	590
1.5-1.6	330	411	520	670
1.4-1.5	380	179	610	790
1.3-1.4	460	580	740	960
1.25-1.3	580	739	950	1,250
1.20-1.25	670	854	1,100	1,460
1.15-1.20	780	1,003	1,300	1,700
1.10-1.15	950	1,220	1,580	2,100
1.07-1.10	1,150	1,514	2,000	2,700
1.04-1.07	1,400	1,829	2,400	3,200
1.02-1.04	1,700	2,214	2,900	4,000
1.00-1.02	2,000	2,643	3,500	4,800
0.99-1.00	2,350	3,143	4,200	5,800
0.98-0.99	2,600	3,500	4,700	6,500
0.97-0.98	3,000	4,029	5,400	7,600
0.96-0.97	3,400	4,600	6,200	8,500
0.95-0.96	3,800	5,171	7,000	10,000
<0.95	4,400	5,943	8,000	Unlimited

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Table 17-4. Criticality Safety Restrictions for the Use of the Fissile Limits in Table 17-5	
Volume of overpack, if used	>nominal 55-gal. (outermost container)
Volume of waste container	55-gal. drum (may contain inner drums such as a 10-gal. container inside a 30-gal. drum, both within the 55-gal. outer drum)
Space between 55-gal. drum (waste container) and inner containers	If filled, the material must be loose, pourable material (e.g., vermiculite)
Boron location	Boron must be inside 55-gal. drum
Boron physical properties (natural)	Approx. = 20 atom% 10B, Approx.= 80 atom% 11B
Boron Weight Note: For example, 12.9 kg of B_2O_3 is required to have 4 kg of boron	≥ nominal 9 pounds (4 kg) Note: the form is not controlled (e.g., boraxo, B_4C, and borosilicate glass are all acceptable, but it must be loose and pourable).
Beryllium and graphite by package weight	≤1% by weight
Maximum hydrogen content of waste as packed and as received at the Nevada Test Site (NTS)	Hydrogen to U-235 atom ratio (H/X) must be less than 50. For example, this limit is equivalent to a water-to-U-235 mass ratio of 2. All hydrogenous materials, such as plastics and cellulose, may be assumed to be water to determine an equivalent water mass. That is, 1 g plastics = 1 g water.
Packaging (drum) material and mass	No restrictions

Table 17-5. Maximum Grams of U-235 as a Function of Enrichment

U-235 Enrichment (Weight %)	U-235 (g)	U-235 Enrichment (Weight %)	U-235 (g)
0.95	9,000	2.50	1,810
0.96	8,900	3.00	1,650
0.97	8,800	3.50	1,554
0.98	8,700	4.00	1,485
0.99	8,357	4.50	1,436
1.00	7,800	5.00	1,400
1.02	7,195	6.00	1,225
1.04	6,580	7.00	1,179
1.07	5,860	8.00	1,125
1.10	5,200	9.00	1,072
1.15	4,400	10.00	1,028
1.20	3,840	15.00	929
1.25	3,500	20.00	873
1.30	3,225	30.00	814
1.40	2,895	40.00	776
1.50	2,650	50.00	743
1.60	2,460	60.00	720
1.70	2,335	70.00	715
1.80	2,215	80.00	700
1.90	2,135	90.00	690
2.00	2,060	100.00	680

17.2.2 Package Activity Limitations

Package activity limits at the NTS are based on Pu-239 gram equivalents. Packages offered for disposal must have PE-g quantities within the limits in Table 17-6. These limits correspond to the type of package being disposed of, not the shipping container (e.g., a plastic bag inside a reusable container, once dumped, must meet the soft-sided package limits). The total PE-g for either a waste package or a shipment shall be calculated by multiplying the activity of each radionuclide by the PE-g conversion factor and then adding each radionuclide PE-g to get the total PE-g. Conversion factors can be found in Table 17-7 (reference from Appendix B of the NTS WAC).

Table 17-6. Package Activity Limits

Package Type	PE-g Limits
Intermodals (Roll-off boxes)	Less than 300 PE-g total
LLW DOT Type-A Drum	300 PE-g total
LLW Standard Waste Box (SWB)	300 PE-g total
Soft-Sided Packages (supersacks, etc.)	300 PE-g total
Strong-Tight Container (Sealands®, etc.)	300 PE-g total
has Container (DOT Type A)	300 PE-g
DOT Type B Containers (Supertigers®)	No limit if Type B container is disposed of
Entire Shipment	Total for shipment must not exceed 2,000 PE-g

PE-g calculations are confirmed by NTS personnel before shipment receipt based on the PSDR. Any package in excess of these limits will result in the entire shipment being refused by NTS personnel.

PE-g limits for NTS shipments are limited to 2,000 PE-g per shipment (e.g., two cargo containers with 300 PE-g each may be shipped together, but 10 drums of 250 PE-g each may not be shipped together because the total is greater than 2,000 PE-g). This does not apply to shipments made exclusively in DOT Type B containers where the Type B containers are for disposal.

NTS WAC deviations are available for all hard-sided packages that may increase the PE-g limit per package and/or per shipment if permitted by the waste-facility safety basis.

17.2.3 Closure

The waste package closure shall be designed to ensure it will withstand the effects of changing temperatures, weather, pressures, and/or vibrations under normal handling and shipping conditions and not breach or lose the package contents.

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Table 17-7. Plutonium Equivalent Gram (PE-g) Radionuclide Conversion Factors*

****Note:*** For isotopes not having a direct PE-g conversion factor, the total activity shall be treated as Pu-239 for alpha emission and as Cs-137 for beta/gamma emission.

Nuclide	Conversion Factors PE-g/Bq	Nuclide	Conversion Factors PE-g/Bq	Nuclide	Conversion Factors PE-g/Bq
Ac-224	1.12E–13	Au-194	8.69E–16	Br-80	2.40E–17
Ac-225	9.19E–12	Au-195	1.10E–14	Br-80m	3.34E–16
Ac-226	1.12E–12	Au-198	2.79E–15	Br-82	1.30E–15
Ac-227	5.70E–09	Au-198m	4.12E–15	Br-83	7.59E–17
Ac-228	2.62E–13	Au-199	1.28E–15	Br-84	8.22E–17
Ag-102	2.87E–17	Au-200	7.56E–17	C-11	1.04E–17
Ag-103	4.97E–17	Au-200m	1.87E–15	C-14	1.79E–15
Ag-104	6.05E–17	Au-201	2.28E–17	Ca-41	1.15E–15
Ag-104m	5.32E–17	Ba-126	3.12E–16	Ca-45	5.64E–15
Ag-105	3.97E–15	Ba-128	2.58E–15	Ca-47	5.57E–15
Ag-106	2.81E–17	Ba-131	5.70E–16	Cd-104	6.42E–17
Ag-106m	6.08E–15	Ba-131m	3.94E–18	Cd-107	9.26E–17
Ag-108m	2.56E–14	Ba-133	6.64E–15	Cd-109	9.73E–14
Ag-110m	6.83E–14	Ba-133m	5.29E–16	Cd-113	1.42E–12
Ag-111	5.23E–15	Ba-135m	4.28E–16	Cd-113m	1.30E–12
Ag-112	5.64E–16	Ba-139	1.46E–16	Cd-115	3.59E–15
Ag-115	5.60E–17	Ba-140	3.18E–15	Cd-115m	6.14E–14
Al-26	6.77E–14	Ba-141	6.86E–17	Cd-117	3.84E–16
Am-237	2.04E–17	Ba-142	3.50E–17	Cd-117m	3.72E–16
Am-238	7.30E–16	Be-10	3.02E–13	Ce-134	6.96E–15
Am-239	3.90E–16	Be-7	2.73E–16	Ce-135	1.35E–15
Am-240	1.56E–15	Bi-200	5.60E–17	Ce-137	3.56E–17
Am-241	4.44E–10	Bi-201	1.63E–16	Ce-137m	1.20E–15
Am-242	4.97E–14	Bi-202	1.08E–16	Ce-139	7.71E–15
Am-242m	4.35E–10	Bi-203	7.05E–16	Ce-141	7.62E–15
Am-243	4.44E–10	Bi-205	3.68E–15	Ce-143	2.88E–15
Am-244	1.41E–14	Bi-206	5.57E–15	Ce-144	3.18E–13
Am-244m	5.98E–16	Bi-207	1.70E–14	Cf-244	8.44E–15
Am-245	6.86E–17	Bi-210	1.67E–13	Cf-246	5.10E–13
Am-246	5.38E–17	Bi-210m	6.45E–12	Cf-248	4.31E–11
Am-246m	2.84E–17	Bi-212	1.84E–14	Cf-249	4.91E–10
As-69	4.16E–17	Bi-213	1.46E–14	Cf-250	2.23E–10
As-70	1.08E–16	Bi-214	5.60E–15	Cf-251	5.01E–10
As-71	1.08E–15	Bk-245	3.75E–15	Cf-252	1.17E–10
As-72	3.46E–15	Bk-246	1.46E–15	Cf-253	2.65E–12
As-73	2.94E–15	Bk-247	4.88E–10	Cf-254	2.50E–10
As-74	6.77E–15	Bk-249	1.18E–12	Cl-36	1.87E–14
As-76	3.18E–15	Bk-250	6.42E–15	Cl-38	1.14E–16
As-77	8.97E–16	Br-74	7.34E–17	Cl-39	9.63E–17
As-78	2.27E–16	Br-74m	1.39E–16	Cm-238	4.53E–15
At-207	2.06E–15	Br-75	1.11E–16	Cm-240	6.83E–12
At-211	8.69E–14	Br-76	1.36E–15	Cm-241	1.25E–13
Au-193	2.46E–16	Br-77	2.35E–16		

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Table 17-7. Plutonium Equivalent Gram (PE-g) Radionuclide Conversion Factors* (Cont.)

**Note:* For isotopes not having a direct PE-g conversion factor, the total activity shall be treated as Pu-239 for alpha emission and as Cs-137 for beta/gamma emission.

Nuclide	Conversion Factors PE-g/Bq	Nuclide	Conversion Factors PE-g/Bq	Nuclide	Conversion Factors PE-g/Bq
Cm-242	1.47E–11	Es-254	3.50E–11	Ge-77	8.97E–16
Cm-243	2.61E–10	Es-254m	4.75E–13	Ge-78	2.44E–16
Cm-244	2.11E–10	Eu-145	2.33E–15	H-3	5.45E–17
Cm-245	4.60E–10	Eu-146	3.31E–15	Hf-170	1.02E–15
Cm-246	3.84E–10	Eu-147	3.01E–15	Hf-172	2.71E–13
Cm-247	3.53E–10	Eu-148	1.22E–14	Hf-173	4.06E–16
Cm-248	1.41E–09	Eu-149	1.61E–15	Hf-175	4.75E–15
Cm-249	1.64E–16	Eu-150 hr	5.73E–16	Hf-177m	8.41E–17
Co-55	1.78E–15	Eu-150 yr	2.28E–13	Hf-178m	2.09E–12
Co-56	3.37E–14	Eu-152	1.88E–13	Hf-179m	8.60E–15
Co-57	7.71E–15	Eu-152m	6.96E–16	Hf-180m	1.98E–16
Co-58	9.26E–15	Eu-154	2.43E–13	Hf-181	1.31E–14
Co-58m	8.00E–17	Eu-155	3.53E–14	Hf-182	2.83E–12
Co-60	1.86E–13	Eu-156	1.20E–14	Hf-182m	5.29E–17
Co-60m	1.81E–18	Eu-157	9.48E–16	Hf-183	9.95E–17
Co-61	9.01E–17	Eu-158	8.00E–17	Hf-184	7.27E–16
Co-62m	2.87E–17	F-18	7.12E–17	Hg-193	1.58E–16
Cr-48	7.46E–16	Fe-52	1.86E–15	Hg-193m	6.55E–16
Cr-49	6.17E–17	Fe-55	2.29E–15	Hg-194	1.54E–13
Cr-51	2.84E–16	Fe-59	1.26E–14	Hg-195	1.76E–16
Cs-125	3.53E–17	Fe-60	6.36E–13	Hg-195m	1.30E–15
Cs-127	5.01E–17	Fm-252	3.59E–13	Hg-197	6.05E–16
Cs-129	1.35E–16	Fm-253	4.91E–13	Hg-197m	1.02E–15
Cs-130	2.54E–17	Fm-254	4.94E–14	Hg-199m	5.73E–17
Cs-131	1.42E–16	Fm-255	2.27E–13	Hg-203	6.23E–15
Cs-132	1.05E–15	Fm-257	1.99E–11	Ho-155	3.81E–17
Cs-134	4.00E–14	Fr-222	1.05E–14	Ho-157	4.44E–18
Cs-134m	3.72E–17	Fr-223	5.29E–15	Ho-159	5.54E–18
Cs-135	3.87E–15	Ga-65	2.86E–17	Ho-161	1.32E–17
Cs-135m	2.10E–17	Ga-66	1.58E–15	Ho-162	2.00E–18
Cs-136	6.23E–15	Ga-67	4.75E–16	Ho-162m	2.14E–17
Cs-137	2.72E–14	Ga-68	1.18E–16	Ho-164	7.40E–18
Cs-138	8.63E–17	Ga-70	2.68E–17	Ho-164m	1.62E–17
Cu-60	5.89E–17	Ga-72	1.58E–15	Ho-166	2.67E–15
Cu-61	1.59E–16	Ga-73	3.24E–16	Ho-166m	6.58E–13
Cu-64	2.36E–16	Gd-145	3.84E–17	Ho-167	9.26E–17
Cu-67	1.05E–15	Gd-146	3.24E–14	I-120	3.78E–16
Dy-155	1.89E–16	Gd-147	1.53E–15	I-120m	2.25E–16
Dy-157	6.80E–17	Gd-148	2.81E–10	I-121	1.01E–16
Dy-159	2.07E–15	Gd-149	1.95E–15	I-123	2.52E–16
Dy-165	1.14E–16	Gd-151	7.56E–15	I-124	1.65E–14
Dy-166	6.36E–15	Gd-152	2.07E–10	I-125	2.06E–14
Er-161	7.71E–17	Gd-153	2.02E–14	I-126	3.78E–14
Er-165	2.54E–17	Gd-159	8.31E–16	I-128	4.03E–17
Er-169	1.78E–15	Ge-66	2.70E–16	I-129	1.48E–13
Er-171	4.79E–16	Ge-67	5.16E–17	I-130	2.25E–15
Er-172	3.50E–15	Ge-68	4.41E–14	I-131	2.80E–14
Es-250	4.09E–15	Ge-69	7.15E–16	I-132	3.24E–16
Es-251	4.03E–15	Ge-71	1.04E–16	I-132m	2.55E–16
Es-253	3.37E–12	Ge-75	6.05E–17	I-133	4.97E–15

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Table 17-7. Plutonium Equivalent Gram (PE-g) Radionuclide Conversion Factors* (Cont.)

**Note:* For isotopes not having a direct PE-g conversion factor, the total activity shall be treated as Pu-239 for alpha emission and as Cs-137 for beta/gamma emission.

Nuclide	Conversion Factors PE-g/Bq	Nuclide	Conversion Factors PE-g/Bq	Nuclide	Conversion Factors PE-g/Bq
I-134	1.12E–16	Lu-174	3.37E–14	Np-232	1.07E–15
I-135	1.05E–15	Lu-174m	2.16E–14	Np-233	1.85E–18
In-109	1.01E–16	Lu-176	5.64E–13	Np-234	1.73E–15
In-110 hr	1.15E–16	Lu-176m	2.27E–16	Np-235	3.53E–15
In-110 min	2.62E–16	Lu-177	2.09E–15	Np-236 hr	7.02E–14
In-111	7.15E–16	Lu-177m	6.11E–14	Np-236 yr	8.85E–11
In-112	7.68E–18	Lu-178	3.97E–17	Np-237	4.60E–10
In-113m	3.50E–17	Lu-178m	2.78E–17	Np-238	3.15E–14
In-114m	7.56E–14	Lu-179	2.87E–16	Np-239	2.13E–15
In-115	3.18E–12	Md-257	4.88E–14	Np-240	6.93E–17
In-115m	1.13E–16	Md-258	1.41E–11	Os-180	1.48E–17
In-116m	6.49E–17	Mg-28	4.19E–15	Os-181	1.14E–16
In-117	3.13E–17	Mn-51	9.76E–17	Os-182	1.17E–15
In-117m	1.51E–16	Mn-52	4.85E–15	Os-185	8.82E–15
In-119m	3.78E–17	Mn-52m	5.76E–17	Os-189m	2.54E–17
Ir-182	4.12E–17	Mn-53	4.25E–16	Os-191	3.56E–15
Ir-184	1.96E–16	Mn-54	5.70E–15	Os-191m	2.58E–16
Ir-185	4.66E–16	Mn-56	3.21E–16	Os-193	1.70E–15
Ir-186	7.75E–16	Mo-101	3.53E–17	Os-194	5.70E–13
Ir-187	1.79E–16	Mo-90	1.05E–15	P-32	1.32E–14
Ir-188	1.31E–15	Mo-93	2.42E–14	P-33	1.97E–15
Ir-189	1.40E–15	Mo-93m	3.27E–16	Pa-227	4.16E–14
Ir-190	5.45E–15	Mo-99	3.37E–15	Pa-228	3.75E–13
Ir-190m	2.59E–17	Na-22	6.80E–15	Pa-230	1.25E–12
Ir-192	2.40E–14	Na-24	1.03E–15	Pa-231	1.09E–09
Ir-192m	3.27E–13	Nb-88	2.29E–17	Pa-232	7.78E–14
Ir-194	2.47E–15	Nb-89(122)	3.50E–16	Pa-233	8.12E–15
Ir-194m	5.83E–14	Nb-89(66)	1.52E–16	Pa-234	6.93E–16
Ir-195	1.18E–16	Nb-90	1.95E–15	Pb-195m	2.64E–17
Ir-195m	2.12E–16	Nb-93m	2.51E–14	Pb-198	6.55E–17
K-40	1.05E–14	Nb-94	3.53E–13	Pb-199	6.20E–17
K-42	1.16E–15	Nb-95	4.94E–15	Pb-200	6.74E–16
K-43	5.89E–16	Nb-95m	2.07E–15	Pb-201	2.23E–16
K-44	7.05E–17	Nb-96	1.95E–15	Pb-202	8.34E–14
K-45	4.38E–17	Nb-97	7.05E–17	Pb-202m	1.52E–16
Kr-85	1.1E–14	Nb-98	1.04E–16	Pb-203	4.50E–16
La-131	4.41E–17	Nd-136	9.82E–17	Pb-205	3.34E–15
La-132	4.66E–16	Nd-138	8.75E–16	Pb-205	3.34E–15
La-135	5.04E–17	Nd-139	1.80E–17	Pb-209	8.06E–17
La-137	7.46E–10	Nd-139m	3.18E–16	Pb-210	1.16E–11
La-138	1.17E–12	Nd-141	8.75E–18	Pb-211	7.40E–15
La-140	4.12E–15	Nd-147	5.83E–15	Pb-212	1.44E–13
La-141	4.94E–16	Nd-149	1.90E–16	Pb-214	6.64E–15
La-142	2.15E–16	Nd-151	2.65E–17	Pd-100	3.34E–15
La-143	5.10E–17	Ni-56	3.53E–15	Pd-101	1.58E–16
Lu-169	1.15E–15	Ni-57	1.61E–15	Pd-103	1.34E–15
Lu-170	2.19E–15	Ni-59	2.30E–15	Pd-107	1.09E–14
Lu-171	2.54E–15	Ni-63	5.35E–15	Pd-109	9.32E–16
Lu-172	4.25E–15	Ni-65	2.93E–16	Pm-141	2.70E–17
Lu-173	1.92E–14	Ni-66	7.08E–15	Pm-143	9.26E–15

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Table 17-7. Plutonium Equivalent Gram (PE-g) Radionuclide Conversion Factors* (Cont.)

**Note:* For isotopes not having a direct PE-g conversion factor, the total activity shall be treated as Pu-239 for alpha emission and as Cs-137 for beta/gamma emission.

Nuclide	Conversion Factors PE-g/Bq	Nuclide	Conversion Factors PE-g/Bq	Nuclide	Conversion Factors PE-g/Bq
Pm-144	4.57E–14	Ra-226	7.30E–12	Sb-118m	2.23E–16
Pm-145	2.59E–14	Ra-227	2.42E–16	Sb-119	1.79E–16
Pm-146	1.25E–13	Ra-228	4.06E–12	Sb-120 day	3.46E–15
Pm-147	3.34E–14	Rb-79	4.19E–17	Sb-120 min	1.11E–17
Pm-148	9.29E–15	Rb-81	1.11E–16	Sb-122	4.38E–15
Pm-148m	1.92E–14	Rb-81m	1.71E–17	Sb-124	2.14E–14
Pm-149	2.50E–15	Rb-82m	2.47E–16	Sb-124m	8.82E–18
Pm-150	3.08E–16	Rb-83	4.19E–15	Sb-125	1.04E–14
Pm-151	1.49E–15	Rb-84	5.54E–15	Sb-126	9.98E–15
Po-203	6.74E–17	Rb-86	5.64E–15	Sb-126m	2.89E–17
Po-205	1.15E–16	Rb-87	2.75E–15	Sb-127	5.13E–15
Po-207	1.72E–16	Rb-88	7.12E–17	Sb-128 hr	1.44E–15
Po-210	8.00E–12	Rb-89	3.65E–17	Sb-128 min	1.50E–17
Pr-136	2.10E–17	Re-177	2.03E–17	Sb-129	5.48E–16
Pr-137	4.06E–17	Re-178	1.92E–17	Sb-130	8.82E–17
Pr-138m	1.15E–16	Re-181	5.48E–16	Sb-131	1.22E–16
Pr-139	4.91E–17	Re-182(12.7)	3.43E–16	Sc-43	2.20E–16
Pr-142	2.45E–15	Re-182(64)	2.43E–15	Sc-44	4.19E–16
Pr-142m	3.14E–17	Re-184	4.38E–15	Sc-44m	6.45E–15
Pr-143	6.90E–15	Re-184m	1.25E–14	Sc-46	2.52E–14
Pr-144	3.68E–17	Re-186	2.72E–15	Sc-47	1.57E–15
Pr-145	5.73E–16	Re-186m	3.07E–14	Sc-48	3.50E–15
Pr-147	2.59E–17	Re-187	4.63E–17	Sc-49	8.66E–17
Pt-186	1.13E–16	Re-188	1.71E–15	Se-70	1.50E–16
Pt-188	2.67E–15	Re-188m	3.50E–17	Se-73	3.90E–16
Pt-189	1.52E–16	Re-189	1.06E–15	Se-73m	3.94E–17
Pt-191	5.23E–16	Rh-99	2.63E–15	Se-75	7.21E–15
Pt-193	1.93E–16	Rh-99m	7.37E–17	Se-79	8.38E–15
Pt-193m	7.46E–16	Rh-100	1.18E–15	Se-81	2.19E–17
Pt-195m	1.04E–15	Rh-101	8.66E–15	Se-81m	7.53E–17
Pt-197	4.82E–16	Rh-101m	6.36E–16	Se-83	4.66E–17
Pt-197m	1.04E–16	Rh-102	1.02E–13	Si-31	1.90E–16
Pt-199	3.87E–17	Rh-102m	4.06E–14	Si-32	8.63E–13
Pt-200	1.42E–15	Rh-103m	4.35E–18	Sm-141	2.61E–17
Pu-234	2.33E–14	Rh-105	8.12E–16	Sm-141m	4.97E–17
Pu-235	1.94E–18	Rh-106m	1.82E–16	Sm-142	1.83E–16
Pu-236	1.23E–10	Rh-107	2.06E–17	Sm-145	9.38E–15
Pu-237	1.68E–15	Rn-220	3.15E–14	Sm-146	7.02E–11
Pu-238	3.90E–10	Rn-222	8.82E–13	Sm-147	6.36E–11
Pu-239	4.35E–10	Ru-94	1.13E–16	Sm-151	2.55E–14
Pu-240	4.35E–10	Ru-97	3.84E–16	Sm-153	1.67E–15
Pu-241	8.50E–12	Ru-103	7.62E–15	Sm-155	2.14E–17
Pu-242	4.09E–10	Ru-105	3.87E–16	Sm-156	5.95E–16
Pu-243	1.40E–16	Ru-106	4.06E–13	Sn-110	4.28E–16
Pu-244	3.43E–10	S-35	1.11E–14	Sn-111	2.31E–17
Pu-245	1.12E–15	Sb-115	2.22E–17	Sn-113	9.07E–15
Ra-223	6.68E–12	Sb-116	1.97E–17	Sn-117m	3.68E–15
Ra-224	2.69E–12	Sb-116m	6.52E–17	Sn-119m	5.32E–15
Ra-225	6.61E–12	Sb-117	2.13E–17	Sn-121	4.35E–16

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Table 17-7. Plutonium Equivalent Gram (PE-g) Radionuclide Conversion Factors* (Cont.)

**Note:* For isotopes not having a direct PE-g conversion factor, the total activity shall be treated as Pu-239 for alpha emission and as Cs-137 for beta/gamma emission.

Nuclide	Conversion Factors PE-g/Bq	Nuclide	Conversion Factors PE-g/Bq	Nuclide	Conversion Factors PE-g/Bq
Sn-121m	9.79E–15	Tc-93m	2.85E–17	Tm-170	2.24E–14
Sn-123	2.77E–14	Tc-94	2.29E–16	Tm-171	7.78E–15
Sn-123m	3.94E–17	Tc-94m	1.20E–16	Tm-172	4.16E–15
Sn-125	1.32E–14	Tc-96	2.02E–15	Tm-173	4.09E–16
Sn-126	8.47E–14	Tc-96m	1.97E–17	Tm-175	1.97E–17
Sn-127	2.76E–16	Tc-97	8.44E–16	U-230	1.66E–11
Sn-128	1.84E–16	Tc-97m	4.16E–15	U-231	1.01E–15
Sr-80	4.28E–16	Tc-98	1.95E–14	U-232	5.60E–10
Sr-81	7.18E–17	Tc-99	7.08E–15	U-233	1.15E–10
Sr-83	1.29E–15	Tc-99m	2.77E–17	U-234	1.13E–10
Sr-85	4.28E–15	Te-116	2.26E–16	U-235	1.05E–10
Sr-85m	7.24E–18	Te-121	1.62E–15	U-236	1.07E–10
Sr-87m	3.65E–17	Te-121m	1.36E–14	U-237	3.00E–15
Sr-89	3.53E–14	Te-123	8.97E–15	U-238	1.02E–10
Sr-90	1.11E–12	Te-123m	9.01E–15	U-239	3.18E–17
Sr-91	1.41E–15	Te-125m	6.20E–15	U-240	1.93E–15
Sr-92	6.86E–16	Te-127	2.71E–16	V-47	5.98E–17
Ta-172	4.82E–17	Te-127m	1.83E–14	V-48	8.69E–15
Ta-173	2.72E–16	Te-129	7.62E–17	V-49	2.94E–16
Ta-174	5.73E–17	Te-129m	2.04E–14	W-176	9.07E–17
Ta-175	3.24E–16	Te-131	4.06E–16	W-177	5.54E–17
Ta-176	3.97E–16	Te-131m	5.45E–15	W-178	2.30E–16
Ta-177	2.61E–16	Te-132	8.03E–15	W-179	2.98E–18
Ta-178	7.05E–17	Te-133	7.84E–17	W-181	1.29E–16
Ta-179	5.54E–15	Te-133m	3.68E–16	W-185	6.39E–16
Ta-180	2.08E–13	Te-134	1.08E–16	W-187	5.26E–16
Ta-180m	7.93E–17	Th-226	2.98E–14	W-188	3.50E–15
Ta-182	3.81E–14	Th-227	1.38E–11	Xe-120	2.21E–16
Ta-182m	1.14E–17	Th-228	2.13E–10	Xe-121	9.70E–16
Ta-183	4.44E–15	Th-229	1.83E–09	Xe-122	2.96E–17
Ta-184	9.73E–16	Th-230	2.77E–10	Xe-123	3.37E–16
Ta-185	7.15E–17	Th-231	7.46E–16	Xe-125	1.45E–16
Ta-186	2.07E–17	Th-232	1.39E–09	Xe-127	1.55E–16
Tb-147	1.77E–16	Th-234	2.98E–14	Xe-129m	1.28E–17
Tb-149	6.23E–15	Ti-44	8.66E–13	Xe-131m	4.66E–18
Tb-150	2.65E–16	Ti-45	1.83E–16	Xe-133	1.91E–17
Tb-151	5.32E–16	Tl-194	7.84E–18	Xe-133m	1.69E–17
Tb-153	9.26E–16	Tl-194m	3.81E–17	Xe-135	1.47E–16
Tb-154	1.01E–15	Tl-195	3.94E–17	Xe-135m	2.37E–16
Tb-155	6.61E–16	Tl-197	4.22E–17	Xe-138	6.05E–16
Tb-156	3.34E–15	Tl-198	1.40E–16	Y-86	1.46E–15
Tb-156m(24.4)	6.49E–16	Tl-198m	9.10E–17	Y-86m	8.47E–17
Tb-156m(5.0)	1.85E–16	Tl-199	5.92E–17	Y-87	1.49E–15
Tb-157	7.84E–15	Tl-200	4.00E–16	Y-88	2.39E–14
Tb-158	2.18E–13	Tl-201	2.00E–16	Y-90	7.18E–16
Tb-160	2.13E–14	Tl-202	8.38E–16	Y-90m	4.00E–16
Tb-161	2.90E–15	Tl-204	2.05E–15	Y-91	4.16E–14
Tc-101	1.52E–17	Tm-162	1.87E–17	Y-91m	3.09E–17
Tc-104	6.99E–17	Tm-166	3.21E–16	Y-92	6.64E–16
Tc-93	6.05E–17	Tm-167	2.51E–15	Y-93	1.83E–15

Table 17-7. Plutonium Equivalent Gram (PE-g) Radionuclide Conversion Factors* (Cont.)

**Note:* For isotopes not having a direct PE-g conversion factor, the total activity shall be treated as Pu-239 for alpha emission and as Cs-137 for beta/gamma emission.

Nuclide	Conversion Factors PE-g/Bq	Nuclide	Conversion Factors PE-g/Bq	Nuclide	Conversion Factors PE-g/Bq
Y-94	5.95E–17	Yb-178	1.38E–16	Zn-72	4.25E–15
Y-95	3.21E–17	Zn-62	1.75E–15	Zr-86	1.87E–15
Yb-162	1.90E–17	Zn-63	6.93E–17	Zr-88	2.07E–14
Yb-166	2.53E–15	Zn-65	1.73E–14	Zr-89	2.02E–15
Yb-167	7.12E–18	Zn-69	3.34E–17	Zr-93	2.73E–13
Yb-169	6.86E–15	Zn-69m	6.93E–16	Zr-95	2.01E–14
Yb-175	1.38E–15	Zn-71m	3.31E–16	Zr-97	3.68E–15
Yb-177	1.24E–16				

17.2.4 Strength

The disposal package (packaging and contents) must be capable of supporting a uniformly distributed load (compressive strength) of 16,477 kg/m^2 (3,375 lb/ft^2). Actual physical testing or design engineering calculations may be used to demonstrate this requirement. This requirement does not apply to bulk waste, waste packaged in steel drums, or cargo containers.

Bulk waste containers, including cargo containers, must be sufficiently strong to avoid breaching under normal offloading conditions. Bulk waste containers with a reasonable probability of breaching during offloading (i.e., burrito wraps), regardless of the type of transport vehicle (e.g., intermodals), must meet the package activity limitations of Section 17.2.2 of this attachment for soft-sided packages. Alternative packaging may be approved on a case-by-case basis. In the event alternate packaging is necessary, WDP-LLWD personnel will contact NTS for approval.

17.2.5 Handling

Packages exceeding 1 mSv/hr (100 mR/hr) dose rate at 30 centimeters shall be considered for remote handling. Handling procedures and ALARA documentation shall be referenced on the WPF (Form 1346, *Waste Profile Form)* for wastes requiring remote handling and will be made available to the NTS disposal site upon request.

Waste packages must be provided with cleats, offsets, rings, handles, permanently attached or removable skids, or other auxiliary lifting devices to allow handling by means of forklift, cranes, or similar handling equipment. Waste streams with packages requiring cranes for offloading must have an approved lift plan generated by NTS Operations before shipment. Additional costs incurred by this development and implementation will be the responsibility of the waste generator. Removable skids are preferred to assist in meeting NTS Performance Assessment objectives for reducing cell subsidence. Lifting rings and other auxiliary lifting devices on the package are permissible, provided they are recessed, offset, or hinged in a manner that does not inhibit stacking the packages. Auxiliary lifting devices for any portion of the package extending from the top of the waste package must be no higher than 0.1 m (4 inches) in the normal position. The lifting devices must be designed with a 5:1 safety factor based on the ultimate strength of the material.

Rigging devices (e.g., slings, spreader bars, rings, hooks) not permanently attached to the waste package that are provided by the generator for off loading shall have a current load test based on the requirements of DOE-STD-1090, Current Publication*, Hoisting & Rigging Standard*. Non-permanently attached rigging devices shall have traceable certifications provided with the shipping documents. They shall not show any signs of corrosion, kinking, birdcaging, or other deterioration.

LLW packages that have abnormal centers of gravity must have their centers of gravity clearly marked. Top-heavy loads are severely discouraged. Bulk waste shipments with complex geometries must be loaded in the most stable configuration. Cargo containers are exempt from this requirement until the gross weight exceeds 30,000 lbs.

Lifting devices shall be designed in accordance with DOE-STD-1090, Current Publication*, Hoisting & Rigging Standard*.

Lifting devices that are a structural part of the package shall be designed with a minimum safety factor of three-to-one against yielding when used to lift the package to ensure any failure of a lifting attachment under excessive load would not impair the integrity of the package.

Any other structural part of the package which could be used to lift the package shall be capable of being rendered inoperable for lifting the package during transport or shall be designed with strength equivalent to that required for lifting attachments.

17.2.6 Size

Waste containers/packages that allow for optimum handling and stacking efficiency in disposal cells should be considered for use (i.e., cargo containers, boxes measuring 4 ft. × 4 ft. × 7 ft. or 4 ft. × 2 ft. × 7 ft. or 55/85-gallon drums.

Alternate packages will be considered however, Radioactive Waste Management Complex (RWMC) operations personnel need to be consulted to ensure compatibility.

RALLW and PCBs that are not packaged in hard-sided containers meeting the strength requirement allowing the packages to be stacked at least 14 ft. high in a safe and stable manner, may incur additional handling costs.

Bulk waste generally exists in a form not suited to conventional packaging requirements. Bulk LLW must meet the requirements of 49 CFR, *Transportation*. Large items of bulk waste, such as machinery, may be considered for disposal unpackaged. For the transfer of unpackaged bulk material having external contamination, the contamination must be fixed, covered, or contained sufficiently for safe transfer.

17.2.7 Weight

In addition to the weight limits for specific packaging designs, packages must not exceed 4,082 kg (9,000 pounds) per box, 544 kg (1,200 pounds) per drum, or 15,880 kg (35,000 pounds) per intermodal container, with the exception of bulk wastes. For intermodal containers, the weight should be evenly distributed.

Exception to the specified box weight limit is allowed if the following

- Final weight shall not exceed the approved manufacturer design limits;
- Each overweight box shall be clearly marked “Overweight Box,” and
- Shipped on a flatbed trailer and cribbed to a 4 inch minimum height to allow offloading with a forklift.

17.2.8 Loading (Void Space)

To minimize void space, waste packages must be loaded to ensure that the interior volume is as efficiently and compactly loaded as practical.

17.2.9 Package Protection

Methods must be employed to ensure that the integrity of the in-process waste package is not compromised (e.g., prohibited items are not introduced into the waste package). Once the waste package certification activities have been completed and the packages have been sealed, the packages must be stored in a secure, protected Area to prevent deterioration and unauthorized intrusion. Storage should include protection from adverse weather, particularly rain and snow. Tamper-indicating devices, clips, or banding can be used to indicate that the package has not been opened. The devices must not contain lead.

Generators must ensure that waste is handled, stored, and shipped in accordance with applicable DOE, DOT, EPA, state, and local regulations and requirements.

17.2.10 Marking and Labeling

Packages must have the following markings and labels:

- Marking and labeling as required in 49 CFR, *Transportation*. For additional asbestos and beryllium labeling, see Sections 17.1.9 and 17.1.10 of this attachment respectively.
- “Package Certification Label” (Fig. 17-3) signed by the WCO or package certifier. If the waste is unpackaged bulk, a signed package certification label must accompany the shipment papers.
- Shipment number in the following sequence: Two alpha character generator-site-designator codes assigned by NNSA/NSO/WMP (see Table 17-8), one alpha character for type of waste (L for LLW, M for mixed waste), two numerical characters for the current fiscal year, and then three numerical characters for the shipment sequence (e.g., LA99001 indicates the first shipment from LANL of LLW in fiscal year 1999). This number must be on the barcode.
- The package number must be six characters (alpha, numeric, or combination) with no duplication within the shipment. This number must be on the barcode.
- The package weight in units of kilograms and pounds must be included on the side of each waste package. This requirement can be met through the use of a label, additions to barcode labels, or by writing the weight on the side of the waste package.
- For intermodals, markings and labels not intended for NTS or DOT must be obliterated, and the placards must be removable by the transporter.
- Markings and labels must be intact and readable when the shipment arrives at the disposal site.

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PACKAGE CERTIFICATION LABEL

This label certifies this container and its contents meet the requirements of DOT (49 CFR), EPA (40 CFR), and NTS WAC for transportation and disposal.

PACKAGE NUMBER:
DATE:
CERTIFIED BY (print):
CERTIFIED BY (signature):

Waste Certification Official ☐
Alternate Waste Certification Official ☐
Package Certifier ☐

RWMC DESIGNATION (i.e., ONLO, ARIR):

SAMPLE

Fig. 17-3. Sample of the package certification labels (reference Fig. C-2. Package Certification Label, Nevada Test Site [NTS] WAC) that are used for package certification to the NTS.

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Table 17-8. Generator Waste Stream and Shipment Codes

Generator	RWMC Designation	Site Designator
Aberdeen Proving Ground	USAA	AP
Advanced Mixed Waste Treatment Project	AMWP	AM
Argonne National Lab	ANLE	AE
Boeing	BNRC	BN
Brookhaven National Lab	BNLX	BR
BWXT Y-12	BWXT	BW
Duratek	DRTK	DR
Fernald	ONLO	WM
Foster Wheeler	FWOR	FW
GA Technologies	BGAT	BG
INL	INEL	IN
Kansas City	ABXK	AS
LANL	LANL	LA
Lawrence Livermore National Laboratory	BCLA	LL
Lovelace Foundation	ALVI	LV
NSTec–NTS	LRY5	DP
Nuclear Fuel Services	NFSI	NF
Oak Ridge Reservation	ORTN	OR
Paducah	PGDP	PD
Pantex	AMHP	PX
Permafix (M&EC)	PERM	PF
Portsmouth	PORT	PO
Princeton Plasma Physics Lab	PPPL	PL
Sandia–Albuquerque	ASLA	SA
Sandia–California	ASLL	SL
Savannah River	SVRS	SR
Stoller–Navarro	LITN	IT
UT-Battelle	ORNL	OL
West Valley	WVDP	WV

Note: If generator site is not listed, develop designations and submit with first waste profiles. A database verification of uniqueness will be conducted by Radioactive Waste Acceptance Program (RWAP).

17.2.11 Barcoding

Waste packages must be barcoded by WDP-LLWD personnel in accordance with the requirements of Appendix C of the NTS WAC. Barcodes (see Fig. 17-4) used on packages must meet the following standards:

- Code 39 (NTS WAC)
- Low-to-medium-density; low-density (preferred)
- 1-inch high barcode (not to exceed 6 inches wide)
- Human Readable Interpretation (HRI) 1/2 inch high, printed below the barcode
- Spacing between the barcode and HRI will be 1/10 inch
- Minimum left and right margin (quiet zones) will be at least 1/25 inch
- Barcodes and HRI will be stacked with a minimum separation of 1/2 inch in the following order: shipment number, container.
- A total of two barcode labels must be placed on each package near the top and on opposite sides. Drums must have a total of two barcode labels, one on top of the drum lid and one on the side near the top.

  Note: Exceptions to these requirements must be verified with the NTS Radioactive Waste Management Complex *before* the shipment.

- Labels must be securely attached and able to satisfy the following criteria:
  - Weatherproof (must not deform when wet or fade in the sun)
  - Resistant to tearing, peeling, and cracking
  - Print must be legible and made with permanent ink.

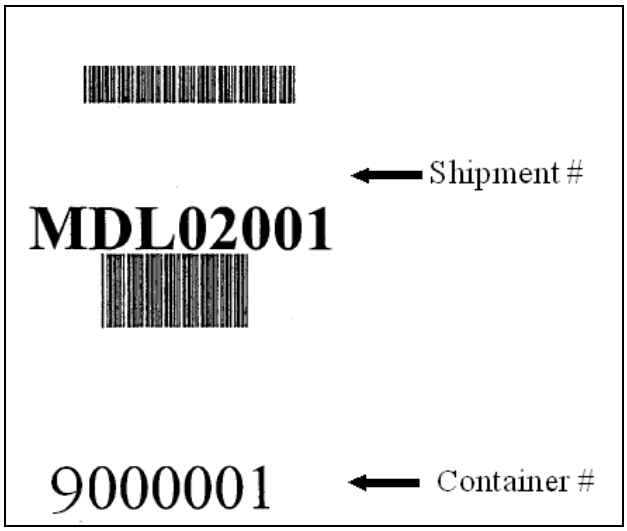

Fig. 17-4. Barcode label example.

Note: Example shown in Fig. 17-4 is not the actual size.

A sample barcode must be submitted to the RWAP before the first shipment to ensure that the RWMS equipment can be used to read the barcode.

17.2.12 Lead Shielding

Lead shielding in containers used for LLW disposal is an acceptable practice, provided that documentation supports that standard packaging without lead shielding would not reduce the exposure rate to less than 5 mrem/h at 30 cm and that shielding is necessary for radiation protection. The lead used for shielding must not be radioactively contaminated when introduced.

Documentation is required demonstrating that the amount of lead used for shielding is not excessive for each specific container of LLW. The documentation must include calculations demonstrating that the amount of lead (thickness and quantity) in the container is not excessive by justifying the quantity of lead required in each given container, or on a container-by-container basis.

17.2.13 Remote-Handled Waste

Remote-handled waste is defined as waste with greater than 100 mrem/h at 30 cm. Handling procedures and ALARA documentation must be included on the WPF (Form 1346, *Waste Profile Form)* for waste that requires remote-handling. NTS may request this documentation. Remote-handling will incur additional costs for the generator and may delay the approval process.

17.2.14 Dose Rates

For intermodal containers, the dose rates should be less than 5 mrem/h on contact. Also, the dose rate must not exceed 5 mrem/h at 30 cm. Any return survey requirements for intermodal containers must be clearly communicated to NTS in the profile submittal.

17.2.15 Contamination Levels

External contamination levels for waste packages and transport vehicles must meet the release limits specified in 10 CFR 835, *Occupational Radiation Protection*, Appendix D, *Surface Contamination Values*.

17.2.16 Waste Containers and Shipping Configuration

Generators shall ensure the following requirements are satisfied to improve transportation safety and off loading at the NTS:

- Waste containers used for shipping, at a minimum, will be Industrial Package-1 (packaging meeting the requirements of 49 CFR 173.410, *General Design Requirements*, and 49 CFR 173.411, *Industrial Packagings*).
- Waste packaged in drums will be palletized and banded and transported to NTS in a closed conveyance.
- Alternative shipping containers/methods for transport of bulk items (Surface Contaminated Object [SCO], Low Specific Activity [LSA] equipment large machinery, etc.) will be approved on a case-by-case basis. When required, WDP-LLWD personnel will obtain this approval from the Waste Management Federal Project Director.

17.3 Waste Characterization

Generators must characterize waste destined for disposal at the NTS. When similar requirements are listed in separate regulations, the most stringent must be met. The NTS will not accept wastes until the generator, through sampling and analysis, acceptable knowledge, or a combination of both, demonstrates the waste to be LLW that meets the NTS WAC.

Generators must characterize waste with sufficient accuracy to permit proper segregation, treatment, storage, and/or disposal. The characterization methods and procedures employed by the generator must adhere to the requirements in P409, *Waste Management*, and ensure that the physical, chemical, and radiological characteristics of the waste are recorded and known during all stages of the waste management process. Methods selected by the generator for waste characterization must undergo a documented peer review. Data Quality Objectives (DQO) must be used for identifying characterization parameters and acceptable uncertainty in characterization data.

Generators shall document their review and acceptance of the most recent certification audit for the analytical laboratory used.

Waste must be characterized before NTS profile submittal. Generators must provide WDP-LLWD with waste characterization documentation that supports development of the NTS waste profile. Based on the information provided in the WPF (Form 1346, *Waste Profile Form)*, WDP-LLWD personnel must prepare and submit an NTS waste profile, which provides NTS with a summary of waste characterization information. NTS personnel may require access to this information for review during evaluations of the LANL waste management program. Waste characterization must be traceable to the NTS waste profile and disposal packages. Isotopic distributions and corresponding activity concentrations must be traceable to the package. Traceability to a package level must be required if characterization is being conducted on an individual basis, but packaged together. Radiological characterization using sampling and analysis, including swipes taken for characterization, must be controlled.

17.3.1 Acceptable Knowledge

Acceptable knowledge is a characterization technique that relies on the generator's knowledge of the physical, chemical, and radiological properties of the materials associated with waste generation processes. It includes knowledge of the fate of those materials, during and subsequent to the process, and associated administrative controls.

Acceptable knowledge sources include, but are not limited to, the following programmatic and waste stream specific materials:

- historic records, including historic analytical data,
- facility maps delineating waste generation areas,
- description of waste generating operations,
- system descriptions,
- plans and drawings,

- areas and/or buildings where each stream is or was generated,
- material inputs, including Material Safety Data Sheets,
- manufacturing specifications,
- mass balance documentation,
- literature searches,
- living memory (documented interviews),
- laboratory notebooks and project reports,
- process logs and batch records, and
- procedures.

Historical data should be routinely verified through controlled analytical methods, such as verification sampling and analysis. However, if the data can successfully undergo a full validation, this verification may not be necessary.

When acceptable knowledge relies on living memory, the individual's knowledge must be documented and signed by both the interviewer and the interviewee. For telephone interviews, a statement outlining relevant information must be signed by the interviewer (and interviewee, if possible). The generator's evaluation shall identify uncertainties, inconsistencies, limitations, and usefulness.

Acceptable knowledge can be used instead of sampling and analysis if the acceptable knowledge is of sufficient detail to qualify as acceptable by NTS. NTS considers acceptable knowledge acceptable if it is based on detailed information on the waste obtained from existing waste analysis data, studies on similar waste-generating processes, or detailed information relative to the properties of the waste that are known, because of site-specific and/or process-specific factors.

17.3.2 Sampling and Analysis

Generators must conduct a documented evaluation of information collected from acceptable knowledge sources to use for waste characterization. The generator's evaluation must identify uncertainties, inconsistencies, limitations, and sampling and analysis results.

Generators must ensure that all data are scientifically valid, defensible, and of known precision and accuracy. Generators must also identify the physical, chemical, and radiological properties of the waste. When waste streams are characterized by sampling and analysis, the process must be controlled and documented. Propagation of error throughout the sampling and analytical process must be evaluated and controlled when ascertaining usability of data for characterization of the waste. Sampling and analysis results must be recorded on the NTS waste profile.

Generators must demonstrate that controls are in place to trace each sample number to a specific package number. Sampling and analysis efforts, including verification and confirmatory sampling, should include screening analysis, such as gamma spectroscopy, gross beta, and gross alpha quantification. The sampling and analysis plan must be approved by the WCO *before* conducting the sampling. Generators should determine the appropriate analysis (total versus TCLP) for RCRA hazardous and UHC determinations. These results must be reported in Form 1346, *Waste Profile Form.*

17.3.2.1 Data Validation

Data validation is a comprehensive analysis and review of analytical data conducted against a set of predetermined criteria or qualified standard that indicates relative usability (e.g., completely usable, estimated value, or unusable) for each analytical result. The validation criteria should be developed using the DQO process and depend upon the type(s) of data involved and the purpose for which the data are collected. Data must be validated by technically qualified personnel who are independent of those performing the analysis.

When sampling and analysis are used as methods of characterization, data validation must be conducted on a portion of chemical and radiological data from the NTS waste stream, *before* use of the data for characterization purposes.

The LANL waste profile instructions require completion of an analytical results summary (Table 17-9 of the NTS WAC) for inclusion in the NTS waste profile if data analyses have been performed. Data validation will be performed on a portion of the data used to complete the table. If in subsequent sampling events, variations of analytical results remain less than 80% of the applicable regulatory threshold, revision of Table 17-9 is not required. If the results ever exceed 80% of the regulatory threshold, it will be necessary to revise the table and submit appropriate validation summary reports (case narratives) for the values entered in the revised table.

Validation summary reports must cite the guidelines or procedures used to validate the data and must include, at a minimum, the following information:

- method and kind of analysis with a general discussion of the data set, including preparation, dilutions, initial and continuing calibration, and holding times;
- method blank analysis;
- Laboratory Control Standard (LCS) analysis;
- surrogate spike recoveries;
- data qualifier codes; and
- discussion and/or statement of data quality.

These reports must be attached to the WPF (*Waste Profile Form)* so that they can be submitted to the NTS.

Table 17-9. Nevada Test Site (NTS) Waste Acceptance Criteria (WAC) Analytical Results

	Statistical Mean	Upper Confidence Limit		Statistical Mean	Upper Confidence Limit
TCLP Metals:			**TCLP Semivolatiles:**		
Arsenic			o-Cresol		
Barium			p-Cresol		
Cadmium			m-Cresol		
Chromium			Cresol		
Lead			Dinitrotoluene		
Mercury			Hexachlorobenzene		
Selenium			Hexachloro-1,3-butadiene		
Silver			Nitrobenzene		
TCLP Volatiles:			Pentachlorophenol		
Benzene			2,4,5-Trichlorophenol		
Carbon Tetrachloride			2,4,6-Trichlorophenol		
Chlorobenzene			Hexachloroethane		
Chloroform			**TCLP Pesticides and Herbicides:**		
1,4-Dichlorobenzene			Chlordane		
1,2-Dichloroethane			2,4-D		
Methyl ethyl ketone			Endrin		
Pyridine			Heptachlor and Hydroxide		
			TCLP Pesticides and Herbicides:		
Tetrachloroethylene			Lindane		
Trichloroethylene			Methoxychlor		
Vinyl chloride			Toxaphene		
Dichloroethylene			2,4,5-TP (Silvex)		

17.3.2.2 Review by Waste Certification Official (WCO)

The WCO must review and provide concurrence of procedures and/or revision to all documents that are critical in the certification of LLW streams to be disposed of or shipped to the NTS.

The WCO must review the sampling and analysis plan for the following:

- The use of and compliance with analytical methods specified in permits or cited in other regulatory or Laboratory documents.
- The methods used to design the sampling and analysis approach, including the use of DQOs or similar method.
- Ensuring that the methods chosen comply with established limits and reporting criteria defined in the WAC.
- The selection of the analytical laboratory and the most recent evaluation of that facility.

17.3.3 Gross Radiation Measurements

Generators using gross radiation measurements must ensure that the measurements correlate with the activity concentration on a consistent basis. Radionuclide distributions in the waste stream must be initially determined and periodically verified through direct measurements or sampling and analysis. Generators must document the methods used to develop scaling factors that relate gross radiation measurements to the activity concentration. When developing scaling factors, generators must consider the waste package and detector geometry, shielding and attenuation effects, and the energy spectra and decay schemes of the radionuclides in the waste.

17.4 Waste Acceptance Criteria (WAC) Deviations

Deviations from the NTS WAC that do not make up the performance objectives for the disposal site, NTS Documented Safety Analysis requirements and limitations, or violate permit requirements may be accepted.

The following information shall be provided with the WPF (*Waste Profile Form)* or as a stand-alone document approved by the WCO:

- NTS WAC requirement that cannot be met,
- justification for not meeting the requirement; including a description of the item(s) and/or process that is affected,
- duration of the deviation, and
- the Action Plan to correct the deviation.

17.5 Additional Requirements

None

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Attachment 18. TA-53 Radioactive Liquid Waste Treatment Plant (RLWTP) (Page 1 of 7)

The TA-53 Radioactive Liquid Waste Treatment Plant (RLWTP) receives and treats radioactive and industrial wastewaters with a radionuclide content of 0.032 curie per liter or less, and a Transuranic (TRU) content of 10 nanocuries per liter or less. These wastewaters cannot contain Toxic Substance Control Act (TSCA) or Resource Conservation and Recovery Act (RCRA) constituents as defined in 40 CFR, *Protection of Environment*, and have temperature and pH restrictions. The concentrations of metals and certain other contaminants are also limited, as set forth in this attachment.

Most of this wastewater is generated at TA-53, and is received at the RLWTP through a network of buried pipelines. Wastewater from other LANL generators is transported to the TA-53 RLWTP by truck. The Waste Acceptance Criteria (WAC) outlined in this attachment are applicable to all wastewaters transported to the TA-53 RLWTP, whether by underground piping or by truck.

Criteria for metals are established so that wastewaters treated at the TA-53 RLWP are below Environmental Protection Agency (EPA) levels for RCRA characteristic hazardous wastes. Criteria for radionuclides are derived from (1) air emission calculations based on the maximum annual design basis flow rate (280,000 gallons) and historical sampling data for the Area A and WNR tanks, and (2) radionuclides that constitute greater than 1% of the total activity and greater than 1% of the Category 3 threshold limit of the cooling water system for the 1L tungsten target located at the Lujan Center (assuming a maximum annual discharge of 3,000 gallons). The activity and radionuclide inventory in the RLW from the 1L tungsten target cooling water system is based on the predicted activity of radionuclides within the target system after one year of beam operation, an assumed conservative corrosion rate (23 mils per year), and an assumed removal efficiency (90%) associated with the ion exchange columns within the cooling water system.

18.1 Facility Requirements For Connecting to the TA53 RLWTP

18.1.1 Sinks and Drains Connected to the TA-53 RLWTP

Each sink and drain connected to the TA-53 RLWTP must be posted with an approved TA-53 RLWTP sign such as the one shown in Fig. 18-1.

ATTENTION
This drain is ONLY for
Aqueous radioactive waste LESS THAN OR EQUAL TO 0.032 Ci/L
Waste with a current WASTE PROFILE FORM approved by the Radioactive Liquid Waste Treatment Facility (RLWTF)

This drain is NOT for waste containing
Transuranic radionuclides greater than 10 nanocuries per liter
Organics or metals regulated by Resource Conservation and Recovery Act (RCRA)
TSCA wastes regulated by Environmental Protection Agency (EPA)

Call the (RLWTF) at 667-4301

Fig. 18-1. Example sign posted to each sink and drain connected to the TA-53 Radioactive Liquid Waste Treatment Facility (RLWTP).

18.1.2 Labeling of Radioactive Waste Lines

Pipelines within buildings that are connected to the TA-53 RLWTP should be labeled "Radioactive Waste Line."

18.2 Waste Profile Form (WPF)

Only wastewater having an approved WPF may be discharged or transported to the TA-53 RLWTP. Instructions for completing the WPF (Form 1346) are in TL-001, *Waste Generator Instruction for Completing the Waste Profile Form (WPF)*. Assistance in completing the WPF can be obtained by calling the Waste Acceptance group. The WPF must include information with sufficient accuracy regarding the waste's physical, nonradiological, and radiological characteristics to evaluate compliance with the TA-53 RLWTP Waste Acceptance Criteria (WAC).

Upon completion, the WPF is to be sent to the Waste Acceptance group. A copy of the WPF will be sent to the generator's WMC upon acceptance or rejection of the waste at the TA-53 RLWTP. Contact your WMC for specific information related to the status of a WPF.

18.3 Waste Acceptance Criteria Exception Form (WEF)

Some waste streams that do not meet the WAC may be acceptable for treatment at the RLWTP. Also, a temporary change in the waste stream may require that the RLWTP be notified. The documentation for handling both of these situations is a WEF (Form 1973, *Waste Acceptance Criteria Exception Form*). The WEF will need to be approved by RLWTP personnel before the new waste stream or the modified waste stream can be sent to the RLWTP. The WEF Form 1973 may be obtained by contacting your WMC.

18.4 Radioactive Liquid Waste Acceptance Criteria (WAC)

For acceptance at the TA-53 RLWTP, wastewater must meet the criteria outlined in this section. Specifically, certain wastewaters are unacceptable for treatment at the RLWTP (Table 18-1), wastewaters must not have concentrations of radioactive constituents and metals in excess of concentrations given in Tables 18-2 and 18-3, and wastewaters must meet other restrictions set forth in this section.

If a waste stream includes any of the constituents listed in Table 18-1, or exceeds limits set forth in Table 18-2, Table 18-3, or this section, the generator may complete a WEF (Form 1973, *Waste Acceptance Criteria Exception Form*) and submit the WEF along with the WPF (Form 1346, *Waste Profile Form)*. The RLWTP Process Engineer will then determine if the waste stream can be accepted for treatment.

18.4.1 Unacceptable Wastewaters

Wastewaters with characteristics set forth in Table 18-1 are unacceptable for discharge to the RLWTP.

Table 18-1. Wastes that are Unacceptable for Treatment at the TA-53 Radioactive Liquid Waste Treatment Plant (RLWTP)	
Nonradioactive Constituents	Resource Conservation and Recovery Act (RCRA)-regulated characteristic waste (D001, D002, D003, as defined in 40 CFR 261.21, *Identification and Listing of Hazardous Waste, Characteristic of ignitability,* 40 CFR 261.22, *Identification and Listing of Hazardous Waste, Characteristic of corrosivity*, and 40 CFR 261.23, *Identification and Listing of Hazardous Waste, Characteristic of reactivity*)
	RCRA-regulated toxic metal waste (D004 – D011) (40 CFR 261.24, *Identification and Listing of Hazardous Waste, Toxicity characteristic*)
	RCRA-regulated toxic organic waste (D012 – D043) (40 CFR 261.24)
	RCRA-regulated listed waste (F-, K-, P-, U-listed) (40 CFR 261.31, *Identification and Listing of Hazardous Waste, Hazardous wastes from non-specific sources,* 40 CFR 261.32, *Identification and Listing of Hazardous Waste, Hazardous wastes from specific sources*, and 40 CFR 261.33, *Identification and Listing of Hazardous Waste, Discarded commercial chemical products, off-specification species, container residues, and spill residues thereof*)
	DDT, dioxins, or pesticides at any detectable concentration determined by an approved Environmental Protection Agency (EPA) method
	TSCA waste as defined in 40 CFR 761, *Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions,* and 40 CFR 766, *Dibenzo-Para-Dioxins/Dibenzofurans*, including but not limited to waste containing PCBs.
Other	Biological or microorganism waste
	Oils, greases, detergents and surfactants that may inhibit evaporation or develop films in the evaporation basins, in concentrations greater than 100 mg/L.
	Sanitary waste (except for rad decontamination showers and sinks)
	Sludges or solids
	Dyes and scintillation cocktails

18.4.2 Radionuclide Content

The maximum allowable radionuclide concentration (defined as the sum of gross alpha, gross beta, and gross gamma **or** the sum of individual alpha-, beta-, and gamma-emitting radionuclides known to be in the wastewater) for wastewater discharged to the TA-53 RLWTP is 3.2E–02 Ci/L. In addition, the maximum allowable TRU radionuclide concentration (defined as the sum of all radionuclides with atomic numbers larger than 92) is 10 nanocuries per liter. Limits for individual radionuclides are listed in Table 18-2. Radionuclides that make up greater than 1% of the total activity in the wastewater and have half-lives greater than 30 days must be reported on the WPF (Form 1346, *Waste Profile Form)*. Total activity of the wastewater must also be reported.

18.4.3 Metals

Liquid waste streams that contain metals below the concentration limits in Table 18-3 are acceptable for discharge to the TA-53 RLWTP.

No: P930-1 LANL Waste Acceptance Criteria
Attachment 18. TA-53 Radioactive Liquid Waste Treatment Plant (RLWTP) (Cont.) (Page 4 of 7)

Table 18-2. Limits on Radionuclides Acceptable for Discharge to the TA-53 Radioactive Liquid Waste Treatment Plant (RLWTP)

Radionuclide	Maximum Allowable Activity (Ci/L)
Be-7	9.0E–04
Co-56	8.8E–06
Co-57	2.0E–05
Co-58	3.5E–05
Co-60	5.7E–06
Gd-148	3.9E–07
H-3	2.0E–08
Hf-172	9.1E–05
Hf-173	3.30E–04
Hf-175	4.1E–04
I-125	5.7E–07
I-126	1.1E–07
Lu-170	2.6E–04
Lu-171	3.0E–04
Lu-172	1.2E–04
Mn-54	4.2E–05
Na-22	1.2E–05
Rb-83	1.3E–06
Rb-84	1.0E–06
Sc-46	6.0E–06
Se-75	3.4E–07
Sr-85	6.0E–08
Ta-173	2.7E–04
Ta-174	3.1E–04
Ta-175	3.6E–04
Ta-176	4.5E–04
Ta-177	4.7E–04
Ta-179	2.8E–04
Ta-182	1.5E–04
Tm-166	2.0E–04
W-176	2.9E–04
W-177	3.3E–04
W-178	5.6E–04
W-181	1.6E–03
W-185	4.4E–03
W-187	9.0E–03
Y-88	2.4E–07
Yb-166	1.9E–04
Yb-169	2.7E–04
Zn-65	1.5E–06
Sum of All radionuclides	3.2E–02
Sum of transuranic radionuclides	1.0E–08

Table 18-3. Limits on Metals Acceptable for Discharge to the TA-53 Radioactive Liquid Waste Treatment Plant (RLWTP)

Metal	Allowable Concentration (mg/L)
Arsenic (D004	<5.0
Barium (D005)	<100
Cadmium (D006)	<1.0
Chromium (D007)	<5.0
Lead (D008)	<5.0
Mercury (D009)	<0.2
Silver (D011)	<5.0
Selenium (D010)	<1.0

18.4.4 Other Characteristics

Volume: The generator must specify on the WPF (Form 1346, *Waste Profile Form)* the average and maximum daily and annual projected volume of wastewater that will be discharged to the TA-53 RLWTP.

Temperature: The maximum allowable temperature of wastewater discharged to the TA-53 RLWTP is 60°C (140°F). Temperatures above 60°C (140°F) will cause expansion and damage to the collection system.

pH: Wastewater must have a pH between 6.1 and 9.0 to be released to the TA-53 RLWTP.

Total Suspended Solids (TSS): Waste streams containing solids may cause problems with in-line blockage and will ultimately settle out within the evaporation basins. The maximum allowable TSS level is 100 mg/L.

Water Content: Waste streams with a water content of less then 95% are not acceptable for discharge to the TA-53 RLWTP.

18.5 Waste Transported by Container or Truck

Wastewater may be transported to the TA-53 RLWTP in containers (such as Tuff Tanks™ and 55-gallon drums) or tanker trucks, in full compliance with applicable DOT regulations.

The generator is responsible for ensuring that an approved WPF and on-line Waste Disposal Request (WDR) Form are completed before transport. Contact your WMC. Either the waste generator or the WMC must be present at the time and place of pickup to ensure that the correct items are transported. The generating organization must also provide the necessary equipment, such as forklifts, required for safely transferring the waste.

18.5.1 Tanker Truck Operations

Waste transported in the RLWTP tanker truck must qualify as a DOT Exempt Classification or as a limited quantity of radioactive materials as defined by 49 CFR 173.425, *Table of Activity Limits—Excepted Quantities and Articles*, and must be located in an area accessible by a tanker truck. The generating group must:

- coordinate the date, time, and location with the RLWTP WMC (667-4301),
- ensure that either the waste generator or the waste generator's WMC is present at the time and place of pickup,
- provide any equipment required for safely transferring the waste (for example, forklifts), and
- incur the cost of transportation.

18.5.2 Flatbed Truck Operations

DOT package limitations for radionuclides specified in 49 CFR 173, *Shippers—General Requirements for Shipments and Packagings,* must not be exceeded.

Waste generator organizations are responsible for their waste containers. After waste is disposed of at the RLWTP, RLWTP personnel triple-rinse the containers and survey them for surface contamination. The generator is responsible for retrieval and disposal of the empty containers.

Waste transported to the RLWTP in containers by flatbed truck must be transported in any of the following containers:

- Tuff Tanks™ or other DOT-approved portable containers. Tuff Tanks™ are not to be filled above the maximum fill line. If there is no maximum fill line, they must be filled to at least 60% and no more than 90% of capacity.
- DOT-approved, 55-gal. or 35-gal. metal, closed-head drums. Drums are to be filled to at least 60% and no more than 90% of capacity.
- Glass bottles or plastic carboys (not to exceed 5-gal. capacity) with fitted, screw-type caps.

Glass bottles or plastic carboys must not have any bottom outlets and must be overpacked in accordance with the appropriate DOT packaging authorization and packing group. If a liquid waste is not regulated by DOT, liquid waste transported in these containers must still be overpacked in a metal or plastic drum. The overpack must contain enough absorbent to absorb all of the liquid waste.

For waste transported to the RLWTP by flatbed truck, the generating group must:

- coordinate a date and time with the RLWTP WMC (667-4301),
- ensure compliance with applicable packaging and transportation criteria,
- ensure that each container has a completed "Health Physics Radioactive Materials Survey Tag,"
- incur the cost of RLWTP waste handling operations, and
- make arrangements to retrieve containers after they are emptied.

No: P930-1 LANL Waste Acceptance Criteria
Attachment 18. TA-53 Radioactive Liquid Waste Treatment Plant (RLWTP) (Cont.) (Page 7 of 7)

18.6 Nonconformances

The RLWTP Process Engineer will issue a nonconformance report to any generating group that discharges or transports a waste stream to the RLWTP that does not meet the criteria outlined in this attachment and for which a WAC exception was not approved by the RLWTP.

RLWTP personnel will periodically audit generator documentation, such as WPFs and WEFs, against actual discharges to the RLWTP. In addition, RLWTP personnel reserve the right to perform scheduled or non-scheduled monitoring of discharges from radioactive wastewater-generating facilities.

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Attachment 19. Non-Hazardous, Non-Radioactive Scrap Metal (Page 1 of 4)

With the exception of reuse or recycle within the DOE Complex (see Attachment 8, *Other Low-Level Waste (LLW)*, Section 8.8), the recycling of scrap metal removed from radiological contaminated areas has been suspended in accordance with the DOE Secretarial Memorandum of July 13, 2000. However, DOE has authorized the direct disposal of nonhazardous, nonradioactive scrap metal in off-site industrial landfills. These Waste Acceptance Criteria (WAC) are applicable to scrap metal destined for recycling or disposal. Scrap metal that does not meet the requirements of this document must be disposed of as radioactive or mixed waste (see appropriate WAC sections).

The scrap metal recycling suspension applies to any Area within RCAs that must be posted as a

- Radiation Area,
- High Radiation Area,
- Very High Radiation Area,
- Contamination Area,
- High Contamination Area, or
- Airborne Radioactivity Area.

Metals from activation areas that are potentially volumetrically contaminated may not be recycled. Volumetrically contaminated metals should be managed separately because their disposal costs may be significantly higher than that for other scrap metals.

Nonhazardous, nonradioactive scrap metal is not subject to the recycling suspension and may be recycled if it originates in an Area with any of the following postings:

- Radiological Controlled Areas (unless from an Area with one of the above postings),
- Radiological Buffer Zones,
- Radioactive Material Areas,
- Soil Contamination Areas,
- Fixed Contamination Areas,
- Underground Radioactive Material Areas, or
- Hot Job Exclusion Areas.

Certain other conditions also exempt nonhazardous, nonradioactive scrap metals from the recycling suspension. These conditions are described as follows:

- Clean metal items that can be reused should be sent to LANL Salvage Operations for reuse.
- Metallic items that are in a fully sealed, protective enclosure, such as ballasts, light bulbs, and circuit boards, are not subject to the recycling suspension and should be recycled. Visit the recycling web page for detailed information about these items: http://int.lanl.gov/recycle.
- If a radiological hazard Area has been down-posted to reflect a lesser radiological hazard for any reason other than the removal of metal, then nonhazardous, nonradioactive metal originating from these areas may be recycled.

No: P930-1 LANL Waste Acceptance Criteria
Attachment 19. Non-Hazardous, Non-Radioactive Scrap Metal (Cont.) (Page 2 of 4)

19.1 Waste Determination

In accordance with P409, *Waste Management*, a generator of bulk scrap metal must make a hazardous waste determination at the time the waste is being generated.

19.2 Waste Form

19.2.1 Acceptable Forms

The following types of metal are acceptable for disposal or recycling:

- Iron and steel,
- Aluminum,
- Metal building debris,
- Metal duct work, and
- Similar type metal items.

19.2.2 Restrictions

The waste types or materials in the following list must not be packaged with nonhazardous, nonradioactive scrap metal destined for recycling or disposal at an industrial landfill:

- Volume-contaminated scrap metal either from activation or from the mixing of radioactive material into the item itself,
- Hazardous waste,
- NM special waste,
- Tritium-contaminated scrap metal,
- TSCA-regulated Polychlorinated Biphenyl (PCB) waste,
- Asbestos-containing material,
- LLW,
- Transuranic (TRU) waste,
- Universal waste, or
- Classified shapes.

19.3 Container Requirements

WDP-HMWO must provide roll-off containers for the loading and transport of scrap metal for recycle. If a waste generator has only a small volume of nonhazardous, nonradioactive scrap metal for recycling, the generator should transport it directly to the Technical Area (TA)-60-85 Material Recycling Facility (MAR).

19.4 Package Weight

Packages of waste must not exceed the rated capacity of the packaging container or the gross weight of the WDP-HMWO supplied roll-off container. The transport vehicle with the container and waste must not exceed 90% of the vehicle rating.

No: P930-1 LANL Waste Acceptance Criteria
Attachment 19. Non-Hazardous, Non-Radioactive Scrap Metal (Cont.) (Page 3 of 4)

19.5 Limits on Removable Contamination and Surface Activity

A waste generator releasing scrap metal must provide WDP-HMWO with reasonable assurance that the scrap metal has been free-released from the radiological control Area (RCA). The waste generator must provide proof that no residual radioactive material is detectable above background on the metal. This must be done using standard procedures and commercially available technology. A waste generator releasing bulk scrap metal for direct disposal must follow the requirements for releasing material into uncontrolled areas as stated P121, *Radiation Protection*. Each item within the bulk scrap metal shipment must be released using an item removal log or Health Physics Release (HPR) tag. Copies of these documents must accompany the CWDR for scrap metal destined for disposal.

19.6 Documentation

19.6.1 Survey Records

Records for releasing bulk scrap metal must indicate the material, the date on which the release survey was performed, the individual who performed the survey, the type and the identification number of the survey instrument used, and the survey results. In addition, the records must include a measurement of the background radiation in the Area where the survey was performed and the minimum detectable activity for the instrument.

19.6.2 Acceptable Knowledge Statement

A waste generator must include acceptable knowledge documentation that is given a unique identifier on the WPF and may attach the document to the WPF. They are liable for retaining this information for auditing purposes and/or Treatment, Storage, and/or Disposal Facility (TSDF) requests. The acceptable knowledge statement must document that due diligence was used in evaluating the scrap metal and that this included operational records, operating history, and process knowledge. A waste generator must also provide an acceptable knowledge statement documenting that due diligence was used in evaluating the scrap metal and that this included operational records, operating history, and process knowledge.

19.6.3 Acceptable Knowledge Statement for Inaccessible Areas

For the portion of specific items that are inaccessible, a separate acceptable knowledge statement signed by the generator must be submitted with the WPF. The acceptable knowledge statement must demonstrate that inaccessible surfaces of the item are within authorized limits based on a case-by-case evaluation, history-of-use documentation, and measurement documentation.

No: P930-1 LANL Waste Acceptance Criteria
Attachment 19. Non-Hazardous, Non-Radioactive Scrap Metal (Cont.) (Page 4 of 4)

19.6.4 Waste Profile Form (WPF) and Chemical Waste Disposal Request (CWDR)

A waste generator is required to submit a WPF and on-line Waste Disposal Request (WDR) Form to Waste and Environmental Services-Waste Acceptance (WES-WA) for all bulk nonhazardous, nonradioactive scrap metal designated to be sent off-site for direct disposal. In the waste/process description section of the WPF (Form 1346), the generator must identify that the waste is bulk scrap metal free released from an RCA for direct disposal in an industrial landfill. For each shipment of bulk scrap metal for disposal, a generator must submit the on-line Waste Disposal Request (WDR) Form. The generator must include with the on-line Waste Disposal Request (WDR) Form either an item removal log or a copy of the HPR tag completed by RP-1 for each item covered by the on-line Waste Disposal Request (WDR) Form.

19.7 Package Marking and Labeling

When the container departs the generator site, the HPR tag for the container must be given to the driver. The tag must not be attached to the container.

19.8 Arranging Transfer of the Waste

When the on-line Waste Disposal Request (WDR) Form is approved and a generator is ready to load the bulk scrap metal, the generator must contact WDP-HMWO to arrange for the delivery of the roll-off container. Once the container is loaded, the generator must contact WDP-HMWO to arrange for transport and disposal.

19.9 Cost

A generator must provide program and cost codes as part of the on-line Waste Profile Charge Code Form. The generator must be charged actual costs to the generator's program and cost codes for the disposal of the bulk scrap metal.

19.10 Verification Monitoring Program

As required by DOE O 5400.5, *Radiation Protection of the Public and the Environment*, WDP-HMWO must conduct a verification monitoring of each shipment of bulk nonhazardous, nonradioactive scrap metal being sent for disposal. Before departure from LANL, bulk scrap metal being transported for disposal must be monitored through a bulk portal-type monitor. If the transport vehicle fails to meet verification monitoring program parameters, the shipment must be returned to the generator for correction and the on-line Waste Disposal Request (WDR) Form must be canceled. Bulk shipments of non-hazardous, non-radioactive metal destined for recycling also will be monitored through a bulk portal-type monitor before departure from LANL.

ENCLOSURE 3

Waste Generator Instruction for Completing the Waste Profile Form (WPF), TL-001, Rev. 0

TL-001, Revision 0
Effective Date: 6-3-2008

Waste Generator Instruction for Completing the Waste Profile Form (WPF)

	Signature on file	6-3-2008
Document Owner	Signature	Date

1.1 DEFINITIONS 3

SEE THE GLOSSARY ASSOCIATED WITH P409, WASTE MANAGEMENT. 3

1.2 ACRONYMS 3

SEE THE ACRONYM ASSOCIATED WITH P409, WASTE MANAGEMENT. 3

2.0 WASTE PROFILE FORM INSTRUCTIONS 3

2.1 COMPLETING THE WASTE PROFILE FORM 3

YOU MAY OBTAIN A FILLABLE COPY OF THE WPF ONLINE OR AT HTTP://ENTERPRISE.LANL.GOV/FORMS/1346.PDF. 3

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2.3 WPF IDENTIFICATION INFORMATION 4

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1.0 ACRONYMS AND DEFINITIONS

1.1 DEFINITIONS

See the glossary associated with P409, Waste Management.

1.2 ACRONYMS

See the acronym associated with P409, Waste Management.

2.0 WASTE PROFILE FORM INSTRUCTIONS

2.1 COMPLETING THE WASTE PROFILE FORM

For assistance in completing the form, contact your Waste Management Coordinator (WMC).

When completing the WPF, the generator should consider following the recommendations of this guidance document to prevent any delays in processing the WPF. This guidance is written in action form to indicate the action recommended.

Waste generators who sign WPFs must be current with required training (see Waste Management" P409, Section 6.0).

NOTE: Waste Document Forms training (#8504) should be taken before completing a profile.

YOU MAY OBTAIN A FILLABLE COPY OF THE WPF ONLINE OR AT HTTP://ENTERPRISE.LANL.GOV/FORMS/1346.PDF.

2.2 CATEGORIZING WASTE

In this document, guidance is provided for completing a WPF for waste(s) generated at the Laboratory.

This section provides examples for the following types of waste that are exempt from the requirement to characterize waste using the WPF:

- Industrial wastewater discharges that are point source discharges currently subject to regulation under Section 402 of the Clean Water Act and are discharged from an active outfall included in the Laboratory's National Pollution Discharge Elimination System (NPDES) permit.

  NOTE: If you have a question as to whether a waste stream is exempt due to its regulation under Section 402 of the Clean Water Act and discharge under an active outfall included in the Laboratory's NPDES permit, please contact water quality at 665-0453 for further information.

- Wastewater from restrooms, drinking water fountains, showers and office-type kitchens (Wastes discharged via pipeline originating outside of a Radiological Control Area (RCA) controlled for contamination), but not including washing of laboratory glassware.

- Regular office trash; food waste; recyclable paper, cardboard, binders, surplus chemicals, plastic bottles, aluminum cans and foil, transparencies, toner cartridges sent for refill, and wood products; landscape debris; scrap metal; and excess furniture, equipment, or other materials sent for salvage.

  NOTE: This is not a complete list of materials/items that do not require a WPF. If you have questions as to whether a WPF is required, please contact the ENV-RCRA group office at 667-0666.

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- Lab-wide profiles. The Laboratory has generated lab-wide profiles for various waste streams. (See Waste Management Coordinator Program Page) Lab-wide profiles are available for use by any generator or WMC so long as the waste meets the associated description.

2.3 WPF IDENTIFICATION INFORMATION

1. Contact (optional)

Name and phone number of person, other than Generator or WMC listed below, who is knowledgeable of and may be contacted for information on the waste stream.

2. Reference number

For WES-WA group use only.

3. Provide Generator/WMC Information

Generator	WMC	Waste Stream*
• Z Number • Name • Mail stop • Telephone number • Waste Generation Group	• Z Number • Name • Telephone number **NOTE:** If you don't have a WMC, contact Generator Support Services or Waste Management Coordinator group for assistance.	• Technical Area • Building • Room number
*** NOTE:** Provide the technical area, building, and room number *where the waste is generated*, **NOT** where the waste is accumulated.		

4. Waste Accumulation

A. Identify the type of area where the waste is being accumulated or stored, include site identification number (check only one).

- ☐ Satellite accumulation area
- ☐ Less-than-90-day storage area
- ☐ TSDF
- ☐ Universal Waste Storage Area
- ☐ PCBs Storage Area*
- ☐ NM Special Waste
- ☐ Rad Staging Area
- ☐ Rad Storage Area
- ☐ None of the above*
- ☐ Used Oil for Recycle

* These areas may not have site identification number.

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B. If waste is generated from environmental restoration program, include the Solid Waste Management Unit (SWMU)/Area of Concern (AOC) number.

5. Method of Characterization

NOTE: Analysis is required when:

- The waste has an unknown origin,
- A chemical reaction has occurred that may have created an unknown chemical compound,
- The waste requires a radiochemical analysis for determining if contaminated,
- The waste contains unknown chemical or radiological contamination, OR
- AK documentation does not provide sufficient information to characterize the waste. (See P409 Waste Management or click on the link above).

Choose all that apply:

☐ Chemical/Physical Analysis

☐ Radiological Analysis

☐ PCB Analysis

☐ Acceptable Knowledge Documentation

☐ MSDS

Indicate if associated analysis/documentation is attached to WPF by checking the attached box. Only attach MSDS if chemical is not common, (i.e. methanol, acetone, toluene, water are common chemicals).

☐ Attached

NOTE: Certain hazardous waste types will need analytical attached to WPF for storage at Area L.

NOTE: If more than one document or sample number is to be entered for the associated method of characterization enter "see section 5" and enter the document/sample numbers in the "Additional Information" section.

NOTE: Request an analysis by contacting solid waste and regulatory compliance group.

2.4 SECTION 1, WASTE PREVENTION/MINIMIZATION

As required by the LANL Waste Certification Program (WCP) in P930-2 "Waste Certification Program," Module VIII, Section B.1, of the Laboratory's Hazardous Waste Facility Permit and P409 – "Waste Management", waste generators must evaluate their processes prior to generating waste to ensure that waste minimization opportunities have been identified and implemented. By answering the questions listed below, the generator is identifying the extent to which waste minimization efforts have been or are being considered.

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Contact the Pollution Prevention Program for pollution prevention and waste minimization assistance: 667-4348. Guidance on waste minimization for typical waste streams and chemical alternatives is available at this link: http://int.lanl.gov/environment/waste/

Answer yes, no, or not applicable to the following questions and provide comments, as appropriate, in Section 5, Additional Information.

NOTE: WES-WA group will not refuse or reject WPFs that include comments but rather will use the comments to assist generators and WMCs with waste minimization and prevention efforts.

1. **Can hazard segregation, elimination, or material substitution be used?**

   If "yes" explain waste minimization efforts that will take place.

2. **Can any of the materials in the waste stream be recycled or reused?**

   If "yes" explain how materials in this waste stream will be recycled or reused.

3. **Has waste minimization been incorporated into procedures or other process controls?**

   If "no" explain why waste minimization has not been incorporated into procedures or other process controls and when it will be incorporated.

4. **Can this waste be generated outside a RCA?**

   If "yes" explain how waste-generating process will be moved outside an RCA.

2.5 SECTION 2, CHEMICAL AND PHYSICAL INFORMATION

1. Waste Type

To properly characterize waste, indicate waste type (Choose only one):

If	Then
☐ Unused / Unspent Chemical	Note: Fill out a WPF when unable to use the lab-wide profile for new/unused chemicals; 1. Complete all sections 2. Describe in "Waste/Process Description," top of Page 2 3. Submit MSDS for each chemical to accompany CWDR
☐ Process Waste/Spent Chemical	Complete all sections

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2. Radiological Information

A. Determine radiological information

1) Indicate if the waste was generated in a Radiological Controlled Area (RCA), by selecting "Yes" or "No."

2) Indicate if the waste is Non-radioactive, Radioactive – Low Level, or Radioactive – Transuranic (TRU)

If	Then
Waste generated is in a RCA **AND** Waste is "Nonradioactive"	Follow all the requirements of ISD 121-1, "Radiation Protection," regarding "Contamination Control."

NOTE: When generating Naturally Occurring Radioactive Material (NORM) waste, contact WES-WA group for guidance.

3. Waste Destination: If the waste is destined for one of the following listed below, additional attachment will be needed for acceptance. Complete the appropriate attachment. Contact your WMC to determine proper disposal path.

If waste is destined for the following	Then
Sanitary Wastewater System (SWWS) Plant	Complete WPF and Attachment 1
Radioactive Liquid Waste Treatment Facility (RLWTF) at TA-50	Complete WPF and Attachment 2
Radioactive Liquid Waste Treatment Plant (RLWTP) at TA-53	Complete WPF and Attachment 3
HE Wastewater Treatment Facility (TA-16).	Complete WPF and identify all potential UHCs on Attachment 4 (even for non-hazardous waste).
Nevada Test Site (NTS)	Complete WPF and Attachment 5

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4. Determine classification information:

☐ Unclassified, or

☐ Classified/Sensitive

NOTE: Do not provide any classified/sensitive information on the profile. However check this box if the waste itself is classified/sensitive.

NOTE: Ensure that there is a disposal path forward for Classified/Sensitive Waste.

5. Waste Category (Check all that apply):

Select the appropriate categories, according to these descriptions:

Category	Description
Inorganic	Pertaining to, or composed of, chemical compounds that do not contain carbon as the principal element (except carbonates and cyanides).
Organic	Composed of chemical compounds based on carbon chains/rings and containing hydrogen with/without oxygen, nitrogen, or other elements.
Solvent	Substances that dissolve or mobilize other constituents (examples: degreasing, cleaning, fabric scouring, diluents, extraction, reaction, and synthesis media). Still bottoms from the recovery or recycle of listed spent solvents are also listed spent solvents. For waste characterization purposes, generally a volatile or semi-volatile organic compound specified for its toxic or ignitable characteristics. **NOTE:** This box is checked if the solvent meets the listing under 40 CFR 261.31 either F002, F003, F004, or F005. These solvents have a certain definition criteria and that criteria is detailed in the following. For solvent(s), (i.e. the listing for F002, F004, or F005), or solvent mixtures, (i.e. the listing for F001, F002, F004, and/or F005), with the concentration of 10% or greater by volume before use and/or any F003 constituent(s). List each constituent and its concentration, in Section 5. (See ENV-RCRA "Generator Support Guidance Information for the solvent listing).

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Category	Description
Degreaser	A liquid used to clean or dissolve organic contamination from an object. Often volatile organic solvents or commercial cleaning products for mechanical or electrical components. **NOTE:** This box is checked if the degreaser meets the listing under 40 CFR 261.31 for F001. These degreasers have a certain definition criteria and that criteria is detailed in the following. For degreaser(s), (i.e. the listing for F001), or solvent mixtures, (i.e. the listing for F001, F002, F004, and/or F005), with the concentration of 10% or greater by volume before use or F001 (10% before use) and F003 constituents. List each constituent and its concentration, in Section 3. (See ENV-RCRA"Generator Support Guidance Information" for the solvent listing).
Dioxin	A member of a family of highly toxic chlorinated aromatic hydrocarbons found in a number of chemical mixtures. Dioxin is also known as polychlorinated dibenzo-para-dioxin.
Electroplating	A material processing operation to cover or coat an object with a thin layer of metal by electrolysis. The process can generate corrosive and toxic metal-containing wastewater, treatment sludges and rinsates. Regulated electroplating operations do not include the following processes: (1) sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel; (6) chemical etching and milling of aluminum; (7) chemical conversion coating (wastewater); (8) electrolyses plating; and (9) printed circuit board manufacturing (unless etching or milling). Describe in Waste/Process Description box the detail of the electroplating process. **NOTE:** Treatment of wastewater may result in the classification of an F006 RCRA-regulated sludge after treatment. **NOTE:** Treatment of wastewater from the chemical conversion coating of aluminum may result in the classification of an F019 RCRA regulated waste sludge. **NOTE:** The electroplating meets the listing under 40 CFR 261.31 for F007, F008, or F009.

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Category	Description
Treated Hazardous Waste or Residue	Waste or residue generated from the treatment of listed or characteristic hazardous waste. This treatment includes waste from generator treatment under 40 CFR 262 and waste from RCRA permitted or interim status facilities under 40 CFR 264 or 265. Also included are wastes from treated hazardous debris under 40 CFR 261.3(f)(1). For treated hazardous debris describe the following in the process description [40 CFR 261.3(f)(1)]: • How the hazardous debris was originally generated • The technology from 40 CFR 268.45 Table 1 used to treat the debris (See P409 Nonradioactive Waste Tool and click on treated formerly characteristic waste). 1) If checked, provide WPF numbers in the Waste/Process Description field or in Section 3,"Additional Information" for all wastes prior to treatment. EPA codes and UHCs associated with these WPFs are needed to certify the treatment for the waste(s). 2) See additional instructions under the Notification and Certification - "TSDF or Generator Treatment" subsection on Attachment 4, the LDR form. The LDR form will need to be completed to inform the receiving treatment storage disposal facility (TSDF) that the waste either does or does not meet the treatment standards and that a certification will be required.
No-Longer Contained-In	This applies only to hazardous debris and/or hazardous environmental media for which the generator has received a no-longer contained-in determination from the State. The following is needed to meet the requirement under 40 CFR 261.3(f)(2) and 268.7(d) for hazardous debris and 40 CFR 268.7(e) for hazardous waste contaminated soil. • The documentation of the no-longer contained-in determination will need to be provided with the WPF.
Explosive Process	High explosive (HE) or HE-contaminated waste. **NOTE:** Treated explosive waste does not fall under this category but falls under the "Treated Hazardous Waste or Residue" category.

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Category	Description
Infectious / Medical	Waste materials that carry a probable risk of transmitting disease to humans or animals. Examples include, but are not limited to: • Regulated medical waste • Infectious substances (etiologic agents) • Other potentially infectious materials (OPIM) See LANL Waste Acceptance Criteria Attachment 10.
Biological	A waste that cannot be classified as an infectious substance or as a regulated medical waste **and** is not subject to federal or state regulations of infectious waste.
Beryllium	Includes beryllium metal, beryllium oxide, alloys containing 0.1% or more beryllium, and beryllium compounds, such as beryllium sulfate. See ISD101-21, Chronic Beryllium Disease Prevention Program for more information.
Empty Container	Check if the item meets the definition of a "RCRA empty container"
Battery	Alkaline and carbon batteries may be discarded as municipal refuse. Hazardous waste batteries (e.g. mercury, lithium, and nickel-cadmium) are to be managed as universal waste. (See Lab-wide profile). **NOTE:** See the P409, the "Waste Identification Toolset"; click on the appropriate button in the battery section) or the Battery Recycling Program for guidance. Other non-hazardous batteries will need to be profiled. **NOTE:** Non-radioactive wet lead acid and gel cell batteries should be recycled through salvage or as universal waste.
Asbestos	Contains any of the following naturally occurring crystalline minerals: chrysotile, amosite, crocidolite, tremolite, actinolite, and anthrophyllite. Comes in two forms: • *Friable:* brittle or readily crumbled, pulverized, or reduced to powder by hand pressure when dry. • *Non-friable:* not brittle or readily crumbled when dry and is completely encapsulated in a manufactured article such as an undamaged safe or file cabinet. **NOTE:** Refractory ceramic fiber does not meet the definition of asbestos and is not a New Mexico Special Waste. Check with your WMCs for safe handling.

