STATE OF NEW MEXICO
BEFORE THE SECRETARY OF ENVIRONMENT

IN THE MATTER OF THE APPLICATION FOR A CLASS 3 MODIFICATION TO THE HAZARDOUS WASTE FACILITY PERMIT FOR THE WASTE ISOLATION PILOT PLANT, CARLSBAD, NEW MEXICO EPA ID NO. NM 4890139088	))))))	No. HWB 06-01 (M)

NOTICE OF FILING OF STIPULATION

The Hazardous Waste Bureau of the New Mexico Environment Department (NMED or the Department) hereby gives notice that NMED, the Carlsbad Field Office of the United States Department of Energy (DOE), Washington TRU Solutions, LLC (WTS) (DOE and WTS are together the "Permittees"), the New Mexico Attorney General, Southwest Research and Information Center (SRIC), Concerned Citizens for Nuclear Safety (CCNS), and Citizens for Alternatives to Radioactive Dumping (CARD) have entered into a Stipulation regarding language in the proposed Draft Permit for the Waste Isolation Pilot Plant issued on November 23, 2005 (Draft Permit). A copy of the signed Stipulation is attached hereto as Exhibit 1. The Stipulation recites that the signatories (with certain exceptions) agree to the Draft Permit with language changes as shown in Stipulation Exhibit A. It also recites that certain parties reserve their right to object to certain issues or language as set forth in Stipulation Exhibit B.

The Department, the Permittees, the Attorney General and SRIC agree to support the Draft Permit with the language changes shown on Stipulation Exhibit A.[1] CCNS and

[1] Please note that some pages of Stipulation Exhibit A, which will contain drawings or other figures, are currently blank. The actual drawings or figures to be inserted are at the back of Stipulation Exhibit A.

CARD reserve the right to object to limited issues or wording as specified in Stipulation Exhibit B - CCNS and Stipulation Exhibit B - CARD. The Department will also be informing other persons who requested a hearing in this matter that they may also agree to the Stipulation, and submit Stipulation Exhibit Bs showing no exceptions to Exhibit A, or state the specific issues or wording in the Draft Permit with the language changes shown on Stipulation Exhibit A that they oppose, if any. The Department will send out a letter explaining these options to persons who requested a hearing (attached hereto as Exhibit 2). The Department will be requesting that if a person wishes to agree to the Stipulation and submit a Stipulation Exhibit B indicating no exceptions, or showing the specific issues or wording in the Draft Permit with the language changes shown on Stipulation Exhibit A that they oppose, if any, that it be filed with the Hearing Clerk by the end of the hearing. Participation in the Stipulation is not required, and interested members of the public may participate in the hearing regardless of their participation in the Stipulation.

The Stipulation, and Stipulation Exhibits A, B - CCNS and B - CARD, will be posted on the NMED Hazardous Waste Bureau website. In addition, the Department will issue a press release notifying the public of the agreement and its contents.

Respectfully submitted,

NEW MEXICO ENVIRONMENT DEPARTMENT

Charles F. Noble

Charles F. Noble
Assistant General Counsel

STATE OF NEW MEXICO
BEFORE THE SECRETARY OF THE ENVIRONMENT

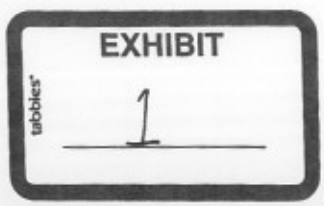
IN THE MATTER OF THE APPLICATION FOR A CLASS 3 MODIFICATION TO THE HAZARDOUS WASTE FACILITY PERMIT FOR THE WASTE ISOLATION PILOT PLANT CARLSBAD, NEW MEXICO EPA ID NO. NM4890139088

No. HWB 06-01(M)

STIPULATION ON CHANGES TO LANGUAGE IN THE DRAFT PERMIT FOR THE WASTE ISOLATION PILOT PLANT

This stipulation is a result of negotiations conducted by the New Mexico Environment Department (NMED) on the Draft Permit for the Waste Isolation Pilot Plant (WIPP) issued by NMED on November 23, 2005 (Draft Permit). The negotiations were conducted pursuant to 20.4.1.901.A(4) NMAC, and as requested by Southwest Research and Information Center (SRIC) and Concerned Citizens for Nuclear Safety (CCNS) on February 22, 2006. The undersigned individuals and organizations in support of this Stipulation (the Parties) state as follows:

1. On February 27, 2006, NMED mailed a letter to the Permittees and the 11 individuals and organizations who had submitted a notice of opposition and request for hearing. The letter stated that NMED was convening a meeting pursuant to 20.4.1.901.A(4) NMAC on March 9, 2006 and invited them to discuss and attempt to resolve the issues giving rise to the hearing requests. Meetings were held on March 9 and 10, 2006 among NMED, the WIPP Permittees and those individuals and organizations who attended in person or telephonically in response to the February 27, 2006 invitation. Additional negotiations were held on March 14-17, March 24, April 3-7, April 10-14, and May 3, 2006.



2. As a result of the negotiations, the Parties have prepared Exhibit A, which sets forth changes to the Draft Permit. The Parties agree to the language in Exhibit A shown in redline/strikeout format, except as provided in Paragraph 4. The Parties also agree to the unchanged language in the Draft Permit, except as provided in Paragraph 4.

3. The Parties agree to support and not to challenge or oppose the Draft Permit as changed by Exhibit A during the comment process, or during any hearing or appeal regarding the Draft Permit, except as provided in Paragraph 4. The Parties reserve the right to submit testimony in response to testimony inconsistent with Exhibit A or the unchanged language in the Draft Permit. If the Hearing Officer recommends or the Secretary issues a Final Permit that is significantly inconsistent with Exhibit A or the unchanged language in the Draft Permit, the Parties reserve all rights to oppose the recommendation or appeal the Final Permit.

4. Exhibit B identifies the Party and the specific language of or issues related to the Draft Permit as changed by Exhibit A to which that Party does not agree and preserves the Party's right to object, oppose, or propose alternative language. Except for language or issues as set forth in Exhibit B, the Party agrees not to challenge or oppose the Draft Permit as changed by Exhibit A during the comment process, or during any hearing or appeal regarding the Draft or Final Permit.

5. The Parties recognize that individuals or organizations who have not agreed to this Stipulation may support or oppose the Draft Permit and are not bound by this Stipulation.

Agreed to by:

DOE/WTS

Gloria J. Johnson, WTS

W. Michael Ryan for DOE

FOR DOE

CNRD

Trey for NMED 5/4/06

for NMED 5/3/06

for CCNS 5.4.06

Deputy General Counsel Patricia D. Madrid

EXHIBIT A

CHANGES TO DRAFT PERMIT

regulations. [20.4.1.900 NMAC (incorporating 40 CFR §§270.10(h) and 270.30(b))]

I.B.3. Permit Review

The Secretary shall review this Permit no later than five (5) years after the effective date of this Permit, and shall modify this Permit as necessary pursuant to Section 74-4-4.2 of the HWA and 20.4.1.900 NMAC (incorporating 40 CFR §270.41). Such modification(s) shall not extend the effective term of this Permit specified in Permit Condition I.E.2. [20.4.1.900 NMAC (incorporating 40 CFR §§270.41 and 270.50(b) and (d))]

I.C. SEVERABILITY

The provisions of this Permit are severable, and if any provision of this Permit, or the application of any provision of this Permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this Permit shall not be affected thereby. [40 CFR §124.16(a)(1) and (2)]

I.D. DEFINITIONS

Unless otherwise expressly provided herein, the terms used in this Permit shall have the meaning set forth in RCRA, HWA, and/or their implementing regulations.

I.D.1. Contact-handled Transuranic Mixed Waste

"Contact-handled transuranic mixed waste" means transuranic mixed waste with a surface dose rate not greater than 200 millirem per hour. [Pub. L. 102-579 (1992)]

I.D.2. Remote-handled Transuranic Mixed Waste

“Remote-handled transuranic mixed waste” means transuranic mixed waste with a surface dose rate of 200 millirem per hour or greater. For WIPP, the surface dose rate shall not exceed 1,000 rems per hour. [Pub. L. 102-579 (1992)]

I.D.3. Facility

"Facility" or "permitted facility" means the Waste Isolation Pilot Plant (**WIPP**) owned by the DOE and located approximately twenty six (26) miles east of Carlsbad, New Mexico, EPA I.D. Number NM4890139088. The WIPP facility comprises the entire complex within the WIPP Site Boundary as specified in the WIPP Land Withdrawal Act of 1992, Pub. L. 102-579 (1992), including all contiguous land, and structures, other appurtenances, and improvements on the Permittees' land, used for management, storage, or disposal of TRU mixed waste.

I.D.11. Waste Characterization

"Waste characterization" or "characterization" means the activities performed by the waste generator/storage sites to obtain information used by the Permittees to satisfy the general waste analysis requirements of 20.4.1.500 NMAC (incorporating 40 CFR §264.13(a)), ~~which can be met by applying acceptable knowledge, conducting sampling and analysis, or a combination of both~~. Characterization occurs before waste containers have been certified for disposal at WIPP.

I.D.12. Waste Confirmation

"Waste confirmation" or "confirmation" means the activities performed by the Permittees to satisfy the requirements specified in Section ~~311~~ 310 of Pub. L. 108-~~137~~447. Confirmation occurs after waste containers have been certified for disposal at WIPP.

~~I.D.13. Acceptable Knowledge~~

~~"Acceptable knowledge" or "AK" means the use of 1) process knowledge, 2) waste analysis data, and/or 3) records of analyses performed before the effective date of RCRA regulations to satisfy all or part of the waste characterization requirements of 40 CFR §264.13.~~

I.E. DUTIES AND REQUIREMENTS

I.E.1. Duty to Comply

The Permittees shall comply with all conditions of this Permit, except to the extent and for the duration such noncompliance is authorized in an emergency permit specified in 20.4.1.900 NMAC (incorporating 40 CFR §270.61). Any Permit noncompliance, except under the terms of an emergency permit, constitutes a violation of RCRA and/or HWA and is grounds for enforcement action; for Permit modification, suspension, or revocation; or for denial of a Permit modification or renewal application. [20.4.1.900 NMAC (incorporating 40 CFR §270.30(a))]

I.E.2. Permit Term

This Permit shall be effective for a fixed term not to exceed ten (10) years from the date of issuance as specified in the Permit certificate. [20.4.1.900 NMAC (incorporating 40 CFR §270.50(a))]

I.E.3. Duty to Reapply

If the Permittees wish to continue an activity regulated by this Permit after the expiration date of this Permit, the Permittees shall apply for and obtain a new Permit. The Permittees shall submit an application for a new Permit at least one hundred eighty (180) calendar days before the expiration date of this Permit. [20.4.1.900 NMAC (incorporating 40 CFR §§270.10(h), 270.30(b))]

I.E.15. Other Information

Whenever the Permittees become aware that they failed to submit any relevant facts in the Permit application, or submitted incorrect information in the Permit application or in any report to the Secretary, the Permittees shall promptly submit such facts or information in writing to the Secretary. [20.4.1.900 NMAC (incorporating 40 CFR §270.30(l)(11))]

I.F. SIGNATORY REQUIREMENT

The Permittees shall sign and certify, as specified in 20.4.1.900 NMAC (incorporating 40 CFR §270.11) all applications, reports required by this Permit, or information submitted to or requested by the Secretary. [20.4.1.900 NMAC (incorporating 40 CFR §270.30(k))]

I.G. REPORTS, NOTIFICATIONS, AND SUBMISSIONS TO THE SECRETARY

The Permittees shall submit, by certified mail or hand delivery, all reports, notifications, or other submissions which are submitted to or requested by the Secretary or required by this Permit, to:

Hazardous Waste Permits Program Manager
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505

Telephone Number: (505) 428-2500
Facsimile Number: (505) 428-2567

I.H. PUBLIC E-MAIL NOTIFICATION LIST

The Permittees shall develop and maintain an e-mail list to notify members of the public concerning actions identified in this Permit requiring e-mail notification. The Permittees shall provide a link on the WIPP Home Page <http://www.wipp.energy.gov> whereby members of the public may review the actions requiring e-mail notification and submit a request to be placed on this list.

I.I. CONFIDENTIAL INFORMATION

The Permittees may claim confidentiality for any information submitted to or requested by the Secretary or required by this Permit, to the extent authorized by Section 74-4-4.3(D) of the HWA and 20.4.1.900 NMAC (incorporating 40 CFR §270.12).

I.J. DOCUMENTS TO BE MAINTAINED AT THE FACILITY

The Permittees shall maintain at the facility, until closed as specified in Module II, the following documents and all amendments, revisions and modifications to these documents:

1. Waste Analysis Plan, as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.13(b)) and this Permit, and records and results of waste analyses performed as specified in 20.4.1.500 NMAC (incorporating 40 CFR §264.13).

2. Inspection schedules, as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.15(b)(2)) and this Permit, and records and results of inspections as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.15(d)).

3. Personnel training documents and records, as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.16(d)) and this Permit.

4. Contingency Plan, as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.53(a)) and this Permit, including summary reports and details of all incidents that require implementation of the contingency plan as specified in 20.4.1.500 NMAC (incorporating 40 CFR §264.56(j)).

5. Operating record, as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.73) and this Permit.

6. Closure Plan, as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.112(a)) and this Permit.

7. Post-Closure Plan as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.118(a)) and this Permit.

8. Procedures for limiting air emissions, as required by 20.4.1.500 and .900 NMAC (incorporating 40 CFR §§264.601(c) and 270.23(a)(2)) and this Permit.

9. All other documents required by Module I, Permit Condition I.E.10, and Module II.

I.K. DOCUMENTS TO BE SUBMITTED TO THE SECRETARY

The Permittees shall submit the Mine Ventilation Rate Monitoring Plan to the Secretary in accordance with the compliance schedule specified in Permit Condition IV.J.

I.L. DISPUTE RESOLUTION

I.L.1. Applicability

In the event the Permittees disagree, in whole or in part, with either an action on a final audit report ~~determination~~ by NMED (as specified in Permit Condition II.C.2.d) or an evaluation by NMED of the Permittees' provisional approval of an AK Sufficiency Determination Request for a particular waste stream (as specified in Permit Attachment B), the Permittees may seek dispute resolution. The dispute resolution procedure in this Permit Condition shall be the exclusive mechanism for resolving disputes related to NMED's final audit report

action ~~determination~~ or a determination that the Permittees' provisional approval for a particular waste stream is inadequate.

I.L.2. Notice to NMED

To invoke dispute resolution, the Permittees shall notify NMED in writing within seven (7) calendar days of receipt of the action or determination in dispute. Such notice shall be sent to the Hazardous Waste Bureau Chief and must set forth the specific matters in dispute, the position the Permittees assert should be adopted, a detailed explanation for the Permittees' position, and any other matters considered necessary for the dispute resolution. For AK Sufficiency Determination disputes, the Permittees shall also submit all factual data, analysis, opinion, and other documentation upon which they relied for their provisional approval, and any other information that supports their position. NMED shall acknowledge receipt of notification by e-mail sent to the Permittees' representative as designated in their written notification.

I.L.3. Tier I - Informal Negotiations

The Permittees and NMED shall make all reasonable, good faith efforts to informally resolve disputes related to NMED's determination. The Permittees and NMED shall meet or teleconference within fifteen (15) calendar days from NMED's receipt of ~~notification~~ notice to commence negotiations to resolve the dispute. The Permittees and NMED shall have thirty (30) calendar days from NMED's receipt of ~~notification~~ notice to resolve the dispute. ~~In the event~~ If an agreement is reached, NMED shall promptly inform the Permittees of the terms of the agreement in writing. The ~~the~~ Permittees shall comply with the terms of such agreement or, if appropriate, submit a revised submittal and implement the same in accordance with ~~, and within the time frame specified in,~~ such agreement. If an agreement is not reached, NMED shall promptly inform the Permittees in writing that an agreement has not been reached.

I.L.4. Tier II - Final Decision of the Secretary

In the event agreement is not reached within the thirty (30) calendar day period, the Permittees may submit a written Request for Final Decision to the Secretary. The Request must be submitted within ~~five (5)~~ seven (7) calendar days after receipt of notification from NMED that an agreement under Tier I was not reached ~~of the end of Tier I Informal Negotiation period~~. The Secretary will notify the Permittees in writing of the decision on the dispute, and the Permittees shall comply with the terms and conditions of the decision. Such decision shall be the final resolution of the dispute and shall be ~~an~~ enforceable ~~Order~~ under this Permit. ~~The Permittees shall implement the decision in accordance with, and within the time frame specified in, such decision.~~

I.L.5. Actions Not Affected by Dispute

With the exception of those matters under dispute, the Permittees shall proceed to take any action required by those portions of the submission and of this Permit that NMED determines are not affected by the dispute.

I.L.6. E-Mail Notifications

If the Permittees submit a notice to NMED pursuant to Permit Condition I.L.2, the Permittees shall concurrently post a link to the notice on the WIPP Home Page, and inform those on the e-mail notification list. Within seven (7) calendar days after receipt of NMED's letter concerning the conclusion of any Tier I negotiations, the Permittees shall post a link to the NMED letter on the WIPP Home Page, and shall inform those on the e-mail notification list. If a Tier I agreement is not reached and the Permittees submit a Tier II request for final decision to the Secretary, the Permittees shall concurrently post a link to the request on the WIPP Home Page, and shall inform those on the e-mail notification list. Within seven (7) calendar days after receiving notice of the final action by the Secretary, the Permittees shall post a link to the final action on the WIPP Home Page and shall inform those on the e-mail notification list.

requirements of the WAP, specified in Permit Attachment B, prior to the Permittees' receipt of TRU mixed waste ~~from a generator/storage site~~ at WIPP.

ii. The Permittees shall implement applicable waste confirmation requirements of the WAP, specified in Permit Attachment B7, prior to ~~storage or disposal~~ receipt of TRU mixed waste at WIPP.

II.C.1.b. Waste characterization sampling and analytical methods - the Permittees shall require that generator/storage sites and Permittee approved laboratories comply with the applicable method requirements, quality control, equipment testing, inspection, maintenance, and equipment calibration and frequency standards for the procedures specified in Permit Attachment B1 (Waste Characterization Sampling Methods). For all analytical methods for waste analysis not otherwise specified in Permit Attachment B1, the Permittees shall require the generator/storage sites and Permittee approved laboratories to use "*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*", EPA Publication SW-846. Updates to EPA Publication SW-846 shall be incorporated into this permit by reference. Sites may use these new or revised methods once they have demonstrated that the results from the new methods will be at least equivalent to the results from the currently used methods.

II.C.1.c. Statistical methods used in sampling and analysis - the Permittees shall require that generator/storage sites use the methods for statistically selecting retrievably stored and newly-generated TRU mixed waste containers for ~~visual examination and~~ volatile organic compounds (**VOCs**), semivolatile organic compounds (**SVOCs**), and total metals analysis, and establishing upper confidence limits, ~~and, when demonstrated appropriate, control charting for newly-generated waste stream sampling~~ as specified in Permit Attachment B2 (Statistical Methods Used in Sampling and Analysis).

II.C.1.d. Quality assurance objectives - the Permittees shall require that all waste characterization activities used by generator/storage sites and Permittee approved laboratories comply with the appropriate quality assurance objectives (**QAOs**) specified in Permit Attachment B3 (Quality Assurance Objectives

and Data Validation Techniques for Waste Characterization Sampling and Analytical Methods). The Permittees shall require generator/storage sites to review, validate, and verify all analytical data; reconcile analytical results with data quality objectives (**DQOs**); satisfy data reporting requirements; and identify, document, and report all nonconformances and operational variances in compliance with Permit Attachment B3.

II.C.1.e. Acceptable knowledge - the Permittees shall require generator/storage sites to assemble acceptable knowledge documentation and ~~verify~~ re-evaluate acceptable knowledge determinations, and shall audit (as specified in Permit Condition II.C.2) all aspects of the acceptable knowledge waste characterization process as specified in Permit Attachment B4 (TRU Mixed Waste Characterization Using Acceptable Knowledge).

II.C.1.f. Quality assurance - the Permittees shall require each generator/storage site and Permittee approved laboratory to develop and implement a quality assurance project plan (**QAPjP**) which demonstrates compliance with, and implementation of, applicable requirements of the WAP, Permit Attachment B, as specified in Permit Attachment B5 (Quality Assurance Project Plan Requirements).

II.C.1.g. WIPP Waste Information System (**WWIS**) database - the Permittees shall provide the Secretary access to the WWIS database as necessary to determine compliance with the WAP. The WWIS shall meet all requirements presented in Section B-4b(1)(i) of the WAP, Permit Attachment B, prior to acceptance of TRU mixed waste. The Secretary's access to the WWIS shall be direct, read-only (via modem or Internet) to all query and reporting functions of the Characterization, Certification, Shipping, and Inventory modules of the WWIS database.

Beginning on December 31, 2005, the Permittees instituted a public database containing certain information from the WWIS. The Permittees shall continue to provide such public access through the WIPP Home Page at <http://www.wipp.energy.gov>.

II.C.2. Audit and Surveillance Program

The Permittees shall not manage, store, or dispose TRU mixed waste at WIPP from a generator/storage site until the following conditions have been met as necessary for the Secretary to determine that the applicable characterization requirements of Permit Condition II.C.1 have been implemented:

II.C.2.a. Requirement to audit - the Permittees shall demonstrate to the Secretary that the generator/storage sites and Permittee approved laboratories have implemented and comply with applicable requirements of the WAP by conducting audits as specified in Permit Attachment B, Section B-~~4b(1)(iii)~~5a(3), and Permit Attachment B6 (Waste Isolation Pilot Plant Permittees' Audit and Surveillance Program), and as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.13).

II.C.2.b. Observation of audit - the Secretary may observe such audits as necessary to validate the implementation of and compliance with applicable WAP requirements at each generator/storage site and Permittee approved laboratory. The Permittees shall provide the Secretary with a current audit schedule on a monthly basis and notify the Secretary no later than thirty (30) calendar days prior to each audit.

II.C.2.c. Final audit report - the Permittees shall provide the Secretary a final audit report as specified in Permit Attachment B6, and within five (5) calendar days of submittal, post a link to the final audit report transmittal letter on the WIPP Home Page and inform those on the e-mail notification list. The final audit report shall include all information specified in Permit Attachment B6, Section B6-4, and:

i. A detailed description of all corrective actions and the resolution of any corrective action applicable to WAP requirements, including re-audits if required;

ii. All documentation necessary for the Secretary to determine if the corrective action was resolved.

II.C.2.d. Secretary notification of approval - the Secretary shall approve the Permittees' final audit report by written notification to the Permittees that the applicable characterization requirements of the WAP

specified in Permit Attachment B are not acceptable at WIPP unless specifically approved through a Class 3 permit modification. Such wastes are listed in Table II.C.3.h below.

Table II.C.3.h - Additional Approved Waste Streams	
Date Class 3 Permit Modification Request Approved	**Description of Waste Stream**

II.C.3.i. ~~Radiographic / visual examination~~ Unconfirmed waste - any waste container ~~from a waste stream (or waste stream lot) which~~ that has not ~~undergone either radiographic or visual examination of a statistically representative subpopulation of the waste stream~~ been subject to confirmation ~~in each shipment, as described~~ as specified in Permit Attachment B7 is not acceptable at WIPP. This prohibition shall not apply to waste containers accepted before confirmation activities were required by this Permit.

II.C.3.j. Waste stream profiles - any waste container from a waste stream which has not been preceded by an appropriate, certified Waste Stream Profile Form (Attachment B, Figure B-1) is not acceptable at WIPP.

II.C.4. Permitted TRU Mixed Wastes

The Permittees shall accept containers which contain only those TRU mixed wastes listed in the Hazardous Waste Permit Application Part A, Permit Attachment O. Allowable TRU mixed wastes are specified in Table II.C.4 below. Some of the waste may also be identified by unique state hazardous waste codes. These wastes are acceptable at WIPP as long as the TSDF-WAC are met:

III. MODULE III - CONTAINER STORAGE

III.A. DESIGNATED CONTAINER STORAGE UNITS

This Module authorizes the storage and management of transuranic (**TRU**) mixed waste containers in the Waste Handling Building and Parking Area Container Storage Units described below. Specific facility and process information for the storage and management of TRU mixed waste in these Container Storage Units is incorporated in Permit Attachment M1 (Container Storage).

III.A.1. Waste Handling Building Container Storage Unit

The Waste Handling Building Container Storage Unit (**WHB Unit**) is located in the Waste Handling Building (**WHB**) at the WIPP facility. The WHB Unit consists of the WHB contact-handled (**CH**) Bay and the remote-handled (**RH**) Complex. The areas and storage capacities for the WHB unit are defined in Table III.A.1.

The Permittees may store and manage TRU mixed waste in the WHB Unit, provided the Permittees comply with the following conditions:

III.A.1.a. Storage containers - the Permittees shall store TRU mixed waste in containers specified in Permit Condition III.C.1.

III.A.1.b. Storage locations and quantities - the Permittees may store TRU mixed waste containers in ~~nine (9)~~ the locations in the WHB Unit, as specified in Table III.A.1 below and depicted in Permit Attachment M1, Figures M1-1 and M1-17a, b, and c. The Permittees may store quantities of TRU mixed waste containers in these locations not to exceed the maximum capacities specified in Table III.A.1 below.

III.A.1.c. Use of CH Bay Surge Storage - The Permittees may use the CH Bay Surge Storage Area in Table III.A.1 below only as specified in Permit Attachment M1, Section M1-1c(1).

III.A.1.d. Notification of CH Bay Surge Storage Use - The Permittees shall notify the Secretary in writing upon using the CH Bay Surge Storage Area and provide justification for its use. Within 5 (five) calendar days of using Surge Storage, the Permittees shall post a link to the notice of CH Bay Surge Storage Area use on the WIPP Home Page, and inform those on the e-mail notification list. The Permittees shall

submit a report to the Secretary by October 27 of each year summarizing CH Bay Surge Storage Area usage.

Table III.A.1 - WHB Unit			
Description	**Area**	**Maximum Capacity**	**Container Equivalent**
~~TRUDOCK Storage Area~~	~~4,734 ft²~~ ~~(440 m²)~~	~~640 ft³~~ ~~(18.1 m³)~~	~~Contents of 4 Contact- Handled Packages~~
CH Bay Storage Area	~~20,574~~ 26,151 ft² (~~1,911~~ 2,430 m²)	~~5,440~~ 4,800 ft³ (~~154.0~~ 135.9 m³)	~~17~~ 13 loaded facility pallets and 4 CH Packages at the TRUDOCKs
~~Shielded~~ CH Bay Surge Storage Area	~~292.5 ft²~~ ~~(27.2 m²)~~ included in CH Bay Storage Area	~~320~~ 1,600 ft³ (~~9.1~~ 45.3 m³)	~~1~~ 5 loaded facility pallets
Derived Waste Storage Area	~~48 ft²~~ ~~(4.46 m²)~~ included in CH Bay Storage Area	66.3 ft³ (1.88 m³)	1 Standard Waste Box
Total for CH Waste	~~25,650~~ 26,151 ft² (~~2,383~~ 2,430 m²)	**6,466.3 ft³ 183.1 m³**	
RH Bay	12,552 ft² (1166 m²)	~~147~~ 156 ft³ (4.~~2~~4 m³)	2 loaded casks and 1 drum of derived waste
Cask Unloading Room	382 ft² (36 m²)	74 ft³ (2.1 m³)	1 loaded cask
Hot Cell	1,841 ft² (171 m²)	~~262 215~~ 94.9ft³ (~~7.4 6.1~~ 2.7 m³)	~~10~~ 12 drums ~~and 6 canisters~~ and 1 drum of derived waste
Transfer Cell	1,003 ft² (93 m²)	31.4 ft³ (0.89 m³)	1 canister
Facility Cask Loading Room	1,625 ft² (151 m²)	31.4 ft³ (0.89 m³)	1 canister
Total for RH Waste	**17,403 ft² (1,617 m²)**	**~~545507.8~~ 387.7 ft³ (~~15.5 14.4~~ 11.0 m³)**	
Facility Total	**~~43,053~~ 43,554 ft² (~~4,000~~ 4,047 m²)**	**~~7012~~ 6,854 ft³ (~~199~~ 194.1 m³)**	**-**

III.A.1.e. Storage on pallets - the Permittees shall store TRU mixed waste containers unloaded from the Contact-Handled Packages (**TRUPACT-II or HalfPACT** shipping

containers) on pallets in the WHB Unit, as described in Permit Attachment M1, Section M1-1c(1).

III.A.1.f. Storage of derived waste - the Permittees shall store containers of TRU mixed derived waste only in the Derived Waste Storage Area, the RH Bay, and the RH Hot Cell. The Permittees shall store the derived waste containers on a pallet that provides secondary containment and elevates the containers at least 6 inches above the floor to protect them from contact with accumulated liquid.

III.A.1.g. CH TRU mixed waste storage time limit - the Permittees shall not store a CH TRU mixed waste container in the WHB Unit for more than sixty (60) calendar days, with the exception of the Derived Waste Storage Area, where derived waste may be accumulated and stored until the container is full.

III.A.1.h. Minimum aisle space - the Permittees shall maintain a minimum aisle space of 44 inches (1.1 m) between facility pallets in the CH Bay of the WHB Unit. The Permittees shall maintain adequate aisle space of 44 inches (1.1 m) between loaded casks in the RH Bay of the WHB Unit. For other locations within the RH Complex, sufficient aisle space will be maintained to assure that emergency equipment can be accessed or moved to the necessary locations.

III.A.1.i. Storage of RH TRU mixed waste containers - the Permittees shall store RH TRU mixed waste in casks, canisters, or drums in the RH Complex as described in Permit Attachment M1, Section M1-1c(1).

III.A.1.j. RH TRU mixed waste storage time limit - the Permittees shall not store a RH TRU mixed waste container in the RH Complex for more than sixty (60) calendar days, with the following exceptions: ~~of the~~

i. Derived Waste Storage Areas, where derived waste may be accumulated and stored until the container is full~~.~~; and

ii. Hot Cell, where 55-gallon drums may be stored for no more than twenty five (25) of the sixty (60) calendar days.

III.A.1.k. Hot Cell RH TRU mixed waste processing capacity - the processing capacity of the Hot Cell is limited to 13,773 ft^3 (390 m^3) of RH TRU mixed waste.

III.A.2. Parking Area Container Storage Unit

The Parking Area Container Storage Unit (**Parking Area Unit**) is an asphalt and concrete surface extending from north of the rail sidings to the WHB, within the Controlled Area. The Parking Area Unit shall be enclosed by chain link fence. The Parking Area Unit shall comprise a surface area of no more than ~~115,000~~ 137,050 ft^2 (~~10,700~~ 12,730 m^2), as depicted in Permit Attachment M1, Figure M1-2.

The Permittees may store and manage TRU mixed waste in the Parking Area Unit, provided the Permittees comply with the following conditions:

III.A.2.a. Storage containers - the Permittees shall store TRU mixed waste in containers specified in Permit Condition III.C.1. These TRU mixed waste containers shall be stored within the sealed Contact-Handled or Remote-Handled Packages described in Permit Attachment M1.

III.A.2.b. Storage locations and quantities - the Permittees shall store TRU mixed waste containers in any location within the Parking Area Unit, as specified in Table III.A.2 below. The Permittees may store quantities of TRU mixed waste containers within sealed Contact-Handled or Remote-Handled Packages in these locations not to exceed the maximum capacities specified in Table III.A.2 below.

III.A.2.c. Use of Parking Area Surge Storage - The Permittees may use the Parking Area Surge Storage in Table III.A.2 below only when the maximum capacity in the Parking Area is reached and as specified in Permit Attachment M1, Section M1-1c(2).

III.A.2.d. Notification of Parking Area Surge Storage Use - The Permittees shall notify the Secretary in writing upon using the Parking Area Surge Storage and provide justification for its use. Within 5 (five) calendar days of using Surge Storage, the Permittees shall post a link to the notice of Parking Area Surge Storage use on the WIPP Home Page, and inform those on the e-mail notification list. The Permittees shall submit a report to the Secretary by October 27 of each year summarizing Parking Area Surge Storage usage.

Table III.A.2 - Parking Area Unit			
Description	**Area**	**Maximum Capacity**	**Container Equivalent**
Parking Area	~~115,000~~ 137,050 ft^2 (~~10,700~~ 12,730 m^2)	~~7,160~~ 6,925 6,734 ft^3 (~~203~~ ~~196.1~~ 191 m^3)	~~50~~ 40 Contact-Handled Packages containing waste and ~~14~~ 8 Remote-Handled Packages containing waste. The total number of Contact-Handled Packages containing waste in the Parking Area Unit cannot exceed 50.
Parking Area Surge Storage	included in Parking Area	~~1,920~~ 2,129 ft^3 (~~54.4~~ 60 m^3)	12 Contact-Handled Packages and 4 Remote-Handled Packages. The total number of Contact-Handled Packages containing waste in the Parking Area Unit cannot exceed 50.
~~**Total**~~	~~--~~	~~**7,160 ft^3 (203 m^3)**~~	~~--~~

III.A.2.e. Prohibition on opening shipping containers - the Permittees shall keep the Contact-Handled or Remote-Handled Packages sealed at all times while in the Parking Area Unit.

III.A.2.f. Storage time limit - the Permittees shall not store sealed Contact-Handled or Remote-Handled Packages in the Parking Area Unit for more than fifty-nine (59) days after the date the Inner Containment Vessel (**ICV**) of the Package was sealed at the generator site. Prior to storing a sealed Package, the Permittees shall verify that the ICV Closure Date for each Package is recorded in the WIPP Waste Information System (**WWIS**) database described in Permit Attachment B.

III.A.2.g. Minimum aisle space - the Permittees shall maintain a minimum spacing of 4 ft (1.2 m) between loaded Contact-Handled or Remote-Handled Packages.

TDOPs may be direct loaded or used to overpack drums or SWBs containing CH TRU mixed waste.

III.C.1.d. 85-gallon (322-liter) drum - with a gross internal volume of up to 11.3 ft^3 (0.32 m^3). 85-gallon drums may be direct loaded or used for overpacking 55-gallons drums containing CH TRU mixed waste and for collecting and storing derived waste.

III.C.1.e. 100-gallon (379-liter) drum - with a gross internal volume of 13.4 ft^3 (0.38m^3). 100-gallon drums may be direct loaded with CH TRU mixed waste.

III.C.1.f. RH TRU canister - with a gross internal volume of 31.4 ft^3 (0.89 m^3). RH TRU canisters contain RH TRU mixed waste packaged in small containers (e.g., 55-gallon drums) or waste loaded directly into the canister.

~~III.C.1.g. RH TRU facility canister - with a gross internal volume of 31.4 ft^3 (0.89 m^3). RH TRU facility canisters contain up to three 55-gallon drums of RH TRU mixed waste from the payload of the CNS 10-160B cask.~~

III.C.2. Derived Waste Containers

The Permittees shall use standard 55-gallon drums, SWBs, or 85-gallon drums to collect, store, and dispose of derived waste.