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Category	Description
Polychlorinated Biphenyls	Regulated by the source concentration of Polychlorinated Biphenyls (PCBs) in the material. Check the box that indicates your source concentration.
Hazardous Waste Contaminated Soil	Soil that contains a hazardous waste listed in subpart D of part 261 or that exhibits a characteristic of hazardous waste identified in subpart C of part 261. "Soil" means unconsolidated earth material composing the superficial geologic strata (material overlying bedrock). Soil consists of clay, silt, sand, or gravel size particles as classified by the U.S. Natural Resources Conservation Service, or a mixture of such materials with liquids, sludges or solids which is inseparable by simple mechanical removal processes and which is made up primarily of soil by volume based on visual inspection. Any deliberate mixing of prohibited hazardous waste with soil that changes its treatment classification (i.e., from waste to contaminated soil) is not allowed under the dilution prohibition in §268.3 [40 CFR 268.2(k)]. Hazardous waste contaminated soil is the only environmental media that has specific certification requirements under the LDR regulations, 40 CFR 268. See additional instructions for completing the LDR for hazardous waste contaminated soil that meets or does not meet treatment standards under the Notification and Certification – "Generator Requirements" subsection. For non-hazardous soil (environmental media) do not mark this box.
Untreated Hazardous Debris	Debris that contains a hazardous waste listed in subpart D of part 261, or that exhibits a characteristic of hazardous waste identified in subpart C of part 261 (e.g., PPE). Any deliberate mixing of prohibited hazardous waste with debris that changes its treatment classification (i.e., from waste to hazardous debris) is not allowed under the dilution prohibitions in §268.3 [40 CFR 268.2(h)]. See additional instructions for completing the LDR for untreated hazardous debris under the "Notification and Certification – Generator Requirements" subsection. For non-hazardous debris (e.g.,: construction debris, concrete, dirt, and/or rebar) do not mark this box for untreated hazardous debris under this section.
Commercial Solid Wastes	Solid waste does not include wastes that are hazardous, mixed, TSCA, NM Special, wastes in a liquid form; or concrete or asphalt wastes destined for use, reuse, or recycle, or any waste destined for an industrial waste landfill. Check this box for profiling a waste to be accepted at the Los Alamos County Landfill other than routine sanitary solid waste such as office trash, loads with a waste ticket obtained from MRF (for government-plated vehicles), or waste with approved acceptable knowledge documentation and signed certification for concrete, asphalt, or soil (for off-site release, not for disposal). NOTE: For wastes that are regulated as Solid Waste follow P409, "Waste Management" requirements. Contact Water Quality & RCRA (ENV-RCRA) for

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Category	Description
	assistance with waste destined for the sanitary solid waste landfill.
Other	If the waste does not belong in one of the above waste categories, check "other" and describe your waste in detail under *Waste Description* at the top of Page 2.

6. Waste Sources

Choose the source of the waste from this list. (Check only one)

Waste Source A is:

- Produced from any production operation, analytical, and/or R&D laboratory operations; treatment, storage, disposal operations; "work for others;" or any other periodic and recurring work that is considered on-going in nature.
- Generated at the Laboratory from regular activities, a waste stream of a predictable quantity and characterization, and is not part of Environmental Restoration activities.

Source	Description
Decon (decontamination)	Results from routine removal of unwanted material (especially radioactive material) from the surface of, or from within another material.
Materials Processing/ Production	Generated from mission-oriented materials processing and/or production.
Research/Development/ Testing	Generated from mission-oriented research, development, and/or testing.
Scheduled Maintenance	Generated from planned/routine maintenance activities.
Housekeeping-Routine	Generated from routine/ongoing housekeeping activities.
Spill cleanup-Routine	Generated from routine wiping/mopping/cleaning of routine day-to-day spills resulting from routine activities.
Sampling-Routine Monitoring	Generated from routine ongoing sampling/monitoring activities necessary as a part of mission-oriented project activity.
Other	If the routine waste does not fit one of the above categories, check "other" and describe in the *Process Description* space at the top of page 2.

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Waste Source B is:

- Generated or occurs on an unscheduled basis, or is of unpredictable quantity and/or characterization.
- Because of unpredictability, cannot be trended over extended period of time.

Source	Description
Abatement	Removal of material such as asbestos or contaminated items that is not a routine generated waste.
Construction/Upgrades	Debris or waste from construction or remodeling, including removal of equipment or building components.
Demolition	Generated from tearing down/removal of a building, or portion thereof.
Decon/Decom (D&D)	**Decontamination (Decon):** removal of unwanted material (especially radioactive material) from the surface of, or from within another material. and **Decommissioning (Decom):** permanent removal from service of surface facilities and components necessary for pre-closure activities only, after facility closure, in accordance with regulatory requirements and environmental policies.
Investigation-Derived	Investigation-Derived Waste (IDW) is debris or waste from collecting environmental samples at a solid waste management unit and other areas of concern (e.g., soil contaminated with a listed waste or that exhibits a characteristic, personal protective equipment; or sampling equipment). **NOTE:** Remediation/Restoration waste is not considered IDW.
Orphan/Legacy	Any material or waste with an unknown origin, history, generator, constituent, or process; or any material or waste that does not have a defined owner.
Remediation/Restoration	Debris or waste from environmental restoration activities, or other activities conducted under RCRA corrective action.
Repackaging (secondary)	Generated from the required overpacking (repacking) of leaking or damaged waste containers.
Unscheduled Maintenance	Generated from emergency, unplanned, non-routine maintenance activities.

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Source	Description
Housekeeping-Non-routine	Generated from lab, building, storage area, or outdoor area cleanup (housekeeping) activities. Includes clean-outs of excess or unwanted items and materials, and chemical inventory reduction projects.
Spill cleanup-Non-routine	Generated from cleanup of accidental releases or spills.
Non-petroleumTanks	Generated from removal and/or cleanup of storage tanks containing material other than petroleum products.
Petroleum Tanks	Generated from the removal and/or cleanup of storage tanks containing petroleum products.
Other Waste	If the waste does not fit into one of the above categories, check *other* and describe in the *Waste/Process Description* at the top of Page 2.

7. Waste Matrix

Identify the single matrix (physical state) that best describes your waste.

NOTE: Profile different waste streams separately (e.g., liquid acetone and kimwipes contaminated with acetone are both from the same process but are separate waste streams to be profiled separately).

Category	Description
Gas	• *Gas at a pressure less than or equal to 1.5 atmospheres.* • *Gas at a pressure greater than 1.5 atmospheres.* • *Gas, liquefied compressed. A gas which in a packaging under the charged pressure, is partially liquid at a temperature of 20°C (68°F).*
Liquid	• *Aqueous* - waste that is amenable to pH measurement; an aqueous solution contains at least 20% free water by volume. • *Non-aqueous* - waste is liquid(s) that contains less than 20% water. • *Suspended solids/aqueous* - an aqueous liquid with a suspension of finely divided particles from which the particles do not settle out readily and cannot be readily filtered (a colloid). • *Suspended solids/non-aqueous* - a non-aqueous liquid with a suspension of finely divided particles from which the particles do not settle out readily and cannot be readily filtered (a colloid).
Solid	• *Powder, ash or dust* - a loose grouping or aggregation of solid particles. • *Solid* - a substance that has a definite volume and shape and resists forces that tend to alter its volume or shape.

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Category	Description
	• *Sludge* - any thick, viscous mass, usually a sediment or filtered waste product. • *Absorbed/adsorbed liquid* – a liquid substance that has penetrated into a solid. • *Debris* – defined in Section 4.2 of this guidance document.

8. Matrix Type

Identify the single matrix type that best describes your waste.

Homogeneous — Waste contains only *one* material or substance or the waste has its components adequately mixed so that identical samples can be drawn throughout.

Heterogeneous — Waste contains multiple components that are separate because of density or specific gravity and are located in different places within the mixture.

If waste is heterogeneous, provide a description in the *Waste Description* section at the top of Page 2.

9. Estimated Annual Volume

Provide the waste stream's estimated annual volume in m3.

(Click here for Online Conversions)

This information will assist WES-WA group in projecting waste volumes for each year, as WPFs are reviewed, and extended if necessary, on an annual basis. In accordance with the Laboratory Director's instructions, generators must budget for waste generation activities.

2.6 SECTION 3, PROCESS AND WASTE DESCRIPTIONS

1. **Process Description**: Provide a complete and concise description of the waste-generating process.
2. **Waste Description**: Provide a complete and concise description of the waste. Do *not* include the number of containers, the volume and weight of waste, or property numbers; these are specific to a waste load, not a waste stream.

2.7 SECTION 4, CHARACTERISTICS

Ignitability

Select the *one* box that best describes the ignitability of your waste.

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EPA ignitable is defined in 40 CFR 261.21(a). A solid waste exhibits the characteristic of ignitability if a representative sample of the waste has any of the following properties described in the first four categories below.

Category	Description
Flash Point Temperature Ranges	40 CFR 261.21(a)(1): It is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume and has flash point less than 60° C (140° F), as determined by a Pensky-Martens Closed Cup Tester, using the test method specified in ASTM Standard D-93-79 or D-93-80 (incorporated by reference, see 40 CFR 260.11), or a Setaflash Closed Cup Tester, using the test methods specified in ASTM Standard D-3278-78 (incorporated by reference, see 40 CFR 260.11), or as determined by an equivalent method approved by the Administrator under procedures set forth in 40 CFR 260.20 and 260.21. Select the temperature range between which a material flashes as measured by the Pensky-Martens Closed Cup tester method or equivalent.
EPA Ignitable – Non-liquid	40 CFR 261.21(a)(2): It is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard.
DOT Flammable Gas	40 CFR 261.21(a)(3): It is an ignitable compressed gas as defined in 49 CFR 173.300 and as determined by the test methods described in that regulation or equivalent test methods approved by the Administrator under 40 CFR 260.20 and 260.21. The Department of Transportation (DOT) regulations define flammable gas in 49 CFR 173.115(a): Division 2.1 (Flammable gas). For the purpose of the subchapter, a "flammable gas" means any material which is a gas at 20° C (68° F) or less at 101.3 kPa (14.7 psi) of pressure (a material which has a boiling point of 20° C (68° F) or less and 101.3 kPa (14.7 psi)) which: (1) Is ignitable at 101.3 kPa (14.7 psi) when in a mixture of 13 percent or less by volume with air; or (2) Has a flammable range at 101.3 kPa (14.7 psi) with air of at least 12 percent regardless of the lower limit. Except for aerosols, the limits specified in paragraphs of this section shall be determined at 101.3 kPa (14.7 psi) and a temperature of 20°C (68°F) in accordance with ASTM E681-85, Standard Test Methods for Concentration Limits of Flammability of Chemicals or other equivalent method approved by the Associate Administrator for Hazardous Materials Safety. The flammability of aerosols is determined by the tests specified in 40 CFR 173.306(i) of this part.

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Category	Description
DOT Oxidizer	40 CFR 261.21(a)(4) It is an oxidizer as defined in 49 CFR 173.151. DOT Oxidizer is actually defined in 49 CFR 173.127(a). For the purpose of this subchapter, "oxidizer" (Division 5.1) means a material that may, generally by yielding oxygen, cause or enhance the combustion of other materials. A solid material is classified a Division 5.1 material if the mean burning time of the test mixture, is equal to or less than that of the average of the three tests with ammonium persulfate mixture. A liquid is classed as a Division 5.1 material by analogy to existing entries in the 49 CFR 172.101 Table. This applies to both primary and secondary hazard classification by 49 CFR. Solutions are evaluated on case-by-case basis; may or may not have the oxidizer properties
Not Ignitable	Check this only if the waste does not meet any of the above criteria.

If waste is ignitable by one of these criteria, identify the component(s) causing this condition under *Additional Chemical Constituents and Contaminants* at the top of Page 3.

Corrosivity

1. Check the *one* box that best describes the corrosivity of your waste.

   EPA corrosivity is defined in 40 CFR 261.22(a). A solid waste exhibits the characteristic of corrosivity if a representative sample of the waste has either of the following properties:

Category	Description
pH Ranges	40 CFR 261.22(a)(1) It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, as determined by a pH meter using Method 9040 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in 40 CFR 260.11 of this chapter. Liquids that do not contain water (hydrogen ions) cannot be measured for pH.
Liquid Corrosive to Steel	40 CFR 261.22(a)(2) It is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 millimeters (0.250 inch) per year at a test temperature of 55° C (130° F) as determined by the test method specified in NACE (National Association of Corrosion Engineers) Standard TM-01-69 as standardized in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods." EPA Publication SW-846, as incorporated by

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	reference in 40 CFR 260.11 of this chapter.
Non-aqueous	Check this if the waste does not meet any of the above criteria.

2. If waste is corrosive by one of these criteria, identify the component(s) causing this condition under *Additional Chemical Constituents and Contaminants* at the top of page 3.

Reactivity

1. Select as many items as apply to your waste.

EPA reactivity is defined in 40 CFR 261.23(a) A solid waste exhibits the characteristic of reactivity if a representative sample of the waste fits any of the following category descriptions:

Category	Description
RCRA Unstable	40 CFR 261.23(a)(1) It is normally unstable and readily undergoes violent changes without detonating.
Water Reactive	40 CFR 261.23(a)(2) It reacts violently with water. OR 40 CFR 261.23(a)(3) It forms potentially explosive mixtures with water. OR 40 CFR 261.23(a)(4) When mixed with water, it generates toxic gases, vapors, or fumes in sufficient quantity to present a danger to human health or the environment.
Cyanide Bearing	40 CFR 261.23(a)(5) It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment.
Sulfide Bearing	40 CFR 261.23(a)(5) It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment.

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Category	Description
Pyrophoric	Under normal conditions may cause fire through friction or retained heat from manufacturing or processing, or can be ignited readily and when ignited burns so vigorously and persistently as to create a serious transportation, handling, or disposal hazard. 40 CFR 261.23(a)(1) It is normally unstable and readily undergoes violent changes without detonating. 40 CFR 261.23(a)(6) It is readily capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement. 40 CFR 261.23(a)(7) It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.
Shock Sensitive	40 CFR 261.23(a)(7) It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.
Explosive	40 CFR 261.23(a)(8) It is a forbidden explosive as defined in 49 CFR 173.51, or Class A explosive as defined in 49 CFR 173.53, or a Class B explosive as defined in 49 CFR 173.88. DOT Forbidden explosives are defined in 49 CFR 173.54. Former DOT Class A and B explosives have been reclassified to the following Divisions: [49 CFR 173.53] Current Division Classification — Former Class Division 1.1 — Class A Division 1.2 — Class A & B Division 1.3 — Class B 49 CFR 173.52 provides classification codes and compatibility of explosives.
Non-reactive	Check this if the waste does not meet any of the above criteria.

2. If waste is reactive by one of these criteria, identify the component(s) causing this condition under *Additional Chemical Constituents and Contaminants* at the top of Page 3.

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Boiling Point

Boiling point is the temperature at which the transition from the liquid-to-gaseous phase occurs at atmospheric pressure. The boiling point identifies the DOT packing group for Hazard Class 3.

Select the temperature range that describes the boiling point of your liquid waste.

If it is other than a liquid, check not applicable.

Toxicity Characteristic Contaminants

- Eight metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) and
- Twenty-four toxicity characteristic organics (VOCs/SVOCs)
- Eight herbicides and pesticides

1. For each contaminant listed, indicate the method of characterization.
   - If acceptable knowledge (AK) documentation was used as the characterization method, check the "AK" box.

     NOTE: The WPF by itself is not adequate documentation for AK. Acceptable knowledge documentation is described in P409.

   - If analysis was performed either for the entire waste or only for certain constituents, the type of analysis performed is to be indicated. Either toxicity characteristic leaching procedure (TCLP) or "Total." If the waste was analyzed by "Total" and is in solid form, do not divide by 20; enter the total results as-is.
2. Indicate the concentration of the identified contaminants by checking/completing ONE of the following:
   - None or Non-Detect
   - Enter the minimum-to-maximum range of the specific contaminant, in parts per million (ppm).

     NOTE: Specifying a min to max range of 0 to 10,000 ppm, for example, is not acceptable since there is a regulatory limit on these contaminants.

2.8 SECTION 5, ADDITIONAL CONSTITUENTS AND INFORMATION

Additional Constituents

List all other constituents in the waste. This includes any hazardous constituents not already described (see P409, "Nonradioactive Waste toolset", click on radio button for "Hazardous Waste not otherwise listed") and all other constituents, including inert constituents (water, paper, wood, metal, plastic, etc.).

1. Identify Chemical Abstract Service (CAS) numbers for all constituents. For non-chemical items, enter "No CAS #."
2. Enter name of constituent. The constituents from page 2 (metal/organics/pesticides/herbicides) do not need to be entered again in this section.
3. Enter accurate minimum-to-maximum in %. Guidelines for the ranges are:
   - Constituent between 0.1 and 5.0% of total – Report to the nearest 1%
   - Constituent between 5.0 and 25.0% of total – Report to the nearest 2.5%

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- Constituent between 25.0 and 50.0% of total – Report to the nearest 5%
- Constituent between 50.0 and 100.0% of total – Report to the nearest 10%

As a general principal to convert from % to ppm: take the percentage and multiply by 10,000 (e.g., 2% x 10,000 = 20,000 ppm).

To convert from ppm to %: take the ppm and divide by 10,000 (e.g. 20,000 ÷ 10,000 = 2%).

4. Total the "Maximum" ppm and percent from page 2-3 and provide the answer in percent.

NOTE: Accounting for 100% of the waste ensures proper classification, storage, transportation and disposal, but due to the errors inherent in chemical analysis and physical measurements, your maximum value may exceed 100%. Good characterization practices–including keeping to the range limits specified above–should result in a maximum value no greater than 130%, which is acceptable.

Additional Information

Provide any additional information about the waste that has not been addressed in other parts of the WPF.

NOTE: This information would include any chemical, physical, or radiological characteristics of the waste that could pose a threat to human health and the environment.

2.9 SECTION 6, WORK CONTROL DOCUMENTATION

As required in P930-2 "Waste Certification Program," waste generators must ensure that their procedures address how waste is managed and controlled. By answering the questions listed below, the generator is confirming that the applicable procedures adequately address how waste is managed and how changes to waste constituents are prevented.

Answer "yes" or "no" to the following questions and provide comments, as appropriate, in Section 5, Additional Information.

1. **Do the procedures for this process cover how to manage this waste?**

   If "no" explain when procedures will be revised to include waste management.

2. **Do the procedures for this process address controls to prevent changes to waste constituents and concentrations, or addition/removal of waste to/from the containers?**

   If 'no" explain when procedures will be revised to include process controls.

2.10 SECTION 7, PACKAGING AND STORAGE CONTROL

As required by P409, waste generators must ensure that waste is packaged in accordance with the applicable WAC. Additionally, they must identify the controls that will be implemented to prevent contents from being added to waste containers while in storage.

1. **Describe how the waste will be packaged according to the applicable WAC.**
2. **Identify the storage management controls that will be used for this waste stream:**
   - ❑ Tamper indication devices
   - ❑ Limited use locks with log-in for waste
   - ❑ Locked cabinet or building

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- ❑ Other (describe)

2.11 SECTION 8, WASTE CERTIFICATION

NOTE: Complete this section with assistance from your WMC.

1. Select one of the following:

- Waste appears to meet P930-1 for: (indicate on-site TSDF)
- Waste stream needs exception/exemption for treatment, storage, or disposal at: (indicate TSDF WAC requirement not being met)
- Waste does not meet the criteria for any known TSDF. DOE approval is required. Contact the Waste Management Program Office for assistance.

3.0 WASTE CERTIFICATION

The waste generator needs to read, sign, and date the *Waste Generator Certification* statement.

The WMCs needs to sign and date the *Waste Certifying Official* statement, after the reviewed of the WPF for completeness and accuracy.

NOTE: Once a WPF has been classified/activated, only Waste Services personnel may make modifications to the form. Any modification needs to be initialed and dated by Waste Services personnel and include a justification. Modifications that will affect classification must be approved by the Waste Services personnel. Modifications made by any other Laboratory organization voids the WPF and will be rejected by the Waste Services team.

3.1 ATTACHMENT 1, WASTEWATER FOR SWWS (TA-46)

This attachment is to be completed only if "Wastewater for SWWS" is selected in the "Waste Destination" part of Section 1 of WPF.

1. General

Complete Attachment 1 for wastewater destined for Sanitary Waste Water System (SWWS) facility at TA-46 if the wastewater is sent via pipeline, collected in a tank or containers.

A. Use of AK in lieu of analytical data for wastewater characterization must be approved by SWWS. For guidance, contact the Waste Water Systems Specialist at 667-0998, 665-7884, or 665-8507.

B. Analytical methods need to conform to 40 CFR 136, unless an alternative method has been approved by ENV-RCRA.

2. Microtox Analysis

- To request samples, use "Microtox Sample Request" form from the KSL/ENV web page, OR
- Contact the SWWS Pre-treatment Representative at 665-7884 or 665-8507 to propose an alternate sampler.

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- If an approved alternate sampler was used, contact KSL/ENV (7-0104) to schedule analysis.
- KSL/ENV provides the Microtox Sample Number for the WPF, Attachment 1.

3. Radioactivity Detectable Levels

A. Check either "yes" or "no" for detectable levels.

B. If "yes," list the radionuclide and the activity level in pCi/l.

NOTE: If there are additional radionuclides, list these in the Additional Information section in the WPF.

4. Wastewater Parameters

Indicate the status of analytical results for each wastewater parameter by checking one of the following:

- Not analyzed for
- Non-Detect
- Within regulatory limit for flow rates less than 100 gal/day
- Within regulatory limit for flow rates greater than 100 gal/day
- Above limit

3.2 ATTACHMENT 2, WASTEWATER FOR THE RLWTF (TA-50)

This attachment is to be completed only if "Wastewater for RLWTF" is selected in the "Waste Destination" part of Section 1 of WPF.

1. General

Complete Attachment 2 if wastewater is destined for the Radioactive Liquid Waste Treatment Facility (RLWTF) at TA-50, including waste poured down drains connected to RLWTF. If you need assistance in completing this section, contact RLW (TA50) at 7-4301.

2. Waste Production

A. Indicate if the waste was accelerator produced, reactor produced, or other.

B. If other, describe in WPF Section 1 "Waste/Process Description."

3. Radionuclide Contaminants

A. Check the box for those radionuclides that are present at or below the Level of Concern (LOC).

B. Provide the minimum and maximum range in Ci/l for those radionuclides that are present above the LOC.

C. List any other radionuclides present in the waste, and provide the minimum and maximum range.

4. Metal Contaminants

A. Check the box for any of the six metals that are present below the LOC.

B. Provide the minimum and maximum range, in ppm, for those metals that are present above the LOC.

5. Additional Contaminants

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A. Provide minimum and maximum ranges, in mg/l, for each of the following:

1) Chemical Oxygen Demand (COD)
2) Total Suspended Solids (TSS)
3) Total Dissolved Solids (TDS)
4) Perchlorates
5) Total Toxic Organics (TTO)
6) Either Total Nitrogen *or* Total Nitrates

B. If none is present, enter "0" or NA into the "Min" space.

6. Radioactive Contaminant Totals

Provide totals, in Ci/*l*, for:

A. Total Alpha
B. Total Beta
C. Total Gamma

7. TA-55 Use Only: Liquid Waste

If the wastewater is generated at TA-55, check the appropriate box for the discharge line to be used to transfer the water. The pH of waste discharged to the RLWTF via the "caustic line" must have a pH greater than 8.0.

8. Chemical Treatment for Boilers/Water Chillers

Select YES, if the wastewater is from chemical treatment of boilers or water chillers. If not, select NO.

9. Industrial Cleaner

This includes all industrial and janitorial cleaning solutions.

Select **YES** if the wastewater contains an industrial cleaner. If not, select NO.

If yes, provide the specific:

- Type and
- Volume and unit.

10. Average Daily Volume

Provide the Average Daily Volume (when discharge occurs) of the wastewater in gallons/day or liters/day. Include the waste volume plus the rinse water volume.

11. Maximum Daily Volume

Provide the Maximum Daily Volume (when discharge occurs) of the wastewater in gallons/day or liters/day. Include the waste volume plus the rinse water volume.

12. Estimated Days per Year

Provide the *Estimated Number of Days* per year that discharge will occur.

13. Estimated Total Volume

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Provide the *Estimated Total Volume* that will be discharged *per year* to the RLWTF in gallons or liters.

3.3 ATTACHMENT 3, WASTEWATER FOR THE RLWTP (TA-53)

This attachment is to be completed only if "Wastewater for TA-53 RLWTP" is selected in the "Waste Destination" part of Section 1 of WPF.

1. General

Complete Attachment 3 if wastewater is destined for the Radioactive Liquid Waste Treatment Plant (RLWTP) at TA-53. If you need assistance in completing this section, contact Radioactive Liquid Waste at 7-4301.

2. Total Activity Range

Provide the minimum and maximum range in Ci/l for the total activity.

3. Radionuclide Contaminants

A. Check the box for those radionuclides that are present at or below the Concentration Limit.

B. Check the box for those radionuclides that are greater than or equal to 1% of Total Activity.

C. Provide the minimum and maximum range in Ci/l for those radionuclides that are present above Concentration Limit or greater than or equal to 1% of Total Activity.

D. List any other radionuclides present in the waste, and provide the minimum and maximum range.

4. Other Contaminates

A. Check the box for those additional contaminants that are present at or below Concentration Level for

1) Total Dissolved Solids (TDS)

2) Total Suspended Solids (TSS)

3) Oils/Grease

4) Surfactants/Detergents

B. Provide the minimum and maximum range in mg/l for those additional contaminants that are present above the Concentration Level.

5. Radioactive Contaminant Totals

Check the box for those discharge locations that are present at or below Activity Level in Ci/l for:

A. Collection System

B. Tanker Truck

C. Tuff Tank

D. 55-gal. drum

E. Other

6. Temperature

Provide the discharge temperature of the waste in degrees Fahrenheit or Celsius.

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7. Surfactant/Detergent

A. Select **YES** if the wastewater contains surfactant/detergent. If not, select NO.

B. If yes, provide the specific:

- Brand Name
- Volume and unit

8. Industrial Cleaner

This includes all industrial and janitorial cleaning solutions.

A. Select **YES** if the wastewater contains an industrial cleaner. If not, select NO.

B. If yes, provide the specific:

- Type
- Volume and unit

9. Average Daily Volume

- Provide the Average Daily volume (when discharge occurs) of the wastewater in gallons/day or liters/day.

10. Maximum Daily Volume

- Provide the Maximum Daily volume (when discharge occurs) of the wastewater in gallons/day or liters/day.

11. Estimated Days per Year

- Provide the Estimated Number of Days per year that discharge will occur.

12. Estimated Total Volume

- Provide the Estimated Total Volume that will be discharged per year to the RLWTP in gallons or liters.

3.4 ATTACHMENT 4, LDR AND UHC INFORMATION

The composition of a waste at the point of generation determines whether it is subject to the Land Disposal Restriction (LDR). The objective of the "Treatment Standards for Hazardous Wastes" in 40 CFR 268.40 is to develop concentration based levels or technology based treatment for treated wastes so that they may be safely land disposed. The land disposal treatment standards should "minimize threats" to human health and the environment, including any threat posed by "underlying hazardous constituents (UHCs) in characteristic wastes "Universal Treatment Standards" [40 CFR 268.48]. (See attachment 4 of the profile).

1. General

This section describes the appropriate LDR notification or certification as identified in 40 CFR 268.7 or 268.9(d). This guideline is to meet the most restrictive requirements from both the federal regulations and New Mexico State regulations.

2. Treatability Group – Check Only One.

A. Determine if the waste stream meets the Non-Wastewater, Wastewater treatability group, or the alternative treatment, 40 CFR 268.42(c), "Lab Pack".

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1) Criteria for meeting the treatability group definition for wastewater is as follows: "Wastewaters are wastes that contain less than 1% by weight total organic carbon (TOC) and less than 1% by weight total suspended solids (TSS)" [40 CFR 268.2(f)]. If checked proceed to step 3, "Notification and Certification".

2) If the waste stream does not meet the definition for wastewater then the treatability group is non-wastewater. If checked proceed to step 3, "Notification and Certification".

3) Criteria for meeting the alternative lab pack treatment standard is as follows:

NOTE: EPA hazardous waste numbers and certification will be added on the form to meet the requirement for the alternative treatment under 40 CFR.

Wastes that use the alternative lab pack treatment standard must be destined for incineration. The EPA defines lab packs [40 CFR 264.316 or 265.316] as small containers of hazardous waste in overpacked drums (lab packs). The waste contains NONE of the waste specified in Appendix IV of Part 268 (D009, F019, K003, K004, K005, K006, K062, K071, K100, K106, P010, P011, P012, P076, P078, U134, U151). The waste contains NONE of the reactive waste specified in 40 CFR:

261.23(a)(1)	normally unstable and readily undergoes violent change without detonating;
261.23(a)(2)	reacts violently with water;
261.23(a)(3)	forms potentially explosive mixtures with water;
261.23(a)(4)	mixed with water it generates toxic gases, vapors or fumes...to present danger...;
261.23(a)(6)	...capable of detonation...if subjected to a strong initiating source or heated under confinement;
261.23(a)(7)	...readily capable of detonation...at standard temperature and pressure; and
261.23(a)(8)	is a forbidden explosive. [40 CFR 264.316(e)].

If checked, the LDR form is completed; no other steps are required for Attachment 4. WES-WA group will include the appropriate EPA codes.

A certification for lab packs containing hazardous waste to use the alternative treatment standard for lab packs will be included on the LDR form for signature.

B. Check only one box for non-wastewater (NWW), wastewater (WW), or Lab Pack.

3. **Notification and Certifications:** For waste characterized at the point of generation, follow the subsection for "Generator requirements." For treated waste, follow the subsection for "TSDF or Generator Treatment."

"Generator requirements:" The receiving TSDF needs to be informed that the waste either does or does not meet the applicable treatment standards with the required certification(s). If applicable, check only one of the boxes on Attachment 4 that pertains to the waste under generator requirements, described by the following:

A. This shipment contains hazardous waste contaminated soil that does not meet treatment standards

Check this box if you have hazardous soil that does not meet the treatment standards.

1) Check the treatability group box for NWW (since this is not WW).
2) Identify the UHCs in the waste stream that exceed the Universal Treatment Standards (UTS) limits by 10 times in order to meet the alternative 40 CFR 268.49 treatment standards.
3) Two certifications for contaminated soil will be included on the LDR form for signature.

NOTE: If the hazardous waste soil meets the treatment standards (268.40 and/or 268.49) at the original point of generation, check box for "Hazardous Wastes contaminated soil meeting treatment standards at point of generations" under the "Generator requirements" subsection.

WES-WA group will include the appropriate EPA codes and subcategories on the LDR form.

B. This shipment contains untreated hazardous debris to be treated to 40 CFR 268.45 treatment standards.

1) Check this box if you have untreated debris and would like it to be treated to the alternative 40 CFR 268.45 standard.
2) Check the treatability group box for NWW (since this is not WW).
3) Identify all potential UHCs on the LDR form.

NOTE: In order for the treatment facility to determine the best treatment technology for the waste, all potential UHCs need to be identified. The contaminants subject to treatment in this hazardous debris are being treated to comply with 40 CFR 268.45.

WES-WA group will include the appropriate EPA codes and subcategories on the LDR form.

4) This is just a notification; there is no certification required under 40 CFR 268.7(a)(2).

C. Hazardous wastes (except soil) meeting treatment standards at point of generation .

For example, this box is checked if all constituents in an F-listed waste are below the concentration based treatment standards under 40 CFR 268.40 at the point of generation. 40 CFR 268.7(a)(1) allows the determination of whether the hazardous waste meets the treatment standards either by testing the waste or by using acceptable knowledge of the waste.

1) Check this box if the waste at the point of generation meets the treatment standards.
2) Check the appropriate treatability group box.
3) A certification will be included on the LDR for signature.

WES-WA group will include the appropriate EPA codes and subcategories on the LDR form.

D. Hazardous wastes contaminated soil meeting treatment standards at point of generation:

For example, this box is checked if all constituents in an F-listed waste are below the concentration based treatment standards under 40 CFR 268.40 or 40 CFR 268.49 at the point of generation. 40 CFR 268.7(a)(1) allows the determination of whether the hazardous waste contaminated soil meets the treatment standards either by testing the waste or by using acceptable knowledge of the waste.

1) Check this box if the contaminated soil at the point of generation meets the treatment standards.

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2) Check the appropriate treatability group box.

3) Two certifications will be included on the LDR for signature.

NOTE: If this is hazardous waste contaminated soil meeting treatment standards at the point of generation, the table under 40 CFR 268.7(a)(4) requires two certifications. There will be two certifications provided on the LDR form for signature.

WES-WA group will include the appropriate EPA codes and subcategories on the LDR form.

E. If the hazardous waste does not fit into the descriptions listed above complete the LDR form with the following:

1) Check the appropriate treatability group box.
2) Identify all potential UHCs if applicable.
3) This is just a notification; there is no certification required to meet 40 CFR 268.40 treatment standards.

WES-WA group will include the appropriate EPA codes and subcategories on the LDR form.

4. **"TSDF or Generator Treatment":** Check the appropriate box(s) that pertains to the waste under subsection "TSDF or Generator Treatment" and/or "Generator requirements." This section pertains to treated waste from a TSDF, or less than 90-day generator treatment. Generator treatment requires different certifications than TSDF treatment so the treatment facility/generator must check the appropriate TSDF or generator treatment box.

A. TSDF Treated hazardous debris meeting the alternative treatment standards of 40 CFR 268.45.

Mark this box for TSDF treatment if the hazardous debris has been treated to meet the alternative 40 CFR 268.45 treatment standards.

1) Check the treatability group NWW (since this is not WW).
2) List the untreated waste (original) WPF number(s) in the process description of this WPF.
3) List the description of treatment technology from 40 CFR 268.45 Table 1 in the process description section of the WPF.
4) The description of how the hazardous debris was originally generated will be provided by the original profiles (prior to treatment).
5) A certification is required to indicate these contaminants are compliant with 40 CFR 268.45.

B. Generator Treated hazardous debris meeting the alternative treatment standards of 40 CFR 268.45

Mark this box for generator treatment if the hazardous debris has been treated to meet the alternative 40 CFR 268.45 treatment standards.

1) Follow steps 1 through 4 as listed above under the TSDF treated hazardous debris.
2) Two certifications is required to indicate these contaminants are compliant with 40 CFR 268.45.

NOTE: If the waste is disposed in a subtitle D facility, the required notification will be sent to the State by ENV-RCRA with the information listed above plus the name and

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address of the subtitle D facility. If the waste is disposed in a subtitle C facility, then the notification would be provided to the Subtitle C.

C. Hazardous Waste Contaminated Soil treated to 40 CFR 268.49

Check this box if the hazardous waste contaminated soil has been generator treated or TSDF treated to meet the alternative 268.49 standards. The UHC must be treated to below 10 times UTS or a 90% reduction in the original concentration of the UHCs to meet this certification. The waste will be land disposed without further treatment. (See Guidance on Demonstrating compliance with Land Disposal Restrictions {LDR} Alternative Soil Treatment Standards)

1) Two certifications is required to indicate that the soil has been treated to meet the alternative 268.49 standards.

2) See additional certifications for soil treated to remove all characteristics by checking one of the following boxes listed in this subsection: "Waste or residue from characteristic hazardous waste meeting treatment standards and UTS" or "Waste or residue from characteristic hazardous waste treatment not meeting UTS."

NOTE: Since the ultimate disposition of the waste is unknown at the time the waste profile form is completed (Subtitle C or Subtitle D landfill), the information listed below is required.

3) Check treatability group box NWW (since this is not WW), and

4) WES-WA group will include the appropriate EPA codes (applied to waste after treatment) and subcategories on the LDR form.

D. Waste or Residue from characteristics hazardous waste treatment meeting treatment standards and UTS

Check this box if the waste has been treated to remove all characteristics (268.40, or 268.49) and meets UTS for all UHCs after on-site treatment. The waste will be land disposed without further treatment.

1) The information from the original WPF, the WPF for the residue, and the certification constitute the notification required to meet 40 CFR 268.7(e) requirements.

2) Check the treatability group.

3) Identify all potential UHCs.

4) Two treatment certifications for waste or residue from characteristics hazardous waste treatment meeting treatment standards and UTS will be included on the LDR form for signature.

WES-WA group will include the appropriate EPA codes for the treated waste, and subcategories on the LDR form.

E. Waste or Residue from characteristic hazardous waste treatment not meeting UTS

1) Check this box if the waste is no longer hazardous, but does not meet UTS for all UHC(s). The waste will be shipped to another facility for further treatment.

2) Check the treatability group box.

3) Identify all potential UHCs.

4) Two certifications will be provided on the LDR form for signature.

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5) Complete the subsection under "Generator Requirement" for additional notification(s)/certification(s) so the waste can be shipped to another facility for further treatment.

F. Other TSDF wastes meeting the more stringent 40 CFR 268.40 treatment standards to be land disposed.

1) Mark this box if the treated waste meets 40 CFR 268.40 treatment standards.
2) Check the treatability group, and
3) A certification will be included on the LDR form for signature.

G. Other Generator wastes meeting the more stringent 40 CFR 268.40 treatment standards to be land disposed.

Follow steps 1 through 3 as listed above under Other TSDF wastes meeting the more stringent 40 CFR 268.40 treatment standards to be land disposed.

H. Other wastes could not be treated to meet treatment standards 268.40, 268.45, or 268.49.

Other wastes to be further managed at a different treatment or storage facility in order to meet treatment standards and UTS not achieved on-site (e.g. non-characteristic wastes treated in an accumulation area).

1) Complete the applicable subsection under "Generator Requirement" for notification(s)/certification(s) so the waste can be shipped to another facility for further treatment.
2) Follow the appropriate subsection in completing the LDR form.

NOTE: TSDF requirement under 40 CFR 268.7(b)(1) and (2) requires the TSDF to test the residue of the treated waste. It is up to the facility to ensure that the required analysis follows their permitted waste analysis plan (WAP).

5. Notification Of Underlying Hazardous Constituents – Check All That Apply.

The Underlying Hazardous Constituents are listed in the Universal Treatment Standards (see in 40 CFR 268.48).

Certain characteristic wastes (D001-D043) subject to 40 CFR 268.40, "Treatment Standards for Hazardous Wastes," will also have to meet the treatment standards described in 40 CFR 268.48, "Universal Treatment Standards;" (e.g., a non-wastewater D001 HI TOC—waste with a flash point less than 140°F and TOC of greater than or equal to 10%—is excluded from the 40 CFR 268.48 treatment standards).

A. Identify all potential underlying hazardous constituents (UHCs) (except fluoride, selenium, sulfide, vanadium and zinc; which are not underlying hazardous constituents as defined at 40 CFR 268.2(i)) in the waste which, at the point of generation, are above the treatment standard for the applicable treatability group in the third or the fourth column (e.g. wastewater or nonwastewater).

B. Check "No Underlying Hazardous Constituents in this waste stream" if no UHCs exist in the waste stream.

NOTE: 40 CFR 268.7(a)(6): If the generator determines that the waste is restricted based solely on knowledge of the waste, all data used to make the determination must be retained on-site in the generator's files. If the generator determines that the waste is restricted based on testing this waste or an extract developed using the Test Method 1311 in test Methods for evaluating "Solid Waste Physical/Chemical Methods, " EPA Publication SW-

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846, as referenced in 40 CFR 260.11 of this chapter, all waste analysis data must be retained on-site in the generator's files.

3.5 ATTACHMENT 5, NTS

In addition to the waste characterization information provided on the WPF, Attachment 5 must be completed for all waste destined for disposal at NTS. The information contained in Attachment 5, along with the WPF, satisfies the minimum waste characterization requirements set forth by NTS.

If you are unsure about whether you need to complete this attachment, please contact the Waste Certification Official (for NTS-destined waste) at wco@lanl.gov for further assistance. Contact wco@lanl.gov for NTS Waste Profile Number and include the number on Attachment 5.

General Waste Stream Information

1. Waste Category (check box if applicable)

   ☐ Contains accountable nuclear material

2. Identify estimated frequency of shipments per fiscal year.

Physical/Chemical Characterization

1. Check the box that describes the process knowledge information used for physical/chemical characterization of this waste. If process knowledge is a major source of the chemical characterization of the waste stream, it is important to thoroughly describe that knowledge. If characterization is being conducted at the item level, then characterization data ***shall*** be traceable at that level (e.g., individual sealed sources, bags, or components characterized on an individual basis but packaged together).

   ☐ Mass balance from process inputs. (Describe how the process inputs are controlled and recorded.)

   ☐ Inert debris characterized by inventory control. (Check this box when the waste stream consists largely of inert debris items that are characterized by inventory control procedures and recorded on inventory sheets. Briefly list or describe inventory procedures.)

   ☐ Physical/chemical characterization varies. (Check this box when the characterization strategy varies from container to container. Describe the strategy used to meet the acceptable knowledge requirements of P930-1, "LANL Waste Acceptance Criteria," Attachment 17 "Low-Level Waste for Disposal at the Nevada Test Site")

   ☐ Other. (Describe.)

2. Describe the type of sampling and analysis performed to characterize this waste stream. If field screening or laboratory analysis data is used, describe in detail the sampling and analytical methods used and attach a copy of the analytical results from a representative sample or sample set. Data validation for waste characterized using sampling and analysis must be performed by WES-EDA personnel in accordance with approved procedures.
3. Check all boxes that apply, as defined by the referenced regulations.
4. If the waste stream contains liquid, check all that apply and list the procedures followed.
5. Check all boxes that define components of the waste stream and describe how P930-1, "LANL Waste Acceptance Criteria," Attachment 17 "Low-Level Waste for Disposal at the Nevada Test Site" is met.
6. Identify whether the chemical composition varies greatly from container to container and provide bounding values or ranges in section 5 of the WPF. Further evaluation will occur on the specific package paperwork as it is provided for highly variable streams.

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Radiological Characterization

Check all boxes that describe the analysis and characterization methods used to determine the radionuclides in the waste. For each box checked, provide a brief but specific description of the methods used.

Where multiple characterization methods are checked (e.g., nondestructive assay and scaling factors), briefly describe how these methods are used together to establish the radiological inventory of the waste.

For complex or highly variable waste streams, explain the strategy used to meet the acceptable knowledge requirements of P930-1, "LANL Waste Acceptance Criteria," Attachment 17 "Low-Level Waste for Disposal at the Nevada Test Site."

Data validation for waste characterized using sampling and analysis must be performed by WES-EDA personnel in accordance with approved procedures.

If characterization is being conducted at the item level, then characterization data ***shall*** be traceable at that level (e.g., individual sealed sources, bags, or components characterized on an individual basis but packaged together).

1. Provide estimated radiation dose of disposal package in mSv/hr at surface, 30-cm and 1-meter.
2. Identify whether the waste contains enriched uranium (^{235}U wt% ∃ 0.90), ^{233}U, ^{239}Pu, ^{241}Pu, ^{242m}Am, ^{243}Cm, ^{245}Cm, ^{247}Cm, ^{249}Cf, ^{251}Cf. If yes, check applicable boxes and answer questions for compliance with the criticality safety criteria of P930-1, "LANL Waste Acceptance Criteria," Attachment 17 "Low-Level Waste for Disposal at the Nevada Test Site" and provide the requested information.
3. Report the major radionuclides expected to be in the waste stream and the concentration (in Bq/m^3) of each reportable radionuclide in the packaged waste. In cases where the radionuclide concentration is variable, report the anticipated range of concentration. If the concentration is highly variable, check the box indicating that the isotopic composition is highly variable.
4. List any alpha-emitting transuranic radionuclides (nCi/g) with a half-life greater than 5 years, ^{241}Pu, or ^{242}Cm, and the range and activity representative of the final waste form.
5. Identify if there are any packages in this waste stream that exceed the PGE limits specified in P930-1, "LANL Waste Acceptance Criteria," Attachment 17 "Low-Level Waste for Disposal at the Nevada Test Site." Provide container type(s), quantity, and supporting PGE calculations.

Packaging

1. Check all boxes that describe the packaging used (size, type, and weight range). Use external dimensions when identifying the container size. Provide detail on venting and sorbent use. Provide detail on waste radiologically stabilized by the generator to meet the requirements of P930-1, "LANL Waste Acceptance Criteria," Attachment 17 "Low-Level Waste for Disposal at the Nevada Test Site."
2. Enter the maximum container size (external dimensions of the container in meters). For rectangular packages, enter length, width, and height of the waste package in that order. For cylindrical packages (e.g. drums) enter diameter and length in that order.
3. Enter the maximum anticipated container gross weight in kilograms. For bulk waste, mark this section "N/A".
4. Describe the liners and/or protective coatings used for contamination control and for compatibility of the container with the waste. Mark this section N/A for bulk waste.

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5. Identify if each container meets each of the package criteria defined in P930-1, "LANL Waste Acceptance Criteria," Attachment 17 "Low-Level Waste for Disposal at the Nevada Test Site."
6. List documentation that demonstrates compliance with P930-1, "LANL Waste Acceptance Criteria," Attachment 17 "Low-Level Waste for Disposal at the Nevada Test Site."
7. Reference any special handling procedures and ALARA documentation, if applicable.

Additional Information

1. Provide any additional comments about the waste stream, as appropriate.
2. If the waste stream requires an exception to any of the requirements contained in P930-1, "LANL Waste Acceptance Criteria," complete the "Waste Acceptance Criteria Exception Form (Form # 1973)"
3. List and number any attachments provided with the WPF.
4. Handling procedures and ALARA documentation must be referenced in this section for wastes requiring remote handling. Packages exceeding 1 mSv/hr (100 mR/hr) dose rate at 30 cm shall be considered for remote handling.

NTSWAC Table B-1: Analytical Results

This table requires the statistical mean and upper confidence level for TCLP Metals, TCLP Volatiles, TCLP Semivolatiles, and TCLP Pesticides and Herbicides. This table must be completed and attached to the WPF if laboratory or radiochemical analysis was performed.

NTSWAC Table E-3: Calculation of ^{235}U Fissile Gram Equivalence and Effective ^{235}U Enrichment for LLW Packages

This table must be completed if the waste contains enriched uranium (^{235}U wt% ∃ 0.90), ^{233}U, ^{239}Pu, ^{241}Pu, ^{242m}Am, ^{243}Cm, ^{245}Cm, ^{247}Cm, ^{249}Cf, or ^{251}Cf.

3.6 ACTIVATION AND EXTENSION

When the WPF has been activated, it is active for one year. The WPF is activated when the RCRA and/or PCB review and any applicable waste acceptance(s) has been completed. Waste acceptance(s), for example, are TA-50 RLWTF, municipal refuse, SWWS, and TA-16. These review(s) and waste acceptance(s) will be noted at the end of the hardcopy of the activated WPF and should be checked to verify disposition of the waste. At the end of that year, a Waste Profile Extension Questionnaire will be obtainable for the generator to renew or void the profile. Only the generator can sign for the extension. The WMC or Generator can void a profile.

The following, for example, can be changed without redoing the profile:

- If there is an active WPF for a waste stream and the waste stream classification will not change as a result of being turned over to someone else, the WPF can be revised to identify the "new" generator.
- If the generator moves from building "a" to building "b" and the waste stream stays the same, the WPF can be revised to identify the "new" location.

NOTE: A "History of Revisions" table has been incorporated into the Waste Profile (Oracle) database. This feature will allow Waste Services personnel to change the name of a waste generator, as needed, for any given waste stream. This feature will be used primarily for routine waste streams that are generated by one person and then turned over to another. As long as the waste stream has not changed, a new WPF does not need to be created for the new generator.

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NOTE: Before you request that a generator name be changed on a WPF, all waste created by the first generator must be in the disposal process. If the WPF has been changed to identify the "new" generator and a problem arises, this new generator would be assuming responsibility for any discrepancies.

4.0 DOCUMENTATION

The original WPF is considered a record and should be maintained in accordance with:

- P409, "Waste Management"

4.1 REFERRALS

Radioactive Liquid Waste Treatment Facility (RLW), 7-4301.

Environmental & Waste Management Facility Operations-Area G, (EMWO-AG) 5-6158.

Environmental Protection - Water Quality & RCRA (ENV-RCRA), 5-0677.

4.2 DOCUMENTS

15 U.S.C. Sec. 2601-2671, Toxic Substances Control Act, as amended.

20 NMAC 4.1, New Mexico Hazardous Waste Regulations.

20 NMAC 9.1, New Mexico Hazardous Waste Regulations.

40 CFR Parts 260, 261, 262, 263, 264, 265, 268, 273, and 279.

42 U.S.C. Sec. 6901-6992k, Resource Conservation and Recovery Act of 1976, as amended.

42 U.S.C. Sec. 7401-7642, Clean Air Act, as amended.

49 CFR Parts 171 through 173.

"Authorization to Discharge Under the National Pollutant Discharge Elimination System," Environmental Protection Agency, Permit Number NM28355, effective January 31, 1990.

DOE Order 435.1, "Radioactive Waste Management."

DOE Order 5400.5, "Radiation Protection of the Public and the Environment."

P 409, "Waste Management."

ISD101-21, "Chronic Beryllium Disease Prevention Program."

ISD 121-1, "Radiation Protection."

P930-1, "LANL Waste Acceptance Critera."

P930-2, "Waste Certification Program."

Los Alamos National Laboratory. 1989/1995 Hazardous Waste Facility Permit, Attachment A.

New Mexico Hazardous Waste Act, N.M. Statutes Annotated 74-4-1 to 13.

New Mexico Solid Waste Act, N.M. Statutes Annotated 74-9-1 to 42.

"Test Methods for Evaluating Solid Wastes," Environmental Protection Agency Report SW 846 (November 1986).

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ENCLOSURE 4

Waste Profile Form, Form 1346 (9/08)

Los Alamos NATIONAL LABORATORY EST. 1943

Waste Profile Form

For rapid processing, complete all sections in black or blue ink and mail to: Waste Acceptance Group at MS J496.

For assistance with completing this form, contact your WMC. Click here for instruction in completing the form.

Contact (*if other than given below*)	Reference Number (*for Waste Acceptance Group Use Only*)

Generator's Z Number	Waste Generator's Name (*print*)	WMC's Z Number	WMC's Name (*print*)		Generator's Phone
Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room	WMC Phone

Waste Accumulation (*check only one*)

- ☐ Satellite Accumulation Area Site No: _____
- ☐ Less-than-90-days Storage Area Site No: _____
- ☐ TSDF Site No: _____
- ☐ Universal Waste Storage Area Site No: _____
- ☐ Used Oil for Recycle Site No: _____

ER Use Only

- ☐ ER Site SWMU/AOC No. _____

- ☐ PCBs Storage Area Site No: _____
- ☐ NM Special Waste Site No: _____
- ☐ Rad Staging Area Site No: _____
- ☐ Rad Storage Area Site No: _____
- ☐ None of the Above

Method of Characterization (*check as many as apply*)

- ☐ Chemical Physical Analysis ☐ Attached Sample No: _____
- ☐ Radiological Analysis ☐ Attached Sample No: _____
- ☐ PCB Analysis ☐ Attached Sample No: _____
- ☐ Acceptable Knowledge Documentation ☐ Attached Documentation No: _____
- ☐ MSDS ☐ Attached

Section 1 – Waste Prevention/Minimization (***answer all questions***)

Can hazard segregation, elimination, or material substitution be used?	☐ Yes (*provide comments*)	☐ No	
Can any of the materials in the waste stream be recycled or reused?	☐ Yes (*provide comments*)	☐ No	
Has waste minimization been incorporated into procedures or other process controls?	☐ Yes	☐ No (*provide comments*)	
Can this waste be generated outside a RCA?	☐ Yes (*provide comments*)	☐ No	☐ N/A

Comments:

Section 2 – Chemical and Physical Information

Waste Type (*check only one*)

- ☐ Unused/Unspent Chemical (complete all sections as appropriate)
- ☐ Process Waste/Spent Chemical/Other (complete all sections)

Radiological Information

Was Waste generated in a RCA?

- ☐ Yes ☐ No
- ☐ Non-radioactive
- ☐ Radioactive – Low Level
- ☐ Radioactive – Transuranic

Waste Destination (*check only one*)

- ☐ SWWS (complete Attachment 1)
- ☐ RLWTF (complete Attachment 2
- ☐ RLWTP (complete Attachment 3)
- ☐ TA-16/HE (complete Attachment 4)
- ☐ NTS (complete Attachment 5)

Classification Information

- ☐ Unclassified
- ☐ Classified/Sensitive

Waste Category (*check all that apply*)

- ☐ Inorganic
- ☐ Organic
- ☐ Solvent*
- ☐ Degreaser*
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous Waste or Residue
- ☐ No-Longer Contained-In
- ☐ Explosive Process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (see instructions)
- ☐ Battery (see instructions)

Asbestos ☐ Friable ☐ non-friable

PCB Source Concentration

- ☐ PCB < 50 ppm
- ☐ PCB ≥ 50 - < 500 ppm
- ☐ PCB ≥ 500 ppm
- ☐ Hazardous Waste Contaminated Soil
- ☐ Untreated Hazardous Debris
- ☐ Commercial Solid Waste
- ☐ Other (describe below)

* See instructions

Waste Source (*check only one*)

Waste Source A

- ☐ Decon
- ☐ Materials Processing Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup - Routine
- ☐ Sampling – Routine Monitoring
- ☐ Other (describe below)

Waste Source B

- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping (non-routine)
- ☐ Spill Cleanup (non-routine)
- ☐ Non-Petroleum Tanks
- ☐ Petroleum Tanks
- ☐ Other (describe below)

Waste Matrix (*check only one*)

Gas

- ☐ ≤1.5 Atmospheres Pressure
- ☐ >1.5 Atmospheres Pressure
- ☐ Liquefied Compressed Gas

Liquid

- ☐ Aqueous
- ☐ Non-Aqueous
- ☐ Suspended Solids/Aqueous
- ☐ Suspended Solids/Non-Aqueous

Solid

- ☐ Powder/Ash/Dust
- ☐ Solid
- ☐ Sludge
- ☐ Absorbed/Solidified Liquid
- ☐ Debris

Matrix Type (*check only one*)

- ☐ Homogeneous
- ☐ Heterogeneous (describe below)

Estimated Annual Volume (m^3):

Section 3 – Process and Waste Description

Process Description:

Waste Description:

Section 4 – Characteristics

Ignitability (*check only one*)

(°F)	(°C)
☐ < 73	< 22.8
☐ 73 – 99	22.8 - 37.2
☐ 100 – 139	37.8 - 59.4
☐ 140 –200	60.0 - 93.3
☐ > 200	> 93.3

☐ EPA Ignitable – Non-liquid
☐ DOT Flammable Gas
☐ DOT Oxidizer
☐ Not Ignitable

Corrosivity (*check only one*) (pH)

☐ ≤ 2.0
☐ 2.1 – 4.0
☐ 4.1 – 6.0
☐ 6.1 – 9.0
☐ 9.1 - 12.4
☐ ≥ 12.5
☐ Liquid corrosive to steel
☐ Non-aqueous

Reactivity (*check as many as apply*)

☐ RCRA Unstable
☐ Water Reactive
☐ Cyanide Bearing
☐ Sulfide Bearing
☐ Pyrophoric
☐ Shock Sensitive
☐ Explosive - DOT Div.: _____
☐ Non-reactive

Boiling Point (check only one)

(°F)	(°C)
☐ ≤ 95	≤ 35
☐ > 95	> 35

☐ Not applicable

Identify for all contaminants listed.	Characterization Method: AK	TCLP	Total	None or Non-detect	Concentration of Contaminants: Contaminant present at Minimum	Maximum	Regulatory Limit
Toxicity Characteristic Metals					(10,000 ppm = 1%)		
Arsenic	☐	☐	☐	☐	_____ to	_____ ppm	5.0 ppm
Barium	☐	☐	☐	☐	_____ to	_____ ppm	100.0 ppm
Cadmium	☐	☐	☐	☐	_____ to	_____ ppm	1.0 ppm
Chromium (Total)	☐	☐	☐	☐	_____ to	_____ ppm	5.0 ppm
Lead	☐	☐	☐	☐	_____ to	_____ ppm	5.0 ppm
Mercury	☐	☐	☐	☐	_____ to	_____ ppm	0.2 ppm
Selenium	☐	☐	☐	☐	_____ to	_____ ppm	1.0 ppm
Silver	☐	☐	☐	☐	_____ to	_____ ppm	5.0 ppm
Toxicity Characteristic Organics							
Benzene	☐	☐	☐	☐	_____ to	_____ ppm	0.5 ppm
Carbon Tetrachloride	☐	☐	☐	☐	_____ to	_____ ppm	0.5 ppm
Chlorobenzene	☐	☐	☐	☐	_____ to	_____ ppm	100.0 ppm
Chloroform	☐	☐	☐	☐	_____ to	_____ ppm	6.0 ppm
o – cresol	☐	☐	☐	☐	_____ to	_____ ppm	200.0 ppm
m - cresol	☐	☐	☐	☐	_____ to	_____ ppm	200.0 ppm
p – cresol	☐	☐	☐	☐	_____ to	_____ ppm	200.0 ppm
Cresol – mixed	☐	☐	☐	☐	_____ to	_____ ppm	200.0 ppm
1,4-Dichlorobenzene	☐	☐	☐	☐	_____ to	_____ ppm	7.5 ppm
1,2-Dichloroethane	☐	☐	☐	☐	_____ to	_____ ppm	0.5 ppm
1,1-Dichloroethylene	☐	☐	☐	☐	_____ to	_____ ppm	0.7 ppm
2,4-Dinitrotoluene	☐	☐	☐	☐	_____ to	_____ ppm	0.13 ppm
Hexachlorobenzene	☐	☐	☐	☐	_____ to	_____ ppm	0.13 ppm
Hexachlorobutadiene	☐	☐	☐	☐	_____ to	_____ ppm	0.5 ppm
Hexachloroethane	☐	☐	☐	☐	_____ to	_____ ppm	3.0 ppm
Methyl ethyl ketone	☐	☐	☐	☐	_____ to	_____ ppm	200.0 ppm
Nitrobenzene	☐	☐	☐	☐	_____ to	_____ ppm	2.0 ppm
Pentachlorophenol	☐	☐	☐	☐	_____ to	_____ ppm	100.0 ppm
Pyridine	☐	☐	☐	☐	_____ to	_____ ppm	5.0 ppm
Tetrachloroethylene	☐	☐	☐	☐	_____ to	_____ ppm	0.7 ppm
Trichloroethylene	☐	☐	☐	☐	_____ to	_____ ppm	0.5 ppm
2,4,5-Trichlorophenol	☐	☐	☐	☐	_____ to	_____ ppm	400.0 ppm
2,4,6-Trichlorophenol	☐	☐	☐	☐	_____ to	_____ ppm	2.0 ppm
Vinyl chloride	☐	☐	☐	☐	_____ to	_____ ppm	0.2 ppm
Herbicides and Pesticides							
Chlordane	☐	☐	☐	☐	_____ to	_____ ppm	0.03 ppm
2,4-D	☐	☐	☐	☐	_____ to	_____ ppm	10.0 ppm
Endrin	☐	☐	☐	☐	_____ to	_____ ppm	0.02 ppm
Heptachlor (& its epoxide)	☐	☐	☐	☐	_____ to	_____ ppm	0.008 ppm
Lindane	☐	☐	☐	☐	_____ to	_____ ppm	0.4 ppm
Methoxychlor	☐	☐	☐	☐	_____ to	_____ ppm	10.0 ppm
Toxaphene	☐	☐	☐	☐	_____ to	_____ ppm	0.5 ppm
2,4,5-TP (Silvex)	☐	☐	☐	☐	_____ to	_____ ppm	0.5 ppm

Section 5 – Additional Constituents and Contaminants

Additional Constituents and Contaminants. Please account for 100% of waste. Range should be given within guidelines of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formula allowed in this field. Continue in Section 3 Additional information as necessary. CAS numbers are needed for all chemical constituents, for material without a CAS number, enter "No CAS Number." Contact Waste Acceptance at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum	Maximum
		to	%
		to	%
		to	%
		to	%
		to	%
		to	%
		to	%
		to	%
		to	%
		to	%
		to	%
	Total of max. ranges of this section and page 2	_____ in %	

Additional Information (Use additional sheet if necessary.)

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

Section 6 - Work Control Documentation (answer all questions)

Do the procedures for this process cover how to mange this waste? ☐ Yes ☐ No (*provide comments*)

Do the procedures for this process address controls to prevent changes to waste constituents and concentrations or addition or removal of waste to/from containers? ☐ Yes ☐ No (*provide comments*)

Comments:

Section 7 – Packaging and Storage Control

Describe how the waste will be packaged in according to the applicable WAC.

Identify the storage management controls that will be used for this waste stream: (*check all that apply*)

☐ Tamper Indication Devices ☐ Limited use locks with log-in for waste ☐ Locked cabinet or building ☐ Other (describe)

Section 8 – Waste Certification Statements (*check only one*)

☐ Waste appears to meet WAC attachment for:

☐ Waste stream needs exception/exemption for treatment, storage, or disposal at:

☐ Waste does not meet the criteria for any known TSDF. (DOE approval is required. Contact the office of the Principle Associate Director for Weapons Programs [PADWP] for assistance.)

Waste Generator Certification: Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the waste characterization information on this form is correct and that it meets the requirements of the applicable waste acceptance criteria. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Signature: _____ Date: _____

Waste Certifying Official: I have reviewed this form and any associated attachments and the characterization information provided appears to be complete and accurate. I certify, to the best of my knowledge, that the waste characterization information provided by the waste generator meets the requirements of the applicable WAC.

Signature: _____ Date: _____

Attachment 4 - LDR and UHC Information

Identify category and presence of any constituents listed below (*equal to or above limit*).

Non-Wastewater/Wastewater Category (*check only one*)

☐ Non Wastewater ☐ Wastewater [as defined by 40 CFR 268.2(f)] ☐ Lab Pack [40 CFR 268.42(c)] **Sign Certification #1**

Notifications and Certifications – Check the applicable boxes

Generator Requirements:

☐ This shipment contains hazardous waste contaminated soil that does not meet treatment standards **Sign Certification #2**
☐ This shipment contains untreated hazardous debris to be treated to 40 CFR 268.45 treatment standards **(No certification)**
☐ Hazardous wastes (except soil) meeting treatment standards at point of generation **Sign Certification #3**
☐ Hazardous wastes contaminated soil meeting treatment standards at point of generation **Sign Certification #4**

TSDF or Generator Treatment:

☐ TSDF Treated hazardous debris meeting the alternative treatment standards of 40 CFR 268.45 **Sign Certification #5**
☐ Generator Treated hazardous debris meeting the alternative treatment standards of 40 CFR 268.45 **Sign Certification #6**
☐ Hazardous wastes contaminated soil treated to 40 CFR 268.49 **Sign Certification #7**
☐ Wastes or Residues from characteristic hazardous waste treatment meeting treatment standards and UTS **Sign Certification #8**
☐ Wastes or Residues from characteristic hazardous waste treatment not meeting UTS **Sign Certification #9**
☐ Other TSDF wastes meeting the more stringent 40 CFR 268.40 treatment standards to be land disposed **Sign Certification #10**
☐ Other Generator wastes meeting the more stringent 40 CFR 268.40 treatment standards to be land disposed **Sign Certification #11**

Notification of Underlying Hazardous Constituents

(*Check the applicable underlying constituents above the concentration levels for D001 through D043 characteristic wastes only*)

☐ ***No Underlying Hazardous Constituents in this waste stream.***

	Organic Constituents	CASRN[1]	Wastewater Standard (mg/l)	Non Wastewater Standard (mg/kg unless noted otherwise)	Hazardous Soil 10Xs UTS Nonwastewater (mg/kg unless noted otherwise)
☐	Acenaphthylene	208-96-8	0.059	3.4	34
☐	Acenaphthene	83-32-9	0.059	3.4	34
☐	Acetone	67-64-1	0.28	160	1600
☐	Acetonitrile	75-05-8	5.6	38	380
☐	Acetophenone	96-86-2	0.010	9.7	97
☐	2-Acetylaminofluorene	53-96-3	0.059	140	1400
☐	Acrolein	107-02-8	0.29	NA	NA
☐	Acrylamide	79-06-1	19	23	230
☐	Acrylonitrile	107-13-1	0.24	84	840
☐	Aldicarb sulfone	1646-88-4	0.056	0.28	2.8
☐	Aldrin	309-00-2	0.021	0.066	0.66
☐	4-Aminobiphenyl	92-67-1	0.13	NA	NA
☐	Aniline	62-53-3	0.81	14	140
☐	o-Anididine (2-methoxyaniline)	90-04-0	0.010	0.66	6.6
☐	Anthracene	120-12-7	0.059	3.4	34
☐	Aramite	140-57-8	0.36	NA	NA
☐	alpha-BHC	319-84-6	0.00014	0.066	0.66
☐	beta-BHC	319-85-7	0.00014	0.066	0.66
☐	delta-BHC	319-86-8	0.023	0.066	0.66
☐	gamma-BHC	58-89-9	0.0017	0.066	0.66
☐	Barban	101-27-9	0.056	1.4	14
☐	Bendiocarb	22781-23-3	0.056	1.4	14
☐	Benomyl	17804-35-2	0.056	1.4	14
☐	Benzene	71-43-2	0.14	10	100
☐	Benz(a)anthracene	56-55-3	0.059	3.4	34
☐	Benzal chloride	98-87-3	0.055	6.0	60
☐	Benzo(b)fluoranthene	205-99-2	0.11	6.8	68
☐	Benzo(k)fluoranthene	207-08-9	0.11	6.8	68

Attachment 4 - LDR and UHC information (continued)

	Organic Constituents	CASRN[1]	Wastewater Standard (mg/l)	Non Wastewater Standard (mg/kg unless noted otherwise)	Hazardous Soil 10Xs UTS Nonwastewater (mg/kg unless noted otherwise)
☐	Benzo(g,h,I)perylene	191-24-2	0.0055	1.8	18
☐	Benzo(a)pyrene	50-32-8	0.061	3.4	34
☐	Bromodichloromethane	75-27-4	0.35	15	150
☐	Bromomethane (Methyl bromide)	74-83-9	0.11	15	150
☐	4-Bromophenyl phenyl ether	101-55-3	0.055	15	150
☐	n-Butyl alcohol	71-36-3	5.6	2.6	26
☐	Butylate	2008-41-5	0.042	1.4	14
☐	Butyl benzyl phthalate	85-68-7	0.017	28	280
☐	2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	88-85-7	0.066	2.5	25
☐	Carbaryl	63-25-2	0.006	0.14	1.4
☐	Carbenzadim	10605-21-7	0.056	1.4	14
☐	Carbofuran	1563-66-2	0.006	0.14	1.4
☐	Carbofuran phenol	1563-38-8	0.056	1.4	14
☐	Carbon disulfide	75-15-0	3.8	4.8 mg/l TCLP	48 mg/l TCLP
☐	Carbon tertachloride	56-23-5	0.057	6.0	60
☐	Carbosulfan	55285-14-8	0.028	1.4	14
☐	Chlordane (alpha & gamma isomers)	57-74-9	0.0033	0.26	2.6
☐	p-Chloroaniline	106-47-8	0.46	16	160
☐	Chlorobenzene	108-90-7	0.057	6.0	60
☐	Chlorobenzilate	510-15-6	0.10	NA	NA
☐	2-Chloro-1,3-butadiene	126-99-8	0.057	0.28	2.8
☐	Chlorodibromomethane	124-48-1	0.057	15	150
☐	Chloroethane	75-00-3	0.27	6.0	60
☐	bis(2-Chloroethoxy) methane	111-91-1	0.036	7.2	72
☐	bis(2-Chloroethyl) ether	111-44-4	0.033	6.0	60
☐	Chloroform	67-66-3	0.046	6.0	60
☐	bis(2-Chloroisopropyl) ether	108-60-1	0.055	7.2	72
☐	p-Chloro-m-cresol	59-50-7	0.018	14	140
☐	2-Chloroethyl vinyl ether	110-75-8	0.062	NA	NA
☐	Chloromethane (Methyl chloride)	74-87-3	0.19	30	300
☐	2-Chloronaphthalene	91-58-7	0.055	5.6	56
☐	2-Chlorophenol	95-57-8	0.044	5.7	57
☐	3-Chloropropylene	107-05-1	0.036	30	300
☐	Chrysene	218-01-9	0.059	3.4	34
☐	p-Cresidine	120-71-8	0.010	0.66	6.6
☐	o-Cresol	95-48-7	0.11	5.6	56
☐	m-Cresol	108-39-4	0.77	5.6	56
☐	p-Cresol	106-44-5	0.77	5.6	56
☐	m-Cumenyl methylcarbamate	64-00-6	0.056	1.4	14
☐	Cyclohexanone	108-94-1	0.36	0.75 mg/l TCLP	7.5 mg/l TCLP
☐	o,p'-ddd	53-19-0	0.023	0.087	0.87
☐	p,p'-ddd	72-54-8	0.023	0.087	0.87
☐	o,p'-dde	3424-82-6	0.031	0.087	0.87
☐	p,p'-dde	72-55-9	0.031	0.087	0.87
☐	o,p'-ddt	789-02-6	0.0039	0.087	0.87
☐	p,p'-ddt	50-29-3	0.0039	0.087	0.87
☐	Dibenz(a,h)anthracene	53-70-3	0.055	8.2	82
☐	Dibenz(a,e)pyrene	192-65-4	0.061	NA	NA

Attachment 4 - LDR and UHC Information (continued)

	Organic Constituents	CASRN[1]	Wastewater Standard (mg/l)	Non Wastewater Standard (mg/kg unless noted otherwise)	Hazardous Soil 10Xs UTS Nonwastewater (mg/kg unless noted otherwise)
☐	1,2-Dibromo-3-chloropropane	96-12-8	0.11	15	150
☐	1,2-Dibromoethane (Ethylene dibromide)	106-93-4	0.028	15	150
☐	Dibromomethane	74-95-3	0.11	15	150
☐	m-Dichlorobenzene	541-73-1	0.036	6.0	60
☐	o-Dichlorobenzene	95-50-1	0.088	6.0	60
☐	p-Dichlorobenzene	106-46-7	0.090	6.0	60
☐	Dichlorodifluoromethane	75-71-8	0.23	7.2	72
☐	1,1-Dichloroethane	75-34-3	0.059	6.0	60
☐	1,2-Dichloroethane	107-06-2	0.21	6.0	60
☐	1,1-Dichloroethylene	75-35-4	0.025	6.0	60
☐	trans-1,2-Dichloroethylene	156-60-5	0.054	30	300
☐	2,4-Dichlorophenol	120-83-2	0.044	14	140
☐	2,6-Dichlorophenol	87-65-0	0.044	14	140
☐	2,4-Dichlorophenoxyacetic acid (2,4-D)	94-75-7	0.72	10	100
☐	1,2-Dichloropropane	78-87-5	0.85	18	180
☐	cis-1,3-Dichloropropylene	10061-01-5	0.036	18	180
☐	trans-1,3-Dichloropropylene	10061-02-6	0.036	18	180
☐	Dieldrin	60-57-1	0.017	0.13	1.3
☐	Diethyl phthalate	84-66-2	0.20	28	280
☐	p-Dimethylaminoazobenzene	60-11-7	0.13	NA	NA
☐	2,4-Dimethylaniline (2,4-xylidine)	95-68-1	0.010	0.66	6.6
☐	2,4-Dimethyl phenol	105-67-9	0.036	14	140
☐	Dimethyl phthalate	131-11-3	0.047	28	280
☐	Di-n-butyl phthalate	84-74-2	0.057	28	280
☐	1,4-Dinitrobenzene	100-25-4	0.32	2.3	23
☐	4,6-Dinitro-o-cresol	534-52-1	0.28	160	1600
☐	2,4-Dinitrophenol	51-28-5	0.12	160	1600
☐	2,4-Dinitrotoluene	121-14-2	0.32	140	1400
☐	2,6-Dinitrotoluene	606-20-2	0.55	28	280
☐	Di-n-octyl phthalate	117-84-0	0.017	28	280
☐	Di-n-propylnitrosamine	621-64-7	0.40	14	140
☐	1,4-Dioxane	123-91-1	12.0	170	1700
☐	Diphenylamine	122-39-4	0.92	13	130
☐	Diphenylnitrosamine	86-30-6	0.92	13	130
☐	1,2-Diphenylhydrazine	122-66-7	0.087	NA	NA
☐	Disulfoton	298-04-4	0.017	6.2	62
☐	Dithiocarbamates (total)	NA	0.028	28	280
☐	Endosulfan I	959-98-8	0.023	0.066	0.66
☐	Endosulfan II	33213-65-9	0.029	0.13	1.3
☐	Endosulfan sulfate	1031-07-8	0.029	0.13	1.3
☐	Endrin	72-20-8	0.0028	0.13	1.3
☐	Endrin aldehyde	7421-93-4	0.025	0.13	1.3
☐	EPTC	759-94-4	0.042	1.4	14
☐	Ethyl acetate	141-78-6	0.34	33	330
☐	Ethyl benzene	100-41-4	0.057	10	100
☐	Ethyl cyanide (Propanenitrile)	107-12-0	0.24	360	3600

Attachment 4 - LDR and UHC Information (continued)

	Organic Constituents	CASRN[1]	Wastewater Standard (mg/l)	Non Wastewater Standard (mg/kg unless noted otherwise)	Hazardous Soil 10Xs UTS Nonwastewater (mg/kg unless noted otherwise)
☐	Ethyl ether	60-29-7	0.12	160	1600
☐	bis(2-Ethylhexyl)phthalate	117-81-7	0.28	28	280
☐	Ethyl methacrylate	97-63-2	0.14	160	1600
☐	Ethylene oxide	75-21-8	0.12	NA	NA
☐	Famphur	52-85-7	0.017	15	150
☐	Fluoranthene	206-44-0	0.068	3.4	34
☐	Fluorene	86-73-7	0.059	3.4	34
☐	Formetanate hydrochloride	23422-53-9	0.056	1.4	14
☐	Heptachlor	76-44-8	0.0012	0.066	0.66
☐	Heptachlor epoxide	1024-57-3	0.016	0.066	0.66
☐	1,2,3,4,6,7,8-Heptachlorodibenzo-pdioxin	35822-46-9	0.000035	0.0025	0.025
☐	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	0.000035	0.0025	0.025
☐	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	0.000035	0.0025	0.025
☐	Hexachlorobenzene	118-74-1	0.055	10	100
☐	Hexachlorobutadiene	87-68-3	0.055	5.6	56
☐	Hexachlorocyclopentadiene	77-47-4	0.057	2.4	24
☐	Hexachlorodibenzo-p-dioxins (HxCDDs)	NA	0.000063	0.001	0.01
☐	Hexachlorodibenzo-furans (HxCDFs)	NA	0.000063	0.001	0.01
☐	Hexachloroethane	67-72-1	0.055	30	300
☐	Hexachloropropylene	1888-71-7	0.035	30	300
☐	Indeno (1,2,3-c,d) pyrene	193-39-5	0.0055	3.4	34
☐	Iodomethane	74-88-4	0.19	65	650
☐	Isobutyl alcohol	78-83-1	5.6	170	1700
☐	Isodrin	465-73-6	0.021	0.066	0.66
☐	Isosafrole	120-58-1	0.081	2.6	26
☐	Kepone	143-50-0	0.0011	0.13	1.3
☐	Methacrylonitrile	126-98-7	0.24	84	840
☐	Methanol	67-56-1	5.6	0.75 mg/l TCLP	7.5 mg/l TCLP
☐	Methapyrilene	91-80-5	0.081	1.5	15
☐	Methiocarb	2032-65-7	0.056	1.4	14
☐	Methomyl	16752-77-5	0.028	0.14	1.4
☐	Methoxychlor	72-43-5	0.25	0.18	1.8
☐	3-Methylchlolanthrene	56-49-5	0.0055	15	150
☐	4,4-Methylene bis(2-chloroaniline)	101-14-4	0.50	30	300
☐	Methylene chloride	75-09-2	0.089	30	300
☐	Methyl ethyl ketone	78-93-3	0.28	36	360
☐	Methyl isobutyl ketone	108-10-1	0.14	33	330
☐	Methyl methacrylate	80-62-6	0.14	160	1600
☐	Methyl methansulfonate	66-27-3	0.018	NA	NA
☐	Methyl parathion	298-00-0	0.014	4.6	46
☐	Metolcarb	1129-41-5	0.056	1.4	14
☐	Mexacarbate	315-18-4	0.056	1.4	14
☐	Molinate	2212-67-1	0.042	1.4	14
☐	Naphthalene	91-20-3	0.059	5.6	56
☐	2-Naphthylamine	91-59-8	0.52	NA	NA
☐	o-Nitroaniline	88-74-4	0.27	14	140

Attachment 4 - LDR and UHC Information (continued)

	Organic Constituents	CASRN[1]	Wastewater Standard (mg/l)	Non Wastewater Standard (mg/kg unless noted otherwise)	Hazardous Soil 10Xs UTS Nonwastewater (mg/kg unless noted otherwise)
☐	p-Nitroaniline	100-01-6	0.028	28	280
☐	Nitrobenzene	98-95-3	0.068	14	140
☐	5-Nitro-o-toluidine	99-55-8	0.32	28	280
☐	o-Nitrophenol	88-75-5	0.028	13	130
☐	p-Nitrophenol	100-02-7	0.12	29	290
☐	N-Nitrosodiethylamine	55-18-5	0.40	28	280
☐	N-Nitrosodimethylamine	62-75-9	0.40	2.3	23
☐	N-Nitroso-di-n-butylamine	924-16-3	0.40	17	170
☐	N-Nitrosomethylethylamine	10595-95-6	0.40	2.3	23
☐	N-Nitrosomorpholine	59-89-2	0.40	2.3	23
☐	N-Nitrosopiperidine	100-75-4	0.013	35	350
☐	N-Nitrosopyrrolidine	930-55-2	0.013	35	350
☐	1,2,3,4,6,7,8,9-Octachlorodibenzo-pdioxin	3268-87-9	0.000063	0.005	0.05
☐	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	0.000063	0.005	0.05
☐	Oxamyl	23135-22-0	0.056	0.28	2.8
☐	Parathion	56-38-2	0.014	4.6	46
☐	PCBs (total)	1336-36-3	0.10	10	100
☐	Pebulate	1114-71-2	0.042	1.4	14
☐	Pentachlorobenzene	608-93-5	0.055	10	100
☐	Pentachlorodibenzo-p-dioxins (PeCDDs)	NA	0.000063	0.001	0.01
☐	Pentachlorodibenzo-furans (PeCDFs)	NA	0.000035	0.001	0.01
☐	Pentachloroethane	76-01-7	0.055	6.0	60
☐	Pentachloronitrobenzene	82-68-8	0.055	4.8	48
☐	Pentachlorophenol	87-86-5	0.089	7.4	74
☐	Phenacetin	62-44-2	0.081	16	160
☐	Phenanthrene	85-01-8	0.059	5.6	56
☐	Phenol	108-95-2	0.039	6.2	62
☐	1,3-Phenylenediamine	108-45-2	0.01	0.66	6.6
☐	Phorate	298-02-2	0.021	4.6	46
☐	Phthalic acid	100-21-0	0.055	28	280
☐	Phthalic anhydride	85-44-9	0.055	28	280
☐	Physostigmine	57-47-6	0.056	1.4	14
☐	Physostigmine salicylate	57-64-7	0.056	1.4	14
☐	Promecarb	2631-37-0	0.056	1.4	14
☐	Pronamide	23950-58-5	0.093	1.5	15
☐	Propham	122-42-9	0.056	1.4	14
☐	Propoxur	114-26-1	0.056	1.4	14
☐	Prosulfocarb	52888-80-9	0.042	1.4	14
☐	Pyrene	129-00-0	0.067	8.2	82
☐	Pyridine	110-86-1	0.014	16	160
☐	Safrole	94-59-7	0.081	22	220
☐	Silvex (2,4,5-TP)	93-72-1	0.72	7.9	79
☐	1,2,4,5-Tetrachlorobenzene	95-94-3	0.055	14	140
☐	Tetrachlorodibenzo-p-dioxins (TCDDs)	NA	0.000063	0.001	0.01
☐	Tetrachlorodibenzofurans (TCDFs)	NA	0.000063	0.001	0.01
☐	1,1,1,2-Tetrachloroethane	630-20-6	0.057	6.0	60

Attachment 4 - LDR and UHC Information (continued)

	Organic Constituents	CASRN[1]	Wastewater Standard (mg/l)	Non Wastewater Standard (mg/kg unless noted otherwise)	Hazardous Soil 10Xs UTS Nonwastewater (mg/kg unless noted otherwise)
☐	1,1,2,2-Tetrachloroethane	79-34-5	0.057	6.0	60
☐	Tetrachloroethylene	127-18-4	0.056	6.0	60
☐	2,3,4,6-Tertachlorophenol	58-90-2	0.030	7.4	74
☐	Thiodicarb	59669-26-0	0.019	1.4	14
☐	Thiophanate-methyl	23564-05-8	0.056	1.4	14
☐	Toluene	108-88-3	0.080	10	100
☐	Toxaphene	8001-35-2	0.0095	2.6	26
☐	Triallate	2303-17-5	0.042	1.4	14
☐	Tribromomethane (Bromoform)	75-25-2	0.63	15	150
☐	2,4,6-Tribromophenol	118-79-6	0.035	7.4	74
☐	1,2,4-Trichlorobenzene	120-82-1	0.055	19	190
☐	1,1,1-Trichloroethane	71-55-6	0.054	6.0	60
☐	1,1,2-Trichloroethane	79-00-5	0.054	6.0	60
☐	Trichloroethylene	79-01-6	0.054	6.0	60
☐	Trichloromonofluoromethane	75-69-4	0.020	30	300
☐	2,4,5-Trichlorophenol	95-95-4	0.18	7.4	74
☐	2,4,6-Trichlorophenol	88-06-2	0.035	7.4	74
☐	2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)	93-76-5	0.72	7.9	79
☐	1,2,3-Trichloropropane	96-18-4	0.85	30	300
☐	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.057	30	300
☐	Triethylamine	121-44-8	0.081	1.5	15
☐	tris-(2,3-Dibromopropyl) phosphate	126-72-7	0.11	0.10	1.0
☐	Vernolate	1929-77-7	0.042	1.4	14
☐	Vinyl chloride	75-01-4	0.27	6.0	60
☐	Xylenes (total)	1330-20-7	0.32	30	300
☐	Antimony	7440-36-0	1.9	1.15 mg/l TCLP	11.5 mg/l TCLP
☐	Arsenic	7440-38-2	1.4	5.0 mg/l TCLP	50 mg/l TCLP
☐	Barium	7440-39-3	1.2	21 mg/l TCLP	210 mg/l TCLP
☐	Beryllium	7440-41-7	0.82	1.22 mg/l TCLP	12.2 mg/l TCLP
☐	Cadmium	7440-43-9	0.69	0.11 mg/l TCLP	1.1 mg/l TCLP
☐	Chromium (Total)	7440-47-3	2.77	0.60 mg/l TCLP	6.0 mg/l TCLP
☐	Cyanides (Total)[4]	57-12-5	1.2	590	5900
☐	Cyanides (Amenable)[4]	57-12-5	0.86	30	300
☐	Fluoride	16984-48-8	35	NA	NA
☐	Lead	7439-92-1	0.69	0.75 mg/l TCLP	7.5 mg/l TCLP
☐	Mercury (Retort residues)	7439-97-6	NA	0.20 mg/l TCLP	2.0 mg/l TCLP
☐	Mercury - All others	7439-97-6	0.15	0.025 mg/l TCLP	0.25 mg/l TCLP
☐	Nickel	7440-02-0	3.98	11 mg/l TCLP	110 mg/l TCLP
☐	Selenium	7782-49-2	0.82	5.7 mg/l TCLP	57 mg/l TCLP
☐	Silver	7440-22-4	0.43	0.14 mg/l TCLP	1.4 mg/l TCLP
☐	Sulfide	18496-25-8	14	NA	NA
☐	Thallium	7440-28-0	1.4	0.20 mg/l TCLP	2.0 mg/l TCLP
☐	Vanadium[5]	7440-62-2	4.3	1.6 mg/l TCLP	16 mg/l TCLP
☐	Zinc[5]	7440-66-6	2.61	4.3 mg/l TCLP	43 mg/l TCLP

Notifications/Certifications #1

WPF # _____

Lab Pack [40 CFR 268.42(c)]

I certify under penalty of law that I personally have examined and am familiar with the waste and that the lab pack contains only wastes that have not been excluded under Appendix IV to 40 CFR part 268 and that this lab pack will be sent to a combustion facility in compliance with the alternative treatment standards for lab packs at 40 CFR 268.42(c). I am aware that there are significant penalties for submitting a false certification, including the possibility of fine or imprisonment.

_____
Authorized Signature

Notifications/Certifications #2

WPF # _____

This shipment contains hazardous waste contaminated soil that does not meet treatment standards.

This contaminated soil [does/does not] contain listed hazardous waste and [does/does not] exhibit a characteristic of hazardous waste and [is subject to/complies with] the soil treatment standards as provided by 268.49(c) or the universal treatment standards.

_____
Authorized Signature

I certify under penalty of law that I personally have examined this contaminated soil and it [does/does not] contain listed hazardous waste and [does/does not] exhibit a characteristic of hazardous waste and requires treatment to meet the soil treatment standards as provided by 268.49(c).

_____
Authorized Signature

Notifications/Certifications #3

WPF # _____

Hazardous wastes (except soil) meeting treatment standards at point of generation

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR part 268 subpart D. I believe that the information I submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

_____
Authorized Signature

Notifications/Certifications #4

WPF # _____

Hazardous wastes contaminated soil meeting treatment standards at point of generation

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR part 268 subpart D. I believe that the information I submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

_____
Authorized Signature

This contaminated soil [does/does not] contain listed hazardous waste and [does/does not] exhibit a characteristic of hazardous waste and [is subject to/complies with] the soil treatment standards as provided by 268.49(c) or the universal treatment standards.

_____
Authorized Signature

Notifications/Certifications #5

WPF # _____

TSDF Treated hazardous debris meeting the alternative treatment standards for 40 CFR 268.45.

I certify under penalty of law that the debris has been treated in accordance with the requirements of 40 CFR 268.45. I am aware that there are significant penalties for making a false certification, including the possibility of fine and imprisonment.

_____
Authorized Signature

Notifications/Certifications #6

WPF # _____

Generator Treated hazardous debris meeting the alternative treatment standards for 40 CFR 268.45.

I certify under penalty of law that the debris has been treated in accordance with the requirements of 40 CFR 268.45. I am aware that there are significant penalties for making a false certification, including the possibility of fine and imprisonment.

_____
Authorized Signature

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR part 268 subpart D. I believe that the information I submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

_____
Authorized Signature

Notifications/Certifications #7

WPF # _____

Hazardous wastes contaminated soil treated to 40 CFR 268.49

I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and believe that it has been maintained and operated properly so as to comply with the treatment standards specified in 40 CFR 268.49 without impermissible dilution of the prohibited wastes. I am aware there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

_____
Authorized Signature

This contaminated soil [does/does not] exhibit a characteristic of hazardous waste and [is subject to/complies with] the soil treatment standards as provided by 268.49(c)

_____
Authorized Signature

Notifications/Certifications #8

WPF # _____

Wastes or Residues from characteristic hazardous waste treatment meeting treatment standards and UTS.

I certify under penalty of law that the waste has been treated in accordance with the requirements of 40 CFR 268.40 to remove the hazardous characteristic and that underlying hazardous constituents, as defined in 268.2(i) have been treated on-site to meet the 268.48 Universal Treatment Standards. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

_____
Authorized Signature

I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification. Based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the treatment standards specified in 40 CFR 268.40 without impermissible dilution of the prohibited waste. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

_____
Authorized Signature

Notifications/Certifications #9

WPF # _____

Wastes or Residues from characteristic hazardous waste treatment not meeting UTS.

I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification. Based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the treatment standards specified in 40 CFR 268.40 without impermissible dilution of the prohibited waste. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

_____
Authorized Signature

I certify under penalty of law that the waste has been treated in accordance with the requirements of 40 CFR 268.40 or 268.49 to remove the hazardous characteristic. This decharacterized waste contains underlying hazardous constituents that require further treatment to meet treatment standards. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonments.