III.D. COMPATIBILITY OF WASTE WITH CONTAINERS

The Permittees shall use containers made of or lined with materials which will not react with, and are otherwise compatible with, the TRU mixed waste to be stored, so that the ability of the container to contain the waste is not impaired, as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.172).

III.E. MANAGEMENT OF CONTAINERS

The Permittees shall manage all containers as specified in Permit Attachment M1 and shall keep all containers closed during storage, except when it is necessary to add waste to derived waste containers. The Permittees shall not open, handle, or store containers in a manner which may rupture the container or cause it to leak, as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.173).

III.F. CONTAINMENT SYSTEMS

The Permittees shall maintain the secondary containment systems for all containers managed in the WHB Unit and Parking Area Unit as specified in Permit Attachment M1, Section M1-1f, and as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.175).

IV. MODULE IV - GEOLOGIC REPOSITORY DISPOSAL

IV.A. DESIGNATED DISPOSAL UNITS

This Module authorizes the management and disposal of contact-handled (**CH**) transuranic (**TRU**) mixed waste containers in the Underground Hazardous Waste Disposal Units (**Underground HWDUs**) identified herein. Specific facility and process information for the management and disposal of CH TRU mixed waste in the Underground HWDUs is incorporated in Permit Attachment M2 (Geologic Repository).

IV.A.1. Underground Hazardous Waste Disposal Units

The Underground HWDUs are located at the WIPP facility approximately 2150 feet (665 meters) below the ground surface within the Salado formation. An Underground HWDU is a single excavated panel, consisting of seven rooms and two access drifts, designated for disposal of TRU mixed waste containers.

The Permittees may dispose TRU mixed waste in the Underground HWDUs, provided the Permittees comply with the following conditions:

IV.A.1.a. Disposal containers - the Permittees shall dispose TRU mixed waste in containers specified in Permit Condition IV.C.1.

IV.A.1.b. Disposal locations and quantities - the Permittees shall dispose TRU mixed waste containers in seven (7) Underground HWDUs, as specified in Table IV.A.1 below and depicted in Permit Attachment M2, Figure M2-1. The Permittees may dispose quantities of TRU mixed waste containers in these locations not to exceed the maximum capacities specified in Table IV.A.1 below. The Permittees may increase these capacities subject to the following conditions:

i. The Permittees may submit a Class 1 permit modification requiring prior approval of the Secretary in accordance with 20.4.1.900 NMAC (incorporating 40 CFR §270.42(a)) to increase the CH TRU mixed waste capacity by 35,300 ft^3 (1,000 m^3) or less, and the RH TRU mixed waste capacities in Panels 5 and 6 to a maximum of 22,950 ft^3 (650 m^3).

At least fifteen (15) calendar days before submittal to NMED, the Permittees shall post a link to the Class 1 permit modification on the WIPP Home Page and inform those on the e-mail notification list.

ii. Notwithstanding Permit Condition IV.A.1.b.i, any Underground HWDU CH TRU waste capacity may be increased by up to 25 percent of the total maximum capacity in Table IV.A.1 by submitting a Class 2 permit modification request in accordance with 20.4.1.900 NMAC (incorporating 40 CFR §270.42(b)).

Table IV.A.1 - Underground HWDUs

Description[1]	~~Area~~ Waste Type	Maximum ~~Design~~ Capacity[1,2]	Container Equivalent	Final Waste Volume
Panel 1	~~124,150 ft²~~ ~~(11,533 m²)~~ CH TRU	~~662,150~~ 636,000 ft³ (~~18,750~~ 18,000 m³)	~~89,300 55-Gallon Drums~~	371,000 ft³ (10,500 m³)
Panel 2	~~124,150 ft²~~ ~~(11,533 m²)~~ CH TRU	~~662,150~~ 636,000 ft³ (~~18,750~~ 18,000 m³)	~~89,300 55-Gallon Drums~~	634,500 ft³ (17,998 m³)
Panel 3	~~124,150 ft²~~ ~~(11,533 m²)~~ CH TRU	662,150 ft³ (18,750 m³)	~~89,300 55-Gallon Drums~~	
		~~22,950 ft³ (650 m³)~~	~~730 RH TRU Canisters~~	
Panel 4	~~124,150 ft²~~ ~~(11,533 m²)~~ CH TRU	662,150 ft³ (18,750 m³)	~~89,300 55-Gallon Drums~~	
	RH TRU	~~22,950~~ 12,575 ft³ (~~650~~ 356 m³)	~~730~~ 400 RH TRU Canisters	
Panel 5	~~124,150 ft²~~ ~~(11,533 m²)~~ CH TRU	662,150 ft³ (18,750 m³)	~~89,300 55-Gallon Drums~~	
	RH TRU	~~22,950~~ 15,720 ft³ (~~650~~ 445 m³)	~~730~~ 500 RH TRU Canisters	
Panel 6	~~124,150 ft²~~ ~~(11,533 m²)~~ CH TRU	662,150 ft³ (18,750 m³)	~~89,300 55-Gallon Drums~~	

	RH TRU	~~22,950~~ 18,860 ft^3 (~~650~~ 534 m^3)	~~730~~ 600 RH TRU Canisters	
Panel 7	~~124,150 ft^2 (11,533 m^2)~~ CH TRU	662,150 ft^3 (18,750 m^3)	~~89,300 55-Gallon Drums~~	
	RH TRU	22,950 ft^3 (650 m^3)	730 RH TRU Canisters	
Total	**~~--~~ CH TRU**	**~~4,635,050~~ 4,582,750 ft^3 (~~131,250~~ 129,750 m^3)**	**~~625,000 55-Gallon Drums~~**	
	RH TRU	**~~114,750~~ 70,100 ft^3 (~~3,250~~ 1,985 m^3)**	**~~3650~~ 2230 RH TRU Canisters**	

[1] The area of each panel is approximately 124,150 ft^2 (11,533 m^2).
~~1~~ [2] "Maximum ~~Design~~ Capacity" is the maximum volume of TRU mixed waste that may be emplaced in each panel.~~, so long as the~~ The maximum repository capacity of "6.2 million cubic feet of transuranic waste" is specified in the WIPP Land Withdrawal Act (Pub. L. 102-579, as amended) ~~is not exceeded~~.
~~2 The final volume of TRU mixed waste emplaced in each panel shall be maintained in the operating record.~~

IV.B. PERMITTED AND PROHIBITED WASTE IDENTIFICATION

IV.B.1. Permitted Waste

The Permittees may dispose TRU mixed waste in the Underground HWDUs, provided the Permittees comply with the following conditions:

IV.B.1.a. Waste analysis plan - the TRU mixed waste shall be characterized to comply with the waste analysis plan specified in Permit Condition II.C.1.

IV.B.1.b. TSDF Waste acceptance criteria - the TRU mixed waste shall comply with the treatment, storage, and disposal facility (**TSDF**) waste acceptance criteria specified in Permit Condition II.C.3.

IV.B.1.c. Hazardous waste numbers - the TRU mixed waste shall contain only hazardous waste numbers specified in Permit Condition II.C.4.

Derived waste may be disposed in the Underground HWDUs as specified in Permit Condition II.C.5.

IV.B.2. Prohibited Waste

IV.B.2.a. General prohibition - the Permittees shall not dispose any TRU mixed waste that fails to comply with Permit Condition IV.B.1.

IV.B.2.b. Specific prohibition - after this Permit becomes effective, the Permittees shall not dispose non-mixed TRU waste in any Underground HWDU unless such waste is characterized in accordance with the requirements of the WAP specified in Permit Condition II.C.1. The Permittees shall not dispose TRU mixed waste in any Underground HWDU if the Underground HWDU contains non-mixed TRU waste which was disposed of after this Permit became effective and was not characterized in accordance with the requirements of the WAP.

IV.C. DISPOSAL CONTAINERS

IV.C.1. Acceptable Disposal Containers

The Permittees shall use containers that comply with the requirements for U.S. Department of Transportation shipping container regulations (49 CFR §173 - Shippers - General Requirements for Shipment and Packaging, and 49 CFR §178 - Specifications for Packaging) for disposal of TRU mixed waste at WIPP. The Permittees are prohibited from disposing TRU mixed waste in any container not specified in Permit Attachment M1, Section M1-1b, as set forth below:

IV.C.1.a. Standard 55-gallon (208-liter) drum - configured as a 7-pack or as an individual unit.

IV.C.1.b. Standard waste box (**SWB**) - as an individual unit.

IV.C.1.c. Ten-drum overpack (**TDOP**) - as an individual unit.

IV.C.1.d. 85-gallon (322-liter) drum - configured as a 4-pack or as an individual unit.

IV.C.1.e. 100 gallon (379-liter) drum - configured as a 3-pack or as an individual unit.

IV.C.1.f. RH TRU canister ~~or RH TRU facility canister~~ - as an individual unit~~s~~.

IV.F.1.b. Reporting requirements - the Permittees shall submit to the Secretary an annual report, beginning twelve (12) months after issuance of this Permit, evaluating the geomechanical monitoring program and shall include geomechanical data collected from each Underground HWDU during the previous year, as specified in Permit Attachment M2, Section M2-5b(2), "Geomechanical Monitoring", and shall also include a map showing the current status of HWDU mining.

IV.F.1.c. Notification of adverse conditions - when evaluation of the geomechanical monitoring system data identifies a trend towards unstable conditions which requires a decision whether to terminate waste disposal activities in any Underground HWDU, the Permittees shall provide the Secretary with the same report provided to the WIPP Operations Manager within five (5) working days of its issuance, as specified in Permit Attachment M2, Section M2-5b(2)(a), "Description of the Geomechanical Monitoring System".

IV.F.2. Repository Volatile Organic Compound Monitoring

IV.F.2.a. Implementation of repository VOC monitoring - the Permittees shall implement repository VOC monitoring as specified in Permit Attachment N (Volatile Organic Compound Monitoring Plan) and as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.602 and §264.601(c)). The Permittees shall implement repository VOC monitoring within thirty (30) calendar days of issuance of this Permit until the certified closure of all Underground HWDUs.

IV.F.2.b. Reporting requirements - the Permittees shall ~~submit~~ report to the Secretary ~~an~~ semi-annually ~~report~~, beginning twelve (12) months after issuance of this Permit, ~~describing the implementation and presenting~~ the data and analysis of the VOC Monitoring Plan.

IV.F.2.c. Notification requirements - the Permittees shall notify the Secretary in writing, within five (5) working days of obtaining validated analytical results, whenever the concentration of any VOC specified in Table IV.D.1 exceeds the concentration of concern specified in Table IV.F.2.c below.

The Permittees shall notify the Secretary in writing, within five (5) working days of obtaining validated analytical results, whenever the running

once per week. The once per week sampling will continue either until the concentrations in the closed room(s) fall below the "50% Action Level" in Table IV.D.1, or until closure of Room 1 of the panel, whichever occurs first. If one or more of the VOCs in Table IV.D.1 in the active open room or immediately adjacent closed room reaches the "95% Action Level" in Table IV.F.3.b, another sample will be taken to confirm the existence of such a condition. If the second sample confirms that one or more of VOCs in the immediately adjacent closed room have reached the "95% Action Level" in Table IV.F.3.b, the active open room will be abandoned, ventilation barriers will be installed as specified in Permit Condition IV.E.3.c, waste emplacement will proceed in the next open room, and monitoring of the subject closed room will continue at a frequency of once per week until commencement of panel closure.

IV.F.4. Mine Ventilation Rate Monitoring

IV.F.4.a. Implementation of Mine Ventilation Rate Monitoring Plan - the Permittees shall implement the Mine Ventilation Rate Monitoring Plan specified in Permit Attachment Q (Mine Ventilation Rate Monitoring Plan) and as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.602 and §264.601(c)). The Permittees shall implement this plan within thirty (30) calendar days of approval by the Secretary until the certified closure of all Underground HWDUs.

IV.F.4.b. Reporting requirements ~~- as part of~~ the Permittees shall ~~annual~~ report to the Secretary annually, beginning twelve (12) months after issuance of this Permit, ~~required under Permit Condition IV.F.2.b, the Permittees shall describe the implementation and present~~ the results of the data and analysis of the Mine Ventilation Rate Monitoring Plan.

IV.F.4.c. Notification requirements - the Permittees shall calculate the running annual average mine ventilation exhaust rate on a monthly basis. In addition, the Permittees shall evaluate compliance with the minimum active room ventilation rate specified in Permit Condition IV.E.3.b on a monthly basis. Whenever the evaluation of the mine ventilation monitoring program data identifies that the ventilation rates specified in Permit Condition IV.E.3.b have not been achieved, the Permittees

ATTACHMENT A

GENERAL FACILITY DESCRIPTION AND PROCESS INFORMATION

A-1 Facility Description

Abstract

NAME OF FACILITY:	Waste Isolation Pilot Plant
OWNER and CO-OPERATOR:	U.S. Department of Energy P.O. Box 3090 Carlsbad, NM 88221
CO-OPERATOR:	Washington TRU Solutions LLC P.O. Box 2078 Carlsbad, NM 88221
RESPONSIBLE OFFICIALS:	~~Lloyd L. Piper, Acting~~ David C. Moody, Manager DOE/Carlsbad Field Office Richard D. Raaz, General Manager Washington TRU Solutions LLC
FACILITY MAILING ADDRESS:	U.S. Department of Energy P.O. Box 3090 Carlsbad, NM 88221
FACILITY LOCATION:	30 miles east of Carlsbad on the Jal Highway, in Eddy County.
TELEPHONE NUMBER:	505/234-7300
U.S. EPA I.D. NUMBER:	NM4890139088
GEOGRAPHIC LOCATION:	32º 22' 30" N 103º 47' 30" W
DATE OPERATIONS BEGAN:	November 26, 1999

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TRU mixed waste contains both TRU radioactive and hazardous components, as defined in 20.4.1.800 NMAC (incorporating 40 CFR, §268.35(d)), and in the Federal Facility Compliance Act, Public Law 102- 386, Title 1, §3021(d). It is designated and separately packaged as either contact-handled (**CH**) or remote-handled (**RH**), based on the radiological dose rate at the surface of the waste container.

The hazardous components of the TRU mixed waste to be managed at the WIPP facility are designated in Table B-9. Some of the waste may also be identified by unique state hazardous waste codes or numbers. These wastes are acceptable at WIPP as long as the Treatment, Storage, and Disposal Facility Waste Acceptance Criteria (**TSDF-WAC**) in Module II are met. This WAP describes the measures that will be taken to ensure that the TRU mixed wastes received at the WIPP facility are within the scope of Table B-9 as established by 20.4.1.500 NMAC (incorporating 40 CFR §264), and that they comply with unit-specific requirements of 20.4.1.500 NMAC (incorporating 40 CFR §264.600), Miscellaneous Units.

Some TRU mixed waste is retrievably stored at the DOE generator/storage sites. Additional TRU mixed waste will be generated and packaged into containers at these generator/storage sites in the future. TRU mixed waste will be retrieved from storage areas at a DOE generator/storage site. Retrievably stored waste is defined as TRU mixed waste generated after 1970 and before the New Mexico Environment Department (**NMED**) notifies the Permittees, by approval of the final audit report, that the characterization requirements of the WAP at a generator/storage site have been implemented. Newly generated waste is defined as TRU mixed waste generated after NMED approves the final audit report for a generator/storage site. Acceptable knowledge (**AK**) information is assembled for both retrievably stored and newly generated waste. Waste characterization of retrievably stored TRU mixed waste will be performed on an ongoing basis, as the waste is retrieved. Waste characterization of newly generated TRU mixed waste is typically performed as it is generated, although some characterization occurs post-generation. Waste characterization requirements for retrievably stored and newly generated TRU mixed wastes differ, as discussed in Sections B-3d(1) and B-3d(2).

Waste characterization is defined in Module I as the activities performed by the waste generator to satisfy the general waste analysis requirements of 20.4.1.500 NMAC (incorporating 40 CFR §264.13(a)) before waste containers have been certified for disposal at WIPP. The characterization process for WIPP waste is presented in Figure B-2. Generator site waste characterization programs are first audited by the Permittees, with NMED approving the final audit report. After this, generator sites determine whether AK alone is sufficient for characterization, or whether a sampling and analysis program in conjunction with AK is necessary to adequately characterize wastes. If an AK Sufficiency Determination is sought, information is provided to the Permittees for their review and provisional approval; NMED determination of adequacy of the AK information is required before final approval by the Permittees. If the sampling and analysis route is chosen, sites proceed to sample and analyze waste in conjunction with AK and in accordance with this WAP. Once an AK Sufficiency Determination is obtained, or when required sampling and analysis data are obtained, sites would then prepare and submit the Waste Stream Profile ~~Report~~ Form for the Permittees' approval. Once the WSPF is approved, a site may ship waste to WIPP. The Permittees will perform waste confirmation prior to shipment of the waste from the generator/storage site to WIPP as specified in Permit Attachment B7, ~~through non-destructive examination (**NDE**)~~ by

performing radiography or visual examination of a representative subpopulation of certified waste containers, to ensure that the wastes meet the applicable requirements of the TSDF-WAC.

B-0a Waste Characterization

Characterization requirements for individual containers of TRU mixed waste are specified on a waste stream basis. A waste stream is defined as waste material generated from a single process or from an activity that is similar in material, physical form, and hazardous constituents. Waste streams are grouped by Waste Matrix Code Groups related to the physical and chemical properties of the waste. Generator/storage sites shall use the characterization techniques described in this WAP to assign appropriate Waste Matrix Code Groups to waste streams for WIPP disposal. The Waste Matrix Code Groups are solidified inorganics, solidified organics, salt waste, soils, lead/cadmium metal, inorganic nonmetal waste, combustible waste, graphite, filters, heterogeneous debris waste, and uncategorized metal. Waste Matrix Code Groups can be grouped into three Summary Category groups: Homogeneous Solids (Summary Category S3000), Soil/Gravel (Summary Category S4000), and Debris Waste (Summary Category S5000).

TRU mixed wastes are initially categorized into the three broad Summary Category Groups that are related to the final physical form of the wastes. Waste characterization requirements for these groups are specified separately in Section B-2 of this WAP. Each of the three groups is described below.

S3000 - Homogeneous Solids

Homogeneous solids are defined as solid materials, excluding soil, that do not meet the NMED criteria for classification as debris (20.4.1.800 NMAC (incorporating 40 CFR §268.2[g] and [h])). Included in the series of homogeneous solids are inorganic process residues, inorganic sludges, salt waste, and pyrochemical salt waste. Other waste streams are included in this Summary Category Group based on the specific waste stream types and final waste form. This Summary Category Group is expected to contain toxic metals and spent solvents. This category includes wastes that are at least 50 percent by volume homogeneous solids.

S4000 - Soils/Gravel

This Summary Category Group includes S4000 waste streams that are at least 50 percent by volume soil/gravel. This Summary Category Group is expected to contain toxic metals.

S5000 - Debris Wastes

This Summary Category Group includes heterogeneous waste that is at least 50 percent by volume materials that meet the criteria specified in 20.4.1.800 NMAC (incorporating 40 CFR §268.2 (g)). Debris means solid material exceeding a 2.36 inch (in.) (60 millimeter) particle size that is intended for disposal and that is:

1. a manufactured object, or
2. plant or animal matter, or
3. natural geologic material.

The generator/storage sites shall characterize their waste in accordance with this WAP and associated Permit Attachments, and ensure that waste proposed for storage and disposal at WIPP meets the applicable requirements of the TSDF-WAC in Module II. The generator/storage site shall assemble the Acceptable Knowledge (**AK**) information into an auditable record[1] for the waste stream as described in Permit Attachment B4. For those waste streams with an approved AK Sufficiency Determination (see below), sampling and analysis per the methods described in Permit Attachments B1 and B2 are not required.

All waste characterization activities specified in this WAP and associated Permit Attachments shall be carried out at generator/storage sites and Permittee approved laboratories in accordance with this WAP. The Permittees will audit generator/storage site waste characterization programs and activities as described in Section B-3. Waste characterization activities at the generator/storage sites include the following, although not all these techniques will be used on each container, as discussed in Section B-3:

- Radiography, which is an x-ray technique to determine physical contents of containers
- Visual examination of opened containers as an alternative way to determine their physical contents
- Headspace-gas sampling to determine VOC content of gases in the void volume of the containers
- Sampling and analysis of waste forms that are homogeneous and can be representatively sampled to determine concentrations of hazardous waste constituents and toxicity characteristic contaminants of waste in containers
- Compilation of AK documentation into an auditable record

B-0b AK Sufficiency Determination

~~Generator/storage sites may identify waste streams that can be adequately characterized using AK alone, without the need to perform post packaging chemical or physical sampling and analysis on any containers in the waste stream. For those waste streams, the~~ gGenerator/storage sites may submit a request to the Permittees for an AK Sufficiency Determination (**Determination Request**) to meet all or part of the waste characterization requirements. The contents of the Determination Request are specified in Permit Attachment B4, Section B4-3d. The Determination Request may take one of the following forms:

Scenario 1 Radiography or visual examination (**VE**) of the waste stream is not required, and chemical sampling and analysis is not required;

Scenario 2 Radiography or VE of the waste stream is not required, but chemical sampling and analysis of a representative sample of the waste stream is required; or

[1] "Auditable records" mean those records which allow the Permittees to conduct a systematic assessment, analysis, and evaluation of the Permittees' compliance with the WAP and this Permit.

Scenario 3 Chemical sampling and analysis is not required, but radiography or VE of 100% of the containers in the waste stream is required.

The Permittees shall evaluate the Determination Request for completeness and technical adequacy. This evaluation shall include, but not be limited to whether the Determination Request is technically sufficient for the following:

- The Determination Request must include all information specified in Permit Attachment B4, Section B4-3d
- The AK Summary must identify relevant hazardous constituents, and must correctly identify all toxicity characteristic and listed hazardous waste numbers.
- All hazardous waste number assignments must be substantiated by supporting data and, if not, whether this lack of substantiation compromises the interpretation.
- Resolution of data discrepancies between different AK sources must be technically correct and documented.
- The AK Summary must include all the identification of waste material parameter weights by percentage of the material in the waste stream, and determinations must be technically correct.
- All prohibited items specified in the TSDF-WAC should be addressed, and conclusions drawn must be technically adequate and substantiated by supporting information.
- If the AK record includes process control information specified in Permit Attachment B4, Section B4-3b, the information should include procedures, waste manifests, or other documentation demonstrating that the controls were adequate and sufficient.
- The site must provide the supporting information necessary to substantiate technical conclusions within the Determination Request, and this information must be correctly interpreted.

The Permittees will review the Determination Request for technical adequacy and compliance with the requirements of the Permit, using trained and qualified individuals in accordance with standard operating procedures that shall, at a minimum address all of the technical and procedural requirements listed above. The Permittees shall resolve comments with the generator/storage site, and the Permittees may change the scope of the Determination Request to one of the three scenarios. If the Permittees determine that the AK is sufficient, they will provisionally approve the Determination Request and forward it along with all relevant information submitted with the Determination Request to NMED for an evaluation that the provisional approval made by the Permittees is adequate. ~~The Permittees will also post the transmittal letter to NMED through the WIPP Home Page~~. Within five (5) days of submitting a Determination Request to NMED, the Permittees will post a link to the transmittal letter to NMED on the WIPP Home Page and inform those on the e-mail notification list. Based on the results of NMED's evaluation, the Permittees will notify the generator/storage sites whether the AK information is sufficient and the Determination Request is approved. The Permittees will not approve a~~n~~ Determination Request that NMED has determined to be inadequate unless the generator/storage site resolves the inadequacies and provides the resolution to NMED for evaluation of adequacy. Should the inadequacies not be resolved to NMED's satisfaction, the Permittees shall not submit a Determination Request for the same waste stream at a later date.

~~At any time, NMED may decide that certain waste stream groupings no longer require NMED evaluation of adequacy of the Permittees' provisional approval of Determination Requests. If this arises, the Secretary will notify the Permittees in writing of this decision, and the Sufficiency Determinations for the specified waste stream groups would no longer require NMED evaluation of adequacy.~~

In the event the Permittees disagree, in whole or in part, with an evaluation performed by NMED resulting in a determination by NMED that the Permittees' provisional approval for a particular waste stream is inadequate, the Permittees may seek dispute resolution. The dispute resolution process is specified in Module I.

If a generator/storage site does not submit a Determination Request, or if the Permittees do not approve a Determination Request, or if NMED finds that the Permittees' provisional approval of a Determination Request is inadequate, the generator/storage site shall perform radiography or VE on 100% of the containers in a waste stream and chemical sampling and analysis on a representative sample of the waste stream using headspace gas sampling and analysis (for debris waste) or solids sampling and analysis (for homogeneous solid or soil/gravel waste) as specified in Permit Attachments B1 and B2.

If a generator/storage site submits a Determination Request, the Permittees provisionally approve the Determination Request as Scenario 1, and NMED finds that the Permittees' provisional approval is adequate, neither radiography or VE nor chemical sampling and analysis of the waste stream is required.

If a generator/storage site submits a Determination Request, the Permittees provisionally approve the Determination Request as Scenario 2, and NMED finds that the Permittees' provisional approval is adequate, chemical sampling and analysis of a representative sample of the waste stream is required, but radiography or VE is not required.

If a generator/storage site submits a Determination Request, the Permittees provisionally approve the Determination Request as Scenario 3, and NMED finds that the Permittees' provisional approval is adequate, radiography or VE of 100% of the containers in the waste stream is required, but chemical sampling and analysis is not required.

B-0c Waste Stream Profile Form Completion

After a complete AK record has been compiled and either a Determination Request has been approved by the Permittees or the generator/storage site has completed the applicable representative sampling and analysis requirements specified in Permit Attachments B1 and B2, the generator/storage site will complete a Waste Stream Profile Form (**WSPF**) and Characterization Information Summary (**CIS**). The requirements for the completion of a WSPF and a CIS are specified in Permit Attachment B3, Sections B3-12b(1) and B3-12b(2) respectively.

The WSPF and the CIS for the waste stream resulting from waste characterization activities shall be transmitted to the Permittees, reviewed for completeness, and screened for acceptance prior to loading any TRU mixed waste into the Contact-Handled or Remote-Handled Packaging

at the generator facility, as described in Section B-4. The review and approval process will ensure that the submitted waste analysis information is sufficient to meet the Data Quality Objectives (**DQOs**) for AK in Section B-4a(1) and allow the Permittees to demonstrate compliance with the requirements of this WAP. Only TRU mixed waste and TRU waste that has been characterized in accordance with this WAP and that meets the **TSDF-WAC** specified in this Permit will be accepted at the WIPP facility for disposal in a permitted Underground Hazardous Waste Disposal Unit (**HWDU**). The Permittees will provide NMED with copies of the approved WSPF and accompanying CIS prior to waste stream shipment. Upon notification of approval of the WSPF by the Permittees, the generator/storage site may be authorized to ship waste to WIPP.

In the event the Permittees request detailed information on a waste stream, the site will provide a Waste Stream Characterization Package (Section B3-12b(2)). For each waste stream, this package will include the WSPF, the CIS, and the complete AK summary. The Waste Stream Characterization Package will also include specific Batch Data Reports (**BDRs**) and raw analytical data associated with waste container characterization as requested by the Permittees.

B-0d Waste Confirmation

The Permittees will perform waste confirmation on a representative subpopulation of each waste stream shipment after certification and prior to shipment as described in Permit Attachment B7. The Permittees will use radiography, review of radiography audio/video recordings, ~~visual examination (~~VE~~)~~, or review of VE records (e.g., VE data sheets or packaging logs) to examine at least 7 percent of each waste stream shipment to confirm that the waste does not contain ignitable, corrosive, or reactive waste. Waste confirmation will be performed by the Permittees prior to shipment of the waste from ~~at~~ the generator/storage site to WIPP.

B-1 Identification of TRU Mixed Waste to be Managed at the WIPP Facility

B-1a Waste Stream Identification

TRU mixed waste destined for disposal at WIPP will be characterized on a waste stream basis. Generator/storage sites will delineate waste streams using acceptable knowledge. Required acceptable knowledge is specified in Section B-3b and Permit Attachment B4.

All of the waste within a waste stream may not be ~~available~~ accessible for sampling and analysis at one time. Permit Attachment B2 addresses the requirements for selecting waste containers used for characterization of waste streams as they are generated or retrieved.

B-1b Waste Summary Category Groups and Hazardous Waste Accepted at the WIPP Facility

Once a waste stream has been delineated, generator/storage sites will assign a Waste Matrix Code to the waste stream based on the physical form of the waste. Waste streams are then assigned to one of three broad Summary Category Groups; S3000-Homogeneous Solids, S4000-Soils/Gravel, and S5000-Debris Wastes. These Summary Category Groups are used to determine further characterization requirements.

- any waste container from a waste stream which has not been preceded by an appropriate, certified WSPF (see Section B-1d)

Before accepting a container holding TRU mixed waste, the Permittees will perform waste confirmation activities on each waste stream shipment to confirm that the waste does not contain ignitable, corrosive, or reactive waste and the assigned EPA hazardous waste numbers are allowed for storage and disposal by this Permit. Waste confirmation activities will be performed on at least 7 percent of each waste stream shipped, equating to examination of at least one of fourteen containers in each waste stream shipment. If a waste stream shipment contains fewer than fourteen containers ~~in a waste stream shipment are received~~, one container will be examined to satisfy waste confirmation requirements. Section B-4 and Permit Attachment B7 include descriptions of the waste confirmation processes that the Permittees will conduct prior to receiving a shipment at the WIPP facility.

Containers are vented through filters, allowing any gases that are generated by radiolytic and microbial processes within a waste container to escape, thereby preventing over pressurization or development of conditions within the container that would lead to the development of ignitable, corrosive, reactive, or other characteristic wastes.

To ensure the integrity of the WIPP facility, waste streams identified to contain incompatible materials or materials incompatible with waste containers cannot be shipped to WIPP unless they are treated to remove the incompatibility. Only those waste streams that are compatible or have been treated to remove incompatibilities will be shipped to WIPP.

B-1d Control of Waste Acceptance

Every waste stream shipped to WIPP shall be preceded by a WSPF (Figure B-1) and a CIS. The required WSPF information and the CIS elements are found in Section B3-12b(1) and Section B3-12b(2).

Generator/storage sites will provide the WSPF to the Permittees for each waste stream prior to its acceptance for disposal at WIPP. The WSPF and the CIS will be transmitted to the Permittees for each waste stream from a generator/storage site. If continued waste characterization reveals discrepancies that identify different hazardous waste numbers or indicates that the waste belongs to a different waste stream, the waste will be redefined to a separate waste stream and a new WSPF submitted.

The Permittees are responsible for the review of WSPFs and CISs to verify compliance with the restrictions on TRU mixed wastes for WIPP disposal. The Permittees will submit completed WSPFs to NMED prior to waste stream shipment. The Permittees will also be responsible for the review of shipping records (Section B-5) to confirm that each waste container has been prepared and characterized in accordance with applicable provisions of this WAP. Waste characterization data shall ensure the absence of prohibited items specified in Section B-1c.

As stated in the Introduction of this WAP, any time the Permittees request additional information concerning a waste stream, the generator/storage site will provide a Waste Stream Characterization Package (Section B3-12b(2)). The option for the Permittees to request additional information ensures that the waste being offered for disposal is adequately

characterized and accurately described on the WSPF.

B-1e Waste Generating Processes at the WIPP Facility

Waste generated as a result of the waste containers handling and processing activities at the WIPP facility is termed “derived” waste. Because derived wastes can contain only those RCRA-regulated materials present in the waste from which they were derived, no additional characterization of the derived waste is required for disposal purposes. In other words, the generator/storage site's characterization data and knowledge of the processes at the WIPP facility will be used to identify and characterize hazardous waste and hazardous constituents in derived waste. The management of derived waste is addressed in Permit Attachment M1.

B-2 Waste Characterization Program Requirements and Waste Characterization Parameters

The Permittees shall require the sites to develop the procedure(s) which specify their programmatic waste characterization requirements. The Permittees will evaluate the procedures during audits conducted under the Permittees’ Audit and Surveillance Program (Section B-5a(3)) and may also evaluate the procedures as part of the review and approval of the WSPF. Sites must notify the Permittees and obtain approval prior to making data-affecting modifications to procedures (Permit Attachment B3, Section B3-15). Program procedures shall address the following minimum elements:

- Waste characterization and certification procedures for retrievably stored and newly generated wastes to be sent to the WIPP facility
- Methods used to ensure prohibited items are documented and managed. These will include procedures for performing radiography, VE, or treatment, if these methods are used to ensure prohibited items are not present in the waste prior to shipment of the waste to WIPP.
- Procedures used to verify packaging configurations to determine the correct drum age criteria (**DAC**) if headspace gas sampling and analysis is used to collect waste characterization information per Section B1-1a(1) of the WAP.
- Identify the organization(s) responsible for compliance with waste characterization and certification procedures.
- Identify the oversight procedures and frequency of actions to verify compliance with waste characterization and certification procedures.
- Develop training specific to waste characterization and certification procedures.
- Ensure that personnel may stop work if noncompliance with waste characterization or certification procedures is identified.
- Develop a nonconformance process that complies with the requirements in Permit Attachment B3 of the WAP to document and establish corrective actions.

- As part of the corrective action process, assess the potential time frame of the noncompliance, the potentially affected waste population(s), and the reassessment and recertification of those wastes.

- A listing of all approved hazardous waste numbers which are acceptable at WIPP are included in ~~the~~ Table B-~~8~~9.

For those waste streams or containers that are not amenable to radiography (e.g., RH TRU mixed waste, direct loaded ten-drum overpacks (**TDOPs**)) for waste confirmation by the Permittees as described in Permit Attachment B7, generator/storage site VE data may be used for waste acceptance. In those cases, the Permittees will review the generator/storage site VE procedures to ensure that data sufficient for the Permittees' waste acceptance activities as described in Permit Attachment B7 will be obtained and the procedures meet the minimum requirements for visual examination specified in Permit Attachment B1, Section B1-3.

The following waste characterization parameters shall be obtained from the generator/storage sites:

- Determination whether TRU mixed waste streams comply with the applicable provisions of the TSDF-WAC

- Determination whether TRU mixed wastes exhibit a hazardous characteristic (20.4.1.200 NMAC, incorporating 40 CFR §261 Subpart C)

- Determination whether TRU mixed wastes are listed (20.4.1.200 NMAC, incorporating 40 CFR §261 Subpart D)

- Estimation of waste material parameter weights

Tables B-1, B-2, B-3 and B-4 provide the parameters of interest for the various constituent groupings and analytical methodologies. The following sections provide a description of the acceptable methods to evaluate these parameters for each waste Summary Category Group.

B-3 Generator Waste Characterization Methods

The characterization techniques used by generator/storage sites includes acceptable knowledge and may also include, as necessary,~~,~~ headspace-gas sampling and analysis, radiography, visual examination, and homogeneous waste sampling and analysis. All characterization activities are performed in accordance with the WAP. Table B-5 provides a summary of the characterization requirements for TRU mixed waste.

B-3a Sampling and Analytical Methods

B-3a(1) Headspace Gas Sampling and Analysis

Representative headspace gas sampling and analysis shall be used by generator/storage sites to determine the types and concentrations of VOCs in the void volume of randomly selected waste containers in order to resolve the assignment of EPA hazardous waste numbers for those debris waste streams for which an AK Sufficiency Determination Request has not been approved by the Permittees. In addition, VOC constituents will be compared to those assigned by acceptable knowledge, which may include an analysis of radiolytically derived VOCs. The generator/storage sites may also consider radiolysis and packaging materials when assessing the presence of hazardous constituents in the headspace gas results, and whether radiolysis would generate wastes which exhibit the toxicity characteristic. Refer to Permit Attachment B4 for additional clarification regarding hazardous waste number assignment and headspace gas results. The methods for random selection of containers for headspace gas sampling and analysis are specified in Permit Attachment B2. Headspace gas sampling and analysis shall be subject to the Permittees' Audit and Surveillance Program (Permit Attachment B6).

In accordance with EPA convention, identification of hazardous constituents detected by gas chromatography/mass spectrometry methods that are not on the list of target analytes shall be reported. These compounds are reported as tentatively identified compounds (**TICs**) in the analytical BDR and shall be added to the target analyte list if detected in a given waste stream, if they appear in the 20.4.1.200 NMAC (incorporating 40 CFR §261) Appendix VIII, and if they are reported in 25% of the waste containers sampled from a given waste stream. The headspace gas analysis method Quality Assurance Objectives (**QAOs**) are specified in Permit Attachment B3.

B-3a(2) Homogeneous and Soil/Gravel Waste Sampling and Analysis

Representative homogeneous and soil/gravel waste sampling and analysis shall be used by generator/storage sites to resolve the assignment of EPA hazardous waste numbers for homogeneous and soil/gravel waste streams for which an AK Sufficiency Determination Request has not been approved by the Permittees. Sampling of homogeneous and soil/gravel wastes shall result in the collection of a sample that is used to ~~verify~~ resolve the assignment of hazardous waste number~~s assignment by acceptable knowledge~~. Sampling is accomplished through coring or other EPA approved sampling, which is described in Permit Attachment B1.For those waste streams defined as Summary Category Groups S3000 or S4000 on page B-3, debris that may also be present within these wastes need not be sampled. The waste containers for sampling and analysis are to be selected randomly from the population of containers for the waste stream. The random selection methodology is specified in Permit Attachment B2. Homogeneous and soil/gravel sampling and analysis shall be subject to the Permittees' Audit and Surveillance Program (Permit Attachment B6).

Totals or TCLP analyses for VOCs, SVOCs, and RCRA-regulated metals are used to determine waste parameters in soils/gravels and solids that may be important to the performance within the disposal system (Tables B-3 and B-4). To determine if a waste exhibits a toxicity characteristic for compounds specified in 20.4.1.200 NMAC (incorporating 40 CFR §261, Subpart C), TCLP may be used instead of total analyses. The generator will use the results from

these analyses to determine if a waste exhibits a toxicity characteristic. The mean concentration of toxicity characteristic contaminants are calculated for each waste stream such that it can be reported with an upper 90 percent confidence limit (**UCL_{90}**). The UCL_{90} values for the mean measured contaminant concentrations in a waste stream will be compared to the specified regulatory levels in 20.4.1.200 NMAC (incorporating 40 CFR §261 Subpart C), expressed as total/TCLP values, to determine if the waste stream exhibits a toxicity characteristic. A comparison of total analyses and TCLP analyses is presented in Appendix C3 of the WIPP RCRA Part B Permit Application (DOE, 1997), and a discussion of the UCL_{90} is included in Permit Attachment B2. If toxicity characteristic (**TC**) wastes are identified, these will be compared to those determined by acceptable knowledge and TC waste numbers will be revised, as warranted. Refer to Permit Attachment B4 for additional clarification regarding hazardous waste number assignment and homogeneous solid and soil/gravel analytical results.

B-3a(3) Laboratory Qualification

The Permittees will ensure that generator/storage sites conduct analyses using laboratories that are qualified through participation in the Performance Demonstration Program (**PDP**) (DOE, 2003, 2005). Required QAOs are specified in Permit Attachment B3. In addition, methods and supporting performance data demonstrating QAO compliance shall be ensured by the Permittees during the annual certification audit of the laboratories.

Analytical methods used by the laboratories shall: 1) satisfy all of the appropriate QAOs, and 2) be implemented through laboratory-documented standard operating procedures. These analytical QAOs are discussed in detail in Permit Attachment B3.

B-3b Acceptable Knowledge

Acceptable knowledge (**AK**) is used in TRU mixed waste characterization activities in five ways:

- To delineate TRU mixed waste streams
- To assess whether TRU mixed wastes comply with the TSDF-WAC
- To assess whether TRU mixed wastes exhibit a hazardous characteristic (20.4.1.200 NMAC, incorporating 40 CFR §261 Subpart C)
- To assess whether TRU mixed wastes are listed (20.4.1.200 NMAC, incorporating 40 CFR §261 Subpart D)
- To estimate waste material parameter weights

Acceptable knowledge is discussed in detail in Permit Attachment B4, which outlines the minimum set of requirements and DQOs which shall be met by the generator/storage sites in order to use acceptable knowledge. In addition, Section B-5a(3) of this permit attachment describes the assessment of acceptable knowledge through the Permittees' Audit and Surveillance Program.

B-3c Radiography and Visual Examination

Radiography is a nondestructive qualitative and quantitative technique that involves X-ray scanning of waste containers to identify and verify waste container contents. Visual examination (**VE**) constitutes opening a container and physically examining its contents. Generator/storage sites shall perform radiography or VE ~~on~~ of 100 percent of CH TRU mixed waste containers in waste streams~~, where acceptable knowledge does not substantiate the absence of prohibited items~~ except for those waste streams for which the Permittees approve a Scenario 1 or Scenario 2 Determination Request. No RH TRU mixed waste will be shipped to WIPP for storage or disposal without documentation of radiography or VE of 100 percent of the containers as specified in Permit Attachment B1. Radiography and/or visual examination will be used, when necessary, to examine a waste container to verify its physical form. These techniques can detect liquid wastes and containerized gases, which are prohibited for WIPP disposal. The prohibition of liquids and containerized gases prevents the shipment of corrosive, ignitable, or reactive wastes. Radiography and/or VE are also able to confirm that the physical form of the waste matches its waste stream description (i.e. Homogeneous Solids, Soil/Gravel, or Debris Waste [including uncategorized metals]). If the physical form does not match the waste stream description, the waste will be designated as another waste stream and assigned the preliminary hazardous waste codes associated with that new waste stream assignment. That is, if radiography and/or VE indicates that the waste does not match the waste stream description arrived at by acceptable knowledge characterization, a non-conformance report will be completed and the inconsistency will be resolved as specified in Permit Attachment B4. The proper waste stream assignment will be determined (including preparation of a new WSPF), the correct hazardous waste codes will be assigned, and the resolution will be documented. Refer to Permit Attachment B4 for a discussion of acceptable knowledge and its verification process.

Generator/storage sites may conduct visual examination of waste containers in lieu of radiography. For generator/storage sites that choose to use visual examination in lieu of radiography, the detection of any liquid waste in non-transparent inner containers, detected from shaking the container, will be handled by assuming that the container is filled with liquid and adding this volume to the total liquid in the payload container (e.g., 55 gallon drum or SWB). The payload container would be rejected and/or repackaged to exclude the container if it is over the TSDF-WAC limits. When radiography is used, or visual examination of transparent containers is performed, if any liquid in inner containers is detected, the volume of liquid shall be added to the total for the payload container. Radiography, or the equivalent, will be used as necessary on the existing/stored waste containers to verify the physical characteristics of the TRU mixed waste correspond with its waste stream identification/waste stream Waste Matrix Code and to identify prohibited items. Radiographic examination protocols and QA/QC methods are provided in Permit Attachment B1. Radiography and VE shall be subject to the Permittees' Audit and Surveillance Program (Permit Attachment B6).

B-3d Characterization Techniques and Frequency for Newly Generated and Retrievably Stored Waste

Generator/storage sites will use acceptable knowledge to delineate all TRU mixed waste containers into waste streams for the purposes of grouping waste for further characterization. The analyses performed may differ based on the waste stream and the physical form of the waste (i.e., heterogeneous debris waste cannot be sampled for totals analyses). Both

retrievably stored and newly generated wastes will be delineated in this fashion, though the types of acceptable knowledge used may differ. Section B-3b discusses the use of acceptable knowledge, sampling, and analysis in more detail. Acceptable knowledge is discussed more completely in Permit Attachment B4. Every TRU mixed waste stream will be assigned hazardous waste numbers based upon acceptable knowledge, and the generator/storage sites may ~~verify these designations~~ resolve the assignment of hazardous waste numbers using headspace gas (~~all~~ Summary Category Group~~s~~ S5000 only) and solid sampling and analysis (Summary Category Groups S3000 and S4000 only).

In the CIS for each waste stream, the generator/storage site will be required to document their methods, and the findings from those methods, for determining the physical form of the waste and the presence or absence of prohibited items for both retrievably stored and newly generated waste. Radiography and/or VE may be used to verify the physical form of retrievably stored TRU mixed waste. For newly generated waste, physical form and prohibited items may either be documented during packaging (using the VE technique) or verified after packaging using radiography (or VE in lieu of radiography).

For debris waste streams that do not have an AK Sufficiency Determination approved by the Permittees, containers selected in accordance with Permit Attachment B2 from those waste streams must be sampled and analyzed for VOCs in the headspace gas. Likewise, a statistically selected portion of homogeneous solids and soil/gravel waste streams must be sampled and analyzed for RCRA-regulated total VOCs, SVOCs, and metals when those waste streams do not have an AK Sufficiency Determination approved by the Permittees. Sampling and analysis methods used for waste characterization are discussed in Section B-3a.

In the process of performing organic headspace and solid sample analyses, nontarget compounds may be identified. These compounds will be reported as TICs. TICs reported in 25% of the samples and listed in 20.4.1.200 NMAC (incorporating 40 CFR §261) Appendix VIII, will be compared with acceptable knowledge data to determine if the TIC is in a listed hazardous waste in the waste stream. TICs identified through headspace gas analyses that meet the Appendix VIII list criteria and the 25 percent reporting criteria for a waste stream will be added to the headspace gas waste stream target list, regardless of the hazardous waste listing associated with the waste stream. TICs subject to inclusion on the target analyte list that are toxicity characteristic parameters shall be added to the target analyte list regardless of origin because the hazardous waste designation for these numbers is not based on source. However, for toxicity characteristic and non-toxic F003 constituents, the site may take concentration into account when assessing whether to add a hazardous waste number. TICs reported from the Totals VOC or SVOC analyses may be excluded from the target analyte list for a waste stream if the TIC is a constituent in an F-listed waste whose presence is attributable to waste packaging materials or radiolytic degradation from acceptable knowledge documentation. If the TIC associated with a total VOC or SVOC analysis cannot be identified as a component of waste packaging materials or as a product of radiolysis, the generator/storage site will add these TICs to the list of hazardous constituents for the waste stream (and assign additional EPA listed hazardous waste numbers, if appropriate). A permit modification will be submitted to NMED for their approval to add these constituents (and waste numbers), if necessary. For toxicity characteristic compounds and non-toxic F003 constituents, the generator/storage site may consider waste concentration when determining whether to change a hazardous waste number. Refer to Permit Attachment B3 for additional information on TIC identification.

Waste characterization solid sampling and analysis activities may differ for retrievably stored waste and newly generated waste. The waste characterization processes used by the generator/storage sites for both retrievably stored and newly generated waste streams will be evaluated during the Permittees' audit of the site. The typical waste characterization data collection design used by the generator/storage sites for each type of waste is described in the following sections. Table B-1 provides a summary of hazardous waste characterization requirements for all TRU mixed waste by waste characterization parameters.

Table B-5 summarizes the parameters, methods, and rationales for stored and newly generated CH TRU mixed wastes according to their waste forms.

WIPP may accept TRU mixed waste that has been repackaged or treated. Treated waste shall retain the original waste stream's listed hazardous waste number designation.

B-3d(1) Newly Generated Waste

The RCRA-regulated constituents in newly generated wastes will typically be documented at the time of generation based on acceptable knowledge for the waste stream. Newly generated TRU mixed waste characterization typically begins with verification that processes generating the waste have operated within established written procedures. Waste containers are delineated into waste streams using acceptable knowledge. The Permittees will require that the generator/storage sites document the methods used to delineate waste streams in the acceptable knowledge record and Acceptable Knowledge Summary Report. ~~Verification~~ Determination that the physical form of the waste (Summary Category Group) corresponds to the physical form of the assigned waste stream may be accomplished either during packaging or by performing radiography as specified in Permit Attachment B1, Section B1-3 for retrievably stored waste. Instead of using a video/audio tape as required with VE in lieu of radiography, the VE method for newly generated waste (or repackaged retrievably stored waste) uses a second operator, who is equally trained to the requirements stipulated in Permit Attachment B1, to provide additional verification by reviewing the contents of the waste container to ensure correct reporting. If the second operator cannot provide concurrence, corrective actions[2] will be taken as specified in Permit Attachment B3. The subsequent waste characterization activities depend on the assigned Summary Category Group, since waste within the Homogeneous Solids and Soils/Gravel Summary Category Groups may be characterized using different techniques than the waste in the Debris Waste Summary Category Group. The packaging configuration, type and number of filters, and rigid liner vent hole presence and diameter necessary to determine the appropriate drum age criteria (**DAC**) in accordance with Permit Attachment B1, Section B1-1, may be documented as part of the characterization information collected during the packaging of newly generated waste or repackaging of retrievably stored waste for those containers of debris waste that will undergo headspace gas sampling and analysis.

B-3d(1)(a) Sampling of Newly Generated Homogeneous Solids and Soil/Gravel

When a Determination Request has not been approved by the Permittees, sampling and analysis of newly generated homogeneous solid and soil/gravel waste streams shall be

[2] "Corrective action" as used in this WAP and its attachments does not mean corrective action as defined under HWA, RCRA, and their implementing regulations.

conducted in accordance with the requirements specified in Permit Attachment B1, Section B1-2. The number of newly generated homogeneous solid and soil/gravel waste containers to be sampled will be determined using the procedure specified in Section B2-1, wherein a statistically selected portion of the waste will be sampled.

B-3d(2) Retrievably Stored Waste

All retrievably stored waste containers will first be delineated into waste streams using acceptable knowledge. The Permittees will require that the generator/storage sites document the methods used to delineate waste streams in the acceptable knowledge record and Acceptable Knowledge Summary Report. Retrievably stored waste containers may be examined using radiography or VE to ~~verify~~ determine the physical waste form (Summary Category Group), ~~to verify~~ the absence of prohibited items, and ~~to determine~~ additional waste characterization techniques that may be used based on the Summary Category Groups (i.e., S3000, S4000, S5000).

The headspace gas sampling method provided in Permit Attachment B1 will be used, when necessary, to resolve the assignment of EPA hazardous waste numbers to debris waste streams, as specified in Permit Attachment B4.

A statistically selected portion of retrievably stored homogeneous solids and soil/gravel wastes will be sampled and analyzed for total VOCs, SVOCs, and metals, when necessary. The sample location selection method is described in Permit Attachment B2. The sampling methods for these wastes are provided in Permit Attachment B1.

The toxicity characteristic of retrievably stored homogeneous solids and soil/gravel wastes will be determined using total analysis of toxicity characteristic parameters or TCLP. To determine if a waste exhibits a toxicity characteristic for compounds specified in 20.4.1.200 NMAC (incorporating 40 CFR §261, Subpart C), TCLP may be used instead of total analyses. Appendix C3 of the WIPP RCRA Part B Permit Application (DOE, 1997) discusses comparability of totals analytical results to those of the TCLP method.

Representativeness of containers selected for headspace gas sampling and waste subjected to homogeneous solids and soil/gravel sampling and analysis will be validated by the generator/storage site and by the Permittees during an audit (Permit Attachment B6) via examination of documentation that shows that random samples were collected. (Because representativeness is a quality characteristic that expresses the degree to which a sample or group of samples represent the population being studied, the random sampling of waste streams ensures representativeness.)

B-4 Data Verification and Quality Assurance

The Permittees will ensure that applicable waste characterization processes performed by generator/storage sites sending TRU mixed waste to the WIPP for disposal meets WAP requirements through data validation, usability and reporting controls. Verification occurs at three levels: 1) the data generation level, 2) the project level, and 3) the Permittee level. The

validation and verification process and requirements ~~for the data generation and project~~ at each level are described in Permit Attachment B3, Section B3-10. The validation and verification process at the Permittee Level is also described in ~~Attachment B7~~ Section B-5.

B-4a Data Generation and Project Level Verification Requirements

B-4a(1) Data Quality Objectives

The waste characterization data obtained through WAP implementation will be used to ensure that the Permittees meet regulatory requirements with regard to both regulatory compliance and to ensure that all TRU mixed wastes are properly managed during the Disposal Phase. To satisfy the RCRA regulatory compliance requirements, the following DQOs are established by this WAP:

- Acceptable Knowledge
  - To delineate TRU mixed waste streams.
  - To assess whether TRU mixed wastes comply with the applicable requirements of the TSDF-WAC.
  - To assess whether TRU mixed wastes exhibit a hazardous characteristic (20.4.1.200 NMAC, incorporating 40 CFR §261 Subpart C).
  - To assess whether TRU mixed wastes are listed (20.4.1.200 NMAC, incorporating 40 CFR §261, Subpart D).
  - To estimate waste material parameter weights.
- Headspace-Gas Sampling and Analysis
  - To identify VOCs and quantify the concentrations of VOC constituents in waste containers to resolve the assignment of EPA hazardous waste numbers
- Homogeneous Waste Sampling and Analysis
  - To compare UCL_{90} values for the mean measured contaminant concentrations in a waste stream with specified toxicity characteristic levels in 20.4.1.200 NMAC (incorporating 40 CFR §261), to determine if the waste is hazardous, and to resolve the assignment of EPA hazardous waste numbers.

- Radiography
  - To ~~verify the TRU mixed waste streams by Waste Matrix Code for purposes of physical waste form identification and determination of sampling and analytical requirements, to identify prohibited items, and to confirm the waste stream delineation by acceptable knowledge. to verify~~ determine the physical waste form, the absence of prohibited items, and additional waste characterization techniques that may be used based on the Summary Category Groups (i.e., S3000, S4000, S5000).
- Visual Examination
  - To ~~verify the TRU mixed waste streams by Waste Matrix Code for purposes of physical waste form identification, determination of sampling and analytical requirements, and to identify prohibited items~~ determine the physical waste form, the absence of prohibited items, and additional waste characterization techniques that may be used based on the Summary Category Groups (i.e., S3000, S4000, S5000).

Reconciliation of these DQOs by the Generator/Storage Site Project Manager or the Permittee approved laboratories, as applicable, is addressed in Permit Attachment B3. Reconciliation requires determining whether sufficient type, quality, and quantity of data have been collected to ensure the DQO's cited above can be achieved.

B-4a(2) Quality Assurance Objectives

The generator/storage sites or the Permittee approved laboratories, as applicable, shall demonstrate compliance with each QAO associated with the various characterization methods as presented in Permit Attachment B3. Generator/Storage Site Project Managers or the Permittee approved laboratories, as applicable, are further required to perform a reconciliation of the data with the DQOs established in this WAP. The Generator/Storage Site Project Manager or the Permittee approved laboratories, as applicable, shall conclude that all of the DQOs have been met for the characterization of the waste stream prior to submitting a WSPF to the Permittees for approval (Permit Attachment B3). The following QAO elements shall be considered for each technique, as a minimum:

- Precision
  - Precision is a measure of the mutual agreement among multiple measurements.
- Accuracy
  - Accuracy is the degree of agreement between a measurement result and the true or known value.

B-4a(5) Data Verification

BDRs will document the testing, sampling, and analytical results from the required characterization activities, and document required QA/QC activities. Data validation and verification at both the data-generation level and the project level will be performed as required by this Permit before the required data are transmitted to the Permittees (Permit Attachment B3). NMED may request, through the Permittees, copies of any BDR, and/or the raw data validated by the generator/storage sites, to check the Permittees' audit of the validation process.

B-4a(6) Data Transmittal

BDRs will include the information required by Section B3-10 and will be transmitted by hard copy or electronically (provided a hard copy is available on demand) from the data generation level to the project level.

The generator/storage site will transmit waste container information electronically via the WIPP Waste Information System (**WWIS**). Data will be entered into the WWIS in the exact format required by the database. Refer to Section B-5a(1) for WWIS reporting requirements and the *WIPP Waste Information System User's Manual for Use by Shippers/Generators* (DOE, 2001) for the WWIS data fields and format requirements.

Once a waste stream is ~~fully~~ characterized, the Site Project Manager will also submit to the Permittees a WSPF (Figure B-1) accompanied by the CIS for that waste stream which includes reconciliation with DQOs (Section B3-12b(1)). The WSPF, the CIS, and information from the WWIS will be used as the basis for acceptance of waste characterization information on TRU mixed wastes to be disposed of at the WIPP.

B-4a(7) Records Management

Records related to waste characterization activities performed by the generator/storage sites will be maintained in the testing, sampling, or analytical facility files or generator/storage site project files. Permittee approved laboratories will forward testing, sampling, and analytical records along with BDRs, to the generator/storage site project office for inclusion in the generator/storage site's project files and to the Permittees for inclusion in the WIPP facility operating record. Raw data obtained by testing, sampling, and analyzing TRU mixed waste in support of this WAP will be identifiable, legible, and provide documentary evidence of quality. TRU mixed waste characterization records submitted to the Permittees shall be maintained in the WIPP facility operating record and be available for inspection by NMED.

Records inventory and disposition schedule (**RIDS**) or an equivalent system shall be prepared and approved by generator/storage site personnel. All records relevant to an enforcement action under this Permit, regardless of disposition, shall be maintained at the generator/storage site until NMED determines they are no longer needed for enforcement action, and then dispositioned as specified in the approved RIDS. All waste characterization data and related QA/QC records in the generator/storage site project files for TRU mixed waste to be shipped to the WIPP facility are designated as either Lifetime Records or Non-Permanent Records. Records that are designated as Lifetime Records shall be maintained for the life of the waste characterization program at a participating generator/storage site plus six years, then offered to

the Permittees for permanent archival of information of these records in the appropriate form, or transferred to the appropriate Federal Records Center (**FRC**). Waste characterization records designated as Non-Permanent Records shall be maintained for ten years from the date of (record) generation and then dispositioned according to their approved RIDS. If a generator/storage site ceases to operate, all records shall be transferred before closeout. Table B-6 is a listing of records designated as Lifetime Records and Non-Permanent Records. Classified information will not be transferred to WIPP. Notations will be provided to the Permittees indicating the absence of classified information. The approved generator/storage site RIDS will identify appropriate disposition of classified information. Nothing in this Permit is intended to, nor should it be interpreted to, require the disclosure of any U.S. Department of Energy classified information to persons without appropriate clearance to view such information.

B-5 Permittee Level Waste Screening and Verification of TRU Mixed Waste

Permittee waste screening is a two-phased process. Phase I will occur prior to configuring shipments of TRU mixed waste. Phase II will occur after configuration of shipments of TRU mixed waste but before it is ~~placed into storage or~~ disposed at the WIPP facility. Figure B-3 presents Phase I and a portion of Phase II of the TRU mixed waste screening process. Permit Attachment B7 presents the Permittees' TRU mixed waste confirmation portion of Phase II activities~~, which are the Permittees TRU mixed waste confirmation processes~~.

B-5a Phase I Waste Stream Screening and Verification

The first phase of the waste screening and verification process will occur before TRU mixed waste is shipped to the WIPP facility. Before the Permittees begin the process of accepting TRU mixed waste from a generator/storage site, an initial audit of that generator/storage site will be conducted as part of the Permittees' Audit and Surveillance Program (Permit Attachment B6). The RCRA portion of the generator/storage site audit program will provide on-site verification of characterization procedures; BDR preparation; and recordkeeping to ensure that all applicable provisions of the WAP requirements are met. Another portion of the Phase I verification is the WSPF approval process. At the WIPP facility, this process includes verification that all of the required elements of the WSPF and the CIS are present (Permit Attachment B3) and that the waste characterization information meet acceptance criteria required for compliance with the WAP (Section B3-12b(1)).

A generator/storage site must first prepare a QAPjP, which includes applicable WAP requirements, and submit it to the Permittees for review and approval (Permit Attachment B5). Once approved, a copy of the QAPjP is provided to NMED for examination. The generator/storage site will implement the specific parameters of the QAPjP after it is approved. An initial audit will be performed after QAPjP implementation and prior to the generator/storage site being certified for shipment of waste to WIPP. Additional audits, focusing on the results of waste characterization, will be performed at least annually. The Permittees have the right to conduct unannounced audits and to examine any records that are related to the scope of the audit. See Section B-5a(3) and Permit Attachment B6 for further information regarding audits.

When the required waste stream characterization data have been collected by a generator/storage site and the initial generator/storage site audit has been successfully completed, the generator/storage Site Project Manager will verify that waste stream

made to resolve discrepancies by contacting the generator/storage site in order for the waste stream to be eligible for shipment to the WIPP facility. If discrepancies in the waste stream are detected at the generator/storage site, the generator/storage site will implement a non-conformance program to identify, document, and report discrepancies (Permit Attachment B3).

The WSPF shall pass all verification checks by the Permittees in order for the waste stream to be approved for shipment to the WIPP facility. The WSPF check against waste container data will occur during the initial WSPF approval process (Section B-5a).

The EPA hazardous waste numbers for the wastes that appear on the Waste Stream Profile Form will be compared to those in Table B-9 to ensure that only approved wastes are accepted for management, storage, or disposal at WIPP. Some of the waste may also be identified by unique state hazardous waste codes or numbers. These wastes are acceptable at WIPP as long as the TSDF-WAC are met. The CIS will be reviewed by the Permittees to verify that the waste has been classified correctly with respect to the assigned EPA hazardous waste numbers. Any analytical method used will be compared to those listed in Tables B-2, B-3, and B-4 to ~~assure~~ ensure that only approved analytical methods were used for analysis of the waste. The Permittees will verify that the applicable requirements of the TSDF-WAC ~~compliance has~~ have been met by the generator/storage site.

The EPA hazardous waste numbers for the wastes that appear on the Waste Stream Profile Form will be compared to those in the WIPP Hazardous Waste Permit Application Part A, Permit Attachment O, to ensure that only approved wastes are accepted for storage or disposal at WIPP. Some of the waste may also be identified by unique state hazardous waste numbers. These wastes are acceptable at WIPP as long as the TSDF-WAC are met. The CIS will be reviewed by the Permittees to verify that the waste has been classified correctly with respect to the assigned EPA hazardous waste numbers. The Permittees will verify that the applicable requirements of the TSDF-WAC ~~compliance has~~ have been met by the generator/storage site.

Waste data transferred via the WWIS after WSPF approval will be compared with the approved WSPF. Any container from an approved hazardous waste stream with a description different from its WSPF will not be managed, stored, or disposed at WIPP.

The Permittees will also verify that three different types of data specified below are available for every container holding TRU mixed waste before that waste is managed, stored, or disposed at WIPP: 1) an assignment of the waste stream's waste description (by Waste Matrix Codes) and Waste Matrix Code Group; 2) a determination of ignitability, reactivity, and corrosivity; and 3) a determination of compatibility. The verification of waste stream description will be performed by reviewing the WWIS for consistency in the waste stream description and WSPF. The CIS will indicate if the waste has been checked for the characteristics of ignitability, corrosivity, and reactivity. The final verification of waste compatibility will be performed using Appendix C1 of the WIPP RCRA Part B Permit Application (DOE, 1997), the compatibility study.

Any container with unresolved discrepancies associated with hazardous waste characterization will not be managed, stored, or disposed at the WIPP facility until the discrepancies are resolved. ~~All shipments of the subject waste stream will cease until the corrective action(s), as necessary, have been implemented and the discrepancy resolved. The Permittees will notify NMED when the certification status of a waste stream at a generator/storage site is revoked.~~ If

the discrepancies cannot be resolved, the Permittees will revoke the approval status of the waste stream, suspend shipments of the waste stream, and notify NMED. Waste stream approval ~~characterization and certification authority~~ will not be reinstated until the generator/storage site demonstrates all corrective actions have been implemented and the generator/storage site waste characterization program is reassessed by the Permittees.

B-5a(3) Permittees' Audit and Surveillance Program

An important part of the Permittees' verification process is the Permittees' Audit and Surveillance Program. The focus of this audit program is compliance with this WAP and the Permit. This audit program addresses all AK implementation and waste sampling and analysis activities, from waste stream classification assignment through waste container certification, and ensures compliance with SOPs and the WAP. Audits will ensure that containers and their associated documentation are adequately tracked throughout the waste handling process. Operator qualifications will be verified, and implementation of QA/QC procedures will be surveyed. A final report that includes generator/storage site or Permittee approved laboratory audit results and applicable WAP-related corrective action report (**CAR**) resolution will be provided to NMED for approval, and will be kept in the WIPP facility operating record until closure of the WIPP facility.

An initial audit will be performed at each generator/storage site performing waste characterization activities prior to the formal acceptance of the WSPFs and/or any waste characterization data supplied by the generator/storage sites. Audits will be performed at least annually thereafter, including the possibility of unannounced audits (i.e., not a regularly scheduled audit). These audits will allow NMED to verify that the Permittees have implemented the WAP and that generator/storage sites have implemented a QA program for the characterization of waste and meet applicable WAP requirements. The Permittees will also audit annually the Permittee approved laboratories performing waste sampling and/or analysis. The accuracy of physical waste description and waste stream assignment provided by the generator/storage site will be verified by review of the radiography results, and visual examination of data records and radiography images (as necessary) during audits conducted by the Permittees. More detail on this audit process is provided in Permit Attachment B6.

B-5b Phase II Waste Shipment Screening and Verification

As presented in Figure B-3, Phase II of the waste shipment screening and verification process ~~includes~~ begins with confirmation of the waste as required by Permit Attachment B7 after waste shipments are configured. ~~examination of a waste shipment after~~ After the waste shipment has arrived~~. The Phase II~~, the Permittees will screen the shipment to determine~~: 1)~~ the completeness and accuracy of the EPA Hazardous Waste Manifest and the~~; 2) waste shipment completeness and container defects; 3)~~ land disposal restriction notice completeness. The Permittees will verify there are no~~; and 4)~~ waste shipment irregularities and the waste containers are in good condition. ~~In addition, as part of Phase II activities, the Permittees will perform waste confirmation activities specified in Attachment B7.~~ Only those waste containers that are from shipments that have been confirmed as required by Permit Attachment B7 and that pass all Phase II waste screening and verification determinations will be emplaced at WIPP. For each container shipped, the Permittees shall ensure that the generator/storage sites provide the following information:

Hazardous Waste Manifest Information:

- Generator/storage site name and EPA ID
- Generator/storage site contact name and phone number
- Quantity of waste
- List of the hazardous waste numbers in the shipment
- Listing of all shipping container IDs (Shipping Package serial number)
- Signature of authorized generator representative

Specific Waste Container information:

- Waste Stream Identification Number
- List of Hazardous ~~Hazardous~~ Waste Numbers per Container
- Certification Data
- Shipping Data (Assembly numbers, ship date, shipping category, etc.)

This information shall also be supplied electronically to the WWIS. The container-specific information will be supplied electronically as described in Section B-5a(1), and shall be supplied prior to the Permittees' management, storage, or disposal of the waste.

The Permittees will verify each approved shipment upon receipt at WIPP against the data on the WWIS shipment summary report to ensure containers have the required information. A Waste Receipt Checklist will be used to document the verification.

B-5b(1) Examination of the EPA Uniform Hazardous Waste Manifest and Associated Waste Tracking Information

Upon receipt of a TRU mixed waste shipment, the Permittees will make a determination of EPA Uniform Hazardous Waste Manifest completeness and sign the manifest to allow the driver to depart. ~~The~~ For CH TRU mixed waste, the Permittees will then make a determination of waste shipment completeness by checking the unique, bar-coded identification number found on each container holding TRU mixed waste against the WWIS database after opening the Shipping Package.

The WWIS links the bar-coded identification numbers of all containers in a specific waste shipment to the waste assembly (for 7-packs, 4-packs, ~~and~~ 3-packs, and 5-drum carriages) and to the shipment identification number, which is also written on the EPA Hazardous Waste Manifest.

For shipments in the RH-TRU 72B cask, ~~only one payload container is bar-coded~~ the identification number of the single payload container is read during cask-to-cask transfer in the Transfer Cell and then checked against the WWIS database. For shipments in the CNS 10-160B cask, the Permittees will make a determination of waste shipment completeness by checking the unique identification number found on each container holding TRU mixed waste in the Hot Cell against the WWIS database after unloading the cask. ~~the WWIS links the bar-coded identification numbers of all containers in a specific waste shipment to the shipment identification number, which is also written on the EPA hazardous waste manifest.~~

Generators electronically transmit the waste shipment information to the WWIS before the TRU mixed waste shipment is transported. Once a TRU mixed waste shipment arrives, the Permittees verify the identity of each cask or container (or one container in a bound 7-pack, 4-pack, or 3-pack) using the data already in the WWIS.

The WWIS will maintain waste container receipt and emplacement information provided by the Permittees. It will include, among other items, the following information associated with each container of TRU mixed waste:

- Package inner containment vessel or shipping cask closure date
- Package (container or canister) receipt date
- Overpack identification number (if appropriate)
- Package (container or canister) emplacement date
- Package (container or canister) emplacement location

~~The WWIS links the bar-coded identification numbers of all containers in a specific TRU mixed waste shipment to the waste assembly (for 7-packs, 4-packs, and 3-packs) and to the shipment identification number, which is also written on the EPA Hazardous Waste Manifest. Generators electronically transmit the waste shipment information to the WWIS before the TRU mixed waste shipment is transported. Once a TRU mixed waste shipment arrives, the Permittees verify the identity of each container (or one container in a bound 7-pack, 4-pack, or 3-pack) using the data already in the WWIS.~~

Manifest discrepancies will be identified during manifest examination and container bar-code WWIS data comparison. A manifest discrepancy is a difference between the quantity or type of hazardous waste designated on the manifest and the quantity or type of hazardous waste the WIPP facility actually receives. The generator/storage site technical contact (as listed on the manifest) will be contacted to resolve the discrepancy. If the discrepancy is identified prior to the containers being removed from the package or shipping cask, the waste will be retained in the parking area. If the discrepancy is identified after the waste containers are removed from the package or cask, the waste will be retained in the Waste Handling Building (**WHB**) until the discrepancy is resolved. Errors on the manifest can be corrected by the WIPP facility with a verbal (followed by a mandatory written) concurrence by the generator/storage site technical contact. All discrepancies that are unresolved within fifteen (15) days of receiving the waste will be immediately reported to NMED in writing. Notifications to NMED will consist of a letter describing the discrepancies, discrepancy resolution, and a copy of the manifest. If the manifest discrepancies have not been resolved within thirty (30) days of waste receipt, the shipment will be returned to the generator/storage facility. If it becomes necessary to return waste containers to the generator/storage site, a new EPA Uniform Hazardous Waste Manifest may be prepared

information in the WWIS

- Whether there~~ are any~~ containers are in good condition~~ defects~~

The Permittees will verify that the containers (as identified by their container ID numbers) are the containers for which accepted data already exists in the WWIS. A check will be performed by the Permittees comparing the data on the WWIS Shipment Summary Report for the shipment to the actual shipping papers (including the EPA Hazardous Waste Manifest). This check also verifies that the containers included in the shipment are those for which approved shipping data already exist in the WWIS Transportation Data Module (Table B-7). For standard waste boxes (**SWBs**) and ten drum overpacks (**TDOPs**), this check will include comparing the barcode on the container with the container number on the shipping papers and the data on the WWIS Shipment Summary Report. For 7-pack assemblies, one of the seven container barcodes will be read by the barcode reader and compared to the assembly information for this container on the WWIS Shipment Summary Report. This will automatically identify the remaining six containers in the assembly. This process enables the Permittees to identify all of the containers in the assembly with minimum radiological exposure. If all of the container IDs and the information on the shipping papers agree with the WWIS Shipment Summary Report, and the shipment was subject to waste confirmation by the Permittees ~~at an off-site facility~~ prior to shipment to WIPP as specified in Permit Attachment B7, the containers will be approved for storage and disposal at the WIPP facility.