_____
Authorized Signature

Notifications/Certifications #10

WPF # _____

Other TSDF wastes meeting the more stringent 40 CFR 268.40 treatment standards to be land disposed.

I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification. Based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the treatment standards specified in 40 CFR 268.40 without impermissible dilution of the prohibited waste. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

_____

Authorized Signature

Notifications/Certifications #11

WPF # _____

Other Generator wastes meeting the more stringent 40 CFR 268.40 treatment standards to be land disposed.

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR part 268 subpart D. I believe that the information I submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

_____

Authorized Signature

Attachment 1 – Wastewater Characteristics for SWWS (TA-46)

- **Use of Acceptable Knowledge in lieu of analytical data must be pre-approved by the SWWS WAC Committee.**
- **All samples must be collected by KSL/ENV unless the SWWS WAC Committee approves an alternate sample taker.**

Obtain a KSL/ENV Sample Request form or contact KSL/ENV at 7-0104. To obtain SWWS WAC Committee approval for Acceptable Knowledge criteria, for an alternate sampler, or for help in completing this form, contact the SWWS Pre-treatment Representative at 655-7884.

KSL/ENV Provides: Microtox Analysis #:

[NOTE: Microtox sampling and analysis must be performed by KSL/ENV.]

Are there any detectable levels of gross Alpha, gross Beta, gross Gamma, and/or Tritium? Check one: ☐ Yes ☐ No

If "Yes," identify radionuclide and specify concentration: Radionuclide _____ Concentration (pCi/l) _____

[1,2]Waste Water Parameters	Not Analyzed for	Non-detect	Within Limit Shown Below at Flow Rate of 100 Gal/Day or Less	Within Limit Shown Below at Flow Rate of Greater Than 100 Gal/Day	Above Limit
PH	☐	☐	☐ 5 -11 SU	☐ 5.5 -11 SU	☐
Chemical Oxygen Demand (COD)	☐	☐	☐ ≤ 750 mg/l	☐ ≤ 500 mg/l	☐
Total Dissolved Solids (TDS)	☐	☐	☐ < 1000.0 mg/l	☐ <1000.0 mg/l	☐
Total Suspended Solids (TSS)	☐	☐	☐ ≤ 330.0 mg/l	☐ ≤ 330.0 mg/l	☐
Oil and Grease	☐	☐	☐ < 100.0 mg/l	☐ < 50.0 mg/l	☐
Microtox Results (screen)	☐	☐	☐ < 55% screen	☐ < 50% screen	☐
Microtox Results (EC50)	☐	☐	☐ > 20% EC50	☐ > 25% EC50	☐
Temperature	☐	☐	☐ 180 °F	☐ ≤ 140 °F	☐
Aluminum	☐	☐	☐ < 5.0 mg/l	☐ < 5.0 mg/l	☐
Arsenic	☐	☐	☐ < 0.2 mg/l	☐ < 0.1 mg/l	☐
Barium	☐	☐	☐ < 40.0 mg/l	☐ < 20.0 mg/l	☐
Beryllium	☐	☐	☐ < 0.01 mg/l	☐ < 0.01 mg/l	☐
Boron	☐	☐	☐ < 2.0 mg/l	☐ < 1.0 mg/l	☐
Cadmium	☐	☐	☐ < 0.1 mg/l	☐ < 0.05 mg/l	☐
Chromium	☐	☐	☐ < 3.8 mg/l	☐ < 1.9 mg/l	☐
Cobalt	☐	☐	☐ < 2.2 mg/l	☐ < 1.1 mg/l	☐
Copper	☐	☐	☐ < 1.0 mg/l	☐ < 0.5 mg/l	☐
Cyanide	☐	☐	☐ < 5.0 mg/l	☐ < 0.34 mg/l	☐
Fluoride	☐	☐	☐ < 180.0 mg/l	☐ < 80.0 mg/l	☐
Iron	☐	☐	☐ < 100.0 mg/l	☐ < 35.0 mg/l	☐
Lead	☐	☐	☐ < 0.4 mg/l	☐ < 0.2 mg/l	☐
Magnesium	☐	☐	☐ < 100.0 mg/l	☐ < 50.0 mg/l	☐
Manganese	☐	☐	☐ < 10.0 mg/l	☐ < 7.5 mg/l	☐
Mercury	☐	☐	☐ < 1.5 ug/l	☐ < 0.77 ug/l	☐
Molybdenum	☐	☐	☐ < 4.0 mg/l	☐ < 2.0 mg/l	☐
Nickel	☐	☐	☐ < 0.5 mg/l	☐ ≤ 0.25 mg/l	☐
Nitrogen (Total)	☐	☐	☐ 100.0 mg/l	☐ ≤ 50.0 mg/l	☐
Polychlorinated Biphenyls (PCB)	☐	☐			☐
Phosphorus (Total)	☐	☐	☐ < 80.0 mg/l	☐ < 40.0 mg/l	☐
Selenium	☐	☐	☐ < 5.0 ug/l	☐ < 5.0 ug/l	☐
Silver	☐	☐	☐ < 5.0 mg/l	☐ < 1.0 mg/l	☐
Vanadium	☐	☐	☐ < 0.2 mg/l	☐ < 0.1 mg/l	☐
Zinc	☐	☐	☐ < 10.0 mg/l	☐ < 0.5 mg/l	☐

[1] Methods of analysis must conform to those approved pursuant to 40 CFR 136 unless an alternative method has been approved by RRES-WQH

[2] All metal concentrations are for the total metal concentration present in the sample unless otherwise indicated.

Allowable Chlorine Concentrations in Line or other Disinfection Discharge. Volumes less than 20 gal. may be released directly to the SWWS without regard to chlorine concentration. Volumes greater than 20 gal. but less than 1000 gal. must be dechlorinated to less than 3 ppm before discharge to the SWWS. Volumes greater than 1000 gal. may not be released to the SWWS under any circumstances.

Attachment 2 – Wastewater Characteristics for RLWTF (TA-50 and TA-21)

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

Indicate if waste was: ☐ Accelerator produced ☐ Reactor Produced ☐ Other (describe in WPF Section 1 " Waste/Process Description"

Radionuclide Contaminants

Identify for the following	Present at or Below LOC (in Ci/l)	Range if above LOC in Ci/L Min. / Max.	Identify for the following	Present at or Below LOC (in Ci/l)	Range if Above LOC in Ci/L Min. / Max.
AS-74	☐ ≤ 1.0 E-7	_____/_____	Sc-48	☐ ≤ 1.0 E-7	_____/_____
Be-7	☐ ≤ 1.0 E-7	_____/_____	Se-75	☐ ≤ 1.0 E-7	_____/_____
Ce-141	☐ ≤ 1.0 E-7	_____/_____	Na-22	☐ ≤ 5.0 E-8	_____/_____
Cs-134	☐ ≤ 1.0 E-8	_____/_____	Sr-85	☐ ≤ 1.0 E-7	_____/_____
Cs-137	☐ ≤ 1.0 E-8	_____/_____	Sr-89	☐ ≤ 1.0 E-7	_____/_____
Co-56	☐ ≤ 1.0 E-8	_____/_____	Sr-90	☐ ≤ 5.0 E-9	_____/_____
Co-57	☐ ≤ 1.0 E-7	_____/_____	Sn-113	☐ ≤ 1.0 E-7	_____/_____
Co-58	☐ ≤ 1.0 E-7	_____/_____	V-48	☐ ≤ 1.0 E-7	_____/_____
Co-60	☐ ≤ 2.0 E-8	_____/_____	Y-88	☐ ≤ 1.0 E-7	_____/_____
Eu-132	☐ ≤ 1.0 E-7	_____/_____	Zn-65	☐ ≤ 4.0 E-8	_____/_____
H-3	☐ ≤ 2.0 E-8	_____/_____	Am-241	☐ ≤ 1.0 E-7	_____/_____
I-133	☐ ≤ 5.0 E-8	_____/_____	Pu-238	☐ ≤ 1.0 E-7	_____/_____
Mn-52	☐ ≤ 1.0 E-7	_____/_____	Pu-239	☐ ≤ 1.0 E-7	_____/_____
Mn-54	☐ ≤ 1.0 E-7	_____/_____	U-234	☐ ≤ 1.0 E-7	_____/_____
Ra-226 + 228	☐ ≤ 5.0 E-10	_____/_____	U-235	☐ ≤ 1.0 E-9	_____/_____
Rb-83	☐ ≤ 1.0 E-7	_____/_____	U-238	☐ ≤ 1.0 E-9	_____/_____
Rb-84	☐ ≤ 5.0 E-8	_____/_____	Th-232	☐ ≤ 1.0 E-10	_____/_____
Sc-46	☐ ≤ 1.0 E-7	_____/_____			
Others:			**Others:**		
		_____/_____			_____/_____
		_____/_____			_____/_____
		_____/_____			_____/_____

Other Contaminants

Metal Contaminants	Present Below LOC (in ppm or mg/l)	Range if above LOC (in ppm or mg/l) Min. / Max.	Additional Contaminants	Min. / Max.
			Chemical Oxygen Demand (COD)	_____/_____ mg/l
Aluminum	☐ ≤ 50.0	_____/_____	Total Suspended Solids (TSS)	_____/_____ mg/l
Boron	☐ ≤ 50.0	_____/_____	Total Dissolved Solids (TDS)	_____/_____ mg/l
Cobalt	☐ ≤ 5.0	_____/_____	Percholorate	_____/_____ mg/l
Copper	☐ ≤ 10.0	_____/_____	Total Toxic Organics (TTO)	_____/_____ mg/l
Vanadium	☐ ≤ 1.0	_____/_____	☐ Total Nitrogen (only one entry needed)	_____/_____ mg/l
Zinc	☐ ≤ 100.0	_____/_____	☐ Total Nitrates	_____/_____ mg/l

Radioactive Contaminant Totals

Total Alpha _____ Ci/l
Total Beta _____ Ci/l
Total Gamma _____ Ci/l

For TA-55 Use Only

Wastewater will be discharged through one of the following:
☐ Acid Line ☐ Caustic Line* ☐ Industrial Waste Line
* pH must be greater than 8.0

Chemical Treatment for Boilers/Water Chillers: ☐ Yes ☐ No

Industrial Cleaner: ☐ Yes ☐ No Type: _____ Volume: _____ Unit: _____

Average daily volume when discharge occurs (*include waste volume plus rise water volume*): ☐ Gallons/day ☐ Liters/day

Maximum daily volume when discharge occurs: (*include waste volume plus rinse water volume*): ☐ Gallons/day ☐ Liters/day

Estimated number of days per year discharge will occur: _____

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-50/TA-21: _____ ☐ Gallons ☐ Liters

Attachment 3 – Wastewater Characteristics for RLWTP (TA-53)

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

Total Activity Range (in Ci/l):

Min. / Max. _____ Ci/l _____ Ci/l

Radionuclide Contaminants

Identify for the following:	Present at or Below LOC (in Ci/l)	≥ 1% of Total Activity (Yes)	Range if ≥ 1% of Total Activity or above Concentration Limit (in Ci/l) (and a half-life of 30 Days) Min. / Max.	Identify for the following:	Present at or Below LOC (in Ci/l)	≥ 1% of Total Activity (Yes)	Range if ≥ 1% of Total Activity or above Concentration Limit (in Ci/l) (and a half-life of 30 Days) Min. / Max.
Be-7	☐ ≤ 9.0 E–4	☐	_____/_____	Ta-173	☐ ≤ 2.7 E–4	☐	_____/_____
Co-56	☐ ≤ 8.8 E–6	☐	_____/_____	Ta-174	☐ ≤ 3.1 E–4	☐	_____/_____
Co-57	☐ ≤ 2.0 E–5	☐	_____/_____	Ta-175	☐ ≤ 3.6 E–4	☐	_____/_____
Co-58	☐ ≤ 3.5 E–5	☐	_____/_____	Ta-176	☐ ≤ 4.5 E–4	☐	_____/_____
Co-60	☐ ≤ 5.7 E–6	☐	_____/_____	Ta-177	☐ ≤ 4.7 E–4	☐	_____/_____
Gd-148	☐ ≤ 3.9 E–7	☐	_____/_____	Ta-179	☐ ≤ 2.8 E–4	☐	_____/_____
H-3	☐ ≤ 3.5 E–3	☐	_____/_____	Ta-182	☐ ≤ 1.5 E–4	☐	_____/_____
HF-172	☐ ≤ 9.1 E–5	☐	_____/_____	Tm-166	☐ ≤ 2.0 E–4	☐	_____/_____
Hf-173	☐ ≤ 3.3 E–4	☐	_____/_____	W-176	☐ ≤ 2.9 E–4	☐	_____/_____
HF-175	☐ ≤ 4.1 E–4	☐	_____/_____	W-177	☐ ≤ 3.3 E–4	☐	_____/_____
I-125	☐ ≤ 5.7 E–7	☐	_____/_____	W-178	☐ ≤ 5.6 E–4	☐	_____/_____
I-126	☐ ≤ 1.1 E–7	☐	_____/_____	W-181	☐ ≤ 1.6 E–3	☐	_____/_____
Lu-170	☐ ≤ 2.6 E–4	☐	_____/_____	W-185	☐ ≤ 4.4 E–3	☐	_____/_____
Lu-171	☐ ≤ 3.0 E–4	☐	_____/_____	W-187	☐ ≤ 9.0 E–3	☐	_____/_____
Lu-172	☐ ≤ 1.2 E–4	☐	_____/_____	Y-88	☐ ≤ 2.4 E–7	☐	_____/_____
Mn-54	☐ ≤ 4.2 E–5	☐	_____/_____	Yb-166	☐ ≤ 1.9 E–4	☐	_____/_____
Na-22	☐ ≤ 1.2 E–5	☐	_____/_____	Yb-169	☐ ≤ 2.7 E–4	☐	_____/_____
Rb-83	☐ ≤ 1.3 E–6	☐	_____/_____	Zn-65	☐ ≤ 1.5 E–6	☐	_____/_____
Rb-84	☐ ≤ 1.0 E–6	☐	_____/_____	**Others:**			
Sc-46	☐ ≤ 6.0 E–6	☐	_____/_____				_____/_____
Sc-75	☐ ≤ 3.4 E–7	☐	_____/_____				_____/_____
Sr-85	☐ ≤ 6.0 E–8	☐	_____/_____				_____/_____

Identify the Following:	Present (Yes)	≥ 1% of Total Activity (Yes)	Provide Range in Ci/l Min. / Max.	Identify	Present at or Below Concentration Limit (in Ci/l)	≥ 1% of Total Activity (Yes)	Provide Range in Ci/l Min. / Max.
Am-241	☐	☐	_____/_____	Total TRU	☐ ≤ 1.0 E–8	☐	_____/_____
Pu-238	☐	☐	_____/_____	**Other Contaminates**			
Pu-239	☐	☐	_____/_____				
U-234	☐	☐	_____/_____				
U-235	☐	☐	_____/_____	**Additional Contaminates**	**Present at or Below Concentration Level (in mg/l)**		**Provide Range in Ci/l**
Others:				Total Dissolved Solids (TDS)	☐ ≤ 1000		_____/_____
	☐	☐	_____/_____	Total Suspended Solids (TSS)	☐ ≤ 100		_____/_____
	☐	☐	_____/_____	Oils/Grease	☐ ≤ 10		_____/_____
	☐	☐	_____/_____	Surfactants/Detergents	☐ ≤ 10		_____/_____

Radioactive Contaminant Totals:

Discharge Location	Present at or Below Activity Level (in Ci/l)
Collection System	☐ ≤ 3.2 E –2
Tanker Truck	☐ ≤ 2.0 E –6*
Tuff Tank	☐ ≤ 3.2 E –2
55 Gallon Drum	☐ ≤ 3.2 E –2
Other	☐ ≤ 3.2 E –2

* or qualify as "limited quantity" per 40 CFR § 173.425

Temperature:

Discharge Temperature: ☐ °F ☐ °C

Surfactant/Detergent: ☐ Yes ☐ No
Brand Name: _____ Volume: _____ Unit: _____

Industrial cleaner: ☐ Yes ☐ No
Type: _____ Volume: _____ Unit: _____

Average daily volume when discharge will occurs:
_____ ☐ Gallons/day ☐ Liters/day

Maximum daily volume when discharge occurs:
_____ ☐ Gallons/day ☐ Liters/day

Estimated number of days per year discharge will occur:

Estimated total volume per year discharged to the Radioactive Liquid Waste Collection System at TA-53: _____ ☐ Gallons ☐ Liters

Attachment 5 – Additional Information for Nevada Test Site

General Waste Stream Information

1. Waste Category (*check if applicable*)	2. Estimated frequency of shipments per fiscal year
☐ Contains Accountable Nuclear Material	

Physical/Chemical Characterization

1. Describe the process knowledge information used for physical/chemical characterization of this waste. If characterization is being conducted at the item level, then characterization data shall be traceable at that level (e.g. individual sealed sources, bags or components characterized on an individual basis but packaged together.

   ☐ Mass balance from process inputs. Describe how process inputs are controlled and recorded.

   ☐ Inert debris characterized by inventory control. Check this box when the waste stream consists largely of inert debris items that are characterized by inventory control procedures and recorded on inventory sheets. Briefly list or describe inventory procedures.

   ☐ Physical/chemical characterization varies. Check this box when the characterization strategy varies from container to container. Describe below the strategy used to meet the acceptable knowledge requirements of P930-1, "LANL Waste Acceptance Criteria," Attachment 17, "Low-Level Waste for Disposal at the Nevada Test Site."

   ☐ Other. Describe.

2. Describe the sampling and analysis performed to characterize this waste stream. Data validation for waste characterized using sampling and analysis must be performed by WES-EDA personnel in accordance with approved procedures.

   ☐ No analysis performed. ☐ Field screening performed. Describe the frequency and type of field screening performed.

   ☐ Laboratory analysis performed. Describe the sample source and sampling frequency and methods. List the analytical methods used, including upper confidence limits and explanations of anomalies for all analytes analyzed. Attach representative analytical sample result summary and data validation summary. Complete and attach Table B-1. List procedure used for sampling and analysis.

3. Check all boxes below that describe the regulatory status of the waste stream.

   ☐ TSCA regulated PCB (40 CFR 761). Describe category of PCB (i.e. PCB waste, PCB bulk product waste, PCB remediation waste, PCB analytical waste, etc). Describe PCB source and concentration. If PCB concentration is > 50 ppm, waste is prohibited from disposal at NTS.

   ☐ Waste generated from cleanup activities conducted under CERCLA. ☐ Waste is not regulated under any of these regulations.

4. If the waste stream contains liquid, check all that apply.

   ☐ Containerized Liquid ☐ Absorbed Liquid ☐ Stabilized Liquid List procedures followed.

5. Check all that are components of the waste stream, and provide a description of how P930-1, "LANL Waste Acceptance Criteria," Attachment 17, "Low-Level Waste for Disposal at the Nevada Test Site" is met.

   ☐ Vegetation ☐ Particulates

6. If the chemical composition varies greatly from container to container, check this box and provide bounding values or ranges in section 5 of the WPF. Further evaluation will occur on the specific package paperwork as it is provided for highly variable streams.

Radiological Characterization

1. Describe the analysis and characterization methods used to determine the radionuclides in the waste. Check all that apply. Data validation for waste characterized using sampling and analysis must be performed by WES-EDA personnel in accordance with approved procedures.

☐ Radionuclide material accountability. Describe the accounting methods used to help establish the radionuclide inventory.

☐ Describe type and frequency of sampling and analysis. Complete and attach Table B-1. Attach data validation summary.

☐ Nondestructive assay. Describe type and frequency of assay performed.

☐ Field measurement instruments. Describe the type of instruments and how they are used to establish the radionuclide inventory.

☐ Scaling factors. Explain how the scaling factors were derived and how they are used.

☐ Computer models. Describe the computer model used and how it is used to establish the radionuclide inventory.

☐ Other. Describe method.

If several methods are checked above, describe how the methods are used together to establish the radiological inventory of the waste stream. For complex or highly variable waste streams, explain the strategy used to meet the acceptable knowledge requirements of the waste acceptance criteria.

If characterization is being conducted at the item level, then characterization data shall be traceable at that level (e.g. individual sealed sources, bags or components characterized on an individual basis but packaged together).

2. Estimated radiation dose of disposal package (mSv/hr):

Surface: _____ 30 cm: _____ One Meter: _____

3. Does waste contain enriched uranium (^{235}U wt% ∃ 0.90), ^{233}U, ^{239}Pu, ^{241}Pu, ^{242}mAm, ^{243}Cm, ^{245}Cm, ^{247}Cm, ^{249}Cf, ^{251}Cf? ☐ Yes ☐ No

If yes, check applicable boxes and answer questions for compliance with the criticality safety criteria of P930-1, "LANL Waste Acceptance Criteria," Attachment 17, "Low-Level Waste for Disposal at the Nevada Test Site."

a. ☐ Complete and attach Table E-3, ^{235}U FGE and ^{235}U Effective Enrichment, for each enrichment level or range.

b. ☐ Waste package contains 15 g or less of ^{235}U FGE. Specify controlling document.

c. ☐ Fissile material does not exceed 350 g of ^{235}U FGE per package nor does it exceed 2 g of ^{235}U FGE per kg of waste (mass of the package is not included in the mass of the waste) (graphite must not exceed 1% of the mass of the waste). Specify controlling document.

d. ☐ Waste complies with the conditions as specified in P930-1, "LANL Waste Acceptance Criteria," Attachment 17, "Low-Level Waste for Disposal at the Nevada Test Site" (Table 17-2). Specify controlling document.

e. ☐ Graphite exceeds 1% of the mass of the waste.

f. ☐ Waste complies with the conditions as specified in P930-1, "LANL Waste Acceptance Criteria," Attachment 17, "Low-Level Waste for Disposal at the Nevada Test Site" (Tables 17-2 and 17-5). Specify controlling document.

g. ☐ A waste specific nuclear criticality safety evaluation (NCSE) was performed to show compliance with P930-1, "LANL Waste Acceptance Criteria," Attachment 17, "Low-Level Waste for Disposal at the Nevada Test Site." Attach NCSE for review and specify controlling document.

Radiological Characterization

4. List the radionuclides that could be reportable in the waste stream.

☐ If the nuclides vary greatly from container to container, check this box and provide bounding values or ranges here. Further evaluation will occur on the specific package paperwork as it is provided for highly variable streams. Note: NTS requires that concentrations be entered in Bq/m^3.

Isotope	Concentration in Bq/m^3. Range and Activity Representative of Final Waste Form	Isotope	Concentration in Bq/m^3. Range and Activity Representative of Final Waste Form

5. List any alpha-emitting transuranium radionuclides with a half-life greater than 20 years, 241Pu, or 242Cm.

Transuranium Nuclide	Concentration (nCi/g). Range and Activity Representative of Final Waste Form	Transuranium Nuclide	Concentration (nCi/g). Range and Activity Representative of Final Waste Form

6. Are there any packages in this waste stream that exceed the PGE limits specified in P930-1, "LANL Waste Acceptance Criteria," Attachment 17, "Low-Level Waste for Disposal at the Nevada Test Site"? ☐ Yes ☐ No

Provide container type(s) quantity, and supporting PGE calculations.

Attachment 5 (continued)

Packaging

1. Packaging used. Check all applicable boxes and describe package size(s), type, and weight range.

- ☐ Drum
- ☐ Metal box
- ☐ Wood Box

Do the Metal or Wood boxes meet the 3,375 lb/ft2 strength test?
☐ Yes ☐ No ☐ N/A

- ☐ High integrity container
- ☐ Intermodal transport container
- ☐ Other container
- ☐ Bulk waste (supersack, burrito wraps, equipment, etc.).
- ☐ Vented; describe type of venting
- ☐ Sorbents; describe type and amount used.
- ☐ Radiologically stabilized in concrete or other stabilization agent; describe type and amount of material used and provide data to demonstrate waste meets stabilization criteria.

Descriptions from above:

2. Maximum container size:

3. Maximum container gross weight:

4. Describe any liners/protective coatings used to ensure that the container and waste are compatible.

5. Does each container meet each of the package criteria defined in P930-1, "LANL Waste Acceptance Criteria," Attachment 17, "Low-Level Waste for Disposal at the Nevada Test Site"?
☐ Yes ☐ No

6. List documentation that demonstrates compliance with P930-1, "LANL Waste Acceptance Criteria," Attachment 17, "Low-Level Waste for Disposal at the Nevada Test Site."

7. Reference any special handling procedures and ALARA documentation, if applicable.

Additional Information

1. Comments.
2. Exception/Deviation to P930-1, "LANL Waste Acceptance Criteria," Attachment 17, "Low-Level Waste for Disposal at the Nevada Test Site." Complete the "LANL Waste Acceptance Criteria Exception Form." a. Identify specific requirement for which an exception or deviation is desired. b. Provide reason an exception or deviation is needed. c. Describe any proposed alternative methods to meet the general intent of the requirement.
3. Attachments. List and number any attachments provided with this profile.

NTSWAC Table B-1
Analytical Results

Analyte	Statistical Mean	Upper Confidence Level	Analyte	Statistical Mean	Upper Confidence Level
TCLP Metals:			**TCLP Semivolatiles:**		
Arsenic			o-Cresol		
Barium			p-Cresol		
Cadmium			m-Cresol		
Chromium			Cresol		
Lead			Dinitrotoluene		
Mercury			Hexachlorobenzene		
Selenium			Hexachloro-1,3-butadiene		
Silver			Nitrobenzene		
TCLP Volatiles:			Pentachlorophenol		
Benzene			2,4,5-Trichlorophenol		
Carbon Tetrachloride			2,4,6-Trichlorophenol		
Chlorobenzene			Hexachloroethane		
Chloroform			**TCLP Pesticides and Herbicides:**		
1,4-Dichlorobenzene			Chlordane		
1,2-Dichloroethane			2,4-D		
Methyl ethyl ketone			Endrin		
Pyridine			Heptachlor and Hydroxide		
Tetrachloroethylene			Lindane		
Trichloroethylene			Methoxychlor		
Vinyl Chloride			Toxaphene		
Dichloroethylene			2,4,5-TP (Silvex)		

NTSWAC Table E-3
Calculation of ^{235}U Fissile Gram Equivalence and Effective ^{235}U Enrichment for LLW Packages

Nuclide (A)	High Activity Conc. (Bq/m3) (B)	Package Volume (m3) (C)	Activity (Bq) (D)	Specific Activity (Bq/g) (E)	Mass of Nuclide (g) (D/E=F)	235U FGE Factors (G)	235U FGE (F*G=H)	If FGE is > 1% of 235U Mass, then include (I)
^{233}U				3.6E+08		1.4E+00		
^{235}U				8.1E+04		1.0E+00		
^{239}Pu				2.3E+09		1.6E+00		
^{241}Pu				3.8E+12		3.5E+00		
^{242}mAm				3.6E+11		5.4E+01		
^{243}Cm				1.9E+12		7.8E+00		
^{245}Cm				6.4E+09		2.3E+01		
^{247}Cm				3.5E+06		7.8E-01		
^{249}Cf				1.5E+11		7.0E+01		
^{251}Cf				5.9E+10		1.42E+02		
Effective Enrichment $^{235}U = \frac{\text{Total } ^{235}U \text{ FGE}}{\text{Total U}}$							Total ^{235}U FGE =	

ENCLOSURE 5

User Manual for the Waste Disposal Request (WDR) Form, Rev. 0

Los Alamos NATIONAL LABORATORY	Waste and Environmental Services-Waste Acceptance WES-WA
Title:	**User Manual for the Waste Disposal Request (WDR) Form**
Document/Revision: **MAN-5003,R0**	Page 1 of 24

Authority	Name	Title/Org	Signature	Z#	Date
Approver:	Andrew Montoya	Software Project Leader	Signature on File	099848	12/9/08

☐ Unclassified	☐ Restricted Data	Authorized Derivative Classifier	
☐ Confidential	☐ Formerly Restricted Data	Signature on File	
☐ Secret	☐ National Security Information	Name: Larry Lamsa	Date: 12/11/08
☐ Unclassified Controlled Nuclear Information (UCNI)		Title: Environmental Professional IV	
		Derived From: -----	

HISTORY OF REVISIONS

Document Revision Number	Approval Date	Change Description
MAN-5003,R0	12/9/08	Original Issue. User Manual for the Waste Disposal Request Form.

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1 Introduction

This document is the User Manual for the Waste Disposal Request (WDR) form. A Non-Safety Category Level 3 project, the on-line WDR form is a front-end interface to the Chemical/Low Level (Chem/LL) database.

The on-line WDR form is used by the WMC and designated waste personnel to generate on-line Waste Disposal Requests and submit them electronically for review and approval for the following waste types:

- Non-Consolidated (LLW and MLLW)
- Consolidated (Chemical and Hazardous)
- Universal

The on-line WDRs implement a current hardcopy documentation requirement and provide a more efficient and less onerous process. Allowing for a one-time data entry and automating several areas of input or populating information from existing database tables.

1.1 Training Objectives

Instruction on the use of the Waste Disposal Request (WDR) form is a self-study course using this user manual. The user community is provided with an institutional wide help-line and one-on-one support as needed for successful implementation of these forms. Small group overviews are also available to the user community by contacting the help-line.

By the end of this self-study and on-line use with this user manual, the participant will demonstrate:

- Ability to log into the Waste Database Application and access the Waste Disposal Request (WDR) forms.
- Knowledge of specific waste item and WDR data requirements for each type of waste – Universal, Consolidated, and Non-Consolidated.
- Competency in entering and updating waste disposal request data, to include:
    - Creating Waste Disposal Requests
    - Searching for and selecting applicable Waste Items
    - Saving Waste Disposal Requests
    - Updating Waste Disposal Requests
    - Familiar with field movement
    - Responding to entry messages
- Previewing container surface radiation and radionuclide data.
- Previewing and printing a Waste Disposal Request.

- Submitting a Waste Disposal Request for review. (WMC Only)
- Select, preview, and print reports for waste disposal tracking.

1.2 Help Desk, Problem Reporting and Change Requests

1.2.1 Help Desk

For questions and assistance with the form contact the Help Desk at **665-2494** or email wastehelp@lanl.gov. Help Desk personnel are available during normal business hours and will handle calls in the order they are received.

1.2.2 Problem Reporting

If issues cannot be resolved by contacting the Help Desk, send a detailed description of the problem to the Systems Development Team – ta54dbdev@lanl.gov. In the subject line of the email provide the following – **Problem: WPF Charge Code Form**. Systems Support personnel will handle reports in the order they are received.

1.2.3 Change Requests

Request for changes or enhancements to the form can be sent to the Systems Development Team - ta54dbdev@lanl.gov. Provide a detailed description of the proposed change or enhancement and include a justification to support the request. In the subject line of the email provide the following – **Change: WPF Charge Code Form**. Requests are presented at the Change Control Board meeting for review and approval.

1.3 Responsibilities

Waste Management Coordinator (WMC)	• Serves as the primary point-of-contact for waste related issues • Works with the generator as needed prior to accepting the waste • Works with designated waste personnel on the generation and saving of WDRs. • Generates the on-line WDR and submits it electronically for review and approval • Ensures hardcopy documentation, if needed, in support of the WDR is submitted through inter-office mail or as an email attachment to the reviewers • Maintain an auditable file of waste management documentation
Designated Waste Personnel	• Works with the generator as needed prior to accepting the waste • Generates and saves the on-line WDR for the WMC. • Ensures hardcopy documentation, if needed, in support of the WDR is submitted to the WMC.

1.4 Acronyms and Definitions

Acronym	Definition
WDR	Waste Disposal Request
Chem/LL	Chemical/Low Level Waste Database
WMC	Waste Management Coordinator
GSS	Generator Support Services

2 Waste Item Identification and Disposal Request Overview

The Waste Generator initiates the waste item identification process using the Waste Acceptance Form or a similar tool and enters the information in the Waste Item Inventory (WII) form. The waste item identification and disposal request overview is shown in Figure 1.

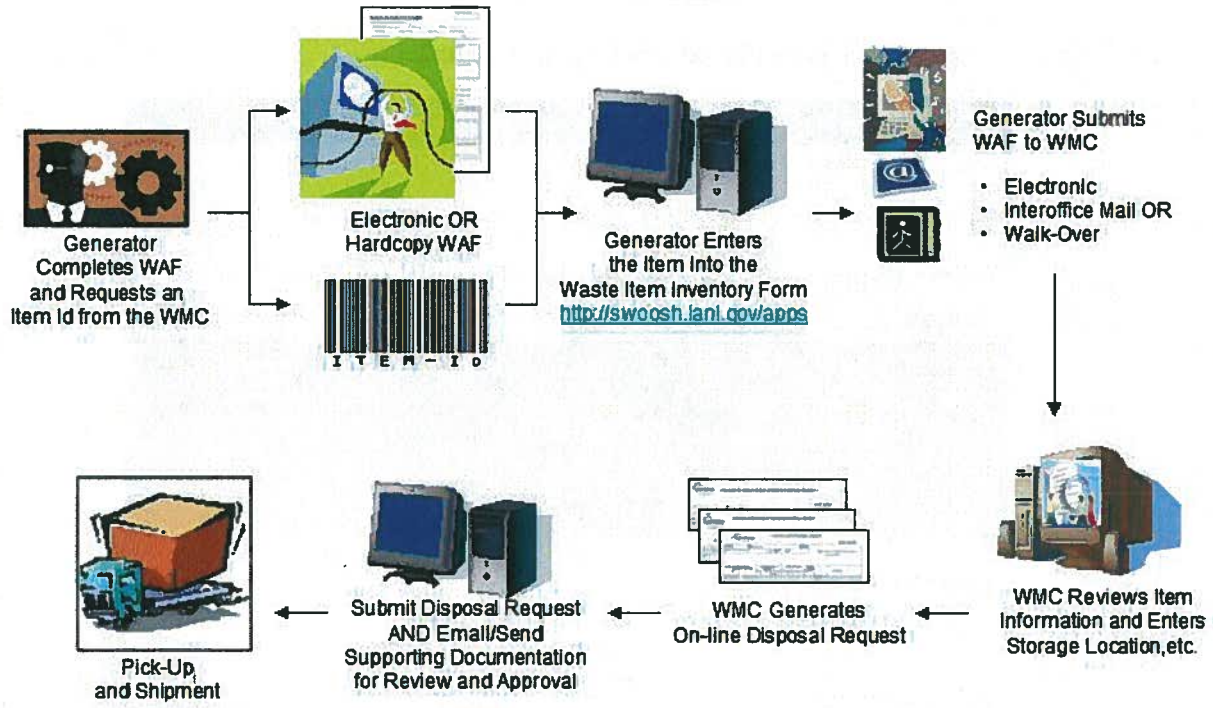


Figure 1 – Waste Identification and Disposal Request Overview

The Waste Generator (WG) initiates the WAF by providing information about the waste item – Generator Information, Applicable Cost String information, Generation Location, Weight and Volume of the waste items, Waste Profile Number, and other pertinent information that allows the Waste Management Coordinator (WMC) to properly identify and handle the waste item.

The WG contacts the WMC for an Item Id and enters the information on the WAF into the Waste Item Inventory form. The WG submits the WAF to the WMC or designated waste personnel for review. The WMC works with the generator as needed prior to accepting the waste.

When the WMC takes possession of the waste, the WII form is updated by the WMC with waste Storage Type, Storage Site, Received/Start Date, and Temporary Container Id and container attributes (if applicable).

The WMC generates the on-line WDR and submits it electronically for review and approval. If hardcopy documentation is needed in support of the WDR, it can be sent through inter-office mail or attached to an email.

3 Accessing the Forms

3.1 Waste Database Applications Link

To access the forms, go to the following URL:

https://swoosh.lanl.gov/apps

The LANL Weblogin page is displayed as shown in Figure 2.

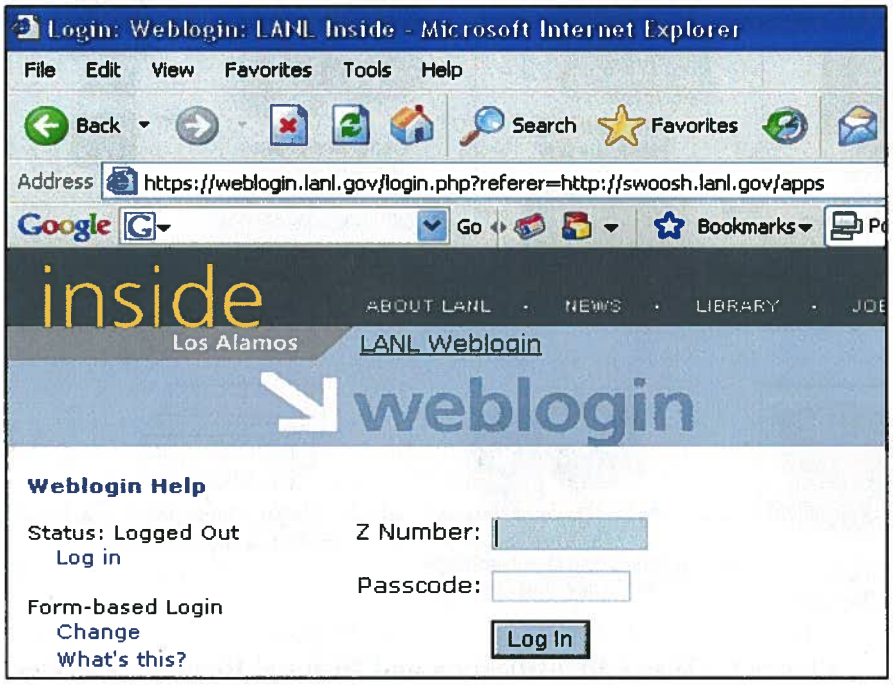


Figure 2 – LANL Weblogin Page

3.2 Logging into the System

Click in the Z Number field and type in your Z Number. Press tab or click in the Passcode field. Using your CRYPTOCard enter the passcode.

Press RETURN or click the Log In button.

Successful login displays the ORACLE splash screen as shown in Figure 3.

If you receive a login error, it may be due to one of the following:

- The Z Number may have been entered incorrectly.
- The Passcode may have been entered incorrectly.
- You do not have an account on the system.

Figure 3 – ORACLE Splash Screen

After the ORACLE splash screen, the Waste Management Database Applications screen is displayed as shown in Figure 4.

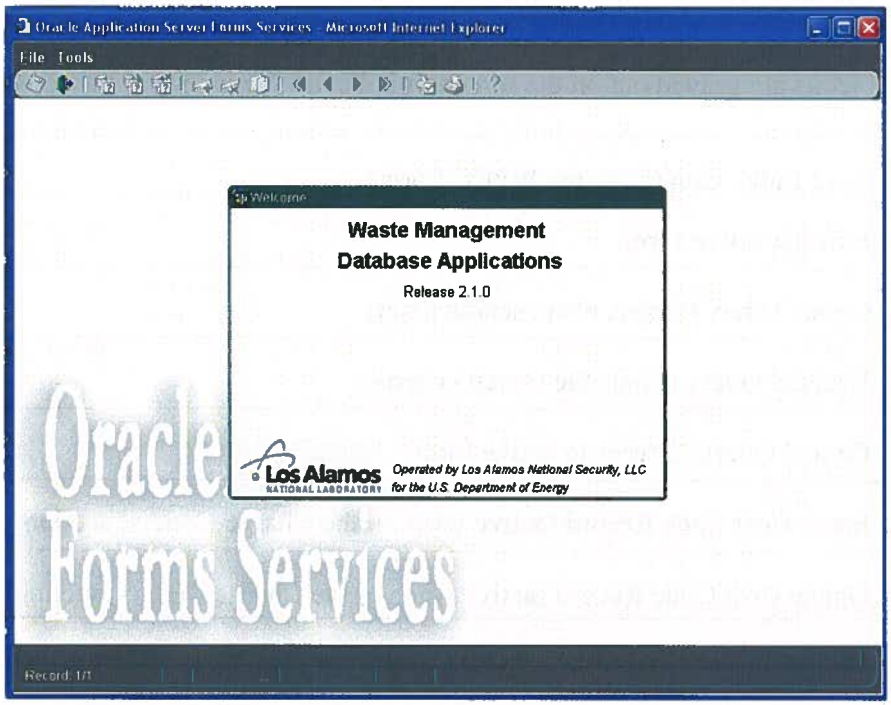


Figure 4 - Waste Management Database Applications screen

4 Menu and Tool Bar

4.1 Menu Options

Below are the menu options for the WII and WDR forms. Menu options not discussed are not relevant to the forms and are covered in other documents.

File	New
	• Enter Waste Disposal Requests
	  o Consolidated Waste
	  o NonConsolidated Waste
	  o Universal Waste
	Open
	• Update Waste Disposal Requests
	  o Consolidated Waste
	  o NonConsolidated Waste
	  o Universal Waste
	• Exit – Allows the user to exit the form.

4.2 Tool Bar Icons

Below are the tool bar options that may be available for various application forms in the Waste Database. If icons are grayed out on the screen, it indicates the icon is not used on the form.

	Save Entry Icon (Save the WPCC Form)
	Exit the active form
	Create Query (Opens blank search form)
	Execute Query (Finds the search criteria)
	Cancel Query (returns to active form)
	Insert Cost Code Record (active when in the Charge Code(s) section)
	Delete Cost Code Record (active when in the Charge Code(s) section)
	Duplicate Cost Code Record (active when in the Charge Code(s) section)
	First Record
	Previous Record

	Next Record
	Last Record
	Not Applicable to this application
	Print
	Help

4.3 Minimizing Search Criteria in Selection Boxes

If you are searching for a word or sub-set of a word you can use the Oracle wild-card: % (percent symbol). Samples of how to use the wild-card include:

Wild-Card T = text	**Description**
T%	Example: Nu% will return any words starting with "Nu".
%T	Example: %ion will return any words ending with "ion".
%T%	Example: %405% will return any numbers with "405" in the middle.

5 Waste Disposal Request Form

To access the Waste Disposal Request form, select the following menu options as shown in Figure 5.

File → New → Enter Waste Disposal Requests

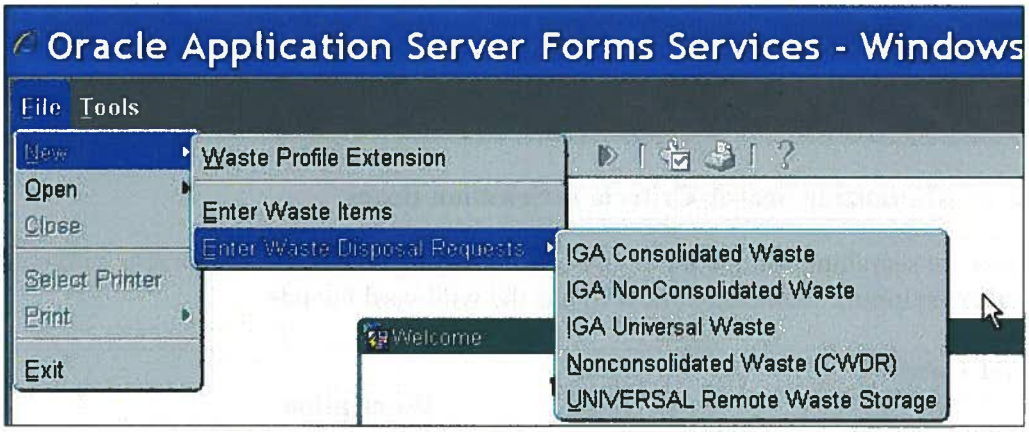


Figure 5 – Enter Waste Disposal Request Menu Options

There are three types of WDRs that can be created – Consolidated Waste, Non-Consolidated Waste, and Universal Waste. A single form is used for each of the waste types, with additional information for Non-Consolidated Waste – "Temporary Container (Temp Con) Id" query and sort option, the "Temp Con Id" in the item display list, and the "RAD" tab as shown in Figure 6. The function of the form is the same regardless of the waste type.

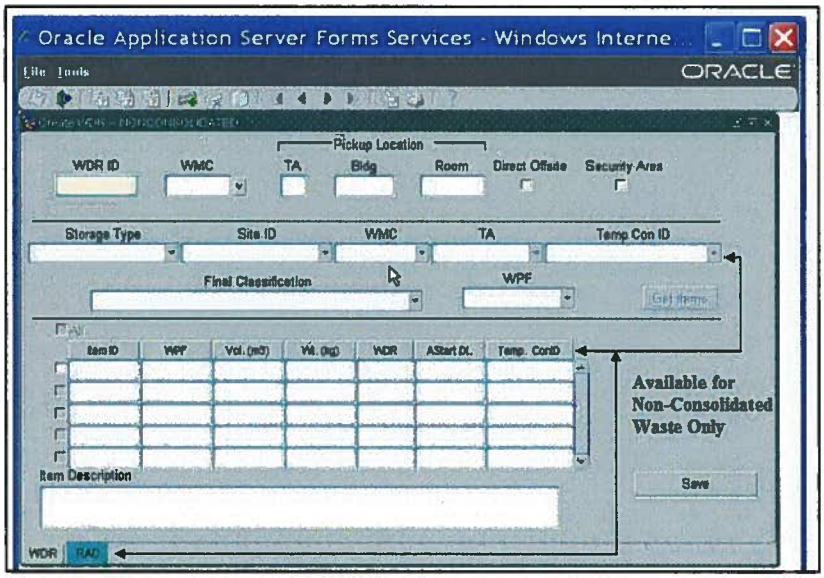


Figure 6 – Create Waste Disposal Request Form

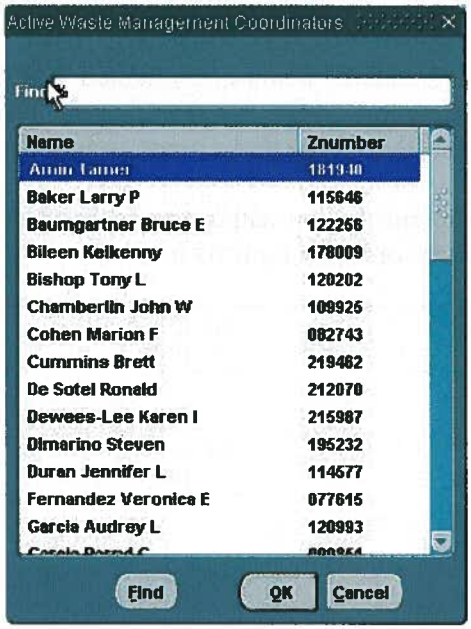
6 Creating and Saving a WDR

The WMC and Designated Waste Personnel are allowed to create and save on-line WDRs using the Waste Disposal Request (WDR) form. If you have questions or need assistance, refer to Section 1.2 for information on contacting the Help Line.

Select the following menu options to begin entering a WDR:

File → New → Enter Waste Disposal Requests → *Select the Waste Type*

Note: At a minimum, you must enter the WMC Z number and pick-up information to save a WDR.

Step	Entry Information
1.	The WDR ID is auto-populated from the Chem/LL Database. The WDR field cannot be edited.
2.	Enter the WMC Z-Number. If an invalid Z number, the system will prompt you. If you do not know the WMCs z number, click the icon to display a list of active WMCs as shown in Figure 7. Double click on the name and the Z number will be populated and the WMC name is displayed.  **Figure 7 – Select an Active WMC**

Step	Entry Information
3.	Enter the Pickup Location – TA, Building, and Room. The system will pad leading zeros for the TA and Building numbers. Example: TA-3 is converted to 03, Building 29 is converted to 0029.
4.	Select if the WDR is for Direct Offsite shipment.
5.	Select if the pickup location is in a Security Area.
6.	The Query/Sort Section is used to expedite the selection of waste items. The use of this section is unique to each site. By selecting options under the drop down boxes and clicking the Get Items button, the system will display the items that meet the criteria. By selecting multiple options, the system will look for items that meet the selected criteria, e.g., Z Number AND TA. Both must be true to retrieve items. **Figure 8 – Query/Sort Section** For example, you are creating a non-consolidated WDR for a LL waste box. The waste box was assigned a Temp Con ID. By selecting the Temp Con ID from the drop down box and clicking Get Items, only those items assigned the Temp Con ID will be displayed. By clicking the Get Items button without any search/sort criteria, all waste items will be displayed in numerical order by Item ID number.

Step	Entry Information
7.	

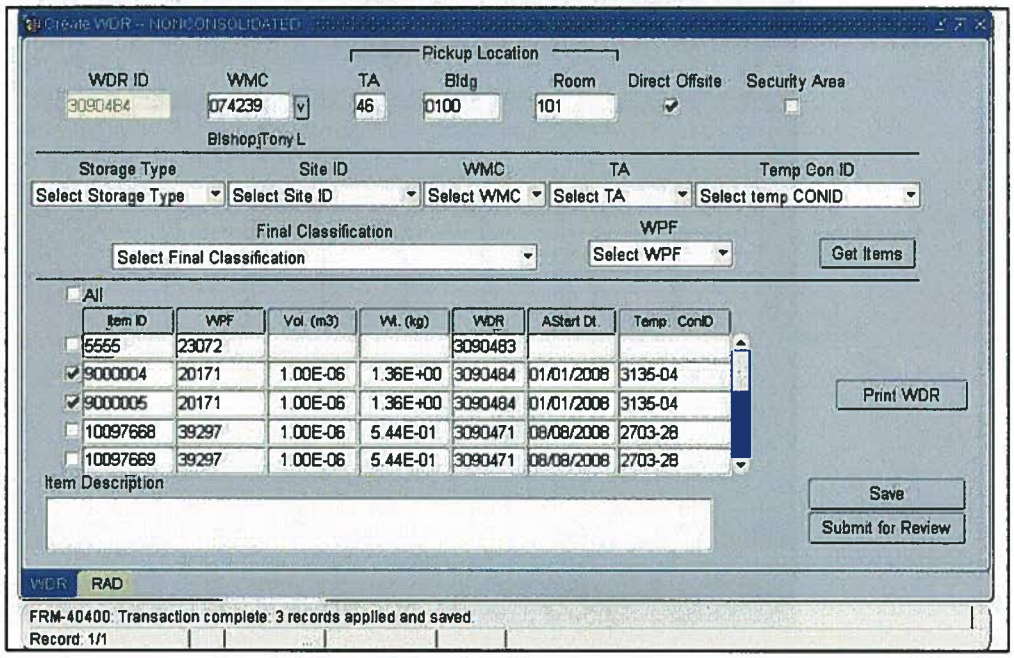


Figure 9 – Create WDR Form

The Item display list consists of fields from the Waste Item Inventory Form. The display fields include: Item ID, WPF, Vol. (m3), Wt. (kg), WDr, Astart Dt., Temp. ConID, and Item Description.

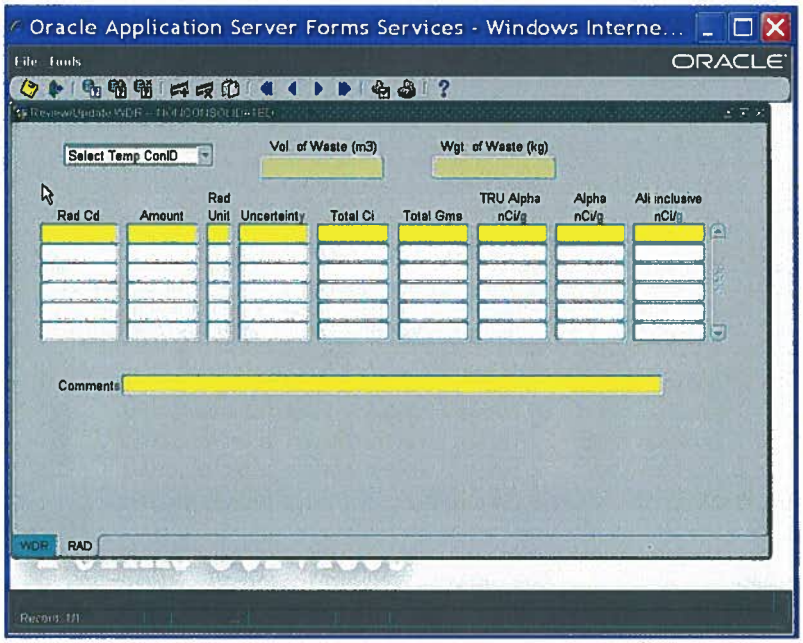
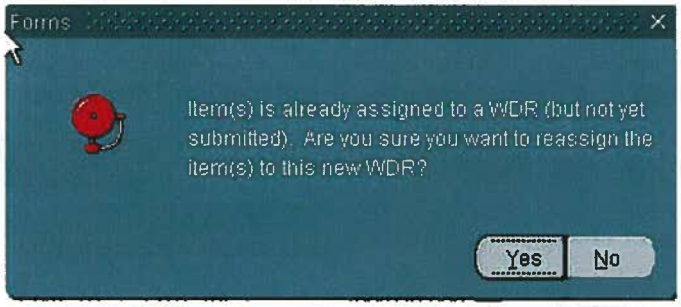
The WDR ID is generated when the waste items are displayed.

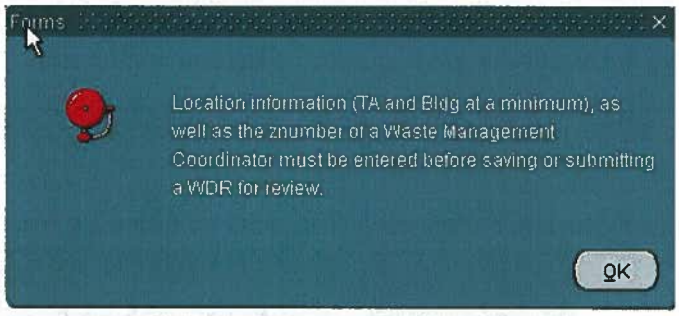
If the user is a WMC, the Submit for Review button [Submit for Review] is displayed.

When the user clicks the Save button, [Save] the Print WDR button is displayed. [Print WDR]

The RAD tab [RAD] displays the radiological information associated with a Non-Consolidate waste container. The radionlogical data cannot be edited and is available for preview only as displayed in Figure 10.

The All checkbox [☐ All] is used to select all the items in the displayed list. Uncheck the box to deselect all the items on the list.

Step	Entry Information
	 **Figure 10 - RAD Tab for Non-Consolidate Waste Containers**
8.	To select waste items click the check-box in front of the Item ID. If a waste item has already been assigned to a WDR, the message in Figure 11 is displayed.  **Figure 11 – Item Already Assigned Message** If the waste item was reassigned in error, deselect the check-box and the item will revert to the original WDR number.

9.	Once you have selected the items for this WDR, Click the Save button. Save A successful save displays at the bottom left side of the form: **FRM-#####: Transaction complete: # records applied and saved.** At a minimum you must have entered the WMC Z number, TA and Bldg. If any of the pick-up information is incomplete, the message in Figure 12 is displayed.  **Figure 12 – Minimum Required Entries Message**
10.	When the WDR has been saved, the Print WDR button is displayed. Print WDR The Print WDR button renders a PDF of the disposal request. The PDF can be printed, saved to your system for printing or emailing. The PDF report is in the format for the selected waste type.

7 Submitting a WDR

The WMC is allowed to submit online WDRs using the Waste Disposal Request (WDR) form. If you have questions or need assistance, refer to Section 1.2 for information on contacting the Help Line.

Step	Entry Information
1.	If you are a designated waste person who has created and saved the WDR, then preview and print the WDR for the WMC for verifying and sumbmittal.
2.	If you are a WMC creating the disposal request and wish to submit the WDR for Review and Approval then follow the instructions in **Step 3**. The Submit for Review button works the same in both the Create and Update mode of the form.

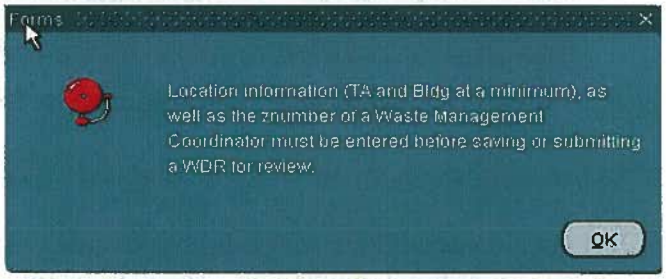


Figure 13 – Minimum Required Entries Message

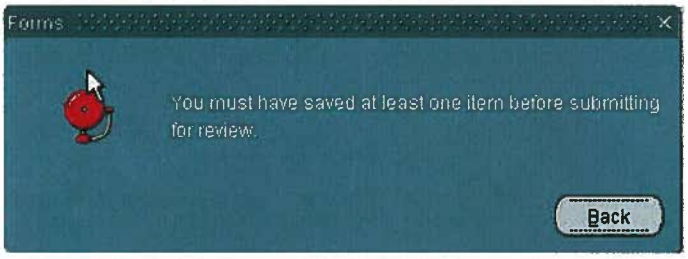


Figure 14 – Minimum Items Selected Message

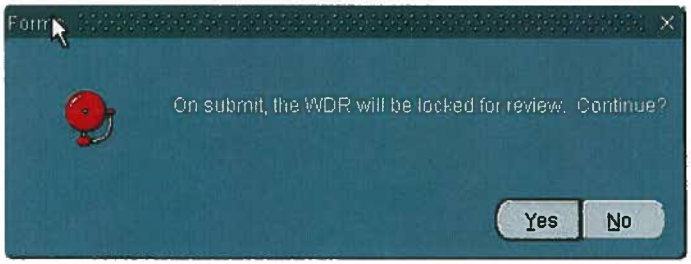


Figure 15 – Submittal Locked for Review Message

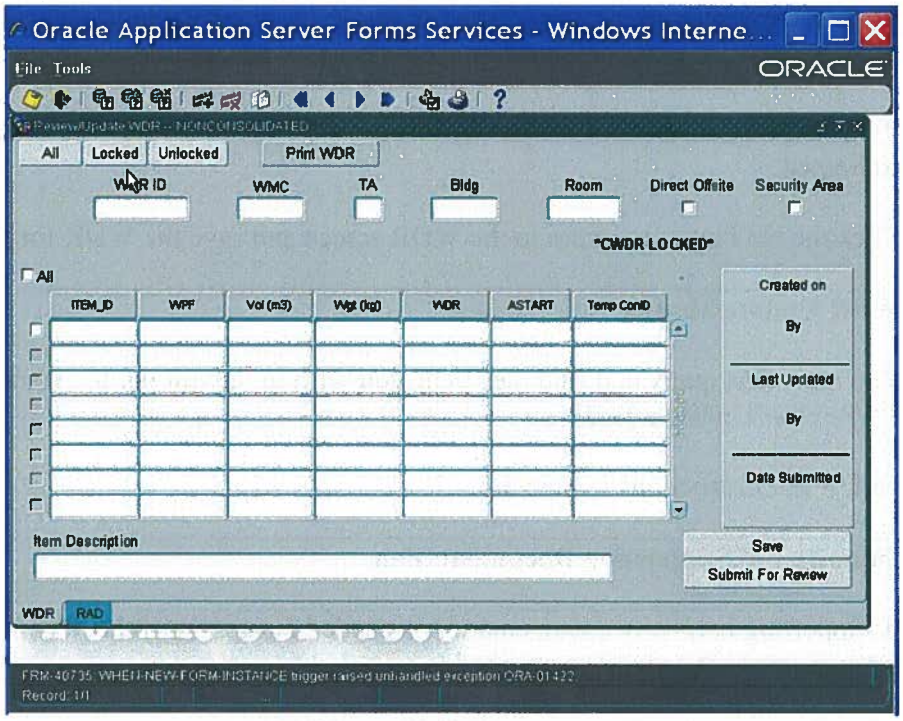
Step	Entry Information
3.	**Submit for Review and Approval** Submit for Review
3.1	**WDR Create Mode** Review the error messages in Figures 13 and 14 prior to continuing. Verify the completeness of the WDR prior to submittal. You may also print and save a copy of the WDR for generator waste record files. When the WDR is complete, click the Submit for Review button. The message in Figure 15 is displayed. Click the Yes button to continue the submittal. Once the WDR is submitted, it is locked from editing. If the WDR contains invalid Cost Codes, the system will display the items that have to be addressed. Click the No button to return to the WDR screen and save the WDR for future submittal.
3.2	**WDR Update Mode** You must first query and find the WDR you wish to Submit per the instructions in Section 8 – Review/Update a WDR. Follow the instructions in Step 3.1.
4.	**Submittal of Supporting Documentation** If supporting hardcopy documentation is needed in support of the WDR, it can be sent through inter-office mail or attached to an email to a reviewer. Mail Stop: J496 Supporting documentation may include, as appropriate; MSDS, lab notes, analytical results, photos, Rad-Tags, and any relevant documentation to support the acceptable knowledge of the waste. Reference the WDR number on all hardcopy attachments.

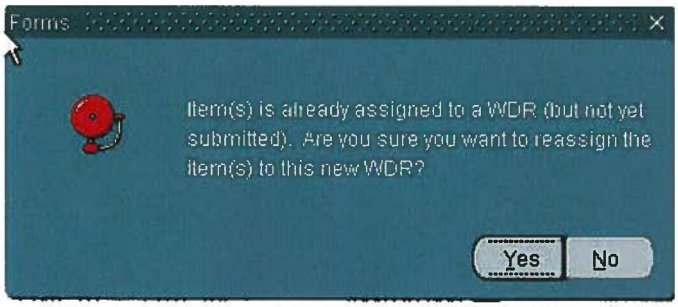
8 Reviewing and Updating a WDR

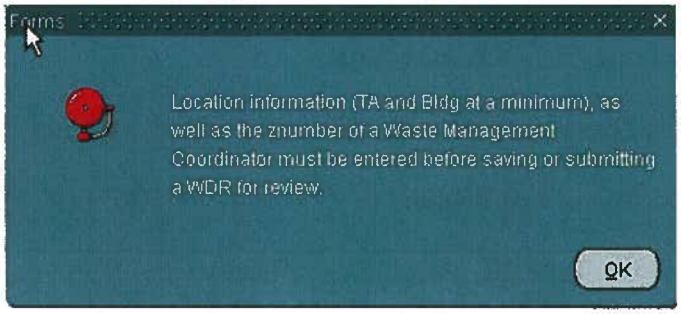
The WMC and Designated Waste Personnel are allowed to Review/Update and Save on-line WDRs. If you have questions or need assistance, refer to Section 1.2 for information on contacting the Help Line.

Select the following menu options to begin entering a WDR:

File → Open → Update Waste Disposal Requests → *Select the Waste Type*

Step	Entry Information
1.	The Review/Update WDR form functions the same for each waste type. The only difference is the addition of the Temp ConID and RAD tab for Non-Consolidated waste.  **Figure 15 – Review/Update WDR Form**
2.	Based on the waste type selection you made from the File-Open-Update option, the form only displays that waste type.

Step	Entry Information
3.	To view all WDRs for the selected waste type, click the ALL button. To view WDRs for the selected waste type that have been submitted for review, click the LOCKED button. To view WDRs for the selected waste type that have been saved but not submitted for review, click the UNLOCKED button. The WDR is displayed with its checked items sorted at the top of the list. Click the Right and Left triangles to view each of the WDRs.
4.	To find a particular WDR, click the Enter Query icon. Click in the WDR field and type in the WDR ID, click the Execute Query icon. The WDR is displayed with its checked items sorted at the top of the list. You can also search by any of the fields at the top of the form: WMC, TA, Bldg., or Room. To Cancel a query, click the Cancel Query icon.
5.	To select waste items click the check-box in front of the Item ID. If a waste item has already been assigned to a WDR, the message in Figure 11 is displayed.  **Figure 11 – Item Already Assigned Message** If the waste item was reassigned in error, deselect the check-box and the item will revert to the original WDR number.

6.	Once you have selected the items for this WDR, Click the Save button. A successful save displays at the bottom left side of the form: **FRM-#####: Transaction complete: # records applied and saved.** At a minimum you must have entered the WMC Z number, TA and Bldg. If any of the pick-up information is incomplete, the message in Figure 12 is displayed.  **Figure 12 – Minimum Required Entries Message**
7.	When the WDR has been saved, the Print WDR button is displayed. The Print WDR button renders a PDF of the disposal request. The PDF can be printed, saved to your system for printing or emailing. The PDF report is in the format for the selected waste type.
8.	To submit a WDR for review and approval, follow the instructions outlined in Section 7.

9 Reporting

Open a new Explorer window and type in the following URL to access the Apex Reports. You will need your CryptoCard to complete this exercise.

http://swoosh.lanl.gov/wastegen/pls/apex/f?p=GENAPP

The following web-delivered reports will be provided for generators and waste management coordinators:

- Facility Registered Waste Storage Site Report
- Waste Item Generation Report (by Generating Location, Waste Type, and Date)
- Generator's Active Waste Profile Forms (WPFs)
- Generator's Pending Waste Items
- Generator's Pending Waste Disposition Requests (WDRs)
- Generator's Waste Profile Forms that Need Cost Codes
- WMC's Active Waste Profile Forms (WPFs)
- WMC's Pending Waste Items
- WMC's Pending Waste Disposition Requests (WDRs)
- WMC's Waste Profile Forms that Needs Cost Codes

10 Correcting a Submitted WDR

When a WDR is submitted for review and approval it is "Locked" by the system from being updated.

10.1 Waste Management Coordinator (WMC)

To make corrections to a WDR that has been submitted, the WMC contacts the Generator Support Services (GSS) team and requests the WDR be released for correction and then resubmitted. The GSS website is available at

http://int.lanl.gov/orgs/wes/wa/team_gss.shtml

10.2 General Support Services (GSS) Team

When discrepancies are found on the WDR, the GSS reviewer releases the WDR and contacts the WMC with a request for correction. The WMC is responsible for re-submitting the corrected WDR.

11 Deleting of Canceling a Submitted WDR

The WMC is the only user allowed to request deletion of a WDR. If the WDR has not been submitted, the number can be reused by deselecting the items and selecting new items for the same WDR number.

11.1 Waste Management Coordinator (WMC)

To delete a WDR that has been submitted and is "locked" in the system, the WMC contacts the Generator Support Services (GSS) team and requests the WDR be released for reassignment of items to the same WDR number. The WMC may also request only the items be released and have the GSS team cancel the WDR number.

The GSS website is available at

http://int.lanl.gov/orgs/wes/wa/team_gss.shtml

11.2 General Support Services (GSS) Team

When cancelling or deleting a submitted "locked" WDR, the GSS reviewer is responsible for releasing the entire WDR for reuse or release the items for reassignment by the WMC and cancel the WDR number.

12 Record Requirements

Generator waste records and supporting documentation is to be handled according to approved records management requirements. Supporting documentation may include, as appropriate; Waste Acceptance Form, Waste Disposal Request, MSDS, lab notes, analytical results, photos, Rad-Tags, and any relevant documentation to support the acceptable knowledge of the waste.

ENCLOSURE 6

Waste Generator Guidance for Completing the TRU Waste Storage Record (TWSR), TL-002, Rev. 0

TL-002, Revision 0 **Effective Date: 6/4/08**

Waste Generator Guidance for Completing the TRU Waste Storage Record (TWSR)

Monica Noll	Signature on File	5/19/08
Document Owner	Signature	Date

1.0 INTRODUCTION

The Los Alamos National Laboratory (Laboratory) requires that transuranic (TRU) waste generators complete the TRU Waste Storage Record (TWSR) for the purpose of requesting the storage of TRU and TRU-mixed wastes at the Laboratory's TRU waste storage facility located at TA-54, Area G.

2.0 PURPOSE

This document provides guidance to transuranic waste generators on the completion of the TRU Waste Storage Record (Form 1971). A TWSR should be completed by the generator and approved by WES-WA personnel for each TRU waste container before the waste is transported to the TRU waste storage facility at TA-54, Area G.

3.0 SCOPE

This document is limited to guidance for the completion of the TWSR and applies to all TRU waste generators at the Laboratory.

4.0 TABLE OF CONTENTS

Section	Table of Contents	Page
1.0	Introduction	1
1.1	Overview	1
2.0	Purpose	1
3.0	Scope	1
4.0	Table of Contents	2
5.0	Acronyms	2
6.0	Guidance	2
6.1	Changes	2
6.2	Waste Package Serial Number	2
6.3	Information on the TWSR	2

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5.0 ACRONYMS AND DEFINITIONS

5.1 Definitions

See the glossary associated with P409, Waste Management.

5.2 Acronyms

See the acronyms associated with P409, Waste Management.

6.0 GUIDANCE

This form should be completed in blue or black ink. All entries should be legibly printed or typed.

6.1 Changes	Any changes should be made by drawing a single line through the incorrect entry and inserting the correct entry in the nearest open space. All changes should be initialed and dated.
6.2 Waste Package Serial Numbers	A bar code label provides a unique waste package serial number for each TWSR and its associated TRU waste package. The TWSR should have a small bar-coded serial number on the front. The number on the TWSR should match the serial number used on any supplemental forms provided by the waste generator.
6.3 Information on the TWSR	The following table summarizes the information that should be included when completing the TWSR.

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TABLE 1. TWSR GUIDANCE

Section	Title or Subsection	Recommended Action
1	**Generator's Pre-use Visual Inspection**	
1	Purchase Order #	Enter the purchase order number under which the waste container was procured.
1	Inspected Items	Inspect the container before use. Check the box for each item found to be free of damage. If any of these items are damaged, the container is unacceptable for packaging of TRU waste.
1	Signature, Printed Name, Date	Enter the signature and printed name of the person completing Section 1. Enter the date (MM/DD/YY) that this section was completed. If approved by WES-WA to use form FMU64-F272E (electronically generated form), the signature may be replaced by a Z number.
2	**Generator's Package Information**	
2	Group, Technical Area, Building	Enter information for the generating group, technical area, and building number.
2	Cost Center/ Program Code/ Cost Acct./ Work Pkg.	Enter a valid cost center, program code, cost account and work package.
2	Additional information	Use this space to provide additional information, if desired.
2	Container	Check one and only one box identifying the container type. If the "Other" box is checked, an approved WAC Exception Form (WEF) should accompany the TWSR and the "Additional Information" box should be used to provide a description of the container. The description should include the volume and the tare weight of the container.
2	Liner	Check one and only one box.

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Section	Title or Subsection	Recommended Action
2	Internal Shielding	If "none" is marked, no other entry should be made in this section. If a shielding type is entered, enter the "Thickness" in inches, in scientific notation. More than one shielding type may be entered. Each type should have an entry for thickness.
2	Filter Serial Number	Enter filter serial numbers for all drums and standard waste boxes (SWBs). A 55-gallon drum should have at least one filter and an SWB & pipe overpack (POC) should have at least two filters. When "other" is checked for container type, the number of filters needed is handled on a case-by-case basis. Contact WDP-TWPS for assistance.
2	Radionuclide Content	Nuclide. Enter the radionuclides present in the waste. At least one entry should be a transuranic radionuclide. "MFP" for "mixed fission products," "MAP" for "mixed activation products;" or material types are unacceptable entries for nuclides. Amount. Enter the activity in Curies or amount in grams of each radionuclide listed, in scientific notation. Uncertainty. Enter the uncertainty, in scientific notation, associated with the Curies or grams of each radionuclide present. Curies or grams. Enter C for Curies or M for grams.
2	Waste Profile Number	Enter a valid Waste Profile Number.
2	Gross Weight	Enter the gross weight in pounds using scientific notation. The maximum gross weight in containers should not exceed: 1) 4,000 lb for SWBs 2) 853 lb for 55-gallon drums 3) 853 lb for 85-gallon overpacks
2	Net Weight	Enter the net weight in pounds using scientific notation. The entry should be equal to the gross weight of the container minus the tare weight of the container.

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Section	Title or Subsection	Recommended Action
2	Shipping Category	Enter the 10-digit numeric shipping category.
2	LANL Waste Stream ID	Enter the alphanumeric LANL Waste Stream ID. Contact the Waste Certification Official – Central Characterization Project (WCO-CCP) for assistance.
2	TRUCON Code	Enter the four-digit alphanumeric TRUCON Code. Containers checked as "other" are handled on a case-by-case basis and may not require a TRUCON code. Contact WCO-CCP for assistance.
2	Date Closed	Enter the final date the container was closed (i.e., no additional waste added) in the form MM/DD/YY.
2	DP / Non-DP	Check one and only one box stating whether or not the waste was generated in support of Defense Programs. Note: There is currently no disposal path for non-DP waste. If waste is non-DP, documentation of Department of Energy (DOE) approval for generation of the waste should be attached to the TWSR.
2	Hazardous Materials	Name. Enter the name of any regulated hazardous constituent(s) as identified on the associated WPF. If no hazardous constituents are present (i.e., this is not TRU-mixed waste), enter "None." EPA Code. If hazardous constituents are present in the waste, enter the applicable EPA code(s) assigned to the WPF. Quantity. For each EPA Code listed, enter the associated quantity in grams using scientific notation if applicable. Accumulation Start Date. If hazardous constituents are present in the waste, enter the accumulation start date in the form MM/DD/YY.

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Section	Title or Subsection	Recommended Action
2	Printed Name, Signature, Date	**NOTE:** The person responsible for the completion of this section should be a valid Waste Generator. Enter the signature and printed name of the person completing Section 2. Enter the date (MM/DD/YY) this section was completed. **NOTE:** If approved by WES-WA to use form FMU64-F272E (electronically generated form), the signature may be replaced by a Z number.
3	**Generator Site Health Physics Information**	
3	Gamma Dose Rate (contact)	Enter the contact gamma dose rate in mrem/hr using scientific notation. Survey Date. Enter the date that the gamma survey was performed in the form MM/DD/YY.
		Survey Meter Model. Enter the gamma survey meter model. Property Number. Enter the gamma survey meter property number. Calibration Void Date. Enter the gamma survey meter calibration void date in the form MM/DD/YY. The survey is invalid if the calibration void date is on or before the survey date.
3	Neutron Dose Rate (contact)	Enter the contact neutron dose rate in mrem/hr using scientific notation. Survey Date. Enter the date the neutron survey was performed in the form MM/DD/YY. Survey Meter Model. Enter the neutron survey meter model. Property Number. Enter the neutron survey meter property number. Calibration Void Date. Enter the neutron survey meter calibration void date in the form MM/DD/YY. The survey is invalid if the calibration void date is on or before the survey date.

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Section	Title or Subsection	Recommended Action
3	Total Dose Rate (contact)	Enter the total contact dose rate in mrem/hr using scientific notation. Usually, the total dose rate equals the sum of the gamma and neutron dose rates, but entries greater than the sum may occur when rounding up. The maximum acceptable total surface dose rate is 2.0E+1 mrem/hr. If unable to meet this limit, contact WDP-TWPS
3	Total Dose Rate (1 meter)	Enter the total dose rate at one meter in mrem/hr using scientific notation.
3	Alpha Contamination	Enter the amount of alpha contamination present on the exterior of the waste package in dpm/100 cm^2 using scientific notation. This entry should not exceed 2.0E+1 dpm/100 cm^2.
3	Beta-Gamma Contamination	Enter the amount of beta-gamma contamination present on the exterior of the waste package in dpm/100 cm^2 using scientific notation. This entry should not exceed 9.9E+2 dpm/100 cm^2.
3	Printed Name, Date, Signature	Enter the signature and printed name of the person completing Section 3. Enter the date (MM/DD/YY) this section was completed. The person responsible for the completion of this section of the form should be a Radiological Control Technician. **NOTE:** If approved by WES-WA to use form FMU64-F272E (electronically generated form), the signature may be replaced by a Z number.

NOTE: The remaining portions of this form, Sections 4 through 10, are to be completed by WES-WA & WDP-TWPS: TRU WASTE PROJECT SUPPORT personnel only.

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TABLE 2. REPACKAGING FORM DATA ENTRY

This section describes how to create TRU database records for repackaging operations. The "TRU repack form" documents the repackaging of waste materials from the original container to new drums, maintaining the original drum identification number.

Section	Title or Subsection	Recommended Action
1	**Create new daughter drums or packages**	
Login	User authentication	Sign on to Waste Services Database Applications using your Z# and cryptocard passcode.
TRU Repack form	Menu option 'Enter Transuranic Repackaging Data' (create new daughter drums)	**NOTE:** The person responsible for the completion of this section should be a valid generator, otherwise an error will appear and access will be blocked. Select database option for creating a new, daughter drum. 1. Select 'File' from tool bar 2. Select 'New' from File drop down menu 3. Select 'Enter Transuranic Repackaging Data' 4. Enter the parent drum number The tab "Create Daughter Drum" will become active once you enter the parent drum number. Select this tab to create a TRU Repack form for the daughter drum. Verify that the database automatically fills in the following: • Daughter drum identifier. This unique number is automatically assigned by the database. • Generator's Z# • Group and TA-Bldg of the site where the waste was treated.

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		• Cost code for repackaging activity • Package code • Liner code • Waste profile number. The database ensures that this is an active TRU profile (not void or expired). • Date closed. The date in this field comes from the computer date at the time the form was created, but can be overwritten with another date if needed. • AK Report Number • LA Waste stream • Waste matrix • DP. Inherited from the parent drum, this indicates that the waste is from a defense program. Note: you must complete this form and save it before you can create another form for additional daughter drums. The database will give you an error if you attempt to create a daughter for a drum that's already been repackaged.
2.	**Print shorty labels**	
Print shorty labels		This label has only an id number and a barcode. As soon as you create the TWSR for the daughter drum, the database automatically prints six shorty labels. The format of the identifier is "LA000000#####" where the last numbers are the package id of the TWSR in the database. Apply the five shorty labels to the drum, in accordance with the LANL WAC Attachment 2.
3.	**Enter package data in database form**	
1. Package Informat	All remaining fields	Follow procedures for entering data into a TWSR form, and complete data entry for the daughter form.

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ion		The following fields are required: • Package code • Liner code • Gross weight • TRUCON Code • Shipping Category. Valid categories depend on combinations selected for the package code and TRUCON code. • Dose values
4.	**Check EPA assignments**	
3. Container information	EPA code screen	Select the EPA tab at the bottom of the screen to display the EPA screen. The database automatically copies all EPA codes from the parent drum to the daughter drum. This list must be reviewed and adjusted if needed. Adjust EPA entries to reflect actual contents of daughter drum. 1. To delete an entry, either pick the delete entry icon from the toolbar or use the shortcut key Control-Up arrow. 2. To add an entry, either pick the add entry icon from the toolbar or use the shortcut key Control-Down. • Enter EPA quantity (g) for new entries. • For example, you can select D008, Lead to add on the EPA screen. • When an entry is added, the database automatically enters the current date in the "Accumulation Start Date" on the TRU repack form.
5.	**Save TRU Repack database form**	
TRU Repack form	Save	Click the "Save" icon. This enters the daughter drum information in the

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		TWSR database.
6.	**Create additional daughter drums**	
		You can create as many daughter drums as you need. Upon saving the information for a daughter drum, the window will appear as before. The parent drum information will show in the top of the window, and you'll be able to click the button to create another drum. If a parent has multiple daughter drums, then buttons on the toolbar will become active and allow you to page left and right to the other daughter records.
7.	**Create empty drum for parent**	
		The final repackaging step is to let the system know that the parent drum was emptied. This is done by creating an empty drum for the parent. 1. If you have exited the form since creating the daughter drums, you'll need to re-enter the parent identifier to bring up the information for the drum. If you haven't exited the form, the parent drum identifier will still be displayed.. 2. Press the button "Create Empty Package." This creates a new TWSR for the empty parent drum. 3. Confirm the generator's Z by navigating through the field with the tab key, enter key or mouse 4. Enter the shipping category 5. Enter dose information 6. Press the 'Save' icon in the toolbar. 7. Exit the repackaging module by clicking on the exit icon or selecting File and Exit. NOTES: You can only create an empty drum if a daughter drum exists.

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		Once the empty drum is created and saved, further changes are not allowed to the empty or the daughter using this module. When an empty drum is created, this indicates to the database that the parent drum has been repackaged. Now, if you do a regular query on the parent id, you'll see that the section 'Repackaged Into Packages' will have a checkmark and will list the daughter drums and the empty drum The final steps prior to shipment are approval from Generator Support Services, preparation of the manifest, and printing the All-in-One Label.

7.0 ATTACHMENTS AND APPENDICES

None

8.0 RECORDS

Transmit final waste records generated to the Records Processing Facility as required by Laboratory Records Management ISD 1020-1.0, Document Control and Records Management Policy, IPP1020.0, and the Environmental Program Record Transmittal and Retrieval Process Procedure EP-DIR-SOP-4004, R1.
http://int.lanl.gov/environment/all/docs/qa/ep_qa/EP-DIR-SOP-4004.pdf

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ENCLOSURE 7

TRU Waste Storage Record, Form 1971 (4/08)

Los Alamos NATIONAL LABORATORY EST. 1943

TRU Waste Storage Record

Waste Package Serial Number

1. Generator's Pre-Use Visual Inspection

Purchase Order #	Inspected Items		
This container has been visually inspected according to approved procedures and has been found to be free of damage that would make it unsuitable for TRU waste packaging.	☐ Ring, Bolt, and Nut	☐ Chime	☐ Dents
	☐ Lid and Gasket	☐ Gouges	☐ Paint

Printed Name	Signature	Date

2. Generator's Package Information

Group	Technical Area	Building	Cost Center	Program Code	Cost Account	Work Package

Additional Information

☐ DP ☐ Non-DP If Non-DP waste, attach DOE approval documentation.

Radionuclide Content

Nuclide	Amount	Uncertainty	C=Curie M=Gram

Container	Liner		
☐ Steel Drum (55 gal.)	☐ None		
☐ Pipe Overpack Type:	☐ 90 mil liner		
☐ Steel Drum (85 gal. Overpack)	☐ 125 mil liner		
☐ Standard Waste Box	☐ Fiberboard liner		
☐ Standard Waste Box Overpack	**Internal Shielding**		
☐ RH Canister	☐ None		
☐ Other (Call TWCO)	Type	Thickness (in.)	

Filter Serial No.			
	01		
	02		

Hazardous Materials

Name	EPA Code	Quantity (g)

Waste Profile Number	
Gross Weight (lb.)	
Net Weight (lb.)	
Shipping Category	
LANL Waste Stream ID	
TRUCON Code	

Date Closed (MM/DD/YY):	Accumulation Start Date (MM/DD/YY):

The data in this section were collected, and waste described herein was packaged and labeled according to approved procedures.

Printed Name	Signature	Date

3. Generator Site Health Physics Information

	Survey Date	Survey Meter Model	Property Number	Calibration Void Date
Gamma Dose Rate (mrem/h) (contact)				
Neutron Dose Rate (mrem/h) (contact)				
Total Dose Rate (mrem/h) (contact)				
Total Dose Rate (mrem/h) (1 meter)				
Alpha Contamination (dpm/100cm^2)				
Beta-Gamma Cont. (dpm/100cm^2)				

The data in this section were collected according to approved procedures.

Printed Name	Date

Signature

4. TRU Waste Management Review/Authorization

The data package for this waste has been reviewed. Based on the information provided, this waste meets the WAC requirements for storage at TA-54.	Printed Name	Date
	Signature	

5. Preload Visual Inspection

This waste package was visually inspected prior to transport according to approved procedures. It meets WAC packaging and labeling requirements and is free from obvious damage and defects	Printed Name	Date
	Signature	

6. Receiving Site Health Physics Information

Gamma Dose Rate (mrem/h) (contact)	Survey Date	Survey Meter Model	Property Number	Calibration Void Date
Neutron Dose Rate (mrem/h) (contact)	Survey Date	Survey Meter Model	Property Number	Calibration Void Date
Total Dose Rate (mrem/h) (contact)	*The data in this section were collected according to approved procedures.*			
Total Dose Rate (mrem/h) (1 meter)				
Alpha Contamination (dpm/100cm^2)	Printed Name			
Beta-Gamma Cont. (dpm/100cm^2)	Signature			Date

7. Storage Site Information

Received By (Initials)	Date Received	**Original Storage Data**		
This waste package was visually inspected and found to be properly labeled and in good condition. It was accepted and inspected according to approved procedures.		Building Number	Layer	Row Number
		Column Number	Date Stacked (MM/DD/YY)	
Printed Name	Date	Printed Name		Date
Signature		Signature		

8. Waste Acceptance Office

Initials/Date	WE Description

NCR Number	Initials/Date	NCR Description

Los Alamos
NATIONAL LABORATORY
EST. 1943

Environmental Protection Division
Water Quality & RCRA Group (ENV-RCRA)
P.O. Box 1663, Mail Stop K490
Los Alamos, New Mexico 87545
(505) 667-0666/FAX: (505) 667-5224

Date: August 19, 2009
Refer To: ENV-RCRA-09-150
LA-UR: 09-05158

Mr. James Bearzi, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

Dear Mr. Bearzi:

SUBJECT: TRANSMITTAL OF TRANSURANIC WASTE MANAGEMENT DOCUMENTS, LOS ALAMOS NATIONAL LABORATORY (LANL), EPA NO. NM0890010515

The purpose of this letter is to transmit the enclosed documents discussed in the permit condition meeting of August 18, 2009 at your office. They are related to the applicability of the venting condition in Section 2.8.1 of the second revised draft hazardous waste facility permit released for public comment on July 6, 2009. A response to the second set of questions asked by Don Hancock of the Southwest Research and Information Center on August 7, 2009 is included. The documents also include a copy of the safety analysis addendum for unvented transuranic waste drums stored at Area G, the approval of the addendum, and the waste exception form for the LANL waste acceptance criteria as requested in the previous meeting associated with this issue.

The documents include:

- Enclosure 1: LANL Response to Questions Submitted on August 7, 2009 by Don Hancock
- Enclosure 2: Storage and Remote Drum Venting of Unvented Transuranic Waste Drums, Safety Basis Addendum No. 1, Rev 0 to the TA-54, Area G Documented Safety Analysis, Dec. 2007
- Enclosure 3: Approval of Safety Basis Addendum No. 1, Rev. 0
- Enclosure 4: Waste Acceptance Criteria Exception Form, Form 1973, May 2008

This submittal does not include electronic copies of Enclosures 2, 3, and 4 as these were sent by e-mail to the meeting participants and your office on August 13, 2009. Enclosure 1 will also be sent to the meeting participants in conjunction with this letter.

August 19, 2009

If you have questions regarding this submittal, please contact Jack Ellvinger at (505) 667-0633 or Gene Turner at (505) 667-5794.

Sincerely,

Anthony R. Grieggs
Group Leader
Water Quality & RCRA Group (ENV-RCRA)

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LANL RESPONSE TO QUESTIONS SUBMITTED ON AUGUST 7, 2009,
BY DON HANCOCK

AUGUST 17, 2009

1. What types and numbers of exceptions have been give through Form 1973 (or similar procedures if there was a predecessor form) over the past ten years?

   A total of 66 WAC exception requests have been approved for mixed waste over the past 11 years. None of the approved WAC exceptions were from requirements of the LANL Hazardous Waste Facility Permit or RCRA requirements. Most of the WAC exception requests pertained to the Waste Disposal Request timelines, which are more restrictive than RCRA to allow more time to manage waste within permit requirements at TA-54. (For example, the WAC requires a disposal request for mixed TRU from a <90 day storage area be submitted before day 60 and MLLW from a <90 day storage area be submitted before day 45. The WAC requires that a disposal request for MLLW stored in a permitted storage area be submitted within 6 months before exceeding the storage limit at the permitted storage area.)

   Other exceptions were requested for WAC requirements such as container size (oversized boxes for TRU or greater than 55-gallon drums for MLLW, for example), amounts of tritium, that flammable gases have an insignificant radiological component, liquids and solids not be packaged together in one container, and PC boards not be commingled with other debris.

2. How are the 21 unvented TRU drums inspected, including those that have been overpacked? (Response to questions, July 23, 2009, #1)

   There are a variety of inspections that are conducted on unvented drums. The frequency of the inspections vary from daily to weekly to when work is to occur in the unvented drum storage area or unvented drums are to be moved.

   There is a pre-operational inspection that is conducted by the dome operator each day to check the posting of the requirements and standoff distances for the unvented containers. There are daily facility rounds with inspections related to the DSA Technical Safety Requirements (TSRs) for storage and distance between drums. If work is to be conducted in the dome that day, there are inspections for RCRA labeling, container integrity, and general RCRA compliance. Routine RCRA drum inspections are conducted weekly if no work occurs within the dome. The RCRA inspections include checking the surface on which drums are stored for any indications of leakage, checking that the lid is securely in place, appropriate labels are in place, checking for incompatibility of drums, and inspecting drums for structural integrity, leakage, corrosion, or damage that may impact integrity. Drum spacing and drum stacking are also checked. All inspections are documented on an inspection record form.

A specific procedure is also in place for unvented TRU waste container handling and storage that contains detailed instructions for discovery of an unvented TRU waste drum, the transfer of an unvented container to storage, the movement of drums within the unvented TRU waste container storage area, operations involving individual unvented drums, and the transfer of unvented drums between domes. These include data sheets to document whether the inspection against specific requirements are satisfactory or unsatisfactory.