B-6 Permittees' Waste Shipment Screening QA/QC

Waste shipment screening QA/QC ensures that TRU mixed waste received is that which has been approved for shipment during the Phase I and Phase II screening. This is accomplished by maintaining QA/QC control of the waste shipment screening process. The screening process will be controlled by administrative processes which will generate records documenting waste receipt that will become part of the waste receipt record. The waste receipt record documents that container identifications correspond to shipping information and approved TRU mixed waste streams. The Permittees will extend QA/QC practices to the management of all records associated with waste shipment screening determinations.

B-7 Records Management and Reporting

As part of the WIPP facility's operating record, data and documents associated with waste characterization and waste confirmation are managed in accordance with standard records management practices.

All waste characterization data for each TRU mixed waste container transmitted to WIPP shall be maintained by the Permittees for the active life of the WIPP facility plus two years. The active life of the WIPP facility is defined as the period from the initial receipt of TRU mixed waste at the facility until NMED receives certification of final closure of the facility. After their active life, the records shall be retired to the FRC and maintained for 30 years. These records will then be offered to the National Archives. However, this disposition requirement does not preclude the inclusion of these records in the permanent marker system or other requirements for institutional control.

The storage of the Permittees' copy of the manifest, LDR information, waste characterization data, WSPFs, waste confirmation ~~activities~~ activity records, and other related records will be identified on the appropriate records inventory and disposition schedule.

~~Waste characterization and waste confirmation data and documents related to waste characterization that are part of the WIPP facility operating record are managed in accordance with the following guidelines:~~

~~B-7a General Requirements~~

- ~~Records shall be legible~~
- ~~Corrections shall be made with a single line through the incorrect information, and the date and initial of the person making the correction shall be added~~
- ~~Black ink is encouraged, unless a copy test has been conducted to ensure the other color ink will copy~~
- ~~Use of highlighters on records is discouraged~~
- ~~Records shall be reviewed for completeness~~
- ~~Records shall be validated by the cognizant manager or designee~~

~~B-7b Records Storage~~

- ~~Active records shall be stored when not in use~~
- ~~Quality records shall be kept in a one-hour (certified) fire-rated container or a copy of a record shall be stored separately (sufficiently remote from the original) in order to prevent destruction of both copies as a result of a single event such as fire or natural disaster~~
- ~~Unauthorized access to the records is controlled by locking the storage container or controlling personnel access to the storage area~~

The following records will be maintained for waste characterization and waste confirmation purposes as part of the WIPP facility operating record:

- Completed WIPP WSPFs and accompanying CIS, including individual container data as transferred on the WWIS (or received as hard-copy) and any discrepancy-related documentation as specified in Section B-5a

- Radiography and visual examination records (data sheets, packaging logs, and video and audio recordings) of waste confirmation activities

- Completed Waste Receipt Checklists and discrepancy-related documentation as specified in Section B-5b

- WIPP WWIS Waste Emplacement Report as specified in Section B-5a(1)

- Audit reports and corrective action reports from the Permittees' Audit and Surveillance Program audits as specified in Section B-5a(3) and Permit Attachment B6

- CARs and closure information for corrective actions taken due to nonconforming waste being identified during waste confirmation by the Permittees

These records will be maintained for all TRU mixed waste managed at the WIPP facility.

Waste characterization and waste confirmation data and documents related to waste characterization that are part of the WIPP facility operating record are managed in accordance with the following guidelines:

B-7a General Requirements

- Records shall be legible
- Corrections shall be made with a single line through the incorrect information, and the date and initial of the person making the correction shall be added
- Black ink is encouraged, unless a copy test has been conducted to ensure the other color ink will copy
- Use of highlighters on records is discouraged
- Records shall be reviewed for completeness
- Records shall be validated by the cognizant manager or designee

B-7b Records Storage

- Active records shall be stored when not in use
- Quality records shall be kept in a one-hour (certified) fire-rated container or a copy of a record shall be stored separately (sufficiently remote from the original) in order to prevent destruction of both copies as a result of a single event such as fire or natural disaster
- Unauthorized access to the records is controlled by locking the storage container or controlling personnel access to the storage area

B-8 Reporting

The Permittees will provide a biennial report in accordance with 20.4.1.500 NMAC (incorporating 40 CFR §264.75) to NMED that includes information on actual volume and waste descriptions received for disposal during the time period covered by the report.

TABLE B-2
HEADSPACE TARGET ANALYTE LIST AND METHODS [b]

Parameter	EPA Specified Analytical Method
Benzene Bromoform Carbon tetrachloride Chlorobenzene Chloroform 1,1-Dichloroethane 1,2-Dichloroethane 1,1-Dichloroethylene (cis)-1,2-Dichloroethylene (trans)-1,2-Dichloroethylene Ethyl benzene Ethyl ether ~~Formaldehyde~~ [b] ~~Hydrazine~~ [c] Methylene chloride 1,1,2,2-Tetrachloroethane Tetrachloroethylene Toluene 1,1,1-Trichloroethane Trichloroethylene 1,1,2-Trichloro-1,2,2-trifluoroethane Xylenes	EPA: Modified TO-14[a]; Modified 8240/8260 EPA - Approved FTIRS
Acetone Butanol Methanol Methyl ethyl ketone Methyl isobutyl ketone	EPA: Modified TO-14[a]; Modified 8240/8260 Method 8015 EPA - Approved FTIRS

[a] U.S. Environmental Protection Agency (EPA), 1988, "Compendium Method TO-14, the Determination of Volatile Organic Compounds (VOC) in Ambient Air Using SUMMA® Passivated Canister Sampling and Gas Chromatographic Analysis," in Compendium of Methods for the Determination of Toxic Organic Compounds on Ambient Air. Research Triangle Park, North Carolina, Quality Assurance Division, Monitoring System Laboratory, U.S. EPA. The most current revision of the specified methods may be used.

[b] Required only for debris waste when required to resolve the assignment of EPA hazardous waste numbers.

TABLE B-5 (CONTINUED)
SUMMARY OF PARAMETERS, CHARACTERIZATION METHODS, AND RATIONALE FOR TRANSURANIC MIXED WASTE (STORED WASTE)

Waste Matrix Code Summary Categories	Waste Matrix Code Groups	Characterization Parameter	Method	Rationale
S5000–Debris Waste	C Uncategorized metal (metal waste other than lead/cadmium) C Lead/cadmium waste C Inorganic nonmetal waste C Combustible waste C Graphite waste C Heterogeneous waste C Composite filter waste	Physical waste form	Acceptable knowledge, radiography, and/or visual examination	C Determine waste matrix C Demonstrate compliance with waste acceptance (e.g., no free liquids, no incompatible wastes, no compressed gases)
		~~Headspace gases~~ Hazardous constituents C ~~Gas VOCs~~ Characteristic C Listed	Statistical gas sampling and analysis [a] (see Table B-2)	C Resolve the assignment of EPA hazardous waste numbers
		Hazardous constituents C Characteristic	Acceptable knowledge	C Determine characteristic metals and organics

TABLE B-5 (CONTINUED)
SUMMARY OF PARAMETERS, CHARACTERIZATION METHODS, AND RATIONALE FOR TRANSURANIC MIXED WASTE (NEWLY GENERATED WASTE)

Waste Matrix Code Summary Categories	Waste Matrix Code Groups	Characterization Parameter	Method	Rationale
S5000–Debris Waste	C Uncategorized metal (metal waste other than lead/cadmium) C Lead/cadmium waste C Inorganic nonmetal waste C Combustible waste C Graphite waste C Heterogeneous waste C Composite filter waste	Physical waste form	Acceptable knowledge, radiography, and/or visual examination	C Determine waste matrix C Demonstrate compliance with waste acceptance (e.g., no free liquids, no incompatible wastes, no compressed gases)
		~~Headspace gases~~ Hazardous constituents C ~~Gas VOCs~~ Characteristic C Listed	Statistical gas sampling and analysis [a] (see Table B-2)	C Resolve the assignment of EPA hazardous waste numbers
		Hazardous constituents C Characteristic	Acceptable knowledge	C Determine characteristic metals and organics C Determine total quantity of metals, VOCs, and semi-VOCs

[a] Applies to waste streams that require sampling.

Figure B-2
Waste ~~Data Collection Design for~~ Characterization ~~of Newly Generated Waste~~ Process

Figure B-3
TRU Mixed Waste Screening and Verification ~~Flow Diagram~~

Figure B-3
TRU Mixed Waste Screening and Verification (Continued)

Visual examination performed using two generator site personnel shall meet the following minimum requirements:

- At least two generator site personnel shall approve the data forms or packaging logs attesting to the contents of the waste container.
- The data forms or packaging logs shall contain an inventory of waste items in sufficient detail that another trained visual examination expert can identify the associated waste material parameters.
- The waste container identification number shall be recorded on the data forms or packaging logs.

Visual examination video/audio media of containers which contain classified shapes shall be considered classified information. Visual examination data forms or packaging logs will not be considered classified information.

Visual examination records may be used for characterization of TRU mixed waste. The visual examination records must meet the minimum requirements listed above and shall be reviewed by operators trained and qualified to the requirements listed below. The operators will prepare data forms based on the visual examination records. Visual examination batch data reports will be prepared, reviewed, and approved as described in Permit Attachment B, Section B-4, and Permit Attachment B3.

Standardized training for visual inspection shall be developed. Visual inspectors shall be instructed in the specific waste generating processes, typical packaging configurations, and expected waste material parameters expected to be found in each Waste Matrix Code at the site. The training shall be site specific to include the various waste configurations generated/stored at the site. For example, the particular physical forms and packaging configurations at each site will vary so operators shall be trained on types of waste that are generated, stored, and/or characterized at that particular site. Visual examination personnel shall be requalified once every two years.

Each visual examination facility shall designate a visual examination expert. The visual examination expert shall be familiar with the waste generating processes that have taken place at that site and also be familiar with all of the types of waste being characterized at that site. The visual examination expert shall be responsible for the overall direction and implementation of the visual examination at that facility. The Permittees shall require site QAPjPs to specify the selection, qualification, and training requirements of the visual examination expert.

B1-5 Custody of Samples

Chain-of-Custody on field samples (including field QC samples) will be initiated immediately after sample collection or preparation. Sample custody will be maintained by ensuring that samples are custody sealed during shipment to the laboratory. After samples are accepted by the analytical laboratory, custody is maintained by assuring the samples are in the possession of an authorized individual, in that individual's view, in a sealed or locked container controlled by that individual, or in a secure controlled access location. Sample custody will be maintained until

and RCRA-toxicity determination of a waste stream, then, excludes contaminants associated with F-numbers that have been assigned to the waste stream.

The sampling and analysis strategy is illustrated in Figure B2-1. Preliminary estimates of the mean concentration and variance of each RCRA regulated contaminant in the waste will be used to determine the number of waste containers to select for sampling and analysis. Preliminary estimates will be based on five samples selected randomly from the waste stream. If the entire waste stream is not ~~available~~ accessible for sampling then five preliminary samples will be selected randomly from the ~~available~~ accessible population. As the rest of the waste stream is retrieved or generated, additional selected containers will be sampled as provided below and the analytical results will be reported to the Permittees. Samples collected to establish preliminary estimates that are selected, sampled, and analyzed using a Permittee approved laboratory in accordance with applicable provisions of the WAP may be used as part of the required number of samples to be collected. The applicability of the preliminary estimates to the waste stream to be sampled shall be justified and documented. The preliminary estimates will be determined in accordance with the following equations:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i \qquad \text{(B2-5)}$$

$$s^2 = \frac{1}{n-1}\sum_{i=1}^{n} (x_i - \bar{x})^2 \qquad \text{(B2-6)}$$

~~where~~ Where:

x ~~is~~ = the calculated mean. ~~and~~
s^2 ~~is~~ = the calculated concentration variance.~~,~~
n ~~is~~ = the number of samples analyzed.~~,~~
x_i ~~is~~ = the concentration determined in the *ith* sample.~~, and~~
i ~~is~~ = an index from 1 to n.

Based upon the preliminary estimates of x and s^2 for each chemical contaminant of concern, estimate the appropriate number of samples (*n)* to be collected for each contaminant using the following formulas from SW-846 (EPA 1996):

$$n = \frac{t^2_{\alpha,n_0-1}s^2}{(RT-\bar{x})^2} \qquad \text{(B2-7)}$$

Where:

n_0 = the initial number of samples used to calculate the preliminary sample estimate.
n = the calculated number of samples in the preliminary estimate.
t^2 = the 90th percentile for a t distribution with n_0-1 degrees of freedom.
RT = Regulatory Threshold of the contaminant (TC limit for toxicity characteristic wastes, PRQL for listed wastes)

The number of samples to be collected will be based upon the largest n calculated for each of the contaminants of concern. The actual number of samples collected shall be adjusted as necessary to ensure that an adequate number of samples are collected to allow for acceptable levels of completeness.

All calculations should be rounded up to the nearest integer. A minimum of five containers shall be sampled and analyzed in each waste stream. If there are fewer than the minimum or required number of containers in a waste stream, one or more containers shall be sampled more than once to obtain the samples of the waste. Otherwise any one container may be selected for sampling only once.

The calculated total number of required waste containers will then be randomly sampled and analyzed using a Permittee approved laboratory. Waste container samples from the preliminary mean and variance estimates may be counted as part of the total number of calculated required samples if and only if:

- There is documented evidence that the waste containers for the preliminary estimate samples were selected in the same random manner as is chosen for the required samples.

- There is documented evidence that the method of sample collection in the preliminary estimate samples were identical to the methodology to be employed for the required samples.

- There is documented evidence that the method of sample analysis in the preliminary estimate samples were identical to the analytical methodology employed for the required samples.

- There is documented evidence that the validation of the sample analyses in the preliminary estimate samples were comparable to the validation employed for the required samples. In addition, the validated samples results shall indicate that all sample results were valid according to the analytical methodology.

If only a portion of a waste stream is ~~available~~ accessible for sampling (e.g., the remainder of the waste stream will be recovered from storage at the generator/storage site, or only a portion of the waste stream has been repackaged, treated, or generated), the calculated number of samples will be randomly selected from the ~~available~~ accessible portion of the waste stream. A minimum of five randomly selected samples will be obtained and analyzed from the ~~available~~ accessible portion of the waste stream. The Permittees may approve the WSPF and authorize the generator/storage site to begin shipping the waste stream to WIPP once the analytical data

for the randomly selected samples from the ~~available~~ accessible portion of the waste stream have been obtained.

The generator/storage site will also randomly select the calculated number of sample locations from the waste stream as a whole~~, both the available and unavailable portions~~. A minimum of five randomly selected sample locations will be selected from the waste stream as a whole. As those randomly selected locations (e.g., buried or newly generated waste containers) become ~~available for sampling~~ accessible, samples will be obtained and analyzed.

For those waste streams where the population of the waste stream as a whole is indeterminate (e.g., continually generated waste streams from ongoing processes) or to facilitate waste processing, the generator/storage site may divide the waste stream into lots. In this case, five randomly selected sample locations will be selected from within each subsequent lot. As those randomly selected locations (e.g., buried or newly generated waste containers) become ~~available~~ accessible ~~for sampling~~, samples will be obtained and analyzed. As with sampling from the waste stream as a whole, the generator/storage site may ship waste from the lot being generated or retrieved prior to completing sampling and analysis of the lot.

The generator/storage site will use the data to update the UCL_{90} values for the waste stream as described in Section B2-2a and assign EPA hazardous waste numbers as appropriate. The generator/storage sites will submit the analytical data from subsequent sampling to the Permittees for inclusion in the WIPP facility operating record upon completion of project level data validation in Permit Attachment B3, Section B3-10b. If changes to EPA hazardous waste numbers are required as a result of subsequent sampling, the generator/storage site will notify the Permittees and shipments of the affected waste stream shall be suspended until the Permittees approve a revised WSPF for the affected waste stream.

Upon collection and analysis of the preliminary samples, or at any time after the preliminary samples have been analyzed, the generator/storage site may presumptively assign hazardous waste numbers to a waste stream even if the calculated number of required samples is greater than the preliminary number of samples collected. For waste streams with calculated upper confidence limits below the regulatory threshold, the site shall collect the required number of samples if the site intends to establish that the constituent is below the regulatory threshold.

B2-1b Statistical Selection of Containers for Headspace Gas Analysis

Headspace gas sampling of a waste stream may be done on a randomly selected portion of containers in the waste stream. The minimum number of containers, *n*, that must be sampled is determined by taking an initial VOC sample from ~~10~~ ten randomly selected containers. These samples are analyzed for all the target analytes analytes using a Permittee approved laboratory. The standard deviation, *s,* is calculated for each of the nine VOCs in Module IV, Table IV.D.1. The value of *n* is determined as the largest number of samples (not to exceed the number of containers in the waste stream or waste stream lot) calculated using the following equation:

$$n_{voc_i} = \frac{t^2_{0.9,n-1} s^2_{e_{voc_i}}}{E^2_{voc_i}} \qquad \text{(B2-8)}$$

Where:

$n_{vocᵢ}$ ~~is~~ = the number of samples needed to representatively sample the waste stream for the VOC_i from Table IV.D.1
$s_{evocᵢ}$ ~~is~~ = the estimated standard deviation, based on the initial ~~10~~ ten samples, for VOC_i from Table IV.D.1
$E_{vocᵢ}$ ~~is~~ = the allowable error determined as 1 percent of the limiting concentration for VOC_i from Table IV.D.1

All calculations should be rounded up to the next integer. A minimum of ten containers shall be sampled and analyzed in each waste stream. If there are fewer than the minimum or required number of containers in a waste stream, then each container should be sampled once. The calculated total number of required waste containers will then be randomly sampled and analyzed. Waste container samples from the preliminary mean and variance estimates may be counted as part of the total number of calculated required samples if and only if:

- There is documented evidence that the waste containers for the preliminary estimate samples were selected in the same random manner as is chosen for the required samples.

- There is documented evidence that the method of sample collection in the preliminary estimate samples were identical to the methodology to be employed for the required samples.

- There is documented evidence that the method of sample analysis in the preliminary estimate samples were identical to the analytical methodology employed for the required samples.

- There is documented evidence that the validation of the sample analyses in the preliminary estimate samples were comparable to the validation employed for the required samples. In addition, the validated samples results shall indicate that all sample results were valid according to the analytical methodology.

The mean and standard deviation calculated after sampling *n* containers can be used to calculate a UCL_{90} for each of the headspace gas VOCs using the methodology presented in Section B2-2b.

If only a portion of a waste stream is ~~available~~ accessible for sampling (e.g., the remainder of the waste stream will be recovered from storage at the generator/storage site or only a portion of the waste stream has been repackaged or treated), the calculated number of samples will be randomly selected from the ~~available~~ accessible portion of the waste stream. A minimum of ten randomly selected samples will be obtained and analyzed from the ~~available~~ accessible portion of the waste stream. The Permittees may approve the WSPF and authorize the generator/storage site to begin shipping the waste stream to WIPP once the analytical data for the randomly selected samples from the ~~available~~ accessible portion of the waste stream has been obtained.

The generator/storage site will also randomly select the calculated number of sample locations from the waste stream as a whole~~, both the available and unavailable portions~~. A minimum of ten randomly selected sample locations will be selected from the waste stream as a whole. As those randomly selected locations (e.g., buried or newly generated waste containers) become ~~available for sampling~~ accessible, samples will be obtained and analyzed.

For those waste streams where the population of the waste stream as a whole is indeterminate (e.g., continually generated waste streams from ongoing processes) or to facilitate waste processing, the generator/storage site may divide the waste stream into lots. In this case, ten randomly selected containers will be selected from within each subsequent lot. As those randomly selected containers (e.g., buried or newly generated waste containers) become ~~available for sampling~~ accessible, samples will be obtained and analyzed. As with sampling from the waste stream as a whole, the generator/storage site may ship waste from the lot being generated or retrieved prior to completing sampling and analysis of the lot.

The generator/storage site will use the data to update the UCL_{90} values for the waste stream as described in Section B2-2b and assign EPA hazardous waste numbers as appropriate. The generator/storage sites will submit the analytical data from subsequent sampling to the Permittees for inclusion in the WIPP facility operating record upon completion of project level data validation in Permit Attachment B3, Section B3-10b. If changes to EPA hazardous waste numbers are required as a result of subsequent sampling, the generator/storage site will notify the Permittees, and shipments of the affected waste stream shall be suspended until the Permittees approve a revised WSPF for the affected waste stream.

Upon collection and analysis of the preliminary samples, or at any time after the preliminary samples have been analyzed, the generator/storage site may presumptively assign hazardous waste numbers to a waste stream even if the calculated number of required samples is greater than the preliminary number of samples collected. For waste streams with calculated upper confidence limits below the regulatory threshold, the site shall collect the required number of samples if the site intends to establish that the constituent is below the regulatory threshold.

B2-2 Upper Confidence Limits for Statistical Sampling

B2-2a Upper Confidence Limit for Statistical Solid Sampling

Upon completion of the required sampling, final mean and variance estimates and the UCL_{90} for the mean concentration for each contaminant shall be determined. The observed sample n^* shall be checked against the preliminary estimate for the number of samples (n) to be collected before proceeding, where n* is:

$$n^* = \frac{t^2_{\alpha,n-1} s^2}{(RT - \bar{x})^2} \qquad \text{(B2-9)}$$

Figure B2-1
Approach for Solid and Headspace Gas Sampling and Analysis to Obtain Additional Waste Characterization Information

ATTACHMENT B3
QUALITY ASSURANCE OBJECTIVES AND DATA VALIDATION TECHNIQUES FOR WASTE CHARACTERIZATION SAMPLING AND ANALYTICAL METHODS

B3-1 Validation Methods

The Permittees shall require the generator/storage sites (**sites**) to perform validation of all data (qualitative as well as quantitative) so that data used for Waste Isolation Pilot Plant (**WIPP**) compliance programs will be of known and acceptable quality. Validation includes a quantitative determination of precision, accuracy, completeness, and method detection limits (as appropriate) for analytical data (headspace Volatile Organics Compounds (**VOC**), total VOCs, Semivolatile Organic Compounds (**SVOC**), and metals data). Quantitative data validations shall be performed according to the conventional methods outlined below (equations B3-1 through B3-8). These quantitative determinations will be compared to the Quality Assurance Objectives (**QAOs**) specified in Sections B3-2 through B3-9. A qualitative determination of comparability and representativeness will also be performed.

The qualitative data or descriptive information generated by radiography and visual examination is not amenable to statistical data quality analysis. However, radiography and visual examination are complementary techniques yielding similar data for determining the waste matrix code ~~and waste material parameter weights of waste present in a waste container. Therefore, visual examination results shall be used to verify the waste matrix code and waste material parameter weights determined by radiography~~. The waste matrix code is determined ~~and waste material parameter weights are estimated~~ to ~~verify~~ ensure that the container is properly included in the appropriate waste stream.

Data validation will be used to assess the quality of waste characterization data collected based upon project precision, accuracy, completeness, comparability, and representativeness objectives. These objectives are described below:

Precision

Precision is a measure of the mutual agreement among multiple measurements of a single analyte, either by the same method or by different methods. Precision is either expressed as the relative percent difference (**RPD**) for duplicate measurements or as the percent relative standard deviation (**%RSD**) for three or more replicate measurements. For duplicate measurements, the precision expressed as the RPD is calculated as follows:

$$RPD = \frac{C_1 - C_2}{\frac{(C_1 + C_2)}{2}} \times 100 \qquad \text{(B3-1)}$$

where C_1 and C_2 are the two values obtained by analyzing the duplicate samples. C_1 is the larger of the two observed values.

Representativeness

Specific steps to ensure the representativeness of samples include the following for both waste containers and smaller containers:

- Coring tools and sampling equipment must be clean prior to sampling.

- The entire depth of the waste minus a site defined approved safety factor must be cored, and the core collected must have a length greater than or equal to 50 percent of the depth of the waste. This is called the core recovery and is calculated as follows:

$$\textit{Core recovery (percent)} = \frac{y}{x} \times 100 \qquad \text{(B3-10)}$$

where

x = the depth of the waste in the container
y = the length of the core collected from the waste.

- Coring operations and tool selection should be designed to minimize alteration of the in-place waste characteristics. Minimal waste disturbance must be verified by visually examining the core and describing the observation (e.g., undisturbed, cracked, or pulverized) in the field logbook.

  If core recovery is less than 50 percent of the depth of the waste, a second coring location shall be randomly selected. The core with the best core recovery shall be used for sample collection.

One randomly selected container within a container will be chosen if the container contains individual waste containers.

B3-4 Non Destructive Examination Methods

~~B3-4a Radiography~~

Quality Assurance Objectives

The QAOs for ~~radiography~~ non destructive examination (**NDE**) are detailed in this section. NDE can be either radiography or visual examination (**VE**). If the QAOs described below are not met, then corrective action shall be taken. It should be noted that ~~radiography~~ NDE does not have a specific MDL because it is primarily a qualitative determination. The objective of ~~radiography~~ NDE for the program is to determine the physical waste form, the absence of prohibited items, and additional waste characterization techniques that may be used based on the Summary Category Groups (i.e., S3000, S4000, S5000) ~~verify the waste matrix code and identify prohibited items for each waste container~~. The Permittees shall require each site to describe all

activities required to achieve these objectives in the site quality assurance project plan (**QAPjP**) and standard operating procedures (**SOP**).

B3-4a Radiography

Data to meet these objectives must be obtained from a video and audio recorded scan provided by trained radiography operators at the sites. Results must also be recorded on a radiography data form. The precision, accuracy, completeness, and comparability objectives for radiography data are presented below.

Precision

Precision is maintained by reconciling any discrepancies between two radiography operators with regard to identification of the waste matrix code, liquids in excess of TSDF-WAC limits, and compressed gases through independent replicate scans and independent observations. Additionally, the precision of radiography is verified prior to use by tuning precisely enough to demonstrate compliance with QAOs through viewing an image test pattern.

Accuracy

Accuracy is obtained by using a target to tune the image for maximum sharpness and by requiring operators to successfully identify 100 percent of the required items in a training container during their initial qualification and subsequent requalification.

Completeness

A video and audio media recording of the radiography examination and a validated radiography data form will be obtained for 100 percent of the waste containers subject to radiography. All video and audio media recordings and radiography data forms will be subject to validation as indicated in Section B3-10.

Comparability

The comparability of radiography data from different operators shall be enhanced by using standardized radiography procedures and operator qualifications.

B3-4b Visual Examination

Results must be recorded on a VE data form. The precision, accuracy, completeness, and comparability objectives for VE data are presented below.

Precision

Precision is maintained by reconciling any discrepancies between the operator and the independent technical reviewer with regard to identification of waste matrix code, liquids in excess of TSDF-WAC limits, and compressed gases.

- Representativeness - Representativeness expresses the degree to which sample data accurately and precisely represent characteristics of a population. Representativeness is a qualitative parameter that will be satisfied by ensuring that the process of obtaining, evaluating, and documenting acceptable knowledge information is performed in accordance with the minimum standards established in Permit Attachment B4. Sites also must assess and document the limitations of the acceptable knowledge information used to assign hazardous waste numbers (e.g., purpose and scope of information, date of publication, type and extent to which waste parameters are addressed).

The Permittees shall require each generator/storage site to comply with the nonconformance notification and reporting requirements of Section B3-13 if the results sampling and analysis specified in Permit Attachment B are inconsistent with acceptable knowledge documentation.

The Permittees shall require each site to address quality control by tracking its performance with regard to the use of acceptable knowledge by: 1) assessing the frequency of inconsistencies among information, and 2) documenting ~~the results of~~ acceptable knowledge ~~verification~~ inconsistencies identified through radiography, visual examination, headspace-gas analyses, and solidified waste analyses. In addition, the acceptable knowledge process and waste stream documentation must be evaluated through internal assessments by generator/storage site quality assurance organizations and assessments by auditors external to the organization (i.e., the Permittees).

B3-10 Data Review, Validation, and Verification Requirements

Procedures Procedures shall be developed for the review, validation, and verification of data at the data generation level; the validation and verification of data at the project level; and the verification of data at the Permittee level. Data review determines if raw data have been properly collected and ensures raw data are properly reduced. Data validation verifies that the data reported satisfy the requirements of this WAP and is accompanied by signature release. Data verification authenticates that data as presented represent the sampling and analysis activities as performed and have been subject to the appropriate levels of data review. The requirements presented in this section ensure that WAP records furnish documentary evidence of quality.

The Permittees shall require the sites to generate the following Batch Data Reports for data validation, verification, and quality assurance activities:

- A Testing Batch Data Report or equivalent includes all data pertaining to radiography or visual examination for up to 20 waste containers without regard to waste matrix. Table B3-11 lists all of the information required in Testing Batch Data Reports (identified with an “X”) and other information that is necessary for data validation, but is optional in Testing Batch Data Reports (identified with an “O”).

- A Sampling Batch Data Report or equivalent includes all sample collection data pertaining to a group of no more than 20 headspace gas or homogeneous waste samples that were collected for chemical analysis. Table B3-12 lists all of the information required in Sampling Batch Data Reports (identified with an “X”) and other information

- List of any AK Sufficiency Determinations requested for the waste stream.

- Certification through acceptable knowledge or testing and/or analysis that any waste assigned the hazardous waste number of U134 (hydrofluoric acid) no longer exhibits the characteristic of corrosivity. This is verified by ensuring that no liquid is present in U134 waste.

B3-12b(3) Waste Stream Characterization Package

The Waste Stream Characterization Package includes the following information:

- Waste Stream Profile Form (WSPF, Section B3-12b(1))
- Accompanying Characterization Information Summary (Section B3-12b(2))
- Complete AK summary (Section B3-12b(2))
- Batch Data Reports supporting the characterization of the waste stream and any others requested by the Permittees
- Raw analytical data requested by the Permittees

B3-12b(4) WIPP Waste Information System (**WWIS**) Data Reporting

The WWIS Data Dictionary includes all of the data fields, the field format and the limits associated with the data as established by this WAP. These data will be subjected to edit and limit checks that are performed automatically by the database, as defined in the *WIPP Waste Information System User's Manual for Use by Shippers/Generators* (DOE, 2001). If a container was part of a composite headspace gas sample, the analytical results from the composite sample must be assigned as the container headspace gas data results, including associated TICs, for every waste container associated with the composite sample.

B3-13 Nonconformances

The Permittees shall require the status of work and the WAP activities at participating generator/storage sites to be monitored and controlled by the Site Project Manager. This monitoring and control shall include nonconformance identification, documentation, and reporting.

The nonconformances and corrective action processes specified in this section describe procedures between the Permittees and the generator/storage sites.

Nonconformances

Nonconformances are uncontrolled and unapproved deviations from an approved plan or procedure. Nonconforming items and activities are those that do not meet the WAP requirements, procurement document criteria, or approved work procedures. Nonconforming

ATTACHMENT B4
TRU MIXED WASTE CHARACTERIZATION USING ACCEPTABLE KNOWLEDGE

B4-1 Introduction

The Resource Conservation and Recovery Act (**RCRA**) regulations codified in 40 CFR Parts 260 through 265, 268, and 270, and the New Mexico Hazardous Waste Management Regulations in Title 20 New Mexico Administrative Code, Chapter 4, Part 1, (20.4.1 NMAC) Subparts I through VI, Subpart VIII, and Subpart IX, authorize the use of acceptable knowledge (**AK**) in appropriate circumstances by waste generators, or treatment, storage, or disposal facilities to characterize hazardous waste. Acceptable knowledge is described in *Waste Analysis: EPA Guidance Manual for Facilities That Generate, Treat, Store and Dispose of Hazardous Waste* (EPA, 1994). Acceptable knowledge, as an alternative to sampling and analysis, can be used to meet all or part of the waste characterization requirements under the RCRA (EPA, 1994).

EPA's 1994 Waste Analysis Guidance Manual broadly defines the term "acceptable knowledge" to include process knowledge, whereby detailed information on the wastes is obtained from existing published or documented waste analysis data or studies conducted on hazardous waste generated by processes similar to that which generated the waste; facility records of analysis performed before the effective date of RCRA; and waste analysis data obtained from generators of similar wastes that send their wastes off-site for treatment, storage, or disposal (EPA, 1994). If a generator/storage site determines that AK alone is insufficient to accurately characterize a waste, the site may use radiography and/or visual examination, headspace gas sampling and analysis, and homogeneous waste sampling and analysis (specified in Permit Attachment B1) to complete the waste characterization process and satisfy the requirements of the Waste Analysis Plan (**WAP**) specified in Permit Attachment B. Acceptable knowledge is used in TRU mixed waste characterization activities in five ways:

- To delineate TRU mixed waste streams
- To assess whether TRU mixed wastes comply with the applicable requirements of the Treatment, Storage, and Disposal Facility Waste Acceptance Criteria (**TSDF-WAC**)
- To assess whether TRU mixed wastes exhibit a hazardous characteristic (20.4.1.200 NMAC, incorporating 40 CFR §261 Subpart C)
- To assess whether TRU mixed wastes are listed (20.4.1.200 NMAC, incorporating 40 CFR §261 Subpart D)
- To estimate waste material parameter weights

Sampling and analysis may be performed ~~after waste packaging~~ to augment the characterization of wastes based on acceptable knowledge when an AK Sufficiency Determination has not been requested by the generator/storage site or, if requested, has not

been granted by the Permittees (see Section B4-3d).~~:~~ Sampling and analysis consists of radiography, visual examination, headspace gas, and homogeneous waste sampling and analysis. TRU mixed waste streams shall undergo applicable provisions of the acceptable knowledge process prior to management, storage, or disposal by the Permittees at WIPP.