3. For MLLW containers that are vented and remain vented while managed as MLLW, what happens to the vents when they are disposed? (Response to questions, July 23, 2009, #2)

   The MLLW is removed from the vented containers for treatment at a commercial Treatment/Storage/Disposal (TSD) facility. The empty containers with the vents are characterized and managed appropriately based on the results of the characterization (either as MLLW or LLW) and they would be disposed at either the Nevada Test Site or a licensed low-level waste facility based on the characterization results for radioactive constituents.

4. Do you have proposed language or at least a conceptual framework as to how LANL would like to revise the last sentence in draft permit section 2.8.1?

   Proposed language was discussed at the meeting on August 18, 2009, and will be provided with LANL comments on the draft permit.

5. Why does the LANL WAC (LA-UR-09-04682) not include mixed waste sealed sources? Is there a WAC for such sealed sources?

   The LANL Hazardous Waste Facility Permit does not currently allow LANL to receive off-site hazardous waste except for treated residues from waste that LANL has shipped to a TSD for treatment. LANL does not transport mixed sealed sources to the LANL site. There is not currently a LANL WAC for such sealed sources. If the LANL permit renewal is issued to allow receipt of mixed sealed sources (as per the July 7 draft), then LANL will modify the LANL WAC to address acceptance of mixed waste sealed sources.

Los Alamos
NATIONAL LABORATORY
Environmental and Waste Management Operations
Mail Stop J910, Los Alamos, NM 87545

Storage and Remote Drum Venting of Unvented TRU Waste Drums

SAFETY BASIS ADDENDUM No. 1, Rev. 0

To the Technical Area 54, Area G Documented Safety Analysis

Authorizing Signatures:

Area G Engineering Manager	**Signature**	**Date**
Steve Clemmons		12/13/07

Safety Basis Division – Deputy Division Leader	**Signature**	**Date**
Derek Gordon		12-12-7

Environmental Waste Management Facility Operations Director	**Signature**	**Date**
Dan Cox	Daniel R Cox	12/13/07

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1.0 INTRODUCTION

This hazards and accident analysis supports Los Alamos National Laboratory's request for an addendum to the existing TA-54 Area G Safety Basis to allow remote venting activities to be performed, and to allow for the presence of unvented transuranic (TRU) waste drums that are identified to be in need of remote venting. This analysis includes a description of the staging/storage of unvented TRU waste drums and the remote venting activities, an identification of the associated hazards, a what-if analysis, a hazards analysis, and an accident analysis; all of which form the basis for the identification of a control set.

2.0 DESCRIPTION OF REMOTE VENTING AND UNVENTED DRUM STORAGE AT AREA G

The procurement requirements of DOT Type 7A Transuranic (TRU) waste containers ensure that the waste containers can perform their functional requirements specific to container integrity and contamination control. A vulnerability of the TRU WASTE CONTAINERS at Area G is that a small percentage (~6%) of the total number of TRU WASTE CONTAINERS at Area G are legacy containers that do not have the DOT Type 7A pedigree and do not completely fulfill the functional requirements, such as providing a vent pathway to prevent a build-up of flammable gas.

Unvented TRU Waste Containers

It is possible that the radiolytic decomposition of organic constituents; water/reactive metal reactions, and volatile components in the waste, may result in the over-pressurization of a drum that is not vented. The drums that do not contain vents are of concern because they are in a sealed condition. For TRU waste in these containers, the generation of hydrogen from the radiological decomposition of combustible waste could be significant enough that a flammable gas mixture within the headspace of the drum may be created. If the unvented drum is mishandled, and a spark is produced, a drum deflagration may occur.

Based on previous studies (Larranaga and Volz, 1998), pressurized, open-top, 55-gal. steel drums may exhibit the following characteristics when pressurized:

- Bulges occur only at the top and bottom ends of the drums.
- Audible pinging is noticeable from the drums between 15 and 20 psig.
- The drums' body seams (top to bottom) experience no visible distortion or apparent weakening.
- The drums appear to vent immediately adjacent to the nut and bolt fastener on the ring.
- 100% of the drums tested self-vent at pressures at or below 32 psig.

It is important to note that a distorted drum top or bottom only indicates that the drum has been pressurized at one time, and may or may not be pressurized at the time of inspection. Based on test results of Larranga and Volz, minor deformation of a drum lid (which may or may not be visible to the naked eye) could indicate that the drum contains pressure in excess of 5 psi. A drum lid distortion meter has been developed by HAZMAT that can detect a 1.5 cm deformation of a drum lid. This distortion meter is used as a "Go/No-go" indicator for remote venting of drums which show indication of being pressurized.

There are other (non-drum) TRU waste containers at Area G which do not have a vent. They are considered to be robust enough to contain contamination. However, these containers either do not have the capability of providing enough of a seal to contain any hydrogen, or they are so robust that they would be able to withstand the effects of a deflagration. A brief description of these containers is as follows:

Sealand Containers (Cargo Containers): These containers are an all metal construction with a door at either end. The doors are secure with two knuckle levers per door. The gasket material in the door frame helps reduce the potential for moisture to accumulate inside (such as from rain). Even with the door gaskets in place, the containers are not considered to be air tight, although they are tight enough to contain the larger items within. The containers are large enough, and enough air leakage exists, that appreciable hydrogen accumulation is unlikely.

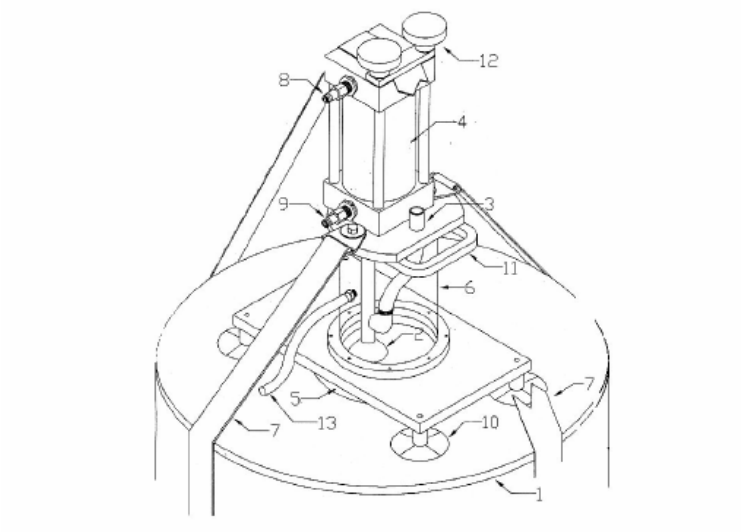
Metal Boxes: Since 1995-96 generators have been prohibited from sending oversized TRU waste in wooden boxes. As a result, metal boxes slightly larger then the waste item have been used. These various sized metal boxes are typically constructed with a single door either at the top, side or bottom. The door is secured with a series of bolts along the edge. The gasket material in the frame helps reduce the potential for moisture to accumulate inside. Similar to the Sealand Containers, these metal boxes are not considered to be air tight but are tight enough to contain contamination. The contents of these containers are largely metal components that do not decompose to produce hydrogen. Plastic wrapping is included as part of the packing procedures, but it typically makes up an extremely small fraction of the contents and would likely not produce enough hydrogen to reach appreciable concentrations.

Corrugated Metal Boxes: These TRU waste containers were generated in the mid-1980s. The design of these boxes was previously considered an approved Type-A construction - these containers are considered the predecessor design of the current SWBs, and are also considered the first approved-WIPP containers. The containers are mainly filled with metal waste from the size-reduction of large metal plate waste items, such as gloveboxes. The sides of the boxes are of welded construction. After the waste was loaded into the containers, the lid was welded to the box. As with the current design of the standard waste boxes (SWBs), these containers are considered to be robust enough, so that the container integrity would be maintained, even if a deflagration occurred. The probability of a deflagration occurring in these containers is considered very low, because the waste matrix is all metal, though the metal plates may have been wrapped in plastic.

Spheres: Solid metal spheres designed with multiple ports to allow for explosive testing. Because the spheres were specifically designed to withhold an explosion, they are considered robust enough to withstand the effects of a deflagration.

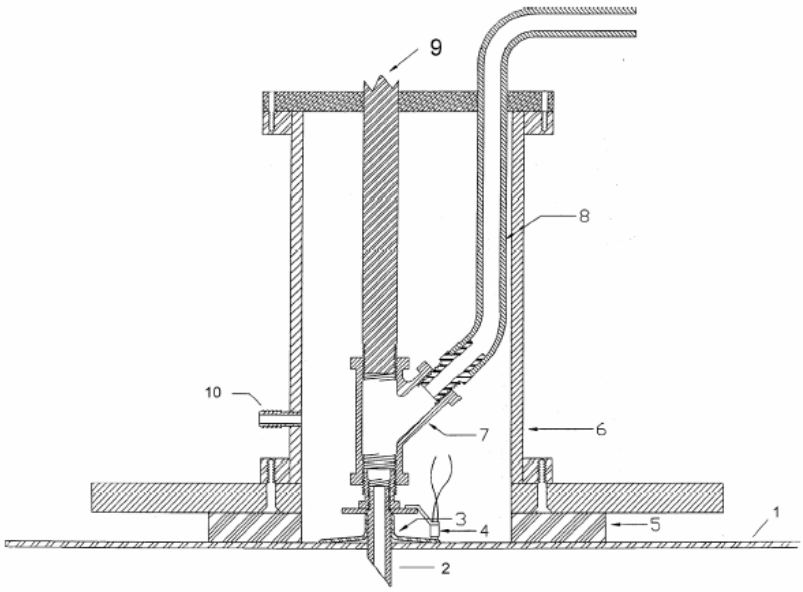
Remote Venting Device for Unvented Drums of Concern

In order to relieve the drum overpressure and provide protection for personnel while venting, a remote venting device (RVD) has been developed. This device allows personnel to vent and sample the gas space of the drum from a safe distance. Figure A-1 depicts a typical RVD on a drum. Note that the RVD may be placed on the top, the bottom or the side of a drum. Figure A-2 depicts a typical cut-away of an RVD, highlighting its salient design features. As shown in Figure A-2, the RVD is installed to the top of the drum using straps. If the RVD is to be installed on the side, these straps are relocated to the sides of the drum. The RVD is light enough so as not to topple the drum on a side installation. Figure A-3 depicts a typical control unit. Note that the actual control units vary in composition and construction, but perform the same task. It is important to note that though Figure A-3 shows that a compressed air tank is used, an inert gas (such as nitrogen, N_2) will be used for the remote drum venting operation described in this addendum. The air hose connections on the control unit and the RVD are sized to ensure that the air hose connections cannot be hooked-up incorrectly. When using the inert gas, nitrogen, the inert gas tank also requires a reducer and additional hose lines.



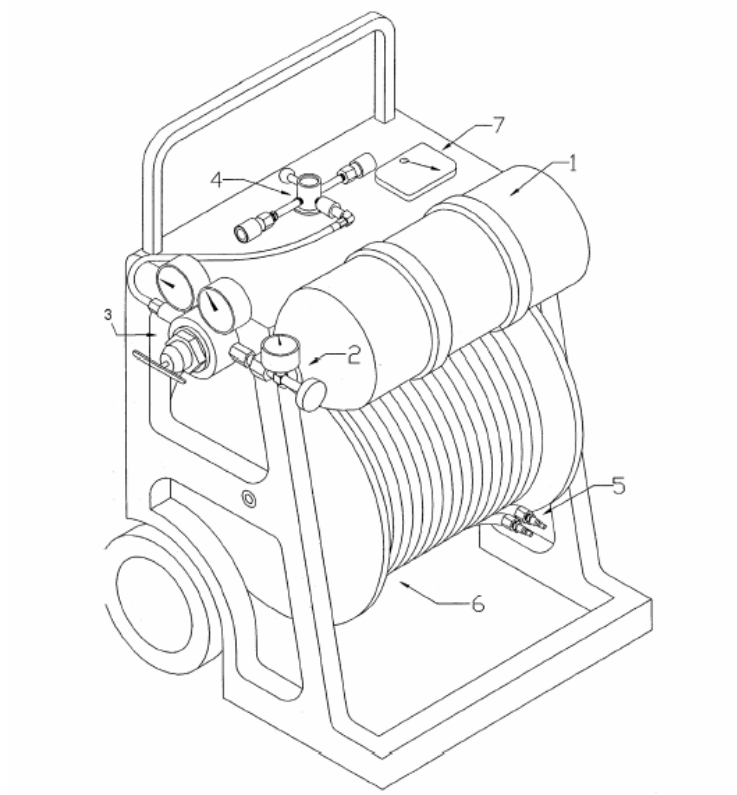
1. Drum or container to be vented.
2. Rubber primary seal.
3. Vapor and liquid vent hose.
4. Pneumatic cylinder.
5. Foam rubber secondary seal.
6. Clean polycarbonate secondary housing.
7. Adjustable straps for securing the Drum Device to the container being vented.
8. Pneumatic connection to control unit.
9. Pneumatic connection to control unit.
10. Rubber mounts.
11. Carrying handle.
12. Clamp down screws for centering the RCSD.
13. Inert gas entry hose.

Figure A-1. Typical Remote Venting Device Mounted on a Drum



1. Surface of barrel or container being sampled.
2. Hollow sampling needle.
3. Rubber primary seal.
4. Ram travel contact switch (optional).
5. Rubber secondary seal.
6. Clear polycarbonate secondary containment.
7. Drum head space vent and sampling connection.
8. Hose to external collection tank or sampling device.
9. Pneumatic ram shaft.
10. Connection for inert gas line.

Figure A-2. Cut-Away View of Typical Remote Venting Device Below Ram Cylinder



1. Compressed air tank.
2. Tank valve and pressure gauge.
3. Pressure regulator.
4. Control valve.
5. Air hose fittings. Note one end of each hose (2 hoses) is attached to the control unit and the other end is attached to the control valve, #4 above.
6. Air hose reel to hold 2 air hoses.
7. Ram travel indicator.

Figure A-3. Typical Control Unit
(nitrogen is to be used instead of air for the remote drum operations described in this addendum)

The remote drum venting activity will be performed inside a containment structure (i.e., a modular Perma-Con® containment structure or a containment tent). The structure is certified as containing contamination for worker and public protection, according to requirements of the Radiological Protection Program. This structure may be used in a waste storage dome at Area G, or outside as a separate structure in a specific, desired location to facilitate operations. Interior partitioning and floor area of the structure can vary to best accommodate the activity.

After the unvented drum is vented, access to the drum containment structure, drum, and the necessity for personnel protection equipment, is determined by the results of radiological monitoring, also according to Radiological Protection Program requirements.

Following drum venting, personnel will attach the headspace gas monitor to the venting apparatus to determine the concentration of any flammable gas mixture, by attaching a hose to a port – see 'point 8' in Figure A-2.

If it is found that the headspace gas analysis is unacceptable (i.e., > 25% of the lower flammability limit of hydrogen, or > 8000 parts per million of volatile organic compounds), the vent apparatus is removed, and a temporary filter is installed. The drum is stored in isolation until further headspace gas analysis

indicates that flammable gas concentrations are at acceptable levels. When acceptable flammable gas concentrations are achieved, the drum is equipped with a Waste-Isolation Pilot Plant (WIPP) certified filtered vent.

In order to prevent the spread of contamination through the temporary filter during the wait time that the flammable gas concentration falls to below acceptable values, normal Radiological Protection Program measures are taken, such as wrapping the area around the temporary vent.

Unvented drums that need to be staged or stored will be staged or stored in a single planar array out of direct sunlight in an exclusion area where non-essential personnel and activities are not allowed. The areas will be designated as operation-free locations, and barriers or posting will be placed around them.

3.0 HAZARD IDENTIFICATION

For this addendum, this activity involves identifying the unique hazards and energy sources associated with the storage and remote venting of unvented drums at Area G. After the hazards and energy sources are identified, it was determined if any potential hazards can be screened from further consideration. Table A-1 presents the screening criteria that were used for these activities.

Table A-1. Hazard Screening Criteria

Screening Criteria	Radiological Hazards	Toxicological Hazards	Other Hazards
Initial hazard identification	> 10% of HC-3 thresholds in DOE-STD-1027*	> 10% of 40 CFR 302 or 40 CFR 355 RQs for hazardous and extremely hazardous chemicals, respectively*	Industrial hazards or energy sources that will result in releases of hazardous material or will result in serious injuries or fatalities to local workers
Process hazard analysis (PrHA)	> HC-3 thresholds in DOE-STD-1027	> 40 CFR 302 or 40 CFR 355 RQs for hazardous and extremely hazardous chemicals, respectively	Hazards or energy sources that could result in releases of hazardous material or could result in severe worker injuries or fatalities

HC = hazard category

RQ = reportable quantity

* 10% is a small fraction of the specified threshold quantities and is selected to ensure that meaningful quantities are not screened out early in the hazard analysis process.

In accordance with the guidance in DOE-STD-3009, standard industrial hazards are screened from further consideration unless they can lead to the release of radiological or toxic materials. A comprehensive list of identified hazards is presented below as part of a standard hazard checklist to help ensure hazards associated with the storage or remote drum venting of unvented drums are not overlooked. However, several hazards are also screened if they are not unique to the activities for the storage or remote drum venting of unvented drums, as this addendum evaluation is meant to identify the hazards that are new to the safety basis. All hazards not screened are carried forward for further evaluation. Table A-2 presents the hazard identification and associated hazard screening as it applies to the activities associated with the storage or remote drum venting of unvented drums.

Table A-2. Hazard Identification Checklist

Hazards	Hazards Applicability	Process or Area	Crosswalk to What if?
Acceleration			
Inadvertent motion	-Waste containers on flatbed trucks, forklifts, drum dollies, floor airmovers, and pallet movers.	-All TRU dome storage areas -Roadways to TRU domes	Screened – not a unique hazard to this addendum.
Sloshing of liquids	N/A	N/A	N/A
Translation of loose objects	N/A	N/A	N/A
Deceleration			
Impacts (sudden stops)	-Waste containers on flatbed trucks, forklifts, drum dollies, floor airmovers, pallet movers.	-All TRU dome storage areas -Roadways to TRU domes	What-if? #s 8 and 9
	-Waste container drops	-All TRU dome storage areas -Roadways to TRU domes	
	-Vehicle impacts into staged/stored containers	-All TRU dome storage areas	
Failure of brakes wheels tires, etc (e.g., vehicle accidents).	-Waste transporters, forklifts, flatbed trucks, or drum dollies.	-All TRU dome storage areas -Roadways to TRU domes	Screened – not a unique hazard to this addendum.
Falling objects	-Waste containers from array stacks or lifting equipment, dome structure/debris, maintenance lifts	-All TRU dome storage areas	Screened – not a unique hazard to this addendum.
Fragments or missiles	-Flying debris/missiles from high winds	-All TRU dome storage areas -Roadways to TRU domes	Screened – not a unique hazard to this addendum.
Chemical Reaction (non-fire, can be subtle over time)			
Disassociation—product reverts to separate components	-Radiolytic decomposition of waste (H_2 / gas production)	-All TRU dome storage areas	What-if? #s 1, 5 and 7
Combination—new product formed from mixture	N/A	N/A	N/A
Corrosion, rust, etc.	-Metal waste container.	-All TRU dome storage areas	Screened – not a unique hazard to this addendum.
Electrical			
Improper mixing, reagents, water	N/A	N/A	N/A
Shock/power outage	-110/240/480VAC service outlets and power tools, electric carts/forklifts.	-All TRU dome storage areas	Screened-SIH, not a unique hazard to this addendum.
Burns	-110/240/480VAC service outlets and power tools, ventilation motors, space heaters.	-All TRU dome storage areas	Screened-SIH, not a unique hazard to this addendum.
Overheating	-110/240/480VAC service outlets and power tools, ventilation motors, space heaters.	-All TRU dome storage areas	Screened – not a unique hazard to this addendum.
Ignition of combustibles	-110/240/480VAC service outlets and power tools, ventilation motors, space heaters.	-All TRU dome storage areas	Screened – not a unique hazard to this addendum.

Table A-2. Hazard Identification Checklist

Hazards	Hazards Applicability	Process or Area	Crosswalk to What if?
Inadvertent activation	N/A	N/A	N/A
Explosion, electrical	N/A	N/A	N/A
Explosions			
Commercial explosive present	N/A	-Explosives may be transported via Pajarito road. Not close enough to affect Area G.	N/A
Explosive gas	-Propane fuel for the fork lifts -Explosive gas (H_2 or VOCs) build up inside drum	-Throughout Area G	Screened – propane forklift not a unique hazard to this addendum. What-if? #s 3, 4, 5, and 6
Explosive liquid	N/A	N/A	N/A
Explosive dust	N/A	N/A	N/A
Flammability and Fires			
Presence of fuel—solid, liquid, gas	-Diesel powered vehicles, cranes and equipment	-All TRU dome storage areas -Roadways to TRU domes	Screened – not a unique hazard to this addendum.
	-Propane powered forklifts.	-All TRU dome storage areas -Roadways to TRU domes	Screened – not a unique hazard to this addendum.
	-Wood waste containers (i.e., FRP crates)	-All TRU dome storage areas	Screened – not a unique hazard to this addendum.
	-Gasoline powered vehicles.	-All TRU dome storage areas -Roadways to TRU domes	Screened – not a unique hazard to this addendum.
	-Waste paper, trash and wooden items	-All TRU dome storage areas	Screened – not a unique hazard to this addendum.
Presence of strong oxidizer	-Portable oxygen tanks.	-All TRU dome storage areas and immediate vicinity during maintenance activities	Screened – not a unique hazard to this addendum.
Presence of pyrophoric	-Potential MLLW material in containers	-All TRU dome storage areas	What-if? # 10
Presence of strong ignition source—welding torch, heaters	-Welding/cutting torches and space heaters, hotwork.	-All TRU dome storage areas and immediate vicinity during maintenance activities	Screened – not a unique hazard to this addendum.
Heat and Temperature			
Source of heat, non-electrical	-Welding/cutting torches.	All TRU dome storage areas and immediate vicinity during maintenance activities	Screened – not a unique hazard to this addendum.
Hot surface burns	-Welding/cutting torches and tools. -Space Heaters	All TRU dome storage areas and immediate vicinity during maintenance activities	Screened – not a unique hazard to this addendum.
Very cold surface burns	N/A	N/A	N/A
Increased gas pressure caused by heat	N/A	N/A	N/A
Increased volatility caused by heat	N/A	N/A	N/A

Table A-2. Hazard Identification Checklist

Hazards	Hazards Applicability	Process or Area	Crosswalk to What if?
Mechanical			
Sharp edges or points	-Forklift tines and pallet edges	-All TRU dome storage areas, -Roadways to TRU domes	What-if? #s 8 and 9
Rotating equipment	-Mobile ventilation fans -Small, portable air compressors	-All TRU dome storage areas	Screened – not a unique hazard to this addendum.
Reciprocating equipment	N/A	N/A	SIH
Pinch points	-Waste containers/pallets during stacking, handling	-All TRU dome storage areas	SIH
	-Dome doors	-All TRU dome storage areas	SIH
Weights to be lifted	-Waste containers	-All TRU dome storage areas	Screened – not a unique hazard to this addendum.
Stability/toppling tendency	-Waste container stacks	-All TRU dome storage areas	Screened – not a unique hazard to this addendum.
Ejected parts or fragments	N/A	N/A	N/A
Pressure			
Compressed gas	-Gas cylinders (oxy/acetylene, nitrogen) - missile generation	All TRU dome storage areas and immediate vicinity during maintenance activities	What-if? # 2
	-Forklift propane fuel tank	-All TRU dome storage areas -Roadways to TRU domes	Screened – not a unique hazard to this addendum.
Compressed air tool	-Air pallets	-All TRU dome storage areas	SIH
Pressure system exhaust	N/A	N/A	N/A
Accidental release	N/A	N/A	N/A
Objects propelled by pressure	-Air pallets	-All TRU dome storage areas	SIH
Water hammer	N/A	N/A	N/A
Flex hose whipping	-Air pallets	-All TRU dome storage areas	SIH
Overflow (RTDs, tanks)	N/A	N/A	N/A
Static			
Container rupture	-Waste container failure from weight or corrosion (drums and FRP crates)	-All TRU dome storage areas, -Roadways to TRU domes	Screened – not a unique hazard to this addendum.
Overpressurization	-Waste container vent failure causes gas buildup -Potential buildup of inert process gas in drum during venting	-All TRU dome storage areas (in nonvented drums)	What-if? #s 1, 2, 3, 4, 5 and 7
Negative pressure effects	N/A	N/A	N/A
Hose rupture, piping, valve flange, glovebox gaskets	N/A	N/A	N/A

Table A-2. Hazard Identification Checklist

Hazards	Hazards Applicability	Process or Area	Crosswalk to What if?
Leak of Material			
Flammable	-Gas cylinders (acetylene).	All TRU dome storage areas and immediate vicinity during maintenance activities	Screened – not a unique hazard to this addendum.
Toxic	-Miscellaneous materials in waste	-MTRU containers in dome 54-224	All releases
Corrosive	-Miscellaneous materials in waste	-MTRU containers in dome 54-224	All releases
Radioactive	-TRU waste from container(s) failure/spills.	-All TRU dome storage areas, -Roadways to TRU domes	All releases
Slippery	N/A	N/A	N/A
Radiation			
Ionizing radiation	-All TRU waste forms (gamma, alpha, neutron and MLLW).	-All TRU dome storage areas, -Roadways to TRU domes	All releases
Mislabeling	- Exposure to radiation during handling	All TRU dome storage areas	Screened – not a unique hazard to this addendum.
High-intensity visible light	N/A	N/A	N/A
Infrared radiation	-Portable space heaters	-All TRU dome storage areas	Screened – not a unique hazard to this addendum.
Electromagnetic radiation	N/A	N/A	N/A
Laser radiation	N/A	N/A	N/A
Toxicity			
Gas or liquid	-Miscellaneous materials in waste	-MTRU containers in dome 54-224	SIH
Asphyxiate	Fumes (CO, CO_2)	All TRU dome storage areas	Screened – not a unique hazard to this addendum.
Irritant	-Miscellaneous materials in waste	-MTRU containers in dome 54-224	SIH
Systemic poison	-Miscellaneous materials in waste	-MTRU containers in dome 54-224	SIH
Carcinogen	-Miscellaneous materials in waste	-MTRU containers in dome 54-224	SIH
Mutagen	-Miscellaneous materials in waste	-MTRU containers in dome 54-224	SIH
Combination product	-Miscellaneous materials in waste	-MTRU containers in dome 54-224	SIH
Combustion product	-Miscellaneous materials in waste	-MTRU containers in dome 54-224	SIH
Vibration			
Vibrating tools	N/A	N/A	N/A
High noise source level	N/A	N/A	N/A
Metal fatigue	N/A	N/A	N/A
Flow or jet vibration	N/A	N/A	N/A

Table A-2. Hazard Identification Checklist

Hazards	Hazards Applicability	Process or Area	Crosswalk to What if?
Supersonics	N/A	N/A	N/A
Miscellaneous	N/A	N/A	N/A
Contamination	N/A	N/A	N/A
Lubricity	N/A	N/A	N/A
External Events			
Refueling of truck and forklift	Causes accidents, fuel ignites and leads explosion Spill (no fire)	All TRU storage areas and vicinity	Screened – not a unique hazard to this addendum.
Airplane crash	Crashes (no fire) and causes releases Crashes causes fire and releases	All TRU storage areas and vicinity	Screened – not a unique hazard to this addendum.
Forest/Brush fire	Spreads around drums, building, site	All TRU storage areas and vicinity	Screened – not a unique hazard to this addendum.
Natural Phenomenon			
Strong wind	containers failure and causes releases (no fire) Release with fire	All TRU storage areas and vicinity	Screened – not a unique hazard to this addendum.
Lightening	Strike, starts fire resulting in a release	All TRU storage areas and vicinity	Screened – not a unique hazard to this addendum.
Snow accumulation	Impacts structure, containers, resulting in a release	All TRU storage areas and vicinity	Screened – not a unique hazard to this addendum.
Earthquake (Seismic)	Breaches structure, topples containers, results in fire or no fire, however, causes releases	All TRU storage areas and vicinity	Screened – not a unique hazard to this addendum.

3.1 WHAT-IF? ANALYSIS

The *What-if?* analysis identifies potential accidents for the Remote Drum Venting Activities using the result of hazard identification and screening. Only the hazards identified in Table A-2 to be applicable and unique to the storage or remote drum venting of unvented drums are evaluated in the What-if? table that follows. In other words, while the Hazard Identification step included a comprehensive set of hazards, only those that survive the screening for the specific activities associated with the storage or remote drum venting of unvented drums Remote Drum Venting are carried forth for further evaluation. Therefore, the What-if? analysis in Table A-3 is limited to a somewhat smaller set of possible facility scenarios to avoid repeating evaluations previously considered in the existing DSA.

Table A-3 What-if? Tables: Remote Drum Venting System Activities and Unvented Drum Staging/Storage

ID NO.	Areas Affected	What-If Question	(Worst) Consequences	Comments/Action Items
1	All TRU storage areas and vicinity	Pressurization of containers (drums) due to radiolytic decomposition or due to excessive flow rate of inert gas (e.g., N_2); either of which causes container failure spilling contents.	-Worker exposed to radioactive or hazardous material -Worker injury from drum missile -Public exposures to airborne radioactive or hazardous material -Radioactive or hazardous material release to the environment	- bounded in HA by scenario of drum deflagration from hydrogen buildup and bounded by fire; HA-1, HA-1a, HA-3, and HA-3a
2	All TRU storage areas and vicinity	Personnel fail to secure gas cylinder or securing devices fail; cylinder topples and valve sears off	Worker exposed to radioactive or hazardous material -Worker injury from cylinder missile -Public exposures to airborne radioactive or hazardous material -Radioactive or hazardous material release to the environment	HA-5
3	All TRU storage areas and vicinity	Hydrogen gas buildup ignites in waste container (e.g., from plugged vent).	-Worker exposed to radioactive or hazardous material -Worker injury from explosion -Public exposures to airborne radioactive or hazardous material -Radioactive or hazardous material release to the environment	HA-1, HA-1a, HA-2, HA-3, and HA-3a
4	All TRU storage areas and vicinity	Hydrogen gas buildup ignites in waste container (e.g., from plugged vent) or overpressurization results in multiple waste container deflagration.	-Worker exposed to radioactive or hazardous material -Worker injury from explosion -Public exposures to airborne radioactive or hazardous material -Radioactive or hazardous material release to the environment	HA-1, HA-1a, HA-2, HA-2a, HA-3, and HA-3a

Table A-3 What-if? Tables: Remote Drum Venting System Activities and Unvented Drum Staging/Storage

ID NO.	Areas Affected	What-If Question	(Worst) Consequences	Comments/Action Items
5	All TRU storage areas and vicinity	Chemical reaction inside waste container causes buildup of gases and overpressurization.	-Worker exposed to radioactive or hazardous material -Worker injury from explosion -Public exposures to airborne radioactive or hazardous material -Radioactive or hazardous material release to the environment	HA-1, HA-1a, HA-2, HA-3, HA-3a, HA-4, HA-4a, and HA-6
6	TA-54 (any location)	RDVS drill tool overheats or during head gas sampling or filter replacement flammable gases (H_2, methane, volatile organic compounds) are ignited in drum	-Worker exposed to hazardous material -Worker injury from fire -Hazardous material release to environment	HA-7, and HA-8
7	TA-54 (any location)	Container fails from internal pressurization (e.g., chemical reaction, radiolytic decomposition, breach of internal container, or excessive inert process gas flow) causing a release of contents.	-Worker injury and/or exposure to radioactive or hazardous material -Public exposures to airborne radioactive or hazardous material. -Radioactive or hazardous material released to the environment	HA-10
8	TA-54 (any location)	Vehicle/forklift crashes into RDVS over an open drum, drum is toppled.	-Worker injury and/or exposure to radioactive or hazardous material -Public exposures to airborne radioactive or hazardous material. -Radioactive or hazardous material released to the environment	HA-11
9	TA-54 (any location)	Vehicles or heavy equipment crashes into containers causing a release.	-Worker injury and/or exposure to radioactive or hazardous material -Public exposures to airborne radioactive or hazardous material. -Radioactive or hazardous material released to the environment	HA-10, HA-11

Table A-3 What-if? Tables: Remote Drum Venting System Activities and Unvented Drum Staging/Storage

ID NO.	Areas Affected	What-If Question	(Worst) Consequences	Comments/Action Items
10	TA-54 (any location)	Pyrophoric materials or unstable chemicals in drum causes explosion and/or fire at RDVRS during venting or headspace sampling	-Worker exposed to radioactive or hazardous material -Worker injury from explosion -Public exposures to airborne radioactive or hazardous material -Radioactive or hazardous material release to the environment	HA-10
11	TA-54 (any location)	Material is released after venting the drum.	-Worker exposed to radioactive or hazardous material -Worker injury from explosion -Public exposures to airborne radioactive or hazardous material -Radioactive or hazardous material release to the environment	HA-11

3.2 HAZARDS ANALYSIS

This section provides the HA Table (Table A-4) evaluates in more detail the scenarios that were not screened in the *What-if?* Analysis process to estimate their unmitigated (or uncontrolled) and mitigated (or controlled) frequency, consequence categories, and risk rankings for both the public and workers.

Table A-4 is organized with the following entries.

Accident Category: Accidents are identified as to which major accident type it is with a brief description.

Hazard of Concern: The type of hazardous material or energy source that are driving the consequences of concern is briefly described (e.g., "radioactive material").

Accident Scenario: This is the postulated accident scenario description. The scenario is numbered such that it can be cross referenced back to its basis in the What-If table scenario. The Accident Scenario description may be generalized to encompass or bound the consequences of more than one What-If? table scenario.

Initiating Event or Cause: The initiating event, cause or reason for the accident scenario is briefly described.

Material at Risk (MAR): Complete set of MAR(s) from all of the What-if? scenarios used to develop the accident scenario. Further information regarding the MAR for each scenario is discussed following the HA Table (Table A-4).

Damage Ratio (DR): This identifies the damage ratio assumed in the unmitigated case. For all the Remote Drum Venting events, the DR is assumed to be 1.0.

What-If ID #: This identifies the What-if? scenario which serves as the basis for the event. Multiple What-if? ID #s may be listed as appropriate.

Control Elements or Description and Type of Control: Controls that are applicable to a given accident scenario are listed in the HA table for that scenario. Each control is identified as preventive or mitigative, facility or process, and engineered or administrative. Administrative controls include applicable safety management program elements.

Each control appropriate to the scenario is identified as preventive or mitigative and as engineering or administrative as follows:

First letter	P	-Preventor that reduces the frequency
	M	-Mitigator that can reduce the consequences
Second letter	F	-Facility related control
	P	-Process related control
Third Letter	A	-Administrative control
	F	-Engineered or design feature

PFA = Preventive Facility Administrative	MFA = Mitigative Facility Administrative
PFF = Preventive Facility Feature	MFF = Mitigative Facility Feature
PPA = Preventive Process Administrative	MPA = Mitigative Process Administrative
PPF = Preventive Process Feature	MPF = Mitigative Process Feature

Unmitigated risk estimates are made for each accident, and then controls are applied. Based on the estimated effectiveness of each control, estimates of the mitigated frequency, consequence, and risk are developed. The controls judged to be most effective in preventing or mitigating the accident scenario are identified and marked with a check sign (√) in the applicable column. These controls contribute significantly to risk reduction, and are considered Safety-Significant for worker safety or defense-in-depth. These controls are also candidates for Safety-Class designation, if formal accident accident is found to be necessary, and the selection of safety-class controls is required. The bases for developing the frequency and consequence estimates for each accident type and each receptor are described following Table A-4.

Table A-4 Hazards Analysis Table for Remote Drum Venting

	Unmitigated				
	Freq	Consequence		Risk	
		P	W	P	W
Accident Category: Operational Explosion or Energetic Event **Hazard of Concern:** Radioactive Material **Accident Scenario:** HA-1. Explosion/energetic event inside a container; ejected material burns (unvented container) **Initiating Event or Cause:** Flammable gas buildup inside container is ignited during drum handling or movement **MAR:** 1,100 PE-Ci (max. container) (1 MW, uncontainerized) **DR:** 1.0 **What If Event ID(s):** 1,3, 4, and 5	II	A	A	1	1

Control Elements or Description	Type of Control	Mitigated					Basis or Comments
		Freq	Conseq		Risk		
			P	W	P	W	
Control List		III	B	C	2	3	
Metal waste container	MPF		√	√			Mitigates release during a deflagration (partially containerized waste). Metal waste containers have vents.
TRU waste container acceptance criteria	PPA	√					Reduces potential of event due to the acceptance of non compliant drums/inventory
Vents on TRU waste containers	PPF	√					Installation of vents on unvented drums reduces likelihood of a gas buildup by minimizing the time the drum remains in a hazardous condition.
Use of lid restraining device	MPF		√	√			Unvented containers will be equipped with a lid restraining device prior to handling. Provides physical protection and additional resistance to lid ejection and material release (e.g., minimizes unconfined burning).
Overpack unvented drum	MPA/ MPF			√			Provides physical protection and additional resistance to lid ejection and material release of an inner unvented drum
Unvented drums stored in unvented TRU waste container storage area where they are not stacked	PFA / MFA			√			Unvented drum storage area isolated from normal operation to reduce probability of impacting unvented drum causing its deflagration
Exclusion area for non-essential personnel and activities established around unvented TRU waste container storage area.	PFA / MFA			√			Mitigates potential dose and impacts between an ejected lid and nearby personnel.
Forklift with enclosed cab used during transfer of an unvented drum(s) to or from unvented drum storage and remote drum venting areas.	MFP			√			Provides barrier between unvented drum and forklift operator.
Emergency Preparedness	MFA		√	√			Communication systems, windsocks, etc. facilitate Emergency Preparedness actions
MAR inventory control	MPA						Protects MAR assumption
Training/certification for forklift and crane operators	PFA	√					Reduces likelihood of an operator induced accident
Use of spotter	PPA	√					

Table A-4 Hazards Analysis Table for Remote Drum Venting

	Unmitigated				
	Freq	Consequence		Risk	
		P	W	P	W
Accident Category: Operational Explosion or Energetic Event **Hazard of Concern:** Radioactive Material **Accident Scenario:** HA-1a. Explosion/energetic event inside a container; multiple waste container deflagration occurs. **Initiating Event or Cause:** Flammable gas buildup inside container is ignited during drum handling or movement **MAR:** 2,200 PE-Ci (2 max. containers) (1 MW, uncontainerized) **DR:** 1.0 **What If Event ID(s):** 3, 4, and 5	III	A	A	2	2

Control Elements or Description	Type of Control	Mitigated					Basis or Comments
		Freq	Conseq		Risk		
			P	W	P	W	
Control List		IV	B	C	3	4	
Metal waste container	MPF		√	√			Mitigates release during a deflagration (partially containerized waste)
TRU waste container acceptance criteria	PPA	√					Reduces potential of event due to the acceptance of non compliant drums/inventory
Vents on TRU waste containers	PPF	√					Installation of vents on unvented drums reduces likelihood of a gas buildup by minimizing the time the drum remains in a hazardous condition.
Unvented drums stored in unvented TRU waste container storage area where they are not stacked	PFA/ MFA			√			Unvented drum store area isolated from normal operations to reduce probability of impacting unvented drum causing its deflagration
Overpack unvented drum	MPA/ MPF			√			Provides physical protection and additional resistance to lid ejection and material release of an inner unvented drum
Use of lid restraining device	MPF		√	√			Unvented containers will be equipped with a lid restraining device prior to handling. Provides physical protection and additional resistance to lid ejection and material release (e.g., minimizes unconfined burning).
Exclusion area for non-essential personnel and activities established around unvented drum activities.	PFA / MFA			√			Mitigates potential dose and impacts between an ejected lid and nearby personnel.
Forklift with enclosed cab used during transfer of an unvented drum(s) to or from unvented drum storage and remote drum venting areas.	MFP			√			Provides barrier between unvented drum and forklift operator. Only single drums transferred on a forklift.
Unvented drums with MAR $\geq$ 300 PE-Ci not stored adjacent to each other	MPA			√			Mitigates possible consequences if two adjacent drums experience sympathetic deflagration
Emergency Preparedness	MFA		√	√			Communication systems, windsocks, etc. facilitate Emergency Preparedness actions
Training/certification for forklift and crane operators	PFA	√					Reduces likelihood of an operator induced accident
Radiological Protection Program	MFA		√	√			Minimizes the spread of contamination

Table A-4 Hazards Analysis Table for Remote Drum Venting

	Unmitigated				
	Freq	Consequence		Risk	
		P	W	P	W
Accident Category: Operational Explosion or Energetic Event **Hazard of Concern:** Radioactive Material **Accident Scenario:** HA-2. Explosion/energetic event inside a container; ejected material burns (vented container) **Initiating Event or Cause:** Flammable gas buildup inside container is ignited during drum handling (vent is obstructed) **MAR:** 1,100 PE-Ci (max. container) (1 MW, uncontainerized) **DR:** 1.0 **What If Event ID(s):** 3, 4, and 5	II	A	A	1	1

Control Elements or Description	Type of Control	Mitigated					Basis or Comments
		Freq	Conseq		Risk		
			P	W	P	W	
Control List		III	B	C	2	3	
Metal waste container	MPF		√	√			Mitigates release during a deflagration (partially containerized waste)
TRU waste container acceptance criteria	PPA	√					Reduces potential of event due to the acceptance of non compliant drums/inventory
Vents on TRU waste containers	PPF	√					Assumed to be present in event description.
Emergency Preparedness	MFA		√	√			Communication systems, windsocks, etc. facilitate Emergency Preparedness actions
MAR inventory control	MPA						Protects MAR assumption
Radiological Protection Program	MFA		√	√			Minimizes the spread of contamination

Table A-4 Hazards Analysis Table for Remote Drum Venting

Accident Category: Operational Explosion or Energetic Event
Hazard of Concern: Radioactive Material
Accident Scenario: HA-2a. Explosion/energetic event inside a container; multiple waste container deflagration occurs
Initiating Event or Cause: Flammable gas buildup inside container is ignited during drum handling (vent is obstructed)
MAR: 2,200 PE-Ci (2 max. containers) (1 MW, uncontainerized) **DR:** 1.0
What If Event ID(s): 4

Unmitigated				
Freq	Consequence		Risk	
	P	W	P	W
III	A	A	2	2

Control Elements or Description	Type of Control	Mitigated					Basis or Comments
		Freq	Conseq		Risk		
			P	W	P	W	
Control List		IV	B	C	3	4	
Metal waste container	MPF		√	√			Mitigates release during a deflagration (partially containerized waste)
TRU waste container acceptance criteria	PPA	√					Reduces potential of event due to the acceptance of non compliant drums/inventory
Vents on TRU waste containers	PPF	√					Assumed to be present in event description.
Unvented drums stored in unvented TRU waste container storage area where they are not stacked	PFA/ MFA			√			Unvented drum storage area isolated from normal operation to reduce probability of impacting unvented drum causing its deflagration
Emergency Preparedness	MFA		√	√			Communication systems, windsocks, etc. facilitate Emergency Preparedness actions
MAR inventory control	MPA						Protects MAR assumption
Overpack unvented drum	MPA/ MPF			√			Provides physical protection and additional resistance to lid ejection and material release of an inner unvented drum
Use of lid restraining device	MPF		√	√			Unvented containers will be equipped with a lid restraining device prior to handling. Provides physical protection and additional resistance to lid ejection and material release (e.g., minimizes unconfined burning).
Exclusion area for non-essential personnel and activities established around unvented drum activities.	PFA / MFA			√			Mitigates potential dose and impacts between an ejected lid and nearby personnel.
Forklift with enclosed cab used during transfer of an unvented drum(s) to or from unvented drum storage and remote drum venting areas.	MFP			√			Provides barrier between unvented drum and forklift operator. Only single drums transferred on a forklift.
Radiological Protection Program	MFA		√	√			Minimizes the spread of contamination
Training/certification for forklift and crane operators	PFA	√					Reduces likelihood of an operator induced accident

Table A-4 Hazards Analysis Table for Remote Drum Venting

	Unmitigated				
	Freq	Consequence		Risk	
		P	W	P	W
Accident Category: Operational Explosion or Energetic Event **Hazard of Concern:** Radioactive Material **Accident Scenario:** HA-3. Explosion/energetic event inside a container; ejected material burns (unvented container) **Initiating Event or Cause:** Flammable gas buildup inside container is ignited during drum handling or movement **MAR:** 300 PE-Ci – direct-loaded container limit (1 MW, uncontainerized) **DR:** 1.0 **What If ID(s):** 3,5,4	II	B	B	2	1

Control Elements or Description	Type of Control	Mitigated					Basis or Comments
		Freq	Conseq		Risk		
			P	W	P	W	
Control List		III	C	C	3	3	Assumed container is unvented.
Metal waste container	MPF		√	√			Mitigates release during a deflagration (partially containerized waste)
TRU waste container acceptance criteria	PPA	√					Reduces potential of event due to the acceptance of non compliant drums/inventory
Vents on TRU waste containers	PPF	√					Installation of vents on unvented drums reduces likelihood of a gas buildup by minimizing the time the drum remains in a hazardous condition.
Unvented drums stored in unvented TRU waste container storage area where they are not stacked	PFA/ MFA			√			Unvented drum storage area isolated from normal operation to reduce probability of impacting unvented drum causing its deflagration
Overpack unvented drum	MPA/ MPF			√			Provides physical protection and additional resistance to lid ejection and material release of an inner unvented drum
Use of lid restraining device	MPF		√	√			Unvented containers will be equipped with a lid restraining device prior to handling. Provides physical protection and additional resistance to lid ejection and material release.
Exclusion area for non-essential personnel and activities established around unvented drum activities.	PFA / MFA			√			Mitigates potential dose and impacts between an ejected lid and nearby personnel.
Forklift movements of an unvented drum(s) shall be done in an enclosed cab	MFP			√			Provides physical protection for the forklift operator.
Emergency Preparedness	MFA		√	√			Communication systems, windsocks, etc. facilitate Emergency Preparedness actions
MAR inventory control	MPA						Protects MAR assumption
Training/certification for forklift and crane operators	PFA	√					Reduces likelihood of an operator induced accident
Radiological Protection Program	MFA		√	√			Minimizes the spread of contamination

Table A-4 Hazards Analysis Table for Remote Drum Venting

	Unmitigated				
	Freq	Consequence		Risk	
		P	W	P	W
Accident Category: Operational Explosion or Energetic Event **Hazard of Concern:** Radioactive Material **Accident Scenario:** HA-3a. Explosion/energetic event inside a container; multiple waste container deflagration occurs **Initiating Event or Cause:** Flammable gas buildup inside container is ignited during drum handling or movement **MAR:** 2,200 PE-Ci (2 max containers) (1 MW, uncontainerized) **DR:** 1.0 **What If Event ID(s):** 4	III	A	A	2	2

Control Elements or Description	Type of Control	Mitigated					Basis or Comments
		Freq	Conseq		Risk		
			P	W	P	W	
Control List		IV	B	B	3	3	Assumed container is unvented.
Metal waste container	MPF		√	√			Mitigates release during a deflagration (partially containerized waste)
Overpack unvented drum	MPF		√	√			Overpack of unvented drum minimizes releases during a deflagration
TRU waste container acceptance criteria	PPA	√					Via LANL WAC for newly generated TRU waste drums, reduces potential of event due to the acceptance of non compliant drums/inventory
Vents on TRU waste containers	PPF	√					Installation of vents on unvented drums reduces likelihood of a gas buildup by minimizing the time the drum remains in a hazardous condition.
Unvented drums stored in unvented TRU waste container storage area where they are not stacked	PFA/ MFA			√			Unvented drum storage area isolated from normal operation to reduce probability of impacting unvented drum causing its deflagration
Use of lid restraining device	MPF		√	√			Unvented containers will be equipped with a lid restraining device prior to handling. Provides physical protection and additional resistance to lid ejection and material release.
Exclusion area for non-essential personnel and activities established around unvented drum activities.	PFA / MFA	√		√			Mitigates potential dose and impacts between an ejected lid and nearby personnel.
Forklift movements of an unvented drum(s) shall be done in an enclosed cab	MFP			√			Provides physical protection for the forklift operator.
Emergency Preparedness	MFA		√	√			Communication systems, windsocks, etc. facilitate Emergency Preparedness actions
Training/certification for forklift and crane operators	PFA	√					Reduces likelihood of an operator induced accident
Unvented drums with MAR $\geq$ 300 PE-Ci not stored adjacent to each other	MPA			√			Mitigates possible consequences if two adjacent drums experience sympathetic deflagration
Radiological Protection Program	MFA		√	√			Minimizes the spread of contamination

Table A-4 Hazards Analysis Table for Remote Drum Venting

Accident Category: Operational Explosion or Energetic Event
Hazard of Concern: Radioactive Material
Accident Scenario: HA-4. Explosion/energetic event and fire only inside a container
Initiating Event or Cause: Exothermic chemical reaction products
MAR: 1,100 PE-Ci (max. container) (1 MW, containerized) **DR:** 1.0
What If Event ID(s): 5

Unmitigated				
Freq	Consequence		Risk	
	P	W	P	W
II	B	A	2	1

Control Elements or Description	Type of Control	Mitigated					Basis or Comments
		Freq	Conseq		Risk		
			P	W	P	W	
Control List		III	C	B	3	2	
Metal waste container	MPF		√	√			Mitigates release during energetic events (partially containerized waste)
Overpack unvented drum	MPF		√	√			Overpack of unvented drum minimizes releases during a deflagration
TRU waste container acceptance criteria	PPA	√					Via LANL WAC for newly generated TRU waste drums, reduces potential of event due to the acceptance of non compliant drums/inventory
Emergency Preparedness	MFA		√	√			Communication systems, windsocks, etc. facilitate Emergency Preparedness actions
MAR inventory control	MPA		√				Protects MAR assumption
Use of lid restraining device	MPF		√	√			Unvented containers will be equipped with a lid restraining device prior to handling. Provides physical protection and additional resistance to lid ejection and material release.
Exclusion area for non-essential personnel and activities established around unvented drum activities.	PFA / MFA	√		√			Mitigates potential dose and impacts between an ejected lid and nearby personnel.
TRU waste container acceptance criteria	PPA	√					Reduces potential of event due to the acceptance of non compliant drums/inventory
Vents on TRU waste containers	PPF	√					Installation of vents on unvented drums reduces likelihood of a gas buildup by minimizing the time the drum remains in a hazardous condition.
Unvented drums stored in unvented TRU waste container storage area where they are not stacked	PFA/ MFA			√			Unvented drum store area isolated from normal operations to reduce probability of impacting unvented drum causing its deflagration
Radiological Protection Program	MFA		√	√			Minimizes the spread of contamination

Table A-4 Hazards Analysis Table for Remote Drum Venting

	Unmitigated				
	Freq	Consequence		Risk	
		P	W	P	W
Accident Category: Operational Explosion or Energetic Event **Hazard of Concern:** Radioactive Material **Accident Scenario:** HA-4a. Explosion/energetic event and fire inside a container, multiple waste container deflagration occurs. **Initiating Event or Cause:** Exothermic chemical reaction products **MAR:** 2,200 PE-Ci (2 max. containers) (1 MW, uncontainerized) **DR:** 1.0 **What If Event ID(s):** 5	III	A	A	2	2

Control Elements or Description	Type of Control	Mitigated					Basis or Comments
		Freq	Conseq		Risk		
			P	W	P	W	
Control List		IV	B	B	3	3	
Metal waste container	MPF		√	√			Mitigates release during energetic events (partially containerized waste)
Overpack unvented drum	MPF		√	√			Overpack of unvented drum minimizes releases during a deflagration
TRU waste container acceptance criteria	PPA	√					Via LANL WAC for newly generated TRU waste drums, reduces potential of event due to the acceptance of non compliant drums/inventory
Emergency Preparedness	MFA		√	√			Communication systems, windsocks, etc. facilitate Emergency Preparedness actions
MAR inventory control	MPA						Protects MAR assumption
Vents on TRU waste containers	PPF	√					Installation of vents on unvented drums reduces likelihood of a gas buildup by minimizing the time the drum remains in a hazardous condition.
Unvented drums stored in unvented TRU waste container storage area where they are not stacked	PFA/ MFA			√			Unvented drum store area isolated from normal operations to reduce probability of impacting unvented drum causing its deflagration
Use of lid restraining device	MPF		√	√			Unvented containers will be equipped with a lid restraining device prior to handling. Provides physical protection and additional resistance to lid ejection and material release.
Exclusion area for non-essential personnel and activities established around unvented drum activities.	PFA / MFA	√		√			Mitigates potential dose and impacts between an ejected lid and nearby personnel.
Unvented drums with MAR $\geq$ 300 PE-Ci not stored adjacent to each other	MPA				√		Mitigates possible consequences if two adjacent drums experience sympathetic deflagration
Radiological Protection Program	MFA		√	√			Minimizes the spread of contamination

Table A-4 Hazards Analysis Table for Remote Drum Venting

Accident Category: Operational Spill/Loss of Confinement
Hazard of Concern: Radioactive Material
Accident Scenario: HA-5. Gas cylinder becomes missile and impacts waste container
Initiating Event or Cause: Personnel fail to secure gas cylinder or securing devices fail; cylinder topples and valve shears off
MAR: 1,100 PE-Ci (max. container) **DR:** 1.0
What If Event ID(s): 2

Unmitigated				
Freq	Consequence		Risk	
	P	W	P	W
III	B	B	2	2

Control Elements or Description	Type of Control	Mitigated					Basis or Comments
		Freq	Conseq		Risk		
			P	W	P	W	
Control List		IV	C	C	3	4	Frequency based on limited number of high activity containers being handled
Metal waste container	MPF		√	√			Limited credit may be taken - container does not fail catastrophically
Emergency Preparedness	MFA		√	√			Communication systems, windsocks, etc. facilitate Emergency Preparedness actions
Gas cylinder storage/handling	PFF	√					Reduces probability of initiating fall of cylinder
MAR inventory control	MPA						Protects MAR assumption
Work performed in accordance with approved procedures	PFA	√					Ensures controls implemented to prevent occurrence of accidents.
Job-specific training	PFA	√					Ensures work performed according to procedure.
Radiological Protection Program	MPA		√	√			Minimizes the spread of contamination

Table A-4 Hazards Analysis Table for Remote Drum Venting

	Unmitigated				
	Freq	Consequence		Risk	
		P	W	P	W
Accident Category: Operational Spill/Loss of Confinement **Hazard of Concern:** Radioactive Material **Accident Scenario:** HA-6. Overpressurization of drum results in lid loss (no ignition) (assumed the container is unvented) **Initiating Event or Cause:** Reaction products, flammable gas buildup, expansion of container contents due to weather **MAR:** 1,100 PE-Ci (max. container) **DR:** 1.0 **What If Event ID(s):** 5	II	B	B	2	1

Control Elements or Description	Type of Control	Mitigated					Basis or Comments
		Freq	Conseq		Risk		
			P	W	P	W	
Control List		IV	C	C	3	4	
Metal waste container	MPF		√	√			Mitigates release during energetic events (partially containerized waste)
TRU waste container acceptance criteria	PPA	√					Via LANL WAC for newly generated TRU waste drums, reduces potential of event due to the acceptance of non compliant drums/inventory
Unvented drums stored in unvented TRU waste container storage area where they are not stacked	PFA/ MFA			√			Unvented drum store area isolated from normal operations to reduce probability of impacting unvented drum causing its deflagration
Work performed in accordance with approved procedures	PFA	√					Ensures controls implemented to prevent occurrence of accidents.
Vents on TRU waste containers	PPF	√					Unvented drum will be vented prior to handling. Minimizes time a drum will be unvented.
Use of lid restraining device	MPF		√	√			Unvented containers will be equipped with a lid restraining device prior to handling. Provides physical protection and additional resistance to lid ejection and material release.
Overpack unvented drum	MPA/ MPF			√			Provides physical protection and additional resistance to lid ejection and material release of an inner unvented drum
Exclusion area for non-essential personnel and activities established around unvented drum activities.	PFA / MFA			√			Mitigates potential dose and impacts between an ejected lid and nearby personnel.
Forklift movements of an unvented drum(s) shall be done in an enclosed cab	MFP			√			Provides physical protection for the forklift operator.
Emergency Preparedness	MFA		√	√			Communication systems, windsocks, etc. facilitate Emergency Preparedness actions
Job-specific training	PFA	√					Ensures work performed according to procedure.
Radiological Protection Program	MFA		√	√			Minimizes the spread of contamination

Table A-4 Hazards Analysis Table for Remote Drum Venting

Accident Category: Operational Explosion or Energetic Event **Hazard of Concern:** Radioactive Material
Accident Scenario: HA-7 Explosion or energetic event in RDVS impacts waste containers
Initiating Event or Cause: Flammable gas ignited during headspace gas sampling
MAR: 1,100 PE-Ci (1 MW, uncontainerized) **DR:** 1.0
What If Event ID(s): 6

Unmitigated				
Freq	Consequence		Risk	
	P	W	P	W
II	A	A	2	1

Control Elements or Description	Type of Control	Mitigated					Basis or Comments
		Freq	Conseq		Risk		
			P	W	P	W	
All Controls		III	B	B	2	2	Worker unmitigated 'A' consequence due to physical hazard. Unmitigated radiological consequence estimated as 'B' to the worker.
Metal waste container	MPF		√	√			Provides partial containment
Bonding during RDVS activities	PPA	√					Prevents occurrence of sparks that could lead to deflagration
Vents on TRU waste containers	PPF	√					Containers are initially vented in RDVS. Reduces possibility of hydrogen rebound.
Emergency Preparedness	MFA		√	√			Communication systems, windsocks, etc. facilitate Emergency Preparedness actions
MAR inventory control	MPA						Protects MAR assumption
Use of lid restraining device	MPF		√	√			Unvented containers will be equipped with a lid restraining device prior to transferring to RDVS. Provides physical protection and additional resistance to lid ejection and material release (e.g., minimizes unconfined burning). RDVS provides some lid restraining capability.
Job-specific training	PFA	√					Ensures work performed according to procedure.
Exclusion area for non-essential personnel and activities established around unvented drum activities.	PFA / MFA	√		√			Mitigates potential dose and impacts between an ejected lid and nearby personnel.
Forklift movements of an unvented drum(s) shall be done in an enclosed cab	MFP			√			Provides physical protection for the forklift operator.
Non-sparking process utilized during RDVS	PPF	√					Prevents occurrence of sparks as ignition source
Work performed in accordance with approved procedures	PFA	√					Ensures controls implemented to prevent occurrence of accidents.
Use of contamination control methods	MPA		√	√			Minimizes spread of contamination during drum venting operations; RDVS performed in enclosure to contain contamination
Radiological Protection Program	MPA		√	√			Minimizes the spread of contamination

Table A-4 Hazards Analysis Table for Remote Drum Venting

Accident Category: Operational Explosion or Energetic Event
Hazard of Concern: Radioactive Material
Accident Scenario: HA-8 Flammable gas buildup in drum causes explosion and/or fire at RDVS that impacts waste container
Initiating Event or Cause: Fire initiated by RDVS tools (e.g., drill bit, etc.) or equipment fault when penetrating container
MAR: 1,100 PE-Ci (1 MW, uncontainerized) **DR:** 1.0
What If Event ID(s): 6

Unmitigated				
Freq	Consequence		Risk	
	P	W	P	W
II	A	A	2	1

Control Elements or Description	Type of Control	Mitigated					Basis or Comments
		Freq	Conseq		Risk		
			P	W	P	W	
All Controls		III	B	B	2	2	Worker unmitigated 'A' consequence due to physical hazard. Unmitigated radiological consequence estimated as 'B' to the worker).
Metal waste container	MPF		√	√			Partial containment mitigates release.
Emergency Preparedness	MFA		√	√			Communication systems, windsocks, etc. facilitate Emergency Preparedness actions
Bonding during RDVS activities	PPA	√					Prevents occurrence of sparks that could lead to deflagration
Non-sparking process utilized during RDVS	PPF	√					Prevents occurrence of sparks as ignition source
MAR inventory control	MPA						Protects MAR assumption
Job-specific training	PFA	√					Ensures work performed according to procedure.
Use of lid restraining device	MPF		√	√			Unvented containers will be equipped with a lid restraining device prior transfer to RDVS. Provides physical protection and additional resistance to lid ejection and material release (e.g., minimizes unconfined burning). RDVS provides some lid restraining capability.
Exclusion area for non-essential personnel and activities established around unvented drum activities.	PFA / MFA	√		√			Mitigates potential dose and impacts between an ejected lid and nearby personnel.
Forklift movements of an unvented drum(s) shall be done in an enclosed cab	MFP			√			Provides physical protection for the forklift operator.
Use of contamination control methods	MPA		√	√			Minimizes spread of contamination during drum venting operations; RDVS performed in enclosure to contain contamination
Radiological Protection Program	MPA		√	√			Minimizes the spread of contamination

Table A-4 Hazards Analysis Table for Remote Drum Venting

	Unmitigated				
	Freq	Consequence		Risk	
		P	W	P	W
Accident Category: Operational Explosion or Energetic Event **Hazard of Concern:** Radioactive Material **Accident Scenario:** HA-9 Pyrophoric materials or unstable chemicals in drum causes explosion and/or fire at RDVS during venting or headspace sampling **Initiating Event or Cause:** Exposure of contents to oxygen causes energetic reaction **MAR:** 1,100 PE-Ci (1 MW, uncontainerized) **DR:** 1.0 **What If Event ID(s):** 10	II	A	A	2	1

Control Elements or Description	Type of Control	Mitigated					Basis or Comments
		Freq	Conseq		Risk		
			P	W	P	W	
All Controls		III	B	B	2	2	Worker unmitigated 'A' consequence due to physical hazard. Unmitigated radiological consequence estimated as 'B' to the worker).
Metal waste container	MPF		√	√			Partial containment mitigates release.
Work performed in accordance with approved procedures	PFA	√					Ensures controls implemented to prevent occurrence of accidents.
Non-sparking process utilized during RDVS	PPF	√					Prevents occurrence of sparks as ignition source
Bonding during RDVS activities	PPA	√					Prevents occurrence of sparks that could lead to deflagration
Emergency Preparedness	MFA		√	√			Communication systems, windsocks, etc. facilitate Emergency Preparedness actions
Use of lid restraining device	MPF		√	√			Unvented containers will be equipped with a lid restraining device prior to transfer RDVS. Provides physical protection and additional resistance to lid ejection and material release (e.g., minimizes unconfined burning). RDVS provides some lid restraining capability.
Use of contamination control methods	MPA		√	√			Minimizes spread of contamination during drum venting operations; RDVS performed in enclosure to contain contamination
Radiological Protection Program	MPA		√	√			Minimizes the spread of contamination

Table A-4 Hazards Analysis Table for Remote Drum Venting

Accident Category: Operational Spill/Loss of Confinement
Hazard of Concern: Radioactive Material
Accident Scenario: HA-10 Container fails from internal pressurization causing release of contents (unvented container)
Initiating Event or Cause: Over pressurization due to chemical reaction, radiolytic decomposition, breach of internal container, or excessive inert process gas flow leads to pressurized release or lid ejection during handling load into RDVS
MAR: 1,100 PE-Ci (uncontainerized) **DR:** 1.0
What If Event ID(s): 7

Unmitigated				
Freq	Consequence		Risk	
	P	W	P	W
II	B	B	2	1

Control Elements or Description	Type of Control	Mitigated					Basis or Comments
		Freq	Conseq		Risk		
			P	W	P	W	
All Controls		III	C	C	3	3	
Metal waste container	MPF		√	√			Provides partial containment
TRU waste container acceptance criteria	PPA	√					Reduces potential of event due to the acceptance of non compliant drums/inventory
Work performed in accordance with approved procedures	PFA	√					Ensures controls implemented to prevent occurrence of accidents.
Use of lid restraining device	MPF		√	√			Unvented containers will be equipped with a lid restraining device prior to transfer to RDVS. Provides physical protection and additional resistance to lid ejection and material release. RDVS provides some lid restraining capability.
Bonding during RDVS activities	PPA	√					Prevents occurrence of sparks that could lead to deflagration
Non-sparking process utilized during RDVS	PPF	√					Prevents occurrence of sparks as ignition source
Exclusion area for non-essential personnel and activities established around unvented drum activities.	PFA / MFA	√		√			Mitigates potential dose and impacts between an ejected lid and nearby personnel.
Use of contamination control methods	MPA		√	√			Minimizes spread of contamination during drum venting operations; RDVS performed in enclosure to contain contamination
Radiological Protection Program	MPA		√	√			Personnel handling unvented drums shall wear appropriate respiratory PPE, as determined by radiation protection personnel.
Emergency Preparedness	MFA		√	√			Communication systems, windsocks, etc. facilitate Emergency Preparedness actions
Job-specific training	PFA	√					Ensures work performed according to procedure.

Table A-4 Hazards Analysis Table for Remote Drum Venting

	Unmitigated				
	Freq	Consequence		Risk	
		P	W	P	W
Accident Category: Operational Spill/Loss of Confinement **Hazard of Concern:** Radioactive Material **Accident Scenario:** HA-11 Container(s) damaged during or after venting activity **Initiating Event or Cause:** Forklift accident into RDVS; drum toppled/spill (includes puncture); release of material after venting **MAR:** 1,100 PE-Ci **DR:** 1.0 **What If Event ID(s):** 8, 9, 11	III	B	B	2	2

Control Elements or Description	Type of Control	Mitigated					Basis or Comments
		Freq	Conseq		Risk		Bounds release of material after venting operation
			P	W	P	W	
All Controls		III	C	C	3	3	
Metal waste container	MPF		√	√			Limited credit may be taken - container does not fail catastrophically, if impacted by forklift
Work performed in accordance with approved procedures	PFA	√					Ensures controls implemented to prevent occurrence of accidents.
Emergency Preparedness	MFA		√	√			Communication systems, windsocks, etc. facilitate Emergency Preparedness actions
MAR inventory control	MPA						Protects MAR assumption
Radiological Protection Program	MFA		√	√			Minimizes the spread of contamination
Job-specific training	PFA	√					Ensures work performed according to procedure.
Training/certification for forklift and crane operators	PFA	√					Reduces likelihood of an operator induced accident
Use of spotter	PPA	√					Reduces potential for accidental impact
Unvented drums stored in unvented TRU waste container storage area where they are not stacked	PFA/ MFA			√			Unvented drum store area isolated from normal operations to reduce probability of impacting unvented drum causing its deflagration

3.3 Frequency and Consequence Estimates

The following sections describe the bases for developing the frequency and consequence estimates for the accident scenarios that are evaluated in the HA tables. Both uncontrolled and controlled frequency and consequence estimates are provided for each accident. The uncontrolled frequency and consequence estimates are provided without considering any engineered or administrative controls. Based on these estimates, those engineered and administrative controls that provide a preventive or mitigate function for each accident scenario are identified.

3.3.1 Bases for Frequency Estimates

This section provides the rationale and nominal values for frequency categories for the accident scenarios that are evaluated in the hazard analysis tables. The unmitigated frequency estimates do not take credit for safety controls that could lower the frequency. Table A-5 identifies the frequency bins that were used in the hazard analysis. These estimates are based on an interpretation of *unmitigated* to mean that no special safety controls are implemented above and beyond standard industrial practices, and do not credit the Laboratory's institutional procedures.

Table A-5. Qualitative Frequency Bins

Frequency	Descriptor	Description
I ($>10^0$/yr)	**FREQUENT** (expected)	**Likely to occur <u>often</u> during the life of the facility.** (Incidents that occur during normal operation)
II ($<10^0$/yr to $\geq 10^{-2}$/yr)	**OCCASIONAL** (likely)	**Likely to occur <u>several times</u> during the life of the facility.** (Incidents that may occur during the lifetime of the facility; these are incidents with a mean expected likelihood of once in 50 years)
III ($<10^{-2}$/yr to $\geq 10^{-4}$/yr)	**PROBABLE** (unlikely)	**Should not occur during the life of the facility.** (Incidents that are not anticipated to occur during the lifetime of the facility but could; these are incidents having a likelihood of between once in 100 years to 10,000 operating years)
IV ($<10^{-4}$/yr to $\geq 10^{-6}$/yr)	**IMPROBABLE** (extremely unlikely)	**Unlikely but possible to occur during the life of the facility.** (Incidents that will probably not occur during the lifetime of the facility; these are incidents having a likelihood of between once in 10,000 years and once in a million years)
V ($<10^{-6}$/yr)	**REMOTE** (beyond extremely unlikely)	**Should not occur during the life of the facility.** (All other incidents having a likelihood of less than once in 1,000,000 operating years)

The unmitigated frequency estimates do not take credit for safety controls that could lower the frequency. These estimates are based on an interpretation of "unmitigated" to be no special safety controls implemented above and beyond standard industrial practices and do not credit many of the Laboratory's institutional procedures.

The frequency of an accident scenario is a function of the frequency of the initiating event and the frequency of enabling events. Enabling events are those events that must occur following the initiating event to cause the postulated accident. For example, in the scenario of an earthquake resulting in a fire in a building, the initiating event is the earthquake and an enabling event could be some type of electrical equipment failure that starts the fire. Unmitigated frequency estimates for accident scenarios are generally taken to be the frequency of the initiating event only, with the probability of the enabling event assumed to be 1.0 (i.e., it happens). Therefore, for the example given above, the unmitigated frequency estimate would typically be the frequency of the earthquake. However, under certain circumstances, where the probability of the enabling event is clearly less than 1.0, the overall scenario frequency estimate could be less than the initiating event frequency.

The controlled or mitigated frequency is based on how the controls lower the scenario frequency by reducing either the initiator frequency and/or the enabling event frequency. Frequency estimates for the specific types of accident scenarios associated with the Remote Drum Venting Activities are based on the general concepts described in the following paragraphs. Frequency estimates were developed for each accident scenario postulated in the HA tables using these general concepts as guidelines.

- Accidents initiated by operator error are generally considered to be in frequency category II (once every 1 to 100 years) for the unmitigated case. Such accidents include container mishandling accidents, vehicle accidents, and accidents involving incorrect operation of equipment. These types of events are expected to occur more frequently, but most will be of minimal significance (e.g., a minor vehicle accident, or "fender-bender" that does not harm waste containers carried by the vehicle or cause a fuel leak resulting in a fire). The accident scenarios postulated in the HA tables are significant accidents that could cause significant releases (e.g., a vehicle accident with a fuel leak and subsequent fire). These types of accidents could occur during the life of the facility, but they are not expected to occur very often.

  The unmitigated frequency for some accident scenarios initiated by operator error is estimated to be in frequency category III (once every 100 to 10,000 years) if the initiating event is unlikely to cause the scenario. For example, a container mishandling accident or a vehicle accident that impacts one or two waste containers are estimated to be frequency category II events, but such events that would impact many more containers is often much less likely. Mishandling accidents or vehicle accidents that significantly impact multiple containers (10 to 20 containers) would be estimated to be in frequency category III.

  Frequency estimates for some mitigated accident scenarios would remain the same as the unmitigated frequency category (II or III), but the estimate for other scenarios could be reduced to the next lower frequency category depending on the controls that are implemented. The mitigated frequency estimate for accidents that are caused by a single operator error that does not allow for correction or recovery, such as a vehicle accident, would generally remain the same as for the unmitigated case.

- For unmitigated estimates, equipment failures that lead to a significant release are generally considered to be in frequency category II (once every 1 to 100 years) or category III (once every 100 to 10,000 years) depending on the particular item. Frequency estimates for mitigated accident scenarios initiated by equipment failures could be lowered one frequency category if controls are identified to significantly improve the reliability of the particular item.

- A deflagration of hydrogen gas inside a drum during handling or while in a storage array is considered to have an unmitigated frequency in category II (once every 1 to 100 years). The unmitigated frequency estimate assumes that the TRU waste containers at Area G are unvented. This estimate is based on two such incidents occurring within the DOE complex recently. However, no such event has ever been recorded at Area G, even during retrieval of unvented waste drums from Pads 1, 2 and 4 by the Transuranic Waste Inspectable Storage Project (TWISP) or from the subsequent venting operations (>12,000 drums vented).

  A multiple waste container deflagration requires two or more suspect containers of poor container integrity to be stored or staged in a single location. The likelihood of a single drum having an atmosphere that would deflagrate was considered to have an unmitigated frequency in category II (once every 1 to 100 years). Idaho drum deflagration tests indicate sympathetic deflagrations/explosions (i.e., explosion induced in the donor drum initiates an explosion in the recipient drum stacked on top of the donor drum) occurred. A *suspect* container is unvented

having sufficient hydrogen-air concentration necessary for lid loss (i.e., exceeding approximately 15% hydrogen concentration with at least 7.5% oxygen), a rare condition from legacy drum characterization experience. The likelihood associated with having multiple suspect waste containers to be stacked, or of poor container integrity to be stored or staged immediately adjacent to each other (e.g., on a pallet) and being subject to an ignition source is considered to have an unmitigated frequency of III (once every 100 to 10,000 years). The mitigated frequency estimate is based on the installation of vents on metal waste container at Area G. These vents are specifically designed to prevent the buildup of gases generated inside waste drums. If they function as designed, they will dramatically reduce the frequency of hydrogen gas buildup that could lead to drum deflagration. However, the vents could fail, be blocked, or become plugged. Therefore, the possibility of a drum deflagration accident must be considered. A search of relevant literature indicates that no such event has ever occurred to a vented TRU waste drum at any DOE site over the approximately 50 years that TRU waste has been stored in drums. Furthermore, data indicates that only waste streams with corrosive media (e.g., HCL) showed any tendency to plug vents. These waste streams (which are not typical characteristics of waste at LANL) also depleted oxygen, further lowering the probability of an explosive hydrogen/oxygen mixture. The mitigated frequency of a drum deflagration accident is therefore estimated to be one category lower then the unmitigated frequency, or frequency category III (once every 100 to 10,000 years).

3.3.2 Bases for Consequence Estimates

As with the frequency categories, qualitative consequence severity categories will be assigned to each of the postulated accident scenarios associated with the unvented drum storage and remote drum venting activities. These consequence severity categories are qualitatively assessed and consider radiological factors such as inventory, material form, and energy of release; toxic factors include toxicity, inventory, and volatility. Table A-6 identifies the consequence categories for the public and worker and the criteria being used to assess the various consequence categories for the postulated accident scenarios in this addendum. Worker consequences will be assigned for the worker closest to the hazard. This will be assumed to be an Area G worker in the immediate vicinity of the hazard.

Although the hazard analysis is mostly a qualitative process, the radiological consequences (doses) to the public are estimated using a simplified quantitative determination. The dose to the maximally exposed offsite individual (MEOI) for each postulated accident scenario is estimated by the product of the source term and the dose-to-source-term ratio. To estimate the consequence category, these parameters are conservatively estimated using simplifying assumptions. For the limiting and representative accident scenarios that are carried forward into the accident analysis, the dose consequences may then be further refined.

It is possible that the dose consequence analysis in the accident analysis for some accident scenarios will result in calculated doses that are outside the consequence category assigned in this hazard analysis. Such apparent anomalies are the result of the conservative simplifying assumptions used herein. These situations are expected and will not invalidate the results of the hazard analysis.

Table A-6. Public Consequence Binning Table

CATEGORY	DEFINITION
A	**Offsite DOE Evaluation Guideline (EG) or Environmental Protection Agency (EPA) Exposure Guidelines Exceeded:** Potential for life-threatening health effects. • ≥ 25 Rem Total Effective Dose Equivalent (TEDE) (DOE EG per Appendix A to DOE-STD-3009-94) • ≥ Emergency Preparedness Planning Guideline (ERPG) 3
B	**Offsite DOE EG or EPA Exposure Guidelines not Exceeded but may be Challenged:** Potential for irreversible or serious health effects; ability to take protective action could be impaired. • From ≥ 5 to < 25 Rem • From ≥ ERPG-2 to < ERPG-3
C	**No Challenge to Offsite DOE EG or EPA Exposure Guidelines:** Irritation or discomfort but no permanent health effects. • From ≥ 0.1 to < 5 Rem • From ≥ ERPG-1 to < ERPG-2
D	**Less than DOE Public Dose Limit:** Mild and transient health effects possible. • From ≥ 0.01 rem to < 0.1 Rem (Offsite life-time dose per year per DOE O 5400.5) • From ≥ ERPG-0 to < ERPG-1
E	**DOE Public Dose Limit not challenged:** No appreciable risk of health effects. • < 0.01 rem • < ERPG-0

The source term for postulated accident scenarios is determined using the Five-Factor Formula in DOE-HDBK-3010:

$$\text{Source Term (ST)} = \text{MAR} \times \text{DR} \times \text{ARF} \times \text{RF} \times \text{LPF}$$

where:

- MAR: is material at risk, the amount of radionuclides available to be acted on by a given physical stress.
- DR: is damage ratio, the fraction of the MAR actually impacted by the energy generated by the postulated accident.
- ARF: is airborne release fraction, the fraction of the MAR impacted by the accident that becomes airborne or suspended in air as an aerosol and thus available for transport due to the physical stress created by the accident.
- RF: is respirable fraction, the fraction of airborne material that is respirable, or could be inhaled by humans (particles 10-µm aerodynamic equivalent diameter [AED] or less).
- LPF: is leak path factor, the fraction of airborne contaminants that are transported out of the confinement (e.g., building) to the environment.

Unmitigated public consequences for postulated accidents are estimated using conservative values for these factors and assume they are not affected by mitigative systems or administrative controls.

MAR

A large number of different radionuclides are present in the waste materials at Area G. The radionuclides of concern for the Remote Drum Venting activities are the transuranics in the waste that is confined inside waste containers. The upper-bound MAR estimates for each accident scenario are based on the values listed in Table A-7.

Table A-7. Upper-Bound MAR Values for Hazard Analysis Consequence Estimates

Affected Location/Component	MAR (PE-Ci or Tritium Ci)
Single TRU Waste Container – direct loaded	300
TRU Waste Container as an overpack (bounds drums, fiberglass reinforced plywood)	1,100

Though the HA uses the 1,100 PE-Ci MAR value for a TRU Waste Container as an overpack, the accident analysis will use a MAR value of 800 PE-Ci value for a TRU Waste Container as an overpack, based on waste generator data. This is because the accident analysis uses the MAR value that bounds actual above ground inventory at Area G, and so the HA will be overly conservative in consequence estimates. However, this does not invalidate the HA, since the same control selection in the HA is applicable if the 800 PE-Ci value is used, though consequence estimates may be higher when using the higher MAR value. In addition, the accident analysis is performed to determine the necessity for safety-class controls, which should be based on bounding, though actual, MAR values. *(Note: Newly generated TRU waste containers with MAR greater than 800 PE-Ci, and less than or equal to 1,100 PE-Ci will not be accepted at TA-54, Area G as required by the LANL Waste Acceptance Criteria, so hazards associated with unvented drums containing greater than 800 PE-Ci are scenarios that are judged not to be considered.)*

For each TRU waste container, the generator provides the quantity of radioactive material by radioisotope. To represent the relative hazards presented by the different radioisotopes, the quantity of each radioisotope must be converted into a single unit. The plutonium-239 equivalent curie (PE-Ci), also referred to as the ^{239}Pu-equivalent curie, is generally recognized as the standard unit for expressing radioactive material quantities for TRU waste and for evaluating the human health consequences of inhalation of TRU releases.

Individual container data may be converted to PE-Ci by multiplying the isotope-specific inventory with a weighting factor for that isotope (Equation A.2). The results from each of the individual isotopes are summed for each container, and entered into the waste container database as the total number of PE-Ci per container. The weighting factor for each individual isotope is determined as follows:

$$WF_i = \frac{DCF_{inh,i}}{DCF_{Pu-239}} \qquad \text{Equation A.2}$$

where:

WF_i = PE-Ci weighting factor for radionuclide i

$DCF_{inh,i}$ = inhalation dose conversion factor for radionuclide i

DCF_{Pu-239} = inhalation dose conversion factor for ^{239}Pu

This conversion method is specified in Appendix B of the WIPP WAC. This methodology uses conversion data that were originally published in DOE/EH-0071, *Internal Dose Conversion Factors for Calculation of Dose to the Public*.

The hazard and accident analyses in this addendum use the PE-Ci data to represent the quantity of radioactive material in each waste container. The dose calculations for waste material are based on ^{239}Pu.

DR

For the HA scenarios associated with activities associated with the storage or remote drum venting of unvented drums in this addendum, the DR is considered as 1.

ARF/RF

ARF/RF values of 1E-3/0.1 were used for the majority of spill scenarios. These values are the recommended values in DOE-HDBK-3010, Section 5.0 "Surface Contamination" or in DOE-Standard-5506 *(Re: Department of Energy Standard 5506-2007, Preparation of Safety Basis Documents for Transuranic (TRU) Waste Facilities, April 2007),* Table 4.5-1. The values are for packaged waste.

For fire accidents involving waste burned outside a container, the ARF/RF values were conservatively assumed to be 1E-2/1.0, respectively. These are the bounding values specified in Section 5.0 of DOE-HDBK-3010 and DOE-STD-5506, Table 4.5-1 for uncontained cellulosics or largely cellulosic mixed waste (e.g., paper, cardboard, rags, and wood shavings).

For the postulated fire accidents involving waste burned inside a container, the ARF/RF values are conservatively assumed to be 5E-4 and 1.0, respectively. These are the bounding values specified in Section 5.0 of DOE-HDBK-3010 and DOE-STD-5506 for packaged mixed waste heated/burned in packages with largely non-contaminated exterior surfaces (e.g., packaged in bags, compact piles, drums). For the CMPs, an ARF/RF value of 1E-6/1 is used for cement, concrete type waste material.

LPF

The LPF is assumed to be 1.0.

ST

Using the above inputs in the Five-Factor Formula, the general source term for accident scenarios involving spills of TRU or LLW material is expressed as follows:

$$ST = MAR \times DR \times 1E\text{-}3 \times 1E\text{-}1 \times 1.0 = 1E\text{-}4 \times MAR \times DR$$

For accident scenarios where the container contents are spilled and burned outside the container, the ST is expressed as follows:

$$ST = MAR \times DR \times 1E\text{-}2 \times 1.0 \times 1.0 = 1E\text{-}2 \times MAR \times DR$$

For accident scenarios where the container contents are burned inside the container, the ST is expressed as follows:

$$ST = MAR \times DR \times 5E\text{-}4 \times 1.0 \times 1.0 = 5E\text{-}4 \times MAR \times DR$$

For accident scenarios involving explosions/energetic events, the ST is expressed as follows:

$$ST = MAR \times DR \times 1E\text{-}3 \times 1.0 \times 1.0 = 1E\text{-}3 \times MAR \times DR$$

Dose-to-source-term ratios for the hazard analysis consequence estimates are provided in Table A-8. The ratios are based on a 1 PE-Ci release from Building 54-33 to the nearest site boundary (approximately 250 m, north). This location is conservative because of its close proximity to the site boundary. Table A-8 contains two types of releases: non-buoyant, and buoyant based on a small energy addition (small fire or deflagration with approximately 1 MW energy addition).

The dose-to-source term ratios in Table A-8 are used as guidelines to assist in the semi-quantitative risk ranking of events that can potentially impact the Public.

Table A-8. Radiological Consequence Estimates for Process Hazard Analysis Tables

Type of Release	TRU/LLW Releases (rem/PE-Ci)
Non-buoyant	49.97
Buoyant (1 MW energy addition)	6.35

Note: Doses are maximum centerline doses.

The dose-to-source term ratios in Table A-8 are calculated with the MELCOR Accident Consequence Code System version 2 (MACCS2) computer code. The dose-to-source term ratios in Table A-8 are intended to be bounding for the purpose of hazard analysis.

Worker consequence estimates are based on judgment rather than calculated exposures using the criteria in Table A-9. Some initiating events themselves have the potential to directly inflict major worker consequences independent of a release of radioactive material. The worker consequences for these cases are based a combination of the initiating event as well as resulting from a release of radioactive material. For instance, for a drum deflagration, a Worker consequence A is assigned mainly as a result of the physical hazard from the accident; with the radiological component being as high as a Consequence B. Mitigated worker consequence estimates are based on a qualitative judgment of the effectiveness of applicable controls.

Table A-9. Worker Consequence Binning Table

CATEGORY	DEFINITION
A	Immediate health effects or loss of life
B	Long-term health effects, disability, or severe injury (not life-threatening)
C	Lost-time injury but no disability (work restriction)
D	Minor injury with no disability and no work restriction
E	No measurable consequences

Risk Ranking

Tables A-10a and A-10b are the matrices of relative risk to the public and worker. The risk ranks are defined in Tables A-10a and A-10b. This risk concept is applicable to unmitigated or mitigated scenarios.

Table A-10a. Public Risk Matrix

Frequency	Severity-of-Consequence Level*				
	A	B	C	D	E
I – Expected	**1**	**1**	**1**	3	4
II – Likely	**1**	**2**	**2**	3	4
III – Unlikely	**2**	**2**	3	3	4
IV – Extremely Unlikely	**2**	3	3	4	4
V – Beyond Extremely Unlikely	3	3	4	4	4

*A is the highest severity, E is the lowest.

Table A-10b. Worker Risk Matrix

Frequency	Severity-of-Consequence Level*				
	A	B	C	D	E
I – Expected	**1**	**1**	**1**	**2**	4
II – Likely	**1**	**1**	**2**	3	4
III – Unlikely	**2**	**2**	3	4	4
IV – Extremely Unlikely	**2**	3	4	4	4
V – Beyond Extremely Unlikely	3	4	4	4	4

* A is the highest severity, E is the lowest.

Table A-11 provides a qualitative designator for each risk rank number. Risk rankings range from 1 (highest risk) to 4 (lowest risk).

Table A-11. Risk Rank Definitions

Risk Rank	Definition
1	High Risk
2	Moderate Risk
3	Low Risk
4	Minimal Risk

3.3.3 Accident Selection

The process for selecting events carried forward for formal accident analysis focuses on events with the potential to challenge the EG (designated as events with Public consequences of A or B). Low consequence events (e.g., C consequences to the public) are typically addressed adequately through the HA process.

The selection criteria include the following cases: Unique scenarios with (a) the highest consequences to the public for a given accident category (i.e., unmitigated consequences that challenge or exceed the DOE EG, or Category A or B consequences), and (b) sufficiently high risk estimates that require examination (i.e., Risk Rank I). All public consequence Category A and B scenarios, by definition, can either exceed or challenge the EG. Thus, they are candidates for further analysis. Events that did not result in Category A or B consequences to the public are not required to be evaluated in formal accident analyses.

Every HA accident scenario provided above is considered in the Accident Analysis section because all public consequences estimates were either A or B. The accident scenarios developed in the consequence analysis is tailored to bound all of these HA accident scenarios that are related to venting activities and the presence of unvented drums.

A summary of the accident scenarios that will be analyzed in consequence analysis is listed below, with the corresponding HA accidents that they bound.

1. Single-Container Deflagration Accident - HA-1, HA-2, HA-3, and HA-4

2. Multiple-Container Deflagration Accident – HA-1a, HA-2a, HA-3a, and HA-4a

3. Deflagration Accident During Drum Venting – HA-7, HA-8, and HA-9

4. Operational Spill/Loss of Confinement Accident - HA-5, HA-6, HA-10, and HA-11

The accident scenarios described above will be evaluated within this analysis because they are unique to the activities associated with the storage of or remote venting of unvented drums. DOE-STD-5506-2007 provides a comprehensive list of all accidents that must be analyzed for TRU-waste facilities and these 4 accidents mentioned above along with the accidents presented in the current DSA (Ref. Area G DSA April 9, 2003) adequately cover this list for the purpose of this addendum.

The results of the consequence analysis in the Section 3.4 Accident Analysis determine the necessity for safety-class controls. DOE Standard 5506-2007 cites that for public dose consequences it,

> *"… is reasonable to expect that for existing facilities using the assumptions provided in this Standard, an unmitigated MOI greater than 10 rem should be considered sufficient to challenge the EG."*

So dose consequences to the public less than 10 rem do not require the selection of safety-class controls as per DOE Standard 5506-2007.

3.4 ACCIDENT ANALYSIS

This section describes the analysis of Remote-Drum-Venting events identified by the hazard analysis for further consideration. Some of these accidents have consequences (in terms of impact on the public) that may approach, or potentially exceed, the EG. The accidents selected include drum deflagration scenarios that may involve one or more drums, drum impacts, and drum over-pressurization.

3.4.1 Single-Container Deflagration Accident

This event is due to hydrogen or other flammable/explosive gases (e.g., off-gas from Volatile Organic Compounds [VOCs]) inside the container). The potential presence of prohibited items such as cylinders of flammable/combustible gases in legacy waste also can generate flammable mixtures. Ignition sources include sparks, heat, etc. that can ignite gases escaping the container, as well as potential ignition sources in the waste, such as metal objects, pyrophoric material, and heat-generating chemical reactions.