B4-2 Acceptable Knowledge Documentation

The Permittees shall obtain from each Department of Energy (**DOE**) TRU mixed waste generator/storage site (**site**) a logical sequence of acceptable knowledge information that progresses from general facility information (TRU Mixed Waste Management Program Information) to more detailed waste-specific information (TRU Mixed Waste Stream Information). Traceability of acceptable knowledge information for a selected container in the audited Waste Summary Category Group(s) will be examined during the Permittees' audit of a site (Section B4-3f). The consistent presentation of acceptable knowledge documentation among sites in auditable records[1] will allow the Permittees to verify the completeness and adequacy of acceptable knowledge for TRU mixed waste characterization during the audit process. The Permittees shall implement the acceptable knowledge process as specified in this Permit to characterize TRU mixed wastes and obtain sufficient waste characterization data to demonstrate compliance with the Permit. The New Mexico Environment Department (**NMED**) may independently validate the implementation of and compliance with applicable provisions of the WAP at each generator/storage site by participation in the Permittees' Audit and Surveillance Program (Permit Attachment B6). The Permittees shall provide NMED with current audit schedules and notify NMED in writing no later than thirty (30) calendar days prior to each audit. NMED may choose to accompany the Permittees on any audit of the WAP implementation.

The following sections include the information the Permittees will require for each site to characterize TRU mixed waste using acceptable knowledge. Because waste generating processes are site-specific, sites shall, as necessary, augment the required acceptable knowledge records with additional supporting information (see Section B4-2c, Supporting Acceptable Knowledge Information). If the required information is not available for a particular waste stream, the waste stream will not be eligible for an AK Sufficiency Determination as specified in Section B4-3d.

B4-2a Required TRU Mixed Waste Management Program Information

TRU mixed waste management program information shall clearly define waste categorization schemes and terminology, provide a breakdown of the types and quantities of TRU mixed waste that are generated and stored at the site, and describe how waste is tracked and managed at the site, including historical and current operations. Information related to TRU mixed waste certification procedures and the types of documentation (e.g., waste profile forms) used to summarize acceptable knowledge shall also be provided. The following information shall be included as part of the acceptable knowledge written record:

[1] "Auditable records" mean those records which allow the Permittees to conduct a systematic assessment, analysis, and evaluation of the Permittees compliance with the WAP and this Permit.

included if this modification is justified and the justification is placed in the auditable record

- Material inputs or other information that identifies the chemical content of the waste stream and the physical waste form (e.g., glove box materials and chemicals handled during glove box operations; events or processes that may have modified the chemical or physical properties of the waste stream after generation; data obtained through visual examination of newly generated waste that later undergoes radiography; information demonstrating neutralization of U134 [hydrofluoric acid] and waste compatibility~~, etc.~~)

The acceptable knowledge written record shall include a summary that identifies all sources of waste characterization information used to delineate the waste stream. The basis and rationale for delineating each waste stream, based on the parameters of interest, shall be clearly summarized and traceable to referenced documents. Assumptions made in delineating each waste stream also shall be identified and justified. If discrepancies exist between required information, then sites shall apply all hazardous waste numbers indicated by the information to the subject waste stream unless the sites choose to justify an alternative assignment and document the justification in the auditable record. The Permittees shall obtain from each site, at a minimum, procedures that comply with the following acceptable knowledge requirements:

- Procedures for identifying and assigning the physical waste form of the waste
- Procedures for delineating waste streams and assigning Waste Matrix Codes
- Procedures for resolving inconsistencies in acceptable knowledge documentation
- ~~If an AK Sufficiency Determination is not being sought, procedures for augmenting acceptable knowledge information through~~ Procedures for headspace gas sampling and analysis, visual examination and/or radiography, and homogeneous waste sampling and analysis, if applicable
- For newly generated waste, procedures describing process controls used to ensure prohibited items (specified in the WAP, Permit Attachment B) are documented and managed
- ~~If an AK Sufficiency Determination is not being sought, procedures~~ Procedures to ensure radiography and visual examination include a list of prohibited items that the operator shall verify are not present in each container of waste (e.g., liquids exceeding TSDF-WAC limits, corrosives, ignitables, reactives, and incompatible wastes)
- Procedures to document how changes to Waste Matrix Codes, waste stream assignment, and associated Environmental Protection Agency (**EPA**) hazardous waste numbers based on material composition are documented for any waste
- Procedures for assigning EPA hazardous waste numbers to TRU mixed waste streams

B4-3d AK Sufficiency Determination Request Contents

Generator/storage sites may ~~elect to~~ submit an AK Sufficiency Determination Request (**Determination Request**) ~~for those waste streams that can be adequately characterized through acceptable knowledge alone, without the need to perform post packaging chemical or physical sampling and analysis on any containers in the waste stream~~ to meet all or part of the waste characterization requirements. The Determination Request shall include, at a minimum:

- Identification of the scenario for which the approval is sought (Permit Attachment B, Section B-0b).
- A complete AK Summary that addresses the following technical requirements:
  - Executive Summary;
  - Waste Stream Identification Summary, including a demonstration that the waste stream has been properly delineated and meets the Permit definition of waste stream (Permit Attachment B, Introduction)~~,~~;
  - Mandatory Program Information (including, but not limited to, facility location and description, mission, defense waste assessment, spent nuclear fuel and high-level waste assessment, description of waste generating processes, research/development [as necessary], facility support operations [as applicable], types and quantities of TRU waste generated, correlation of waste streams to buildings/processes, waste identification and categorization, physical form identifiers);
  - Mandatory Waste Stream Information (including, but not limited to, Area and Building of Generation, waste stream volume/period of generation (including, for newly generated waste, the rate and quantity of waste to be generated), waste generating activities, types of waste generated, material input related to physical form and identification of percentage of each waste material parameter in the waste stream, chemical content information including hazardous constituents and hazardous waste identification, prohibited item content (including documented evidence that the waste meets the TSDF-WAC Permit Conditions II.C.3.a-h), waste packaging, presence of filter vents, number of layers of confinement);
  - Types of supporting information gathered;
  - Container specific data (if available and relevant); and
  - A complete reference list including all mandatory and supporting information.
- An AK roadmap (defined as a cross reference between mandatory programmatic and mandatory waste stream information, with references supporting these requirements).
- A complete reference list including all mandatory and supporting documentation.
- Relevant supporting information for the required programmatic and waste stream data addressed in the AK Summary, examples of which are presented in Permit Attachment B4, Section B4-2c.
- Identification of any mandatory requirements supported only by upper tier documents (i.e., there is insufficient supporting data).
- Description or other means of demonstrating that the AK process described in the Permit was followed (for example, AK personnel were appropriately trained; discrepancies were documented, etc).

- Information showing that the generator/storage site has developed a written procedure for compiling the AK information and assigning hazardous waste numbers as required in Permit Attachment B4-3b~~;~~.
- Information showing that the generator/storage site has assessed the AK process (e.g. internal audits, Permit Attachment B4-3b).

The Permittees shall evaluate the Determination Request for completeness and technical adequacy as specified in Permit Attachment B. ~~If the Permittees provisionally approve the Determination Request, they will forward it along with all information submitted with the Determination Request to NMED for an evaluation of adequacy.~~

B4-3e Requirements for Re-evaluating Acceptable Knowledge Information

Acceptable knowledge includes information regarding the physical form of the waste, the base materials composing the waste, and the process that generates the waste. Waste sampling and analysis (i.e., radiography or visual examination, headspace-gas sampling and analysis, and homogeneous waste sampling and analysis) may be used to augment acceptable knowledge information.

The Waste Stream Profile Form (**WSPF**) and Characterization Information Summary (including the acceptable knowledge summary) will be reviewed for each waste stream prior to Permittee approval of the WSPF. The Permittees review will ensure that the submitted AK information was collected under procedures that ensure implementation of the WAP, provides data sufficient to meet the DQOs in Section B-4a(1), and allow the Permittees to demonstrate compliance with the waste analysis requirements of the Permit. A detailed discussion of the Permittees' waste stream review and approval process is provided in Section B -1d.

The Permittees shall require sites to establish procedures for reevaluating acceptable knowledge if the results of waste confirmation indicate that the waste to be shipped does not match the approved waste stream, or if data obtained from radiography or visual examination for waste streams without an AK Sufficiency Determination exhibit this discrepancy. Site procedures shall describe how the waste is reassigned, acceptable knowledge reevaluated, and appropriate hazardous waste numbers assigned. If the reevaluation requires that theWaste Matrix Code be changed for the waste stream or the waste does not match the approved waste stream, the following minimum steps shall be taken to reevaluate acceptable knowledge:

- Review existing information based on the container identification number and document all differences in hazardous waste number assignments
- If differences exist in the hazardous waste numbers that were assigned, reassess and document all required acceptable knowledge information (Section B4-3b) associated with the new designation
- Reassess and document all sampling and analytical data associated with the waste
- Verify and document that the reassigned Waste Matrix Code was generated within the specified time period, area and buildings, waste generating process,

If the site determines that the source of the F-listed constituent is a spent solvent used in the process or is determined to be the result of mixing a listed waste with a solid waste during waste packaging, or applicable toxicity characteristic or non-toxic F003 wastes are present in excess of regulatory levels, then the site will either: 1) assign the applicable listed hazardous waste number to the entire waste stream, or 2) segregate the drums containing detectable concentrations of the solvent into a separate waste stream and assign applicable hazardous waste numbers. Each site shall document, justify, and consistently delineate waste streams and assign hazardous waste numbers based on site-specific permit requirements and other state-enforced agreements.

To determine the mean concentration of solvent VOCs, all headspace-gas data or homogeneous waste data for a waste stream or waste stream lot (i.e., the portion of the waste stream that is characterized as a unit) will be used, including data qualified with a 'J' flag (i.e., less than the PRQL but greater than the method detection limit [**MDL**]) or qualified with a 'U' flag (i.e., undetected). For data qualified with a 'U' flag, sites shall use one-half the MDL in calculating the mean concentration. Because listed wastes are not defined based on concentration, sites may not remove hazardous waste numbers assigned using acceptable knowledge if hazardous constituents are not detected in the headspace gas or solids/soil analysis.

TRU mixed headspace gases and homogeneous waste matrices may contain one or two constituents (e.g., carbon tetrachloride and 1,1,1-trichloroethane) at concentrations that are orders of magnitude higher than the other target analytes. In these cases, samples shall be diluted to remain within the instrument calibration range for the elevated constituents. Sample dilution results in elevated MDLs for the constituents with elevated concentrations. Only the concentrations of detected constituents will be used to calculate the mean for the purpose of assigning F-listed hazardous waste numbers. Because the presence or absence of F-listed solvents can not be assigned based on the artificially high MDLs that are caused by sample dilution, data flagged as 'U' and showing an elevated MDL will not be used in calculating the mean concentration.

B4-3f Acceptable Knowledge Data Quality Requirements

The data quality objectives for sampling and analysis techniques are provided in Permit Attachment B3. Analytical results will be used to augment the characterization of wastes based on acceptable knowledge. To ensure that the acceptable knowledge process is consistently applied, the Permittees shall require sites to comply with the data quality requirements for acceptable knowledge documentation in Permit Attachment B3.

Each site shall address quality control by tracking its performance with regard to the use of acceptable knowledge by: 1) assessing the frequency of inconsistencies among information, and 2) documenting the results of waste discrepancies identified by the generator/storage site during waste characterization or the Permittees during waste ~~examination~~ confirmation using radiography, review of radiography audio/video recordings, visual examination, or review of visual examination records. In addition, the acceptable knowledge process and waste stream documentation shall be evaluated through internal assessments by generator/storage site quality assurance organizations.

(Permit Attachment B). Audit team members will be independent of all TRU mixed waste management operations at the site being audited.

Auditors will evaluate acceptable knowledge documentation for at least one waste stream from the Summary Category Group(s) being audited, and will audit acceptable knowledge traceability for at least one container from the audited Summary Category Group(s). For these waste streams, auditors will review all procedures and associated processes developed by the site for documenting the process of compiling acceptable knowledge documentation; correlating information to specific waste inventories; assigning hazardous waste numbers; and identifying, resolving, and documenting discrepancies in acceptable knowledge records. The adequacy of acceptable knowledge procedures and processes will be assessed and any deficiencies in procedures documented in the audit report.

Auditors will review the acceptable knowledge documentation for selected waste streams for logic, completeness, and defensibility. The criteria that will be used by auditors to evaluate the logic and defensibility of the acceptable knowledge documentation include completeness and traceability of the information, consistency of application of information, clarity of presentation, degree of compliance with this Permit Attachment with regard to acceptable knowledge data, nonconformance procedures, and oversight procedures. Auditors will evaluate compliance with written site procedures for developing the acceptable knowledge record. A completeness review will evaluate the availability of all required TRU mixed waste management program information and TRU mixed waste stream information (Section B4-2). Records will be reviewed for correlation to specific waste streams and the basis for characterizing hazardous waste. Auditors will verify that sites include all required information and conservatively include all potential hazardous waste numbers indicated by the acceptable knowledge records. All deficiencies in the acceptable knowledge documentation will be included in the audit report.

Auditors will verify and document that sites use administrative controls and follow written procedures to characterize hazardous waste for newly-generated and retrievably stored wastes. Procedures to document changes in acceptable knowledge documentation and changes to hazardous waste number assignments to specific waste streams also will be evaluated for compliance with the WAP (Permit Attachment B).

After the audit is complete, the Permittees will provide the site with preliminary results at a close-out meeting. The Permittees will prepare a final audit report that includes all observations and findings identified during the audit. Sites shall respond to all audit findings and identify corrective actions. Audit results will be included in the final audit report (Permit Attachment B6). If acceptable knowledge procedures do not exist, the required information is not available, or corrective actions (i.e., CARs) are identified associated with acceptable knowledge compilation, and/or hazardous waste characterization, the Permittees will not manage, store, or dispose TRU mixed waste for the subject waste summary category. Management, storage, or disposal of the subject waste summary category at WIPP will not resume until the Permittees find that all corrective actions have been implemented and the site complies with all applicable requirements of the WAP.

The National TRU Program disseminates information regarding TRU mixed waste characterization requirements and program status through the WIPP Home Page ~~at <http://www.wipp.ws>~~. The Permittees will use this web page to disseminate information

Figure B4-1
Compilation of Acceptable Knowledge Documentation

Figure B4-2
Acceptable Knowledge Auditing

pages need to be reissued. Changes to documents, other than those defined as editorial changes or minor changes, shall be reviewed and approved by the same functional organizations that performed the original review and approval, unless other organizations are specifically designated in accordance with approved procedures. Editorial or minor changes may be made without the same level of review and approval as the original or otherwise changed document. The following items are considered editorial or minor changes:

- Correcting grammar or spelling (the meaning has not changed)
- Renumbering sections or attachments
- Updating organizational titles
- Changes to nonquality-affecting schedules
- Revised or reformatted forms, providing the original intent of the form has not been altered
- Attachments marked "Example," "Sample," or exhibits that are clearly intended to be representative only

A change in an organizational title accompanied by a change in the responsibilities is not considered an editorial change. Changes to the text shall be clearly indicated in the document. The Permittees shall provide the QAPjP for each site and all revisions to NMED upon approval by the Permittees.

The Permittees shall ensure that QAPjPs include a detailed description of the reporting and approval requirements for changes to approved QA documents and SOPs, including procedures for implementing changes to these documents. All members of the site project staff are responsible for reporting any obsolete or superseded information to the site project manager. All site-specific changes shall be evaluated and approved by the site project manager and the site project QA officer before implementation. The site project manager shall notify the appropriate personnel and the affected documents shall be revised as necessary. The site project manager shall also be responsible for notifying the DOE field office of the changes. The Permittees shall ensure that changes that affect performance criteria or data quality, such as sample handling and custody requirements, sampling and analytical procedures, quality assurance objectives, calibration requirements, or QC sample acceptance criteria comply with the WAP (Permit Attachment B) and shall not be made without prior approval of the Permittees. ~~Prior to shipment of TRU mixed waste, the Permittees shall provide the approved QAPjP for each site, and all approved revisions, to the New Mexico Environment Department.~~

~~For waste characterization processes performed for multiple sites by a single entity (e.g., mobile waste characterization vendors, Permittee approved laboratories), the procedures and processes used by these single entities will be audited at least annually for at least one site. Upon approval, these procedures and processes may be used at any site without requiring an additional audit. At a minimum, the waste characterization processes performed for multiple sites by a single entity will be audited for each site once every three years. In any case, the acceptable knowledge process will be audited at least annually for each site involved in the waste characterization program.~~

B6-4 Audit Conduct

The conduct of the audit shall commence with an entrance meeting, conducted by the audit team leader, with site or Permittee approved laboratory management. At this meeting, the audit objectives and scope, the specific areas to be audited, the processes or functions to be observed, and the site or Permittee approved laboratory-participation required, including site interfaces, will be identified. The purpose of this meeting is to confirm the audit scope, discuss the audit sequence, establish channels of communication, and confirm the daily and exit meeting. Audits shall be performed using approved audit checklists that include the checklists in Tables B6-1 to B6-6 for the summary category groups undergoing audit. Consistency of evaluation shall be ensured before the audit through site or Permittee approved laboratory QAPjP approval (see Permit Attachment B5). QAPjPs for each site or Permittee approved laboratory shall incorporate the same requirements from the WAP. Objective evidence shall be examined (to the depth necessary) to determine if the identified activities, procedures, or QAOs are adequate and are being effectively implemented.

Audits may not include all waste summary category groups, and thus some audit checklists or portions of checklists (Tables B6-1 through B6-6) may not be applicable to some sites or Permittee approved laboratory (e.g., headspace gas sampling and analysis is not used because debris waste is not being analyzed by the site). In these instances, the Permittees shall indicate nonapplicability in the appropriate checklist row, and justify the exclusion under the "Comment" column. In addition, in cases where discrepancies exist between the audit checklists in Tables B6-1 through B6-6 and the Permit, Permit requirements take precedence. The Permittees may add to the checklists as necessary to clarify Permit requirements, but any additions will be clearly designated on the checklists (i.e., redline the additions).

Audits shall include site personnel interviews, document and record reviews, observations of operations, and any other activities deemed necessary by the auditors to meet the objectives of the audit. Observations or deficiencies identified during the audit will be investigated or evaluated, as necessary, to determine if they are isolated conditions or represent a general breakdown of the waste characterization quality assurance program. During audit interviews or audit meetings, site or Permittee approved laboratory personnel may be advised of deficiencies identified within their areas of responsibility to establish a clear understanding of the identified condition.

The site or Permittee approved laboratory personnel will be given the opportunity to correct any deficiency that can be corrected during the audit period. Deficiencies and observations will be documented and included as part of the final audit report. Those items that have been resolved during the audit (isolated deficiencies that do not require a root cause determination or actions

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ATTACHMENT B7

PERMITTEE LEVEL TRU WASTE CONFIRMATION PROCESSES

Introduction

This part of the Waste Analysis Plan (**WAP**) describes the actions that the Permittees will take to approve and accept waste for storage and disposal at the Waste Isolation Pilot Plant (**WIPP**), including waste confirmation activities.

The Permittees demonstrate compliance with the Permit by ensuring that the waste characterization processes performed by generator/storage sites (**sites**) produce data compliant with the WAP and through the waste screening and verification processes. Verification occurs at three levels: 1) the data generation level, 2) the project level, and 3) the Permittee level. The Permittees also examine a representative subpopulation of waste prior to ~~disposal~~ shipment to confirm that the waste contains no ignitable, corrosive or reactive waste; and that assigned Environmental Protection Agency (**EPA**) hazardous waste numbers are allowed by the Permit. The waste confirmation activities described herein occur prior to shipment of the waste from ~~at~~ the generator/storage site to WIPP.

B7-1 Permittee Confirmation of TRU Mixed Waste

Waste confirmation is defined in Module I as the activities performed by the Permittees to satisfy the requirements specified in Section ~~311~~ 310 of Pub. L. 108-~~137~~447. Waste confirmation occurs after waste containers have been certified for disposal at WIPP. The general confirmation process for WIPP waste is presented in Figure B7-1.

B7-1a Permittees' Confirmation of a Representative Subpopulation of the Waste

The Permittees shall confirm that the waste contains no ignitable, corrosive, or reactive waste through radiography (Section B7-1b) or the use of visual examination (Section B7-1c) of a statistically representative subpopulation of the waste. ~~Waste~~ Prior to shipment to WIPP, waste confirmation will be performed on randomly selected containers from each CH and RH TRU mixed waste stream shipment ~~of TRU mixed waste prior to storage or disposal at WIPP. Both CH and RH TRU mixed waste will be verified and confirmed at a generator/storage site before shipment to WIPP. Figure B7-1 presents the overall waste verification and confirmation process. Figure B7-2 presents the waste examination process at the generator /storage sites (or off-site facilities).~~

The Permittees' waste confirmation encompasses ensuring that the physical characteristics of the TRU mixed waste correspond with its waste stream description and that the waste does not contain liquids in excess of TSDF-WAC limits or compressed gases. These techniques can detect liquids that exceed 1 percent volume of the container and containerized gases, which are prohibited from storage or disposal at the WIPP facility. The prohibition of liquids and containerized gases prevents the storage or disposal of ignitable, corrosive, or reactive wastes. Radiography and/or visual examination will ensure that the physical form of the waste matches its waste stream description (i.e., Homogeneous Solids, Soil/Gravel, or Debris Waste). The

results of the Permittees' waste confirmation activities, including radiography and visual examination records (data sheets, packaging logs, and/or video and audio recordings) will be maintained in the WIPP facility operating record. Noncompliant waste identified during waste confirmation will be managed as described in Section B7-2.

The Permittees shall randomly select at least 7 percent of each waste stream shipment for waste confirmation. This equates to a minimum of one container from each fourteen containers in each waste stream in each designated shipment. If there are less than fourteen containers from a waste stream in a particular shipment, a minimum of one container from the waste stream shipped will be selected. If the random selection of containers in a shipment occurs prior to loading the waste containers into the Shipping Package, the randomly selected containers may be consolidated into a single Type B package consistent with transportation requirements. Documentation of the random selection of containers for waste confirmation will be placed in the WIPP facility operating record.

B7-1b Radiography Methods Requirements

Radiography has been developed by the Permittees specifically to aid in the examination and identification of containerized waste. The Permittees shall describe all activities required to achieve the radiography objectives in standard operating procedures (**SOPs**). These SOPs shall include instructions specific to the radiography system(s) used by the Permittees at an off-site facility (e.g., the generator/storage site). For example, to detect liquids, some systems require the container to be rotated back and forth while other systems require the container to be tilted.

A radiography system (e.g., real time radiography, digital radiography/computed tomography) normally consists of an X-ray-producing device, an imaging system, an enclosure for radiation protection, a waste container handling system, a video and audio recording system, and an operator control and data acquisition station. Although these six components are required, it is expected there will be some variation within a given component between radiography systems. The radiography system shall have controls or an equivalent process which allow the operator to control image quality. On some radiography systems, it should be possible to vary the voltage, typically between 150 to 400 kilovolts (**kV**), to provide an optimum degree of penetration through the waste. For example, high-density material should be examined with the X-ray device set on the maximum voltage. This ensures maximum penetration through the waste container. Low-density material should be examined at lower voltage settings to improve contrast and image definition. The imaging system typically utilizes either a fluorescent screen and a low-light television camera or x-ray detectors to generate the image.

To perform radiography, the waste container is scanned while the operator views the television screen. A video and audio recording is made of the waste container scan and is maintained in the WIPP facility operating record as a non-permanent record. A radiography data form is also used to document the Waste Matrix Code, ensure that the waste container contains no ignitable, corrosive, or reactive waste by documenting the absence of liquids in excess of TSDF-WAC limits or compressed gases, and verify that the physical form of the waste is consistent with the waste stream description documented on the WSPF. Containers whose contents prevent full examination of the remaining contents shall be subject to visual examination unless the Permittees certify that visual examination would provide no additional

relevant information for that container based on the acceptable knowledge information for the waste stream. Such certification shall be documented in the WIPP facility operating record.

For containers that have been characterized using radiography by the generator/storage sites in accordance with the method in Attachment B1, Section B1-3, the Permittees may perform confirmation by review of the generator/storage site's radiography audio/video recordings.

For containers which contain classified shapes and undergo radiography, the radiography will occur at a facility with appropriate security provisions and the video and audio recording will be considered classified. The radiography data forms will not be considered classified.

B7-1b(1) Radiography Training

The radiography system involves qualitative and semiquantitative evaluations of visual displays. Operator training and experience are the most important considerations for ensuring quality controls in regard to the operation of the radiography system and for interpretation and disposition of radiography results. Only trained personnel shall be allowed to operate radiography equipment.

The Permittee radiography operators performing waste confirmation shall be trained in accordance with the requirements of Permit Attachment H1.

B7-1b(2) Radiography Oversight

The Permittees shall be responsible for monitoring the quality of the radiography data and calling for corrective action, when necessary.

A training drum with internal containers of various sizes shall be scanned biannually by each operator. The video and audio media shall then be reviewed by a ~~supervisor~~ radiography subject matter expert to ensure that operators' interpretations remain consistent and accurate. Imaging system characteristics shall be verified on a routine basis.

Independent replicate scans and replicate observations of the video output of the radiography process shall be performed under uniform conditions and procedures. Independent replicate scans shall be performed on one waste container per day or once per shipment, whichever is less frequent. Independent observations of one scan (not the replicate scan) shall also be made once per day or once per shipment, whichever is less frequent, by a qualified radiography operator other than the individual who performed the first examination. When confirmation is performed by review of audio/video recorded scans produced by the generator/storage site as specified in Permit Attachment B1, Section B1-3, independent observations shall be performed on two waste containers per shipment or two containers per day, whichever is less frequent.

~~The Permittees shall be responsible for monitoring the quality of the radiography data and calling for corrective action, when necessary.~~

B7-1c Visual Examination Methods Requirements

Visual examination (**VE**) may also be used as a waste confirmation method by the Permittees. VE shall be conducted by the Permittees in accordance with written SOPs to describe the contents of a waste container. The description shall clearly identify all discernible waste items, residual materials, packaging materials, or waste material parameters. VE may be used by the Permittees to examine a statistically representative subpopulation of the waste ~~received at the~~ certified for shipment to WIPP to confirm that the waste contains no ignitable, corrosive, or reactive waste. This is achieved by confirming that the waste contains no residual liquids in excess of TSDF-WAC limits or compressed gases, and that the physical form of the waste matches the waste stream description documented on the WSPF. A VE data form is used to document this information. During packaging, the waste container contents are directly examined by trained personnel. This form of waste confirmation may be performed by the Permittees at a generator/storage site. The VE may be recorded on video and audio media, or alternatively, by using a second operator to provide additional verification by reviewing the contents of the waste container to ensure correct reporting.

In order to keep radiation doses as low as reasonably achievable at generator/storage sites, the Permittees may use their own trained VE operators to perform VE for waste confirmation by reviewing video media prepared by the generator/storage site during their VE of the waste. If the Permittees perform waste confirmation by review of video media, the video record of the VE must be sufficiently complete for the Permittees to confirm the Waste Matrix Code and waste stream description, and verify the waste contains no residual liquids in excess of TSDF-WAC limits or compressed gases. Generator/storage site VE video/audio media subject to review by the Permittees shall meet the following minimum requirements:

- The video/audio media shall record the waste packaging event for the container such that all waste items placed into the container are recorded in sufficient detail that a trained Permittee VE expert can determine what the waste items are and their associated waste material parameter.
- The video/audio media shall capture the waste container identification number.
- The personnel loading the waste container shall be identified on the video/audio media or on packaging records traceable to the loading of the waste container.
- The date of loading of the waste container will be recorded on the video/audio media or on packaging records traceable to the loading of the waste container.

The Permittees may also use their own trained VE operators to perform VE for waste confirmation by reviewing VE data forms or packaging logs prepared by the generator during their packaging of the waste. To be acceptable, the generator/storage site VE data must be signed by two generator/storage site personnel who witnessed the packaging of the waste and must provide sufficient information for the Permittees to determine that the waste container contents match the waste stream description on the WSPF and the waste contains no liquids in excess of TSDF-WAC limits or compressed gases. The Permittees will document their review of generator/storage site VE data on Permittee VE data forms. Generator/storage site VE forms or

packaging logs subject to review by the Permittees shall meet the following minimum requirements:

- At least two generator site personnel shall approve the data forms or packaging logs attesting to the contents of the waste container.
- The data forms or packaging logs shall contain an inventory of waste items in sufficient detail that a trained Permittee VE expert can identify the associated waste material parameters.
- The waste container identification number shall be recorded on the data forms or packaging logs.

VE video media of containers which contain classified shapes shall be considered classified information. VE data forms will not be considered classified information.

B7-1c(1) Visual Examination Training

The Permittees' VE operators performing waste confirmation shall be trained in accordance with the requirements of Permit Attachment H1.

B7-1c(2) Visual Examination Oversight

The Permittees shall designate at least one VE expert. The VE expert shall be familiar with the ~~waste generating~~ processes ~~that have taken place at each site and with all of the types of waste being characterized at each site where~~ that generated the waste streams ~~will~~ being confirmed using VE. The VE expert shall be responsible for the overall direction and implementation of the Permittees' VE program. The Permittees shall specify the selection, qualification, and training requirements of the visual examination expert in an SOP.

B7-1d Quality Assurance Objectives (**QAO**s) for Radiography and Visual Examination

The QAOs the Permittees must meet for radiography and visual examination are detailed in this section. If the QAOs described below are not met, then corrective action as specified in Permit Attachment B3, Section B3-13 shall be taken.

B7-1d(1) Radiography QAOs

The QAOs for radiography are detailed in this section. If the QAOs described below are not met, then corrective action shall be taken.

Data to meet these objectives must be obtained from a video and audio recorded scan provided by trained radiography operators. Results must also be recorded on a radiography data form. The precision, accuracy, representativeness, completeness, and comparability objectives for radiography data are presented below.

Representativeness

Representativeness is ensured by performing VE on a random sample of waste containers within each waste stream in each shipment.

Completeness

A validated VE data form will be obtained for 100 percent of the waste containers subject to VE.

Comparability

The comparability of VE data from different operators shall be enhanced by using standardized VE procedures and operator qualifications.

B7-1e Review and Validation of Radiography and Visual Examination Data Used for Waste Examination

This section describes the requirements for review and validation of radiography and VE data by the Permittees.

B7-1e(1) Independent Technical Review

The radiography and/or VE confirmation data for each shipment shall receive an independent technical review. This review will be performed before the affected waste shipment is shipped to the WIPP facility. The review shall be performed by an individual other than the data generator who is qualified to have performed the work. The review will be performed in accordance with approved Permittee SOPs and will be documented on a review checklist. The reviewer(s) must approve the data as evidenced by signature, and as a consequence, ensure the following:

- Data generation and reduction were conducted in a technically correct manner in accordance with the methods used (procedure with revision). Data were reported in the proper units and correct number of significant figures.
- The data have been reviewed for transcription errors.
- Radiography video and audio media recordings have been reviewed (independent observation) on a waste container basis at a minimum of once per shipment or once per day of operation, whichever is less frequent. The radiography video/audio recording will be reviewed against the data reported on the Permittees' radiography form to ensure that the data are correct and complete. If review of radiography scans recorded by the generator/storage site was used to perform confirmation, two observations must be performed for each shipment or two observations per day, whichever is less frequent.

B7-1e(2) Permittee Management Review

The radiography and/or visual examination data for each shipment shall receive a Permittee management review. This review will be performed before the affected waste shipment is disposed of at the WIPP. The review shall be performed by a designated member of Permittee management. The review will be performed in accordance with approved Permittee SOPs and will be documented on a review checklist. The reviewer(s) must approve the data as evidenced by signature, and as a consequence, ensure the following:

- The data are technically reasonable based on the technique used.
- The data have received independent technical review.
- The data indicate that the waste examined contained no ignitable, corrosive, or reactive waste and that the physical form of the waste was consistent with the waste stream description in the WSPF.
- QC checks have been performed (e.g., replicate scans, image quality checks).
- The data meet the established QAOs

Upon completion of the Permittee management review, the waste confirmation data for the shipment shall be submitted to the WIPP facility operating record. Waste confirmation data includes radiography and VE data forms, video/audio media, and review checklists.

B7-2 Noncompliant Waste Identified During Waste Confirmation

If the Permittees identify noncompliant waste during waste confirmation at a generator/storage site (i.e., the waste does not match the waste stream description documented in the WSPF or there are liquids in excess of TSDF-WAC limits or compressed gases) the waste will not be shipped. The Permittees will suspend further shipments of the affected waste stream and issue a CAR to the generator/storage site. Shipments of ~~the~~ affected waste streams shall not resume until the CAR has been closed. NMED will be notified within 24 hours of any suspension of waste stream shipments due to the identification of ~~nonconforming~~ noncompliant waste during waste confirmation.

As part of the corrective action plan in response to the CAR, the generator/storage site will evaluate whether the waste characterization information documented in the Characterization Information Summary and/or WSPF for the waste stream must be updated because the results of waste confirmation for the waste stream indicated that the TRU mixed waste being examined did not match the waste stream description. The generator/storage site will thoroughly evaluate the potential impacts on waste that has been shipped to WIPP. The Permittees will evaluate the potential that prohibited items were shipped to WIPP and what remedial actions should occur, if any. The results of these evaluations will be provided to NMED before shipments of affected waste streams resume. If the Characterization Information Summary and/or WSPF requires revision, shipments of the affected waste stream shall not resume until the revised waste stream waste characterization information has been reviewed and approved by the Permittees.

If a generator/storage site certifies noncompliant waste more than once during a running 90-day period, the Permittees will suspend acceptance of that site's waste ~~Repeated nonconformances by a site in implementing WAP requirements (Permit Attachment B) will result in the termination of storage or disposal of the site's waste, waste stream(s), or summary category group(s), as applicable. Management, storage, or disposal of the subject waste summary category at WIPP will not resume~~ until the Permittees find that all corrective actions have been implemented and the site complies with all applicable requirements of the WAP.

Figure B7-1
Overview of Waste Confirmation ~~Process~~

~~Figure B7-2~~
~~Waste Confirmation at an Offsite Facility~~

transfer vehicle, the trailer jockey, and the push-pull attachment. RH TRU mixed waste equipment that is controlled by a logbook includes the 140/25-ton RH Bay overhead bridge crane, cask transfer cars, 25-ton cask unloading room crane, transfer cell shuttle car, RH Bay cask lifting yoke, facility grapple, 6.2- ton overhead hoist, facility cask rotating device, hot cell overhead powered manipulator, 15-ton hot cell crane, facility cask transfer car, 41-ton forklift, facility cask, and horizontal emplacement and retrieval equipment. Inspections of the Cask Unloading Room, Hot Cell, Transfer Cell, Facility Cask Loading Room, RH Bay and radiation monitoring equipment will be recorded on data sheets. In addition to the inspections listed in Tables D-1 and D-1a, many pieces of equipment are subject to regular preventive maintenance. This includes more in-depth inspections of mechanical systems, load testing of lifting systems, calibration of measurement equipment and other actions as recommended by the equipment manufacturer or as required by DOE Orders. These preventive maintenance activities along with the inspections in Tables D-1 and D-1a make mechanical failure of waste handling equipment unlikely. The WIPP Safety Analysis Report (DOE, 1999) and the WIPP Remote-Handled Waste Preliminary Safety Analysis Report (RH PSAR) (DOE, 2000) contain the results of a systematic analysis of waste handling equipment and the hazards associated with potential mechanical failures. Equipment subject to failures that cannot practically be mitigated is retained for analysis and is the basis for contingency planning. The inspection procedures maintained in the Operating Record for operational and preventive maintenance are implemented to assure the equipment is maintained. An example equipment inspection checklist and a typical logbook form are shown as Figures D-1 and D-2. Actual checklists or forms are maintained within the Operating Record.

D-1a General Inspection Requirements

Tables D-1, D-1a, and D-2 of this Permit Attachment list the major categories of monitoring equipment, safety and emergency systems, security devices, and operating and structural equipment that are important to the prevention or detection of, or the response to, environmental or human health hazards caused by hazardous waste. These systems may include numerous subsystems. These systems are inspected according to the frequency listed in Tables D-1 and D-1a, a copy of which is maintained at the WIPP facility. The frequency of inspections is based on the nature of the equipment or the hazard and regulatory requirements. When in use, daily inspections are made of areas subject to spills, such as TRU mixed waste loading and unloading areas in the WHB Unit, looking for deterioration in structures, mechanical items, floor coatings, equipment, malfunctions, etc., in accordance with 20.4.1.500 NMAC (incorporating 40 CFR §264.15(b)(4)).

As required in 20.4.1.500 NMAC (incorporating 40 CFR §264.33), the WIPP facility inspection procedures for communication and alarm systems, fire-protection equipment, and spill control and decontamination equipment include provisions for testing and maintenance to ensure that the equipment will be operable in an emergency.

D-1a(1) Types of Problems

The inspections for the systems, equipment, structures, etc., listed in Tables D-1 and D-1a, include the types of problems (e.g., malfunctions, visible cracks in coatings or welds, and deterioration) to be looked for during the inspection of each item or system, if applicable, and are in compliance with 20.4.1.500 NMAC (incorporating 40 CFR §264.15(b)(3)).

As described in Permit Attachment M1, Section M1-1d(3), RH TRU mixed waste will arrive in containers inside Nuclear Regulatory Commission (**NRC**)-certified casks designed to provide shielding and facilitate safe handling. Canisters, will be loaded singly into an RH-TRU 72-B cask. Drums will be loaded into a CNS 10-160B cask. The cask will be visually inspected upon arrival. Because RH TRU mixed waste is stored in the Parking Area Unit in sealed casks, there are no additional requirements for engineered secondary containment systems. Following removal of the canisters and drums, the interior of the cask will be inspected and surveyed for evidence of contamination that may have occurred during transport.

RH TRU mixed waste is handled and stored in the RH Complex of the WHB. The RH Complex includes the following: RH Bay, the Cask Unloading Room, the Hot Cell, the Transfer Cell, and the Facility Cask Loading Room. As RH TRU mixed waste is held in canisters within a canister rack the physical inspection of the drum or canister is not possible. Inspections of RH TRU mixed waste in these areas occurs remotely via closed-circuit camera a minimum of once weekly when stored waste is present. Because RH TRU mixed waste is in sealed casks, there are no additional requirements for engineered secondary containment systems. However, the floors in the RH Complex (including the RH Bay, Facility Cask Loading Room and Cask Unloading Room) are coated concrete and during normal operations (i.e., when waste is present), the floor of the RH Complex is inspected visually or by using close-circuit cameras on a weekly basis to verify that it is in good condition and free of ~~obvious~~ visible cracks and gaps.

Inspections of RH TRU mixed waste containers stored in the Hot Cell and Transfer Cell are conducted using remotely operated cameras. RH TRU mixed waste in the Hot Cell is stored in either drums or canisters. The containers in the Hot Cell are inspected to ensure that they are in acceptable condition. RH TRU mixed waste in the Transfer Cell is stored in the RH-TRU 72-B cask or shielded insert; therefore, inspections in this area focus on the integrity of the cask or shielded insert. RH TRU mixed waste in the Facility Cask Loading Room is stored in the facility cask; therefore, inspections in this area focus on the integrity of the facility cask.

Inspections will be conducted in the Parking Area Unit at a frequency not less than once weekly when waste is present. These inspections are applicable to loaded Contact- Handled and Remote-Handled Packages. The perimeter fence located at the lateral limit of the Parking Area Unit, coupled with personnel access restrictions into the WHB Unit, will provide the needed security. The perimeter fence and the southern border of the WHB shall mark the lateral limit of the Parking Area Unit. Radiologically controlled areas can be established temporarily with barricades. More permanent structures can be installed. The western boundary can be established with temporary barricades since this area is within the perimeter fence. Access to radiologically controlled areas will only be permitted to personnel who have completed General Employee Radiological Training (**GERT**), a program defined by the Permittees, or escorted by personnel who have completed GERT. This program ensures that personnel have adequate knowledge to understand radiological posting they may encounter at the WIPP site. The fence of the Radiologically Controlled Area, south from the WHB airlocks, was moved to provide more maneuvering space for the trucks delivering waste. Since TRU mixed waste to be stored in the Parking Area Unit will be in sealed Contact-Handled or Remote-Handled Packages, there will be no additional requirements for engineered secondary containment systems. Inspections of the Contact-Handle~~s~~d and Remote-Handled Packages stored in the Parking Area Unit shall be conducted at a frequency no less than once weekly and will focus on the inventory and integrity

TABLE D-1
INSPECTION SCHEDULE/PROCEDURES

System/Equipment Name	Responsible Organization	Inspection [a] Frequency and Job Title of Personnel Normally Making Inspection	Procedure Number and Inspection Criteria
Uninterruptible Power Supply (Central UPS)	Facility Operations	Daily See List 3	WP 04-ED1542 Inspecting for Mechanical Operability[m] and Deterioration[b] with no malfunction alarms. Results of this inspection are logged in accordance with WP 04-AD3008.
TDOP Upender	Waste Handling	Preoperational See List 8	WP 05-WH1010 Inspecting for Mechanical Operability[m] and Deterioration[b]
Vehicle Siren	Emergency Services	Weekly See List 11	Functional Test included with inspection of the Ambulances, Fire Trucks, and Rescue Trucks
Ventilation Exhaust	Maintenance Operations	Quarterly See List 10	IC041098 Check for Deterioration[b] and Calibration of Mine Ventilation Rate Monitoring Equipment
Waste Handling Cranes	Waste Handling	Preoperational See List 8	WP 05-WH1407 Inspecting for Mechanical Operability[m], Deterioration[b], and Leaks/Spills
Waste Hoist	Underground Operations	Preoperational See List 1b and c	WP 04-HO1003 Inspecting for Deterioration[b], Safety Equipment, Communication Systems, and Mechanical Operability[m], Leaks/Spills, in accordance with MSHA requirements
Water Tank Level	Facility Operations	Daily See List 3	SDD-WD00 Inspecting for Deterioration[b], and water levels. Results of this inspection are logged in accordance with WP 04-AD3008.
Push-Pull Attachment	Waste Handling	Preoperational See List 8	WP 05-WH1401 Inspecting for Damage and Deterioration[b]
Trailer Jockey	Waste Handling	Preoperational See List 8	WP 05-WH1405 Inspecting for Mechanical Operability[m] and Deterioration[b]
~~Facility Grapple~~	~~Waste Handling~~	~~Preoperational See List 8~~	~~To Be Determined (RH equipment)~~
~~15-Ton Bridge Crane~~	~~Waste Handling~~	~~Preoperational See List 8~~	~~To Be Determined (RH equipment)~~
~~Hook and Rope on 50/25-Ton Bridge Crane~~	~~Waste Handling~~	~~Preoperational See List 8~~	~~To Be Determined (RH equipment)~~

TABLE D-1 (CONTINUED)
INSPECTION SCHEDULE/PROCEDURES NOTES

[a] Inspection may be accomplished as part of or in addition to regularly scheduled preventive maintenance inspections for each item or system. Certain structural systems of the WHB, Waist Hoist and Station A are also subject to inspection following severe natural events including earthquakes, tornados, and severe storms. Structural systems include columns, beams, girders, anchor bolts and concrete walls.

[b] Deterioration includes: ~~obvious~~ visible cracks, erosion, salt build-up, damage, corrosion, loose or missing parts, malfunctions, and structural deterioration.

[c] "Preoperational" signifies that inspections are required prior to the first use during a calendar day. For calendar days in which the equipment is not in use, no inspections are required. For an area this includes: area is clean and free of obstructions (for emergency equipment); adequate aisle space; emergency and communications equipment is readily available, properly located and sign-posted, visible, and operational. For equipment, this includes: checking fluid levels, pressures, valve and switch positions, battery charge levels, pressures, general cleanliness, and that all functional components and emergency equipment is present and operational.

[e] These weekly inspections apply to container storage areas when containers of waste are present for a week or more.

[g] In addition, the water tank levels are maintained by the CMR and level readouts are available at any time.

[h] This organization is responsible for obtaining licenses for radios and frequency assignments. They do periodic checks of frequencies and handle repairs which are performed by a vendor.

[i] Radios are not routinely "inspected." They are operated daily and many are used in day-to-day operations. They are used until they fail, at which time they are replaced and repaired. Radios are used routinely by Emergency Services, Security, Environmental Monitoring, and Facility Operations.

[j] Fire extinguisher inspection is paperless. Information is recorded into a database using barcodes. The database is then printed out.

[k] Surface CH TRU mixed waste handling areas include the Parking Area Unit, the WHB unit, and unloading areas.

[l] No log forms are used for daily readings. However, readings that are out of tolerance are reported to the CMR and logged by CMR operator. Inspection includes daily functional checks of portable equipment.

[m] Mechanical Operability means that the equipment has been checked and is operating in accordance with site safety requirements (e.g. proper fluid levels and tire pressure; functioning lights, alarms, sirens, and power/battery units; and belts, cables, nuts/bolts, and gears in good condition), as appropriate.

[n] Required Equipment means that the equipment identified in Table F-6 is available and usable (i.e. not expired/depleted and works as designed).

* Positions are not considered RCRA positions (i.e., personnel do not manage TRU mixed waste).

TABLE D-1A~~a~~
RH TRU MIXED WASTE INSPECTION SCHEDULE/PROCEDURES

System/ Equipment Name	Responsible Organization	Inspection[a] Frequency and Job Title of Personnel Normally Making Inspection	Procedure Number (Latest Revision)	Inspection Criteria		
				Deterioration[b]	Leaks/ Spills	Other
Cask Transfer Car(s)	Waste Operations	~~Preoperational~~ Pre-evolution[c,d,e,f] See list 1	WP05-WH1701 PM041186 (Semi-Annual)	Yes	NA	~~Pre-operational~~ Pre-evolution Checks and Operating Instructions. Mechanical Inspection for Wear and Lubrication
RH Bay Overhead Bridge Crane	Waste Operations	Preoperational[c,d,e,i] See list 1	WP05-WH1741 PM041232 (Quarterly & Annual) PM041117 (Annual)	Yes	Yes	Pre-operational Checks and Operating Instructions. Mechanical Inspection for Wear and Lubrication
Facility Cask	Waste Operations	~~Preoperational~~ Pre-evolution[c,d,e,f] See list 1	WP05-WH1753 PM041201 (Annual) PM041203 (Annual)	Yes	NA	~~Pre-operational~~ Pre-evolution Checks and Operating Instructions. Mechanical Inspection for Wear and Lubrication. Electrical PM.
RH Bay Cask Lifting Yoke	Waste Operations	Preoperational[c,d,e,i] See list 1	WP05-WH1741 PM041233 (Annual)	Yes	NA	Pre-operational Checks and Operating Instructions. Mechanical Inspection for Wear and Lubrication
Facility Cask Transfer Car	Waste Operations	~~Preoperational~~ Pre-evolution[c,d,e,f] See list 1	WP05-WH1704 PM041186 (Quarterly) PM041195 (Annual)	Yes	Yes	~~Pre-operational~~ Pre-evolution Checks and Operating Instructions. Mechanical Inspection for Wear and Lubrication Electrical Inspection
Facility Cask Rotating Device	Waste Operations	~~Preoperational~~ Pre-evolution[c,d,e,f] See list 1	WP05-WH1713 PM041175 (Annual) PM041176 (Annual)	Yes	Yes	~~Pre-operational~~ Pre-evolution Checks and Operating Instructions. Mechanical Inspection for Wear and Lubrication Electrical Inspection
Facility Grapple	Waste Operations	~~Preoperational~~ Pre-evolution[c,d,e,f] See list 1	WP05-WH1721 PM041172 (Quarterly) PM041177 (Annual)	Yes	NA	~~Pre-operational~~ Pre-evolution Checks and Operating Instructions. Mechanical Inspection for Wear. Non-Destructive Examination
6.25-Ton Grapple Hoist	Waste Operations	~~Preoperational~~ Pre-evolution[c,d,e,f] See list 1	WP05-WH1721 PM041173 (Annual)	Yes	Yes	~~Pre-operational~~ Pre-evolution Checks and Operating Instructions. Mechanical Inspection for Wear and Lubrication

TABLE D-1A~~a~~
RH TRU MIXED WASTE INSPECTION SCHEDULE/PROCEDURES

System/ Equipment Name	Responsible Organization	Inspection[a] Frequency and Job Title of Personnel Normally Making Inspection	Procedure Number (Latest Revision)	Inspection Criteria		
				Deterioration[b]	Leaks/ Spills	Other
Transfer Cell Shuttle Car	Waste Operations	~~Preoperational~~ Pre-evolution[c,d,e,f] See list 1	WP05-WH1705 PM041184 (Semi-Annual) PM041222 (Annual)	Yes	Yes	~~Pre-operational~~ Pre-evolution Checks and Operating Instructions. Mechanical Inspection for Wear and Lubrication. Electrical Inspection.
Cask Unloading Room	Waste Operations	Preoperational[c,d,e,f,h,i] See list 1	WP05-WH1744	Yes	NA	Floor ~~coating~~ integrity
Hot Cell	Waste Operations	Preoperational[c,d,e,f,g,h,i] See list 1	WP05-WH1744	Yes	NA	Floor ~~coating~~ integrity
Hot Cell Overhead Powered Manipulator	Waste Operations	Preoperational[c,d,e,i] See list 1	WP05-WH1743 PM041215 (Annual) PM041216 (Annual) IC411037 (Annual)	Yes	Yes	Pre-operational Checks and Operating Instructions. Mechanical Inspection for Wear and Lubrication. Electrical Inspection. Load Cell Calibration
Hot Cell Bridge Crane	Waste Operations	Preoperational[c,d,e,i] See list 1	WP05-WH1742 PM041217 (Annual) PM041209 (Annual) IC411038 (Annual)	Yes	Yes	Pre-operational Checks and Operating Instructions. Mechanical Inspection for Wear and Lubrication. Electrical Inspection. Load Cell Calibration.
Transfer Cell	Waste Operations	Preoperational[c,d,e,f,h,i] See list 1	WP05-WH1744	Yes	NA	Floor ~~coating~~ integrity
Facility Cask Loading Room	Waste Operations	Preoperational[c,d,e,f,h,i] See list 1	WP05-WH1744	Yes	NA	Floor ~~coating~~ integrity
Closed Circuit Television Camera	Waste Operations	Preoperational[c,i] See list 1	WP05-WH1757	NA	NA	Operability
Radiation Monitoring Equipment	Radiation ~~Safety~~ Control	Preoperational[c,d,e] See list 2	~~WP12-HP1302 PM411015 IC411039 & IC411040 IC411036~~ WP12-HP124 IC240010 WP12-HP130 IC240007 WP12-HP131 (Annual)	Yes	NA	Operability Checks, Functional Checks, Instrument calibrations, Flow Calibration, Efficiency Checks.

TABLE D-1A~~A~~a
RH TRU MIXED WASTE INSPECTION SCHEDULE/PROCEDURES

System/ Equipment Name	Responsible Organization	Inspection[a] Frequency and Job Title of Personnel Normally Making Inspection	Procedure Number (Latest Revision)	Inspection Criteria		
				Deterioration[b]	Leaks/ Spills	Other
Cask Unloading Room Crane	Waste Operations	Preoperational[c,d,e,i] See list 1	WP05-WH1719 PM041190 (Quarterly & Annual) PM041191 (Annual) PM041192 (Annual) IC411035 (Annual)	Yes	Yes	Pre-operational Checks and Operating Instructions. Mechanical Inspection for Wear and Lubrication. Electrical Inspection. Load Cell Calibration.
Horizontal Emplacement and Retrieval Equipment	Waste Operations	~~Preoperational~~ Pre-evolution[c,d,e,f] See list 1	WP05-WH1700 PM052010 (Monthly) PM052011 (Annual) PM052013 PM052012 PM052014 (Annual)	Yes	Yes	Assembly and Operating Instructions. Electrical Inspection. Position Transducer Calibration. Tilt Sensor Calibration.
41-Ton Forklift	Waste Operations	Preoperational[c,d,e,i] See list 1	WP05-WH1602 PM074061 PM052003 (Hours of Use) PM074027 (Quarterly) PM074029 &PM074051 (Annual)	Yes	Yes	Pre-Operational Checks. PM performed every 100 hours of operation, every 500 hours of operation or every 5 Years. Quarterly Engine Emission Test. Annual Electrical Inspection. Annual NDE.
RH Bay	Waste Operations	Preoperational[c,d,e,h,i] See list 1	WP05-WH1744	Yes	NA	Floor ~~coating~~ integrity
Surface RH TRU Mixed Waste Handling Area	Waste Operations	Preoperational[i] See List 1	WP- 05 WH1744	Yes	Yes	Posted Warning, Communications

TABLE D-1A~~a~~a (CONTINUED)
RH TRU MIXED WASTE INSPECTION SCHEDULE/PROCEDURES LISTS

List 1: Waste Operations

~~Manager,~~ RH Waste Handling Engineer
Qualified TRU-Waste Handler~~, Level II or III~~

List 2:~~ Radiation Safety~~ Radiological Control

Radiological Control Technician

TABLE D-1A~~a~~a (CONTINUED)
RH TRU MIXED WASTE INSPECTION SCHEDULE/PROCEDURES NOTES

[a] Inspection may be accomplished as part of or in addition to regularly scheduled preventive maintenance inspections for each item or system. Certain structural systems of the WHB are also subject to inspection following severe natural events including earthquakes, tornados, and severe storms. Structural systems include columns, beams, girders, anchor bolts, and concrete walls.

[b] Deterioration includes: ~~obvious~~ visible cracks, erosion, salt build-up, damage, corrosion, loose or missing parts, malfunctions, and structural deterioration.

[c] ~~"Preoperational" signifies that inspections are required prior to the waste handling evolution. (The~~ "Pre-evolution" signifies that inspections are required prior to equipment use in the waste handling process. (An evolution is considered to be from the receipt of a cask into the RH Bay through canister emplacement in the underground.) For an area, preoperational inspection includes: area is clean and free of obstructions (for emergency equipment); adequate aisle space; emergency and communications equipment is readily available, properly located and sign-posted, visible, and operational. For equipment, this includes: checking fluid levels, pressures, valve and switch positions, battery charge levels, pressures, general cleanliness, and that functional components and emergency equipment are present and operational. When the equipment is not in use, no inspections are required.

[d] When equipment needs to be inspected while handling waste (i.e., during waste unloading or transfer operations), general cleanliness and functional components will be inspected to detect any problem that may harm human health or the environment. The inspection will verify that emergency equipment is present.

[e] Inspection of RH TRU mixed waste equipment and areas in the RH Complex applies only after RH TRU mixed waste receipt begins.

[f] The inspection/maintenance activities associated with these pieces of equipment are performed when the RH Complex is empty of RH TRU mixed waste. If contamination is present, a radiation work permit may be needed.

[g] For the Hot Cell and Transfer Cell, if RH TRU mixed waste is present, camera inspections will be performed in lieu of physical inspection.

[h] The integrity of the floor coating will be inspected weekly if RH TRU mixed waste is present.

[i] "Preoperational" signifies that inspections are required prior to the first use in a calendar day.

The RH Complex is included in the WHB. The Central UPS supplies power to the WHB which includes the RH Complex. The RH Bay, Hot Cell and Transfer Cell equipment are serviced by dual 1,300 KW diesel powered generators located between the exhaust shaft and the WHB. The generators provide backup power to both CH and RH waste handling operations. The RH waste handling equipment is designed to stop as a result of loss of power in a fail-safe condition. Power from the back-up generators may be utilized to place RH TRU mixed waste containers in process into a safe configuration. During a total power outage condition selected RH loads can be powered by the Central UPS. Within a short time selected RH loads at 480 volts and below can be powered by the Backup Diesel Generators. The backup central UPS for the WHB would also supply backup power to the RH Complex.

E-2e Personnel Protection

The following description of procedures, structures, or equipment used at the facility to prevent undue exposure of personnel to hazardous waste is required by 20.4.1.900 NMAC (incorporating 40 CFR §270.14(b)(8)(v)).

Procedures used at the WIPP facility to prevent undue exposure of personnel to hazardous waste and the sections in this permit application where these procedures are discussed in detail are listed below.

- The TSDF-WAC are criteria designed to prevent the shipment or acceptance of TRU mixed waste exhibiting the characteristics of ignitability, corrosivity, or reactivity.

- Written procedures to prevent the addition of materials to the TRU mixed waste that could exhibit incompatibility or the characteristics of reactivity and/or ignitability are discussed in Section E-3 of this Permit Attachment.

- ~~The shipping containers, forklifts, unloading dock, crane, facility pallets, containment pallets, facility transfer vehicle, waste hoist cage, and underground waste transporter were designed or selected for use in order to minimize the need for CH TRU mixed waste handling personnel to come into contact with CH TRU mixed waste. Each of these items are discussed in detail in Permit Attachments M1 and M2; Section E-2a of this Permit Attachment discusses prevention of hazards to personnel during unloading operations.~~

- ~~The shipping containers, forklifts, cranes, cask shuttle, transfer cars, manipulators, Hot Cell, waste hoist cage, and HERE were designed or selected for use in order to minimize the need for RH TRU mixed waste handling personnel to come into contact with RH TRU mixed waste. These items are discussed in Permit Attachments M1 and M2. Section E-2a of this Permit Attachment discusses in detail prevention of hazards to personnel during unloading operations.~~

- TRU mixed waste handling operations are conducted so that the need for TRU mixed waste handling personnel to touch the TRU mixed waste containers during unloading, overpacking (if necessary), and emplacement operations is

minimized. Appropriate personal protective equipment (**PPE**) will be used depending on locations and operations (e.g., steel-toed shoes, hard hat, safety glasses inside a crane operating envelope; steel-toed shoes, hard hat, mine lamp, self rescuer, and safety glasses in the Underground).

- Tagout/Lockout and work authorization procedures, discussed in Section D-1, prohibit WIPP facility personnel from utilizing TRU mixed waste handling equipment that is temporarily out of service and prevent inappropriate use of TRU mixed waste handling equipment that is not operational for all uses.

- A system for monitoring and inspecting monitoring equipment, safety and emergency systems, security devices, and operating and structural equipment is in place to prevent, detect, or respond to environmental or human health hazards caused by hazardous waste. The inspection/monitoring requirements are described in Permit Attachment D.

- Adequate aisle space is maintained for emergency response purposes, as discussed in Section E-1b of this Permit Attachment.

- Procedures to protect personnel from hazardous and/or TRU mixed waste during nonroutine events are detailed in Permit Attachment F.

The following discusses the structures and equipment that prevent undue exposures of personnel at the WIPP facility to hazardous constituents:

- The WIPP facility was sited and designed to be protective of human health and ensure safe operations during the Disposal Phase.

- TRU mixed waste containers are required to meet shipping/structural requirements.

- The shipping container, forklifts, unloading dock, crane, facility pallets, containment pallets, facility transfer vehicle, waste hoist cage, and underground waste transporter were designed or selected for use in order to minimize the need for CH TRU mixed waste handling personnel to come into contact with CH TRU mixed waste. Each of these items is discussed in detail in Permit Attachments M1 and M2; Section E-2a of this Permit Attachment discusses prevention of hazards to personnel during unloading operations.

- The shipping containers, forklifts, cranes, cask shuttle, transfer cars, manipulators, Hot Cell, waste hoist cage, and HERE were designed or selected for use in order to minimize the need for RH TRU mixed waste handling personnel to come into contact with RH TRU mixed waste. These items are discussed in Permit Attachments M1 and M2. Section E-2a of this Permit Attachment discusses in detail prevention of hazards to personnel during unloading operations.

- The hood ventilation system, used during the initial opening of Contact Handled Packages, is used to vent any potential release of radioactive contaminants into the ventilation system of the WHB Unit (Permit Attachment M1).

- Differential air pressure between the RH TRU mixed waste handling locations in the RH Complex protects workers and prevents potential spread of contamination during handling of RH TRU mixed waste. Airflow between key rooms in the WHB are controlled by maintaining differential pressures between the rooms. The CH Receiving Bay is maintained with a negative pressure relative to outside atmosphere. The RH Receiving Bay is maintained with a requirement to be positive pressure relative to the CH Receiving Bay. The RH Hot Cell is maintained with a negative differential pressure relative to the RH Receiving Bay. The Hot Cell ventilation is exhausted through high-efficiency particulate air filters prior to venting through the WHB filtered exhaust.

- The WIPP facility has internal and external communications and alarm systems to notify personnel of emergency situations and provide instructions for response, evacuation, etc. as discussed in this Permit Attachment and Permit Attachment F.

- The WIPP facility is well equipped with spill-response equipment, transport vehicles, emergency medical equipment and rescue vehicles, fire detection, fire-suppression and firefighting equipment (including water for fire control), PPE, emergency lighting and backup power, and showers and eye-wash fountains. These are discussed in Sections E-1a, E-2~~C~~c and E-2d of this Permit Attachment and are listed in Permit Attachment F.

- The surface and underground ventilation systems, discussed in Permit Attachment M2, are designed to provide personnel with a suitable environment during routine operations.

E-2f Releases to Atmosphere

The following description of procedures, structures, or equipment used at the facility to prevent releases to the atmosphere is required by 20.4.1.900 NMAC (incorporating 40 CFR §270.14(b)(8)(vi)).

All TRU mixed waste will be contained. TRU mixed waste container vents employ particulate filters that prevent particulate releases to the atmosphere. The nature of the waste itself also mitigates potential releases to the atmosphere. Lead and other heavy metals, which could exhibit the characteristic of toxicity, may be present in some TRU mixed waste forms. The metal in the TRU mixed waste, most of which is lead in monolithic form, is present in bricks and shielding rather than in particulate form. The primary sources of other metals are sheets, rods, plating, equipment parts, or solidified sludges.

A release of hazardous waste or hazardous constituents to the air that may have adverse effects on human health or the environment is unlikely. Although VOCs could be present in the TRU mixed waste emplaced within the unit and could potentially be a source of release to the

air, the ~~confirmatory~~ volatile organic compound monitoring plan described in Permit Attachment N will be used to confirm that there is no adverse effects on human health and the environment.

E-2g Flammable Gas Concentration Control

Gas concentrations in the mine and around the underground HWDUs are controlled by mechanically induced ventilation. There are two primary ventilation fans and three filtration fans. If only one primary ventilation fan is ventilating the mine, it typically will be set to draw 260,000 ft^3 (7,358 m^3) per minute of air through the mine, which is sufficient to adequately ventilate all active areas in the mine. If both primary fans are operating, they will typically be set to draw 425,000 ft^3 (12,028 m^3) per minute of air through the mine. The filtration fans are interlocked so that only one filtration fan can operate at any time in the filtration mode. One filtration fan is normally set to draw 60,000 ft^3 (1,698 m^3) per minute of air through the mine. The air is routed through the underground facility with bulkhead doors and dampers to achieve the most efficient use of the air in ventilating for possible gases and maintaining required differential pressures in the underground facility.

The WIPP Mine Ventilation Plan are updated a least once a year or more often to accommodate changing underground conditions. Dead end drifts are fairly common in underground mines. Ventilation to accessible dead end drifts is provided by auxiliary fans and ducts to the extent necessary. Minimum requirements for air quantity, quality, and air flow velocity depend on the level of activity in a given area and are governed by Federal (30 CFR §57, Subpart G) and State regulations. Compliance with those regulations is monitored by facility personnel and through frequent inspections by regulatory authorities.

The WIPP Industrial Hygienist is responsible for monitoring and/or testing the air in the underground. The tests are on an as needed basis, in areas where chemicals are stored, and in areas where people are working that may contain hazardous concentrations of airborne fumes, mists, or vapors. All surveys are recorded; records contain location, time, job description, or occurrences associated with the contaminants, and the identification of instruments used.

Underground Facility Operations checks the underground air quality on a daily basis in all open drifts utilizing instrumentation which indicates Oxygen, Carbon Monoxide, and Flammable Gas concentration. The results of the monitoring are entered in the Shift Log Daily. If conditions are found that exceed established criteria, additional notification is made to the CMR. Appropriate actions are taken to determine the type of gases and impact on mine activities. The readings taken during specific tests for unusual conditions are recorded in the Daily Shift Log. All the monitoring performed by Underground Facility Operations is in accordance with MSHA (30 CFR §57).

Portable air monitoring equipment is used to assure access to all areas where air quality may be of concern. Two types of measuring systems are used at the WIPP: Draeger Pump Systems and Portable Air Monitoring Instruments. Prior to use, all instruments must have certification of current calibration and check gases must also be certified as accurate within one percent of the label concentration. Instruments are used within the guidelines established by the manufacturers and are accompanied with suitable temperature, barometric and relative humidity measurements (as required). Functional testing of instruments must be done before each use and the results must fall within the ranges specified in air monitoring procedures. Gases that are

F-1d Description of Containers

CH TRU mixed waste containers will be either 55-gallon (gal) (208-liter (L)) drums singly or arranged into seven (7)-packs, 85-gal (321-L) drums (used as singly or arranged into four (4)-packs, 100-gal (379 L) drums singly or arranged into three (3)-packs, ten-drum overpacks (**TDOP**), or 66.3 ft^3 (1.88 m^3) SWBs.

RH TRU mixed waste containers are either canisters or drums. Canisters will be loaded singly in an RH-TRU 72-B cask and drums will be loaded in a CNS 10-160B cask. Drums in the CNS 10-160B cask will be arranged singly or in drum carriage units containing up to five drums each. Canisters and drums are described in Permit Attachment M1.

F-1e Description of Surface Hazardous Waste Management Units

The WHB is the surface facility where waste handling activities will take place. The WHB has a total area of approximately 84,000 square feet (ft^2) (7,804 square meters [m^2]) of which ~~43,053~~ 43,554 ft^2 (~~4,000~~ 4,047 m^2) are designated as the WHB Unit for TRU mixed waste management. Within the WHB Unit, ~~25,650~~ 26,151 ft^2 (~~2,383~~ 2,430 m^2) are designated for the waste handling and container storage of CH TRU mixed waste and 17,403 ft^2 (1,617 m^2) are designated for the handling and storage of RH TRU mixed waste. These areas are being permitted as container storage units. The concrete floors within the WHB Unit are sealed with an impermeable coating that has excellent resistance to the chemicals in TRU mixed waste and, consequently, provide secondary containment for TRU mixed waste. In addition, a Parking Area Unit south of the WHB will be used for storage of waste in sealed shipping containers awaiting unloading. This area is also being permitted as a container storage unit. The sealed shipping containers provide secondary containment in this hazardous waste management unit (**HWMU**).

F-1e(1) CH Bay Operations

Once unloaded from the Contact-Handled Package, CH TRU mixed waste containers (7-packs of 55-gal drums, 3-packs of 100-gal drums, 4-packs of 85-gal drums, SWBs, or TDOPs) are placed in one of two positions on the facility pallet. The waste containers are stacked on the facility pallets (one- or two-high, depending on weight considerations). The use of facility pallets will elevate the waste at least 6 inches (in.) (15 centimeters [cm]) from the floor surface. Pallets of waste will then be relocated to the northeast area of the CH bay for normal storage. This storage area will be clearly marked to indicate the lateral limits of the storage area. This storage area will have a maximum capacity of seven facility pallets of waste during normal operations. These pallets will typically be staged in this area for a period of up to five days.

In addition, four Contact-Handled Packages, containing up to 640 ft^3 of CH TRU waste in containers, may occupy the staging positions at the TRUPACT-II Unloading Docks (**TRUDOCK**).

Aisle space shall be maintained in all CH Bay waste storage areas. The aisle space shall be adequate to allow unobstructed movement of fire response personnel, spill-control equipment, and decontamination equipment that would be used in the event of an off-normal event. An aisle space between facility and containment pallets will be maintained in all CH TRU mixed waste storage areas.

F-1e(2) RH Complex Operations

Loaded RH TRU casks are received in the RH Bay of the WHB. The RH Bay is served by an overhead bridge crane used for cask handling and maintenance operations. Storage in the RH Bay occurs in the RH-TRU 72-B or CNS 10-160B casks. A maximum of two loaded casks may be stored in the RH Bay and a maximum of one cask in the Cask Unloading Room may be stored at one time. A minimum of 44 inches (1.1 m) will be maintained between loaded casks in the RH Bay. The cask serves as secondary containment in the RH Bay for the RH TRU mixed waste payload container. In addition, the RH Bay has a concrete floor.

Single RH TRU mixed waste canisters are unloaded from the RH-TRU 72-B casks in the Transfer Cell of the RH Complex where they are transferred to facility casks. Drums of RH TRU mixed waste will be transferred remotely from the CNS 10-160B cask, into the Hot Cell, and loaded into a canister. Storage in the Hot Cell occurs in either drums or canisters. A maximum of ~~10~~ 12 55-gallon drums of RH TRU mixed waste and one 55-gallon drum of derived waste ~~and 6 loaded canisters~~ (~~262~~ 94.9 ft^3 (~~7.4~~ 2.7 m^3)) may be stored in the Hot Cell. Except for the derived waste drum, individual 55-gallon drums may not be stored in the Hot Cell for more than 25 days. The Transfer Cell houses the Transfer Cell Shuttle Car, which is used to facilitate transferring the canister to the facility cask. Storage in this area typically occurs at the end of a shift or in an off-normal event that results in the suspension of waste handling. A maximum of one canister (31.4 ft^3 (0.89 m^3)) may be stored in the Transfer Cell in a shielded insert in the Transfer Cell Shuttle Car or in a RH-TRU 72-B cask.

The Facility Cask Loading Room provides for transfer of a canister to the facility cask for subsequent transfer to the waste hoist and to the Underground Hazardous Waste Disposal Unit. The Facility Cask Loading Room also functions as an air lock between the waste shaft and the Transfer Cell. Storage in this area typically occurs at the end of a shift or in an off-normal event that results in the suspension of waste handling. A maximum of one canister (31.4 ft^3 (0.89 m^3)) may be stored in the Facility Cask in the Facility Cask Loading Room.

Derived waste will be stored in the RH Bay and in the Hot Cell.