Initiating Events

The HA identified the following Waste Container Deflagration scenarios:

- Explosion/energetic event inside a container; ejected material burns (unvented container). The scenario assumes that a flammable gas buildup inside container is ignited during container handling or movement, or exothermic reaction results in explosion and fire (HA-1, HA-3, and HA-4)

- Explosion/energetic event inside a container; ejected material burns (unvented container). This scenario is the same as HA-1, with the exception that it is a vented container. Flammable gas buildup inside container is ignited during container handling due to an obstructed vent (HA-2);

3.4.1.1 Scenario Development

This scenario involves an explosive mixture forming inside a waste drum that is then ignited during handling. In this scenario, the container is assumed unvented to allow the buildup of flammable gas. Hydrogen gas is generated by radiolysis to varying degrees in the waste drums, depending on their contents, and VOCs, if present, can off-gas from the waste matrix. The deflagration is postulated to separate the drum's lid from its body and expel some of the drum's contents. A limited portion of the expelled waste is assumed to burn. All of the waste remaining in the drums is assumed to burn. It is bounding to consider a drum in this accident scenario, as other types of waste containers are thought not to be susceptible to lid loss from a deflagration. In this scenario, three cases will be analyzed using two MAR values.

Case 1: A deflagration occurs using a maximum MAR value 300 PE-Ci. The 300 PE-Ci is the for a single TRU-waste container as indicated in Table A-7.

Case 2: A deflagration occurs using a MAR value of 800 PE-Ci. The 800 PE-Ci is lower than the current Area G DSA limit for a single TRU waste container. However, a study of the above ground inventory at Area G indicates that 800 PE-Ci, based on waste generator data, does bound the maximum MAR in a single TRU-waste container that is overpacked, as indicated in Table A-

7. This case is analyzed as if it were not overpacked. This will determine if containers with MAR greater than 300 PE-Ci require a SC control such as to be overpacked.

Case 3: A deflagration occurs using a MAR value of 800 PE-Ci. The 800 PE-Ci is the limit for a single TRU-waste container that is overpacked, as indicated in Table A-7. This case will be analyzed taking credit for an overpacked container of sound integrity.

For all cases, the deflagrations will be assumed to occur at a location that is closest to the site boundary (Dome 54-33).

Assumptions

STs are determined as a function model estimates for damage and on MAR. Offsite consequences are determined based on the estimated dispersion characteristics of a plume driven by the energy release of the associated fire.

The following assumptions were applied generally to the analysis of Transuranic Waste Container Deflagration Accidents.

1. The analysis is based on single drum. This is considered to be bounding and most representative for Area G. The DR associated with a single drum bound those from other types of containers for this event.

2. Per DOE-STD-5506-2007, containers of sound integrity that are overpacked, SWBs, direct loaded RH canisters with welded lids, and RH canister with nested metal drums can be credited to prevent lid loss and ejection of material. "For SWB, RH canister with nested metal drums, and the overpacked drum, a significant release from the potential venting through the outer container seal is not expected." However, per DOE-STD-5506-2007, pg. 38, these types of containers must be modeled as seal failures. A DR can be taken for the amount of mass loss from the contained burning for a drum of DR = 0.1. (DOE-STD-5506-2007, pg. 38)

3. The maximum MAR contents per container of 300 PE-Ci for a single TRU-waste container and 800 PE-Ci for a single TRU-waste container overpacked, as discussed in Section 3.3.2.

4. The DRs are based on a single TRU-waste container and a single TRU-waste container of sound integrity that are overpacked. Case 2 and 3 provide this comparison. It should be noted that the 800 PE-Ci MAR value is the proposed limit for a single TRU-waste container that is overpacked. Per DOE-STD-5506-2007, "Overpacking a metal drum of sound integrity with a larger metal drum, a SWB, or a RH canister with nested metal drums can be credited to prevent lid loss and ejection of contents". Cases 2 and 3 aid in the determination if containers with MAR greater than 300 PE-Ci require a SC control such as to be overpacked.

5. MAR assumed to be 100% combustible dispersible.

3.4.1.2 Source Term Analysis

A ST is determined for each of the postulated scenarios identified above using the five-factor formula. This section discusses each of the factors in the ST evaluation with respect to the postulated accident scenario.

Material at Risk:

Case 1: MAR value of 300 PE-Ci.

Case 2: MAR value of 800 PE-Ci (not overpacked)

Case 3: MAR value of 800 PE-Ci (overpacked).

Damage Ratio:

40% of the waste is assumed to be ejected due to the deflagration (DR = 0.4) (DOE-STD-5506-2007, p. 30). This DR = 0.4 applies to the flexing-in-air release and the unconfined burning outside the drum. A DR of 0.05 applies to the mass of ejected combustibles that is ignited by heat generated by the combustion of a stoichiometric H_2-air concentration in the drum. This includes the total energy generated by the deflagration of a 30-vol% hydrogen in air (that is assumed to contain a sufficient oxygen concentration for the complete combustion of the hydrogen) and ignoring any heat transfer to other components such as waste remaining in the drum or the drum itself and the possible extinguishment during its flight (see Appendix B discussion)." DOE-STD-5506-2007, p.30. The DR for the remainder of the waste is 0.60 and is assumed to burn contained within the drum (DOE-STD-5506-2007, p.30). It should be noted, that Appendix B of DOE-STD-5506-2007 concludes that the "behavior of TRU waste drums filled with combustible waste containing a limited quantity of VOC is bounded by the drum behavior resulting from the deflagration of an internal stoichiometric H_2-air mixture. The drums at Area G do not contain liquid VOC or large quantities of cellulose wetted with solvents, which would require the use of a DR of 1.0.

For case 3, per DOE-STD-5506-2007, page 38, "As discussed in Section 4.4.2 on deflagration within a container, overpacking a metal drum of sound integrity with a larger metal drum, a SWB or a TDOP, can be credited to prevent lid loss and ejection of contents and modeled as seal failures. In addition to preventing lid loss, overpacked containers provide an additional level of protection from fires that allows a lower DR than those for directed-loaded drums or SWBs." ..." For a radioactive material release to occur, the fire has to heat up the inside of the SWB/TDOP and also heat the inner contents of the 55-gal drums resulting in pyrolization of the drum contents and subsequent venting from both containers. The SWB/TDOP configuration presents a significant heat sink and pyrolization of drum contents would require a very long lasting fire or a very large fire. Another consideration is that the SWB/TDOP is large, therefore, it is not expected that all of the waste will be affected by a fire. Although the drum-in-drum overpack does not provide the same level of heat sink, the overpacked drum fire testing described in Appendix B.2.4, "Volatile Organic Compounds (VOCs)" concluded that the average mass loss for a drum overpacking was about a factor of five less than that of the direct-loaded drums that did not undergo "lid loss" (which only averaged about 10% mass loss). Therefore, a DR of 0.1 is assumed for overpacked drums of sound integrity whether overpacked in a larger drum, a SWB, or a TDOP. This applies to a single or multiple overpacked containers exposed to the radiant heat flux that causes seal failures." DR of 0.1 will be used.

Airborne Release Fractions/Respirable Fractions:

For cases 1 and 2, the release mechanism of flexing in air, the values for suspension from shock-vibration of 1E-3/0.1 in DOE-HDBK-3010-94 are assumed to be applicable and conservative. For the 60% of the waste that remains in the drum and burns, bounding ARF/RF values of 5E-04/1.0 are assigned consistent with DOE-STD-5506-2007 for the situation where combustible solids are heated or burned in a container. For the fraction of waste that burns unconfined outside of the drum, ARF/RF is assigned as 1E-2/1.0 for unpackaged, burning, combustible solids.

For case 3, bounding ARF/RF values of 5E-04/1.0 are assigned consistent with DOE-STD- 5506-2007 for the situation where combustible solids are heated or burned in a container.

Leak Path Factor:

Because of the lack of confinement capability afforded by the TRU waste domes at Area G, an LPF of 1.0 was assumed for the postulated deflagration scenario.

Source Term:

The source terms for each case are calculated using the five factor formula. For each case, the ST associated with each type/form of material is accounted for using the appropriate ARF/RF factors. The ST generally has three parts, a ST associated with a spill of the MAR, a ST associated with the MAR burning uncontained and a ST associated with the MAR burning contained. It should be noted that the amount of MAR burning uncontained is adjusted by subtracting the MAR that becomes airborne during the ejection from the drum from the expelled/spilled MAR to obtain the MAR that burns uncontained on the ground.

Case 1:

ST expelled from container due to deflagration, flexing-in-air (DR = 0.40):

ST = 300 PE-Ci x 0.40 x 1E-3 x 0.1 x 1

ST = 0.012 PE-Ci

ST expelled from container due to deflagration that burns uncontained (DR 0.4 and DR=0.05): The MAR that becomes airborne and respirable during the ejection from the drum is subtracted from the total expelled/spilled MAR to obtain the MAR that burns uncontained on the ground (i.e., expelled or spilled MAR x ARF x RF).

ST = ((300 PE-Ci x 0.40) - (300 PE-Ci x 0.40 x 1E-3 x 0.1)) x 0.05 x 1E-2 x 1 x 1

ST = 0.06 PE-Ci

ST that remains in containers following deflagration that burns contained (DR 0.6)

ST = 300 PE-Ci x 0.60 x 5E-4 x 1 x 1

ST = 0.09 PE-Ci

Total ST from fire = 0.06 + 0.09 = 0.15 PE-Ci

Case 2:

ST expelled from container due to deflagration, flexing-in-air (DR = 0.40):

ST = 800 PE-Ci x 0.40 x 1E-3 x 0.1 x 1

ST = 0.032 PE-Ci

ST expelled from container due to deflagration that burns uncontained (DR 0.4 and DR=0.05): The MAR that becomes airborne and respirable during the ejection from the drum is subtracted from the expelled/spilled MAR to obtain the MAR that burns uncontained on the ground (i.e., expelled or spilled MAR x ARF x RF).

ST = ((800 PE-Ci x 0.40) - (800 PE-Ci x 0.40 x 1E-3 x 0.1)) x 0.05 x 1E-2 x 1 x 1

ST = 0.16 PE-Ci

ST that remains in containers following deflagration that burns contained (DR 0.6)

ST = 800 PE-Ci x 0.60 x 5E-4 x 1 x 1

ST = 0.24 PE-Ci

Total ST from fire = 0.16 + 0.24 = 0.40 PE-Ci

Case 3:

ST that remains burns contained as a result of lid seal failure. (DR =0.1)

ST = 800 PE-Ci x 0.1 x 5E-4 x 1 x 1

ST = 0.040 PE-Ci

3.4.1.3 Consequence Analysis

The doses to the MEOI are based on the ST analysis above and the dispersion associated with the accidents in each case. The dose consequences are calculated as the product of the ST and the dose-to-source term ratio for the appropriate release mechanisms using Building 54-33 as the release point. In general the following equation is used to calculate the dose to the MEOI.

$$Dose = ST_{spilled\ \mathrm{MAR}} \times (rem/PE\text{-}Ci)_{nonbuoyant} + ST_{burning\ \mathrm{MAR}} \times (rem/PE\text{-}\mathrm{Ci})_{bouyant}$$

The atmospheric dispersion associated with a non-buoyant ground-level release is appropriate for the release mechanism of flexing in air. The dispersion associated with a low-buoyancy fire of 0.1 MW is assigned for the fire-related release mechanisms. The χ/Q Values for Area G that were developed in SBDO:CALC-07.019, *Radioactive Material Dispersion Calculation – Area G*, September 2007 were combined with a dose conversion factor (DCF) of 1.85E+08 rem/Ci) (ICRP 68/72 (ICRP 1998/2002)) and a breathing rate of 3.3E-04 m^3/s to get the following dose-to-source-term ratios for a 1 PE-Ci release. Note that SBDO:CALC-07.019 is Appendix 3C developed for the draft Area G BIO that is presently being completed.

Building 54-33

Nonbuoyant release: 49.97 rem/PE-Ci

Buoyant release (0.1 MW): 16.94 rem/PE-Ci

Case 1:

Dose = [0.012 PE-Ci x 49.97 rem/PE-Ci] + [0.15 PE-Ci x 16.94 rem/PE-Ci]

Dose = 3.1 rem.

Case 2:

Dose = [0.032 PE-Ci x 49.97 rem/PE-Ci] + [0.40 PE-Ci x 16.94 rem/PE-Ci]

Dose = 8.4 rem.

Case 3:

Dose = 0.04 PE-Ci x 16.94 rem/PE-Ci

Dose = 0.68 rem.

3.4.1.4 Comparison to Guidelines

The unmitigated dose to the MEOI from the drum deflagration for Cases 1 through 3 do not challenge the EG, so the necessity for the selection of safety-class controls are not warranted. The selection of SS controls for worker protection and defense-in-depth is warranted, however, and is shown in the HA.

3.4.1.5 Summary of TSR Controls

The safety-significant-level controls are listed in the Hazard Analysis, Section 3.3. Also listed are defense-in-depth controls which also help to mitigate or prevent the effects of a deflagration accident.

DOE-STD-5506 Preparation of Safety Basis Documents for Transuranic (TRU) Waste Facilities cites results of Idaho Drum Deflagration Tests. Several drums were filled with representative combustible/metal waste matrices; the drums were also pressurized with a flammable gas mixture comprised of oxygen, hydrogen, and nitrogen. The test drums were then subjected to sparks, a drill bit puncture, or a 12-foot drop. The results showed that puncturing or dropping the test drum did not result in a deflagration. In the 12-foot drop test, when the drum impacted the ground, it rotated a complete 180

degrees, yet it did not deflagrate nor did it show signs that a fire occurred within the drum. This indicates that movement of metal items within the test drums did not produce enough of a spark to ignite the flammable gas mixture. Another indication from the tests is that substantial impact stress to an unvented drum with a flammable gas mixture, such as from a fall from elevated heights, would not cause a shock induced ignition or sparking of metal wastes to ignite the stoichiometric hydrogen concentration. However, this hypothesis is based on a single drop test. The drum that was punctured by a sharpened drill bit also did not experience ignition of the hydrogen flammable mixture. All of the test results taken together indicate that movements or handling of unvented drums, such as involved during careful decontamination and contamination control activities, installation of a lid restraining device, movements of the unvented drum on a forklift, or insertion or removal from an overpack, probably will not cause a drum to deflagrate. However, presuming that a deflagration is expected, the rigorous application of these controls for worker protection is required.

When the unvented drum is in the unvented TRU waste container storage area, the lid restraining device may be removed. The removal of the lid restraining device is allowed because its removal from the unvented drum does not result in much perturbation to or movement of the unvented drum. Also, the unvented drum will not be exposed to any activities that will cause it to deflagrate when it is in storage.

The currently approved Area G TSRs already require the overpack of single drums that contain more than 300 PE-Ci. Overpacking an unvented drum is another control that is credited in the HA tables.

Per DOE-STD-5506-2007, containers of sound integrity that are overpacked, SWBs, direct loaded RH canisters with welded lids, and RH canister with nested metal drums can be credited to prevent lid loss and ejection of material during a deflagration. The DOE-STD-5506-2007 cites the following: "For SWB, RH canister with nested metal drums, and the overpacked drum, a significant release from the potential venting through the outer container seal is not expected."

Since the overpack is considered to provide protection from the effects of a deflagration, such as lid loss and ejection of material; an overpack with an enclosed unvented drum may be returned to the drum storage array.

3.4.2 Multiple-Container Deflagration Accident

This event is due to a deflagration of flammable gas (primarily hydrogen) that has built up inside a drum which results in a multiple-waste-container deflagration. This event is a result of waste container deflagration propagating horizontally or vertically to initiate additional container deflagrations. This event requires two *suspect* containers to be stacked, or of poor container integrity to be stored or staged immediately adjacent to each other (e.g., on a pallet). For containers with sound integrity that are overpacked with a larger metal drum, SWB's, and RH canisters with nested metal drums, sympathetic deflagration is considered extremely unlikely. Per DOE-STD-5506-2007, these containers can be credited to prevent lid loss and ejection of material. Therefore, a sympathetic deflagration with these containers will not be analyzed.

Initiating Events

The HA identified the following Multiple TRU Waste Container Deflagration scenarios:

- HA-1a - Explosion/energetic event inside a container; multiple waste container deflgration occurs. Flammable gas buildup inside container is ignited during drum handling or movement.

- HA-2a - Explosion/energetic event inside a container; multiple waste container deflgration occurs. Flammable gas buildup inside container is ignited during drum handling (vent is obstructed).

- HA-3a - Explosion/energetic event inside a container; multiple waste container deflgration occurs. Flammable gas buildup inside container is ignited during drum handling or movement.

- HA-4a - Explosion/energetic event and fire inside a container, multiple waste container deflagration occurs. Exothermic chemical reaction products.

3.4.2.1 Scenario Development

This scenario is similar to the Single-Container Deflagration scenario previously presented. A multiple waste container deflagration requires two or more suspect containers of poor container integrity to be stored or staged in a single location. A *suspect* container is unvented (includes those containers with inadequate vents, no vent, or plugged vents as well as those containers with newly installed vents that have hydrogen volumetric concentration above 8% [during abatement process]) and meets *at least one* of the following criteria:

- Obvious indications of pressurization,

- Waste stream characteristics that indicates potential for generating explosive atmospheres of hydrogen volumetric concentration above 8%, or

- Inadequate waste stream data available.

Idaho drum deflagration tests [EG&G 1983] indicate sympathetic deflagrations/explosions (i.e., explosion induced in the donor drum initiates an explosion in the recipient drum stacked on top of the donor drum) have occurred. However, the Idaho drum deflagration tests indicated that the lower drum did not lose its lid due to the weight of the drum on top. No experimentation has been conducted nor observed on sympathetic deflagration of horizontally adjacent drums. Therefore, it is conservatively assumed that sympathetic deflagration is possible involving two drums for TRU waste being retrieved from burial sites. Although additional sympathetic drum deflagrations may be possible depending on the retrieval staging configuration and other factors, modeling more than two drum deflagrations is not deemed necessary, because adequate insights from the two-drum deflagration should be sufficient to establish appropriate TSR controls to protect the facility worker, other onsite (collocated) workers, the public, and the environment, and based on the likelihood of three or more sympathetic deflagrations being very low.

A *suspect* container is unvented having sufficient hydrogen-air concentration necessary for lid loss (i.e., exceeding approximately 15% hydrogen concentration with at least 7.5% oxygen), a rare condition from legacy drum characterization experience. Therefore, the bounding scenario is assumed to involve two suspect containers with the maximum single container MAR. A waste container is considered of poor integrity if it meets any of the criteria in the Payload Container Integrity Checklist, DOE/WIPP-02-3122.

In this scenario, the following MAR value will be analyzed:

A deflagration occurs using a MAR value of 600 PE-Ci, involving 2 maximum containers 300 PE-Ci. The 300 PE-Ci is the limit for a single TRU-waste container.

For this case, the deflagrations are assumed to occur at a location that is closest to the site boundary (Dome 54-33). The dose-to-source term ratio for this release point is used.

Since the current Area G TSRs already requires that drums greater than 300 PE-Ci are overpacked, and since DOE Standard 5506 indicates that an overpack is considered to provide protection from the effects of a deflagration, the case for two deflagrating drums each containing 1,100 PE-Ci is not considered for a sympathetic deflagration accident.

Assumptions

STs are determined as a function model estimates for damage and on MAR. Offsite consequences are determined based on the estimated dispersion characteristics of a plume driven by the energy release of the associated fire.

The following assumptions were applied generally for this scenario.

1. The analysis is based on drums. This is considered to be bounding and most representative for Area G. The DR associated with a drum bound those from other types of containers for this event.

2. Per DOE-STD-5506-2007, containers of sound integrity that are overpacked, SWBs, direct loaded RH canisters with welded lids, and RH canister with nested metal drums can be credited to prevent lid loss and ejection of material. Therefore, these containers will not be evaluated.

3. The maximum MAR contents per container of 300 PE-Ci for a single TRU-waste container. Please note assumption 4 below.

4. The DRs are based on single TRU-waste containers. It should be noted that the 1,100 PE-Ci MAR value is the proposed limit for a single TRU-waste container that is overpacked. Per DOE-STD-5506-2007, "Overpacking a metal drum of sound integrity with a larger metal drum, a SWB, or a RH canister with nested metal drums can be credited to prevent lid loss and ejection of contents", and as a result the sympathetic deflagration involving two containers with 1,100 PE-Ci MAR is not considered.

5. MAR assumed to be 100% combustible dispersible.

3.4.2.2 Source Term Analysis

A ST is determined for each of the postulated scenarios identified above using the five-factor formula. This section discusses each of the factors in the ST evaluation with respect to the postulated accident scenario.

Material at Risk:

The maximum MAR for this accident is assumed to be 600 PE-Ci, involving 2 maximum containers at 300 PE-Ci.

Damage Ratio:

40 % of the waste is assumed to be ejected due to the deflagration (DR = 0.4) (DOE-STD-5506-2007, p. 30). This DR = 0.4 applies to the flexing-in-air release and the unconfined burning outside the drum. A DR of 0.05 "of the mass of ejected combustibles that is ignited by heat generated by the combustion of a stoichiometric H_2-air concentration in the drum. This includes the total energy generated by the deflagration of a 30-vol% hydrogen in air (that is assumed to contain a sufficient oxygen concentration for the complete combustion of the hydrogen) and ignoring any heat transfer to other components such as waste remaining in the drum or the drum itself and the possible extinguishment during its flight (see Appendix B discussion)." DOE-STD-5506-2007, p.30. The DR for the remainder of the waste is 0.60 and is assumed to burn contained within the drum (DOE-STD-5506-2007, p.30). It should be noted, that Appendix B of DOE-STD-5506-2007 concludes that the "behavior of TRU waste drums filled with combustible waste containing a limited quantity of VOC is bounded by the drum behavior resulting from the deflagration of an internal stoichiometric H_2-air mixture. The drums at Area G do not contain liquid VOC or large quantities of cellulose wetted with solvents, which would require the use of a DR of 1.0.

Airborne Release Fractions/Respirable Fractions:

For the release mechanism of flexing in air, the values for suspension from shock-vibration of 1E-3/0.1 in DOE-HDBK-3010-94 are assumed to be applicable and conservative. For the 60% of the waste that remains in the drum and burns, bounding ARF/RF values of 5E-04/1.0 are assigned consistent with DOE-STD-5506-2007 for the situation where combustible solids are heated or burned in a container. For the fraction of waste that burns unconfined outside of the drum, ARF/RF is assigned as 1E-2/1.0 for unpackaged, burning, combustible solids.

Leak Path Factor:

Because of the lack of confinement capability afforded by the TRU waste domes at Area G, an LPF of 1.0 was assumed for the postulated deflagration scenario.

Source Term:

The source terms for each case are calculated using the five factor formula. For each case, the ST associated with each type/form of material is accounted for using the appropriate ARF/RF factors. The ST generally has three parts, a ST associated with a spill of the MAR, a ST associated with the MAR burning uncontained and a ST associated with the MAR burning contained. It should be noted that the amount of MAR burning uncontained is adjusted by subtracting the MAR that becomes airborne during the ejection from the drum from the expelled/spilled MAR to obtain the MAR that burns uncontained on the ground.

ST expelled from container due to deflagration, flexing-in-air (DR = 0.40):

ST = 600 PE-Ci x 0.40 x 1E-3 x 0.1 x 1

ST = 0.024 PE-Ci

ST expelled from container due to deflagration that burns uncontained (DR 0.4 and DR=0.05): The MAR that becomes airborne and respirable during the ejection from the drum is subtracted from the expelled/spilled MAR to obtain the MAR that burns uncontained on the ground (i.e., expelled or spilled MAR x ARF x RF).

ST = ((600 PE-Ci x 0.40) - (600 PE-Ci x 0.40 x 1E-3 x 0.1)) x 0.05 x 1E-2 x 1 x 1

ST = 0.12 PE-Ci

ST that remains in containers following deflagration that burns contained (DR 0.6)

ST = 600 PE-Ci x 0.60 x 5E-4 x 1 x 1

ST = 0.18 PE-Ci

Total ST from fire = 0.12 + 0.18 = 0.30 PE-Ci

3.4.2.3 Consequence Analysis

The doses to the MEOI are based on the ST analysis above and the dispersion associated with the accidents in each case. The dose consequences are calculated as the product of the ST and the dose-to-source term ratio for the appropriate release mechanisms using Building 54-33 as the release point. In general, the following equation is used to calculate the dose to the MEOI.

$$Dose = ST_{spilled\ \mathrm{MAR}} \times (rem/PE\text{-}Ci)_{nonbuoyant} + ST_{burning\ \mathrm{MAR}} \times (rem/PE\text{-}\mathrm{Ci})_{bouyant}$$

The atmospheric dispersion associated with a non-buoyant ground-level release is appropriate for the release mechanism of flexing in air. The dispersion associated with a low-buoyancy fire of 0.1 MW is assigned for the fire-related release mechanisms. The χ/Q Values for Area G that were developed in SBDO:CALC-07.019, *Radioactive Material Dispersion Calculation – Area G*, September 2007 were combines with a dose conversion factor (DCF) of 1.85E+08 rem/Ci) (ICRP 68/72 (ICRP 1998/2002)) and a breathing rate of 3.3 E-04 m^3/s to get the following dose-to-source-term ratios for a 1 PE-Ci release. Note that SBDO:CALC-07.019 is Appendix 3C developed for the draft Area G BIO that is presently being completed.

Building 54-33

Nonbuoyant release: 49.97 rem/PE-Ci

Buoyant release (0.1 MW): 16.94 rem/PE-Ci

Dose = [0.024 PE-Ci x 49.97 rem/PE-Ci] + [0.3 PE-Ci x 16.94 rem/PE-Ci]

Dose = 6.3 rem.

3.4.2.4 Comparison to Guidelines

The unmitigated dose to the MEOI from the two-drum deflagration does not challenge the EG, so the necessity for the selection of safety-class controls is not warranted. The selection of SS controls for worker protection and defense-in-depth is warranted, however, and is shown in the HA.

3.4.2.5 Summary of TSR Controls

There are SS-SSCs that were identified for this accident as part of the hazards analysis which contribute significantly to defense-in-depth. These controls were identified in the HA tables (see Table A-4). These controls are also discussed in detail, along with their bases for selection, in the TSR document. The control that unvented drums with MAR $\geq$ 300 PE-Ci not stored adjacent to each other minimizes to zero the probability that two unvented drums with $\geq$ 300 PE-Ci will experience a deflagration. Also, when the unvented drum is stored in an isolated area with other unvented drums, the unvented drums are not stacked. These two controls, along with the rest of the listed controls in the HA tables is considered to effectively minimize the probability of a sympathetic deflagration involving 2 unvented drums containing 300 PE-Ci.

3.4.3 Deflagration Accident During Drum Venting

The source term and consequences for this scenario are the same as for the Single-Container Drum Deflagration Accident. The difference between the two is that the drums to be vented are known to not have a vent (or a plugged vent), or are suspected of having a buildup of flammable gas (bulging drums), as well as purposefully exposing the drum to a potential ignition source, the venting activity. This scenario will derive specific controls for this activity.

Initiating Events

The HA identified the following drum deflagration Drum Venting operations scenarios:

- Flammable gas ignited during headspace gas sampling or filter replacement in RDVS or enclosure (HA-7, HA-8); and
- Pyrophoric materials or unstable chemicals in a container ignite during venting or headspace sampling (HA-9).

3.4.3.1 Scenario Development

This scenario involves an explosive mixture forming inside a waste drum that is then ignited during handling. In this scenario, the container is assumed unvented to allow the buildup of flammable gas. Hydrogen gas is generated by radiolysis to varying degrees in the waste drums, depending on their contents, and VOCs, if present, can off-gas from the waste matrix. The deflagration is postulated to separate the drum's lid from its body and expel some of the drum's contents. A limited portion of the expelled waste is assumed to burn. All of the waste remaining in the drums is assumed to burn. It is bounding to consider a drum in this accident scenario, as other types of waste containers are thought not to be susceptible to lid loss from a deflagration.

Because the ST derivation is the same as for the Single-Container Drum Deflagration Accident analysis, only a summary is provided in this DBA, refer to the Single-Container Drum Deflagration Accident for details.

Case 1: A deflagration occurs using a maximum MAR value 300 PE-Ci. The 300 PE-Ci is the bounding quantity for a single TRU-waste container as indicated in Table A-7.

Case 2: A deflagration occurs using a MAR value of 800 PE-Ci. The 800 PE-Ci is lower than the current Area G DSA MAR limit (1,100 PE-Ci) for a single TRU waste container that is overpacked. However, a study of the above ground inventory at Area G indicates that 800 PE-Ci does bound the maximum MAR in a the limit for a single TRU-waste container that is overpacked, as indicated in Table A-7.

Case 3: Let us consider for Case 3 a deflagration occurring with a MAR value of 15 PE-Ci. This is a useful value for operations as there are a significant number of drums in the population at Area G containing less than 15 PE-Ci. Therefore; as a point of comparison, this case will evaluate the associated consequences.

For all cases analyzed, the deflagrations will be assumed to occur at a location that is closest to the site boundary (Dome 54-33).

3.4.3.2 Source Term Analysis

Although it will be used during drum venting, all cases are evaluated without the contamination controlled enclosure in place. Therefore, the source term for this scenario (Cases 1 and 2) is the same as calculated for the Single-Container Drum Deflagration Accident, and will not be repeated here. Case 3 uses the same methodology; the only difference being the MAR is 15 PE-Ci.

Case 1:

For Case 1, the MAR involved in the deflagration is 300 PE-Ci, and the resulting source term was calculated to be 0.012 PE-Ci for the flexing in air and 0.15 PE-Ci for the burning contribution.

Case 2:

For Case 2, the MAR involved in the deflagration is 800 PE-Ci, and the resulting source term was calculated to be 0.0.032 PE-Ci for the flexing in air and 0.40 PE-Ci for the burning contribution.

Case 3:

ST expelled from container due to deflagration, flexing-in-air (DR = 0.40):

ST = 15 PE-Ci x 0.40 x 1E-3 x 0.1 x 1

ST = 0.0006 PE-Ci

ST expelled from container due to deflagration that burns uncontained (DR 0.4 and DR=0.05): The MAR that becomes airborne and respirable during the ejection from the drum is subtracted from the total expelled/spilled MAR to obtain the MAR that burns uncontained on the ground (i.e., expelled or spilled MAR x ARF x RF).

ST = ((15 PE-Ci x 0.40) - (15 PE-Ci x 0.40 x 1E-3 x 0.1)) x 0.05 x 1E-2 x 1 x 1

ST = 0.003 PE-Ci

ST that remains in containers following deflagration that burns contained (DR 0.6)

ST = 15 PE-Ci x 0.60 x 5E-4 x 1 x 1

ST = 0.0045 PE-Ci

Total ST from fire = 0.003 + 0.0045 = 0.0075 PE-Ci

3.4.3.3 Consequence Analysis

The doses to the MEOI are based on the ST analysis above and the dispersion analysis presented for the Single-Container Drum Deflagration Accident. The dose consequences are calculated as the product of the ST and the dose-to-source term ratio for the appropriate release mechanisms using Building 54-33 as the release point. In general the following equation is used to calculate the dose to the MEOI.

$$Dose = ST_{spilled\ \mathrm{MAR}} \times (rem/PE\text{-}Ci)_{nonbuoyant} + ST_{burning\ \mathrm{MAR}} \times (rem/PE\text{-}\mathrm{Ci})_{bouyant}$$

The atmospheric dispersion associated with a non-buoyant ground level release is appropriate for the release mechanism of flexing in air. The dispersion associated with a low-buoyancy fire of 0.1 MW is assigned for the fire-related release mechanisms.

Building 54-33

Nonbuoyant release: 49.97 rem/PE-Ci

Buoyant release (0.1 MW): 16.94 rem/PE-Ci

Case 1

Dose = [0.012 PE-Ci x 49.97 rem/PE-Ci] + [0.15 PE-Ci x 16.94 rem/PE-Ci]

Dose = 3.1 rem.

Case 2

Dose = [0.032 PE-Ci x 49.97 rem/PE-Ci] + [0.40 PE-Ci x 16.94 rem/PE-Ci]

Dose = 8.4 rem.

Case 3:

Dose = [0.0006 PE-Ci x 49.97 rem/PE-Ci] + [0.0075 PE-Ci x 16.94 rem/PE-Ci]

Dose = 0.2 rem.

3.4.3.4 Comparison to Guidelines

The unmitigated dose to the MEOI for cases 1 through 3 do not challenge the EG, so the necessity for the selection of safety-class controls is not warranted. The selection of SS controls for worker protection and defense-in-depth is warranted, however, and is shown in the HA. For case 2, the drum venting deflagration accident does challenge the EG of 25 rem, therefore safety-class controls are required to mitigate the accident. It is important to note that while some of the cases did not challenge the EG, the risk to workers from the direct effects of the deflagration itself are still present. Controls to address this hazard are identified in the HA table for drum venting (Table A-4).

3.4.3.5 Summary of TSR Controls

The safety-significant-level controls are listed in the Hazard Analysis, Section 3.3. Also listed are defense-in-depth controls which also help to mitigate or prevent the effects of a deflagration accident.

From the list of controls in the HA, of significance to prevent the occurrence of a drum deflagration during the actual drum venting (puncturing) of the unvented drum during remote drum venting activities is to ground the unvented drum prior to its being punctured, and the use of non-sparking processes.

In the Idaho Drum Deflagration Tests cited in DOE Standard 5506-2007, Several drums were filled with representative combustible/metal waste matrices; the drums were also pressurized with a flammable gas mixture comprised of oxygen, hydrogen, and nitrogen. The test drums were then subjected to sparks, a drill bit puncture, or a 12-foot drop in order to determine the initiators that would cause the test drums to deflagrate. The drums that deflagrated were those that were impacted with a soft (20 milli-Joules) or hard (5 Joules) spark.

The results of the Idaho Drum Deflagration Tests indicate that preventing the occurrence of sparks will minimize the probability that a flammable gas mixture, within an unvented drum, will ignite when the unvented drum lid is punctured during its venting. By ensuring that the unvented drum and venting equipment are bonded reduces the probability for a spark occurring when the unvented drum lid is punctured.

The unvented drum and venting equipment must be bonded so that they are at the same potential. The bond must occur to the drum and metal waste package surface through possible layers of paint or wrapping. Methods to ensure a bond on the unvented drum could include the use of a wire brush to scratch through any insulating surfaces to reach the metal, or a bonding clamp that can penetrate through an insulating surface to reach the surface of the metal unvented drum. After the unvented drum lid has been punctured and the venting equipment removed, the bond is no longer required.

3.4.4 Operational Spill/Loss of Confinement Accident

An operational spill during handling of waste or from impacts from vehicles is an accident scenario of concern because of the daily activities at Area G. Several cases are analyzed that bound possible operational spills or loss of confinement scenarios.

Initiating Events

The HA identified the following scenarios that involve spills of radioactive materials from a loss of TRU waste container integrity:

- Operational spills/loss of confinement events due to impacts between vehicles, forklifts, missiles (i.e., cylinders) and containers (HA-5, and HA-11);
- Operational spills/loss of confinement due to internal pressurization of the containers (radiolytic decomposition, chemical reactions, etc.) (HA-6, and HA-10).

3.4.4.1 Scenario Development

Based on the above scenarios, several cases that bound all of the accidents are postulated:

Case 1: One TRU waste container containing 300 PE-Ci is dropped during handling.

Case 2: One TRU waste container containing 800 PE-Ci is dropped during handling.

Case 3: One TRU waste container containing 300 PE-Ci is punctured during handling.

Case 4: One TRU waste container containing 800 PE-Ci is punctured during handling.

All cases analyzed in this scenario are assumed to occur at or near Building 54-33, which is the closest location with respect to the offsite boundary to the north. This location will be the worst-case release point for all operational spill accidents as compared to any waste storage dome.

Assumptions

STs are determined based model estimates for damage and MAR assumptions and waste form inventories. Offsite consequences are determined based on the estimated dispersion characteristics of a plume driven by the energy release of the associated with a non-buoyant release.

The following assumptions were applied generally to the analysis of Operational Spills/Loss of Confinement.

1. The analysis is based on 55-gal drums. This container type bounds other containers because larger DRs are applied.
2. The maximum MAR contents per container of 300 PE-Ci and 800 PE-Ci are for a single TRU-waste and a single TRU-waste container that is overpacked, as discussed in Section 3.3.2.
3. The MAR is assumed to be 100% non-combustible dispersible. For spill scenarios, it is conservative to make this assumption because for sand-like materials, (i.e., evaporator bottom salts, nitrate salts, and chloride salts), certain DR are bounding and assumes a certain type/form of the MAR. It should be noted that the ARF/RF values for spill scenarios for both combustible and non-combustible dispersible are the same.

3.4.4.2 Source Term Analysis

A ST is determined for each of the postulated scenarios identified above using the five-factor formula. This section discusses each of the factors in the ST evaluation with respect to the postulated accident scenario.

Material at Risk and Damage Ratio:

Case 1:

For Case 1, it is postulated that a single drum containing 300 PE-Ci of non-combustible dispersible waste is spilled or otherwise breached during handling. The DR used in this analysis is for a single container per DOE–STD-5506-07 Table 4.4.4-1 accident stress 2, single container dropped from 3rd tier is DR = 0.01.

Case 2:

For Case 2, it is postulated that a single drum that is overpacked contains 800 PE-Ci of non-combustible dispersible waste is spilled or otherwise breached during handling. For conservatism, the DR used in this analysis is for a single container per DOE–STD-5506-07 Table 4.4.4-1 accident stress 2, single container dropped from 3rd tier is DR = 0.01. It should be noted that per the DOE-STD-5506-07, for overpacked containers that meet container integrity requirements, a factor of two credit can be taken for single package drop events.

Case 3:

For Case 3, it is postulated that a single drum containing 300 PE-Ci of non-combustible dispersible waste is punctured during handling. The DR used in this analysis for container(s) punctured by forklift tines per DOE–STD-5506-07, Table 4.4.4-1 accident stress 3 for sand-like material is DR = 1.0.

Case 4:

For Case 4, it is postulated that a single drum that is overpacked containing 800 PE-Ci of non-combustible dispersible waste is punctured during handling. The DR used in this analysis for container(s) punctured by forklift tines per DOE–STD-5506-07 Table 4.4.4-1 accident stress 3 for sand-like material is DR = 1.0.

Airborne Release Fraction/Respirable Fraction:

The cases analyzed in this accident scenario used low-energy impact ARF/RF values. The ARF/RF values are 1E–03/0.1 for use with contaminated combustible waste spilled and non-combustible dispersible waste from a robust container and subjected to shock during a spill.

The applicable ARF/RF values are those associated with an impact because these scenarios involve waste being spilled or otherwise breached during handling.

Leak Path Factor:

Since the accidents occur outside and no confinement exists, the LPF for all cases is assumed to be 1.0.

Source Terms

The source term for each case is calculated using the five factor formula. The ST for both cases analyzed in this scenario only have a ST associated with shock and impact during the spill.

Case 1:

ST expelled from container due to spill (DR = 0.01):

ST = 300 PE-Ci x 0.01 x 1E-3 x 0.1 x 1

ST = 0.0003 PE-Ci

Case 2:

ST expelled from container due to spill (DR = 0.01):

ST = 800 PE-Ci x 0.01 x 1E-3 x 0.1 x 1

ST = 0.0008 PE-Ci

Case 3:

ST expelled from container due to forklift tine puncture (DR = 1.0):

ST = 300 PE-Ci × 1.0 × 1E-3 × 0.1 × 1

ST = 0.03 PE-Ci

Case 4:

ST expelled from container due to forklift tine puncture (DR = 1.0):

ST = 800 PE-Ci × 1.0 × 1E-3 × 0.1 × 1

ST = 0.08 PE-Ci

3.4.4.3 Consequence Analysis

The doses to the MEOI are based on the ST analysis above and the dispersion analysis presented for the Single-Container Drum Deflagration Accident. The dose consequences are calculated as the product of the ST and the dose-to-source term ratio for the appropriate release mechanisms using Building 54-33 as the release point. The dose to the MEOI is based on the following equation.

$$TEDE = ST_{spilled\ \mathrm{MAR}} \times (rem/PE\text{-}Ci)_{nonbuoyant}$$

The dose-to-source term ratio for a ground level non-buoyant release, with Building 54-33 as the release point, is 49.97 rem/PE-Ci.

Case 1:
Dose = 0.0003 PE-Ci x 49.97 rem/PE-Ci
Dose = 0.02 rem.

Case 2:
Dose = 0.0008 PE-Ci x 49.97 rem/PE-Ci
Dose = 0.04 rem.

Case 3:
Dose = 0.03 PE-Ci × 49.97 rem/PE-Ci
Dose = 1.5 rem.

Case 4:
Dose = 0.08 PE-Ci × 49.97 rem/PE-Ci
Dose = 4.0 rem.

3.4.4.4 Comparison to Guidelines

The unmitigated doses to the MEOI for all cases do not challenge the EG. The MEOI doses are well below challenging the EG and no safety-class controls are needed for those events.

3.4.4.5 Summary of TSR Controls

The safety-significant-level controls are listed in the Hazard Analysis, Section 3.3. Also listed are defense-in-depth controls which also help to mitigate or prevent the effects of a deflagration accident.

From the list of controls in the HA, of significance to prevent or mitigate the occurrence of a spill accident involving an unvented drum is job-specific training, certification/training of forklift operators, the Radiological Protection program, and the storage/handling of gas cylinders. These controls are judged to be sufficient to address the contamination or exposure hazards associated with the accident scenario.

4.0/5.0 SAFETY STRUCTURES, SYSTEMS AND COMPONENTS (SSCs) AND DEVELOPMENT OF TECHNICAL SAFETY REQUIREMENTS

Table A-12 presents and evaluates the adequacy of the selected new TSR controls. Safety-significant controls (SS) are derived from the HA Table A-4 and credit in the section 3.4 accident analysis results. New, existing, or revised existing controls are listed in Table A-12. The evaluation of the new SSCs establishes the reasonable assurance that the safety functions and functional requirements for each SSC can be met.

Italicized text signifies the new controls

Table A-12. SAFETY-SIGNIFICANT SSCs and ACs / DEVELOPMENT OF TSRs*				
TSR Control	**Safety Function**	**Functional Requirements**	**Performance Criteria**	**Evaluation**
TRU waste container vent *(Current performance criteria of the safety-class design feature TRU waste container; in this Safety Basis Addendum, this control is a new LCO on the requirements for vented TRU waste drums in above ground storage at Area G)*	*Drums shall be vented to prevent the buildup of flammable gas.*	*TRU waste 55-gallon, 85-gallon, 110-gallon drums in above ground storage at Area G are shall be vented drums*	*TRU waste 55-gallon, 85-gallon, and 110-gallon drums in above ground storage at Area G do not experience build-up of flammable gases that could lead to a deflagration, as demonstrated by:* *1. TRU waste 55-gallon, 85-gallon, 110-gallon drums in above ground storage at Area G are vented drums*	
Overpack of Unvented Drums *(Existing TSR-level control on overpacking TRU waste drums with > 300 PE-Ci MAR)*	*Prevents consequences of drum lid ejection from an unvented drum that could have a flammable gas mixture.*	*Retains lid or ejected waste contents of an unvented inner drum which deflagrates*	*Unvented drums are overpacked. (Alternatively, the unvented drum may be transferred to a unvented Transuranic Waste Container Storage area.)*	*Per DOE-STD-5506-2007, Preparation of Safety Basis Documents for Transuranic (TRU) Waste Facilities cites results of Idaho Drum Deflagration Tests, containers of sound integrity that are overpacked, SWBs, direct loaded RH canisters with welded lids, and RH canister with nested metal drums can be credited to prevent lid loss and ejection of material during a deflagration. The DOE-STD-5506-2007 cites the following: "For SWB, RH canister with nested metal drums, and the overpacked drum, a significant release from the potential venting through the outer container seal is not expected."*

Table A-12. SAFETY-SIGNIFICANT SSCs and ACs / DEVELOPMENT OF TSRs*				
TSR Control	**Safety Function**	**Functional Requirements**	**Performance Criteria**	**Evaluation**
Lid restraining device *(new mitigative SS-level TSR-SAC for worker protection and defense-in-depth, implemented through a LCO)*	*Mitigates consequences of drum lid ejection from an unvented drum with a flammable gas mixture.*	*Retains lid or ejected waste contents of an unvented inner drum which deflagrates*	*The unvented drum has a lid restraining device applied when it is to be transferred to the unvented Transuranic Waste Container Storage area. (Alternatively, the unvented drum may be inserted into an overpack.)*	*DOE-STD-5506 Preparation of Safety Basis Documents for Transuranic (TRU) Waste Facilities cites results of Idaho Drum Deflagration Tests. Several drums were filled with representative combustible/metal waste matrices; the drums were also pressurized with a flammable gas mixture comprised of oxygen, hydrogen, and nitrogen. The test drums were then subjected to sparks, a drill bit puncture, or a 12-foot drop. The results showed that puncturing or dropping the test drum did not result in a deflagration. In the 12-foot drop test, when the drum impacted the ground, it rotated a complete 180 degrees, yet it did not deflagrate nor did it show signs that a fire occurred within the drum. This indicates that movement of metal items within the test drums did not produce enough of a spark to ignite the flammable gas mixture. Another indication from the tests is that substantial impact stress to an unvented drum with a flammable gas mixture, such as from a fall from elevated heights, would not cause a shock induced ignition or sparking of metal wastes to ignite the stoichiometric hydrogen concentration. However, this hypothesis is based on a single drop test. The drum that was punctured by a sharpened drill bit also did not experience ignition of the hydrogen flammable mixture. All of the test results taken together indicate that movements or handling of unvented drums, such as involved during careful decontamination*

Table A-12. SAFETY-SIGNIFICANT SSCs and ACs / DEVELOPMENT OF TSRs*				
TSR Control	**Safety Function**	**Functional Requirements**	**Performance Criteria**	**Evaluation**
				and contamination control activities, installation of a lid restraining device, movements of the unvented drum on a forklift, or insertion or removal from an overpack, probably will not cause a drum to deflagrate. However, presuming that a deflagration is expected, the rigorous application of these controls for worker protection is required. *When the unvented drum is in the unvented TRU waste container storage area, the lid restraining device may be removed. The removal of the lid restraining device is allowed because its removal from the unvented drum does not result in much perturbation to or movement of the unvented drum. Also, the unvented drum will not be exposed to any activities that will cause it to deflagrate when it is in storage.*

Table A-12. SAFETY-SIGNIFICANT SSCs and ACs / DEVELOPMENT OF TSRs*				
TSR Control	**Safety Function**	**Functional Requirements**	**Performance Criteria**	**Evaluation**
Use of Forklift with Enclosed Cab when transferring unvented drums *(new mitigative SS-level TSR-SAC for worker protection and defense-in-depth, implemented through a LCO)*	*Protects workers from ejected lid or waste debris if an unvented drum deflagrates*	*Provides barrier between forklift operator and unvented drum*	*Forklift with enclosed cab shall be used when transferring unvented drums to Unvented TRU waste container storage area or remote drum venting area*	*The use of the lid-restraining device will prevent a lid ejection if a deflagration occurs, and so the energy of any flying debris will be diminished. The forklift enclosed cab provides a barrier to protect the forklift driver from any debris that may eject out of a deflagrating drum.*
Use of spotter during forklift movements of unvented drums *(new SS-level TSR-AC for worker protection, element of Hoisting and Rigging Safety Management Program)*	*Prevents forklift accidents*	*Spotters in place during forklift movements of unvented drums*	*When moving unvented drum to and from the unvented TRU waste container storage area on a forklift, spotters observe forklift movements and warn forklift drivers of impending obstacles or obstructions*	
Unvented Container Storage Area Configuration *(new mitigative SS-level SAC for worker protection and defense-in-depth, in the form of an LCO)*	*Controlling the unvented container storage area reduces the likelihood of a deflagration*	*The unvented storage configuration must be controlled to reduce the likelihood of a deflagration.*	*The following shall occur in the unvented container storage area configuration:* *1. Unvented drums are not stacked.* *2. Access restrictions for the unvented TRU waste container*	*The unvented TRU waste container storage area is designated an operation-free location and is where non-essential personnel and normal activities are prohibited, except to disposition the unvented container and perform surveillances and inspections for regulatory compliance. Activities necessary to install the lid restraining*

Table A-12. SAFETY-SIGNIFICANT SSCs and ACs / DEVELOPMENT OF TSRs*				
TSR Control	**Safety Function**	**Functional Requirements**	**Performance Criteria**	**Evaluation**
			storage area are in place. *3. Unvented drums containing MAR > 300 PE-Ci shall be separated from each other by at least 10 feet.*	*device when transferring the unvented drum out of the unvented TRU waste container storage area with a forklift with an enclosed cab are allowed. To prevent inadvertent access to the area where affected waste containers are stored, barriers or posting will be placed around the unvented TRU waste container storage area.* *Idaho drum deflagration tests indicated that sympathetic deflagration of a drum on top of a deflagrating drum occurred. If an unvented drum contains more than 300 PE-Ci, it must be in an overpack, as required by LCO 3.2, Waste Container Limits, so the occurrence of two unvented drums with 1100 PE-Ci, is considered highly unlikely, without the occurrence of a TSR VIOLATION. If two stacked unvented drums contain 300 PE-Ci, the dose does not challenge the EG, though it is still significant enough (6.3 rem), that controls should be in place to prevent its occurrence.* *On the Idaho drum deflagration tests that were performed, DOE-STD-5506 cites that* *"..sympathetic deflagration of a drum on top of the initial deflagration occurred. However, the lower drum did not lose its lid due to the weight of the drum on top. No experimentation has been conducted nor observed on sympathetic deflagration of horizontally adjacent drums. Therefore, it is conservatively assumed that*

Table A-12. SAFETY-SIGNIFICANT SSCs and ACs / DEVELOPMENT OF TSRs*				
TSR Control	**Safety Function**	**Functional Requirements**	**Performance Criteria**	**Evaluation**
				sympathetic deflagration is possible involving two suspect drums…" "Although additional sympathetic drum deflagrations may be possible depending on the staging configuration and other factors, modeling more than two drum deflagrations is not deemed necessary, because adequate insights from the two-drum deflagration should be sufficient to establish appropriate controls to protect the facility worker, other onsite (collocated) workers, the public, and the environment, and based on the likelihood of three or more sympathetic deflagrations being very low, this is not perceived to be a significant risk." *From this citation, the control that drums ≥ 300 PE-Ci should not be stored horizontally next to each other is also required. Since a specific distance requirement cannot be ascertained from the DOE-STD-5506 discussion, the 10 feet distance, which is more than three (3) 55-gallon drum lengths, is judged as being sufficient to prevent the occurrence of the potential dose of 6.3 rem.* *The application of this control is appropriate if it is considered that a horizontal force does occur from a deflagrating drum. However, the Idaho deflagration tests indicate that the explosive force is in the vertical direction, resulting in lid loss and loss of material. So, the horizontal force is then presumed to be from a deflagrating drum toppling*

Table A-12. SAFETY-SIGNIFICANT SSCs and ACs / DEVELOPMENT OF TSRs*				
TSR Control	**Safety Function**	**Functional Requirements**	**Performance Criteria**	**Evaluation**
				over, and in this motion, another drum could be impacted. The DOE-STD-5506 also cites that the drums that deflagrate require a spark, and it cannot be postulated that a spark would occur if a deflagrating drum were to impact a horizontally adjacent drum. The Idaho tests also showed that a drum with a flammable gas mixture that fell from 12 feet, and rotated a complete 180 degrees upon impact with a hard unyielding surface, did not deflagrate. Another test drum was impacted with a drill bit and did not deflagrate. The test drums that deflagrated required a spark. An unvented drum in storage would not spontaneously deflagrate, unless a spark were introduced to the flammable gas mixture within the unvented drum, which is considered unlikely given the results of the Idaho drum deflagration tests. *Because of the lack of information on horizontal sympathetic deflagration, it is presumed to occur, hence the requirement for this control.* *The requirements for unvented TRU waste drums are also elements of the Hazardous Material and Waste Management Safety Management Program. A sub-element of this TSR-AC are access restrictions:* *Designating the unvented TRU waste container storage area as an operation-free location and where non-essential personnel and normal activities are*

Table A-12. SAFETY-SIGNIFICANT SSCs and ACs / DEVELOPMENT OF TSRs*				
TSR Control	**Safety Function**	**Functional Requirements**	**Performance Criteria**	**Evaluation**
				prohibited. Activities that area allowed within the unvented TRU waste container storage area include those necessary to disposition the unvented drum, such as installing a lid restraining device, and using a forklift with an enclosed cab to move the unvented drum into and out of the unvented TRU waste container storage area, and to perform surveillances and inspections for regulatory compliance; *-Installation of barriers or postings to prevent inadvertent access to the unvented TRU waste container storage area;* *-Establishing an access-restricted 15-foot exclusion area around the unvented TRU waste container storage area which will provide a sufficient separation distance between the perimeter of the Unvented Waste Container Storage area and normal operations activities. A 15-foot exclusion area for non-essential personnel and activities minimizes the probability that any drum moving or handling operations could inadvertently impact the stored unvented drums causing their deflagration. Storing unvented TRU waste containers in a single planar array (no stacking) will preclude the potential for drum toppling from a second row (or higher) elevation; thereby limiting the energy of the impact should it occur.* *The 15-foot exclusion area distance is measured from the outermost edge of the drums in the unvented TRU waste*

Table A-12. SAFETY-SIGNIFICANT SSCs and ACs / DEVELOPMENT OF TSRs*				
TSR Control	**Safety Function**	**Functional Requirements**	**Performance Criteria**	**Evaluation**
				container storage area. *The 15-foot exclusion area around the perimeter of unvented TRU waste container storage area is derived from the consideration of an accident involving a drop/tip-over of a 3rd-tier pallet of drum and forklift into the exclusion area. If it is presumed that the ends of the forklift tines are at the outside rim of the exclusion area, the forklift tines are at the height required to remove a 3rd-tier pallet, and the 3rd-tier pallet and forklift fall over, the pallet will fall a maximum of approximately 11-feet within the exclusion zone. In this improbable, bounding drop/tip-over accident, a 4-foot distance is still maintained between the dropped pallet and the edge of the unvented TRU waste container storage area. The 15-foot exclusion area is the maximum separation distance that can be readily implemented at Area G for the storage of unvented waste containers.* *The exclusion area is required if the unvented TRU waste container storage area is near normal operations involving movement of drums. For example, if the unvented TRU waste container storage area is near a corner area of a dome, the 15 foot exclusion area is not required in the space between the storage area and the corner of the dome since access for normal operations is not required in this space. However, the front end of the unvented TRU waste container storage area, which*

Table A-12. SAFETY-SIGNIFICANT SSCs and ACs / DEVELOPMENT OF TSRs*				
TSR Control	**Safety Function**	**Functional Requirements**	**Performance Criteria**	**Evaluation**
				could be impacted by normal operations, will require the exclusion area. *Though other unvented TRU waste containers (non-drums) are not considered subject to deflagration hazards because they are not air tight or they are robust enough to withstand a deflagration, and given the number of containers stored at Area G (> 20,000 containers) and the legacy of several of the containers, any 'suspect' unvented container may be stored in an unvented TRU waste container storage area to isolate the container from normal operations.* *The accident analysis in this addendum bounds deflagrations for the maximum material-at-risk that can be present in the TRU waste containers.* *Besides the unvented TRU waste container storage area, all other selected controls are specific to TRU waste drums.*
Bonding requirement during the venting of unvented drums *(new preventative SS-level TSR-SAC)*	*Bonding the drum and venting equipment when puncturing the lid of an unvented drum, during its venting, reduces the probability of a spark. Reducing the probability of a spark minimizes the potential of igniting*	*A bond must be applied to both the drum and venting equipment prior to puncturing the lid of an unvented drum.*	*The drum and venting equipment must be bonded when puncturing the lid of an unvented drum, during its venting.*	*DOE Standard 5506 "Preparation of Safety Basis Documents for Transuranic (TRU) Waste Facilities" cites results of Idaho Drum Deflagration Tests. Several drums were filled with representative combustible/metal waste matrices; the drums were also pressurized with a flammable gas mixture comprised of oxygen, hydrogen, and nitrogen. The test drums were then subjected to sparks, a drill bit puncture, or a 12-foot drop in order to determine the initiators that*

Table A-12. SAFETY-SIGNIFICANT SSCs and ACs / DEVELOPMENT OF TSRs*				
TSR Control	**Safety Function**	**Functional Requirements**	**Performance Criteria**	**Evaluation**
	a flammable gas mixture that may exist within the unvented drum.			*would cause the test drums to deflagrate. The drums that deflagrated were those that were impacted with a soft (20 milli-Joules) or hard (5 Joules) spark.* *The results of the Idaho Drum Deflagration Tests indicate that preventing the occurrence of sparks will minimize the probability that a flammable gas mixture, within an unvented drum, will ignite when the Unvented drum lid is punctured during its venting. By ensuring that the unvented drum and venting equipment are bonded reduces the probability for a spark occurring when the unvented drum lid is punctured.* *The unvented drum and venting equipment must be bonded so that they are at the same potential. The bond to the drum and metal waste package surface through possible layers of paint or wrapping. Methods to ensure a bond on the unvented drum could include the use of a wire brush to scratch through any insulating surfaces to reach the metal, or a bonding clamp that can penetrate through an insulating surface to reach the surface of the metal unvented drum.*
Non-Sparking Processes Requirement during the venting or headspace gas analysis of unvented drums	*The use of non-sparking processes when penetrating the lid of an unvented drum, during its venting or headspace gas*	*The process used to penetrate the lid of an unvented drum, during its venting or headspace gas analysis does not produce sparks.*	*The process used to penetrate the lid of an unvented drum, during its venting or headspace gas analysis, must be of the type that does not produce sparks.*	*The basis for the "Bounding Requirement during the Venting of unvented drums – Specific Administrative Control" cites results of drum deflagration tests which indicate that sparks are the initiators for the deflagration of a drum. So, the production of sparks must be avoided*

Table A-12. SAFETY-SIGNIFICANT SSCs and ACs / DEVELOPMENT OF TSRs*				
TSR Control	**Safety Function**	**Functional Requirements**	**Performance Criteria**	**Evaluation**
(new preventative SS-level TSR-SAC)	*analysis, reduces the probability of a spark. Reducing the probability of a spark minimizes the potential of igniting a flammable gas mixture that may exist within the unvented drum.*			*when venting unvented drums.* *When penetrating the lid of an unvented drum, during its venting or headspace gas analysis, the process used must be of the type to prevent ignition (e.g., non-sparking tools; use cold drilling, speed drilling, or drum punch). By their use, the probability of a spark occurring is minimized. Preventing the occurrence of sparks will minimize the probability that a flammable gas mixture can ignite within the unvented drum.*
Remote Drum Venting Requirements *(new mitigative SS-level TSR-SAC)*	*Workers and the public are protected from airborne contamination which may occur during remote drum venting operation, by performing remote drum venting operations within an enclosure. Workers are further protected by flying debris if a drum deflagrates during drum venting, by ensuring personnel are at a distance away from the remote drum venting operation, and by restricting*	*Remote drum venting shall be controlled to minimize contamination and injury to workers.*	*1. Remote drum venting of unvented drums shall occur in a contamination controlled enclosure.* *2. Personnel shall be 90-feet away from the drum venting apparatus, prior to the remote activation of the drum venting operation.*	*Appendix D of DOE Standard 5506 "Preparation of Safety Basis Documents for Transuranic (TRU) Waste Facilities" cites the results of several drum deflagration studies which involved TRU waste drums filled with a flammable gas mixture and combustible waste. The application of a spark causes several of the test drums to deflagrate and experience a forceful ejection of the drum lid. The lids of the deflagrating drums flew as high as 182 feet, and contents traveled as far as 950 feet away, though the drum contents were exposed to a wind. All of the test drums did not have any lid restraints.* *The remote drum venting apparatus is situated on the unvented drum in such a way that it serves to restrain the lid, so the probability is minimized that the lid will eject forcefully in the vertical direction, if*

Table A-12. SAFETY-SIGNIFICANT SSCs and ACs / DEVELOPMENT OF TSRs*				
TSR Control	**Safety Function**	**Functional Requirements**	**Performance Criteria**	**Evaluation**
	personnel access to the dome where drum venting operations occur.			*at all. Since the forceful ejection of the lid is minimized, the ejection of waste contents a great distance in the horizontal direction is also minimized. The requirement that the remote drum venting operation is within an enclosure prevents any amount of spilled contents to be spread by wind or the ambient atmosphere. The enclosure is certified as being capable of containing contamination.* *The combination of remote drum venting within an enclosure inside of a dome, the lid restraining feature of the venting apparatus, curtailment of other work activities within the dome that drum venting activities occur, and the establishment of a 90-feet separation distance between personnel and the remote drum venting operation, right before it is activated, is judged sufficient to protect workers from flying debris. In addition, the public is protected from the spread of airborne contamination that may occur if a drum deflagrates.*
Gas cylinder stored/handled according to Laboratory Requirements *(new mitigative SS-level TSR-AC, element of current Hazardous Material and Waste*	*Prevents gas cylinder impacting unvented TRU waste container.*	*Gas cylinders stored safety so they do not incur accidental drop.*	*Gas cylinders are stored according to Laboratory requirements.*	*If gas cylinder is stored incorrectly, such as without a cap, and unrestrained, the gas cylinder may topple and become a missile which could cause an unvented drum to deflagrate.*

Table A-12. SAFETY-SIGNIFICANT SSCs and ACs / DEVELOPMENT OF TSRs*				
TSR Control	**Safety Function**	**Functional Requirements**	**Performance Criteria**	**Evaluation**
Management SMP)				
Waste Container Material at Risk Limits (existing Specific Administrative Control in the form of an LCO)	Note: No change to existing safety basis for this control.			
Metal Waste Container (existing SC DF)	Note: No change to existing safety basis for this control.			
Work performed in accordance with approved procedures. (existing SMP)	Note: No change to existing safety basis for this control.			
Radiological Protection Program (existing SMP)	Note: No change to existing safety basis for this control.			
Emergency Preparedness Program (existing SMP)	Note: No change to existing safety basis for this control.			
TRU waste container acceptance criteria (existing element of SMP)	Note: No change to existing safety basis for this control.			
Training/Certification of forklift and crane operators (existing element of SMP)				

UNITED STATES GOVERNMENT | DEPARTMENT OF ENERGY

memorandum

National Nuclear Security Administration
Los Alamos Site Office
Los Alamos, New Mexico 87544

DATE: FEB 08 2008
REPLY TO ATTN OF: 5485.2/ SBT:4LB-001
SUBJECT: Approval of Safety Basis Addendum No. 1, Rev. 0 - Storage and Remote Drum Venting of Unvented Drums at TA-54, AREA G

TO: Robert L. McQuinn, ADNHHO, Los Alamos National Laboratory, M- K778

This memorandum serves to forward the Safety Evaluation Report (SER) Addendum that approves "Safety Basis Addendum No.1, Rev. 0 of the 2003 DSA for AREA G".

If you have any questions you may contact me at (505) 665-6872.

Sincerely,

Daniel E. Glenn
Technical Deputy Manager

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SAFETY EVALUATION REPORT ADDENDUM NUMBER 1

Revision 0

LOS ALAMOS NATIONAL LABORATORY

SAFETY BASIS ADDENDUM TO THE TECHNICAL AREA 54, AREA G DOCUMENTED SAFETY ANALYSIS

AND

TECHNICAL SAFETY REQUIREMENTS (TSRs)

ABD-WFM-002, R. 0.18

Los Alamos National Laboratory Contract No. W-7405-ENG-36

U. S. Department of Energy
National Nuclear Security Administration
Los Alamos Site Office

January 29, 2008

Back of title page

Signature Page

The Los Alamos National Laboratory (LANL) AREA G DSA ADDENDUM No. 1 and TSRs Revision 0.18 were reviewed by subject matter experts from the Los Alamos Site Office (LASO) and are approved..

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List of Acronyms and Abbreviations

10 CFR 830	Title 10 of the Code of Federal Regulations, Part 830
AC	Administrative Control
COAs	Conditions of Approval
CORR	Contractor Operational Readiness Review
DOE	Department of Energy
DSA	Documented Safety Analysis
FHA	Fire Hazards Analysis
FM	Factory Mutual Insurance
FSAR	Final Safety Analysis Report
HC	Hazard Categorization
HA	Hazard Assessment
LANL	Los Alamos National Laboratory
LASO	Los Alamos Site Office
MAR	Material at risk
MSA	Management Self Assessment
NNSA	National Nuclear Security Administration
NPH	Natural Phenomena Hazard
PC	Performance Category
Pu	Plutonium
SAC	Specific Administrative Control
SC	Safety-class
SER	Safety Evaluation Report
SR	Surveillance Requirement
SS	Safety-significant
SSC	Structure, system and/or component
TA	Technical Area
TSR	Technical Safety Requirement
VOC	Volatile Organic Compound

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Executive Summary

This Safety Evaluation Report (SER) Addendum establishes the basis for the U.S. Department of Energy (DOE) National Nuclear Security Administration (NNSA) approval of the AREA G Facility Documented Safety Analysis (DSA) Addendum No. 1 and Technical Safety Requirements (TSR) Revision 0.18. The AREA G Facility supports the New Mexico consent order agreement and NNSA's commitment to reduce the risk to the public from high-activity Transuranic (TRU) waste drums stored at Los Alamos National Laboratory (LANL).

The current DSA for the AREA G does not adequately address the hazards and controls associated with the handling or processing TRU waste drums that are not vented and could contain a flammable mixture due to radiolysis or the presence of flammable liquids. The Area G Technical Safety Requirements (TSRs) require that TRU waste containers and drums be provided with a vent opening.

Addendum No. 1 to the AREA G DSA provides quantitative and qualitative hazards analysis and consequence analysis for bounding accident scenarios associated with the potential for a flammable gas mixture in unvented drums. New controls are identified for worker protection that reduce the likelihood of accidents and consequences to the worker; therefore, the risk to the worker is considered significantly reduced. The derived controls presented in the accident analysis that mitigate the flammable gas deflagration scenarios are identified with associated safety functions, functional requirements, and performance criteria. Therefore, the derivation of controls documented in AREA G DSA Addendum No. 1 serves as the basis for page changes to the AREA G Technical Safety Requirements, TSR Revision 0.18. Table 1 summarizes the updated accident analysis results.

In addition, the page change submittal includes deletion of the dome structures from safety class status, and change of the drum banding requirement from safety class to defense in depth. These changes were previously evaluated and approved by Reference 2.

Table 1 – Summary of Accident Analysis

Accident Scenario	MAR (PE-Ci)	Unmitigated Dose (rem)	Controls*	Type*
Single Drum Deflagration HA-1, HA-2, HA-3, HA-4	(800)	(8.4)	*TRU waste container vent (Revised control)*	*SS-DF-TSR-LCO*
Multiple Drum Accident HA-1a, HA-2a, HA-3a, HA-4a	(600)	(6.3)	Overpack Unvented Drums >300 PE Ci	SS-TSR
			Lid Restraining Device	*SS-TSR-SAC-LCO*
Deflagration Accident During Drum Venting HA-7, HA-8, HA-9	(800)	(8.4)	*Forklift w/Enclosed Cab*	*SS-TSR-SAC-LCO*
			Spotter for Unvented Drum Moves	*SS-TSR-SAC-LCO*
Operational Spill/Loss of confinement Accident HA-5, HA-6, HA-10, HA-11	(800)	(4.0)	*Unvented Container Storage Area Configuration* *1) Unvented drums not permitted to be stacked* *2) Unvented drums >300 PE Ci*	*SS-TSR-SAC-LCO*

Accident Scenario	MAR (PE-Ci)	Unmitigated Dose (rem)	Controls*	Type*
			separated by no less than 10 ft *3) Access restricted to required personnel* *4) 15 ft exclusion area to other storage or other activities*	
			Bonding Requirement	*SS-TSR-SAC*
			Non-Sparking Tools	*SS-TSR-SAC*
			Remote Drum Venting Requirements *1) Containment Enclosure or Enclosure* *2) 90 foot separation to workers* *3) Restricted access to drum venting operations area*	*SS-TSR-SAC*
			Gas cylinder handling	*SS-TSR-AC*

*Italicized entries represent new controls, no changes made to existing controls.

The new and existing TSRs included in the Addendum No. 1 provide an adequate control set to effectively mitigate the risk postulated from the drum deflagration accident scenario. The addendum satisfactorily identified, described and analyzed all hazards associated with the increase in risk from a deflagration due to the hazards associated with unvented drums that contain a potentially explosive atmosphere. No Material at Risk (MAR) limits are changed with this submittal or are approved via this SER addendum. The revised control set addresses the hazards introduced by the increased risk from a deflagration and the selected controls were determined to be capable of providing the credited safety functions and were appropriately captured in the TSR page changes. Therefore, the AREA G safety basis Addendum 1 provides a satisfactory safety basis resulting in an acceptable safe operating envelope for AREA G activities.

1.0 INTRODUCTION

This Safety Evaluation Report Addendum No. 1 defines and documents the extent of the AREA G safety basis Addendum 1 review and the conclusions reached based upon this review. The principles provided in DOE-STD-1104-96, Change Notice No.3, December 2005, "*Review and Approval of Nuclear Facility Safety Basis Documents (Documented Safety Analyses and Technical Safety Requirements)*", were used as guidance in formulating the basis for approval and development of this SER Addendum.

The LANL AREA G safety basis addendum was prepared in accordance with the requirements of 10 CFR 830 Subpart B and DOE-STD-5506-2007, "*Preparation of Safety Basis Documents for Transuranic (TRU) Waste Facilities*". Specifically, the format, content, and guidance of DOE-STD-3009-94, "*Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Documented Safety Analyses*", were used to update the hazard and accident analyses. Dose conversion factors, airborne release fractions and respirable fractions were derived for specific DBAs using guidance found in DOE-STD-5506 and DOE-HDBK-3010, "*Airborne Release Fractions/Rates and Respirable Fractions for Nonreactor Nuclear Facilities*". TSRs were developed per 10 CFR 830.205 and in accordance with the format and content requirements of DOE G 423.1-1, "*Implementation Guide for Use in Developing Technical Safety Requirements*".

The AREA G safety basis Addendum 1 clearly identifies the hazards and resulting consequences to the public, workers and the environment resulting from a deflagration of an unvented drum accident scenario. The analysis provided in this Addendum No. 1 shall be incorporated in the next annual update of the AREA G safety basis.

2.0 REVIEW PROCESS

The DOE/NNSA review of the AREA G safety basis Addendum 1 was conducted per 10 CFR 830.207 (d) and focused on those hazards and accidents analyses that have been updated to address the increased risk from a deflagration associated with a pressurized unvented drum containing volatile organic compounds (VOCs) or hydrogen. The AREA G safety basis Addendum 1 consists of a revised hazard analysis (Reference 1), a revised accident analysis providing unmitigated consequences for a bounding deflagration inside the boundaries of AREA G, a section identifying the credited systems, structures and components (SSCs) and development of TSRs. The objective of the review was to ensure that all hazards were identified and controls were developed and defined to protect the public, workers, and the environment.

The AREA G safety basis Addendum No. 1, December 2007, clearly identifies the hazards and resulting consequences to the public, workers and the environment resulting from a deflagration of an unvented drum accident scenario. The analysis provided in this addendum shall be incorporated in the next annual update of the AREA G safety basis.

3.0 APPROVAL BASES

3.1 Base Information

Addendum requests that processing of unvented drums up to 110 gallons capacity and 800 Pu Ci equivalent be permitted inside the AREA G site. The total quantity of MAR allowed inside the AREA G is unchanged from the AREA G 2003 DSA.

The Addendum 1 submittal provides information on the process for storage, transportation, and venting of unvented drums that supplements the information in the existing DSA. The NNSA review team evaluated the additional base information and concluded that the AREA G Safety Basis Addendum No. 1 satisfactorily provided base information to support the venting of unvented drums at AREA G.

3.2 Hazard Identification and Screening

The hazard identification and screening tables from the 2007 DSA Addendum No. 1 were used to support the accident analysis. The HA Table (Table A-4 of Ref 1) was revised to reflect the scenarios associated with the new and existing controls identified as the most significant contributors to risk reduction. Hazard frequencies, consequence, risk, and controls were revised for scenarios associated with the deflagration of a pressurized drum.

NNSA/LASO concluded that the principal hazards associated with venting drums up to 110 gallon capacity in the AREA G have been adequately identified, screened, and characterized to support the accident analysis in Addendum No. 1.

3.3 Hazard Categorization

The site MAR limits for the AREA G facility remain unchanged by the December 2007 DSA and the facility remains a Hazard Category 2 Facility.

3.4 Hazard Evaluation

The December 2007 DSA Addendum No. 1 HA Summary Table A-4 identifies several accident scenarios (HA 1,1a, 2, 2a, 3, 3a, 4, 4a, 5, 6, 7, 8, 9, 10 and 11) as risk rank 1 or 2 consequence to the worker and to the public. These accidents have been previously identified, but the activity of drum venting as the accident initiator is new. Significant hazards identified in the analysis of the pressurized unvented drum deflagration within the AREA G are summarized below:

Fire Hazard

The fire resulting from the deflagration is previously analyzed except that the deflagration of an unvented drum due to drum venting activities is a new initiator to a fire.

Explosion

The deflagration of an unvented drum pressurized with a flammable gas mixture inside the AREA G is adequately bounded by the dose calculations and the existing MAR limit of 1100 PE Ci per drum. The analysis presented an 800 Ci drum release based on the known site

inventories with the expectation that no additional controls would be required for a drum of 1100 PE Ci. The identified controls adequately mitigate or prevent the postulated accident.

NNSA/LASO concluded that the hazard evaluation was performed in accordance with guidelines in DOE-STD-3009-94 and supported the selection of events to be included in the accident analysis.

3.5 Hazard Analysis Results

The two identified hazards, fire and deflagration, were carried forward from the Hazards Analysis based on those accidents with unmitigated public consequences of A or B.

3.6 Accident Analysis

The four accident scenarios identified in the HA for evaluation are as follows:

1. Single Drum Deflagration, HA-1, HA-2, HA-3, HA-4
2. Multiple Drum Accident, HA-1a, HA-2a, HA-3a, HA-4a
3. Deflagration Accident During Drum Venting, HA-7, HA-8, HA-9
4. Operational Spill/Loss of Confinement Accident, HA-5, HA-6, HA-10, HA-11

The mitigated accident analysis identified safety controls that were credited for worker and public protection. These controls have been credited as features that reduce the likelihood of an accident or reduce its consequence.

Accident scenarios that were carried forward for formal accident analysis focused on those with the potential to challenge the DOE-STD-3009 evaluation guideline (EG). The following list summarizes the bounding, representative, or unique accidents selected for accident analysis and the key assumptions used in the analysis:

Single Drum Deflagration

This event is due to hydrogen or other flammable/explosive gases (e.g., off-gas from VOCs inside the drum). The potential presence of prohibited items such as cylinders of flammable/combustible gases in legacy waste also can generate flammable mixtures. Ignition sources include sparks, heat, etc. that can ignite gases escaping the container, as well as potential ignition sources in the waste, such as metal objects, pyrophoric material, and heat-generating chemical reactions.

Multiple-Container Deflagration Accident

This event is due to a deflagration of flammable gas (primarily hydrogen) that has built up inside a drum which results in a multiple-waste-drum deflagration. This event is a result of waste drum deflagration propagating horizontally or vertically to initiate additional drum deflagrations. This event requires two *suspect* drums to be stacked, or of poor container integrity to be stored or staged immediately adjacent to each other (e.g., on a pallet). For drums with sound integrity that are over packed with a larger metal drum, SWB's, and remote handled (RH) canisters with nested metal drums, sympathetic deflagration is considered extremely unlikely. Per DOE-STD-5506-2007, these containers can be credited to prevent lid loss and ejection of material. Therefore, a sympathetic deflagration with these over packed drums is not analyzed.

Drum Deflagration During Drum Venting

This scenario involves an explosive mixture forming inside a waste drum that is then ignited during handling. In this scenario, the container is assumed unvented to allow the buildup of flammable gas. Hydrogen gas is generated by radiolysis to varying degrees in the waste drums, depending on their contents, and VOCs, if present, can off-gas from the waste matrix. The deflagration is postulated to separate the drum's lid from its body and expel some of the drum's contents. A limited portion of the expelled waste is assumed to burn. All of the waste remaining in the drums is assumed to burn. It is bounding to consider a drum in this accident scenario, as other types of waste containers are thought not to be susceptible to lid loss from a deflagration.

Operational Spill/Loss of Confinement Accident

An operational spill during handling of waste or from impacts from vehicles is an accident scenario of concern because of the daily activities at Area G. Several cases were analyzed that bound possible operational spills or loss of confinement scenarios.

The identified controls adequately mitigate the worker consequence. Material-at-risk remains bounded by the previously analyzed accidents. The ARF/RF values for the drum deflagration scenario are contained in Addendum No.1, and are consistent with DOE standard 5506.

The Addendum No. 1 accident scenarios were analyzed and dose consequences to the maximum exposed offsite individual (MEOI) were determined in the Summary of the Unmitigated Source Term Analysis section, and presented in Table 2.

Table 2-Summary of Accident Source Term

Accident Scenario	MAR (PE-Ci)	Unmitigated Dose to Public (rem)
Single Drum Deflagration	800	8.4
Multiple-Container Deflagration Accident	600	6.3
Drum Deflagration During Drum Venting	800	8.4
Operational Spill/Loss of Confinement Accident	800	4.0

LANL concluded that based on the unmitigated dose to the MEOI of up to 8.4 rem these new accident scenarios do not exceed or challenge the EG and therefore no safety class controls are required

Beyond Design Basis Accidents – there were no accident scenarios that could cause a significant increase in potential incremental risks beyond those already evaluated.

NNSA\LASO verified the adequacy of the accident analysis and determined the values selected and results obtained were satisfactory. NNSA\LASO concluded that the proposed DSA Addendum 1 provided sufficient basis (both with analysis and appropriate standards) that a credible release mechanism results in a calculated unmitigated dose that does not challenge the EG. Therefore, NNSA\LASO concludes that safety class controls for public protection were not necessary based on the safety basis addendum and new accident analysis. However, several new safety significant controls were identified as defense in depth for both the public and workers and are listed in Table 3. New controls based on Addendum No. 1 are in italics.

Table 3 - Summary of Controls

Accident	SSC's	Type
Single Drum Deflagration	MAR inventory control	TSR SAC (LCO)
	Metal waste container	SSC-DF
	Vents on TRU Waste Containers	SSC-DF
	Unvented Waste Containers are Segregated	*TSR-SAC*
	Over pack or apply lid restraint device	*TSR-SAC*
Multiple-Container Deflagration Accident	MAR inventory control	TSR SAC (LCO)
	Metal waste container	SSC-DF
	Vents on TRU Waste Containers	SSC-DF
	Unvented drums are segregated	*TSR-SAC*
	Unvented drums with > 300 PE-Ci are not stored adjacent to each other	*TSR-AC*
	Over pack or apply lid restraint device	*TSR-SAC*
Drum Deflagration During Drum Venting	MAR inventory control	TSR SAC (LCO)
	Metal waste container	SSC-DF
	Vents on TRU Waste Containers	SSC-DF
	Non-Sparking Process	*TSR-SAC*
	Unvented drums are segregated	*TSR-SAC*
	Bonding/grounding drum & venting device	*TSR-SAC*
	Remote drum venting performed in an enclosure	*TSR-SAC*
Operational Spill/Loss of Confinement	MAR inventory control	TSR SAC (LCO)
	Metal waste container	SSC-DF

Accident	**SSC's**	**Type**
Accident	Vents on TRU Waste Containers *Unvented Waste Containers are Segregated* *Over pack or apply lid restraint device* *Forklift w/Enclosed Cab* *Spotter for Unvented Drum Moves*	SSC-DF *TSR-SAC* *TSR-SAC* *SS-TSR-SAC-LCO* *SS-TSR-SAC-LCO*

Safety Structures, Systems and Components

The NNSA/LASO review focused on the consistency of the logic developed in the hazard analysis carried through to the identification, definition, and description of safety SSCs. This included reviewing how the accident analysis results were carried through to the identification, definition, and description of SSCs. Table 4 summarizes the safety SSCs identified in Addendum No. 1. New SSCs are in italics.

Table 4 -Safety SSCs

Safety SSC	Safety Function	Functional Requirements
TRU waste container vent (revised control, with an associated LCO)	Drums shall be vented to prevent the buildup of flammable gas	TRU waste 55-gallon, 85-gallon, 110-gallon drums in above ground storage at Area G are shall be vented to insure that lower flammable limits within the drum are not exceeded.
Over pack of Unvented Drums	Prevents consequences of drum lid ejection from an unvented drum with a flammable gas mixture	Retains lid or ejected waste contents of an unvented drum during moving and venting operations (not required in storage) which may deflagrate
Lid restraining device	Protects workers from ejected lid or waste debris if an unvented drum deflagrates	Retains lid or ejected waste contents of an unvented drum during moving and venting operations (not required in storage) which may deflagrate.
Use of Forklift with Enclosed Cab when transferring unvented drums	Protects workers from ejected lid or waste debris if an unvented drum deflagrates	Provides barrier between forklift operator and unvented drum. Barrier must be a shatter proof material.

Safety SSC	Safety Function	Functional Requirements
Unvented Container Storage Area Configuration (Specific Administrative Control in the form of an LCO, element of TSR-AC on requirements for unvented drum)	Controlling the unvented container storage area reduces the likelihood of a deflagration	The unvented storage configuration must be controlled and isolated by a minimum of 15 feet to other storage or operational areas to reduce the likely hood of a deflagration. The distance between drums within the unvented drum storage configuration only applies to high MAR drums, which must be separated from each other by at least one low MAR drum, or 10 feet if there are no intervening drums.
Bonding/grounding requirement during the venting of unvented drums (Specific Administrative Control)	Bonding/grounding the drum and venting equipment when puncturing the lid of an unvented drum, during its venting, reduces the probability of a spark.	The drum shall be placed on a grounding pad and a grounding strap must be applied between the venting equipment prior to puncturing the lid of an unvented drum. After puncturing a drum personnel conducting activities on the drum must attach a wrist (or similar) bonding strap between themselves and the drum.
Non-Sparking Processes Requirement during the Venting of unvented drums – (new Specific Administrative Control)	The use of non-sparking processes when puncturing the lid of an unvented drum, during its venting, reduces the probability of a spark	The process used to puncture the lid of an unvented drum, during its venting does not produce sparks.
Remote Drum Venting Requirements (Specific Administrative Control)	Workers and the public are protected from airborne contamination which may occur during remote drum venting operation, by performing remote drum venting operations within an enclosure. Workers are further protected by flying debris if a drum deflagrates during drum venting, by ensuring personnel are at a distance away from the remote drum venting operation, and by restricting personnel access to the dome where drum venting operations occur.	Remote drum venting shall be controlled by a 90 foot separation from personnel and by 15 foot to other operations or storage to minimize contamination and injury to workers. The enclosure requires HEPA filtration.
Gas Cylinder Handling	Protect workers from hazards associated with high pressure gas cylinders.	Provide adequate restraint while cylinder is in use.
Waste Container Limits (existing Specific Administrative Control in the form of an LCO)	Limits the MAR to within the analyzed limits.	Limit single drum accident to less than 1100 PE Ci.

Safety SSC	Safety Function	Functional Requirements
Metal Waste Container (existing SC DF)	Design feature credited with limiting accident scenarios	Type A drums required
Work performed in accordance with approved procedures. (existing SMP)	Work control	Insures that work is conducted per approved procedures.
Radiological Protection Program (existing SMP)	Provides for worker protection	Limit worker exposures and establish controls for entry into confinement enclosure. The confinement enclosure will be provided HEPA filter ventilation (inlet and exhaust as required) and a continuous radiation detection monitoring system.
Emergency Preparedness Program (existing SMP)	Provides emergency response based on approved pre plans	Meets institutional emergency response criteria.
Fire Protection Program (existing SMP)	Limits MAR releases due to fire.	The automatic fire sprinkler system in the confinement enclosure structure and combustible limit controls in the dome must meet institutional program requirements.

NNSA\LASO verified the adequacy of technical information provided in establishing each safety SSCs safety function, functional requirements, performance criteria and evaluation criteria and concluded that satisfactory control identification, definition and description per DOE-STD-3009 guidance had been provided.

3.7 Derivation of Technical Safety Requirements

NNSA/LASO focused on the consistency of the logic developed in the new hazard and accident analyses and credited controls carried forward through to the TSRs. Specifically, the following new or revised areas were reviewed:

Seven new Specific Administrative Controls (SACs) were identified:
1) Lid Restraining Device
2) Forklift w/Enclosed Cab
3) Spotter for Unvented Drum Moves
4) Unvented Container Storage Area Configuration
   Unvented drums not permitted to be stacked
   Unvented drums >300 PE Ci separated by no less than 10 ft
   Access restricted to required personnel
   15 ft exclusion area to other storage or other activities
5) Bonding/grounding requirement
6) Non-Sparking Tools
7) Remote Drum Venting Requirements
   Containment Enclosure with HEPA filtration
   90 foot separation to workers

Restricted access to drum venting operations area
8) Fire protection program requirements

A single new Administrative Control (AC) was identified, gas cylinder handling, to accommodate the use of high pressure nitrogen for operation of the drum venting device.

A revised Design Feature (DF) was identified as the drum vent, as the drum vent is now identified as a new Limiting Condition for Operations (LCO).

Three new Surveillance Requirements (SRs) are required for drum stacking prohibition, access restrictions to the unvented drum storage area, and a separation distance for drums greater than 300 PE Ci.

NNSA\LASO concluded that credited controls from the hazard and accident analysis had been satisfactorily derived and incorporated into the revised TSRs.

3.8 Safety management programs/programmatic controls

NNSA\LASO concluded that Safety Management Programs (SMPs) and programmatic controls for AREA G operations have changed since issuance of the AREA G DSA, in that the criticality program is now implemented at the site to control high FGE drums. SMPs related to drum venting remain unchanged and are not impacted by the implementation of the new SMP

3.9 Technical Safety Requirements

TSRs are required by 10 CFR 830.205, *Technical Safety Requirements*. Guidance for TSR development is provided in DOE G 423.1-1, *Implementation Guide for Use in Developing Technical Safety Requirements*. NNSA\LASO evaluated the adequacy of the new TSRs based on verification that the commitments for safety controls made in Addendum No. 1 are carried through to TSR provisions, and that the guidance in DOE G 423.1-1 was appropriately applied in development of the new or revised TSRs. The new TSRs identified the following SSCs presented in Table 5.

Table 5, TSRs

TSR Control	Safety Function	Functional Requirements	Surveillance
TRU waste container vent (revised control, with an associated LCO)	Drums shall be vented to prevent the buildup of flammable gas	TRU waste 55-gallon, 85-gallon, 110-gallon drums in above ground storage at Area G are shall be vented to insure that lower flammable limits within the drum are not exceeded.	*DF-LCO*

TSR Control	Safety Function	Functional Requirements	Surveillance
Over pack of Unvented Drums	Prevents consequences of drum lid ejection from an unvented drum with a flammable gas mixture	Retains lid or ejected waste contents of an unvented drum during movement which may deflagrate.	*SAC-LCO*
Lid restraining device	Protects workers from ejected lid or waste debris if an unvented drum deflagrates	Retains lid or ejected waste contents of an unvented drum during movement which may deflagrate.	*SAC-LCO*
Use of Forklift with Enclosed Cab when transferring unvented drums	Protects workers from ejected lid or waste debris if an unvented drum deflagrates	Provides a shatter proof barrier between forklift operator and unvented drum	*SAC-LCO*
Unvented Container Storage Area Configuration *(Specific Administrative Control in the form of an LCO, element of TSR-AC on requirements for unvented drum)*	Controlling the unvented container storage area reduces the likelihood of a deflagration	The unvented storage configuration must be controlled by a 15 foot separation distance to other operations or storage to reduce the likely hood of a deflagration.	*SAC-LCO-SR 4.6.1, SR 4.6.2, SR 4.6.3*
Bonding/grounding requirement during the venting of unvented drums *(Specific Administrative Control)*	Bonding/grounding the drum and venting equipment when puncturing the lid of an unvented drum, during its venting, reduces the probability of a spark.	The drum shall be placed on a grounding pad and a grounding strap must be applied between the venting equipment prior to puncturing the lid of an unvented drum. After puncturing a drum personnel conducting activities on the drum must attach a wrist (or similar) bonding strap between themselves and the drum.	*SAC*

TSR Control	Safety Function	Functional Requirements	Surveillance
Non-Sparking Processes Requirement during the Venting of unvented drums – (new Specific Administrative Control)	The use of non-sparking processes when puncturing the lid of an unvented drum, during its venting, reduces the probability of a spark	The process used to puncture the lid of an unvented drum, during its venting does not produce sparks.	*SAC*
Remote Drum Venting Requirements *(Specific Administrative Control)*	Workers and the public are protected from airborne contamination which may occur during remote drum venting operation, by performing remote drum venting operations within an enclosure. Workers are further protected by flying debris if a drum deflagrates during drum venting, by ensuring personnel are at a distance away from the remote drum venting operation, and by restricting personnel access to the dome where drum venting operations occur.	Remote drum venting shall be controlled by a 90 foot separation to personnel and 15 foot separation to other operations or storage to minimize contamination and injury to workers. The enclosure requires HEPA filtration.	*SAC*
Gas Cylinder Handling	Protect workers from hazards associated with high pressure gas cylinders.	Provide adequate restraint while cylinder is in use.	AC
Waste Container Limits (existing Specific Administrative Control in the form of an LCO)	Limits the MAR to within the analyzed limits.	Limit single drum accident to less than 1100 PE Ci.	SAC
Metal Waste Container (existing SC DF)	Design feature credited with limiting accident	Type A drums required	SC DF

TSR Control	Safety Function	Functional Requirements	Surveillance
	scenarios		
Work performed in accordance with approved procedures. (existing SMP)	Work control	Insures that work is conducted per approved procedures.	None
Radiological Protection Program (existing SMP)	Provides for worker protection	Limit worker exposures and establish controls for entry into confinement enclosure. The confinement enclosure will be provided HEPA filter ventilation (inlet and exhaust as required) and a continuous radiation detection monitoring system.	None
Emergency Preparedness Program (existing SMP)	Provides emergency response based on approved pre plans	Meets institutional emergency response criteria.	None
Fire Protection Program (existing SMP)	Limits MAR releases due to fire.	The automatic fire sprinkler system in the confinement enclosure structure and combustible limit controls in the dome must meet institutional program requirements.	Surveillances must be consistent with the dome or structure in which the venting operation is conducted.