F-1e(3) Parking Area Container Storage Unit (Parking Area Unit)

The area extending south from the WHB within the fenced enclosure identified as the Controlled Area on Figure M1-2 is defined as the Parking Area Container Storage Unit. This area provides storage for up to ~~7,160~~ 6,734 ft^3 (~~203~~ 191 m^3) of CH and/or RH TRU mixed waste contained in up to ~~50~~ 40 loaded Contact-Handled Packages and ~~14~~ 8 Remote-Handled Packages. Secondary containment and protection of the waste containers from standing rainwater are provided by the transportation containers. Up to 12 additional Contact-Handled Packages and four additional Remote-Handled Packages may be stored in the Parking Area Surge Area so long as the requirements of Permit Conditions III.A.2.c and III.A.2.d are met. No more than 50 Contact-Handled and 12 Remote-Handled Packages may be stored in the Parking Area Storage Unit.

The safety criteria for Contact-Handled and Remote-Handled Packages require that they be opened and vented at a frequency of at least once every 60 days. During normal operations, Contact-Handled and Remote-Handled Packages will not require venting while located in the

G. Vapor Suppression refers to the reduction or elimination of vapors emanating from a spilled or released material through the most efficient method or application of specially designed agents such as an aqueous foam blanket.

2. Chemical Methods of Mitigation

A. Neutralization is the process of applying acids or bases to a spill to form a neutral salt. The application of solids for neutralizing can often result in confinement of the spilled material. This would include using the neutralizing adsorbents.

B. Solidification is the process whereby a hazardous liquid is added to material such as an absorbent so that a solid material results.

The established procedures are based upon the incident level and a graded approach for nonradioactive or CH TRU waste emergencies and initiated to:

1. Minimize contamination or contact (through PPE, etc.)
2. Limit migration of contaminants
3. Properly dispose of contaminated materials

For RH TRU mixed waste, the detection of contamination on or damage to a RH TRU mixed waste canister or a facility canister may occur outside the Hot Cell ~~Complex~~ during cask to cask transfer of the canister or during loading of the Shielded Insert in the Transfer Cell. ~~Contamination may also be detected within the Hot Cell Complex during the unloading of the CNS 10-160B shipping cask.~~ When such contamination or damage is found, ~~In either case,~~ the Permittees ~~may~~ have the option to decontaminate or return the ~~shipment~~ canister to the generator/storage site or another site for remediation. In the case of a damaged facility canister, the Shielded Insert may be used as an overpack to facilitate further management. Contamination may also be detected within the Hot Cell during the unloading of the CNS 10-160B shipping cask. In this case, the Permittees may decontaminate the 55-gallon drums or return them to the generator/storage site or another site for remediation. Spills or releases that occur within the RH Complex or the underground as the result of RH TRU mixed waste handling will be mitigated by using appropriate measures which may include the items above.

F-4d(2) Fire

The incident level emergency response identified in Section F-3 includes fire/explosion potential. WIPP fire response includes incipient, exterior structure fires, and internal structure fires. The RCRA Emergency Coordinator can implement the Memoranda of Understanding (**MOU**) for additional support.

The first option in mine fire response will be to apply mechanical methods to stop fires (e.g., cut electrical power). The last option in mine fire response will be to reconfigure ventilation using control doors associated with the underground ventilation system. The following actions are implemented in the event of a fire:

would be removed and packaged as site-derived waste using applicable site procedures for decontaminating surfaces.

The decontamination methods will initially involve wiping down structures, equipment, and other containers in the area with absorbent cloths moistened with tepid water. Surveys of these structures will take place and the need to continue decontamination activities will be established. If further decontamination is required, nonhazardous decontaminating agents, such as Liquinox©, Simple Green©, Windex©, citric acid, Bartlett Strip Coat©, and high pressure CO_2 will be used to prevent generating CH TRU mixed waste.

RWPs and other administrative controls provide protective measures to help ensure that new hazardous constituents will not be added during decontamination activities.

Certain structures and/or equipment may be disassembled to facilitate decontamination or may be placed directly into a derived waste container. Items used in the spill cleanup and decontamination operations (e.g., swipes, tools, PPE, etc.) may also be placed into a derived waste container.

When decontamination is deemed by the recovery team to be complete, RC personnel will conduct one final, intensive radcon survey of the area and components in the area to release it for uncontrolled use. The free release criteria for items, equipment, and areas is < 20 dpm/100 cm^2 for alpha radioactivity and < 200 dpm/100 cm^2 for beta-gamma radioactivity. Personnel will then perform hazardous material sampling after decontamination efforts are complete to verify the removal of hazardous waste substances. After cleanup is complete, facility personnel will complete an inspection and include the details of the spill and cleanup in the log.

RH TRU Mixed Waste

For RH TRU mixed waste, the detection of contamination on or damage to a RH TRU mixed waste canister or a facility canister may occur outside the Hot Cell ~~Complex~~ during cask to cask transfer of the canister or during loading of the Shielded Insert in the Transfer Cell. ~~Contamination may also be detected within the Hot Cell Complex during the unloading of the CNS 10-160B shipping cask.~~ When such contamination or damage is found, ~~In either case,~~ the Permittees ~~may~~ have the option to decontaminate or return the ~~shipment~~ canister to the generator/storage site or another site for remediation. In the case of a damaged facility canister, the Shielded Insert may be used as an overpack to facilitate further management. Contamination may also be detected within the Hot Cell during the unloading of the CNS 10-160B shipping cask. In this case, the Permittees may decontaminate the 55-gallon drums or return them to the generator/storage site or another site for remediation. Spills or releases that occur within the RH Complex or the underground as the result of RH TRU mixed waste handling will be mitigated by using the following measures, as appropriate:

During the re-entry phase, an evaluation of the incident, including the nature of the release, amount, location, and other appropriate factors, will be performed. A RWP will be written and approved prior to personnel entering the Hot Cell ~~Complex~~ with the appropriate PPE to further assess the situation, perform surveys and take samples, and, if possible, mitigate problems that could compound the hazards in the area. Based on the results of the evaluation, a determination will be made by the RCRA Emergency Coordinator, with input from the cognizant

managers, radiological control personnel, and ~~As Low As Reasonably Achievable~~ ALARA Committee representatives whether to implement the Contingency Plan and to determine the appropriate course of action to recover from the event. An action response plan to decontaminate and recover affected areas and equipment, together with an RWP establishing the radiological controls required for the recovery will be developed and approved.

Should a breach of a RH TRU mixed waste container occur in the Hot Cell ~~Complex~~ that results in removable contamination exceeding the small area "spot" decontamination levels, the affected container(s) (e.g., breached and contaminated) will be placed into ~~an available container~~ a canister and processed for disposal. The decontamination of equipment, cleanup of spilled material and the overpacking of contaminated/damaged waste containers will be performed in the vicinity of the incident. For example, under normal operations RH TRU mixed waste in 55-gallon drums will be handled only in the Hot Cell ~~Complex~~. Therefore, it is within this area that decontamination and/or overpacking operations would occur. By eliminating the transport of contaminated equipment to other areas for decontamination or overpacking, the risk of spreading contamination is reduced. Contaminated materials for the cleanup and overpacking of a breached RH TRU mixed waste container may be managed as CH TRU mixed waste, depending on the surface dose rate.

Equipment used during a spill cleanup or RH TRU mixed waste overpacking operation could include: cloths, brushes, scoops, absorbents, squeegees, tape, bags, pails, slings, hand tools, and other equipment as needed for a given incident.

The decontamination methods may initially involve wiping down structures, equipment, and other containers in the area with absorbent cloths moistened with tepid water. Surveys of these structures will take place and the need to continue decontamination activities will be established. If further decontamination is required, nonhazardous decontaminating agents, such as Liquinox©, Simple Green©, Windex©, citric acid, Bartlett Strip Coat©, and high pressure CO_2 will be used to prevent generating CH TRU mixed waste.

RWPs and other administrative controls provide protective measures to help ensure that new hazardous constituents will not be added during decontamination activities.

Certain structures and/or equipment within the Hot Cell ~~Complex~~ may be disassembled to facilitate decontamination or may be placed directly into a derived waste container.Items used in the spill cleanup and decontamination operations (e.g., swipes, tools, PPE, etc.) may also be placed into a derived waste container.

When decontamination of the Hot Cell ~~Complex~~ is deemed by the recovery team to be complete, RC personnel will conduct one final, intensive radcon survey of the area and components in the area to release it for continued use. The free release criteria for items and equipment that will be released for uncontrolled use are < 20 dpm/100 cm^2 for alpha radioactivity and < 200 dpm/100 cm^2 for beta-gamma radioactivity. Personnel will then perform hazardous material sampling after decontamination efforts are complete to confirm the removal of hazardous waste substances. After cleanup is complete, facility personnel will complete an inspection and include the details of the spill and cleanup in the log. The recovery phase must be completed before the affected area and/or equipment are returned to service.

map is shown in Figure F-6. The underground fuel area fire-protection system is shown in Figure F-7.

F-6 Coordination Agreements

The Permittees have established MOUs with off-site emergency response agencies for firefighting, medical assistance, hazardous materials response, and law enforcement. In the event that on-site response resources are unable to provide all the needed response actions during either a medical, fire, hazardous materials, or security emergency, the RCRA Emergency Coordinator will notify appropriate off-site response agencies and request assistance. Once on site, off-site emergency response agency personnel will be under the direction of the RCRA Emergency Coordinator.

The MOUs with off-site cooperating agencies are available from the Permittees. A listing and description of the MOUs with state and local agencies and mining operations in the vicinity of the WIPP facility, as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.37 and §264.52(c)), are:

- An agreement among the Permittees, ~~Mississippi Potash Inc. and IMC Kalium~~ Intrepid Potash NM LLC and Mosaic Potash Carlsbad Inc., provides for the mutual aid and assistance, in the form of MRTs, in the event of a mine disaster or other circumstance at either of the two facilities. This provision ensures that the WIPP MOC will have two MRTs available at all times when miners are underground.

- A joint powers agreement among the DOE; the City of Carlsbad, New Mexico; Eddy County, New Mexico; and the New Mexico Energy, Minerals, and Natural Resources Department provides for the coordination of emergency plans, including the DOE emergency radiological response plans; provides for participation in periodic exercises, drills, and training; and assigns responsibilities to the participants.

- A memorandum of agreement between the City of Carlsbad, New Mexico, and the WIPP MOC for ambulance service assistance provides that, upon notification by the WIPP MOC, the Carlsbad Fire Department/Ambulance Service will be dispatched from Carlsbad toward the WIPP site by a designated route and will accept the transfer of patient(s) being transported by the WIPP facility ambulance at the point both ambulances meet. If the patient(s) is not transferrable, the Carlsbad Fire Department/Ambulance Service will provide equipment and personnel to the WIPP facility ambulance, as necessary.

- A MOU between the DOE and the Carlsbad Medical Center ~~Emergency Radiological Treatment Center for the Waste Isolation Pilot Plant~~ provides for the treatment of radiologically contaminated personnel who have incurred injuries beyond the treatment capabilities at the WIPP facility. The DOE will provide transport of the patient(s) to the Carlsbad Medical Center ~~Emergency Radiological Treatment Center~~ for decontamination and medical treatment.

- A MOU between the DOE and the Lea Regional Medical Center ~~Hospital Emergency Radiological Treatment Center for the WIPP~~ provides for the treatment of radiologically contaminated personnel who have incurred injuries beyond the treatment capabilities at the WIPP facility. The DOE will provide transport of the patient(s) to the Lea Regional Medical Center ~~Hospital Emergency Radiological Treatment Center for the WIPP~~ for decontamination and medical treatment.

- A MOU between the DOE and the U.S. Department of Interior (**DOI**), represented by the Bureau of Land Management (**BLM**), Roswell District, provides for a fire-management program that will ensure a timely, well-coordinated, and cost-effective response to suppress wild fire within the withdrawal area using the WIPP incident commander for fire-management activities. The DOI will provide firefighting support if requested. In addition, the MOU provides for responsibilities concerning cultural resources, grazing, wildlife, mining, gas and oil production, realty/lands/rights-of-way, and reclamation.

- A mutual-aid firefighting agreement between the Eddy County Commission and the DOE provides for the assistance of the Otis and Joel Fire Departments (a volunteer fire district created under the Eddy County Commission and the New Mexico State Fire Marshall's Office), including equipment and personnel, at any location within the WIPP Fire Protection Area upon request by an authorized representative of the WIPP Project. These responsibilities are reciprocal.

- A mutual-aid agreement between the City of Hobbs and the DOE provides for mutual ambulance, medical, fire, rescue, and hazardous material response services; provides for joint annual exercises; provides for use of WIPP facility radio frequencies by the City of Hobbs during emergencies; and provides for mutual security and law enforcement services, within the appropriate jurisdiction limits of each party.

- A mutual-aid agreement between the City of Carlsbad and the DOE provides for mutual ambulance, medical, fire, rescue, and hazardous material response services; provides for joint annual exercises; provides for use of WIPP facility radio frequencies by the City of Carlsbad during emergencies; and provides for mutual security and law enforcement services, within the appropriate jurisdiction limits of each party.

- A MOU between the DOE and the New Mexico Department of Public Safety (**DPS**) concerning Mutual Assistance and Emergency Management applies to any actual or potential emergency or incident that: 1) involves a significant threat to employees of the Permittees or general public; 2) involves property under the control or jurisdiction of either the DOE or the State; 3) involves a threat to the environment which is reportable to an off-site agency; 4) requires the combined resources of the DOE and the state; 5) requires a resource that the DOE has which the State does not have, or a resource the State has which DOE does not have; or 6) involves any other incident for which a joint determination has been made by the DOE and the State that the provisions of this MOU will apply. The

In addition to the above report, the Permittees will ensure that the ES&H Manager, or designee, submits reports to the appropriate agencies as listed in Tables F-8 and F-9.

In accordance with 20.4.1.500 NMAC (incorporating 40 CFR §264.56(i)), the Permittees will notify the Secretary of the NMED and EPA Region VI Administrator that the WIPP facility is in compliance with requirements for the cleanup of areas affected by the emergency and that emergency equipment used in the emergency response has been cleaned, repaired, or replaced and is fit for its intended use prior to the resumption of waste management operations in affected areas. The means the WIPP facility will use to meet these requirements are described in Sections F-4e, F-4f, F-4g, and F-4h.

The WIPP requires the EST/FPT to initiate the "WIPP Hazardous Materials Incident Report" if the Contingency Plan is implemented. A form is attached as Figure F-12. The form is initiated by the EST/FPT. The RCRA Emergency Coordinator, CMRO, and Environmental Compliance representatives complete their respective sections.

F-9 Location of the Contingency Plan and Plan Revision

The owner/operator of the WIPP facility will ensure that copies of this Contingency Plan are available through the WIPP electronic controlled-document distribution system or in appropriate controlled-document locations throughout the facility, ~~at~~ and the alternate Emergency Operations Center and ~~at~~ the Joint Information Center at the Skeen-Whitlock Building, and are, consequently, available to all emergency personnel and organizations described in Section F-2. In addition, the owner/operator will make copies available to the following outside agencies:

- ~~Mississippi Potash Inc. and IMC Kalium~~ Intrepid Potash NM LLC and Mosaic Potash Carlsbad Inc.
- ~~New Mexico Energy, Minerals, and Natural Resources Department~~
- Carlsbad Fire Department, Carlsbad
- Carlsbad Medical Center, Carlsbad
- Lea Regional Medical Center ~~Hospital~~, Hobbs
- Otis Fire Department, Otis
- Hobbs Fire Department, Hobbs
- Joel Fire Department, Carlsbad
- BLM, Carlsbad
- New Mexico State Police

RCRA Hazardous Waste Management Job Descriptions

Position Title: Visual Examination Expert (VE Independent Technical Reviewer)

Duties:

- Performs confirmation of waste using visual examination or review of visual examination records
- Reviews visual examination or visual examination record review performed by another Visual Examination Expert.

Requisite Skills, Experience and Education:

Academic or vocational high school diploma or equivalent~~, plus two years of college-level technical study with courses in nuclear waste management and health physics, or equivalent~~.

Training (Type/Amount):

- General Employee Training (GET-19X/GET-20X)
- General Employee Training Refresher (GET-20XA)
- Radworker II (RAD-201)
- Hazardous Waste Worker (HWW-101/102)
- Respiratory Protection (SAF-630/631)
- Conduct of Shift Operations (OPS 115) (Once)
- Technical Safety Requirements (OPS 122) (Once)
- Subject Matter Expert/On the Job Trainer (TRG 293/298) (Biennial)
- Waste Handling Systems (STC-003) (Once)
- Visual Examination

COURSE: RAD-101 - Radiological Worker I

DURATION: .16 hours

PREREQUISITES: ~~None~~ Radiation Manager Approval

SCOPE: The instructor will present radiological theory and practical information necessary to allow unescorted entry into a controlled area, radioactive materials area, radiological buffer area, and radiation area as required by the WIPP Radiation Safety Manual.

TYPE: Classroom And Practical

OBJECTIVES: Upon completion of this course, the student will have the knowledge to work safely in areas controlled for radiological purposes.

Mastery of the terminal objective will be demonstrated by scoring 80 percent or higher on the course examination and satisfactory performance on the practical examination.

Completion of the course meets the training requirements necessary for Radiological Worker -I (RWT-I).

REFRESHER: Retraining every two years with an alternate year refresher.

COURSE DESCRIPTION (by lesson)

1. Radiological Fundamentals
   .2 hours

   a. Introduction
      1. DOE Safety Policy
      2. Course Overview
      3. Radiological Worker (core academics)
         a. Radiological Worker II (RW II) training
         b. Course outline
         c. Successful completion
   b. Atomic Structure
      1. Basic Units of Matter
         a. Protons
         b. Neutrons
         c. Electrons
      2. Stable and Unstable atoms
      3. Charge of the atom

COURSE: RAD-201 - Radiological Worker II

DURATION: .8 hours

PREREQUISITES: ~~None~~ Radiation Manager Approval

SCOPE: The instructor will present an intensive course intended for the radiological workers whose job assignments involve unescorted entry to high and very high radiation areas, contamination areas, high contamination areas, and airborne activity areas.

TYPE: Classroom And Practical

OBJECTIVES: Demonstrate the ability to work safely in radiologically controlled areas, use ALARA techniques in accordance with WIPP radiation protection procedures

Mastery of the terminal objective will be demonstrated by scoring 80 percent or higher on the course examination and satisfactory performance on the practical examination

REFRESHER: Retraining every two years with an alternate year refresher

COURSE DESCRIPTION (by lesson)

1. Radioactive Contamination
   .3 hours
   a. Plutonium
   b. Comparison of ionizing radiation
      1. Ionizing radiation and radioactive contamination
      2. Radioactive contamination
      3. Radiation is energy, contamination is material
   c. Types of contamination
   d. Sources of radioactive contamination
      1. Sources
      2. Indicators of possible area contamination
      3. Employee response to a spill
   e. Contamination control methods
      1. Preventable methods
      2. Engineering control methods
      3. Personal protective measures
         a. Protective clothing
   f. Contamination monitoring equipment
      1. Purpose
      2. Types and uses
      3. Frisking

TABLE I3-3
RADIOLOGICAL SURVEYS DURING RH TRU MIXED WASTE PROCESSING

Step in RH TRU Mixed Waste Processing	Surface Contamination Survey	Dose Rate Survey
Exterior of cask on arrival at WIPP	X	X
During removal of impact limiters on RH-TRU 72-B cask	X	X
During removal of outer lid closure from RH-TRU 72-B cask	X	X
During removal of inner lid closure from RH-TRU 72-B cask ~~inner vessel~~	X	
During removal of upper impact limiter on the CNS 10-160B cask	X	X
After removal of upper impact limiter on the CNS 10-160B cask	X	X
After removal of the CNS 10-160B cask from the lower impact limiter	X	X
After transfer of the CNS 10-160B cask lid into the Hot Cell	X	
During transfer of waste drum carriages into the Hot Cell	X	
During transfer of waste drums ~~in the Hot Cell~~ into the ~~disposal~~ facility canister in the Hot Cell	X	
During transfer of the waste canister from the RH-TRU 72-B cask or shielded insert to the facility cask	X	
Interior of shipping cask inside the RH Bay after unloading of waste canister or drums	X	
Exterior of shield plug subsequent to final canister emplacement		X
Interior of facility cask after completion of waste emplacement	X	

ATTACHMENT J

POST-CLOSURE PLAN

Introduction

This Permit Attachment contains the Post-Closure Plan, which describes activities required to maintain the Waste Isolation Pilot Plant (**WIPP**) after completion of facility closure. Since the current plans for operations extend over several decades, the Permittees will periodically reapply for an operating permit in accordance with Title 20 of the New Mexico Administrative Code, Chapter 4, Part 1 (**20.4.1 NMAC**), Subpart 900 (incorporating 40 CFR §270.10(h)).

This plan was submitted to the New Mexico Environment Department (**NMED**) in accordance with 20.4.1.900 NMAC (incorporating 40 CFR §270.14(b)(13)) and the U.S. Environmental Protection Agency (**EPA**). The Post-Closure Plan includes the implementation of institutional controls to limit access and groundwater monitoring to assess disposal system performance. Until final closure is complete and has been certified in accordance with 20.4.1.500 NMAC (incorporating 40 CFR §264.115), a copy of the approved Post-Closure Plan and all approved revisions will be on file at the WIPP facility and will be available to the Secretary of the NMED or the EPA Region VI Administrator upon request.

J-1 Post-Closure Plan

The post-closure care period begins after completion of closure of the first underground hazardous waste disposal unit (**HWDU**) and continues for thirty (30) years after final closure of the facility. The post-closure care period may be shortened or lengthened by the Secretary of the NMED, based on evidence that human health and the environment are being protected or are at risk. During the post-closure period, the WIPP shall be maintained in a manner that complies with the environmental performance standards applicable to the facility. During this period, the Permittees will employ active institutional controls as necessary.

This post-closure plan focuses on activities following final facility closure. However, some discussion of post-closure following panel closure is warranted since some panel closures will occur long before final facility closure. As discussed in Attachment I (Closure Plan), Section I-1e(1), panel closures have been designed to require no post-closure maintenance. The Permittees have defined a post-closure care program for closed panels that has three aspects. These are routine inspection of the openings in the vicinity of the closures, the sampling of ventilation air for harmful constituents, and a ~~Confirmatory~~ Volatile Organic Compound Monitoring Program. The rules of the Mine Safety Health Administration drive the implementation of the first two programs. These rules require that underground mines monitor air quality to assure good breathing air whenever personnel are underground and that mine operators provide safe ground conditions for personnel in areas that require access. Routine monitoring of the openings in the access ways to panels will be continued and these openings will be maintained for as long as access into them is needed. This includes continued reading of installed geomechanical instrumentation, sounding the areas, visual inspection and maintenance activities such as scaling, mining, or bolting as required and as described in

Permit Attachment M2. In addition, all areas in the underground that are occupied by personnel are checked prior to each day's work activities for accumulations of harmful gases, including methane. Action levels for increasing ventilation to areas that show high levels of harmful gases are specified as described in Permit Attachment F.

These monitoring programs will be carried out during the period between the closure of the first panel and the initiation of final facility closure for the underground facility. The Permittees have prepared a ~~Confirmatory~~ Volatile Organic Compound Monitoring Plan (**~~C~~VOCMP**) which will be implemented to confirm that the annual average concentration of volatile organic compounds (**VOCs**) in the air emissions from the underground HWDUs do not exceed the VOC concentrations of concern listed in Module IV and Permit Attachment N, Table N-3.1. The ~~C~~VOCMP is provided in Attachment N. The ~~C~~VOCMP includes monitoring design, sampling and analysis procedures and quality assurance objectives. This plan is required to demonstrate compliance with 20.4.1.500 and .900 NMAC (incorporating 40 CFR §264.602 and §270.23(a)(2)).

The Permittees will collect air samples upstream of all open and closed panels, and down stream of Panel 1 beginning just prior to waste emplacement and proceeding until after certification of the closure of the last underground HWDU.

The ~~C~~VOCMP uses EPA Compendium Method TO-1~~4~~5. The Permittees have had success with TO-1~~4~~5 at the WIPP if care is taken in placing the sampler to avoid high dust and if stringent cleaning requirements are imposed for the clean canisters. This is necessary because of the extremely low concentrations that are being monitored. The Permittees are evaluating the use of the Fourier Transform Infra-Red (**FTIR**) technique for monitoring VOCs at WIPP. This method is being used successfully at other locations and has recently been approved by the EPA for measuring the concentration of VOCs in the headspace gases of drums of TRU waste. If FTIR becomes viable, the monitoring plan will be revised and the revisions will be submitted to the NMED for approval prior to implementation.

The ~~C~~VOCMP will be implemented under a Quality Assurance Plan that conforms to the document entitled "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations". Quality Assurance criteria required for the target analytes are presented in Table N-4 in Permit Attachment N. Definitions of these criteria are given in Permit Attachment N along with a discussion of other requirements of the Quality Assurance Program including sample handling, calibration, analytical procedures, data reduction, validation and reporting, performance and system audits, preventive maintenance, and corrective actions.

J-1a Post-Closure Plan after Final Facility Closure

A number of regulations deal with the period of time that begins once the WIPP has undergone final facility closure and decommissioning. Under 40 CFR Part 191, the period consists of an active control period and a passive control period; only one hundred (100) years of the active control period can be used in performance assessment. The Land Withdrawal Act (LWA) of 1992 requires that the Department of Energy (DOE) prepare and submit a post-decommissioning land management plan. 20.4.1.500 NMAC (incorporating 40 CFR §264.117) requires post-closure care, including monitoring, security, and control of property use. Because of the numerous regulations, the Permittees have prepared a single strategy for post-closure

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SWBs containing CH TRU mixed waste. The TDOP may also be direct loaded with CH TRU mixed waste. Figure M1-5 shows a TDOP.

Eighty-Five Gallon Drum

The 85-gal (321-L) drums meet the requirements for DOT specification 7A regulations. One or more filtered vents (as described in Section M1-1d(1)) will be installed in the 85-gal drum to prevent the escape of any radioactive particulates and to eliminate any potential of pressurization.

85-gal (321-L) drums are constructed of mild steel and may also contain rigid, molded polyethylene (or other compatible material) liners. These liners are procured to a specification describing the functional requirements of fitting inside the drum, material thickness and tolerances, and quality controls and required testing. A quality assurance surveillance program is applied to all procurements to verify that the liners meet the specification.

The 85-gal (321-L) drum, which is shown in Figure M1-6, will be used for overpacking contaminated 55-gal (208 L) drums at the WIPP facility. The 85-gal drum may also be direct loaded with CH TRU mixed waste.

85-gal (321-L) drums may be used to collect derived waste.

100-Gallon Drum

100-gal (379-L) drums meet the requirements for DOT specification 7A regulations.

A 100-gal (379-L) drum has a gross internal volume of 13.4 ft^3 (0.38 m^3). One or more filtered vents (as described in Section M1-1d(1) will be installed in the drum lid or body to prevent the escape of any radioactive particulates and to eliminate any potential of pressurization.

100-gal (379-L) drums are constructed of mild steel and may also contain rigid, molded polyethylene (or other compatible material) liners. These liners are procured to a specification describing the functional requirements of fitting inside the drum, material thickness and tolerances, and quality controls and required testing. A quality assurance surveillance program is applied to all procurements to verify that the liners meet the specification.

100-gal (379-L) drums may be direct loaded.

M1-1b(2) RH TRU Mixed Waste Containers

Remote-Handled (**RH**) TRU mixed waste containers include RH TRU Canisters ~~canisters~~, which are received at WIPP loaded singly in an RH-TRU 72-B cask, and 55-gallon drums, which are received in a CNS 10-160B cask.

RH TRU Canister

The RH TRU ~~canister~~ Canister is a steel single shell container which is constructed to be of high integrity. An example canister is depicted in Figure M1-16a. The RH TRU ~~canister~~ Canister is

vented and will have a nominal internal volume of 31.4 ft^3 (0.89 m^3) and shall contain waste packaged in small containers (e.g., drums) or waste loaded directly into the canister.

~~RH TRU Facility Canister~~

~~The RH TRU Facility Canister is a cylindrical container designed to hold up to three 55-gallon drums (Figure M1-16).~~

Standard 55-Gallon Drums

Standard 55-gal (208-L) drums meet the requirements for U.S. Department of Transportation (DOT) specification 7A regulations. A detailed description of a standard 55-gallon drum is provided above. Up to ten 55-gallon drums containing RH TRU mixed waste are arranged on two drum carriage units in the CNS 10-160B cask (up to five drums per drum carriage unit). The drums are transferred to an RH TRU mixed waste Facility Canister that will contain ~~up to~~ three drums.

M1-1b(3) Container Compatibility

All containers will be made of steel, and some will contain rigid, molded polyethylene liners. The compatibility study, documented in Appendix C1 of the WIPP RCRA Part B Permit Application (DOE, 1997a), included container materials to assure containers are compatible with the waste. Therefore, these containers meet the requirements of 20.4.1.500 NMAC (incorporating 40 CFR §264.172).

M1-1c Description of the Container Storage Units

M1-1c(1) Waste Handling Building Container Storage Unit (WHB Unit)

The Waste Handling Building (**WHB**) is the surface facility where TRU mixed waste handling activities will take place (Figure M1-1). The WHB has a total area of approximately 84,000 square feet (ft^2) (7,804 square meters (m^2)) of which ~~25,650~~ 26,151 ft^2 (~~2,383~~ 2,430 m^2) are designated for the waste handling and container storage of CH TRU mixed waste and 17,403 ft^2 (1,617 m^2) are designated for handling and storage of RH TRU mixed waste, as shown in Figures M1-1 and M1-17a, b and c. These areas are being permitted as the WHB Unit. The concrete floors are sealed with a coating that is sufficiently impervious to the chemicals in TRU mixed waste to meet the requirements of 20.4.1.500 NMAC (incorporating 40 CFR §264.175(b)(1)).

CH Bay Surge Storage Area

The Permittees will coordinate shipments with the generator/storage sites in an attempt to minimize the use of surge storage. However, there may be circumstances causing shipments to arrive that would exceed the maximum capacity of the CH Bay Storage Area. The Permittees may use the CH Bay Surge Storage Area as specified in Module III (see Figure M1-1) only when the maximum capacities in the CH Bay Storage Area (except for the Shielded Storage Room) and the Parking Area Unit are reached and at least one of the following conditions is met:

- Surface or underground waste handling equipment malfunctions prevent the Permittees from moving waste to disposal locations;
- Hoisting or underground ventilation equipment malfunctions prevent the Permittees from moving waste into the underground;
- Power outages cause a suspension of waste emplacement activities;
- Inbound shipment delays are imminent because Parking Area Container Storage Unit Surge Storage is in use; or
- Onsite or offsite emergencies cause a suspension of waste emplacement activities.

The Permittees must notify NMED upon using the CH Bay Surge Storage Area and provide justification for its use.

CH TRU Mixed Waste

The Contact-Handled Packages used to transport TRU mixed waste containers will be received through one of three air-lock entries to the CH Bay of the WHB Unit. The WHB heating, ventilation and air conditioning (**HVAC**) system maintains the interior of the WHB at a pressure lower than the ambient atmosphere to ensure that air flows into the WHB, preventing the inadvertent release of any hazardous or radioactive constituents contamination as the result of a contamination event. The doors at each end of the air lock are interlocked to prevent both from opening simultaneously and equalizing CH Bay pressure with outside atmospheric pressure. The CH Bay houses two TRUPACT-II Docks (**TRUDOCKs**), each equipped with overhead cranes for opening and unloading Contact-Handled Packages. The TRUDOCKs are within the TRUDOCK Storage Area of the WHB Unit.

The cranes are rated to lift the Contact-Handled Packaging lids as well as their contents. The cranes are designed to remain on their tracks and hold their load even in the event of a design-basis earthquake.

Upon receipt and removal of CH TRU mixed waste containers from the Contact-Handled Packaging, the waste containers are required to be in good condition as provided in Permit Module III. The waste containers will be visually inspected for physical damage (severe rusting, apparent structural defects, signs of pressurization, etc.) and leakage to ensure they are good condition prior to storage. Waste containers will also be checked for external surface contamination. If a primary waste container is not in good condition, the Permittees will overpack the container, repair/patch the container in accordance with 49 CFR §173 and §178 (e.g., 49 CFR §173.28), or return the container to the generator. The Permittees may initiate local decontamination, return unacceptable containers to a DOE generator site or send the Contact-Handled Package to the third party contractor. Decontamination activities will not be conducted on containers which are not in good condition, or which are leaking. If local decontamination activities are opted for, the work will be conducted in the WHB Unit on the TRUDOCK. These processes are described in Section M1-1d. The area previously designated as the Overpack and Repair Room will not be used for TRU mixed waste management in any instances.

Once unloaded from the Contact-Handled Packaging, CH TRU mixed waste containers (7-packs, 3-packs, 4-packs, SWBs, or TDOPs) are placed in one of two positions on the facility

pallet or on a containment pallet. The waste containers are stacked, on the facility pallets (one- or two-high, depending on weight considerations). Waste on containment pallets will be stacked one-high. The use of facility or containment pallets will elevate the waste at least 6 in. (15 cm) from the floor surface. Pallets of waste will then be relocated to the CH Bay Storage Area of the WHB Unit for normal storage. This CH Bay Storage Area, which is shown in Figure M1-1 ~~M1-7~~, will be clearly marked to indicate the lateral limits of the storage area. This CH Bay Storage Area will have a maximum capacity of ~~seventeen~~ 13 pallets (~~5,440~~ 4,160 ft^3 [~~154~~ 118 m^3]) of TRU mixed waste containers during normal operations. ~~These pallets will typically be staged in this area for a period of up to five days.~~

In addition, four Contact-Handled Packages, containing up to eight 7-packs, 3-packs, 4-packs, SWBs, or four TDOPs, may occupy ~~the staging~~ positions at the TRUDOCKs ~~Storage Area of the WHB Unit~~. If waste containers are left in this area, they will be in the Contact-Handled Package with or without the shipping container lids removed. The maximum volume of waste in containers in four Contact-Handled Packages is 640 ft^3 (18.1 m^3).

The Derived Waste Storage Area of the WHB Unit is on the north wall of the CH Bay. This area will contain containers up to the volume of a SWB for collecting derived waste from all TRU mixed waste handling processes in the WHB Unit. The Derived Waste Storage Area is being permitted to allow containers in size up to a SWB to be used to accumulate derived waste. The volume of TRU mixed waste stored in this area will be up to 66.3 ft^3 (1.88 m^3). The derived waste containers in the Derived Waste Storage Area will be stored on standard drum pallets, which are polyethylene trays with a grated deck, which will elevate the derived waste containers approximately 6 in. (15 cm) from the floor surface, and provide approximately 50 gal (190 L) of secondary containment capacity.

~~An area has also been designated for the temporary storage of waste containers for which manifest discrepancies were noted after the Contact-Handled Package was opened. Discrepant payloads will be placed either in the Shielded Storage Area of the WHB Unit on a facility pallet or inside a Contact-Handled Package, depending on when the discrepancy is discovered. In either case the waste containers will be elevated approximately six inches from the floor surface. The storage capacity of this area is one pallet load of TRU mixed waste containers (i.e., 4 SWBs, 2 TDOPs, or 28 drums, or combinations of all three).~~

Aisle space shall be maintained in all WHB Unit TRU mixed waste storage areas. The aisle space shall be adequate to allow unobstructed movement of fire-fighting personnel, spill-control equipment, and decontamination equipment that would be used in the event of an off-normal event. An aisle space of 44 in. (1.1 m) between facility pallets will be maintained in all WHB Unit TRU mixed waste storage areas. An aisle space of 60 in. (1.5 m) will be maintained between the west wall of the CH Bay and facility pallets.