NNSA\LASO concluded that the revised TSRs satisfactorily establish the safety envelope necessary to protect the worker, the public and the environment from the hazards associated with venting of drums within the AREA G. The TSRs were found to meet guidance contained in DOE G 423.1-1.

4.0 CONCLUSION

The objectives of the NNSA review were to evaluate the adequacy of the AREA G DSA Addendum 1 and TSR Revision 0.18 in meeting the requirements of 10CFR 830 and ensure that all hazards were identified and controls in place to protect the public, workers and the environment. The DSA Addendum No 1 was determined to have satisfactorily identified, described and analyzed all hazards associated with the venting of drums inside the AREA G. Also, the DSA Addendum 1 provided linkage between the individual hazards identified and the final control set that addresses each hazard. The selected controls were determined to be capable of providing the credited safety functions and were appropriately captured in the TSRs.

NNSA\LASO concludes that the current suite of safety class and safety significant engineered controls, specific administrative controls and safety management programs identified in the DSA and DSA Addendum 1 and TSRs results in an acceptable safe operating envelope for the level of risk associated with AREA G activities. A comprehensive annual update of the AREA G Safety Basis should include the hazards and controls submitted in this addendum.

5.0 REFERENCES

1) Storage and Remote Drum Venting of Unvented TRU Waste Drums, Addendum No. 1, Rev.0, December 2007
2) NNSA LASO Correspondence SBT/5485.3/5LB:07-002, D. Winchell to R. McQuinn, October 17, 2007, Closure of Two Separate Potentially Inadequate Safety Analyses (PISA) Concerning the Dome Fabric and Drum Banding at TA-54, Area G, and Radioassay and Nondestructive Testing (RANT)

Applicable Standards

10 CFR 830, Subpart B, *Nuclear Safety Management*, April 2001.

DOE-STD-1027-92, CN 1, *Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports,* September 1997.

DOE-STD-1104-96, CN 3, *Review and Approval of Non-Reactor Nuclear Facility Safety Basis Documents (Documented Safety Analyses and Technical Safety Requirements)*, December 2005.

DOE-STD-3009-94, CN 3, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Documented Safety Analyses*, March 2006.

DOE-STD-1186-2004, *Specific Administrative Controls*, August 2004.

DOE Order 420.1B, *Facility Safety,* December 22, 2005.

DOE G 421.1-2, *Implementation Guide for Use in Developing Documented Safety Analysis to Meet Subpart B of 10 CFR 830,* October 24, 2001.

NOTE: Use these buttons to print or save the form. DO NOT use the browser tool bar.

SAVE PRINT

Los Alamos NATIONAL LABORATORY EST. 1943

Waste Acceptance Criteria Exception Form

WEF Number	WPF Number	CWDR/TWSR Number	Item Number

Completed by Waste Generator

❒ On-going	❒ Hazardous/Chemical	❒ Low-level Waste	❒ Transuranic
❒ One-time	❒ Mixed Low-level Waste	❒ Radioactive Liquid Waste	❒ Other _____

Waste Acceptance Criteria:

Reason for Variance and Justification:

Requested by	Signature	Z Number	Date

SAVE PRINT CLEAR FORM

Waste Management Review

1. Unreviewed Safety Questions Screen/Determination

Is a USQ Screen (USQS) required? ❒ Yes ❒ No ❒ N/A			
If required, USQ Screen was ❒ Positive ❒ Negative			
If the USQS was positive, note the USQ Determination Number (USQD Number): _____			
Results of the USQD were: ❒ Positive ❒ Negative			
If the USQD was positive, DOE approval is required for this action.			
Any USQ issues were resolved. Qualified Person	Signature	Z Number	Date

2. Waste Management Approval

Special Instructions and Comments			
Basis for Exemption or Denial			
❒ Approved ❒ Rejected	Signature	Z Number	Date

Appendix 3

Documents Supporting Comment 23, Dioxin/Furan Prohibition

TA-16 Burn Ground Soil Sample Collection

August 26, 2009

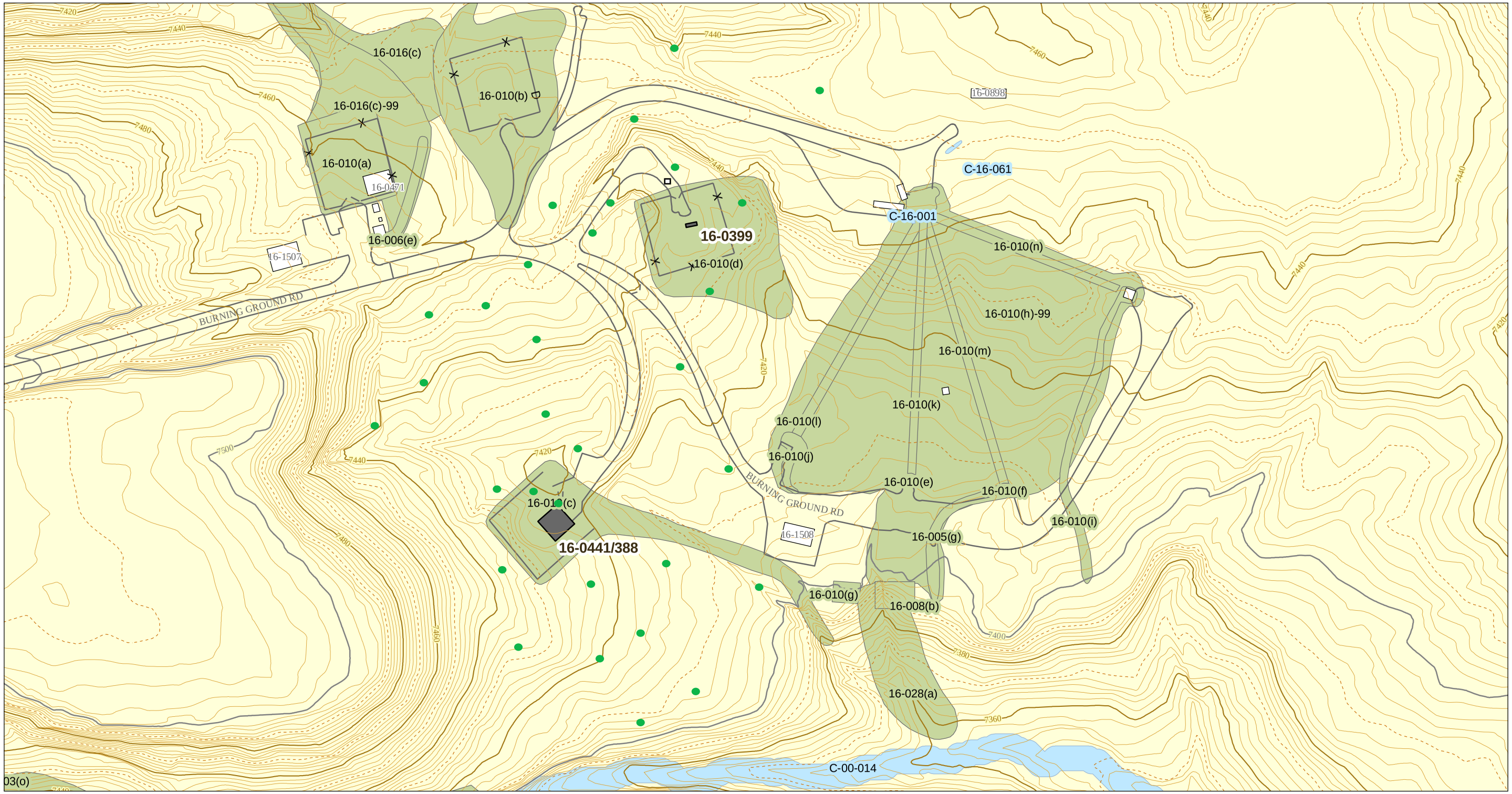
The purpose of the sample collection event scheduled for Wednesday, August 26, 2009 is to collect discrete surface soil samples within the top 1-3 inches of soil at the 31 locations illustrated on the map attached (*Technical Area 16 Burn Ground Soil Sample Locations For August 2009 Sample Collection Event*). The soil will be analyzed for dioxins/furans and the eight Resource Conservation and Recovery Act (RCRA) metals. The goal of this data will be to characterize the Technical Area (TA) 16 Burn Ground in regards to the potential air depositional impact occurring from the current open burning treatment operations.

As required by the Code of Federal Regulations (CFR), Title 40, Part 264, Section 601 (40 CFR 264.601(c)(7)), the potential for TA-16 Burn Ground to impact human health and the environment due to the migration of waste constituents in the air was assessed using an air model requested by the New Mexico Environment Department-Hazardous Waste Bureau. The model concluded that the operations were protective of human health and the environment, but more data was necessary for the potential furan impact. Data collected in June 2009 on the concentration of dioxin/furan congeners at the TA-16 Burn Ground, lead to the decision that more data was necessary.

Analysis results for this sampling event will be combined with the June 2009 data for inclusion into the Ecological Risk Screening Assessment for the TA-16 Burn Ground. The risk assessment will characterize the risk to wildlife in the area associated with the open burning treatment units at the TA-16 Burn Ground and take into consideration past operational activities and acts of nature (forest fires) that have impacted the site.

A site visit by sampling personnel and TA-16 environmental compliance generalist on August 20, 2009 flagged sample locations at the TA-16 Burn Ground. The locations were marked for sample collection on August 26, 2009 using the following criteria:

- A soil sample could physically be collected (e.g. no riprap, asphalt, or wall present);
- The location was at or near a location suggested by David Cobrain (NMED-HWB) and a contracted risk assessor (Page Walton), during a meeting on August 11, 2009; and
- The location represents an area where particulate deposition from the air is likely to have occurred.



Technical Area 16 Burn Ground Soil Sample Locations For August 2009 Sample Collection Event

Map Created By: Kathryn Bennett, WES-EDA-GIS GIS Team, July 15, 2009, Map Reference #09-0030-12=TA16BurnGround

Fences
Roads, Paved
100-ft Contour
20-ft Contour
10-ft Contour
2-ft Contour

PRS and Areas of Concern
AOC
SWMU
Soil Sample Locations

RCRA waste management units
RWMU Structure
RWMU
Other Structures

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N

DISCLAIMER:
This map was created for work processes associated with the LANL Hazardous Waste Permit Facility Permit. All other uses for this map should be confirmed with LANL, ENV Division, Water Quality & RCRA..

1:1,600

0 45 90 180 Feet

Meters
03.57 14 21 28

1983 North American Datum
State Plane Coordinate System
New Mexico, Central Zone (US Feet)

DATA SOURCES:

PATH	NAME	DATE ACCESSED	DATE PUBLISHED
X:\Projects\09-Projects\09-0030\Data\TA16BurnGrounds_samples	Sample Location	2009-04-16	2009-04-16
C:\Documents and Settings\106087\Application Data\ESRI\ArcCatalog\Connection to GIS-SDE-P.sde\erdgi1v.ER.LANL_hypsography\erdgi1v.ER.LANL_co	100-ft Contour	2009-04-16	1991
C:\Documents and Settings\106087\Application Data\ESRI\ArcCatalog\Connection to GIS-SDE-P.sde\erdgi1v.ER.LANL_hypsography\erdgi1v.ER.LANL_co	20-ft Contour	2009-04-16	1991
C:\Documents and Settings\106087\Application Data\ESRI\ArcCatalog\Connection to GIS-SDE-P.sde\erdgi1v.ER.LANL_hypsography\erdgi1v.ER.LANL_co	10-ft Contour	2009-04-16	1991
C:\Documents and Settings\106087\Application Data\ESRI\ArcCatalog\Connection to GIS-SDE-P.sde\erdgi1v.ER.LANL_hypsography\erdgi1v.ER.lanl_cont	2-ft Countour	2009-04-16	1991
C:\Documents and Settings\106087\Application Data\ESRI\ArcCatalog\Connection to GIS-SDE-P.sde\erdgi1v.ER.LANL_hypsography\erdgi1v.ER.lanl_cont	2-ft Countour	2009-04-16	1991
V:\er-I\FWO_fences\KSL_fences_arc20081015	Fences	2009-04-16	15-Oct-08
C:\Documents and Settings\106087\Application Data\ESRI\ArcCatalog\Connection to GIS-SDE-P.sde\erdgi1v.ER.FWO_roads\erdgi1v.ER.KSL_centerline	centerline_arc	2009-04-16	2005-12-15
X:\Projects\04-Projects\04-0005\data\Lanl_street_clip	Roads, Paved	2009-04-16	15-Oct-08
V:\er+\SWRC_hazardouswaste\SWRC_rcra_rwmu_ply	RCRA waste management units	2009-04-16	06-Apr-06
C:\Documents and Settings\106087\Application Data\ESRI\ArcCatalog\Connection to GIS-SDE-P.sde\erdgi1v.ER.FWO_structures\erdgi1v.ER.KSL_structu	Structures	2009-04-16	01-Jul-05
X:\users\bennett\arcims\PRS\prs_all_reg.shp (downloaded from SDE server gis-sde-p erdgi1v.ER.ER_prs)	PRS and Areas of Concern	2009-07-15	2009-03-13

Data Quality Objective

Soil Sampling for Dioxan/Furan Levels at Los Alamos National Laboratory TA-16 Burn Ground

Data will support the LANL Hazardous Waste Permit Application

LANL-ENV-RCRA
August 24th, 2009

STEP 1

As required by the Code of Federal Regulations (CFR), Title 40, Part 264, Section 601 (40 CFR 264.601 (c)(7)), CFR environmental performance standards for miscellaneous units, in this case open burn units (OB), dictate that the operator must prevent any release of constituents that would have an adverse effect on the environment, including "domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents."

The planning team for the sampling project was composed of New Mexico Environment Department personnel and Los Alamos National Laboratory (LANL) personnel from the Environmental Department. Air modeling information was gathered from LANL's Systems Engineering and Integration Division and a private contractor for the NMED.

Sampling will be conducted the week of August 24th. The analytical data will be provided to LANL thirty working days following receipt of the samples.

STEP 2

Dioxans/furans were generated from the burn process at TA-16 and may have been transported by wind from the OB units to the immediately surrounding soil.

Past limited sampling in the area of the OB units have shown that dioxans/furans are present in the soil. Present sampling under this DQO will use conclusions of air modeling to assess the migration of dioxans/furans that will focus on the soil areas around the OB units. Sampling will include areas inside the solid waste management unit's boundaries, areas that are known to have contamination. The assessment will also include sampling for the 8 RCRA metals.

STEP 3

Conclusions may be drawn regarding the attribution and levels of dioxans/furans in the soil surrounding the OB units, however data should not be used for site characterization and the risk assessment will involve a study by the ECO group.

STEP 4

The population to be sampled will include an area beginning at each unit to approximately 280 feet out from each unit.

The planning team determined that discrete sampling would be performed using the guidance for simple random sampling to determine the sampling points. *EPA 530-D-02-*

002 RCRA Waste Sampling Draft Technical Guidance. Simple random sampling/equiprobable selection was chosen because the population of interest is relatively homogeneous according to the air models; therefore each portion of the target population has an equal chance of being chosen.
Sampling will be conducted following guidance from ASTM D4700 91(2006) Standard Sampling from the Vadose Zone. This guidance document provides information on sampling for the presence of contaminated in the vadose zone. Each sampling point has been marked on a map of the area and a previous walk-down has marked the spot to be sampled. Each sampling point shall be marked 6" x 6" and sampling done with the scoop from the closest to furtherist point in this area. All sampling locations will be marked on the map with GPS coordinates.

ASTM D6232-00 Standard Guide for Selection of Sampling Equipment for Waste and Contaminated Media Data Collection Activities will provide the criteria for selection of sampling tools. When possible, a disposable Teflon scoop will be used for sampling. Stainless steel scoops will be used on the tuffa. A new stainless steel scoop will be used for each sampling location.

STEP 5

The decision rule will be determined by the ENV-RCRA Permit Team and NMED.

STEP 6

When evaluating the data from the sampling locations these criteria should be considered:
The entire area has been mowed numerous times with gas and diesel powered equipment.
The entire area has visible burned trees from a previous forest fire.
The entire area has been re-vegetated.
Some of the area has new gravel or cleachie layers.

Container Information:

Dioxans/Furans 1 – 125 mL amber glass
Total RCRA metals 500 mL poly

The ENV-RCRA Sampling and Analysis Plan will be followed concerning all aspects of this sampling project.

Appendix 4
Summary of Suggested Changes to Tables K-1, K-2, and K-3

Summary of Requested Changes to Tables K-1, K-2, and K-3

SWMU/AOC	Requested Action
Table K-1	
SWMU 00-002	Delete from Table K-1.
AOC 00-030*(i)	Delete from Table K-1.
AOC 00-030(k)	Delete from Table K-1.
SWMU 00-030(n)	Change “SWMU” to “AOC”.
SWMU 00-030(o)	Change “SWMU” to “AOC”.
SWMU 00-030(p)	Change “SWMU” to “AOC”.
AOC 00-033(b)	Delete from Table K-1.
AOC 00-034(a)	Delete from Table K-1.
SWMU 03-029	Add to Table K-1.
SWMU 03-032	Delete from Table K-1.
SWMU 03-045(i)	Delete from Table K-1.
AOC 03-052(f)	Change “AOC” to “SWMU”.
AOC C-06-006	Delete from Table K-1.
AOC C-06-007	Delete from Table K-1.
AOC C-06-008	Delete from Table K-1.
AOC C-06-009	Delete from Table K-1.
AOC C-06-010	Delete from Table K-1.
AOC C-06-011	Delete from Table K-1.
AOC C-06-012	Delete from Table K-1.
AOC C-06-013	Delete from Table K-1.
AOC C-06-014	Delete from Table K-1.

Summary of Requested Changes to Tables K-1, K-2, and K-3

SWMU/AOC	Requested Action
AOC C-06-015	Delete from Table K-1.
AOC C-06-016	Delete from Table K-1.
AOC C-06-017	Delete from Table K-1.
AOC C-06-018	Delete from Table K-1.
AOC C-06-020	Delete from Table K-1.
AOC C-06-021	Delete from Table K-1.
SWMU 15-009(l)	Delete from Table K-1.
SWMU 15-012(c)	Delete from Table K-1.
SWMU 15-012(d)	Delete from Table K-1.
SWMU 15-012(e)	Delete from Table K-1.
SWMU 15-012(f)	Delete from Table K-1.
SWMU 15-012(g)	Delete from Table K-1.
AOC 16-005(a)	Change “AOC” to “SWMU”.
AOC 16-005(c)	Change “AOC” to “SWMU”.
AOC 16-005(d)	Change “AOC” to “SWMU”.
AOC 16-005(e)	Change “AOC” to “SWMU”.
AOC 16-005(g)	Change “AOC” to “SWMU”.
AOC 16-005(h)	Change “AOC” to “SWMU”.
AOC 16-005(j)	Change “AOC” to “SWMU”.
AOC 16-005(k)	Change “AOC” to “SWMU”.
AOC 16-005(l)	Change “AOC” to “SWMU”.
AOC 16-005(m)	Change “AOC” to “SWMU”.
AOC 16-005(n)	Change “AOC” to “SWMU”.
SWMU 16-008(b)	Delete from Table K-1.
SWMU 16-009(b)	Delete from Table K-1.

Summary of Requested Changes to Tables K-1, K-2, and K-3

SWMU/AOC	Requested Action
SWMU 16-010(b)	Delete from Table K-1.
SWMU 16-010(c)	Delete from Table K-1.
SWMU 16-010(d)	Delete from Table K-1.
SWMU 16-010(e)	Delete from Table K-1.
SWMU 16-010(f)	Delete from Table K-1.
SWMU 16-010(j)	Delete from Table K-1.
SWMU 16-018	Delete from Table K-1.
AOC 16-024(e)	Change “AOC” to “SWMU”.
SWMU 16-032(c)	Add to Table K-1.
AOC C-19-001	Delete from Table K-1.
AOC C-20-001	Delete from Table K-1.
AOC C-20-002	Delete from Table K-1.
AOC C-20-003	Delete from Table K-1.
SWMU 21-016(d)	Delete from Table K-1
SWMU 21-016(e)	Delete from Table K-1
AOC 21-030	Delete from Table K-1.
SWMU C-21-001	Change “SWMU” to “AOC”.
SWMU 35-010(misc)	Delete from Table K-1.
SWMU 35-018(a)	Change “SWMU” to “AOC”.
SWMU 36-006	Add to Table K-1.
AOC 36-009	Delete from Table K-1.
AOC 39-002(a)	Change “AOC” to “SWMU”.
SWMU 40-003(a)	Delete from Table K-1.
SWMU 43-001(a2)	Change “SWMU” to “AOC”.

Summary of Requested Changes to Tables K-1, K-2, and K-3

SWMU/AOC	Requested Action
AOC 43-001(b1)	Delete from Table K-1.
SWMU 49-001(misc)	Delete from Table K-1.
SWMU 50-011(misc)	Delete from Table K-1.
AOC C-51-001	Delete from Table K-1.
AOC C-51-002	Delete from Table K-1.
AOC 52-002(g)	Delete from Table K-1.
SWMU 54-001(a)	Delete from Table K-1.
AOC 54-001(b)	Delete from Table K-1.
AOC 54-001(d)	Delete from Table K-1.
AOC 54-001(e)	Delete from Table K-1.
AOC 54-002	Delete from Table K-1.
SWMU 54-007(misc)	Delete from Table K-1.
SWMU 54-009	Delete from Table K-1.
AOC 54-015(a)	Delete from Table K-1.
AOC 54-015(c)	Delete from Table K-1.
AOC 54-015(d)	Delete from Table K-1.
AOC 54-015(e)	Delete from Table K-1.
AOC 54-015(f)	Delete from Table K-1.
AOC 54-015(j)	Delete from Table K-1.
AOC 63-002	Delete from Table K-1.

Summary of Requested Changes to Tables K-1, K-2, and K-3

SWMU/AOC	Requested Action
AOC 73-007	Delete from Table K-1.
AOC C-73-005(a)	Delete from Table K-1.
AOC C-73-005(b)	Delete from Table K-1.
AOC C-73-005(c)	Delete from Table K-1.
AOC C-73-005(d)	Delete from Table K-1.
AOC C-73-005(e)	Delete from Table K-1.
AOC C-73-005(f)	Delete from Table K-1.
Table K-2	
Table K-3	
AOC 00-030(k)	Add to Table K-3 with corrective action completed date of 12/6/2006.
AOC 00-030(i)	Add to Table K-3 with corrective action completed date of 1/30/2002.
AOC 00-033(b)	Add to Table K-3 with corrective action completed date of 2/23/2006.
AOC 00-034(a)	Add to Table K-3 with corrective action completed date of 12/6/2006.
AOC C-06-006	Add to Table K-3 with corrective action completed date of 3/14/2000.
AOC C-06-007	Add to Table K-3 with corrective action completed date of 3/14/2000.
AOC C-06-008	Add to Table K-3 with corrective action completed date

SWMU/AOC	Requested Action
	of 3/14/2000.
AOC C-06-009	Add to Table K-3 with corrective action completed date of 3/14/2000.
AOC C-06-010	Add to Table K-3 with corrective action completed date of 3/14/2000.
AOC C-06-011	Add to Table K-3 with corrective action completed date of 3/14/2000.
AOC C-06-012	Add to Table K-3 with corrective action completed date of 3/14/2000.
AOC C-06-013	Add to Table K-3 with corrective action completed date of 3/14/2000.
AOC C-06-014	Add to Table K-3 with corrective action completed date of 3/14/2000.
AOC C-06-015	Add to Table K-3 with corrective action completed date of 3/14/2000.
AOC C-06-016	Add to Table K-3 with corrective action completed date of 3/14/2000.
AOC C-06-017	Add to Table K-3 with corrective action completed date of 3/14/2000.
AOC C-06-018	Add to Table K-3 with corrective action completed date of 3/14/2000.
AOC C-06-020	Add to Table K-3 with corrective action completed date of 3/14/2000.
AOC C-06-021	Add to Table K-3 with corrective action completed date of 3/14/2000.
SWMU 35-006	Add to Table K-3 with corrective action completed date of 5/2/2001.
SWMU 35-011(a)	Add to Table K-3 with corrective action completed date of 5/2/2001.

Summary of Requested Changes to Tables K-1, K-2, and K-3

SWMU/AOC	Requested Action
AOC 73-007	Add to Table K-3 with corrective action completed date of 3/28/2001.
AOC C-73-005(a)	Add to Table K-3 with corrective action completed date of 3/28/2001.
AOC C-73-005(b)	Add to Table K-3 with corrective action completed date of 3/28/2001.
AOC C-73-005(c)	Add to Table K-3 with corrective action completed date of 3/28/2001.
AOC C-73-005(d)	Add to Table K-3 with corrective action completed date of 3/28/2001.
AOC C-73-005(e)	Add to Table K-3 with corrective action completed date of 3/28/2001.
AOC C-73-005(f)	Add to Table K-3 with corrective action completed date of 3/28/2001.

Appendix 5

Attachment N- Updated Figures

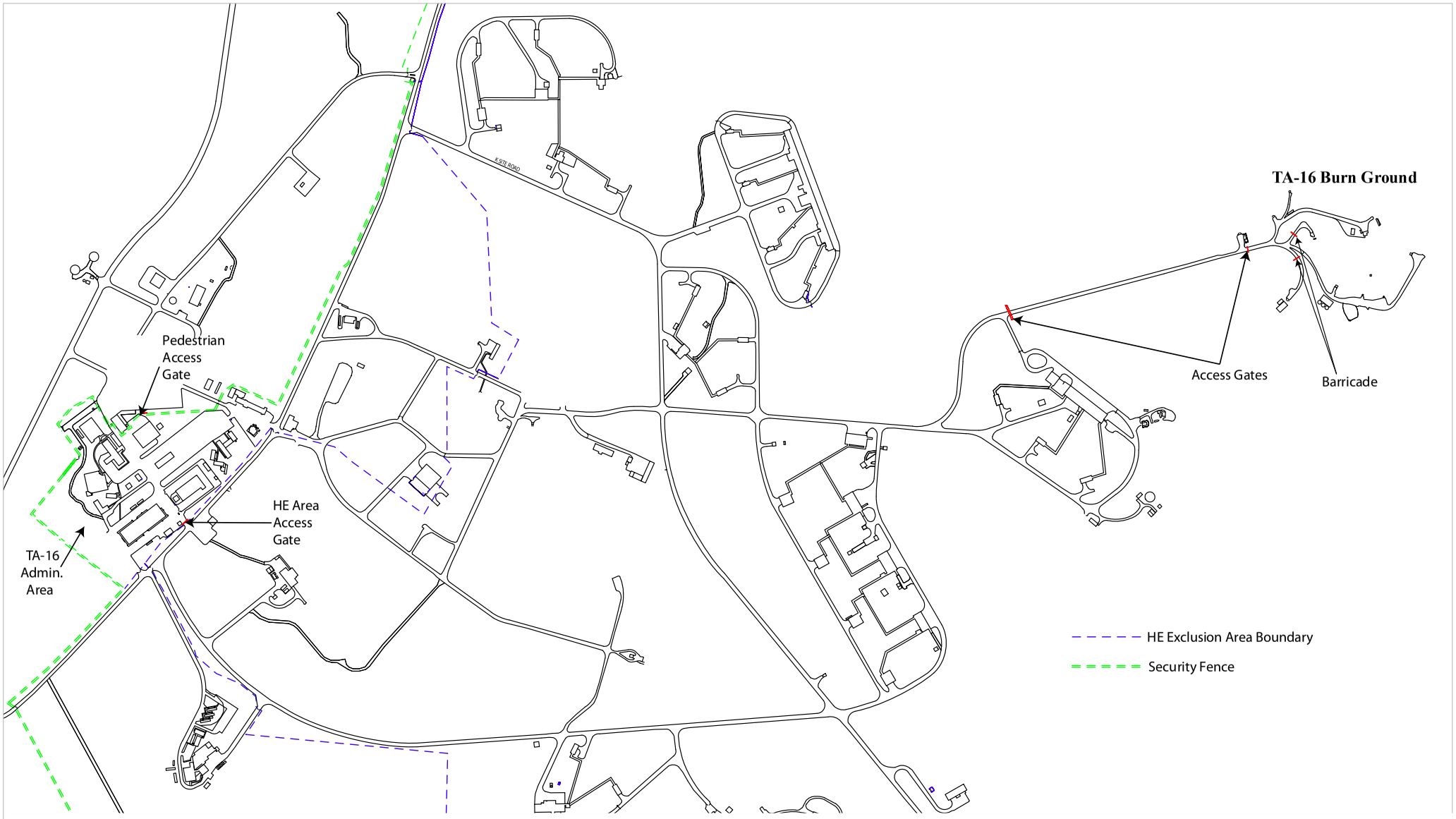


Figure 5:
Technical Area (TA) 16 Security Fences, Entry Gates, and Entry Stations

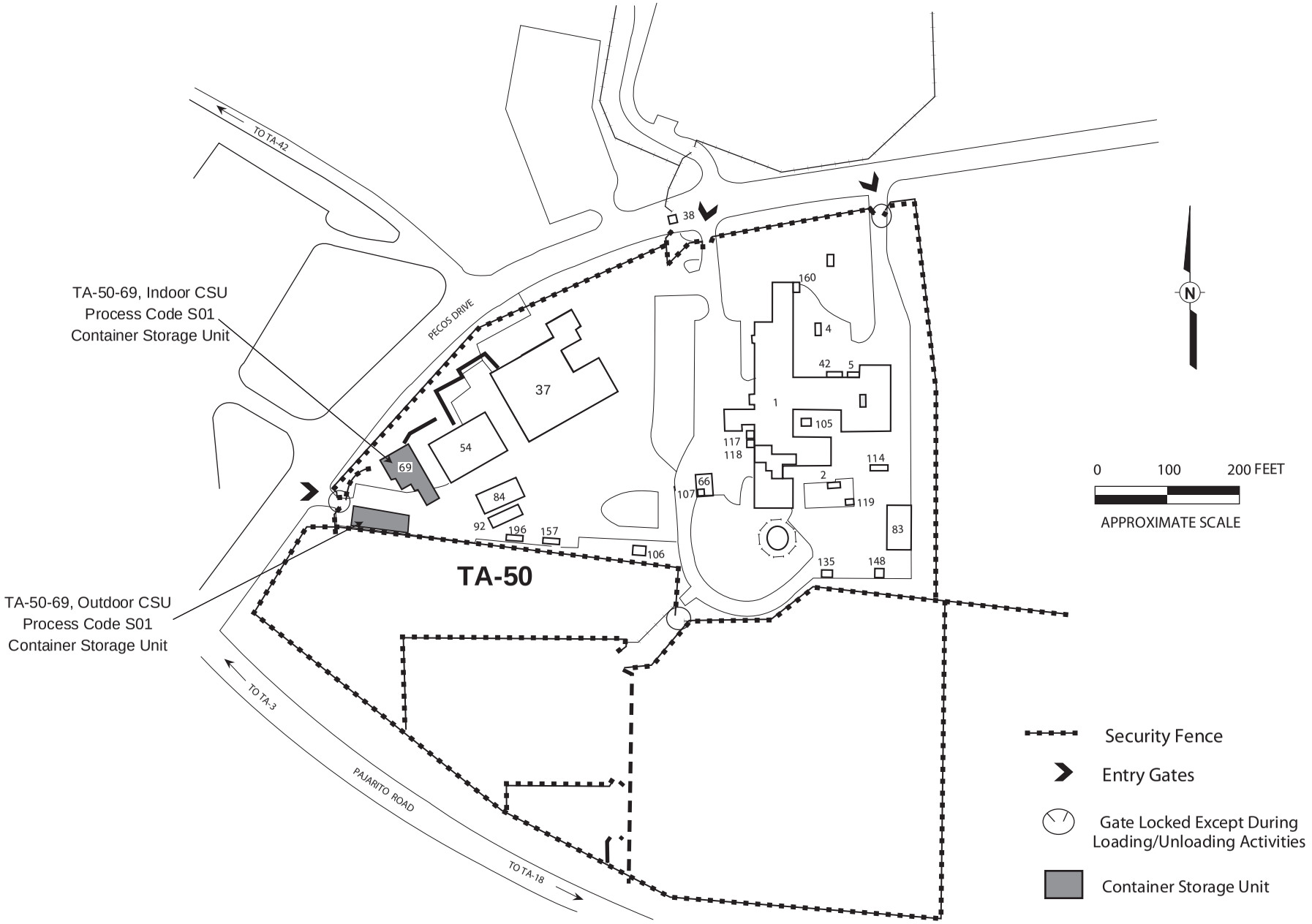


Figure 6:
Technical Area (TA) 50 Location Map Showing Security Fences, Entry Gates, and Entry Stations

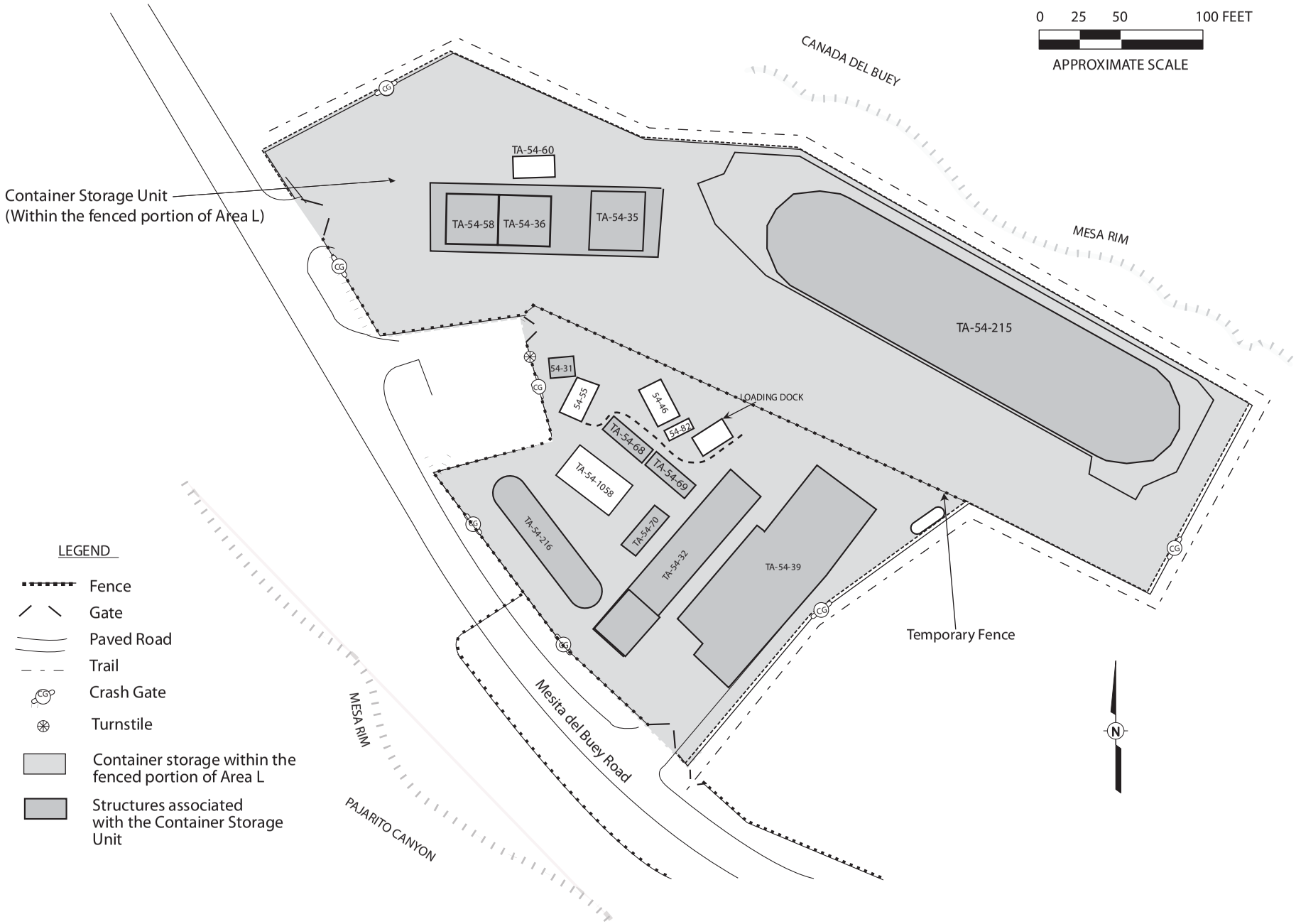
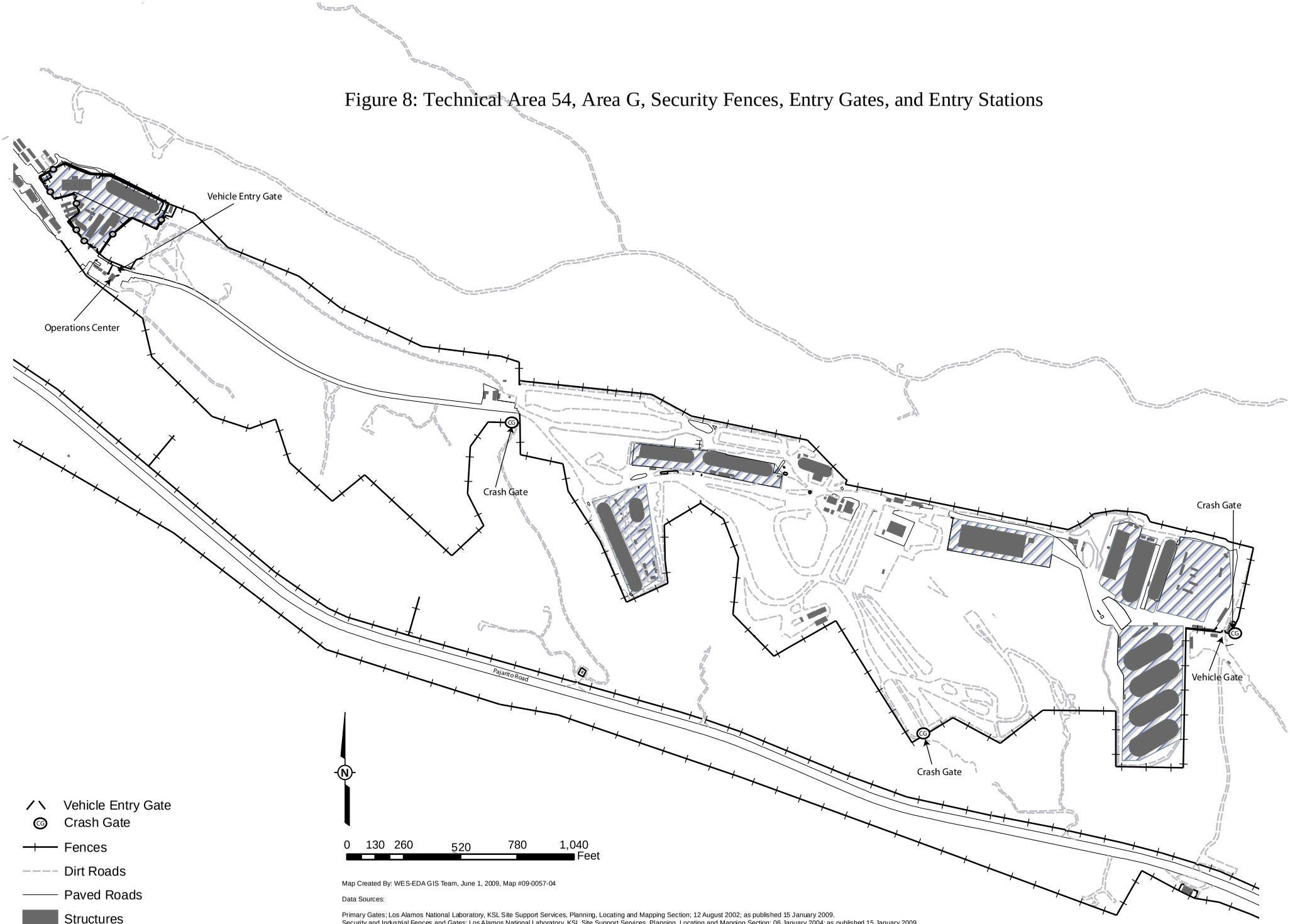


Figure 7: Technical Area 54, Area L, Security Fences, Entry Gates, and Entry Stations

Figure 8: Technical Area 54, Area G, Security Fences, Entry Gates, and Entry Stations



Map Created By: WES-EDA GIS Team, June 1, 2009, Map #09-0057-04

Data Sources:

Primary Gates; Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; 12 August 2002; as published 15 January 2009.
Security and Industrial Fences and Gates; Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 15 January 2009.
Paved Road Arcs; Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 15 January 2009.
Structures; Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 15 January 2009.
Resource Conservation and Recovery Act (RCRA) Storage and Treatment Units; Los Alamos National Laboratory; Solid Wast Regulatory Compliance Group; 04 August 2005.
Waste Storage Features; Los Alamos National Laboratory, Environment and Remediation Support Services Division, GIS/Geotechnical Services Group, EP2007-0032; 1:2,500 Scale Data; 13 April 2007.
Materials Disposal Areas; Los Alamos National Laboratory, ENV Environmental Remediation and Surveillance Program; ER2004-0221; 1:2,500 Scale Data; 23 April 2004.

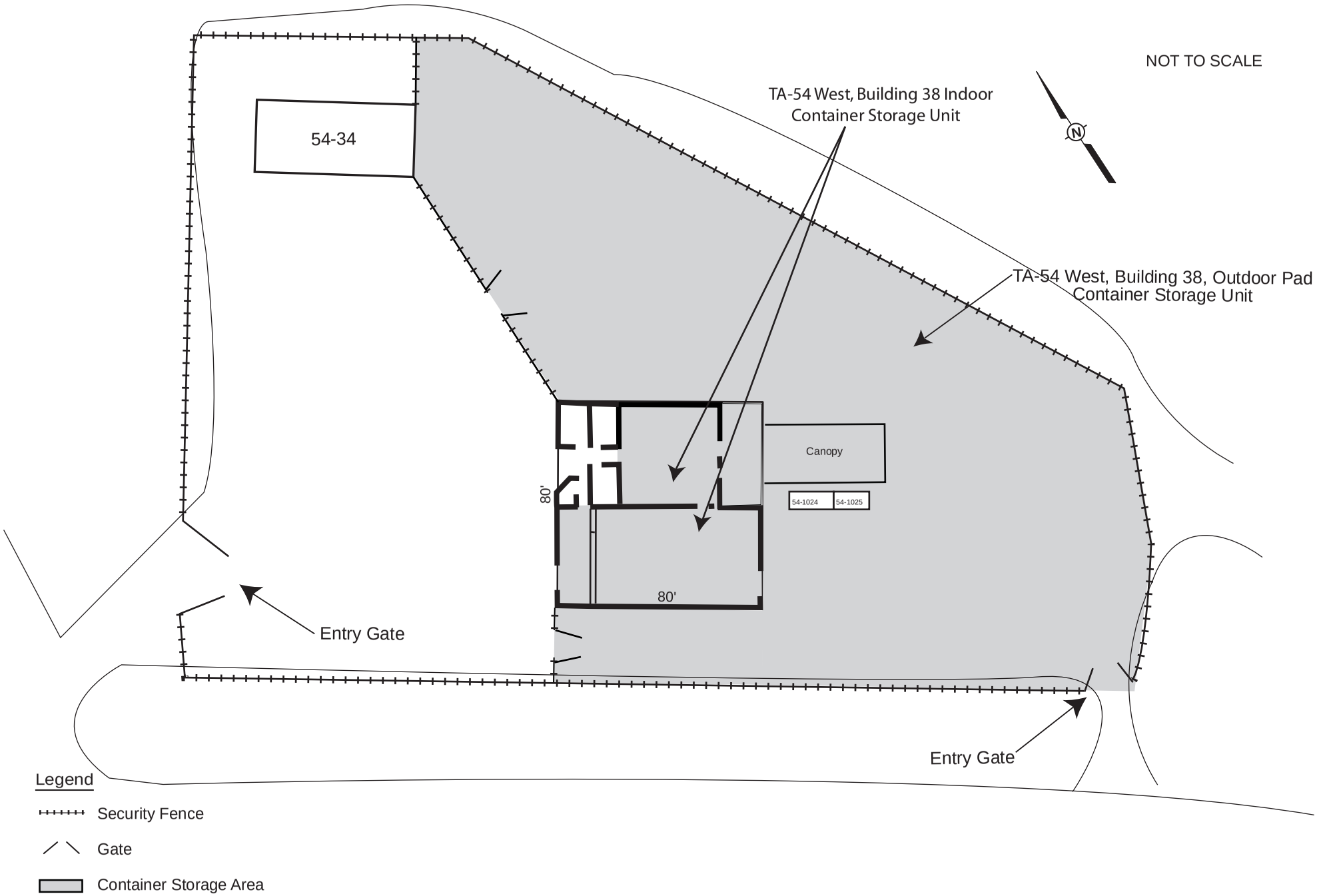


Figure 9
Technical Area (TA) 54 West Location Map Showing Security Fences, Entry Gates, and Entry Stations

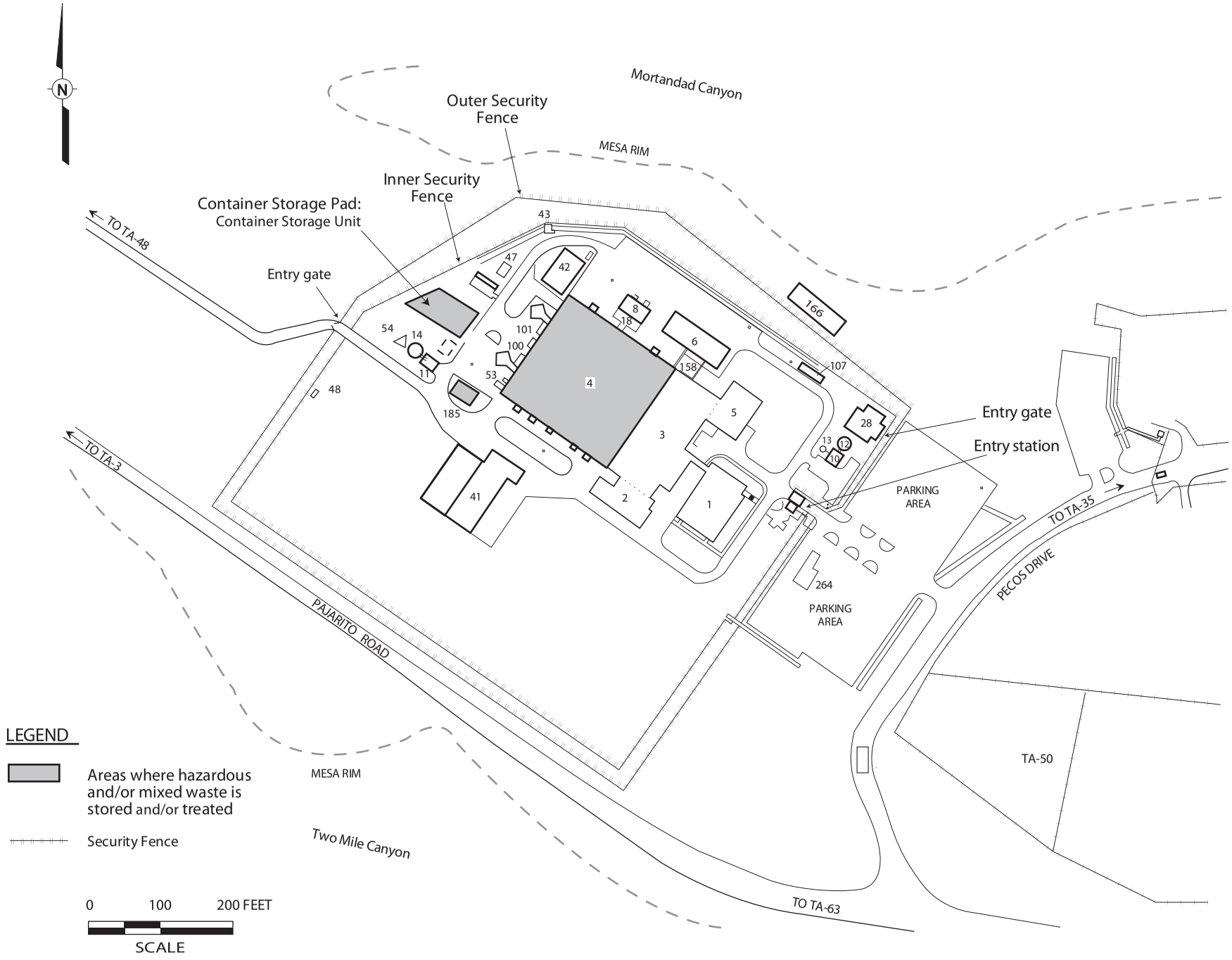


Figure 10
Technical Area (TA) 55 Location Map Showing Security Fences, Entry Gates, and Entry Stations

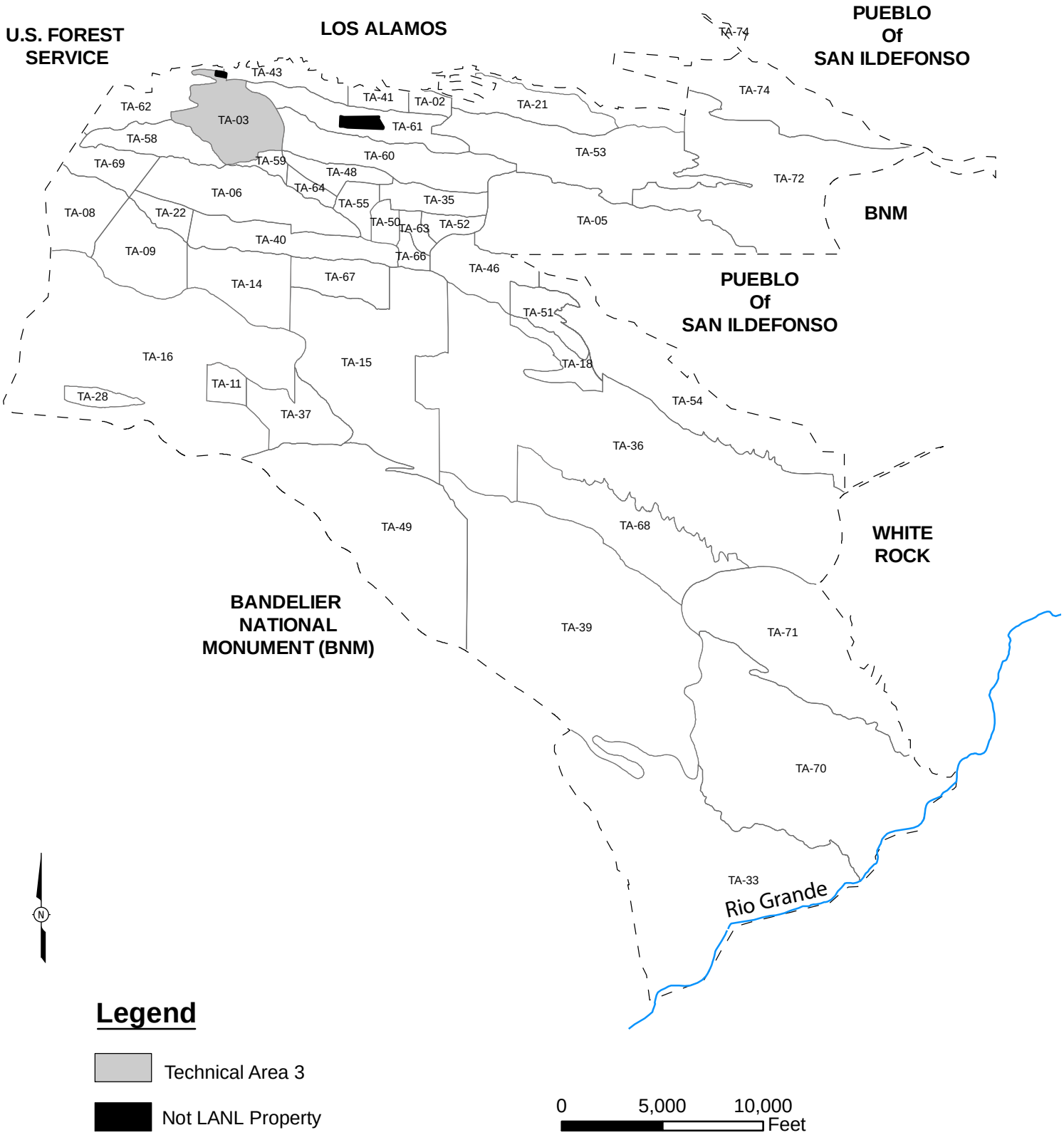


Figure 11:

Technical Area (TA) 3 Location Map

Created by EP-WES-EDA GIS TEAM. Map Number 06-0108 November 13, 2008, modified by ENV-RCRA August 2009
State Plane Coordinate System New Mexico Central Zone North American Datum 1983 (ft)
This map was created for work processes associated with the Environmental &Remediation Support Services. All other uses for this map should be confirmed with LANL EP-WES staff.
Boundary of Department of Energy Property I Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; infrastructure Planning Office. 04 June 2008
Boundary of Department of Energy Property In and Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; 04 June 2008

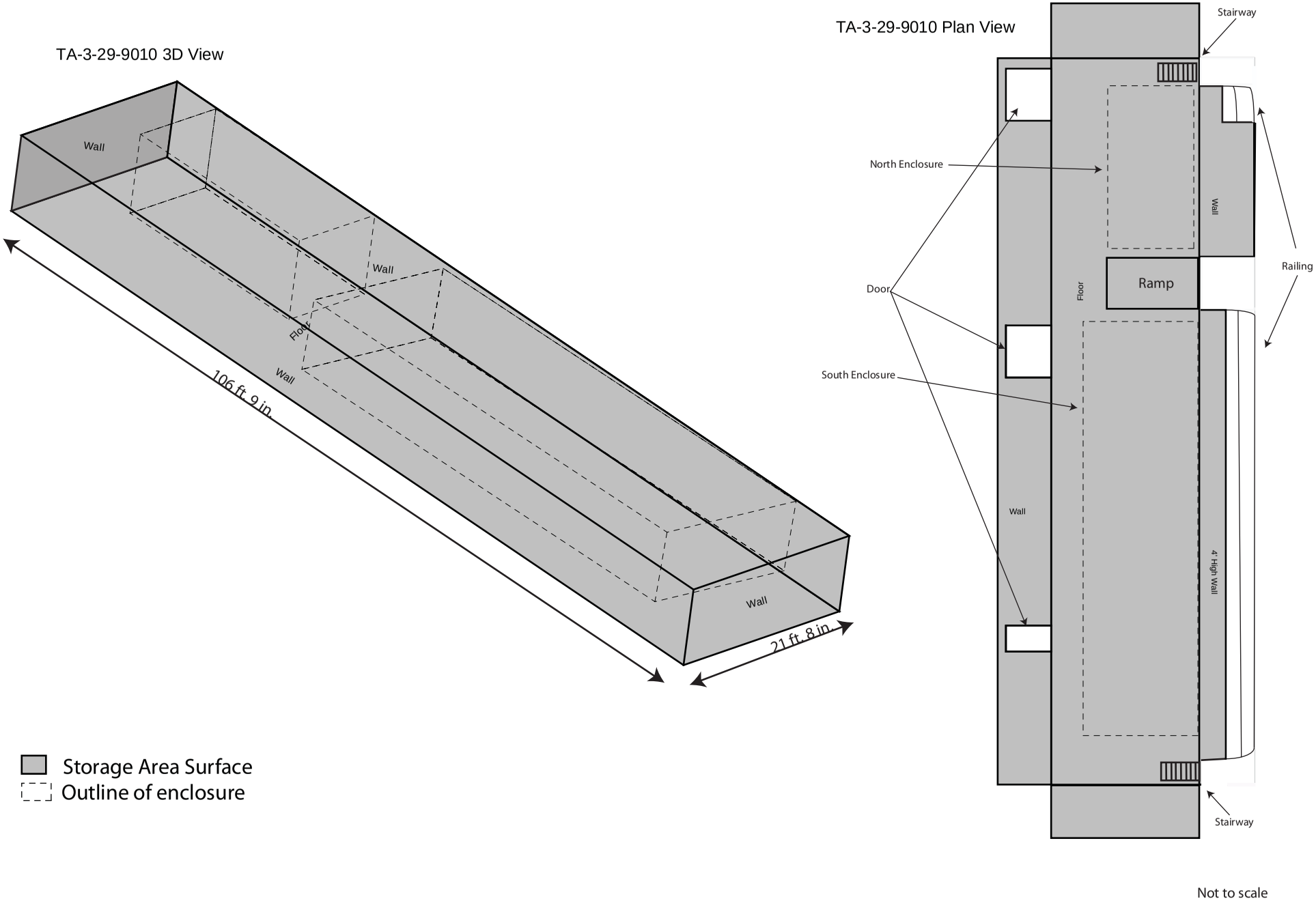


Figure 13:
Technical Area (TA) 3, Building 29, Room 9010

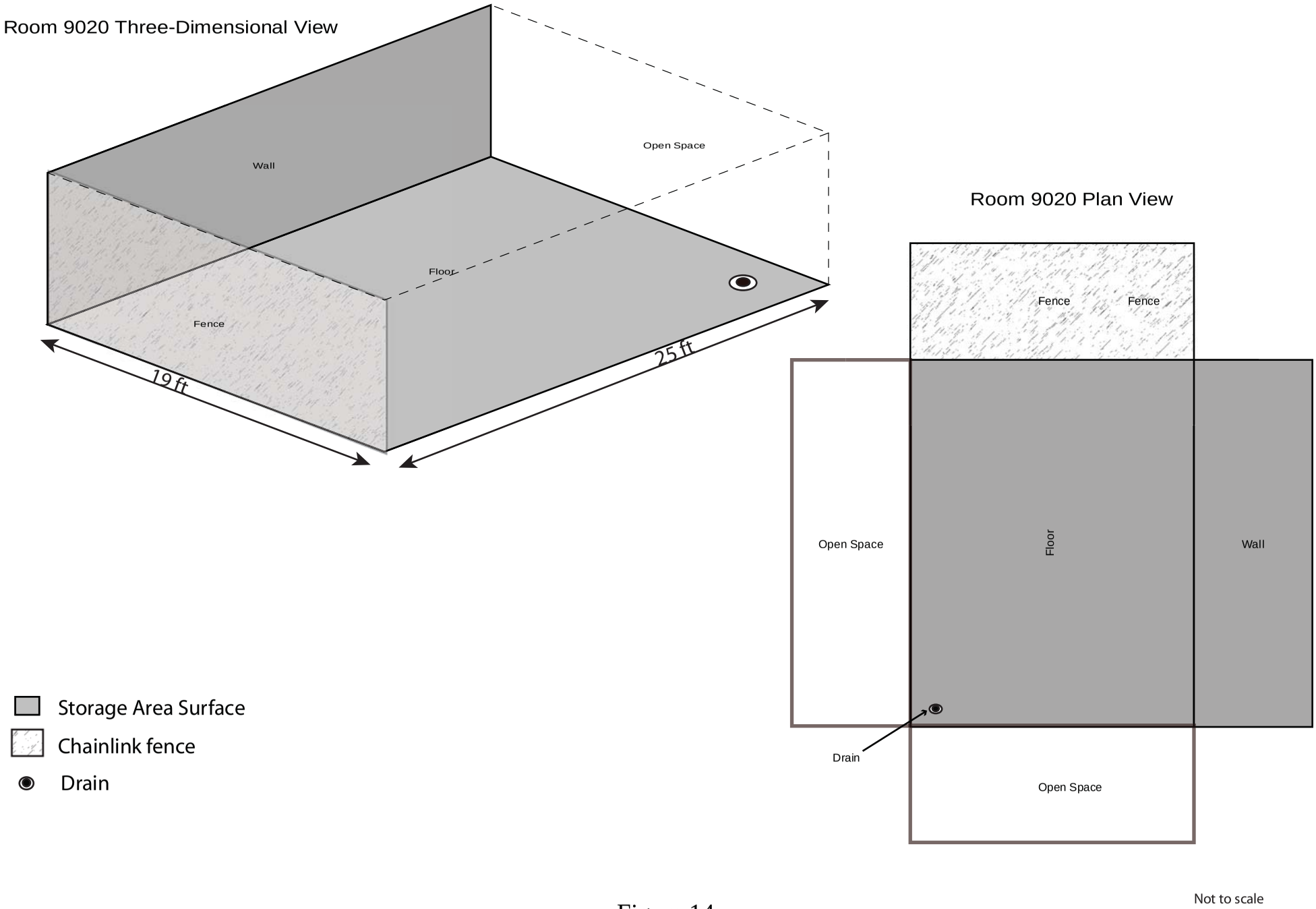


Figure 14:

Technical Area (TA) 3, Building 29, Portion of Room 9020

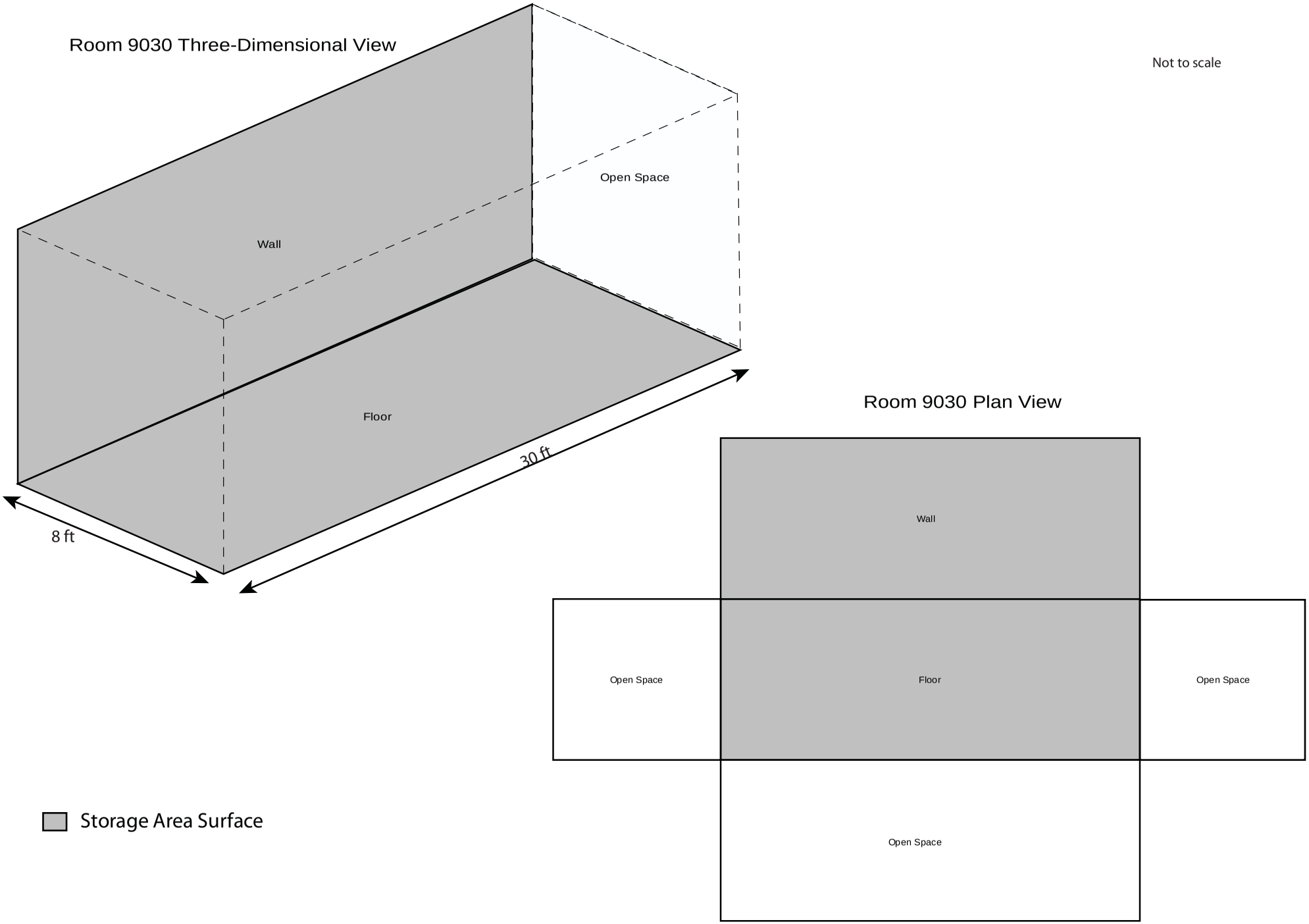


Figure 15:

Technical Area 3, Building 29, Portion of Room 9030

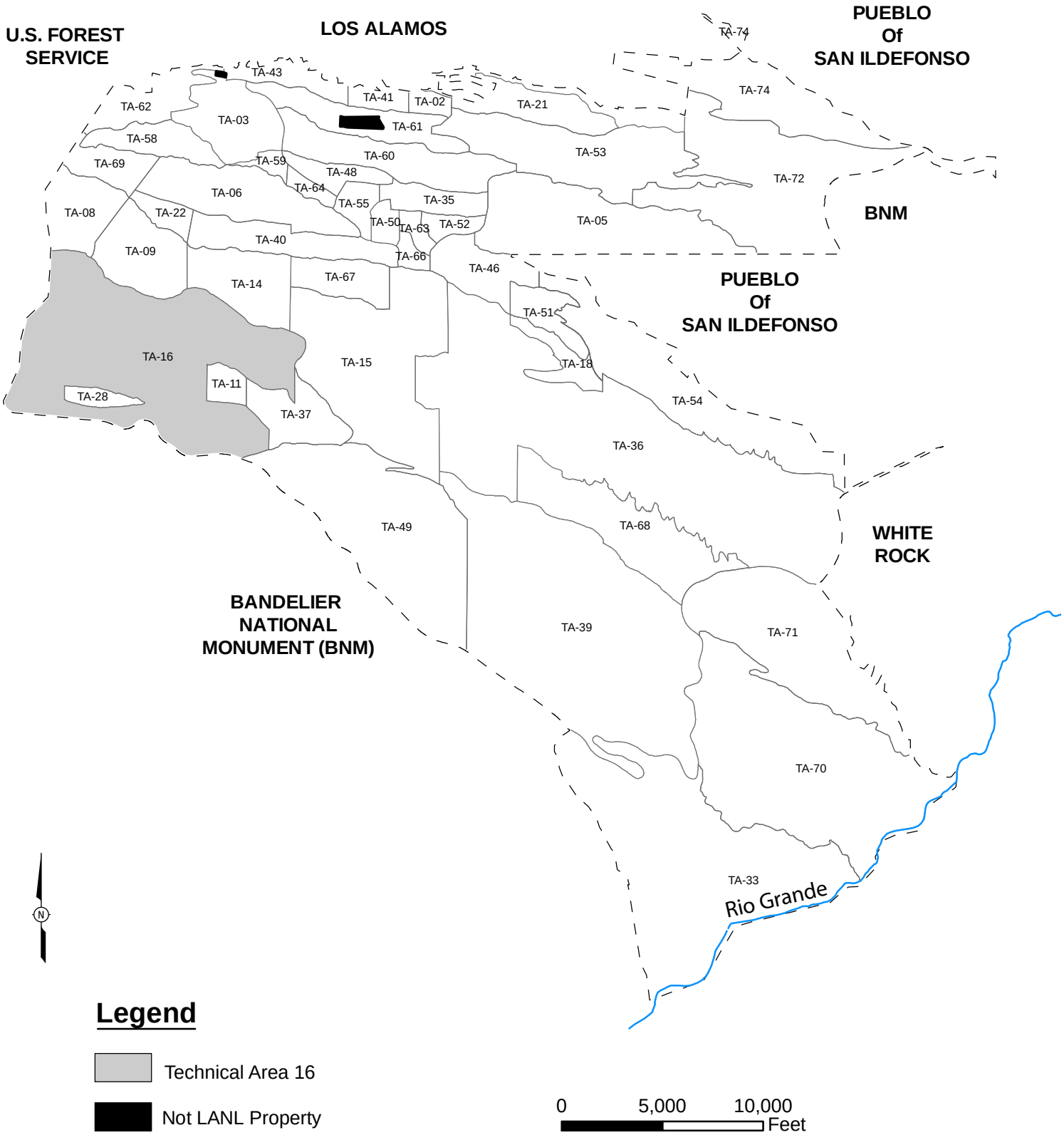


Figure 16:

Technical Area (TA) 16 Location Map

Created by EP-WES-EDA GIS TEAM. Map Number 06-0108 November 13, 2008, modified by ENV-RCRA August 2009
State Plane Coordinate System New Mexico Central Zone North American Datum 1983 (ft)
This map was created for work processes associated with the Environmental &Remediation Support Services. All other uses for this map should be confirmed with LANL EP-WES staff.
Boundary of Department of Energy Property I Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; infrastructure Planning Office. 04 June 2008
Boundary of Department of Energy Property In and Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; 04 June 2008

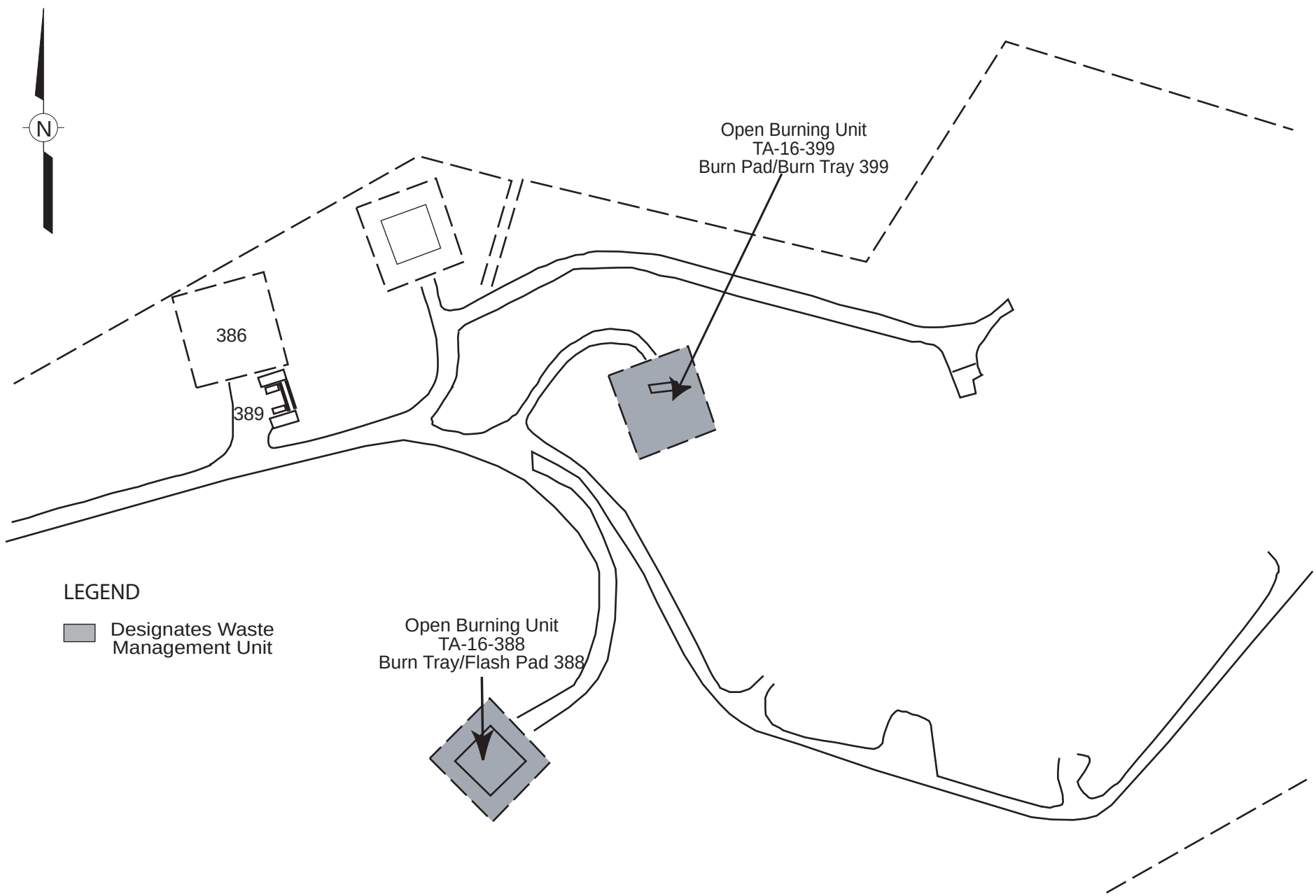


Figure 17
Technical Area (TA) 16 Open Burn Treatment Units (16-388 & 16-399)

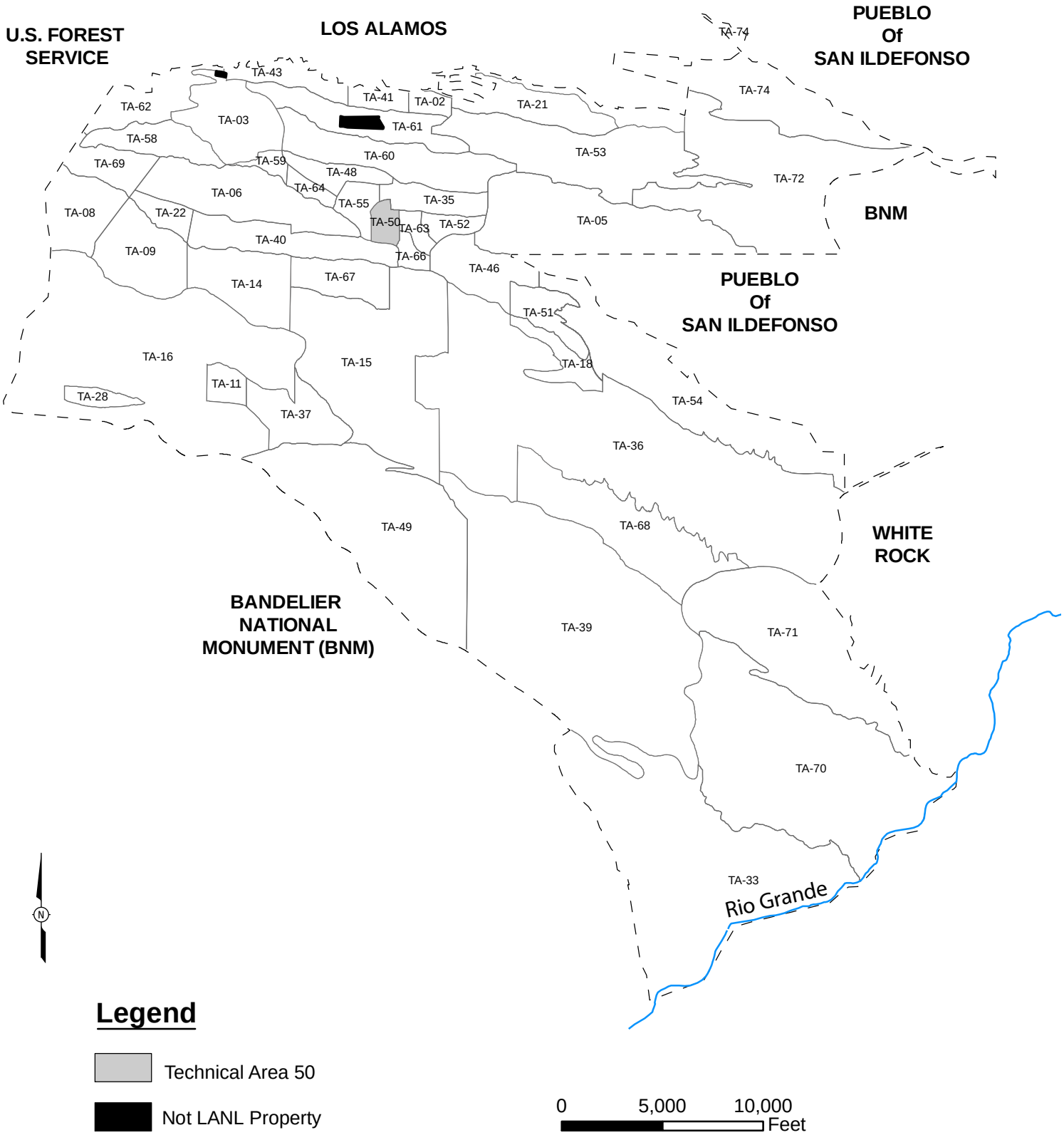
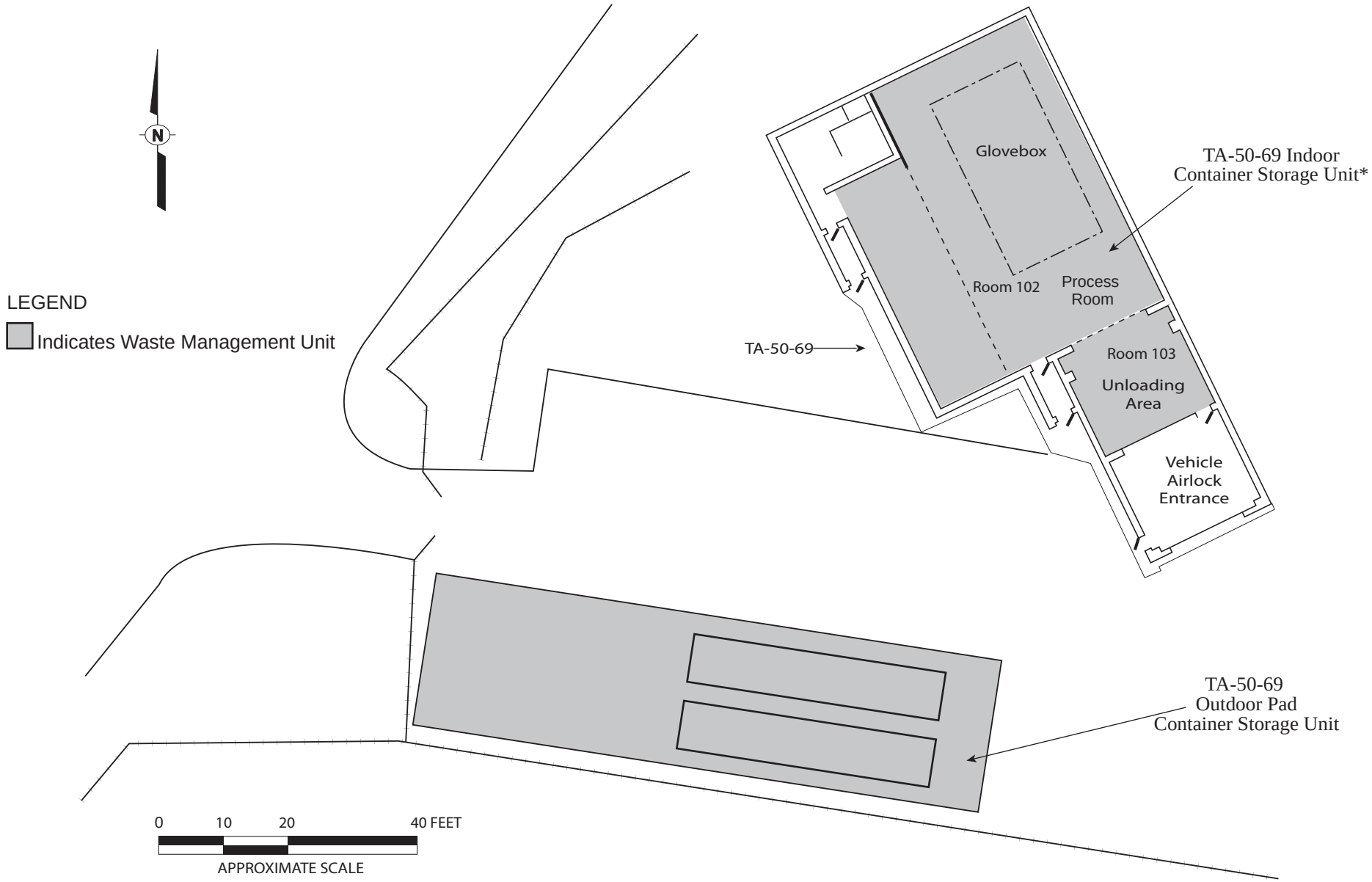


Figure 22:

Technical Area (TA) 50 Location Map

Created by EP-WES-EDA GIS TEAM. Map Number 06-0108 November 13, 2008, modified by ENV-RCRA August 2009
State Plane Coordinate System New Mexico Central Zone North American Datum 1983 (ft)
This map was created for work processes associated with the Environmental &Remediation Support Services. All other uses for this map should be confirmed with LANL EP-WES staff.
Boundary of Department of Energy Property I Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; infrastructure Planning Office. 04 June 2008
Boundary of Department of Energy Property In and Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; 04 June 2008



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

Figure 23
Technical Area (TA) 50, Building 69, Indoor and Outdoor Container Storage Units

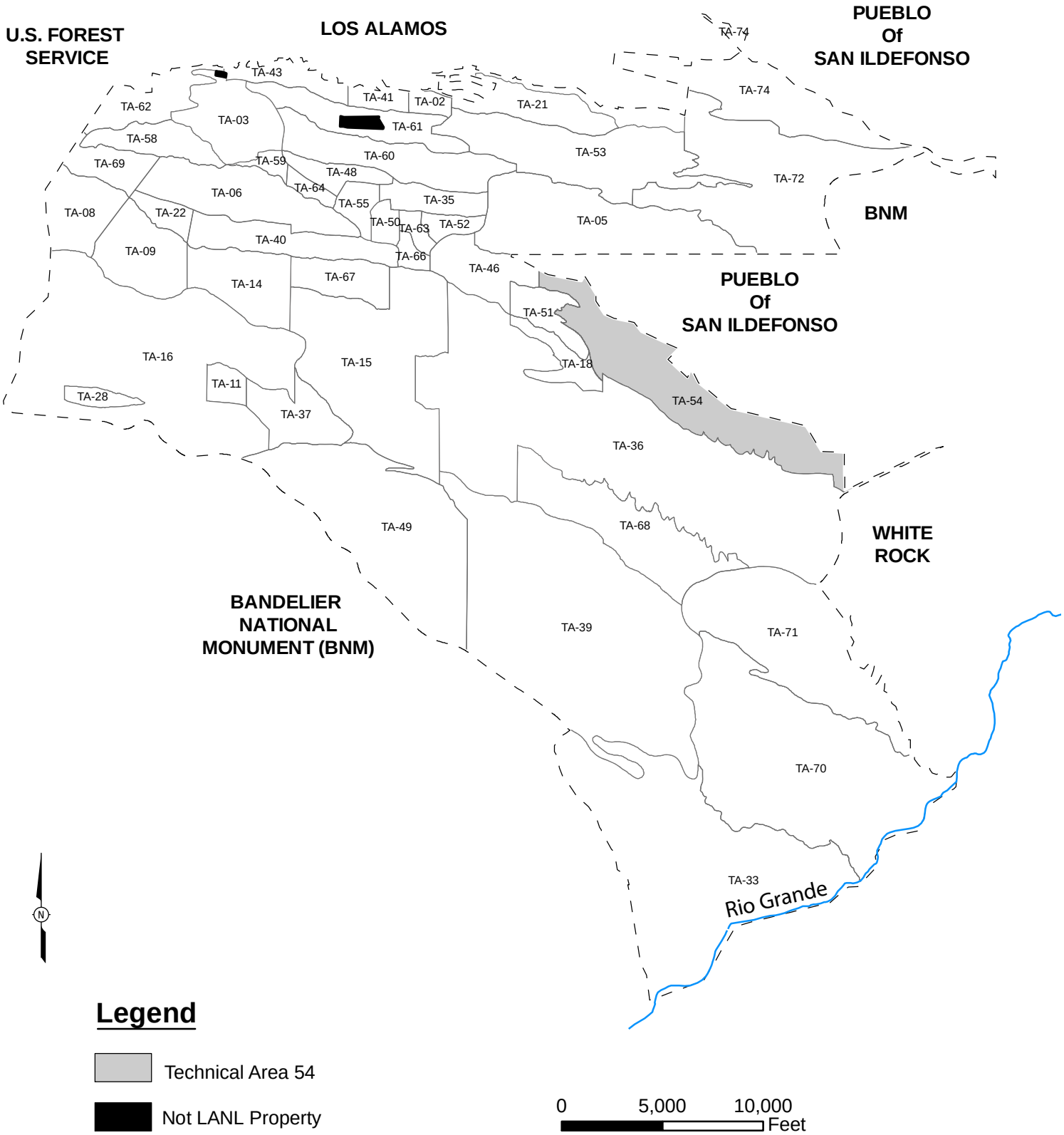


Figure 24:

Technical Area (TA) 54 Location Map

Created by EP-WES-EDA GIS TEAM. Map Number 06-0108 November 13, 2008, modified by ENV-RCRA August 2009
State Plane Coordinate System New Mexico Central Zone North American Datum 1983 (ft)
This map was created for work processes associated with the Environmental &Remediation Support Services. All other uses for this map should be confirmed with LANL EP-WES staff.
Boundary of Department of Energy Property I Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; infrastructure Planning Office. 04 June 2008
Boundary of Department of Energy Property In and Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; 04 June 2008

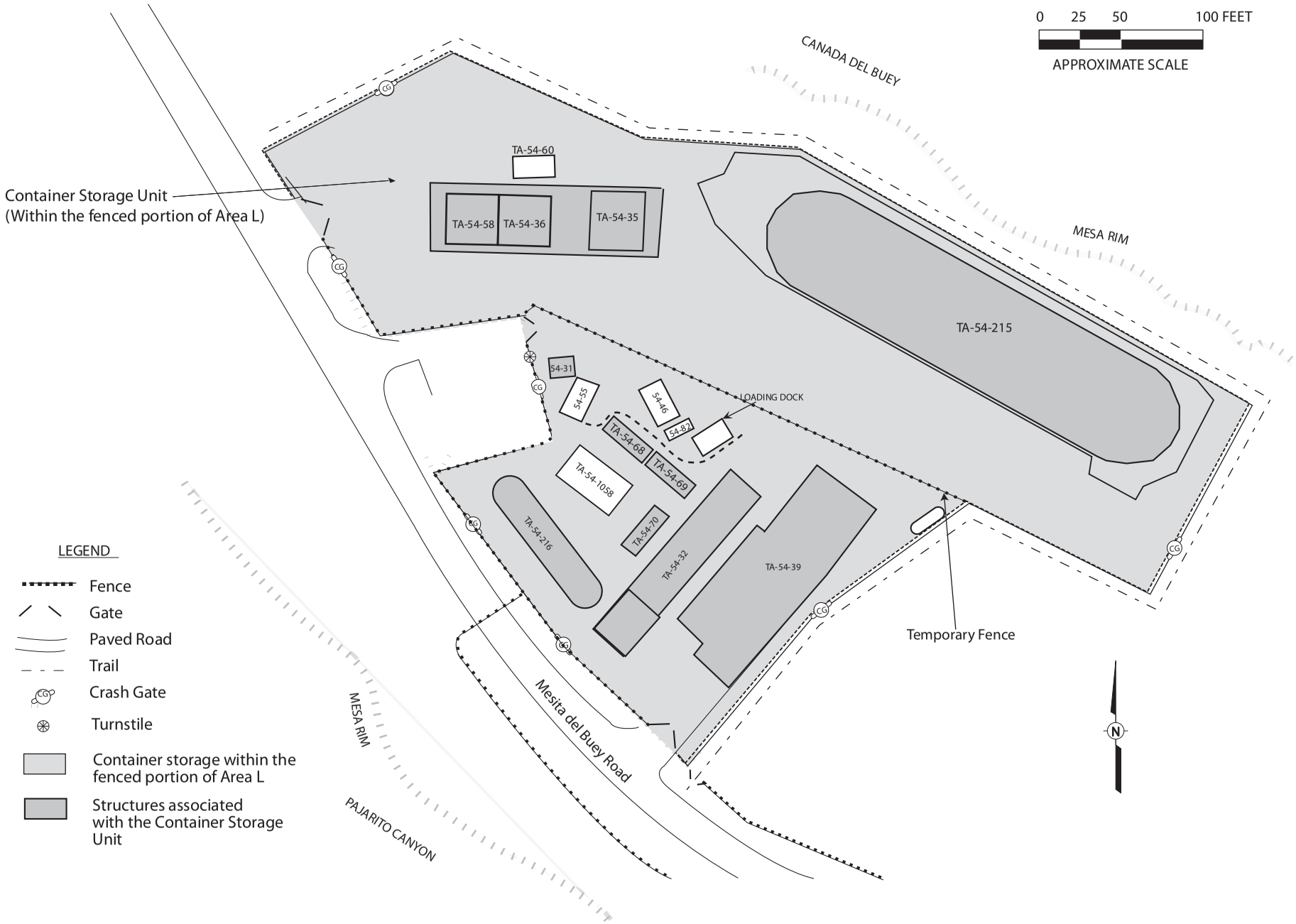


Figure 26: Technical Area 54, Area L, Container Storage Unit

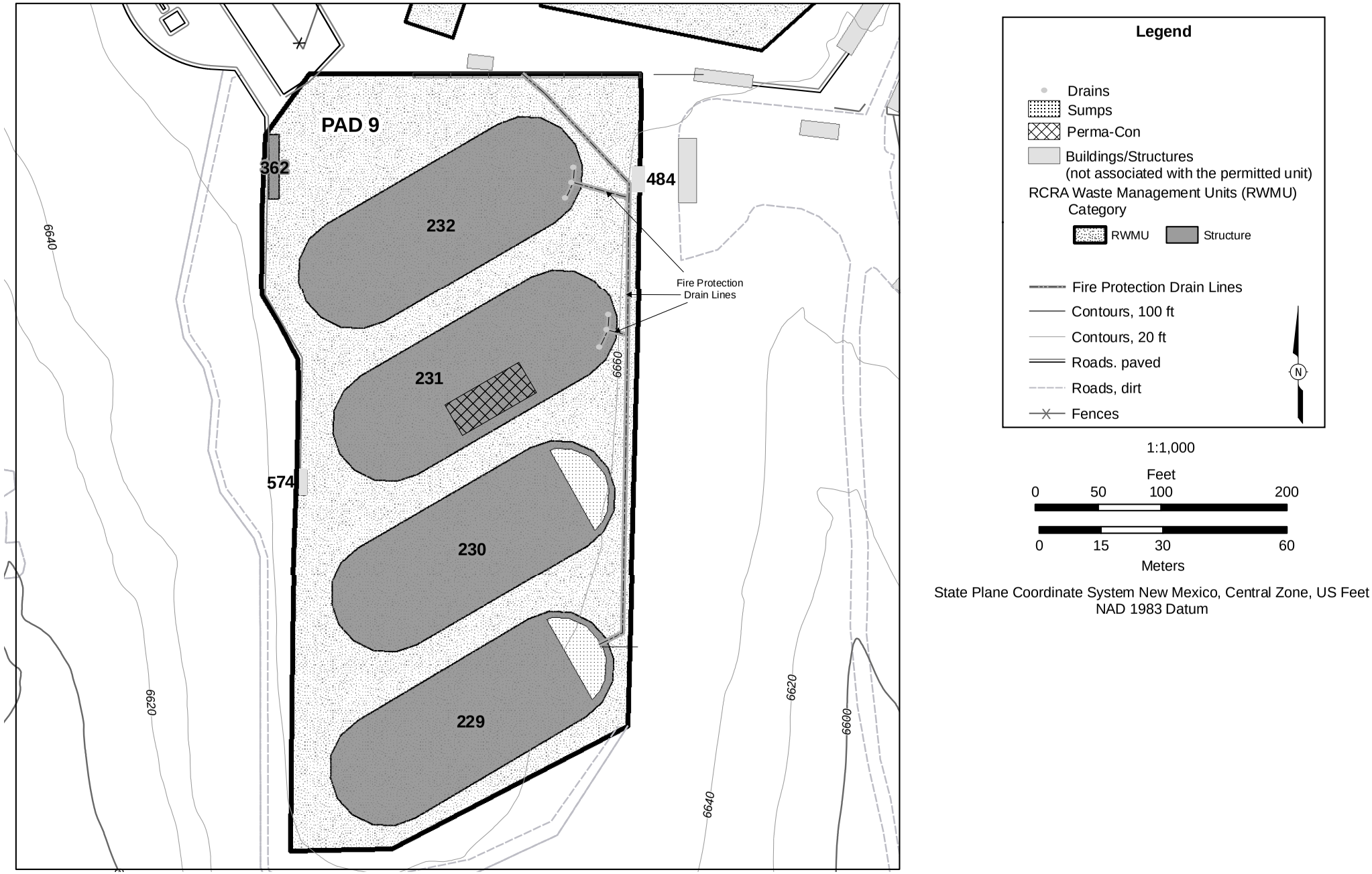
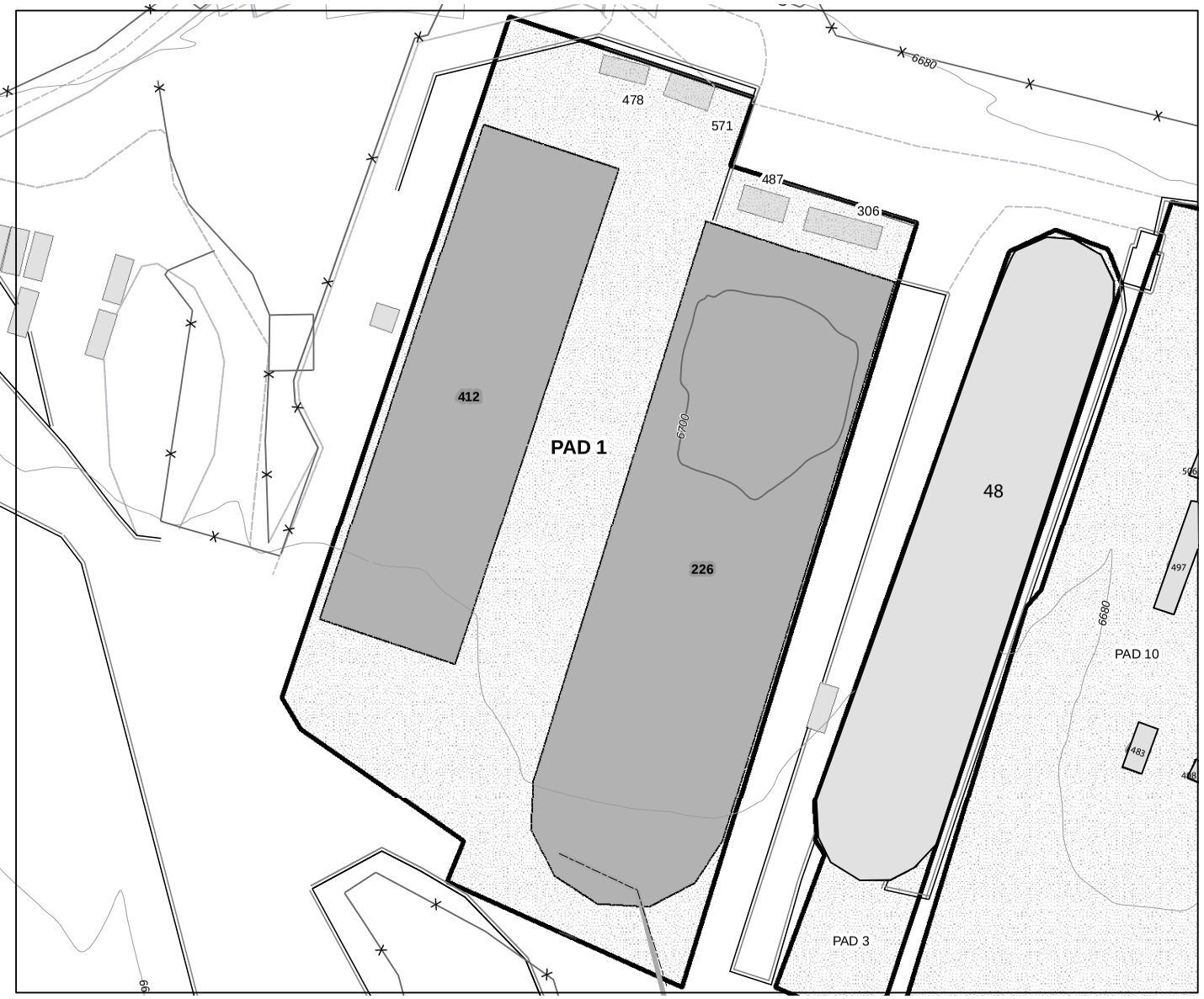


Figure 28
Technical Area (TA)-54 Area G, Pad 9, (TWISP Domes 229, 230, 231 & 232)



Legend

Buildings/Structures
(not associated with the permitted unit)

RCRA Waste Management Units (RWMU)
Category

RWMU

Structure

Fire Protection Drain Lines

Contours, 100 ft

Contours, 20 ft

Roads. paved

Roads, dirt

Fences

N

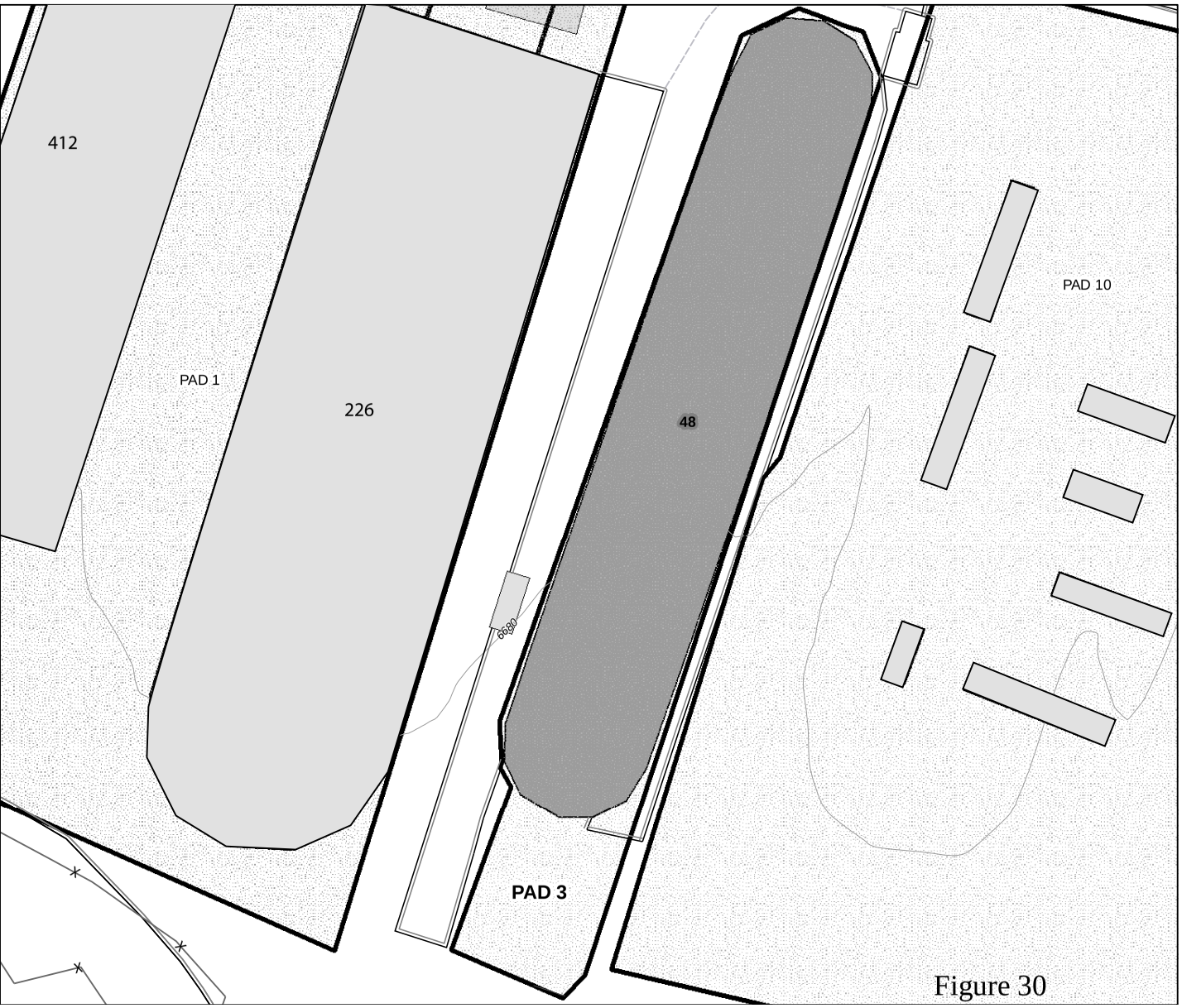
1:600

Feet
0 25 50 100

0 5 10 20
Meters

State Plane Coordinate System New Mexico, Central Zone, US Feet
NAD 1983 Datum

Figure 29
Technical Area (TA)-54, Area G, Pad1 (Dome 226 & Building 54-412 (DVRS))



Legend

Buildings/Structures
(not associated with the permitted unit)

RCRA Waste Management Units (RWMU)
Category

RWMU

Structure

Contours, 100 ft

Contours, 20 ft

Roads. paved

Roads, dirt

Fences

N

1:475

Feet

0 25 50 100

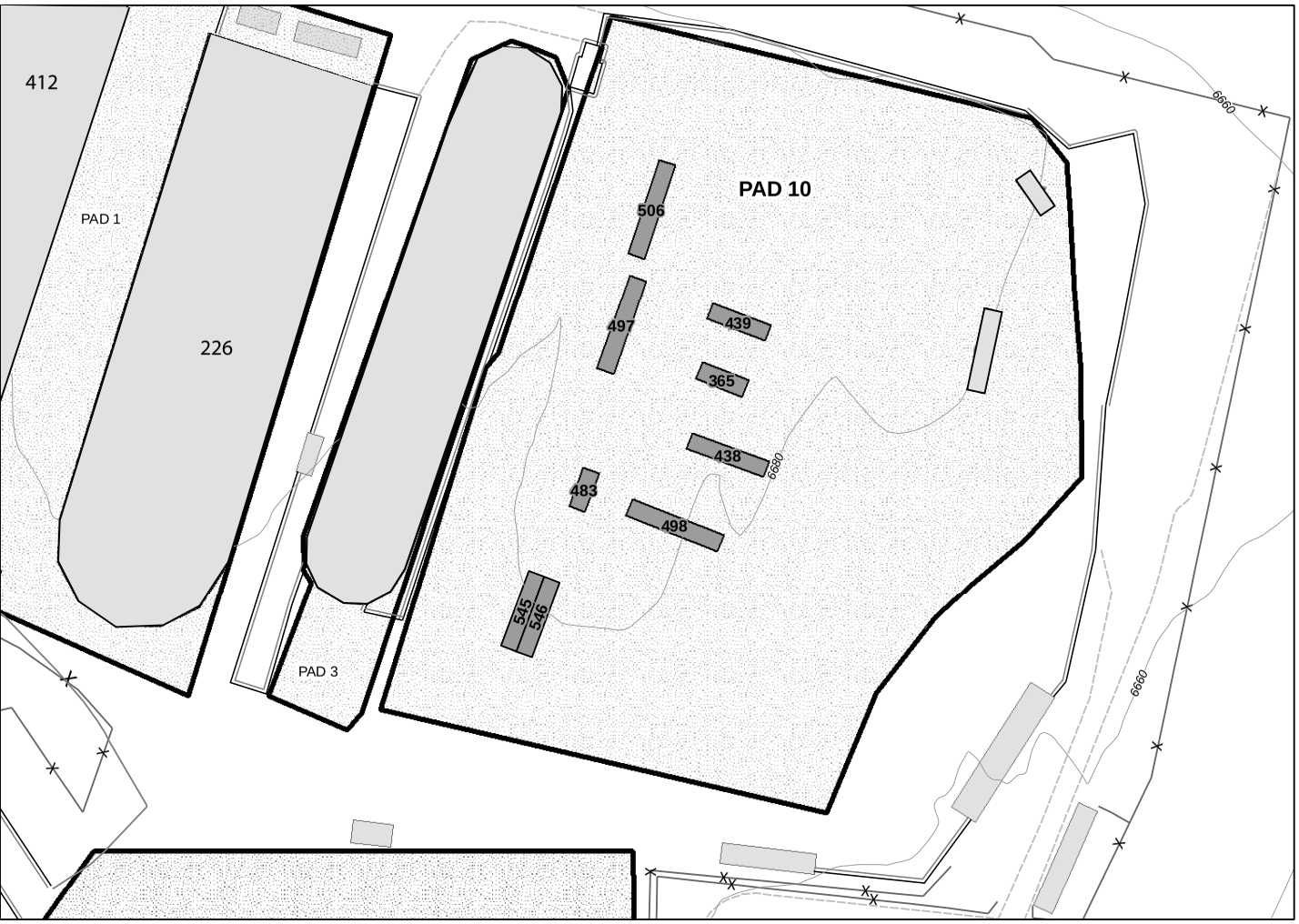
0 3.5 7 14

Meters

State Plane Coordinate System New Mexico, Central Zone, US Feet
NAD 1983 Datum

DISCLAIMER: This map was created for work processes associated with the LANL Hazardous Waste Facility Permit. All other uses for this map should be confirmed with the LANL, ENV Division, Water Quality & RCRA..

Figure 30
Technical Area (TA)-54, Area G, Pad 3, (Dome 48)



Legend

Buildings/Structures
(not associated with the permitted unit)

RCRA Waste Management Units (RWMU)
Category

RWMU

Structure

Contours, 100 ft

Contours, 20 ft

Roads. paved

Roads, dirt

Fences

N

1:750

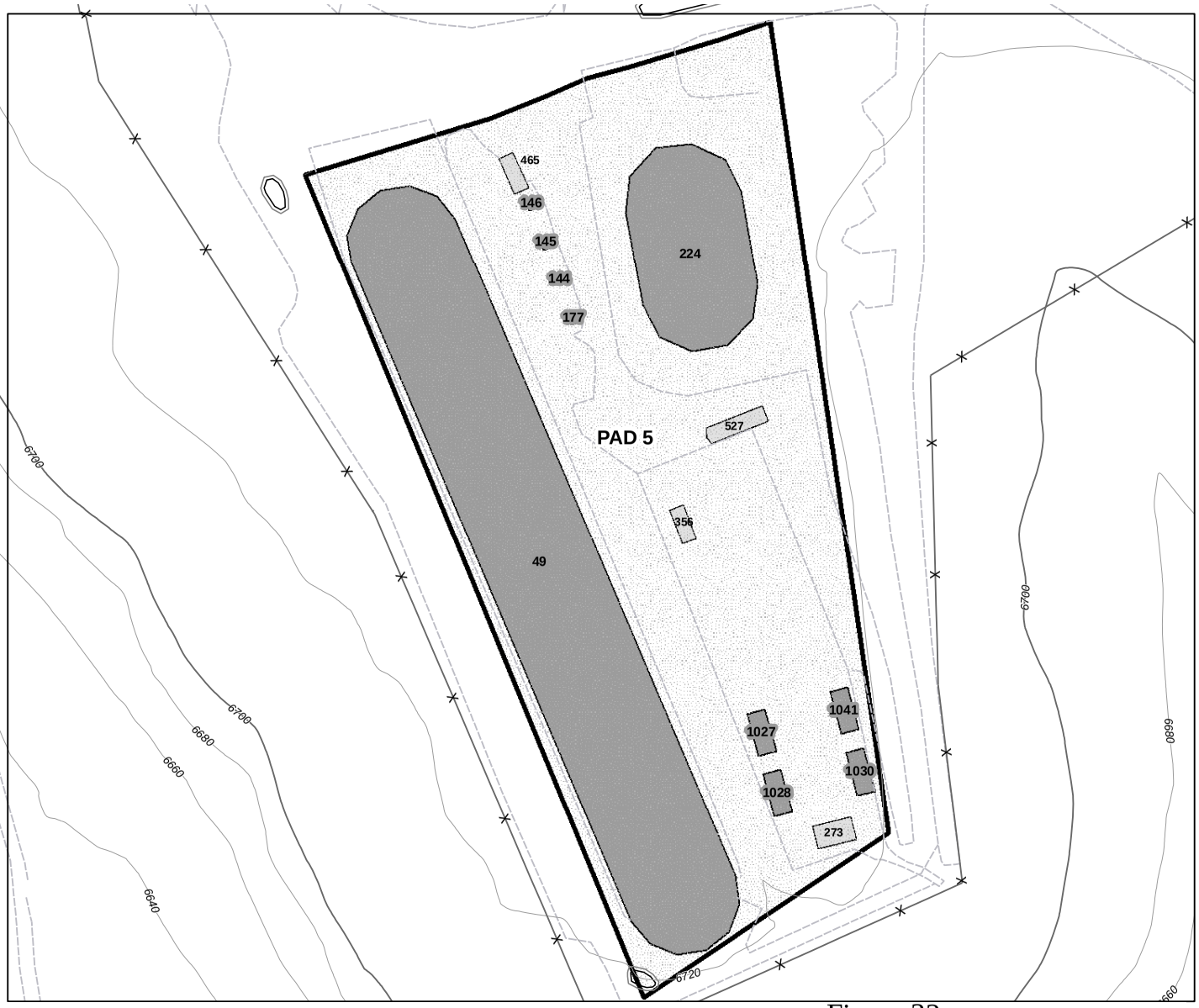
Feet
0 45 90 180

0 10 20 40
Meters

State Plane Coordinate System New Mexico, Central Zone, US Feet
NAD 1983 Datum

DISCLAIMER: This map was created for work processes associated with the LANL Hazardous Waste Facility Permit. All other uses for this map should be confirmed with the LANL, ENV Division, Water Quality & RCRA..

Figure 31
Technical Area (TA)-54, Area G, Pad 10



Legend

Buildings/Structures
(not associated with the permitted unit)

RCRA Waste Management Units (RWMU) Category

RWMU

Structure

Contours, 100 ft

Contours, 20 ft

Roads. paved

Roads, dirt

Fences

N

1:750

Feet

0 37.5 75 150

0 12.5 25 50

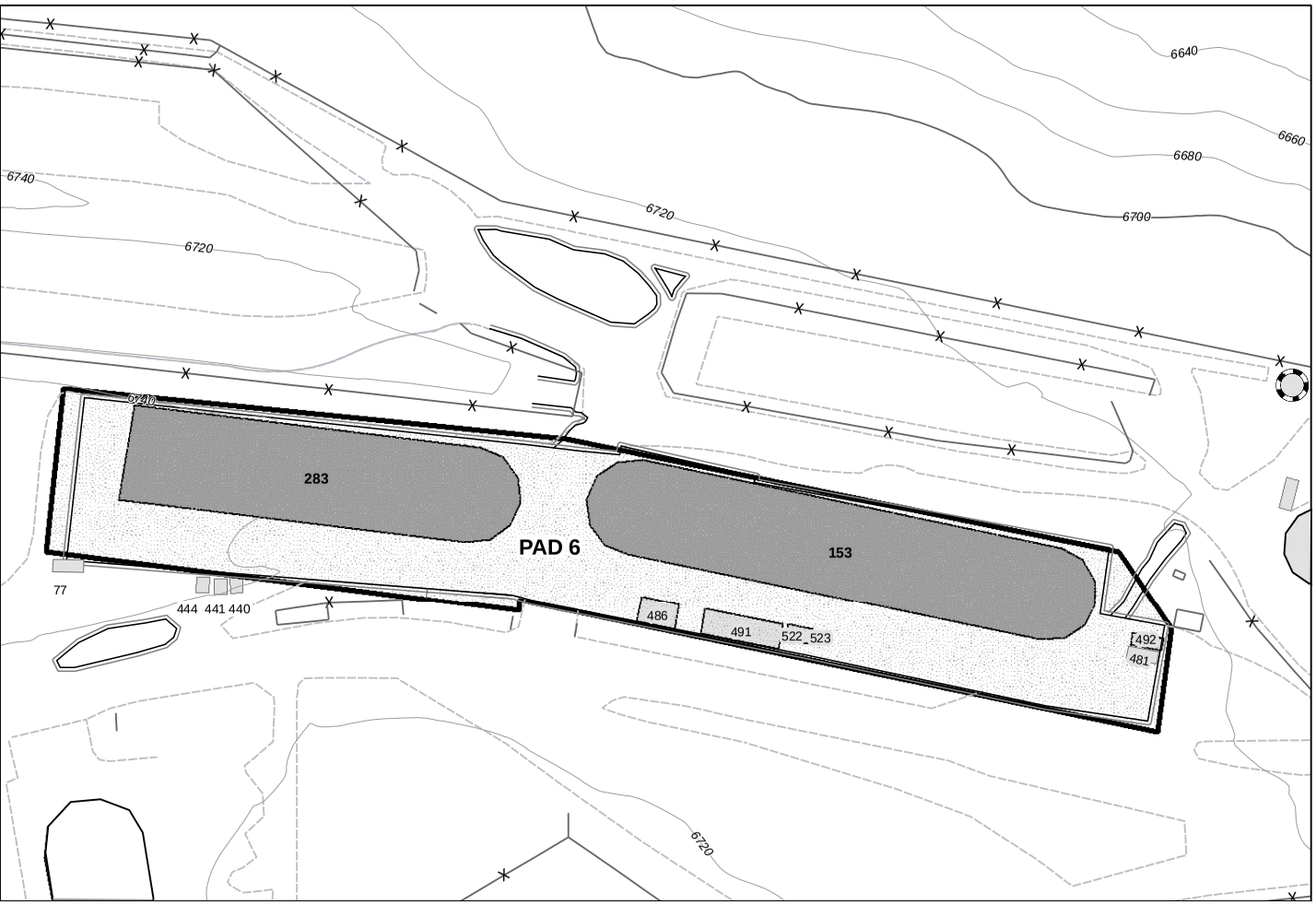
Meters

State Plane Coordinate System New Mexico, Central Zone, US Feet
NAD 1983 Datum

DISCLAIMER: This map was created for work processes associated with the LANL Hazardous Waste Facility Permit. All other uses for this map should be confirmed with the LANL, ENV Division, Water Quality & RCRA..

Figure 32

Technical Area (TA)-54, Area G, Pad 5 (Domes 49 and 224; Storage Sheds 144, 145, 146, 177, 1027,1028, 1030, and 1041)



Legend

Buildings/Structures
(not associated with the permitted unit)

RCRA Waste Management Units (RWMU)
Category

RWMU

Structure

Sediment Trap

Contours, 100 ft

Contours, 20 ft

Roads. paved

Roads, dirt

Fences

N

1:975

Feet
0 40 80 160

0 12.5 25 50
Meters

State Plane Coordinate System New Mexico, Central Zone, US Feet
NAD 1983 Datum

DISCLAIMER: This map was created for work processes associated with the LANL Hazardous Waste Facility Permit. All other uses for this map should be confirmed with the LANL, ENV Division, Water Quality & RCRA..

Figure 33
Technical Area (TA)-54, Area G, Pad 6, (Domes 153 & 283)

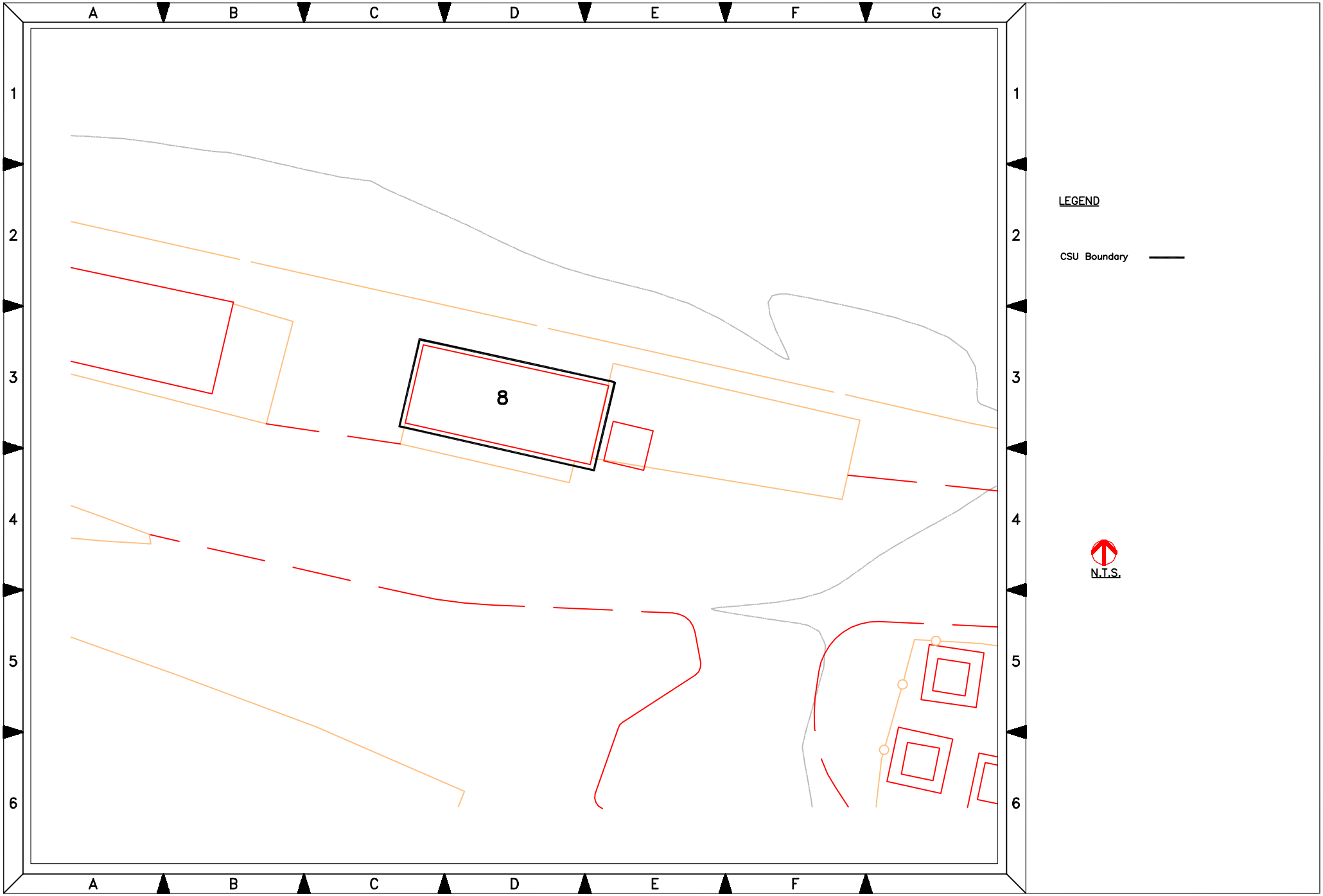
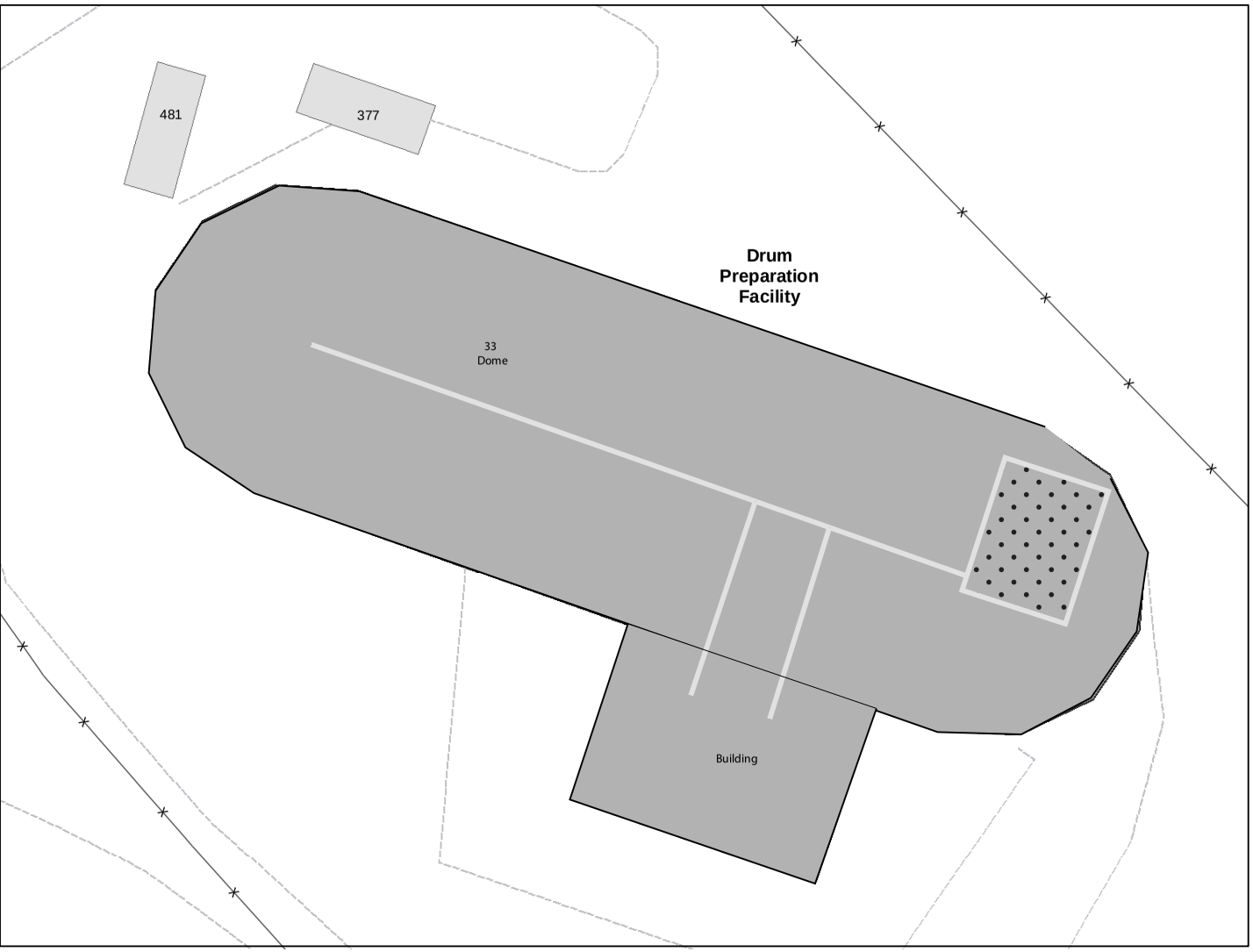


Figure 34
Technical Area (TA)-54, Area G, Storage Shed 8



Legend

Sumps*

Buildings/Structures
(not associated with the permitted unit)

RCRA Waste Management Units (RWMU)
Category

RWMU

Structure

Drain Lines*

Contours, 100 ft

Contours, 20 ft

Roads. paved

Roads, dirt

Fences

** Location and size are approximate.*

N

1:230

Feet

0 15 30 60

0 4.5 9 18

Meters

State Plane Coordinate System New Mexico, Central Zone, US Feet
NAD 1983 Datum

DISCLAIMER: This map was created for work processes associated with the LANL Hazardous Waste Facility Permit. All other uses for this map should be confirmed with the LANL, ENV Division, Water Quality & RCRA..

Figure 35
Technical Area (TA)-54, Area G, Building 33

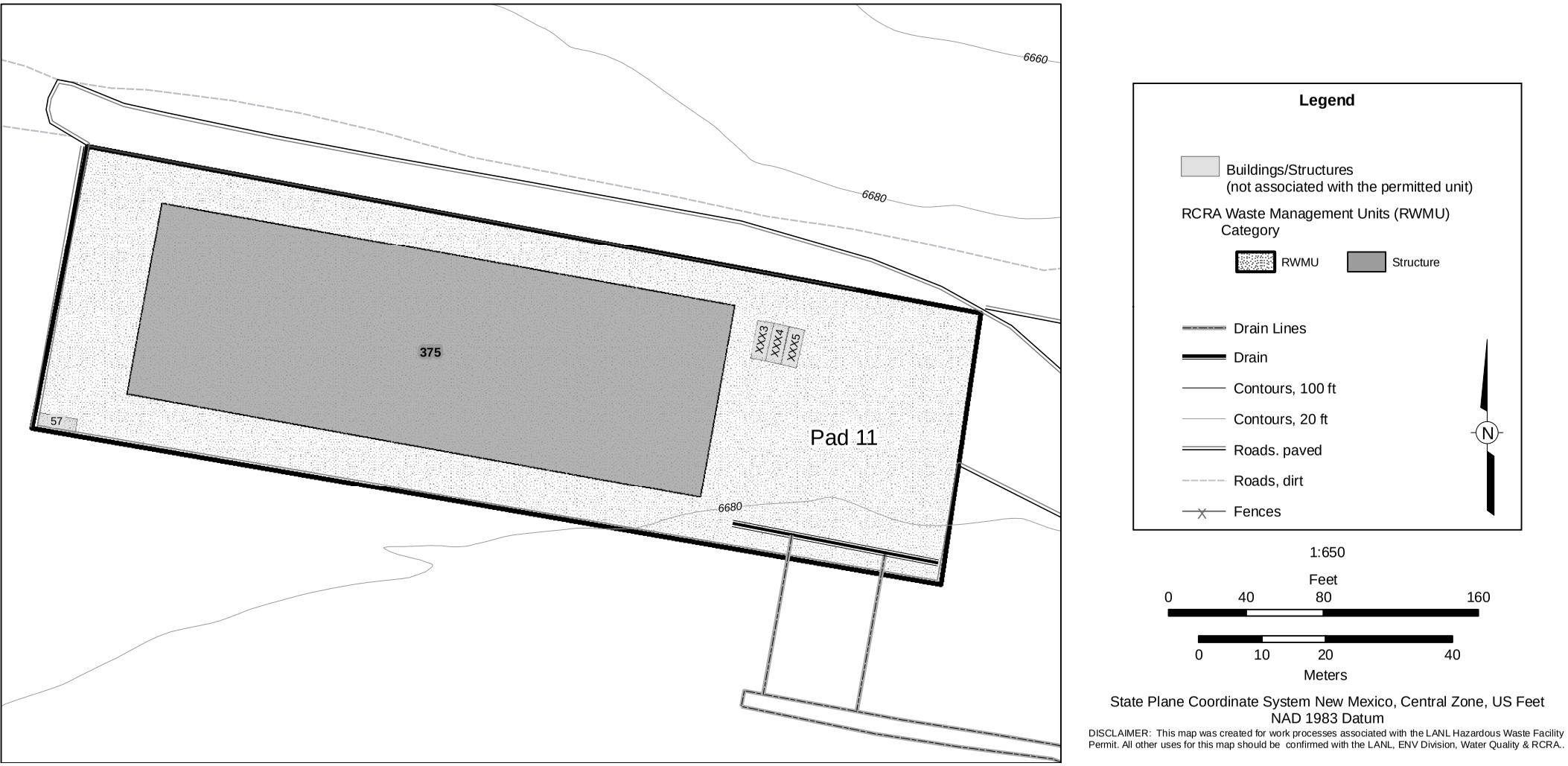


Figure 36
Technical Area (TA)-54, Area G, Pad 11 (Dome 375)

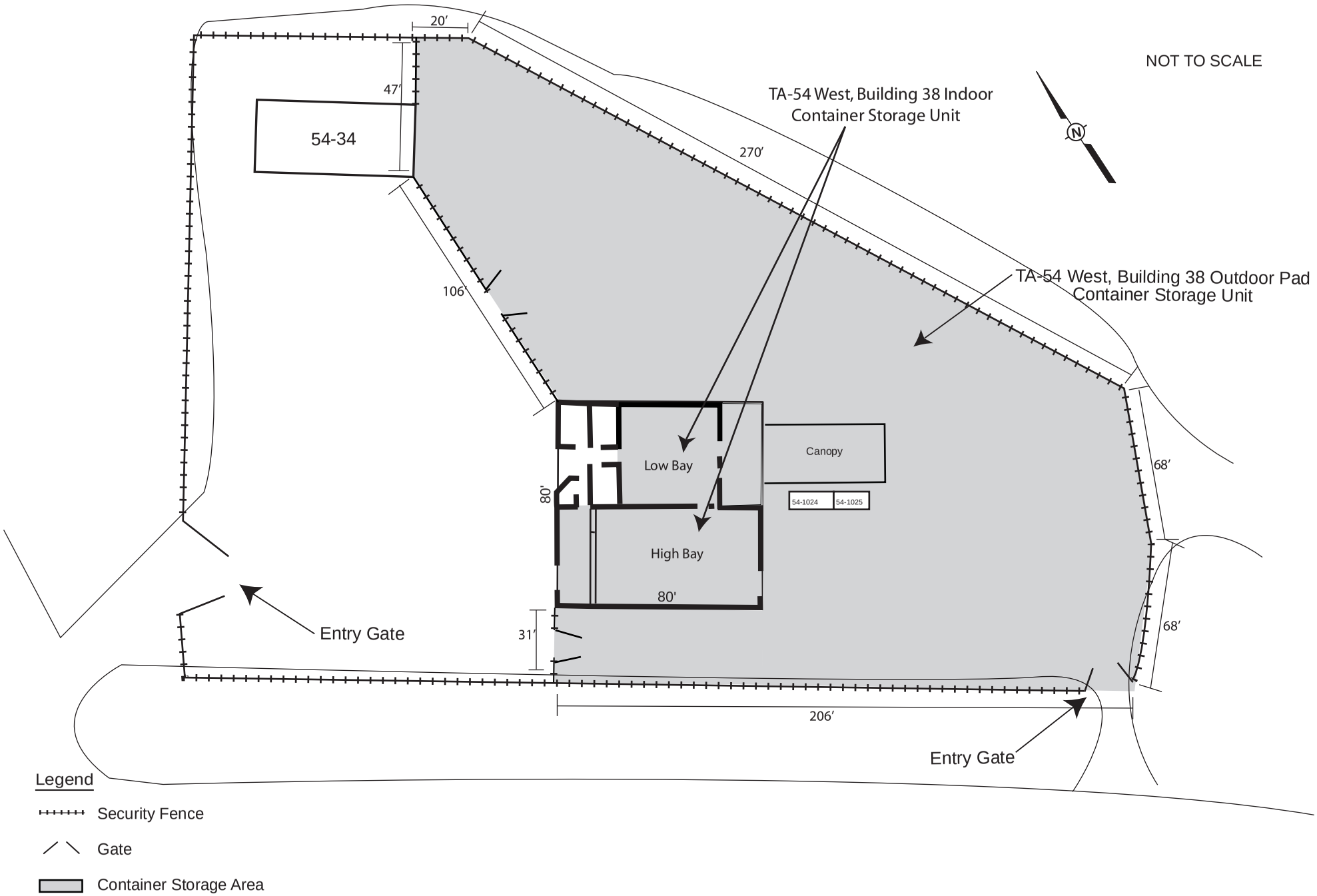


Figure 37
Technical Area (TA) 54 West, Building 38 Indoor (High Bay and Low Bay) and Outdoor Pad

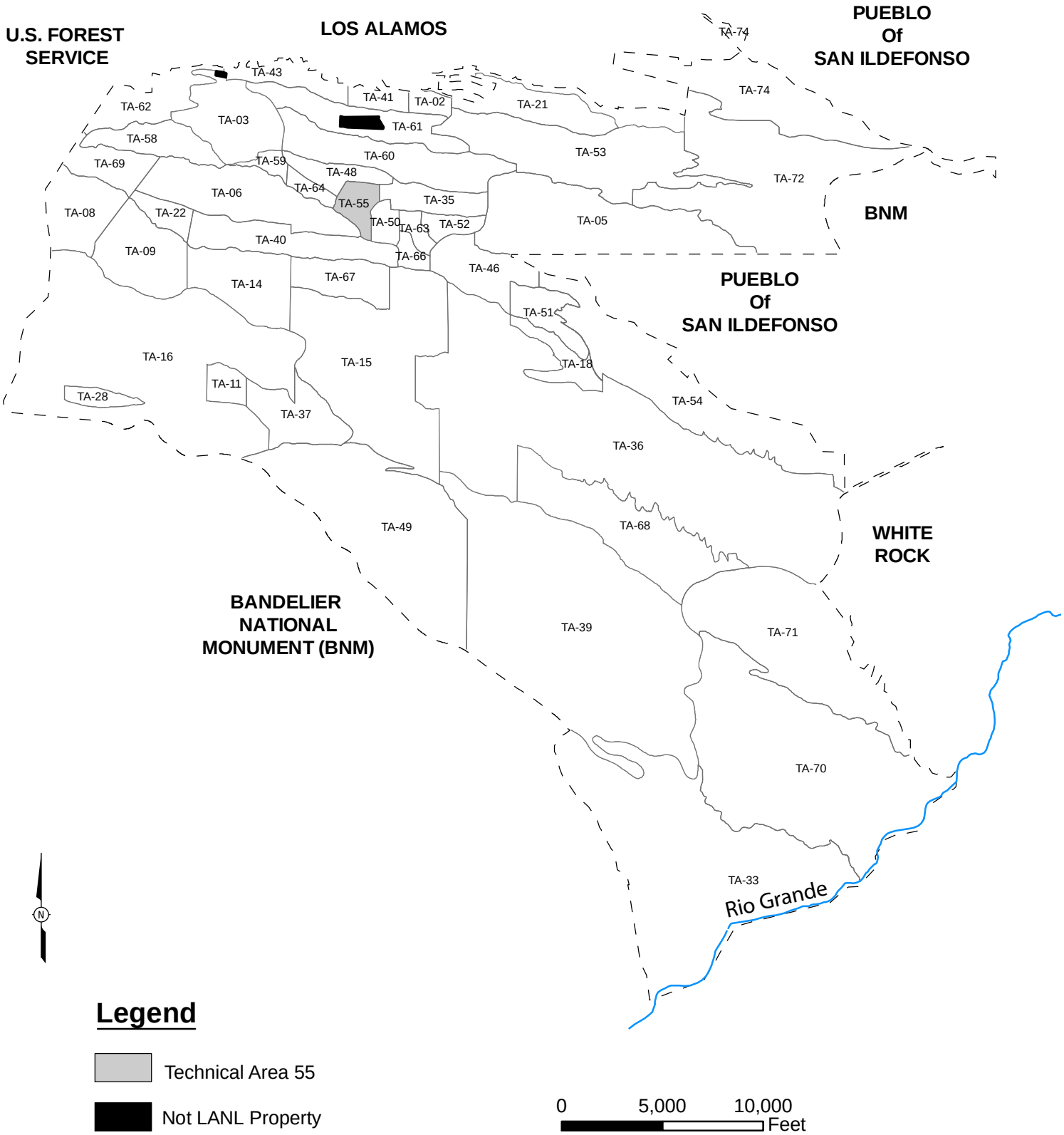


Figure 38:

Technical Area (TA) 55 Location Map

Created by EP-WES-EDA GIS TEAM. Map Number 06-0108 November 13, 2008, modified by ENV-RCRA August 2009
State Plane Coordinate System New Mexico Central Zone North American Datum 1983 (ft)
This map was created for work processes associated with the Environmental &Remediation Support Services. All other uses for this map should be confirmed with LANL EP-WES staff.
Boundary of Department of Energy Property I Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; infrastructure Planning Office. 04 June 2008
Boundary of Department of Energy Property In and Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; 04 June 2008

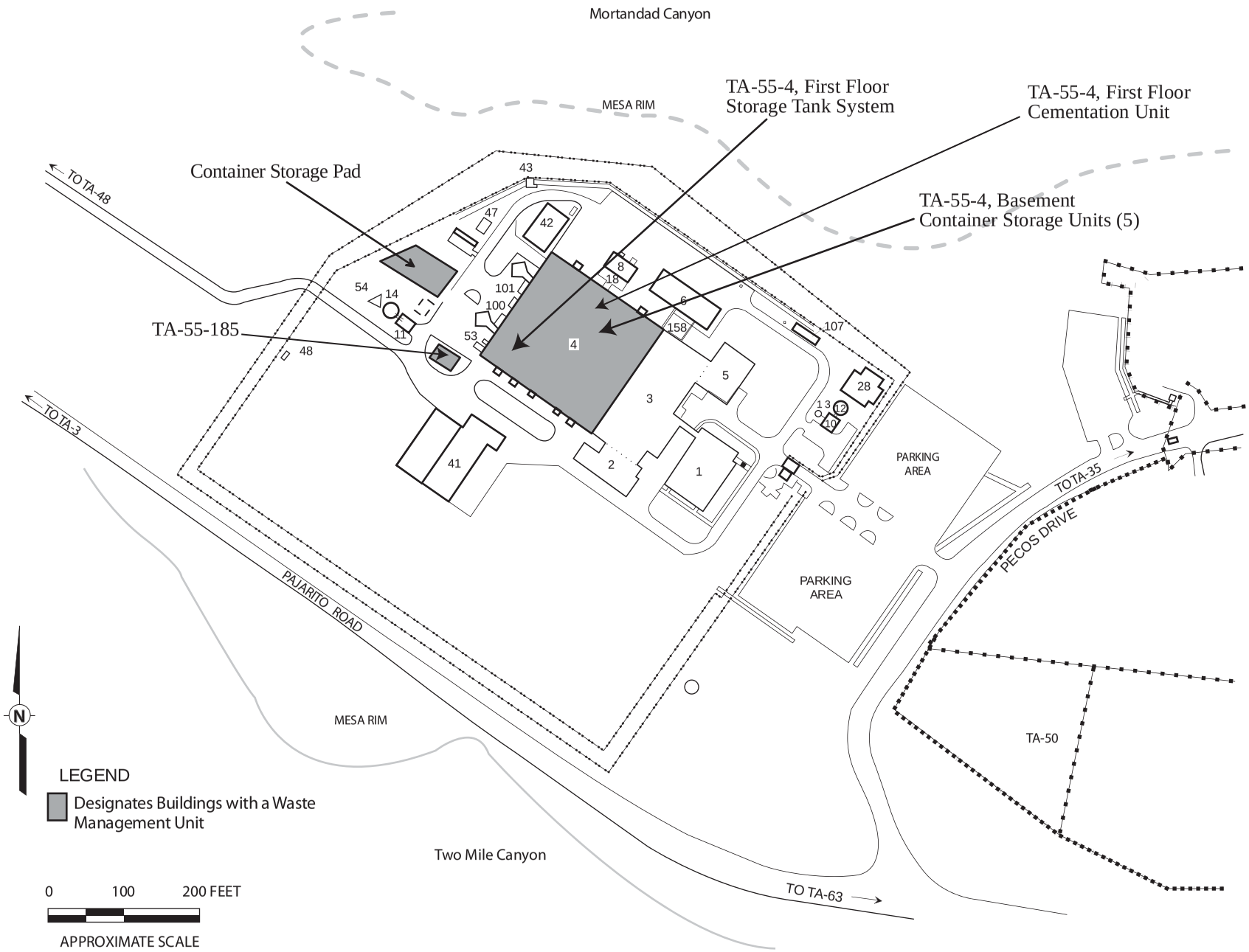
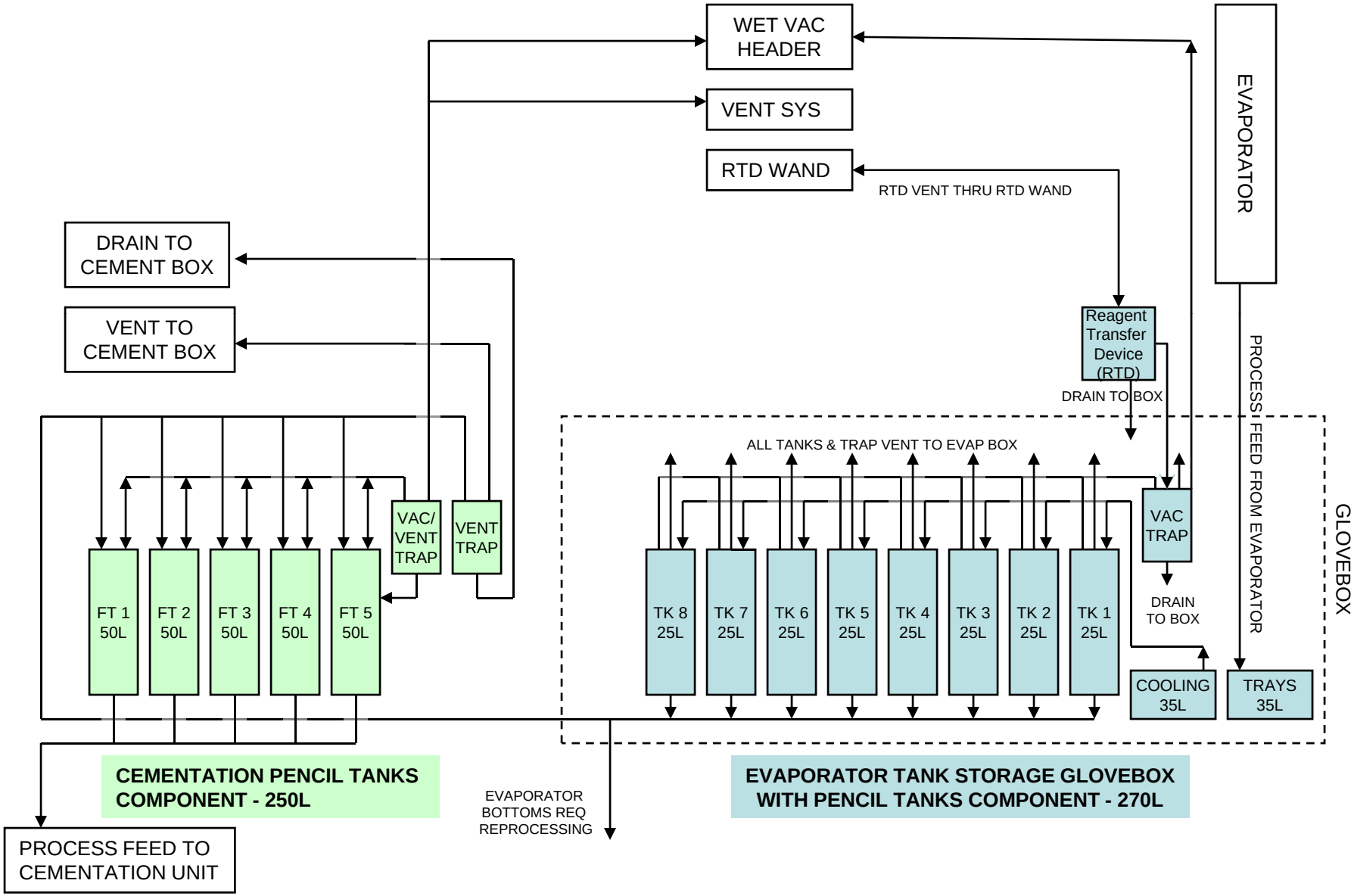


Figure 39
Technical Area (TA) 55, Building 4 Location Map

Figure 47: TA-55, Building 4, Room 401, Storage Tank System Process Flow Diagram



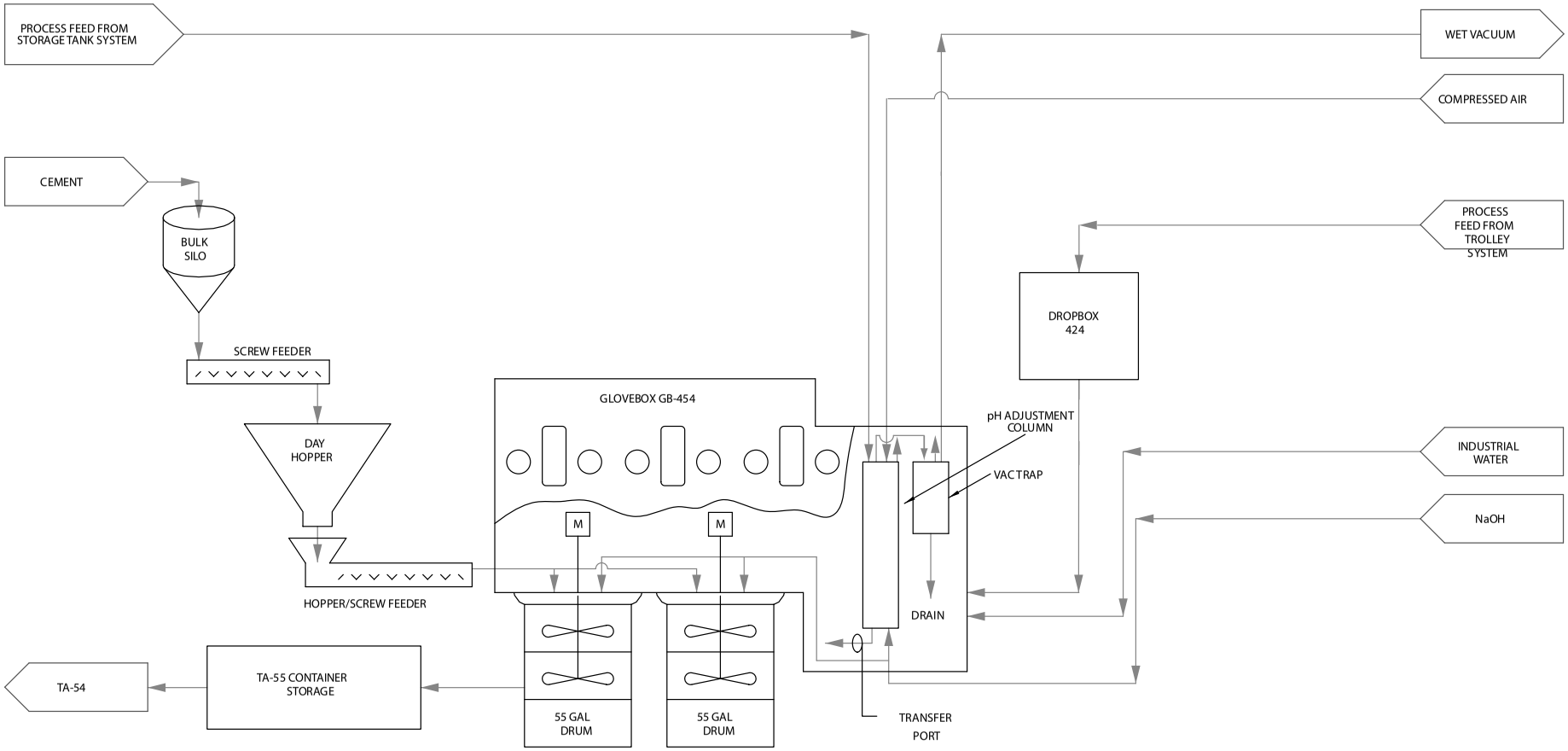


Figure 48
Technical Area (TA)-55, Building 4, Room 401, Cementation Unit Process Flow Diagram

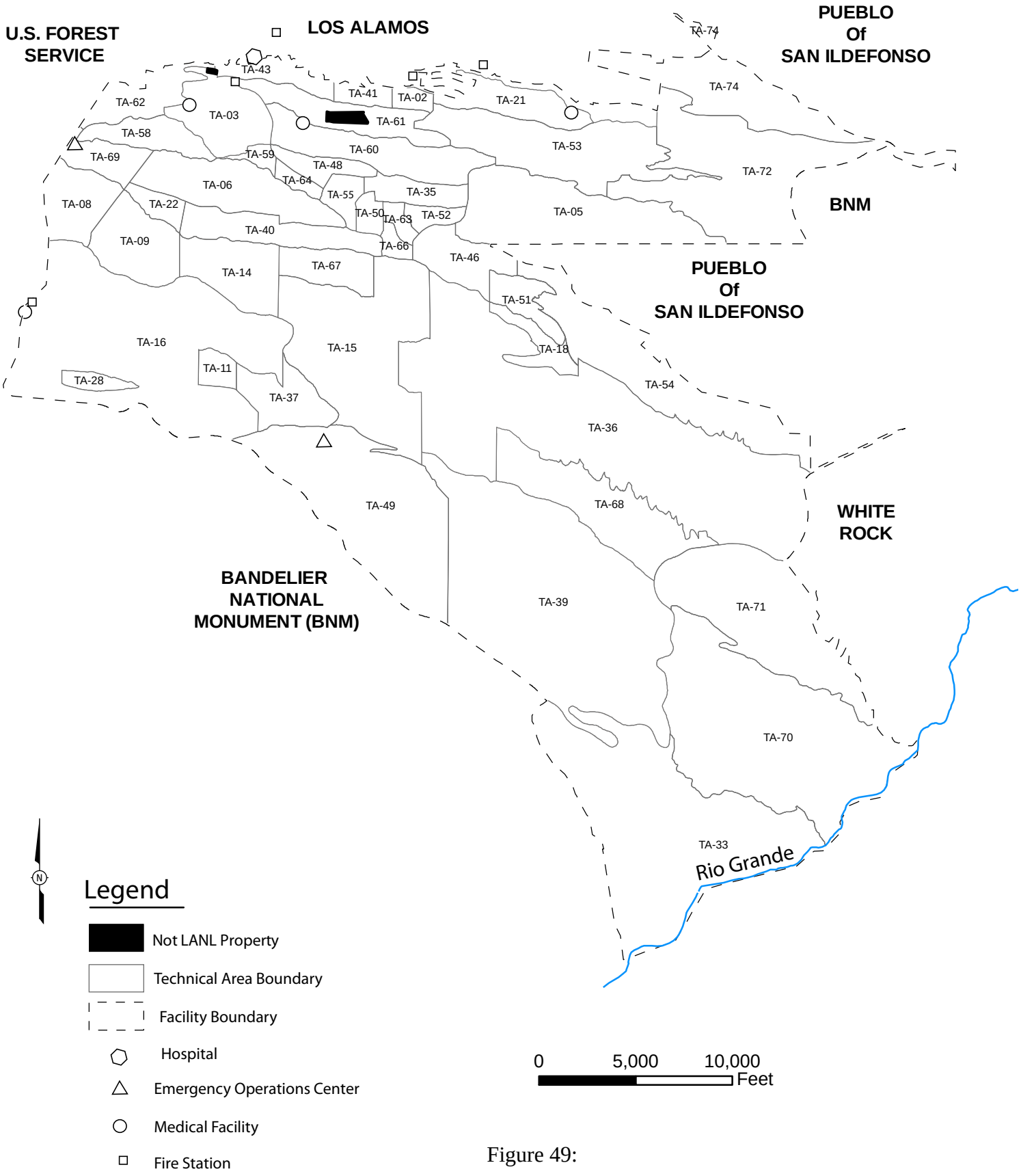


Figure 49:

Emergency Facilities at Los Alamos National Laboratory (LANL)

Created by EP-WES-EDA GIS TEAM. Map Number 06-0108 November 13, 2008, modified by ENV-RCRA August 2009
State Plane Coordinate System New Mexico Central Zone North American Datum 1983 (ft)
This map was created for work processes associated with the Environmental &Remediation Support Services. All other uses for this map should be confirmed with LANL EP-WES staff.
Boundary of Department of Energy Property I Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; infrastructure Planning Office. 04 June 2008
Boundary of Department of Energy Property In and Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; 04 June 2008

Appendix 6

Attachment C-Updated Tables C-6, C-12

Table C-6

Descriptions of High Explosives (HE) Waste and HE-Contaminated Waste Treated by Open Burning at the Facility

(This table is for informational purposes only)

Waste Description	Waste Generating Activity	Basis for Hazardous Waste Designation	Potential EPA[a] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[b] (milligrams per liter)
HE-Contaminated ~~Water~~Bulk Solvent Waste	Laboratory analysis; dissolving HE and polymers; HE ~~processing~~production; ~~maintenance~~ and R&D	Acceptable Knowledge[c]	D003 ~~D005~~ ~~D006~~ ~~D007~~ ~~D008~~ ~~D009~~ ~~D011~~ ~~D018~~ D030 ~~D035~~ ~~D036~~ ~~D038~~ ~~F004~~ ~~F005~~	~~Reactivity~~ ~~Barium~~ ~~Cadmium~~ ~~Chromium~~ ~~Lead~~ ~~Mercury~~ ~~Silver~~ ~~Benzene~~ ~~Chloroform~~ 1,2-Dichloroethane ~~2,4-Dinitrotoluene~~ ~~Methyl ethyl ketone~~ ~~Nitrobenzene~~ ~~Pyridine~~ ~~Trichloroethylene~~	NA[d] ~~100.0~~ ~~1.0~~ ~~5.0~~ ~~5.0~~ ~~0.2~~ ~~5.0~~ ~~0.5~~ 0.13 ~~200.0~~ ~~2.0~~ ~~5.0~~ ~~NA[d]~~ ~~NA[d]~~ ~~NA[d]~~ ~~NA[d]~~
HE-Contaminated Used Oils	~~Laboratory analysis; dissolving HE and polymers;~~ HE production; spills; and R&D activities	Acceptable Knowledge[c]	D001 D002 D003 D005 D006 D007 D008 D009 D011 D018 D022 D028 D029	Ignitability Corrosivity Reactivity Barium Cadmium Chromium Lead Mercury Silver Benzene Chloroform 1,2-Dichloroethane 1,2-Dichloroethylene	NA[d] NA[d] NA[d] 100.0 1.0 5.0 5.0 0.2 5.0 0.5 6.0 0.5 0.7

Waste Description	Waste Generating Activity	Basis for Hazardous Waste Designation	Potential EPA[a] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[b] (milligrams per liter)
HE-Contaminated Used Oils			D030	2,4-Dinitrotoluene	0.13
			D035	Methyl ethyl ketone	200.0
			D036	Nitrobenzene	2.0
			D038	Pyridine	5.0
			D040	Trichloroethylene	0.5
			F001	–Spent halogenated solvents	NA[d]
			F002	Spent halogenated solvents	NA[d]
			F003	Spent nonhalogenated solvents	NA[d]
			F004	Spent nonhalogenated solvents	NA[d]
			F005	Spent nonhalogenated solvents	NA[d]
Solid and Scrap HE	HE-processing; R&D activities; testing operations; disposition of weapons	Acceptable Knowledge[c]	D001	Ignitability	NA[d]
			D003	Reactivity	NA[d]
			D005	Barium	100.0
			D006	Cadmium	1.0
			D007	Chromium	5.0
			D008	Lead	5.0
			D018	Benzene	0.5
			D030	2,4-Dinitrotoluene	0.13

Waste Description	Waste Generating Activity	Basis for Hazardous Waste Designation	Potential EPA[a] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[b] (milligrams per liter)
HE Process Waste from Water Filtration	Filtration of HE wastewater; R&D, and HE processing	Acceptable Knowledge[c]	D001	Ignitability	NA[d]
			D003	Reactivity	NA[d]
			D005	Barium	100.0
			D006	Cadmium	1.0
			D007	Chromium	5.0
			D008	Lead	5.0
			D009	Mercury	0.2
			D011	Silver	5.0
			D018	Benzene	0.5
			D022	Chloroform	0.13
			D028	1,2-Dichloroethane	200.0
			D029	1,2-Dichloroethylene	2.0
			D030	2,4-Dinitrotoluene	5.0
			D035	Methyl ethyl ketone	NA[d]
			D036	Nitrobenzene	NA[d]
			D038	Pyridine	NA[d]
			D040	Trichloroethylene	NA[d]
			F001	Spent halogenated solvents	NA[d]
			F002	Spent halogenated solvents	
			F003	Spent nonhalogenated solvents	
			F004	Spent nonhalogenated solvents	
			F005	Spent nonhalogenated solvents	
			K044	Wastewater sludges	
			K045	Spent carbon	

Waste Description	Waste Generating Activity	Basis for Hazardous Waste Designation	Potential EPA[a] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[b] (milligrams per liter)
HE-Contaminated Solid Waste	HE processing activities; R&D and laboratory use	Acceptable Knowledge[c]	D001	Ignitability	NA[d]
			D002	Corrosivity	NA[d]
			D003	Reactivity	NA[d]
			D005	Barium	100.0
			D006	Cadmium	1.0
			D007	Chromium	5.0
			D008	Lead	5.0
			D009	Mercury	0.2
			D011	Silver	5.0
			D018	Benzene	6.0
			D022	Chloroform	0.5
			D028	1,2-Dichloroethane	0.7
			D029	1,1-Dichloroethylene	0.13
			D030	2,4-Dinitrotoluene	200.0
			D035	Methyl ethyl ketone	2.0
			D036	Nitrobenzene	5.0
			D038	Pyridine	0.5
			D040	Trichloroethylene	NA[d]
			F001	Spent halogenated solvents	NA[d]
			F002	Spent halogenated solvents	NA[d]
			F003	Spent nonhalogenated solvents	NA[d]
			F004	Spent nonhalogenated solvents	NA[d]
			F005	Spent nonhalogenated solvents	
HE-Contaminated Equipment	HE processing; R&D activities and laboratory use	Acceptable Knowledge[c]	D003	Reactivity	NA[d]
			D005	Barium	100.0
			D006	Cadmium	1.0
			D007	Chromium	5.0
			D008	Lead	5.0
			D009	Mercury	0.2
			D011	Silver	5.0
			D030	2,4-Dinitrotoluene	0.13
			F001	Spent halogenated solvents	NA[d]
			F002	Spent halogenated solvents	NA[d]
			F003	Spent nonhalogenated solvents	NA[d]
			F004	Spent nonhalogenated solvents	NA[d]
			F005	Spent nonhalogenated solvents	NA[d]

Waste Description	Waste Generating Activity	Basis for Hazardous Waste Designation	Potential EPA[a] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[b] (milligrams per liter)
~~HE-Contaminated Solvents in *de minimis* quantities (liquid acids, bases, and Inorganic salt solutions)~~	~~Materials used as titrants, solvents, and cleaning fluids and material from hydrolysis research~~	~~Acceptable Knowledge[c]~~	~~D002~~ ~~D003~~ ~~D018~~ ~~D030~~ ~~D035~~ ~~D036~~ ~~D038~~ ~~F003~~ ~~F004~~ ~~F005~~	~~Corrosivity~~ ~~Reactivity~~ ~~Benzene~~ ~~Chloroform~~ ~~2,4-Dinitrotoluene~~ ~~Methyl ethyl ketone~~ ~~Nitrobenzene~~ ~~Pyridine~~	~~NA[d]~~ ~~NA[d]~~ ~~0.5~~ ~~0.13~~ ~~200.0~~ ~~2.0~~ ~~5.0~~ ~~NA[d]~~ ~~NA[d]~~ ~~NA[d]~~

[a] U.S. Environmental Protection Agency. Note that these constituents will likely be present only in trace amounts.

[b] A solid waste exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, Test Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA, 1986), the extract from a representative sample of the waste contains any of the contaminants listed at a concentration equal to or greater than the respective value given in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Subpart C [6-14-00]. These constituents are included if they are likely to be present; however, they are not expected to exceed the toxicity characteristic limits on a routine basis.

[c] Acceptable knowledge is broadly defined as process knowledge, additional characterization data, and/or facility records of analysis, U.S. Environmental Protection Agency, 1994, "Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Waste, A Guidance Manual," *OSWER 9938.4-03*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.

[d] Not applicable: refers to the absence of regulatory limits for ignitable, corrosive, reactive wastes, and F-, K-, and U-listed wastes. The amount of F-listed waste is expected to be trace in all waste streams, with the exception of the HE-contaminated spent solvent waste, which is expected to be 30 percent or more (by volume) solvent.

Table C-12

Parameters, Characterization Methods, and Rationale for Parameter Selection for High Explosives (HE) Waste and HE-Contaminated Waste

Waste Description	Parameter[a]	Characterization Method	Rationale
HE-Contaminated ~~Water~~Bulk Solvent Waste	– Ignitability – Reactivity – Toxicity – ~~Solvents from non-specific sources~~ – 25% by volume HE	– Acceptable Knowledge[b] – Field screening – Sampling and analysis – SW846 methodology	– Determine characteristic for ignitability and reactivity – Determine toxicity characteristic (metals and organics) ~~– Determine the presence of F-listed solvents~~
HE-Contaminated Oil~~/Solvent~~ Waste	– Corrosivity – Ignitability – Reactivity – Toxicity – Solvents from non-specific sources – 25% by volume HE	– Acceptable Knowledge[b] – Sampling and analysis – SW846 methodology	– Determine characteristic for ignitability, corrosivity, and reactivity – Determine toxicity characteristic (organics) – Determine the presence of F-listed solvents
Solid and Scrap HE (i.e., bulk HE)	– Ignitability – Reactivity – Toxicity	– Acceptable Knowledge[b]	– Determine characteristic for ignitability and reactivity – Determine toxicity characteristic (barium and dinitrotoluene)
~~HE-Contaminated Commercial Chemical Products~~	~~– Ignitability~~ ~~– Reactivity~~ ~~– Spill residues from commercial products~~	~~– Acceptable Knowledge[b]~~	~~– Determine characteristic for ignitability and reactivity~~ ~~– Determine the presence of U-listed wastes~~
~~Wet~~ HE Process Waste From Water Filtration	– Ignitability – Reactivity – Toxicity – Solvents from non-specific sources – Specific source wastes (K wastes)	– Acceptable Knowledge[b]	– Determine characteristic for ignitability and reactivity – Determine toxicity characteristic (organics and metals) – Determine the presence of F- and K-listed solvents

Refer to footnotes at end of table.

Table C-12 (continued)

Waste Description	Parameter[a]	Characterization Method	Rationale
HE-Contaminated Solid Waste (heterogeneous)	– Ignitability – Corrosivity – Reactivity – Toxicity – Solvents from non-specific sources	– Acceptable Knowledge[b] – Field screening – Sampling and analysis – Visual examination	– Determine characteristic for ignitability, corrosivity, and reactivity – Determine toxicity characteristic (organics and metals) – Determine the presence of F-listed solvents
HE-Contaminated Solid Waste (homogeneous, i.e., sand)	– Ignitability – Corrosivity – Reactivity (i.e., 10% by weight) – Toxicity – Solvents from non-specific sources	– Acceptable Knowledge[b] – Field screening – Sampling and analysis	– Determine characteristic for ignitability, corrosivity, and reactivity – Determine toxicity characteristic (organics and metals) – Determine the presence of F-listed solvents
HE-Contaminated Equipment	– Reactivity – Toxicity	– Acceptable Knowledge[b] – Field screening – Sampling and analysis	– Determine characteristic for reactivity – Determine toxicity characteristic (dinitrotoluene and metals)
~~HE-Contaminated Liquid Acids, Bases, and/or Inorganic Salt Solutions~~	~~– Corrosivity~~ ~~– Reactivity~~ ~~– Toxicity~~ ~~– Solvents from non-specific sources~~ ~~– 25% by volume HE~~	~~– Acceptable Knowledge[b]~~ ~~– Field screening~~ ~~– Sampling and analysis~~ ~~– SW846 methodology~~	~~– Determine characteristic for corrosivity and reactivity~~ ~~– Determine toxicity characteristic (organics)~~ ~~– Determine the presence of F-listed solvents~~

[a] Parameter selection is based on process knowledge for each waste stream. Additional parameters may be selected for each waste stream as necessary.

[b] Acceptable knowledge is broadly defined as process knowledge, additional characterization data, and/or facility records of analysis, U.S. Environmental Protection Agency, 1994, "Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Waste, A Guidance Manual," *OSWER 9938.4-03*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.

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Appendix 8

Attachment D Revisions

ATTACHMENT D

CONTINGENCY PLAN

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ATTACHMENT D
GENERAL CONTINGENCY PLAN

This Attachment presents contingency measures applicable to all permitted hazardous or mixed waste management units. The Permittees shall implement the provisions of this Plan and the applicable provisions of Permit Part 2 immediately to minimize hazards whenever there is a fire, explosion, or release of hazardous or mixed waste or hazardous or mixed waste constituents that could threaten human health or the environment.

D.1 HAZARDOUS AND MIXED WASTE EMERGENCY RESPONSE RESOURCES

1. The management of hazardous and mixed waste emergency incidents at the Facility resides within Permittees' Emergency Management ~~and Response~~ Group(EM~~&R~~)~~ Office~~. During an emergency situation, line management (i.e., the Group Leader of the affected area) works with the Duty Emergency Manager from the EM~~&R Office~~Group. The Emergency Manager has primary responsibility for managing emergency response operations, ~~making~~ directing the Emergency Operations Support Center (EOSC) to make appropriate notifications, activating the emergency response organizations, ~~and proceeding~~while the Emergency Management proceeds to the scene. The Emergency Manager has authority to assume the role of Incident Commander (IC) during an emergency and typically assumes full responsibility for management of the emergency response operations at the scene. (Personnel from other organizations, such as the Federal Bureau of Investigation or the ~~Los Alamos County Fire Department~~Los Alamos Fire Department [~~LACFD~~LAFD], may also assume the role of IC, depending upon the type of emergency and responding organizations.) Additional Facility resources that may provide assistance in an emergency include personnel from health physics, industrial hygiene, environment compliance, emergency response, and radiation protection personnel at the Facility. These personnel as well as other resources are discussed in Sections D.1.2, D.1.3, and D.1.6 of this Attachment.

2. Laboratory-contracted support services and other agencies shall also be available for assistance during emergencies. These are discussed in Attachment Section D.1.5 and include the contracted services for security and the ~~LACFD~~LAFD. These contracted services, if changed, shall be replaced and/or supplemented with functionally equivalent contracted services required to assume the same duties and responsibilities described in this section. Other outside response agencies are discussed in Section D.1.7 and include the Los Alamos County Police Department (LACPD) and the Los Alamos Medical Center (LAMC). The LACPD and the LAMC each provide assistance under a memorandum of understanding with the U.S. Department of Energy (DOE).

3. The Permittees shall use the Incident Command System (ICS) in response to all emergencies. The ICS is based on the on-scene management structure protocols of the National ~~Interagency~~ Incident Management System (NI~~I~~MS). The N~~I~~IMS is a national standard that provides consistency in terminology/methodology and allows for an integrated emergency response both locally and nationally, if necessary. ~~Consequently, this Contingency Plan may undergo modification.~~

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4. The IC (e.g., Duty Emergency Manager) coordinates all groups and agencies responding to the emergency and personnel operating at the scene using the ICS. The ~~general emergency notification~~ICS response structure, illustrated on Figure D-1, is designed to expand and contract, as appropriate, to include the response groups/agencies needed to address any particular emergency. The EOSC provides notifications to on-site and off-site groups and agencies for both response requests and information.

5. The IC may appoint and utilize a network of support personnel to assess, plan for, and mitigate emergencies. ~~These personnel can include, but are not limited to, a Safety Officer, a Public Information Officer, and a Liaison Officer that report directly to the IC and are responsible for issues related to safety, information, and the interaction of various groups associated with the overall emergency. Also reporting directly to the IC are an Operations Section Chief, Logistics Section Chief, Planning Section Chief, and an Administrative Section Chief. The Operations Section Chief oversees the Fire Branch and the Emergency Medical Services Branch, and is responsible for the actual emergency response. The Logistics Section Chief is responsible for providing support personnel and equipment necessary for the emergency response. The Planning Section Chief is responsible for planning the active mitigation and recovery for the emergency. The Administrative Section Chief is responsible for keeping records of expenditures. In some instances, some or all of these positions may be activated, as the emergency warrants.~~This includes personnel to fulfill command and general staff position under ICS, and subject matter experts as needed. The ICS positions are listed in Figure D-1. During an emergency at the Facility, assistance may be provided to the IC and the IC's appointees by a large variety of response groups/agencies. The responsibilities and/or assistance available from the various response groups/agencies are listed in Attachment Table D-1 and discussed briefly in Attachment Sections D.1.2 through D.1.7.

6. The Permittees shall provide a copy of this Contingency Plan and any revisions to each of the emergency response groups/agencies (including the LACPD, ~~LACFD~~LAFD, LAMC, and the State of New Mexico's Department of Homeland Security and Emergency Management (DHSEM) Area 3 Emergency Management Coordinator).

D.1.1 Emergency Management ~~and Response Office~~Group

1. The Permittees shall delegate the authority and responsibility for administering and implementing the Facility's emergency management program to the Emergency ~~Response~~ Operations Division, which includes EM~~&R~~ personnel. Emergency Operations Division ~~EM&R~~ personnel shall coordinate and issue the Facility's ~~Emergency Management Plan (EMP)~~Los Alamos National Laboratory and Los Alamos Site Office Hazardous Materials Program Plan, while EM provides ~~and provide~~ response coordination for emergencies. ~~The~~ EM~~&R Office also~~ provides a 24-hour Emergency Operations Center for the Facility and a 24-hour Duty Emergency Manager to respond to emergencies, including hazardous and mixed waste releases. The Facility Emergency Manager is the functional equivalent of the Emergency Coordinator (40 CFR § 264.55). The EM~~&R Office~~ maintains an Emergency Operations Center (EOC) in a ready condition, should a center be required. The primary EOC is located at TA-69, Building 33 (TA-

69-33). An alternate EOC is located at TA-49-113. Should an EOC be activated during an emergency, additional emergency personnel can be requested by the IC through the EOC.

2. Assignment as the Duty (*i.e.*, primary) Emergency Manager is rotated. The Duty Emergency Manager can be reached 24 hours a day by contacting the ~~EM&R Office~~ EOSC at 667-6211 ~~or the Central Alarm Station (CAS) operator (911).~~

3. The Duty Emergency Manager will respond to emergency incidents involving the release of hazardous or mixed waste to the environment, including spills, fires, and explosions. With input from the appropriate Facility groups, the Duty Emergency Manager shall initially assess the possible hazards to human health or the environment and, if assuming incident command, shall use whatever response personnel and/or emergency equipment necessary to control and contain the waste. In the event of an emergency, the Emergency Manager typically becomes the IC with full responsibility for field activities ~~(including safety, operations, and planning, or establishing these positions within the ICS)~~. As described previously, the exception to this is when on-site personnel can adequately address the emergency and maintain incident command internally. ~~At the scene of the emergency, the IC shall assemble the ICS, as required, for response to the emergency.~~

4. The Duty Emergency Manager responding to an emergency shall have access to a copy of the appropriate building emergency plan(s) (BEP) for the area in which the incident is occurring. These plans shall be maintained by the facility manager where a waste management unit is located and shall be available at the EOC at TA-69; they are also located on site for use by emergency response personnel. The various response groups shall obtain specific information relating to the facilities involved (including the layout of all affected buildings; the location of evacuation routes, equipment, and personnel; properties of the materials/wastes managed at the facility; and the hazards associated with these materials/wastes) from the BEP(s) and other site-specific information.

5. The Permittees shall ensure that the names, addresses, and telephone numbers listed below are the current Primary and Alternate Emergency Manager.

Primary:

Brenda Anderson
3926 A Alabama
Los Alamos, NM ~~87544~~
(H) 505-662-4173
(W) 505-667-6211
(C) 505-699-1144

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Alternates:

Manny L'Esperance
13 ~~Pasel~~ Paseo Paltron
Los Alamos, NM ~~87544~~
(H) 505-~~455-9138~~660-9799
(W) 505-667-6211

(C) 505-699-1383

~~Roy Van Tiem~~Joyce Boyet
~~114 Azure Drive~~125 Private Rd. 1153
~~Los Alamos~~Espanola, NM ~~87544~~
(H) 505-~~672-6296~~753-6108
(W) 505-667-6211

(C) 505-412-9997

~~Ruth Larkin~~Ron Huerta
~~315 Joya Loop~~P.O. Box 923
~~Los Alamos~~Alcalde, NM ~~87544~~
(H) 505-~~672-9860~~852-0286
(W) 505-667-6211

(C) 505-412-8434

Wil Martinez

120 A RA CR 92

Chimayo, NM

(H) 505-351-2340

(W) 505-667-6211

(C) 505-412-8135

Dave McClard

2220 A 36 Street

Los Alamos, NM

(H) 505-412-8945

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(W) 505-667-6211

(C) 505-699-0803

6. To assure timely notifications and immediate response during an emergency, the Permittees shall ensure that the telephone numbers 911 or 667-6211 obtain the on-call Duty Emergency Manager.

D.1.2 Hazardous Materials Response

1. The Hazardous Materials (HAZMAT) Team is responsible for the aggressive mitigation of chemical, radiological, hazardous waste, and mixed waste emergencies, including field decontamination of responders and response equipment. At the request of the IC, the HAZMAT Team may provide limited field decontamination support for victims. The HAZMAT Team is capable of providing a decontamination station at the scene of a hazardous material incident to process people working in a contaminated area and is prepared to perform decontamination of personnel. The HAZMAT Team shall meet the training criteria for emergency response personnel specified in the Code of Federal Regulations, Title 29, §1910.120(q)(6)(iii), (iv), and (v). The HAZMAT Team acts as part of the ICS reporting through the ~~HAZMAT Supervisor~~EOSC via the Operations Section Chief. The ~~HAZMAT Supervisor shall coordinate the HAZMAT Team and radiological~~ field monitoring team leader supervises field monitoring activities.

2. During an emergency response, the HAZMAT Team may also provide site field monitoring to determine the nature and extent of contamination, provide information on correct handling of chemicals, make recommendations on protective clothing and equipment, and provide exposure and treatment information to responders. The HAZMAT Team may obtain resources from environmental monitoring groups, such as health physics and industrial hygiene personnel.

D.1.3 Environmental Protection Division Response

At the scene, representatives and technical advisors from Environmental Protection Division (ENV) and other response personnel are coordinated by the IC. In addition to their post-emergency duties, they may also be responsible for on-scene emergency operations such as planning. Depending on the type of emergency and the associated hazards, an individual from the most relevant group in the ENV shall ~~assume the position of the Environmental Safety and Health Advisor, shall~~ provide technical support, and shall ensure the Permittees' compliance with applicable federal, state, and local regulations.

D.1.3.1 Ecology Personnel

Ecology personnel provide field surveys of soil, foodstuffs, and biota to determine environmental effects of exposure after an emergency.

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D.1.3.2 Meteorology and Air Quality Personnel

Meteorology and air quality personnel provide field surveys of air to determine environmental impacts and dose equivalent to members of the public after a radiological emergency. In addition, they provide expertise in meteorology to project short- and long-term environmental effects of emergency conditions.

D.1.3.3 Hazardous Waste Compliance Personnel

Hazardous waste compliance personnel provide guidance on regulatory requirements for proper treatment, storage, and transportation of hazardous and mixed wastes to other Facility groups. After an emergency, hazardous waste compliance personnel may provide field sampling (e.g., of soil, spills, or potentially hazardous waste) to determine environmental effects of exposure.

D.1.3.4 Water Quality and Hydrology Personnel

After an emergency, water quality and hydrology personnel provide sampling of surface water runoff and sediments to determine the environmental effects of an emergency and perform assessments for regulatory reporting requirements. They also provide expertise in hydrogeology to establish short- and long-term environmental effects of emergency conditions.

D.1.4 Other Facility Response Resources

Emergency response personnel from the Plutonium Manufacturing and Technology Division at TA-55 are trained to respond to emergencies at that facility. Dynamic and Energetic Materials Division personnel are responsible for the hazardous waste management units at TA-14, TA-36, and TA-39. Dynamic and Energetic personnel responsible for these units are trained in emergency procedures and may provide information and/or assistance during emergencies involving high explosive waste. High Explosives Engineering personnel are responsible for hazardous waste management units at TA-16. These personnel are also trained in emergency procedures so that they are able to provide information and/or assistance during emergencies involving units at TA-16. Personnel from the Waste Disposition Project may provide guidance on proper treatment, storage, and transportation of hazardous and mixed waste at TA-50 and TA-54.

D.1.5 Contracted Response

Contracted response groups' representatives may report directly to the IC Post, if requested. If the IC deems it necessary, the IC may designate an Operations Section Chief to aid in the coordination and direction of these groups. In addition, contracted response groups may report to a staging area, with a representative going either to the IC Post or, if activated, to the EOC.

D.1.5.1 Security Services

Security personnel provide security service to the Facility. During an emergency, these activities include maintaining security, directing traffic within the Facility, and controlling access to the

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emergency scene. Security personnel maintain the necessary equipment (such as crowd-control equipment and patrol vehicles) to perform these functions.

D.1.5.2 ~~Reserved~~Maintenance Site Services (MSS)

MSS provides a maintenance support force to the Facility. This support force is under the Permitees' direction in an emergency. MSS also provides a representative to the facility in the event of an emergency and participates, as necessary, in post-emergency cleanup under the direction of a Recovery Manager designated by the IC. The duties of the recovery Manager are discussed in Attachment Section D.10.

D.1.5.3 ~~Los Alamos County Fire Department~~Los Alamos Fire Department

The ~~LACFD~~LAFD provides fire protection and ambulance coverage for the residential communities of Los Alamos and White Rock and for the Facility. In the case of an emergency within the Facility, the ~~LACFD~~LAFD coordinates fire suppression and Emergency Medical Services. The IC retains overall responsibility for the emergency response effort.

D.1.6 Facility Support

D.1.6.1 Health Physics Operations

Radiation protection personnel perform routine site evaluation and monitoring to determine radiological conditions in facilities. They also provide guidance on radiological decontamination. In addition, this group augments the assessment and monitoring functions of the HAZMAT Team.

D.1.6.2 Occupational Medicine Personnel

1. The Facility maintains its own medical facility operated by occupational medicine personnel. Occupational medicine personnel provide appropriate medical treatment for occupation-related illnesses and injuries and monitors employees to assess the effectiveness of health protection programs.

2. Although occupational medicine personnel are not routinely involved with on-scene emergency response, the group maintains a central medical facility with a fully equipped emergency room and decontamination facilities at TA-3, Building 1411. The location of this and other emergency facilities are shown on Figure 48 in Permit Attachment N (*Figures)*. Medical staff at these facilities includes physicians, physician's assistants, nurses, technicians, and counselors. All full-time physicians and nurses receive radiation accident training. Occupational medicine personnel also maintain access to a database that provides the clinical staff with timely toxic exposure and treatment information.

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D.1.6.3 Industrial Hygiene and Safety Personnel

Industrial hygiene and safety personnel assist occupational medicine personnel with their ability to obtain additional exposure and treatment information. In addition, they maintain computer access to the National Institute of Occupational Safety and Health Technical Information Center and the Registry of Toxic Effects of Chemical Substances. During routine operations, these personnel perform site evaluations and field testing to determine the nature and extent of chemical contamination and specify protective clothing and equipment.

D.1.6.4 Contract Assurance Office

The Contract Assurance Office assists the facility manager in investigating all adverse environmental, safety, health, and operational occurrences (on-site and off-site), determining the causal factors, identifying the appropriate corrective actions, and assisting in the preparation of reports documenting the occurrence to DOE. This group tracks corrective actions associated with such occurrences and maintains the information in an on-site database.

D.1.7 Outside Response Agencies

During an emergency, outside response agencies report directly to the IC. A Liaison Officer or an~~An~~ Operations Section Chief, designated by the IC, may aid in coordinating and directing the groups responding to an emergency.

D.1.7.1 Los Alamos County Police Department

The LACPD may assume IC under unique circumstances, but usually has only minimal interaction with the Facility in an on-site emergency. This interaction normally involves traffic control on DOE roads with public access, handling criminal activity, and criminal investigations.

D.1.7.2 Los Alamos County Emergency Management Coordinator

Los Alamos County has an agreement with the Facility's EM~~&R~~ to provide assistance in certain emergency situations. If an emergency occurs on Facility property that may affect the communities of Los Alamos and White Rock, EM~~&R~~ personnel will notify the CDC who will in turn notify the Los Alamos County Emergency Management Coordinator, who will coordinate necessary emergency actions throughout the county.

D.1.7.3 Los Alamos Medical Center

The Facility maintains a fully equipped decontamination room adjacent to the emergency room at LAMC. In the event that a case is sent to LAMC, support for the emergency room staff is provided by Facility occupational medical personnel. Radiation protection, industrial hygiene, and HAZMAT personnel also provide assistance to the emergency room staff; assistance from additional Facility resources is provided, as necessary. Assistance is coordinated through ~~EM&R~~EM personnel.

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D.2 EMERGE NCY EQUIPMENT AND COMMUNICATIONS

D.2.1 Emergency Equipment

The Permittees shall make available the lists of emergency equipment listed in Table D-2 for use at any of Permittees' hazardous or mixed waste management units. The list includes emergency equipment available in the HAZMAT vehicles and trailers as well as supplemental emergency equipment maintained by the ~~LACFD~~LAFD, ~~KSL~~maintenance personnel, and occupational medicine personnel. A list of emergency equipment available for use at specific hazardous and/or mixed waste management units is identified in Attachment Tables TA-3, D-1; TA-16, D-1; TA-50, D-1; TA-54, Area L, D-1; TA-54, Area G, D-2; TA-54 West, D-3, TA-55 Vault, D-1; TA-55 Building 4 Basement, D-2; TA-55 Container Storage Pad, D-3, and TA-55 Building 185, D-4 . Emergency equipment listed in these tables may be replaced and/or upgraded with functionally equivalent components and equipment, as necessary, for routine maintenance and repair.

D.2.2 Emergency Communications

The initial phase of an emergency may involve a small number of individuals at the affected area, require notification of the Duty Emergency Manager, and utilize local communication equipment and/or systems. When responding to hazardous and/or mixed waste emergencies, the Permittees shall ensure that ~~EM&R~~EM personnel can provide communications between response units and emergency organizations.

D.2.2.1 ~~Central Alarm Station~~ Fire Alarms ~~(CAS)~~

1. ~~The CAS is manned by security personnel 24 hours a day and is equipped with telephones (including direct-line telephones), medium- and short-range radios, a National Warning System (NAWAS) station, and an emergency power system. The fire alarm board at the control room gives the location of automatic and manual fire alarm equipment. The CAS receives alarms from several sources and, in turn, notifies the Duty Emergency Manager of a hazardous or mixed waste emergency. Sources include:~~ The Duty Emergency Manager is notified for confirmed fire or smoke.

~~1.Telephone communication (911)~~
~~2.Automatic fire alarms~~
~~3.Manual pull alarms~~
~~4.Computer interface (to warn of critical events at selected facilities)~~
~~5.Security alarms~~
~~6.Radio communications.~~

~~2. Upon receipt of an alarm, the CAS operator notifies the LACFD and the Duty Emergency Manager. The Emergency Manager, the EOC communicator, and/or the CAS operator may request emergency response groups to respond. Should the Facility 911 system fail, the Los Alamos County System, located at the LACPD Station, shall be used to activate emergency response groups.~~Fire alarms are monitored 24 hours a day by trained personnel. Both

the primary and backup buildings where the monitoring takes place have emergency power systems. The Duty Emergency Manager is notified when there is a confirmed fire or smoke via the Los Alamos County Consolidated Dispatch Center.

D.2.2.2 Pow er Dispatch

The Permittees shall maintain the Power Dispatch facility 24 hours a day. Alarms at this facility are connected to Facility experiments, equipment, and/or buildings to record outages and hazardous conditions. Any conditions that activate these alarms shall be reported immediately to the building management or to the ~~CAS~~ facility operator for notification and response.

D.2.2.3 Additional Communication Systems

Internal communication systems at the Facility include:

1. ~~The Centrex~~Preprogrammed telephone system
2. ~~A telephone paging system~~Private telephone lines
3. A variety of frequency modulated very high frequency simplex repeater systems, including:
   - Multiple base stations
   - Mobile and hand-held units
   - Links to New Mexico public safety agencies
4. An ultrahigh frequency radio system, including:
   - Multiple antenna sites
   - Mobile and base units
   - Links with the LACPD, the ~~LACFD~~LAFD, and the State Medical System
5. A 400-megahertz trunked radio system that includes a link with the ~~LACFD~~LAFD
6. Transmission and reception (through the EOC) for:
   - Secure telephone
   - Secure fax
   - Secure still video
   - Secure videoconference system (to all DOE EOCs and DOE Headquarters)
7. Access to all radio systems outlined above (through the EOC).

2. Off-site communications with federal, state, tribal, county, and other agencies are available through the following:

1. A ~~Centrex~~ preprogrammed telephone system
2. Private telephone lines ~~(if Centrex fails)~~
3. Two NAWAS stations

~~4.A link to KRSN radio (local radio station)~~
~~5.The local cable television~~
~~6.The Community Alert Network.~~

3. The Permittees' EOC, maintained by ~~EM&R~~EM personnel, operates radio systems on key Facility and off-site channels. Emergency personnel responding to on-site incidents have the

benefit of wide-area radio coverage using EOC facilities. The Duty Emergency Manager is responsible for activating whatever support personnel, equipment, or services are needed 24 hours a day.

D.3 CONTINGENCY PLAN IMPLEMENTATION

The following sections discuss requirements used to implement this Plan, emergency notification, emergency manager actions, and actions to be taken in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents into the environment at the Facility.

D.3.1 Requirements for Implementation

1. The decision to implement this Plan depends upon whether an emergency exists, which for the purposes of this section is defined as an imminent or actual incident arising from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents that could threaten human health or the environment. The Duty Emergency Manager or IC will use the guidelines listed below to decide whether to implement this Plan. The Permittees shall investigate all adverse environmental, safety, health, and operational occurrences (on-site and off-site) resulting in implementation of the contingency plan to determine to causal factors and identify the appropriate corrective actions.

2. This Plan shall be implemented immediately in the following situations involving releases or potential releases of hazardous or mixed waste:

1. Spills:
   - If a hazardous or mixed waste spill cannot be contained with secondary containment or application of sorbents
   - If a hazardous or mixed waste spill causes the release of flammable material, creating a fire or explosion hazard
   - If a hazardous or mixed waste spill results in toxic fumes that threaten human health
2. Explosions:
   - If an unplanned explosion involving hazardous or mixed waste occurs
   - If an imminent danger of an explosion involving hazardous or mixed waste exists.
3. Fires:
   - If a fire involving hazardous or mixed waste occurs
   - If any building, grass, forest, or nonhazardous waste fire exists that threatens to volatilize or ignite hazardous or mixed waste.
4. Other Acts of Force Majeure
   - If an earthquake or other natural disaster threatens containment integrity, including precipitation that threatens to move spilled material off site.

D.3.2 Emergency Notification

1. Emergency notification requires immediate notification of ~~911~~ 667-6211 or ~~EM&R~~EM personnel upon discovery of an imminent or actual incident involving hazardous and/or mixed

waste. During nonworking hours, personnel will report all imminent or actual incidents involving hazardous and/or mixed waste to the Emergency Manager ~~or the CAS operator~~ at 667-6211. In the case of fire, notification of these individuals is superseded by the Facility fire alarm system. A fire is reported by dialing 911~~ (from telephone exchanges 667 and 665) or 667-7080 (from all exchanges, including cellular phones)~~, activating automatic alarms, or activating a fire alarm pull box. All fire alarms alert the ~~CAS operator~~Los Alamos County Consolidated Dispatch Center, who in turn the ~~LACFD~~LAFD, and ~~security personnel, who in turn~~ notify the Duty Emergency Manager.

2. Upon recognition of a hazardous or mixed waste emergency, the first arriving emergency-trained person will become the Facility Command Leader. Once ~~EM&R~~EM personnel are notified of the emergency, the Duty Emergency Manager will proceed to the scene and be briefed by the Facility Command Leader, building/area personnel, and/or other emergency units/teams. The Emergency Manager will then assume the position of IC. If necessary, the IC may recommend that the EOC be activated and that the necessary members of the emergency management team be determined. The IC will form an ICS and contact the ~~HAZMAT Supervisor~~Emergency Operations Support Center. The ~~HAZMAT Supervisor~~EOSC will notify the appropriate emergency response groups. The IC may determine from the list of response groups described in Table D-1 which groups to contact in an emergency. Each response group maintains an on-call person and/or a call-down procedure to respond to emergencies.

3. ~~EM&R~~EM personnel shall be notified of any potential hazardous or mixed waste emergency. The IC ~~and the HAZMAT Supervisor~~ will use whatever means are available (including the assistance of other response groups, computer data searches, and sampling) to determine if a hazardous or mixed waste emergency exists.

4. The Facility Emergency Manager or his or her designee shall make best efforts to timely communicate the nature or the emergency and the hazards that may be present to any outside response agency whose assistance may be provided.

D.3.3 Emergency Manager Actions

1. Upon notification of an emergency incident, the Duty Emergency Manager may:

    1. Make an initial assessment of the incident and, in conjunction with the IC, obtain resources to determine the source, quantities, and types of hazardous and/or mixed waste involved and the areal extent of any released materials.
    2. Request resources needed and have EOC staff begin notifications.
    3. Proceed directly to the scene.
    4. Assess the nature of the incident (e.g., through communication with the IC).
    5. Assume incident command after a direct briefing with the Facility Command Leader.
    6. Based on the guidelines in Section D.3.1 of this Plan, determine if implementation of this Plan is warranted.
    7. Activate the EOC, if necessary.

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2. Upon deciding to implement this Plan, the IC will, when appropriate:

   1. Assess the hazards to human health and the environment, including both direct and indirect effects, such as generation of toxic, irritating, or asphyxiating gases and/or hazards of runoff of water or chemicals used for fire suppression. An individual designated by the IC~~-~~will use the guidelines in Section D.3.1 to assess the hazards to human health and the environment. If any of the criteria under Section D.3.1 are met and if the responsible Group Leader (or his/her designee) has not already accomplished evacuation of the area, the IC will initiate shelter in place or evacuation of the immediate area.

   2. Direct the EOC staff to initiate protective actions and immediately notify appropriate response groups and personnel as per the ~~EM&R~~EM Guidelines. The ~~IC~~ Los Alamos County Emergency Coordinator may activate one or more of the following community alert mechanisms: ~~the Community Alert (telephone) Network~~reverse 911, ~~the~~ AM 1490 KRSN radio~~ remote input system~~, or the cable television capture system, site wide area network radios, and public radio and television channels.

   3. In the case of fire or release of any type, make reasonable efforts to confirm that all response personnel at the scene are aware of actual or imminent special hazards associated with hazardous or mixed waste.

   4. In emergency situations, contact the appropriate ENV representative to notify the Department's Hazardous Waste Bureau and the National Response Center at (800) 424-8802, reporting:

      - The name and telephone number of the ENV representative
      - The name and address of the facility
      - The time and type of incident
      - The name and quantity of material involved, to the extent known
      - The extent of injuries, if any
      - The possible hazards to human health or the environment outside the facility.

   5. When an emergency occurs at hazardous or mixed waste treatment units, ensure that appropriate Facility personnel monitor for leaks, pressure buildup, gas generation, or equipment ruptures.

3. Once control of the emergency is established, the IC will take all reasonable measures to minimize the occurrence, recurrence, or spread of fires, explosions, or releases. In addition, the IC will delegate cleanup and decontamination responsibilities to the Recovery Manager. These responsibilities may include:

   1. Arranging for site cleanup.
   2. Assisting with arrangements for proper handling of recovered waste, contaminated soil, or contaminated surface/groundwater.
   3. Assisting with arrangements for decontamination of equipment, as needed.
   4. Arranging for replacement and/or repair of equipment, as needed.
   5. Requesting that testing is conducted to verify successful cleanup.

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4. The Permittees shall report implementation of this Plan in accordance with Permit Sections 1.9.12, 1.9.13, and 2.11.6.3.

D.4 SPILLS

1. Sudden releases may include spills of hazardous or mixed waste that pose a significant threat to human health or the environment. Spill incidents resulting in a sudden release of hazardous or mixed waste that present a potential threat to human health or the environment, as listed in Attachment Section D.3.1, require implementation of this Plan.

2. Hazardous and mixed wastes are stored on site at the Facility in a variety of containers. The general steps in handling hazardous and/or mixed waste spills are as follows:

1. Isolate the immediate area and deny entry to all unauthorized personnel;
2. Contain the spill by spreading sorbents or forming temporary dikes to prevent further migration (performed by properly trained personnel, if safe);
3. Monitor the spill area and sample the spilled waste and contaminated media.
4. Package the waste and contaminated media in sound containers;
5. Decontaminate the area and all involved equipment and personnel (followed by testing to assure adequate cleanup); and
6. Remove the waste and contaminated media (performed by appropriate waste management personnel).

3. The IC will determine the steps to be taken for spill mitigation. If initial mitigation of the spill is necessary and can be accomplished safely (by appropriately trained personnel) before the Emergency Manager arrives, a qualified member of the affected area's operating group will serve as the Facility Command Leader.

4. The Permittees shall ensure that hazardous and/or mixed waste spills are stabilized and cleaned up. During spill control and cleanup, all personnel shall wear appropriate personal protective equipment (PPE). Monitoring will be conducted to ensure that chemical and, as appropriate, radiological exposure is minimized. The collected material may be treated as hazardous or mixed waste, depending on the components present. Runoff from spills of listed hazardous or mixed waste that have migrated outside hazardous waste management areas must be contained and managed as hazardous or mixed waste, as appropriate. If the spill was from a characteristic hazardous or mixed waste and if it is determined by analysis that the runoff does not exhibit the characteristic (i.e., ignitability, corrosivity, reactivity, and/or toxicity), the runoff need not be managed as characteristic waste. Temporary dikes may be constructed to contain runoff.

D.4.1 Spill Control Procedures

When a flammable organic solvent spill, a highly acidic spill, or a highly caustic spill has been stabilized with the contents of an organic solvent spill kit, an acid spill kit, or a caustic spill kit, respectively, the resulting material may be sorbed using a nonbiodegradable sorbent. Nonbiodegradable sorbent can be used to control any spill if it is known to be compatible with

the spilled material. Appropriate containers or packaging shall be used to collect all spilled material and contaminated sorbent. Attachment Tables TA-3, D-1; TA-16, D-1; TA-50, D-1; TA-54, Area L, D-1; TA-54, Area G, D-2; TA-54 West, D-3, TA-55 Vault, D-1; TA-55 Building 4 Basement, D-2; TA-55 Container Storage Pad, D-3, and TA-55 Building 185, D-4 list emergency equipment available for spill control at specific units. The ultimate disposition of any contaminated sorbent or waste material shall be determined by appropriate waste management personnel, and in accordance with hazardous waste management regulatory requirements.

D.4.1.1 Tank System Spill Control and Reporting

1. The Permittees shall remove a tank system from service immediately using approved shutdown procedures if a leak or spill occurs from the tank system or its secondary containment system or if the system is determined to be unfit for use. Further addition of waste to the tank system or containment system will cease and the system shall be visually inspected to determine the cause of the leak or spill. If a leak occurs from a tank system, as much of the waste as is necessary to prevent further release of waste will be removed within 24 hours after detection or as early as practicable, and the system will be inspected and repaired. All released waste will be removed within 24 hours or as soon as possible if a leak occurs to a tank's containment system.

2. If a spill from a tank is not immediately contained and cleaned up and exceeds a quantity of 1 pound, the release will be reported to the Department within 24 hours of its detection in accordance with the requirements of 40 CFR § 264.196(d)(1). In addition, the Permittees shall report in accordance with Permit Section 1.9.12 and 2.11.6.3. That report shall describe the likely migration route of the release; soil characteristics at the site; monitoring and sampling data relevant to the release; proximity to down gradient drinking water, surface water, and populated areas; and response actions taken or planned.

D.4.1.2 Tank System/Secondary Containment Repair and Closure

If the integrity of a tank system, including its secondary containment, has not been damaged by a spill, the system may be returned to service. Service may not resume until after all released waste is removed and repairs, if necessary, are made. Any tank system that cannot satisfy the criteria described above shall undergo closure in accordance with the requirements of 40 CFR § 264.197.

D.4.1.3 Certification of Major Repairs

If a tank system undergoes extensive repairs (e.g., installation of an internal liner, tank system piping retrofit), the tank system will not be returned to service until a certification by an independent, qualified registered professional engineer is obtained, verifying that the repaired system is capable of handling wastes without release for the intended life of the system. This certification will be submitted to the Department within seven days after returning the tank system to use.

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D.4.2 Decontamination Verification

1. Decontamination will be accomplished at the spill site by removal of all contaminated material. After the spilled material has been sorbed, the material will be containerized. If the spill occurs on a concrete or asphaltic-concrete area, water or an appropriate solvent will be used to clean the area. Liquids (i.e., spilled material and cleaning water or solvents used to clean a spill) may be sorbed with a compatible, nonbiodegradable sorbent and containerized. If a spill is from an identifiable source, the spilled material may be characterized as a newly-generated waste using acceptable knowledge or may be analyzed, as applicable, for the hazardous waste constituents known to be components of the waste managed at that unit. Analytical method(s) given in Table D-3 will be utilized, as appropriate. If the spill is from other than an identifiable source, the spilled material will be analyzed for the appropriate parameters listed in Table D-3. All personnel conducting decontamination verification will wear appropriate PPE. Radiation protection personnel will conduct health physics monitoring whenever mixed waste is involved to ensure that radiation exposure is maintained as low as reasonably achievable. Any hazardous or mixed waste collected from decontamination activities will be handled appropriately.

2. In order to establish baseline data, a sample of decontamination water or solvent (and nonbiodegradable sorbent material, as applicable) will be taken prior to the start of the decontamination effort. A sample of the final washwater (or the used sorbent) will then be taken. The baseline samples and final washwater/used sorbent samples will be analyzed for the applicable parameters given in Attachment Table D-3. If the decontamination samples contain hazardous constituents that are not present in the baseline samples the decontamination procedure shall be repeated. An alternative demonstration of decontamination may be proposed and justified to the Department, who will evaluate the proposed alternative in accordance with the standards and guidance currently in effect. If the proposed alternative is accepted, decontamination levels will meet the levels approved by the Department. Each sample will be collected with an appropriate sampling device (e.g., a thief or trier) as specified in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA, 1986), and approved updates, as applicable.

3. If a hazardous/mixed waste spill occurs on soil, any free liquid present will be collected and containerized. Liquids may be sorbed with a compatible nonbiodegradable sorbent prior to containerization. For such a spill, contaminated soil will either be excavated and containerized or remediated in situ. Industrial health and safety personnel will conduct industrial hygiene monitoring and, if mixed waste is involved, radiation protection personnel will conduct health physics monitoring, if deemed necessary, to minimize exposure during soil removal or remediation operations. Excavation or remediation will continue until soil contaminant concentrations are at a level approved by the Department.

4. If a hazardous/mixed waste spill occurs in an area with flooring, the floor will either be removed in lieu of decontamination, or the floor will be decontaminated. If the decision is made to decontaminate the floor, swipe samples or other types of sampling appropriate for the contaminant will be collected at random and characterized for decontamination verification. If, after several decontamination efforts, it is subsequently determined that the affected floor area

cannot be decontaminated, the floor material will be removed. In all cases, wastes generated during the decontamination and/or removal process will be managed appropriately.

D.5 EXPLOSI ON

1. Explosions and resultant releases may result in a significant threat to human health or the environment. The potential exists for hazardous or mixed waste to be released during an explosion. Implementation of this Plan is required whenever there is an explosion at a permitted unit.

2. In the event of an explosion at the Facility, all personnel will immediately evacuate the area. Any injured personnel will be decontaminated at the site, if required and if time allows. An ~~LACFD~~LAFD ambulance will transport these personnel to LAMC for treatment. If an injury is severe and requires immediate medical evacuation, the injured person will be wrapped to contain contamination, if necessary. In the case of an actual or potential explosion, on-site personnel will contact ~~EM&R~~EM personnel immediately so that the Emergency Manager can ensure that all necessary emergency response personnel are alerted. The ~~LACFD~~LAFD is notified automatically upon ~~central alarm system~~fire alarm activation. The Emergency Manager assumes incident command and will remain near but at a safe distance from the site in order to inform personnel responding to the explosion of the known hazards.

3. If a fire results from an explosion, the ~~LACFD~~LAFD Senior Officer will, upon arrival at the scene, evaluate all available information and determine the appropriate firefighting methods and tactics. The ~~LACFD~~LAFD Senior Officer will direct firefighting operations as the acting IC until ~~EM&R~~EM formally assumes command.

D.6 FIRE

1. Fires and resultant releases of hazardous or mixed waste may result in a significant threat to human health or the environment. Implementation of this Plan is required whenever there is a fire at a permitted unit.

2. Fire alarms will be sounded automatically or manually to alert personnel that a fire hazard exists and to evacuate the area immediately if in the vicinity. Information related to the various fire alarms at the specific units is included in Attachment Tables TA-3, D-1; TA-16, D-1; TA-50, D-1; TA-54, Area L, D-1; TA-54, Area G, D-2; TA-54 West, D-3, TA-55 Vault, D-1; TA-55 Building 4 Basement, D-2; TA-55 Container Storage Pad, D-3, and TA-55 Building 185, D-4.

3. Depending on the size of the fire and the fuel source, portable fire extinguishers may be used. However, Facility policy does not encourage the use of portable fire extinguishers by employees unless they are properly trained. Instead, Facility policy encourages immediate evacuation of the area and notification of the ~~CAS operator~~Los Alamos County Emergency Coordinator by dialing 911. For any fire, including a fire that involves hazardous or mixed waste, the responsible Group Leader and ~~EM&R~~EM personnel must be contacted immediately. The Emergency Manager will alert the ~~LACFD~~LAFD and all other necessary emergency response personnel. If the fire spreads or increases in intensity, all personnel must follow protective actions as designated by

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the Emergency Manager. The Emergency Manager assumes incident command and will remain near the scene to advise personnel responding to the fire of the known hazards.

4. Upon arrival at the scene, the ~~LACFD~~LAFD Senior Officer will evaluate all available information and determine the appropriate firefighting methods and tactics. The ~~LACFD~~LAFD Senior Officer will direct firefighting operations as the acting IC until ~~EM&R~~EM formally assumes command.

D.7 UNPL ANNED NONSUDDEN RELEASES

Nonsudden releases include those incidents that, if uncontrolled, impact the environment over a long period of time. Such incidents include minor leaks from containers and loss of secondary containment integrity.

D.7.1 Responsibility

Appropriate Facility personnel are responsible for correction of a nonsudden release from a hazardous or mixed waste unit if the correction can be performed safely with normal maintenance and management procedures. Personnel from ~~EM&R~~EM 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 Department.

D.7.2 Nonsudden Releases

1. In general, the response to a nonsudden release will be to contain the release, to correct the cause of the release, and to clean up any release to a level that protects human health and the environment.

2. Appropriate Facility personnel shall conduct regularly scheduled inspections to detect failure of containment at the unit(s) addressed in this Permit. Secondary containment systems shall be inspected regularly to ensure that the integrity of the containment systems has not deteriorated. If an inspection reveals that containers are leaking or that secondary containment has deteriorated, Facility personnel shall ensure that maintenance or replacement of containment is performed, as appropriate. Inspections will be conducted in accordance with the facility's inspection plan.

D.7.3 Nonsudden Release Surveillance

1. In addition to routine inspection and site-specific sampling and testing, the Permittees shall maintain an area-wide environmental monitoring network. Monitoring and sampling locations for various types of measurements are organized into three main groups. Regional monitoring stations located within the counties surrounding Los Alamos County are placed up to 80 kilometers (50 miles) from the Facility. These stations serve to determine background conditions. Perimeter stations are generally located within 4 kilometers (2.5 miles) of the Facility boundary and document conditions in residential areas surrounding the Facility. On-site

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stations, most of which are accessible only to employees during normal working hours, are within the Facility boundary.

2. Different types of surveillance sampling conducted at these stations include measuring radiation and collecting samples of air particulates, surface waters, groundwater, soil, sediment, and foodstuffs for subsequent analysis. Additional samples provide information about particular events, such as major runoff events and nonroutine releases. Data from these efforts are used for comparison with standards, for determining background levels, and for radiation dose calculations.

D.8 EXPOSURE TO HAZARDOUS OR MIXED WASTE

1. If a person is exposed to hazardous or mixed waste, the affected person, a co-worker, or line management will notify ~~EM&R~~EM personnel. Appropriate first aid should be administered immediately. An ~~EM&R~~EM representative will make appropriate notifications as soon as possible so that exposure levels and decontamination requirements can be established. The affected person will then be transported to the occupational medical facility or to LAMC for evaluation. If possible, the material involved in the exposure will be ascertained, and the information will be given to the medical staff.

2. Other potential exposures will necessitate evacuation of the area, if appropriate, or under any of the following conditions:

1. Irritation of the eyes, breathing passages, or skin
2. Difficulty in breathing
3. Nausea, lightheadedness, vertigo, or blurred vision.

3. The affected person will be transferred to the occupational medical facility or to LAMC if there is a serious injury. An industrial health and safety, radiation protection, or HAZMAT representative will attempt to ascertain what, if any, exposure occurred and what corrective measure is appropriate.

D.9 EVACUATION

A permitted unit shall be evacuated upon the voice command to evacuate the area or upon the sounding of the evacuation or fire alarm. The IC may call for sheltering in place when evacuation is impractical due to significant airborne hazards. Shelter in place may be possible in a designated area or in a building where all exterior windows and doors may be closed and outdoor air ventilation equipment turned off. Once the airborne hazard has decreased, personnel would then be evacuated.

D.9.1 Emergency Process Shutdown Prior To Evacuation

Personnel are instructed to shut down equipment prior to evacuating a building/area unless an immediate building/area evacuation is announced or signaled. To ensure efficient shutdown, training and exercises addressing the shutdown process are performed. In the case of an immediate evacuation, a selected team may shut down designated equipment in an evacuated

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area upon approval of command. The team will be equipped with proper equipment and PPE. If they are on location, radiation protection, industrial health and safety, and/or HAZMAT personnel will provide advice and assistance.

D.9.2 Evacuation Plan

1. Emergency situations may warrant the shutdown and evacuation of areas or buildings in order to protect personnel and property, to anticipate the emergency condition, or to enhance the appropriate response. Attachment Table D-4 lists the criteria for evacuation, persons responsible for initiating evacuations, and reentry conditions.

2. To initiate the evacuation of a building/area, the evacuation or fire alarm is sounded and/or the public address (PA) system may be used. Evacuation alarms cannot be silenced and reset by site personnel. Only the Fire Alarm Maintenance Section and the ~~LACFD~~LAFD Battalion Chief can silence and reset alarms. To evacuate a portion of a building or area, use of the PA system may be more appropriate. The PA system will notify the occupants of the area to be evacuated and will advise personnel throughout the building of the existence of a problem in a specific area. Once evacuation has been initiated and if conditions allow, personnel will turn off all equipment that could contribute to the hazard if left unattended. All personnel will then proceed from the affected area to the assembly/muster area.

3. In the event of evacuation of a building, an outbuilding, or an outlying work area, the responsible Group Leader (or his/her designee) will determine a control point at the closest safe location (e.g., considering wind direction). The designated area will be outside the affected area and will serve as an assembly/muster area where the Group Leader (or designee) can oversee evacuation operations and work to prevent further spread of the hazard.

4. As personnel exit an affected building/area, a primary sweep of the building/area ~~will~~ may be performed to ensure that all personnel have evacuated. If the building/area is evacuated, a Group Leader designee will take attendance at the assembly/muster area and report personnel accountability to the IC. The evacuation procedure is as follows:

1. The person discovering the accident or emergency will call 911 if the event Is life threatening or LAFD is required, or 667-6211 for all other evacuations, the personnel will then notify line management ~~to ensure that line management and EM&R personnel are notified.~~.
2. Site-specific BEPs and/or emergency action procedures will be followed concerning evacuation, sweep, personnel accountability, and equipment shutdown procedures.

5. A responsible on-site person may direct the initial evacuation and the ~~central~~ fire alarm system may be activated. ~~EM&R~~EM personnel will be notified and dispatched immediately ~~and will dispatch the Duty Emergency Manager~~. A responsible on-site person may implement and direct the evacuation process until the Duty Emergency ~~Manager~~ Manager or LAFD arrives at the scene to assume that responsibility.

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D.10 SALVAGE AND CLEANUP

1. Appropriate representatives from the ENV groups will survey the affected area before salvage and cleanup begin. They will conduct visual inspections and sampling, as appropriate, of the affected area to determine whether cleanup is complete. If gases or fumes, electrical or radiological problems, or other conditions present a hazardous situation, personnel or selected teams equipped with proper PPE will reenter the area to perform designated decontamination tasks, repairs, and salvage to allow the return to normal operations. After an emergency, the IC will turn the operation over to a designated Recovery Manager, who will:

1. Provide for proper handling of recovered waste, contaminated soil or surface water, or any other material that results from a spill, fire, or explosion. Contaminated material will be managed appropriately and temporarily stored at one of the hazardous or mixed waste storage areas at the Facility. Waste management personnel will be responsible for determining the final disposition of the waste. This determination will be made in compliance with hazardous waste management regulations.
2. Arrange to monitor for damage or improper operation of the unit and associated equipment as a result of the emergency or of plant shutdown in response to the emergency.
3. Arrange for site cleanup procedures to be completed and ensure that no waste that may be incompatible with the released material is treated or stored in the same area.
4. Ensure that emergency equipment is cleaned, decontaminated, and fit for its intended use before operations are resumed. Equipment will be inspected visually and then sampled, if necessary, to determine the type and degree of contamination and to determine appropriate cleanup measures.

2. Prior to resuming operations, the Permittees shall verify that the previously mentioned tasks have been performed. The Permittees shall notify appropriate state and local authorities that cleanup procedures are completed and that emergency equipment is clean and fit for its intended use.

3. The IC assumes the coordination of post-emergency actions (particularly during the time period immediately following the emergency) until a Recovery Manager is appointed. The Recovery Manager then assumes this coordination role. The Recovery Manager is the functional equivalent of the Emergency Coordinator for post-emergency actions. The post-emergency actions include cleanup operations, vital equipment repair, or interim hazard-removal operations (such as arranging for demolition of unstable walls). The services of affected operational organizations, ENV groups, ~~KSL~~maintenance personnel, and other on-site resources will also be used to estimate cleanup costs and operational impact.

D.11 EMERGENCY RESPONSE RECORDS AND REPORTS

The Permittees shall ensure that any emergency that requires implementation of this Plan will be documented and reported in accordance with Permit Section 1.9.12, 1.9.13, and 2.11.6.3. This information will be maintained in the facility operating record.

D.12 CONTINGENCY PLAN AMENDMENT

The Permittees shall review this Plan at a minimum annually. The Plan will be amended immediately if determined to be inadequate to handle releases (spills, explosions, and/or fires) and whenever:

1. The facility permit is revised;
2. There is change in the design or operation of the facility (e.g., quantities of waste handled and handling techniques) that increases the likelihood of an emergency and requires changes in emergency response;
3. The Primary Emergency Manager changes; and
4. The list of emergency equipment changes significantly.

D.13 REFERENCES

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.

LANL, 2002, "Los Alamos National Laboratory Emergency Management Plan," LIR 403-00-01.0, Los Alamos National Laboratory, Emergency Management and Response Office, Los Alamos, New Mexico.

LANL, 2002a, “Los Alamos National Laboratory General Part B Permit Renewal Application”, Revision 2.0, August 2002, LA-UR-03-5923, Los Alamos National Laboratory, Los Alamos, New Mexico.

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Table D-1

Response Groups and Agencies Available to the Emergency Management Group ~~and Response Office~~ for Guidance and/or Emergency Assistance

Facility[a]-Controlled Response Group	Telephone	Responsibilities
Health Physics Personnel	667-7797	Provides routine guidance on radiological decontamination. Provides routine site evaluation and monitoring to determine the nature and extent of contamination (radiological).
Occupational Medicine	667-0660	Provides emergency medical treatment.
Industrial Hygiene and Safety Personnel	606-0295 667-5231	Provides guidance on industrial hygiene equipment and operational safety. Provides routine site evaluation/support field testing to determine the nature and extent of contamination (chemical).
Contractor Assurance Office	6658206	Reports occurrences and tracks follow-up actions.
Hazardous Materials Response (HAZMAT)	665-5237	Provides emergency site evaluation/field monitoring (chemical and radiological). Specifies protective clothing and equipment. Dispatches Hazardous Materials Response Team. Provides support for chemical, radiological, hazardous, and mixed waste incidents and decontamination of responders and response equipment.
Meteorology & Air Quality Personnel	667-6952	Provides information on meteorological conditions.
Water Quality and Hydrology Personnel	667-0666 or 665-0453	Provides information on hydrologic conditions.
Hazardous Waste Compliance Personnel	667-0666 or 665-	Provides guidance on regulatory requirements.

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	0453	Provide guidance on proper treatment, storage, and off-site shipment of hazardous and mixed waste. Conducts field surveys to determine spread of contamination and adequacy of cleanup.
Ecology Personnel	667-6952	Provide information on biotic conditions.
Security Personnel	667-4531	Provide traffic control and security.
Maintenance and Site Services	667-5702	Dispatches maintenance personnel and equipment. Assists in waste cleanup under the direction of the Recovery Manager
TA-55 Operations Division	667-3030	Provides initial emergency site evaluation at Technical Area (TA) 55 and conducts activities related to the prevention, notification, and control of emergencies at TA-55. In the event of an emergency at TA-55, monitors for leaks, pressure buildup, gas generation, or equipment ruptures, if necessary. Maintains and operates TA-55 Emergency Response Team. Writes TA-55 emergency plans and procedures.
Dynamic and Energetic Materials Division	667-5653	Provides information and/or assistance during emergencies at TA-14, TA-15, TA-36, and TA-39.
High Explosives Area Access Control	667-6844	Provides information and/or assistance during emergencies involving units at TA-16.
Los Alamos ~~County~~ Fire Department	911 662-~~8301~~8222	Dispatches firefighting personnel and equipment and provides Emergency Medical Services.
Los Alamos County Police Department	662-8222	Provides traffic control on public access roads.
Los Alamos Medical Center[c]	662-4201	Provides medical services. Provides and maintains Emergency Room.
Facility-controlled Response Group:	667-5702	Dispatches maintenance personnel and assists in waste

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Maintenance Services		cleanup under the direction of the Recovery Manager.

[a] Los Alamos National Laboratory.

[c] Medical services related to hazardous and mixed waste injuries are provided under the direction of ~~HSR-2~~OM.

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Table D-2

Los Alamos National Laboratory-Wide Emergency Equipment

Hazardous Materials (HAZMAT) Vehicles and Associated Emergency Equipment

HAZMAT vehicles and trailers are located at Technical Area (TA) 64, Building 39 (TA-64-39). They are available to the ~~Security and Safeguards (S) Hazardous Materials Response~~Emergency Response Group ~~(S-10~~ER~~)~~ for emergency response to all of the TAs at the Facility. ~~S-10~~ER is responsible for maintaining the supplies of appropriate emergency equipment in each vehicle and trailer.

The HAZMAT vehicles and trailers are equipped with safety and emergency equipment, personal protective clothing, and other supplies, which may include, but are not limited to, some or all of the following:

Assorted personal protective equipment, T-shirts, and gloves
Safety goggles, safety glasses, and face shields
Boots and booties
Totally encapsulating suits and boots
Level A and B suits
Flash suits
Self-contained breathing apparatus (SCBA) and SCBA bottles
Respirators and cartridges
Hazardous chemical reference books and other reference materials
Shovels
Siphon pumps
Assorted spill kits and sorbents
Neutralizing solutions: acids, bases, and caustics
Two-way radios, cellular phones, facsimile, and other communication equipment
Bottles of leak detector and leak repair kits
Emergency repair packs
HAZMAT bags
Gas detectors and chemical monitoring equipment
Radiological monitoring equipment
Sponges and cleaners
Warning signs and barricade tape
Traffic control barriers
Flashlights
Cameras and film
Knives
Portable power supplies
Warning and signal horns
Harnesses and belts

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Decontamination equipment
Sampling equipment
Lifting equipment and vetter bags
Assorted tools, tape, and other supplies
Non-sparking tools
Biological detection equipment
Chemical vacuums
Sandia foam
Plugging and diking equipment
Sample van equipped with a glovebox and analysis equipment
Environmental continuous air monitoring equipment
Robot
National Atmospheric Release Advisory Center-Internet Client (NARAC Client)
Hotspot plume modeling program
Mass decontamination trailer with tent and supplies
Portable decontamination trailer
Portable structures
Tents
Trucks
Trailers
International Shipping Units
Portable hot water heater
Forklift
Automated external defibrillators.

Supplemental Emergency Equipment and Personnel Available From the ~~Los Alamos County Fire Department~~Los Alamos Fire Department (~~LACFD~~LAFD)

Supplemental emergency equipment available from the ~~LACFD~~LAFD may include, but is not limited to, some or all of the following:

Fire engines
Mini-tankers with compressed air foam capability
Modular ambulances
Rescue vehicles
Crash-Fire-Rescue (CFR) unit
Water tankers with compressed air foam capability
Incident Command vehicles
SCBA units
SCBA air tanks
Remote air system for confined space rescue
Ladder truck with pump

Personnel with Hazardous Material First Response Operational Level training
Personnel with Basic Emergency Medical Technician training
Personnel with Advanced Life Support training

Supplemental Emergency Equipment and Personnel from Maintenance and Site Services (MSS)

Supplemental emergency equipment may include, but is not limited to, some or all of the following:

TRANSPORTATION EQUIPMENT

Pickups, 1/2 through 3/4 ton
Trucks, 1 through 3 ton
Vans, panels, and carryalls
Buses

SPECIAL EQUIPMENT

Graders
Loaders
Snowplows and snow blowers
Bulldozers
Scrapers
Semitrailers
Chain saws
Street flushers
Mobile transceivers
Generators
Handsets (2-way)
Pageboys (1-way)
Welders
Mobile site logistics support equipment/associated heavy equipment
Fully equipped spill response unit
Utilities equipment and emergency utility support
Fuel trucks
Light banks
Dump trucks
Backhoes
Potable water trucks
Cranes
Forklifts

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TRAINED PERSONNEL

Heavy equipment operators
Dispatchers
Mechanics
Power saw operators
Radio and telephone operators
Truck drivers
Rodent/Pest Control personnel
HAZMAT response/cleanup personnel
Welders
Electricians

Emergency Equipment and Personnel at the Occupational Medicine Clinic Occupational Medicine Group (~~HSR-2~~OM)

At TA-3 (SM-1411) Central Clinic

Emergency equipment and supplies available from ~~HSR-2~~OM may include, but are not limited to, some or all of the following:

PERSONNEL

Physicians
Physician's Assistants
Nurses
X-ray Technician
Clinical Laboratory Technicians
Clinical Testing Technicians
Clinical Psychologist
Counselors

SPECIAL EQUIPMENT-PORTABLE

Multichannel emergency receiver-base station
Two-way radio on the State Med Net, the Facility Emergency Management channel, and the Facility Health-Safety Net
Cardiac monitors and defibrillators
Crash cart emergency equipment with E-tank oxygen (O_2)
Portable physicians' bag with medications
Portable suction unit
Portable stretchers (ambulance, gurney, folding)
Wheelchairs
O_2 tanks
Manual resuscitators

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Intravenous (IV) stands
IV solutions
Otoscopes/ophthalmoscopes
Portable sphygmomanometers
Stethoscopes
Anticontamination apparel
Eye irrigation solution
First-aid kits
Extrication and cervical collars, crutches, canes
Suture sets
Protective apparel
Morgan lens irrigation sets
Decontamination equipment (portabl

SUPPLIES-GENERAL

Bedding/pillows
Rescue blankets
Burn blankets
Thermal/icing pouches
Multitrauma dressings, surgical and first aid supplies
Disposable ice bags

SPECIAL FACILITIES - NONPORTABLE

Fully equipped decontamination room at the Occupational Medicine Clinic
Completely equipped emergency room with ambulance entrance
Emergency lighting system
Complete X-ray suite
Protective clothing and wound counters
12-lead electrocardiograph
Fully equipped crash cart with Life Pak defibrillator/external pacer, intubation equipment, emergency medications
Fully equipped decontamination room at Los Alamos Medical Center (LAMC) adjacent to the LAMC emergency room

TRANSPORTATION

Full ambulance service is available within minutes to the central facility.

COMMUNICATION

Base station on State Medical Net and ~~Los Alamos County Fire Department~~Los Alamos Fire Department trunked radio system.

Table D-3
Waste Analysis Parameters and Test Methods[a]

Parameter	Test Method	Reference[b]
Ignitability	Pensky-Martens closed-cup method	(L, S) SW1010, SW1020A
	Setaflash closed-cup method	(S) SW1030
	Ignitability of solids	(L, S) ASTM D93-02a
Reactivity	Test method to determine hydrogen cyanide released from waste	(L, S) SW, Section 7.3
	Test method to determine hydrogen sulfide released from waste	
Corrosivity	Electrometric (pH of aqueous solution)	(L) SW9040B
Toxicity characteristic (TC)	Toxicity characteristic leaching procedure (TCLP) extraction	(S) SW1311
TC Metals:	Graphite furnace atomic absorption (AA) spectroscopy, gaseous hydride AA, or direct aspiration AA, manual cold-vapor technique	
Arsenic		(L, S) SW7060A, SW7061A
Barium		(L, S) SW7080A, SW7081
Cadmium		(L, S) SW7130, SW7131A
Chromium		(L, S) SW7190, SW7191
Lead		(L, S) SW7420, SW7421
Selenium		(L, S) SW7740, SW7741A
Silver		(L, S) SW7760A, SW7761
Mercury	Manual cold-vapor technique	(L) SW7470A, (S) SW7471A
Volatile organics	Gas chromatography (GC)/mass spectrometry (MS)	(L, S) SW8260B
	GC/MS capillary column technique	
Semivolatile organics	GC/MS	(L, S) SW8270C[c]
	GC/MS capillary column technique	(S) SW8275A
Organochlorine Pesticides	Thermal extraction/GC/MS	(L, S) SW8081A
Chlorinated Herbicides	GC	(L, S) SW8151A
Cyanide, free and total	Distillation and colorimetric ultraviolet	(L, S) SW9010B, SW9012A
Total chromium	Colorimetric method for hexavalent chromium	(L, S) SW7196A
Sulfide	Colorimetric titration	(L, S) SW9030B

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Table D-3 (Continued)

Parameter	Test Method	Reference[b]
Total RCRA metals[c,d]	Acid digestion	(L) SW3010A, (S) SW3050B
	Inductively coupled plasma atomic emission spectroscopy	(L, S) SW6010B
Arsenic		(L, S) SW6010B
Barium		(L, S) SW6010B
Cadmium		(L, S) SW6010B
Chromium		(L, S) SW6010B
Lead		(L, S) SW6010B
Selenium		(L, S) SW6010B
Silver		(L, S) SW6010B
Mercury	Manual cold-vapor technique	(L) SW7470A, (S) SW7471A
Free liquids	Paint Filter Liquids Test	(L, S) SW9095A

[a] At Los Alamos National Laboratory, current analytical capabilities include limited analyses of mixed waste samples. These analyses include gross alpha, beta, and gamma screening.
[b] "A" (e.g., A006) refers to U.S. Environmental Protection Agency, 1984, "Sampling and Analysis Methods for Hazardous Waste Combustion," *EPA-600/8-84-002*.
"ASTM" refers to American Society for Testing and Materials standards.
"SW" refers to U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
(L) refers to liquid waste.
(S) refers to solid waste.
[c] See also atomic absorption methods. Total metals may be substituted for TCLP metals, if appropriate.
[d] RCRA = Resource Conservation and Recovery Act.

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Table D-4

Evacuation Determination and Re-Entry Conditions

Reason for Evacuation	Evacuation Determination Made by	Reentry Conditions[a]
Fire	[1]Fire or evacuation alarm, Group Leader or alternate, Lead Engineer, Senior Staff Member present, Senior Technician, or Emergency Manager	Following survey by the person designated by the IC[b]
Explosion	Same as 1 above	Same as above
Loss of ventilation	[2]Group Leader or alternate, Senior Staff Member, Lead Engineer, or Senior Technician, or Emergency Manager	Same as above
Loss of electric power	Same as 2 above	Same as above
Extensive contamination	Same as 2 above or health physics representative	Same as above
Airborne contamination	Same as 2 above or Radiation Monitor	Same as above
Escape or release of toxic or hazardous gas or fumes	Group Leader or alternate, Senior Staff Member, Lead Engineer, Senior Technician, or Emergency Manager	Same as above
Bomb or bomb threat	~~EM&R~~EM[c] or security personnel , R&D[d] Section Leader or alternate, Senior Staff Member, or Lead Engineer	Same as above

[a] All reentries are authorized by the ~~EM&R~~EM Incident Commander.
[b] "IC" refers to the Incident Commander as defined in 29 CFR § 1910.120.
[c] "~~EM&R~~EM" refers to the Emergency Management ~~and Response Office~~Group.
[d] "R&D" refers to the Research and Development Section

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~~**Figure D-1**~~

~~**General Hazardous and Mixed Waste Emergency Notification Structure**~~

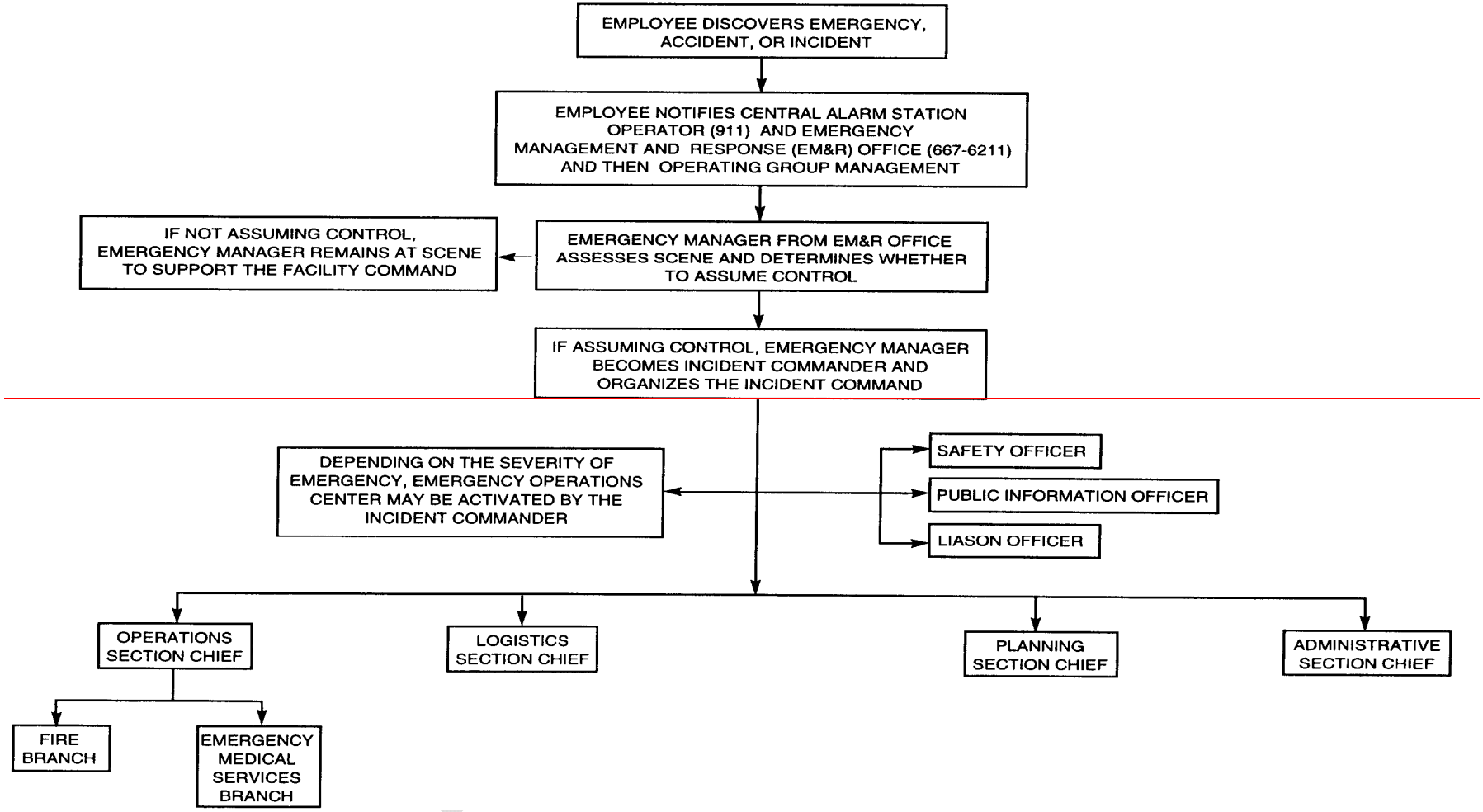
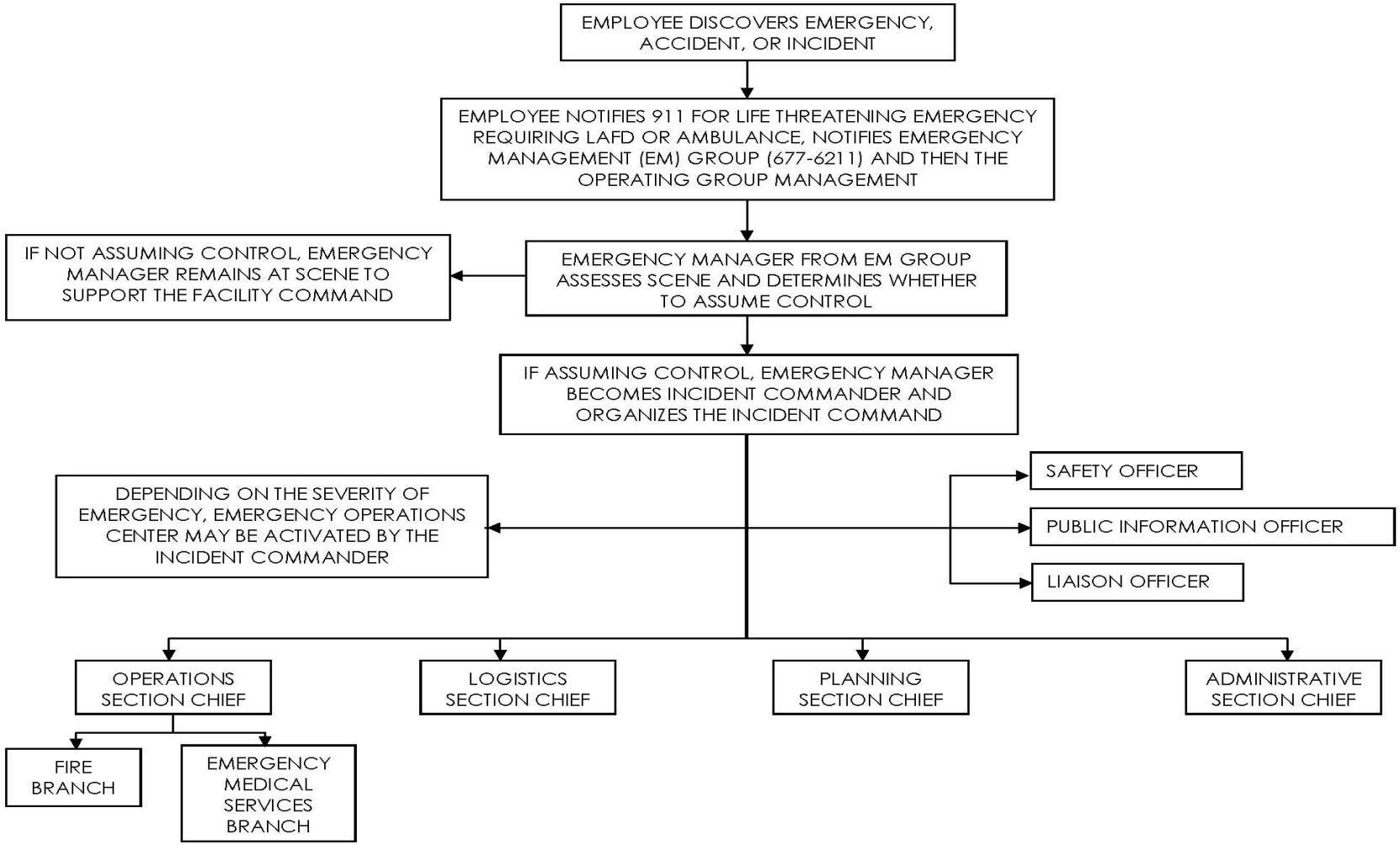


Figure D-1

General Hazardous Waste Emergency Notification Structure



TA-3

ATTACHMENT D

CONTINGENCY PLAN

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TA-3

ATTACHMENT D

CONTINGENCY PLAN

Specific information on emergency response resources and release prevention/mitigation at TA-3 is provided below.

The CMR Building at the Facility has a facility-specific Emergency Management Plan (EMP) to ensure that emergency planning and preparedness for the CMR Building are commensurate with the facility and the nature of work performed there and to provide sufficient subject matter experts at the facility, should an emergency occur.

The EMP establishes the CMR Facility Emergency Response Organization, which is comprised of a facility Emergency Response Team (ERT), Facility Incident Command (FIC), and the CMR Operations Center. The CMR ERT is a 15 - 20 member group of volunteer facility personnel trained to provide initial response to emergencies. The FIC is comprised of division and line managers and key personnel who respond to pre-designated locations for the purpose of initial command and control of events that occur at CMR Building emergencies. The CMR Operations Center is the emergency communications focal point and has the responsibility of development and maintenance of alarm response instructions, notification lists, and call-out lists. When mitigation of the emergency is beyond the capabilities of CMR or when injuries occur or could potentially occur due to the emergency, EM is required to respond.

"The CMR Facility Emergency Management Plan Training for CMR Workers" (LANL, 1999), includes information on emergency equipment (see Table D-1 of this Attachment Section); evacuation routes and primary and secondary evacuation assembly areas; and evacuation procedures for the FIC, persons wearing anti-C clothing, and persons in non-anti-C clothing. The CMR EMP also includes emergency categorization, lists of potential facility emergencies, their associated alarms, and the appropriate response to the emergency and/or the alarms. Evacuation routes, evacuation area locations, and emergency equipment are subject to change.

REFERENCES

LANL, 1999, "The CMR Facility Emergency Management Plan Training for CMR Workers," Los Alamos National Laboratory, Los Alamos, New Mexico.

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

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Table D-1

TA-3

Emergency Equipment

FIRE CONTROL EQUIPMENT

Dry chemical fire extinguishers are available in Rooms 9010, 9020, and 9030.

Description of General Capabilities:
Each fire extinguisher has a 10-pound minimum capacity and may be used by any qualified employee in the event of a small fire.

Nine fire hydrants are located around the outside perimeter of Technical Area (TA) 3, Building 29 (TA-3-29). The nearest fire hydrants to Rooms 9010, 9020, and 9030 are located on the south side of Wing 9 and west of Wing 5.

Description of General Capabilities:
The fire hydrants supply water at an adequate volume and pressure to satisfy the requirements of 40 CFR § 264.32(d).

Fire alarm pull boxes are located in Rooms 9010 and 9020.

Description of General Capabilities:
Manually-operated fire alarms may be activated by any employee in the event of fire to notify the ~~Los Alamos County Fire Department~~Los Alamos Fire Department (~~LACFD~~LAFD) and security personnel.

Sprinkler systems are located in Rooms 9010, 9020, and 9030.

Automatic thermal alarm systems are located in Rooms 9010, 9020, and 9030.

Description of General Capabilities:
The sprinkler systems and thermal alarm systems are heat activated. Security personnel and the ~~LACFD~~LAFD are alerted when a system has been activated.

SPILL CONTROL EQUIPMENT

Spill control kits are located in Rooms 9010, 9020, and 9030. Spill kits include (but are not limited to) sorbent pillows, and/or absorbent.

Description of General Capabilities:
Sorbent is used in the event of a small spill.

COMMUNICATION EQUIPMENT

Telephones are located in the north enclosure of Room 9010, in Room 9020, and in Room 9030.

Paging phones and evacuation alarms are located in Rooms 9010, 9020, and 9030.

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Description of General Capabilities:
Telephones are used for internal and external communication and have paging capabilities. The evacuation alarm is a pulsating sound that can be heard over the public address system. The fire alarm is a double slow-whoop sound.

DECONTAMINATION EQUIPMENT

Emergency shower and eyewash stations are located in the two enclosures in Rooms 9010, 9020, and in Room 9030.

Material safety data sheets (MSDS) are available hard copy or via online database.

Description of General Capabilities:
Emergency shower and eyewash stations are used by personnel who receive a chemical splash to the skin or eyes. Specific MSDSs for the chemicals should be obtained prior to working with hazardous or mixed waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT

Personnel at TA-3-29 are required to use appropriate personal protective equipment (PPE) to protect themselves from hazards found in the workplace under normal conditions. This PPE may include gloves, steel-toed shoes, and safety glasses. Additional PPE may be required during an unusual hazardous situation or during sampling activities.

Self-contained breathing apparatus are available in hallway outside of Room A130 (Administrative Wing).

Room 9102 is a change room with protective clothing available.

Full-mask negative pressure respirators are available as needed; radioactive particulate filters are available.

OTHER

See Table D-2 of this Contingency Plan for equipment available in the Hazardous Materials Response Group vehicles and trailers.

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TA-16

ATTACHMENT D

CONTINGENCY PLAN

DRAFT

TA-16
ATTACHMENT D
CONTINGENCY PLAN

Specific information on emergency response resources and release prevention/mitigation at TA-16 is provided below. Emergency equipment currently available for use at the TA-16 Burn Ground is included as Table D-1 below.

D.1 EMERGE NCY RESPONSE RESOURCES

The High Explosives Engineering personnel are responsible for the TA-16 OB units. Appropriate personnel have been trained in emergency procedures.

D.2 RESPONSI BILITY

At TA-16, High Explosives Engineering personnel are responsible for correction of a nonsudden release from the TA-16 OB units if the correction can be performed safely with normal maintenance and management procedures. Personnel from the Emergency Management ~~and Response Office~~Group 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 New Mexico Environment Department.

D.3 REMEDI AL ACTION

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. These remedial actions may 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.

High Explosives Engineering personnel conduct regularly scheduled inspections at TA-16 to detect deterioration and/or failure of containment at the TA-16 OB units. If an inspection reveals deterioration or failure, personnel ensure that maintenance or replacement is performed, as appropriate.

D.4 REFE RENCES

LANL, 2002, "Los Alamos National Laboratory General Part B Permit Renewal Application", Revision 2.0, August 2002, LA-UR-03-5923, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 2003, "Los Alamos National Laboratory Technical Area 16 Part B Permit Renewal Application", Revision 4.0, June 2003, LA-UR-03-3903, Los Alamos National Laboratory, Los Alamos, New Mexico.

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TABLE D-1

TA-16

Emergency Equipment

FIRE CONTROL EQUIPMENT

Fire extinguishers are located at or in:

Tank-truck garage (TA-16-1507)
Control Building (TA-16-389)
High Explosives Wastewater Treatment Facility (HEWTF) (TA-16-1508)
Each truck used to transport high explosives

General Capabilities
These portable units may be used by any properly trained employee in the event of fire.

Seven fire hydrants are located at the TA-16 Burn Ground.

General Capabilities
The fire hydrants will supply water at adequate volume and pressure to satisfy the requirements of 40 CFR § 264.32(d).

Water spigots are located at TA-16-388 and TA-16-399.

A fire alarm pull station is located at the HEWTF.

The Central Alarm Station is notified before all open burning operations. In dry conditions, when operations may result in a grass fire, the ~~Los Alamos County Fire Department~~Los Alamos Fire Department is notified and requested to prepare to respond or stage onsite during the burn.

SPILL CONTROL

Portable berms to contain spills are stored in an all-weather cabinet near the center of the TA-16 Burn Ground, at the less-than-90-day storage area (TA-16-386), and beside the Control Building.

COMMUNICATION EQUIPMENT

Telephones are available at the Control Building, at the HEWTF, and at the railroad gate at the entrance to the Burn Ground.

General Capabilities
Telephones for internal and external communication are available for use by all employees.

DECONTAMINATION EQUIPMENT

Eyewash stations are located in the tank-truck garage and in the HEWTF.

Water spigots with hoses attached are available at the TA-16-388 Flash Pad/Burn Tray and the TA-16-399 HE Burn Tray for general wash down.

Material Safety Data Sheets (MSDS) are available at the Control Building.

General Capabilities

Eyewashes are used by personnel who receive a chemical splash to the eyes. MSDSs for the chemical(s) should be obtained prior to working with hazardous waste or hazardous material to determine if the application water is indicated for decontamination. The MSDSs are also maintained to provide information during emergency response.

PERSONNEL PROTECTION EQUIPMENT

Respirators, coveralls, and safety glasses are available for TA-16 personnel during waste-handling operations.

All vehicles are equipped with first-aid kits.

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TA-50

ATTACHMENT D

CONTINGENCY PLAN

DRAFT

TA-50
ATTACHMENT D
CONTINGENCY PLAN

Specific information on emergency response resources and release prevention/mitigation at TA-50 is provided below.

Emergency equipment currently available for use at TA-50 CSUs are included in Table D-1 below. A list of emergency equipment (including spill equipment) available from the ~~Hazardous Materials~~ Emergency ~~Response~~ Management Group is presented in Table D-1 in this Attachment.

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

REFERENCES

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

LANL, 2002, "Los Alamos National Laboratory Technical Area 50 Part B Permit Renewal Application", Revision 3.0, August 2002, LA-UR-02-4739, Los Alamos National Laboratory, Los Alamos, New Mexico.

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Table D-1

TA-50

EMERGENCY EQUIPMENT

FIRE CONTROL EQUIPMENT

- **FIRE EXTINGUISHERS**

  Description of General Capabilities
  The fire extinguishers are portable, manually operated units and may be used by any employee in case of fire. They consist of Class ABC or BC rated.

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

  1 fire extinguisher is located at the TA-50-69, Outdoor CSU

- **FIRE AL ARM PUL L BOXES CONNE CTED TO THE CENTRAL AL ARM STATION**

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

  Locations
  Three fire alarm pull stations are located in the TA-50-69, Indoor CSU. Personnel working at the TA-50-69, Outdoor CSU may use the pull stations at TA-50-69 in the event of a fire.

- **AUTOMATIC FIRE SUPPRESSION SYSTEM**

  Description of General Capabilities
  A wet-pipe automatic sprinkler system that is hydraulically designed for ordinary hazard Group II coverage is in place throughout TA-50-69. This system is activated at 100°C (212°F).

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

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- **FIRE HYDRANT**

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

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

SPILL CONTROL EQUIPMENT

- **SPILL CONTROL EQUIPMENT**

  Description of General Capabilities
  The spill control kits may contain items such as absorbents (i.e., pillows and pigs) or weighted tarps. The Emergency Management and Response Group provides additional spill control and clean up equipment as needed.

  Spill Control Kit Location
  The spill kits are located in TA-50-69 and at the TA-50-69 Outdoor CSU

COMMUNICATION EQUIPMENT

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

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

DECONTAMINATION EQUIPMENT

- **SAFETY SHOWERS**

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

  Location of Safety Showers
  A safety shower is located in TA-50-69, Room 102. One standard shower is located adjacent to the change room in TA-50-69.

- **EYEWASHES**

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

Location of Eyewashes and Material Safety Data Sheets
An eyewash is located in the TA-50-69, Indoor CSU (Room 102). A portable eyewash station will be available during active waste management operations at the Outdoor CSU if waste with free liquids is being managed.

- **PERSONAL PROTECTIVE EQUIPMENT**

Appropriate personal protective equipment (PPE) will be worn to protect from hazards found in the workplace under normal conditions. This PPE may include gloves, steel-toed shoes, and safety glasses. Additional PPE may be required during an unusual hazardous situation and may be found in the spill kits at various locations throughout the site.

- **OTHER**

Continuous air monitors, giraffe monitors, or other appropriated air monitoring equipment (as determine by health physics personnel) may be located in the container storage units for detection of airborne radioactive constituents.

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TA-54

ATTACHMENT D

CONTINGENCY PLAN

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TA-54
ATTACHMENT D
CONTINGENCY PLAN

Specific information on emergency response resources and release prevention/mitigation at TA-54 is provided below.

Listings of emergency equipment currently available for use at Area L, Area G, and TA-54 West are presented in Tables D-1 through D-3 below.

REFERENCES

LANL, 2002, "Los Alamos National Laboratory General Part B Permit Renewal Application", Revision 2.0, August 2002, LA-UR-03-5923, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 2003, "Los Alamos National Laboratory Technical Area 54 Part B Permit Renewal Application", Revision 3.0, June 2003, LA-UR-03-3579, Los Alamos National Laboratory, Los Alamos, New Mexico.

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TABLE D-1

TA-54 AREA L

Emergency Equipment

FIRE CONTROL EQUIPMENT

Class ABC and BC rated fire extinguishers are located at Area L. Class D rated fire extinguishers are available at Area L if combustible metals are being managed. A dry-pipe sprinkler system is located at TA-54-215.

Dry chemical fire-suppression systems are located in storage sheds TA-54-68, TA-54-69, and TA-54-70.

> Description of General Capabilities:
> Fire extinguishers may be used by any qualified employee in the event of a small fire. The automatic dry-pipe sprinkler system is heat activated. Security personnel and the ~~Los Alamos County Fire Department~~Los Alamos Fire Department (~~LACFD~~LAFD) are alerted when this system has been activated.

Fire alarm pull boxes are located inside TA-54-37, TA-54-39, TA-54-51, TA-54-60, TA-54-117, TA-54-210, and TA-54-221.

> Description of General Capabilities:
> Fire alarms may be activated by any employee in the event of a fire to notify the ~~LACFD~~LAFD and security personnel.

Fire hydrants are located near the main site entrance to Area L and at the southeast corner of TA-54-62 inside Area L. These fire hydrants supply water at an adequate volume and pressure to satisfy 40 CFR § 264.32(d).

Freeze-proof faucets are located east of TA-54-31.

SPILL CONTROL EQUIPMENT

Spill equipment at TA-54 Area L includes the following:

- Shovels
- Oversized drums
- Absorbent (various locations on site)
- Heavy equipment from Area G available for any emergencies at Area L

Spill kits are located throughout Area L. Each kit includes bags of absorbent, caustic neutralizer, acid neutralizer, and an inventory of tools and supplies.

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COMMUNICATION EQUIPMENT

Alpha numeric emergency pagers are given to employees working in the area. Telephones are located in TA-54-32, TA-54-55, TA-54-62, and TA-54-1058.

Fire alarm pull boxes are locate at TA-54-215

Emergency paging system-loud speaker located throughout the site. Evacuation alarms are located adjacent to the fenceline crash gates at Area L, at the northeast end of TA-54-32, the exterior west end of TA-54-215 and at TA-54-62.

Additional equipment includes two-way radios and cellular telephones.

Description of General Capabilities:
External and internal Laboratory communications which may be used in emergency situations are listed.
Fire alarm may be activated by any employee in the event of a fire to notify the ~~LACFD~~LAFD and security personnel.
Employees can be notified of an emergency situation and appropriate response actions through the use of a text message sent on the emergency alpha-numeric pagers.
The evacuation alarm is a pulsating sound that can be heard throughout Area L. The fire alarm is a double slow-whoop sound.
The emergency paging system can be utilized to alert workers of an emergency situation as well as appropriate response actions.

DECONTAMINATION EQUIPMENT

Emergency shower and eyewash stations are located immediately east of TA-54-31, at TA-54-215, at TA-54-35, and at TA-54-39.

Material Safety Data Sheets (MSDS) are available hard copy or via online database at the facility.

Description of General Capabilities:
Emergency shower and eyewash stations are used by personnel who receive a chemical splash to the skin or eyes. Specific MSDSs for the chemical(s) should be obtained prior to working with the chemical to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT

Personnel at Area L are required to use appropriate personal protective equipment (PPE) to protect themselves from the hazards found in the workplace under normal conditions. This PPE may include gloves, steel-toed shoes, and safety glasses. Additional PPE may be required during an unusual hazardous situation or during sampling activities.

Spill kits throughout Area L may contain PPE items such as: gloves, goggles, safety glasses, coveralls, and face shields.

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Table D-2

TA-54 AREA G

Emergency Equipment

FIRE CONTROL EQUIPMENT

ABC and/or BC rated fire extinguishers are available at TA-54-8, TA-54-33, TA-54-48, TA-54-49, TA-54-153, TA-54-224, TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, TA-54-283, TA-54-375, and TA-54-412, and on Pads 9 & 10.

> Description of General Capabilities:
> These portable, manually operated fire extinguishers may be used by any qualified employee in the event of a small fire. For larger fires, security personnel and the ~~Los Alamos County Fire Department~~Los Alamos Fire Department (~~LACFD~~LAFD) are alerted.

Flame or smoke detection equipment and fire alarm pull stations will be located within structures at TA-54-226, TA-54-229, TA-54-230, TA-54-231, and TA-54-232.

Dry-chemical fire suppression systems are available at TA-54-1027, TA-54-1028, TA-54-1030, and TA-54-1041.

A dry-pipe fire suppression system is available at TA-54-412.

Fire alarm pull stations are available at TA-54-33, TA-54-48, TA-54-49, TA-54-153, TA-54-224, TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, TA-54-283, TA-54-375, and TA-54-412.

> Description of General Capabilities:
> Fire alarms may be activated by any employee in the event of a fire to notify the ~~LACFD~~LAFD and security personnel. Security personnel and ~~LACFD~~LAFD are also notified upon activation of the flame or smoke detectors.

Several fire hydrants are located in Area G. These fire hydrants will supply water at an adequate volume and pressure to satisfy the requirements of 40 CFR 264.32(d)

SPILL CONTROL EQUIPMENT

Spill control stations and/or portable spill kits are located at TA-54-8, TA-54-33, TA-54-48, TA-54-49, TA-54-153, TA-54-224, TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, TA-54-283, TA-54-375, and TA-54-412.

Each spill kit generally includes bags of absorbent and an inventory of tools and supplies.

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COMMUNICATION EQUIPMENT

Alpha-numeric emergency pagers are given to employees working in the area.

Emergency paging system- loud speakers located throughout the site.

Evacuation alarm buttons are located at or near TA-54-33, TA-54-48, TA-54-49, TA-54-153, TA-54-224, TA-54-226, TA-54-229, TA-54-230, TA-54-231, TA-54-232, TA-54-283, TA-54-375, TA-54-412, Pads 9 & 10 and at various muster stations.

Additional equipment includes portable two-way radios and cellular telephones.

> Description of General Capabilities:
> Loud speakers, telephones and alarms are located throughout Area G. Paging telephones are equipped with public address capabilities. Evacuation alarms have horns mounted on telephone poles throughout Area G. The evacuation alarm is a is an audible alarm that can be heard throughout Area G. Employees can be notified of an emergency situation and appropriate response action through the use of a text message sent on the emergency alpha-numeric pagers. The emergency paging system can be utilized to alert workers of an emergency situation as well as appropriate response actions.

DECONTAMINATION EQUIPMENT

Portable eyewash stations are located at TA-54 CSUs during waste management operations involving free liquids.

One permanent, hard-plumbed eyewash station and a safety shower is located in TA-54-33.

Material Safety Data Sheets (MSDS) are available hard copy or via online database.

> Description of General Capabilities:
> Emergency shower and eyewash stations are used by personnel who receive a chemical splash to the skin or eyes. Specific MSDSs for the chemical(s) being managed should be obtained prior to working with hazardous or mixed waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT

Personnel at Area G are required to use appropriate personal protective equipment (PPE) to protect themselves from the hazards found in the workplace under normal conditions. This PPE may include gloves, steel-toed shoes, and safety glasses. Additional PPE may be required during an unusual hazardous situation and can be found in the spill kits or at various locations throughout the site.

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OTHER

Continuous air monitors and giraffe monitors (or other appropriate air monitoring equipment) are located in many of the container storage units for detection of airborne radioactive constituents.

Heavy equipment available on site includes:

- Scraper
- Back hoe
- Bulldozer
- Front-end loader

Vehicles available to evacuate personnel from Area G include:

- All-terrain vehicles
- Pickup truck
- Flat-bed truck
- Micro trucks
- Vans

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TABLE D-3

TA-54 WEST

Emergency Equipment

FIRE CONTROL EQUIPMENT

ABC and/or BC fire extinguishers are available at TA-54-38 in the high and low bays and at the outdoor container storage unit.

> Description of General Capabilities:
> Fire extinguishers may be used by any employee in the event of a small fire. Security personnel and the ~~Los Alamos County Fire Department~~Los Alamos Fire Department (~~LACFD~~LAFD) are alerted when the automatic dry-pipe sprinkler system has been activated.

A dry-pipe sprinkler system is available throughout TA-54-38, including the loading dock area. The dry-pipe sprinkler system is heat activated in the high bay and at the loading dock. It is smoke activated in the low bay.

Fire alarm pull boxes are available inside TA-54-38 at the main entrance, in the high bay, and in the low bay.

> Description of General Capabilities:
> Fire alarms may be activated by any employee in the event of a fire to notify the ~~LACFD~~LAFD and security personnel.

A fire hydrant is located west of TA-54-38 near the entrance to TA-54 West. This fire hydrant supplies water at adequate volume and pressure to satisfy 40 CFR § 264.32(d).

A wall hydrant is located on the west side of TA-54-38.

Freeze-proof faucets are located on the west, south, and east sides of TA-54-38.

SPILL CONTROL EQUIPMENT

A mobile response kit is located at TA-54-38. The kit includes absorbent socks, pillows, and sheets; goggles; and large plastic bags.

COMMUNICATION EQUIPMENT

Evacuation alarm buttons are located at the high bay, the low bay, and the main entrance to TA-54-38.

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Telephones with public address (PA) capabilities are located in TA-54-38 in the high bay, in the low bay, and outside the main entrance. An emergency telephone is also located outside the main entrance.

Alpha-numeric emergency pagers are given to employees working in the area.

Additional equipment includes cellular phones.

Description of General Capabilities:
Telephones with PA capabilities for internal and external communication are available for use by any employee. Employees can be notified of an emergency situation and appropriate response actions through the use of a text message sent on the emergency alpha-numeric pagers. The evacuation alarm can be heard throughout TA-54-38 and TA-54-34. The fire alarm is a double slow-whoop sound. Fire and evacuation alarms are activated in the event of a fire or evacuation. The emergency paging phone can be utilized to alert workers of an emergency situation as well as appropriate response actions.

DECONTAMINATION EQUIPMENT

Safety showers and portable eyewash stations are located in TA-54-38 in the high bay and on the loading dock. The portable eyewash stations will be present during active ~~wate~~waste management operations involving free liquids at these locations.

Material Safety Data Sheets (MSDS) are available hard copy or via online database.

Description of General Capabilities:
Safety showers and eyewashes are used by personnel who receive a chemical splash to the skin or to the eyes. Specific MSDSs for the chemical(s) being managed should be obtained prior to working with mixed waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT

Personnel at TA-54 West are required to use appropriate personal protective equipment (PPE) to protect themselves from the hazards found in the workplace under normal conditions. This PPE includes gloves, steel-toed shoes, and safety glasses. Additional PPE may be required during an unusual hazardous situation and can be found in the spill kits or at various locations throughout the site or at adjacent TA-54 facilities.

Gloves and goggles are found in the spill kits located at TA-54-38.

All workers located within the operating limits of a crane (fixed or mobile) wear hard hats.

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TA-55

ATTACHMENT D

CONTINGENCY PLAN

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TA-55
ATTACHMENT D
CONTINGENCY PLAN

Specific information on emergency response resources and release prevention/mitigation at TA-55 is provided below.

Emergency equipment currently available for use at TA-55 are included as Tables D-1 through D-4 in this Attachment. A list of emergency equipment (including spill control equipment) available from the ~~Hazardous Materials~~Emeregency Response Group is presented in Table D-2 of this Attachment's General Section. Emergency equipment discussed in this Plan may be replaced and/or upgraded with functionally equivalent components and equipment as necessary for routine maintenance and repairs.

Hazardous waste spills are managed by type and severity of the incident. If a hazardous waste spill occurs, the ~~Incident Command~~ facility line management evaluates the type and severity of the spill and determines if assistance from the Facility's Emergency Management and Response Group is required. If not, the spill is managed internally by TA-55 personnel.

REFERENCES

LANL, 2002, "Los Alamos National Laboratory General Part B Permit Renewal Application", Revision 2.0, August 2002, LA-UR-03-5923, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 2003, "Los Alamos National Laboratory Technical Area 54 Part B Permit Renewal Application", Revision 3.0, June 2003, LA-UR-03-3579, Los Alamos National Laboratory, Los Alamos, New Mexico.

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Table D-1

TA-55 VAULT

Emergency Equipment

FIRE CONTROL EQUIPMENT

Dry-chemical fire extinguishers are located in Room 401.

> Description of General Capabilities:
> The fire extinguishers are portable, manually-operated units and can be used by any employee in case of fire. The fire extinguishers in Room 401 are for use only in case of fire outside the gloveboxes.

Fire alarm pull boxes and push button stations are available in Room 401.

> Description of General Capabilities:
> Fire alarms can be activated by any employee in the event of fire to notify the Central Alarm Station.

An automatic fire suppression sprinkler system is located in Room 401.

Automatic thermal alarms are located in the gloveboxes in Room 401.

Fire hydrants are located outdoors on the north, south, and west sides of TA-55-4.

SPILL CONTROL EQUIPMENT

Room 401 provides secondary containment for the storage tank system and cementation unit.

COMMUNICATION EQUIPMENT

Telephones are located in Room 401. The telephones are capable of handling incoming/outgoing calls and paging.

A telephone is located at each of the two west exit doors of TA-55-4.

Two-way radios are available from the Nuclear Materials Technology Facility Incident Command located at TA-55-3, Room 179, for personnel working in Room 401.

> Alarms at TA-55-4:
> The fire alarm is a zone-wide whooping sound. If a drop-box pushbutton station is used, a zone-wide, high-pitched constant tone will be activated and then switch to the standard whooping sound.

The evacuation alarm is a facility-wide mid-range pulsating tone.

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The continuous air monitor alarm is a local high-pitched pulsating tone.

The ventilation alarm is a local slow, repeating chime tone.

The public address system may also be used to announce an evacuation.

DECONTAMINATION EQUIPMENT

Safety showers and eyewash stations are located in Room 401.

> Description of General Capabilities:
> Safety showers and eyewashes are available for decontamination of personnel who receive a chemical splash to the skin or eyes.

Material Safety Data Sheets (MSDS) are available in Room 401 and at TA-55-4.

Specific MSDSs may be obtained prior to working with any hazardous waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT

Self-contained breathing apparatus (SCBA) are located in the southside hallway outside of Room 401, in the northside hallway of TA-55-4, and in TA-55-3, Room 179. The SCBAs are available for personnel working in or near Room 401.

Change/decontamination rooms with protective clothing available are located on the first floor of TA-55-4 and in TA-55-3. Protective clothing is also available in a locker located in the hallway near Room 401 for use by personnel working in or near Room 401.

Respirators located in TA-55-3 (Room 107) and in TA-55-4 (Room 515) are available for all personnel working in or near TA-55-4. Respirators are re-issued on a regular basis to TA-55-4 personnel for radiation work. These respirators are stored in the personnel's individual lockers. Combination gas canisters (particulate, organic, and acid) are available in TA-55-4 (Room 515).

OTHER:

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

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TABLE D-2

TA-55 Building 4 Basement

Emergency Equipment

FIRE CONTROL EQUIPMENT

Halon, dry chemical, and/or carbon dioxide fire extinguishers are available near B40, B05, K13, B45, and the Vault.

> Description of General Capabilities:
> The fire extinguishers are portable, manually-operated units and can be used by any employee in case of fire.

Fire alarm pull boxes are located at B05, K13, B45, the Vault, and on each side of the fire door.

> Description of General Capabilities:
> Fire alarms can be activated by any employee in the event of fire to notify the Central Alarm System.

An automatic fire suppression sprinkler system is located throughout the basement at TA-55-4, including the Vault and the office and corridor associated with the Vault.

Fire hydrants are located outdoors on the north, south, and west sides of TA-55-4.

SPILL CONTROL EQUIPMENT

Self-containment pallets or cabinets are provided for containers of liquid and/or potentially liquid-bearing wastes stored at B40, K13, and the Vault.

COMMUNICATION EQUIPMENT

Telephones and intercom stations are located throughout the basement of TA-55-4. The telephones are capable of handling both incoming and outgoing calls. The intercom system is connected to the TA-55-3 Operations Center and allows the Operations Center to easily mobilize emergency response support.

Two-way radios are available from the Nuclear Materials Technology Facility Incident Command located at TA-55-3, Room 179, for personnel working in the basement at TA-55-4.

Personal pagers are issued to and carried by assigned personnel working in the basement of TA-55-4. These pagers are accessed by telephone.

Alarms at TA-55-4:

The fire alarm is an area-wide whooping sound.

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The evacuation alarm is a facility-wide mid-range pulsating tone.

The continuous air monitor alarm is a local high-pitched pulsating tone.

The ventilation alarm is a local slow, repeating chime tone.

The public address system activated from the TA-55-3 Operations Center may be used to announce an evacuation.

A site-wide paging system activated from the TA-55-3 Operations Center can be heard throughout TA-55-4.

DECONTAMINATION EQUIPMENT

Eyewashes are located throughout the basement of TA-55-4.

> Description of General Capabilities:
> The eyewash stations are available for decontamination of personnel who receive a chemical splash to the eyes.

Safety showers are located near B40, K13 and in the office for the Vault.

> Description of General Capabilities:
> The safety showers are available for decontamination of personnel who receive a chemical splash to the skin.

Material Safety Data Sheets (MSDSs) are available at TA-55-41. Specific MSDSs may be obtained prior to working with any hazardous waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT

Change/decontamination rooms with protective clothing available are located on the first floor of TA-55-4 and in TA-55-3.

Respirators located in TA-55-4 and in TA-55-3 are available for all personnel working in or near TA-55-4. Particulate and toxic gas canisters are available in TA-55-4.

Self-contained breathing apparatus are located in the TA-55, Basement.

OTHER:

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

Forklifts stored in the basement are available for use in the basement and are stored near the north basement doorway.

TABLE D-3
TA-55 CONTAINER STORAGE PAD
Emergency Equipment

FIRE CONTROL EQUIPMENT

A dry chemical fire extinguisher is located on the Container Storage Pad.

> Description of General Capabilities:
> The fire extinguishers are portable, manually-operated units and can be used by any employee in case of fire.

Fire hydrants are located along the north, south, and west sides of TA-55-4.

One fire hydrant is located just south of the Container Storage Pad.

Fire alarm pull boxes are located in TA-55-42 at the northwest corner of TA-55-4.

One fire alarm pull box is located outside on the south side of TA-55-4.

COMMUNICATION EQUIPMENT

A telephone is located on the east side of TA-55-11, and additional phones are located in TA-55-185 and on the south side of TA-55-4.

Two-way radios are available from the Nuclear Materials Technology (NMT) Facility Incident Command located at TA-55-3, Room 179, for personnel working at the Container Storage Pad.

Personal pagers are issued to and carried by assigned personnel working at the Container Storage Pad. These pagers are accessed by telephone.

> Alarms at TA-55:
> The fire alarm is an area-wide whooping sound.
> The evacuation alarm is a facility-wide mid-range pulsating tone.

The public address (PA) system activated from the TA-55-3 Operations Center may be used to announce an evacuation. PA speakers are located on the west side of TA-55-4.

Two intercom systems to the TA-55-3 Operations Center are located on the south and north sides of TA-55-4.

DECONTAMINATION EQUIPMENT

A safety shower and eyewash station are located outdoors on the Container Storage Pad.

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Description of General Capabilities:
The safety shower and eyewash are available for personnel who receive a chemical splash to the skin or eyes.

Material Safety Data Sheets (MSDSs) are available at TA-55-2. Specific MSDSs may be obtained prior to working with any hazardous waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT

Change rooms with protective clothing available are located on the first floor of TA-55-4 and in TA-55-3.

Respirators are located in TA-55-4 and in TA-55-3 for all personnel working in or near TA-55-4.

OTHER:

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

Two forklifts are available for NMT-7 use.

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TABLE D-4

TA-55 BUILDING 185

Emergency Equipment

FIRE CONTROL EQUIPMENT:

Fire hydrants are located along the north, south, and west sides of TA-55, Building 4 (TA-55-4).

One fire alarm pull box is located inside TA-55-185.

Fire alarm pull boxes are located in TA-55, Building 42, at the northwest corner of TA-55-4.

One fire alarm pull box is located outside on the south side of TA-55-4.

COMMUNICATION EQUIPMENT:

One telephone is located inside TA-55-185.

A telephone is located on the east side of TA-55-11 and additional phones are located in TA-55-185 and on the south side of TA-55-4.

Two-way radios are available from the Nuclear Materials Technology (NMT) Facility Incident Command located at TA-55-3, Room 179, for personnel working at TA-55-185.

Personal pagers are issued to and carried by assigned personnel working at TA-55-185. These pagers are accessed by telephone.

Alarms at TA-55-4:
The fire alarm is an area-wide whooping sound.
The evacuation alarm is a facility-wide mid-range pulsating tone.

The pubic address (PA) system activated from the TA-55-3 Operations Center may be used to announce an evacuation.

PA speakers are located on the west side of TA-55-4 near TA-55-185. Intercom systems to the TA-55-3 Operations Center are located on the south and north sides of TA-55-4.

DECONTAMINATION EQUIPMENT:

TA-55-185 will be equipped with a portable safety shower and eyewash station before wastes are managed there.

PERSONAL PROTECTIVE EQUIPMENT:

Change rooms with protective clothing available are located in TA-55-3.

Respirators located in TA-55-4 and in TA-55-3 are available for all personnel working in or near TA-55-185.

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OTHER:

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

A forklift is available inside of TA-55-185.

Two forklifts are available to NMT-7.

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