The WHB has been designed to meet DOE design and associated quality assurance requirements. Table M1-1 summarizes basic design requirements, principal codes, and standards for the WIPP facility. Appendix D2 of the WIPP RCRA Part B Permit Application (DOE, 1997a) provided engineering design-basis earthquake and tornado reports. The design-basis earthquake report provides the basis for seismic design of WIPP facility structures, including the WHB foundation. The WIPP design-basis earthquake is 0.1 g. The WIPP design-basis tornado includes a maximum windspeed of 183 mi per hr (mi/hr) (294.5 km/hr), which is

the vector sum of all velocity components. It is also limited to a translational velocity of 41 mi/hr (66 km/hr) and a tangential velocity of 124 mi/hr (200 km/hr). Other parameters are a radius of maximum wind of 325 ft (99 m), a pressure drop of 0.5 lb per in.^{2} (3.4 kilopascals [kPa]), and a rate-of-pressure drop of 0.09 lb/in.^{2}/s (0.6 kPa/s). A design-basis flood report is not available because flooding is not a credible phenomenon at the WIPP facility. Design calculations for the probable maximum precipitation (**PMP**) event, provided in Appendix D7 of the WIPP RCRA Part B Permit Application (DOE, 1997a), illustrated run-on protection for the WIPP facility.

The following are the major pieces of equipment that will be used to manage CH TRU mixed waste in the container storage units. A summary of equipment capacities, as required by 20.4.1.500 NMAC is included in Table M1-2.

TRUPACT-II Type B Packaging

The TRUPACT-II (Figure M1-8a) is a double-contained cylindrical shipping container 8 ft (2.4 m) in diameter and 10 ft (3 m) high. It meets NRC Type B shipping container requirements and has successfully completed rigorous container-integrity tests. The payload consists of approximately 7,265 lbs (3,300 kg) gross weight in up to fourteen 55-gal (208-L) drums, eight 85-gal (322-L) drums, six 100-gal (379-L) drums, two SWBs, or one TDOP.

HalfPACT Type B Packaging

The HalfPACT (Figure M1-8b) is a double-contained right cylindrical shipping container 7.8 ft (2.4 m) in diameter and 7.6 ft (2.3 m) high. It meets NRC Type B shipping container requirements and has successfully completed rigorous container-integrity tests. The payload consists of approximately 7,600 lbs (3,500 kg) gross weight in up to seven 55-gal (208-L) drums, one SWB, or four 85-gallon drums.

Unloading Docks

Each TRUDOCK is designed to accommodate up to two Contact-Handled Packages. The TRUDOCK functions as a work platform, providing TRU mixed waste handling personnel easy access to the container during unloading operations (see Figure M1-1a ~~M1-9~~) (Also see Drawing 41-M-001-W in Appendix D3 of the WIPP RCRA Part B Permit Application (DOE, 1997a)).

Forklifts

Forklifts will be used to transfer the Contact-Handled Packages into the WHB Unit and may be used to transfer palletized CH TRU mixed waste containers to the facility transfer vehicle. Another forklift will be used for general-purpose transfer operations. This forklift has attachments and adapters to handle individual TRU mixed waste containers, if required.

Cranes and Adjustable Center-of-Gravity Lift Fixtures

At each TRUDOCK, an overhead bridge crane is used with a specially designed lift fixture for disassembly of the Contact-Handled Packages. Separate lifting attachments have been specifically designed to accommodate SWBs and TDOPs. The lift fixture, attached to the crane,

has built-in level indicators and two counterweights that can be moved to adjust the center of gravity of unbalanced loads and to keep them level.

Facility or Containment Pallets

The facility pallet is a fabricated steel unit designed to support 7-packs, 4-packs, or 3-packs of drums, SWBs, or TDOPs, and has a rated load of 25,000 lbs. (11,430 kg). The facility pallet will accommodate up to four 7-packs, four 3-packs, or four 4-packs of drums or four SWBs (in two stacks of two units), two TDOPs, or any combination thereof. Loads are secured to the facility pallet during transport to the emplacement area. Facility pallets are shown in Figure M1-10. Fork pockets in the side of the pallet allow the facility pallet to be lifted and transferred by forklift to prevent direct contact between TRU mixed waste containers and forklift tines. This arrangement reduces the potential for puncture accidents. Facility pallets may also be moved by facility transfer vehicles. WIPP facility operational documents define the operational load of the facility pallet to ensure that the rated load of a facility pallet is not exceeded.

Containment pallets are fabricated units having a containment capacity of at least ten percent of the volume of the containers and designed to support a minimum of either a single drum, a single SWB or a single TDOP. The pallets will have a rated load capacity of equal to or greater than the gross weight limit of the container(s) to be supported on the pallet. Loads are secured to the containment pallet during transport. A typical containment pallet is shown in Figure M1-10a. Fork pockets in the side of the pallet allow the containment pallet to be lifted and transferred by forklift. WIPP facility operational documents define the operational load of the containment pallet to assure that the rated load of a containment pallet is not exceeded.

Facility Transfer Vehicle

The facility transfer vehicle is a battery or electric powered automated vehicle that either operates on tracks or has an on-board guidance system that allows the vehicle to operate on the floor of the WHB. An integrated or removable roller bed will be used to move pallets on and off the vehicle. It is designed with a flat bed that has adjustable height capability and will transfer waste payloads on facility pallets to the storage areas be used to transfer the facility pallets on or off the pallet support stands in the waste hoist cage by raising and lowering the bed (see Figure M1-11).

RH TRU Mixed Waste

The RH TRU mixed waste is handled and stored in the RH Complex of the WHB Unit which comprises the following locations: RH Bay (12,552 ft^2 (1,166 m^2)), the Cask Unloading Room (382 ft^2 (36 m^2)), the Hot Cell (1,841 ft^2 (171 m^2)), the Transfer Cell (1,003 ft^2 (93 m^2)) (Figures M1-17a, b and c), and the Facility Cask Loading Room (1,625 ft^2 (151 m^2)).

The RH Bay (Figure M1-14a) is a high-bay area for receiving casks and subsequent handling operations. The trailer carrying the RH-TRU 72-B or CNS 10-160B shipping cask (Figures M1-18, M1-19, M1-20 and M1-21) enters the RH Bay through a set of double doors on the east side of the WHB. The RH Bay houses the ~~cask transfer car~~ Cask Transfer Car. The RH Bay is served by the RH Bay Overhead Bridge Crane used for cask handling and maintenance operations. Storage in the RH Bay occurs in the RH-TRU 72-B or CNS 10-160B casks. The

storage occurs after the trailer containing the cask is moved into the RH Bay and prior to moving the cask into the Cask Unloading Room to stage the waste for disposal operations. A maximum of two loaded casks ~~(147 ft^3 (4.2 m^3))~~ and one 55-gallon drum for derived waste (156 ft^3 (4.4 m^3)) may be stored in the RH Bay.

The Cask Unloading Room (Figure M1-17a) provides for transfer of the RH-TRU 72-B cask to the Transfer Cell, or the transfer of drums from the CNS 10-160B cask to the Hot Cell. Storage in the Cask Unloading Room will occur in the RH-TRU 72-B or CNS 10-160B casks. Storage in this area typically occurs at the end of a shift or in an off-normal event that results in the suspension of waste handling operations. A maximum of one cask (74 ft^3 (2.1 m^3)) may be stored in the Cask Unloading Room.

The Hot Cell (Figure M1-17b) is a concrete shielded room in which drums of RH TRU mixed waste will be transferred remotely from the CNS 10-160B cask, staged in the Hot Cell, and loaded into a ~~facility canister~~ Facility Canister. The loaded ~~facility canister~~ Facility Canister is then lowered from the Hot Cell into the Transfer Cell ~~shuttle car~~ Shuttle Car containing a ~~shielded insert~~ Shielded Insert. Storage in the Hot Cell occurs in either drums or ~~facility canisters~~ Facility Canisters. Drums that are stored are either on the drum carriage unit that was removed from the CNS 10-160B cask or in a ~~facility canister~~ Facility Canister. A maximum of ~~10~~ 12 55-gallon drums ~~and 6 loaded facility canisters (262 ft^3 (7.4 m^3))~~ and one 55-gallon drum for derived waste (94.9 ft^3 (2.7 m^3)) may be stored in the Hot Cell.

The Transfer Cell (Figure M1-17c) houses the Transfer Cell Shuttle Car, which moves the RH-TRU 72-B cask or ~~shielded insert~~ Shielded Insert into position for transferring the canister to the ~~facility cask~~ Facility Cask. Storage in this area typically occurs at the end of a shift or in an off-normal event that results in the suspension of a waste handling evolution. A maximum of one canister (31.4 ft^3 (0.89 m^3)) may be stored in the Transfer Cell in the Transfer Cell Shuttle Car.

The Facility Cask Loading Room (Figure M1-17d) provides for transfer of a canister to the ~~facility cask~~ Facility Cask for subsequent transfer to the waste hoist and to the Underground Hazardous Waste Disposal Unit (**HWDU**). The Facility Cask Loading Room also functions as an air lock between the Waste Shaft and the Transfer Cell. Storage in this area typically occurs at the end of a shift or in an off-normal event that results in the suspension of waste handling operations. A maximum of one canister (31.4 ft^3 (0.89 m^3)) may be stored in the Facility Cask (Figure M1-23) in the Facility Cask Loading Room.

Following is a description of major pieces of equipment that are used to manage RH TRU mixed waste in the WHB Unit. A summary of equipment capacities, as required by 20.4.1.500 NMAC, is included in Table M1-3.

Casks

The RH-TRU 72-B cask (Figure M1-20) is a cylinder designed to meet U.S. Department of Transportation (**DOT**) Type B shipping container requirements. It consists of a separate inner vessel within a stainless steel, lead-shielded outer cask protected by impact limiters at each end, made of stainless steel skins filled with polyurethane foam. The inner vessel is made of stainless steel and provides an internal containment boundary and a cavity for the payload. Neither the outer cask nor the inner vessel is vented. Payload capacity of each RH-TRU 72-B

shipping cask is 8,000 lbs (3,628 kg). The payload consists of a canister of RH TRU mixed waste, which may contain up to 31.4 ft^3 (0.89 m^3) of directly loaded waste or waste in smaller containers.

The CNS 10-160B cask (Figure M1-21) is designed to meet DOT Type B container requirements and consists of two carbon steel shells and a lead shield, welded to a carbon steel bottom plate. A 12-gauge stainless steel thermal shield surrounds the cask outer shell, which is equipped with two steel-encased, rigid polyurethane foam impact limiters attached to the top and bottom of the cask. The CNS 10-160B cask is not vented. Payload capacity of each CNS 10-160B cask is 14,500 lbs (6,577 kg). The payload consists of up to ten 55-gallon drums.

Shielded Insert

The Shielded Insert (Figure M1-30) is specifically designed to be used in the Transfer Cell to hold and transport loaded Facility Canisters from the Hot Cell until loaded into the Facility Cask. The Shielded Insert, designed and constructed similar to the RH-TRU 72-B shipping cask, has a 29 in. inside diameter with an inside length of 130.5 in. to accommodate the Facility Canister, which is 28.5 in. in diameter by 117.5 in. long. The Shielded Insert is installed on and removed from the Transfer Cell Shuttle Car in the same manner as the RH-TRU 72-B shipping cask.

CNS 10-160B Drum Carriage

The CNS 10-160B drum carriage (Figure M1-25) is a steel device used to handle drums in the CNS 10-160B cask. The drum carriages are stacked two high in the CNS 10-160B cask during shipment. They are removed from the cask using a below-the-hook lifting device termed a pentapod. The drum carriage is rated to lift up to five drums with a maximum weight of 1000 pounds each.

RH Bay Overhead Bridge Crane

In the RH Bay, an overhead bridge crane is used to lift the cask from the trailer and place it on the Cask Transfer Car. It is also used to remove the impact limiters from the casks and the outer lid of the RH-TRU 72-B cask.

Cask Lifting Yoke

The lifting yoke is a lifting fixture that attaches to the RH Bay Overhead Bridge Crane and is designed to lift and rotate the RH-TRU 72-B cask onto the Cask Transfer Car.

Cask Transfer Cars

The Cask Transfer Cars (Figures M1-22a and M1-22b ~~and M1-24~~) ~~is a~~ are self-propelled, rail-guided vehicles, that transports ~~the~~ casks between the RH Bay and the Cask Unloading Room.

6.25 Ton Grapple Hoist

A 6.25 Ton Grapple Hoist is used to hoist the canister from the Transfer Cell Shuttle Car into the ~~facility cask~~ Facility Cask.

Facility Canister

The Facility Canister is a cylindrical container designed to hold three 55-gallon drums of either RH TRU waste or dunnage (Figure M1-16).

Facility Cask

The ~~facility cask~~ Facility Cask body consists of two concentric steel cylinders. The annulus between the cylinders is filled with lead, and gate shield valves are located at either end. Figure M1-23 provides an outline configuration of the ~~facility cask~~ Facility Cask. The canister is placed inside the ~~facility cask~~ Facility Cask for shielding during canister transfer from the RH Complex to the Underground HWDU for emplacement.

Facility Cask Transfer Car

The Facility Cask Transfer Car (Figure M1-24) is a self-propelled rail car that is used to move the ~~facility cask~~ Facility Cask between the Facility Cask Loading Room and the Shaft Station in the underground.

Hot Cell Bridge Crane

The Hot Cell ~~Overhead~~ Bridge Crane, outfitted with a rotating block and the Hot Cell Facility Grapple, will be used to lift the CNS 10-160B lid and the drum carriage units from the cask located in the Cask Unloading Room, into the Hot Cell. The Hot Cell ~~Overhead~~ Bridge Crane is also used to lift the empty ~~disposal canisters~~ Facility Canisters into place within the Hot Cell, move loaded drums into the ~~facility canister~~ Facility Canister, and lower loaded ~~canisters~~ Facility Canisters into the Transfer Cell.

Overhead Powered Manipulator

The Overhead Powered Manipulator is used in the Hot Cell to lift individual drums from the drum carriage unit and lower each drum into the ~~facility canister~~ Facility Canister and support miscellaneous Hot Cell operations.

Manipulators

There is a maximum of two operational sets of fixed Manipulators in the Hot Cell. The Manipulators collect swipes of drums as they are being lifted from the drum carriage unit and transfer the swipes to the Shielded Material Transfer Drawer and support Hot Cell operations.

Shielded Material Transfer Drawer

The Shielded Material Transfer Drawer is used to transfer swipe samples obtained by the fixed Manipulators to the Hot Cell Gallery for radiological counting and transferring small equipment into and out of the Hot Cell.

Closed-Circuit Television Cameras

The Closed-Circuit Television Camera system is used to monitor~~s~~ operations throughout the Hot Cell and Transfer Cell ~~operations~~. These cameras are used to perform inspections of waste containers and waste management areas. This camera system is operated ~~operations are observed~~ from the shielded room in the Facility Cask Loading Room and Hot Cell Gallery. The camera system will have a video recording capability as an operational aid. This video recording capability will be available in the Transfer Cell by December 31, 2006, and in the Hot Cell prior to the initial receipt of RH TRU waste in the Hot Cell. The Transfer Cell may be used without video recording capability before December 31, 2006.

Transfer Cell Shuttle Car

The Transfer Cell Shuttle Car (Figure M1-31) positions the loaded RH-TRU 72-B cask and ~~shielded insert~~ Shielded Insert within the Transfer Cell.

Cask Unloading Room Crane

The Cask Unloading Room Crane lifts and suspends the RH-TRU 72-B cask or ~~shielded insert~~ Shielded Insert from the Transfer Car and lowers the cask or ~~shielded insert~~ Shielded Insert into the Transfer Cell Shuttle Car.

Facility Cask Rotating Device

The Facility Cask Rotating Device, a floor mounted hydraulically operated structure, is designed to rotate the Facility Cask from the horizontal position to the vertical position for waste canister loading and then back to the horizontal position after the waste canister has been loaded into the Facility Cask (Figure M1-32).

M1-1c(2) Parking Area Container Storage Unit (Parking Area Unit)

The parking area south of the WHB (see Figure M1-2) will be used for storage of waste containers within sealed shipping containers awaiting unloading. The area extending south from the WHB within the fenced enclosure identified as the Controlled Area on Figure M1-2 is defined as the Parking Area Unit. The Parking Area Unit provides storage space for up to ~~7,160~~ 6,734 ft^3 (~~203~~ 191 m^3) of TRU mixed waste, contained in up to ~~50~~ 40 loaded Contact-Handled Packages and ~~14~~ 8 Remote-Handled Packages. Secondary containment and protection of the waste containers from standing liquid are provided by the Contact-Handled or Remote-Handled Packaging. Wastes placed in the Parking Area Unit will remain sealed in their Contact-Handled or Remote-Handled Packages, at all times while in this area.

The Nuclear Regulatory Commission (**NRC**) Certificate of Compliance requires that sealed Contact-Handled or Remote-Handled Packages which contain waste be vented every 60 days to avoid unacceptable levels of internal pressure. During normal operations the maximum residence time of any one container in the Parking Area Unit is typically five days. Therefore, during normal waste handling operations, no Contact-Handled or Remote-Handled Packages will require venting while located in the Parking Area Unit. Any off-normal event which results in the need to store a waste container in the Parking Area Unit for a period of time approaching fifty-nine (59) days shall be handled in accordance with Section M1-1e(2) of this Permit Attachment. Under no circumstances shall a Contact-Handled or Remote-Handled Package be stored in the Parking Area Unit for more than fifty-nine (59) days after the date that the inner containment vessel of the Contact-Handled or Remote-Handled Package was sealed at the generator site.

Parking Area Surge Storage

The Permittees will coordinate shipments with the generator/storage sites in an attempt to minimize the use of surge storage. However, there may be circumstances causing shipments to arrive that would exceed the maximum capacity of the Parking Area. The Permittees may use the Parking Area Surge Storage as specified in Module III (see Figure M1-2) only when the maximum capacity in the Parking Area is reached and at least one of the following conditions is met:

- Surface or underground waste handling equipment malfunctions prevent the Permittees from moving waste to disposal locations;
- Hoisting or underground ventilation equipment malfunctions prevent the Permittees from moving waste into the underground;
- Power outages cause a suspension of waste emplacement activities;
- Inbound shipment delays are imminent because the Parking Area is full (not applicable to RH TRU waste shipments); or
- Onsite or offsite emergencies cause a suspension of waste emplacement activities.

The Permittees must notify NMED and those on the e-mail notification list upon using the Parking Area Surge Storage and provide justification for its use.

M1-1d Container Management Practices

20.4.1.500 NMAC (incorporating 40 CFR §264.173) requires that containers be managed in a manner that does not result in spills or leaks. Containers are required to be closed at all times, unless waste is being placed in the container or removed. Because containers at the WIPP will contain radioactive waste, safety concerns require that containers be continuously vented to obviate the buildup of gases within the container. These gases could result from radiolysis, which is the breakdown of moisture by radiation. The vents, which are nominally 0.75 in. (1.9 centimeters [cm]) in diameter, are generally installed on or near the lids of the containers. These vents are filtered so that gas can escape while particulates are retained.

TRU mixed waste containers, containing off-site waste, are never opened at the WIPP facility. Derived waste containers are kept closed at all times unless waste is being added or removed.

performed. Upon completion of these checks, the Uniform Hazardous Waste Manifest is signed, and the generator's copy of the Uniform Hazardous Waste Manifest is returned to the generator. Should the surface dose rate exceed acceptable levels, the shipping cask and transport trailer remain outside the WHB in the Parking Area Unit, and the appropriate radiological boundaries (i.e., ropes, placards) are erected around the shipping cask and transport trailer. A determination will be made whether to return the cask to the originating site or to decontaminate the cask.

Following cask inspections, the shipping cask and trailer are moved into the RH Bay or held in the Parking Area Unit. The waste handling process begins in the RH Bay where the impact limiter(s) are removed from the shipping cask while it is on the trailer. Additional radiological surveys are conducted on the end of the cask previously protected by the impact limiter(s) to verify the absence of contamination. The cask is unloaded from the trailer using the RH Bay Overhead Bridge Crane and placed on a Cask Transfer Car.

RH-TRU 72-B Cask Unloading

The Cask Transfer Car then moves the RH-TRU 72-B cask to a work stand in the RH Bay. The work stand allows access to the head area of the RH-TRU 72-B cask for conducting radiological surveys, performing physical inspections or minor maintenance, and decontamination, if necessary. The outer lid bolts on the RH-TRU 72-B cask are removed, and the outer lid is removed to provide access to the lid of the cask inner containment vessel. The RH-TRU 72-B cask is moved into the Cask Unloading Room by a Cask Transfer Car and is positioned under the Cask Unloading Room Bridge Crane. The Cask Unloading Room Bridge Crane attaches to the RH-TRU 72-B cask and lifts and suspends the RH-TRU 72-B cask to clear the Cask Transfer Car. The RH-TRU 72-B cask is aligned over the Cask Unloading Room port.

The Cask Unloading Room shield valve is opened, and the cask is lowered through the port into the Transfer Cell Shuttle Car. The Cask Unloading Room Bridge Crane is unhooked and retracted, and the Cask Unloading Room shield valve is closed. After the cask is lowered into the Transfer Cell Shuttle Car, the bolts on the lid of the cask inner containment vessel are loosened by a robotic Manipulator. The Transfer Cell Shuttle Car is then aligned directly under the Transfer Cell shield valve in preparation for removing the inner vessel lid and transferring the canister to the ~~facility cask~~ Facility Cask. Operations in the Transfer Cell are monitored by closed-circuit video cameras.

Using the remotely-operated fixed 6.25 Ton Grapple Hoist in the Facility Cask Loading Room, the inner vessel lid is lifted clear of the RH-TRU 72-B cask, and the robotic Manipulator takes swipe samples and places them in a swipe delivery system for counting outside the Transfer Cell. If found to be contaminated above acceptable levels, the Permittees have the option to decontaminate or return the RH TRU Canister to the generator/storage site or another site for remediation ~~a determination is made whether to return the canister and cask to the originating site or to overpack the canister~~. If no contamination is found, the Transfer Cell Shuttle Car moves a short distance, and the inner vessel lid is lowered onto a stand on the Transfer Cell Shuttle Car. The canister is transferred to the ~~facility cask~~ Facility Cask as described below.

CNS 10-160B Cask Unloading

After the lid bolts are removed, the CNS 10-160B cask is moved using the Cask Transfer Car from the RH Bay into the Cask Unloading Room and centered beneath the Hot Cell shield plug port. The Cask Unloading Room shield door is closed, and the inner and outer Hot Cell shield plugs are removed simultaneously and set aside on the floor of the Hot Cell using the remotely operated Hot Cell Bridge Crane. The Hot Cell Bridge Crane is then lowered through the Hot Cell port and is connected to the CNS 10-160B cask lid rigging or lifting device. The Hot Cell Bridge Crane lifts the CNS 10-160B cask lid through the Hot Cell port and sets the lid aside on the Hot Cell floor.

Operations in the Hot Cell are monitored by closed-circuit television cameras. The drum carriage unit lifting fixture (hereafter referred to as lifting fixture) is attached to the Hot Cell Bridge Crane and lowered through the Hot Cell port. The lifting fixture is connected to the upper drum carriage unit contained in the CNS 10-160B cask. The Hot Cell Bridge Crane lifts the upper drum carriage unit from the CNS 10-160B cask through the port into the Hot Cell and sets it near the Hot Cell inspection station. The Hot Cell Bridge Crane again lowers the lifting fixture through the Hot Cell port and connects to the lower drum carriage unit. The Hot Cell Bridge Crane lifts the lower drum carriage unit from the CNS 10-160B cask through the port into the Hot Cell and sets it near the upper drum carriage unit.

The Hot Cell Bridge Crane lifts the CNS 10-160B cask lid from the Hot Cell floor, lowers it through the Hot Cell port and onto the top of the CNS 10-160B cask. The inner and outer Hot Cell shield plugs are replaced simultaneously. The Cask Unloading Room shield door is opened, and the CNS 10-160B cask is moved into the RH Bay using the Cask Transfer Car. The CNS 10-160B cask is inspected and surveyed, the lid and impact limiter are reinstalled on the CNS 10-160B cask, and it is prepared for transportation off-site.

The Hot Cell Bridge Crane connects to an empty ~~facility canister~~ Facility Canister, places it into a sleeve at the inspection station, and removes the canister lid. The Overhead Powered Manipulator or Hot Cell Crane lifts one drum from the drum carriage unit. The Hot Cell Manipulators collect swipe samples from the drum and transfer the swipes via the Transfer Drawer to the Hot Cell Gallery for counting. If the 55-gallon drums are contaminated, the Permittees may decontaminate the 55-gallon drums or return them to the generator/storage site or another site for remediation. The drum identification number is recorded, and the recorded numbers are verified against the WWIS. If there are any discrepancies, the drum(s) in question are stored within the Hot Cell, and the generator/storage site is contacted for resolution. Discrepancies that are not resolved within 15 days will be reported to the NMED as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.72).

Either the Overhead Powered Manipulator or Hot Cell Bridge Crane lowers the drum into the ~~facility canister~~ Facility Canister. This process is repeated to place three drums in the ~~facility canister~~ Facility Canister. The Hot Cell Bridge Crane or powered Manipulator lifts the canister lid and places it onto the ~~facility canister~~ Facility Canister. The lid is locked in place using a Manipulator ~~or secured with the robotic welder~~. Each CNS 10-160B cask shipment will contain up to ten drums. Drums will be managed in sets of three. If there is a tenth drum, it will be placed in a ~~facility canister~~ Facility Canister or stored until WIPP receipt of the next CNS 10-

160B cask shipment. The Hot Cell Bridge Crane lifts the ~~canister~~ Facility Canister and lowers it into the Transfer Cell.

To prepare to transfer a loaded ~~facility canister~~ Facility Canister from the Hot Cell to the Transfer Cell, a ~~shielded insert~~ Shielded Insert is placed onto a Cask Transfer Car in the RH Bay. The Cask Transfer Car is then moved into the Cask Unloading Room and positioned under the Cask Unloading Room Bridge Crane. The Bridge Crane attaches to the ~~shielded insert~~ Shielded Insert. The Cask Unloading Room Bridge Crane lifts and suspends the ~~shielded insert~~ Shielded Insert clear of the Cask Transfer Car. The ~~shielded insert~~ Shielded Insert is aligned over the Cask Unloading Room port. The floor valve is opened, and the ~~shielded insert~~ Shielded Insert is lowered into the Transfer Cell Shuttle Car. The Cask Unloading Room Bridge Crane is unhooked and retracted, and the Cask Unloading Room shield valve is closed. The ~~shielded insert~~ Shielded Insert is positioned under the Hot Cell port.

The Hot Cell Bridge Crane lifts a loaded, closed ~~facility canister~~ Facility Canister and positions it over the Hot Cell port. The Hot Cell shield valve is opened, and the crane lowers the ~~canister~~ Facility Canister through the port into the ~~shielded insert~~ Shielded Insert positioned in the Transfer Cell Shuttle Car in the Transfer Cell. The Hot Cell Bridge Crane is disconnected from the ~~facility canister~~ Facility Canister and raised until the crane hook clears the Hot Cell shield valve. The Hot Cell shield valve is then closed.

Transfer of Disposal Canister into the Facility Cask

The transfer of a canister into the ~~facility cask~~ Facility Cask from the Transfer Cell is monitored by closed-circuit television cameras. The Transfer Cell Shuttle Car positions the RH-TRU 72-B cask or ~~shielded insert~~ Shielded Insert under the Facility Cask Loading Room port and the shield valve is opened. Then the remotely operated 6.25 Ton Grapple Hoist attaches to the canister, and the canister is lifted through the open shield valve into the vertically-oriented ~~facility cask~~ Facility Cask located on the Cask Transfer Car in the Facility Cask Loading Room. During this cask-to-cask transfer, the telescoping port shield is in contact with the underside of the ~~facility cask~~ Facility Cask to assure shielding continuity, as does the shield bell located above the ~~facility cask~~ Facility Cask.

For canisters received at the WIPP from the generator site in a RH-TRU 72-B cask, the identification number is verified using cameras, which also provide images of the canister surfaces during the lifting operation. Identification numbers are verified against the WWIS. If there are any discrepancies, the canister is returned to the RH-TRU 72-B cask, returned to the Parking Area Staging Area, and the generator is contacted for resolution. Discrepancies that are not resolved within 15 days will be reported to the NMED as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.72). As the canister is being lifted from the RH-TRU 72-B cask into the ~~facility cask~~ Facility Cask, additional swipe samples may be taken.

Transfer of the Canister to the Underground

When the canister is fully within the ~~facility cask~~ Facility Cask, the lower shield valve is closed. The 6.25 Ton Grapple Hoist detaches from the canister and is raised until the 6.25 Ton Grapple Hoist clears the ~~facility cask~~ Facility Cask, at which time the upper shield valve is closed. The 6.25 Ton Grapple Hoist and shield bell are then raised clear of the ~~facility cask~~ Facility Cask,

and the telescoping port shield is retracted. The Facility Cask Rotating Device rotates the ~~facility cask~~ Facility Cask until it is in the horizontal position on the ~~facility~~ Facility Cask Transfer Car. The shield doors on the Facility Cask Loading Room are opened, and the ~~facility~~ Facility Cask Transfer Car moves onto the waste hoist conveyance and is lowered to the waste Shaft Station underground. At the waste Shaft Station underground, the ~~facility~~ Facility Cask Transfer Car moves the ~~facility cask~~ Facility Cask from the waste hoist conveyance. A forklift is used to remove the ~~facility cask~~ Facility Cask from the ~~facility~~ Facility Cask Transfer Car and to transport the ~~facility cask~~ Facility Cask to the Underground HWDU.

Returning the Empty Cask

The empty RH-TRU 72-B cask or ~~shielded insert~~ Shielded Insert is returned to the RH Bay by reversing the process. In the RH Bay, swipe samples are collected from inside the empty cask. If necessary, the inside of the cask is decontaminated. The RH-TRU 72-B cask lids are replaced, and the cask is replaced on the trailer using the RH Bay Bridge Crane. The impact limiters are replaced, and the trailer and the RH-TRU 72-B cask are then moved out of the RH Bay. The ~~shielded insert~~ Shielded Insert is stored in the RH Bay until needed.

M1-1e Inspections

Inspection of containers and container storage area are required by 20.4.1.500 NMAC (incorporating 40 CFR §264.174). These inspections are described in this section.

M1-1e(1) WHB Unit

The waste containers in storage will be inspected visually or by closed-circuit television cameras prior to each movement and, at a minimum, weekly, to ensure that the waste containers are in good condition and that there are no signs that a release has occurred. Waste containers will be visually inspected for physical damage (severe rusting, apparent structural defects, signs of pressurization, etc.) and leakage. If a primary waste container is not in good condition, the Permittees will overpack the container, repair/patch the container in accordance with 49 CFR §173 and §178 (e.g., 49 CFR §173.28), or return the container to the generator. This visual inspection of CH TRU mixed waste containers shall not include the center drums of 7-packs and waste containers positioned such that visual observation is precluded due to the arrangement of waste assemblies on the facility pallets. If waste handling operations should stop for any reason with containers located ~~in the TRUDOCK Storage Area~~ at the TRUDOCK while still in the Contact-Handled Package, primary waste container inspections will not be accomplished until the containers of waste are removed from the Contact-Handled Package. If the lid to the Contact-Handled Package inner container vessel is removed, radiological checks (swipes of Contact-Handled Package inner surfaces) will be used to determine if there is contamination within the Contact-Handled Package. Such contamination could indicate a waste container leak or spill. Using radiological surveys, a detected spill or leak of a radioactive contamination from a waste container will also be assumed to be a hazardous waste spill or release.

~~Inspections of the Shielded Storage Area designated for holding waste while manifest discrepancies are resolved are performed prior to use and weekly thereafter, so long as waste~~

~~containers reside in the Shielded Storage Area.~~ Waste containers residing within a Contact-Handled Package are not inspected, as described in the first bullet in Section M1-1e(2).

Waste containers will be inspected prior to reentering the waste management process line for downloading to the underground. Waste containers stored in this area will be inspected at least once weekly.

Loaded RH-TRU 72-B and CNS 10-160B casks will be inspected when present in the RH Bay. Physical or closed-circuit television camera inspections of the RH Complex are conducted as described in Table D-1a. Canisters loaded in an RH-TRU 72-B cask are inspected in the Transfer Cell during transfer from the cask to the ~~facility cask~~ Facility Cask. Waste containers received in CNS 10-160B casks are inspected in the Hot Cell during transfer from the cask to the ~~CNS 10-160B facility canister~~ Facility Canister by camera and/or visual inspection (through shield windows).

M1-1e(2) Parking Area Unit

Inspections will be conducted in the Parking Area Unit at a frequency not less than once weekly when waste is present. These inspections are applicable to loaded, stored Contact-Handled and Remote-Handled Packages. The perimeter fence located at the lateral limit of the Parking Area Unit, coupled with personnel access restrictions into the WHB, will provide the needed security. The perimeter fence and the southern border of the WHB shall mark the lateral limit of the Parking Area Unit (Figure M1-2). Inspections of the Contact-Handled or Remote-Handled Packages stored in the Parking Area Unit will focus on the inventory and integrity of the shipping containers and the spacing between Contact-Handled and Remote-Handled Packages. This spacing will be maintained at a minimum of four feet.

Contact-Handled and Remote-Handled Packages located in the Parking Area Unit will be inspected weekly during use and prior to each reuse.

Inspection of waste containers is not possible when the containers are in their shipping container (e.g., casks, TRUPACT-II or HalfPACTs). Inspections can be accomplished by bringing the shipping containers into the WHB Unit and opening them and lifting the waste containers out for inspection. The DOE, however, believes that removing containers strictly for the purposes of inspection results in unnecessary worker exposures and subjects the waste to additional handling. The DOE has proposed that waste containers need not be inspected at all until they are ready to be removed from the shipping container for emplacement underground. Because shipping containers are sealed and are of robust design, no harm can come to the waste while in the shipping containers and the waste cannot leak or otherwise be released to the environment. Contact-Handled or Remote-Handled Packages shall be opened every 60 days for the purposes of venting, so that the longest waste would be uninspected would be for 60 days from the date that the inner containment vessel of the Contact-Handled or Remote-Handled Package was closed at the generator site. Venting the Contact-Handled or Remote-Handled Packages involves removing the outer lid and installing a tool in the port of the inner lid.

The following strategy will be used for inspecting waste containers that will be retained within their shipping containers for an extended period of time:

Disposal Phase, should the floors need to be re-coated, any floor coating used in the WHB Unit TRU mixed waste handling areas will be compatible with the TRU mixed waste constituents and will have chemical resistance at least equivalent to the Carboline® products. Figure M1-1 shows where TRU mixed waste handling activities discussed in this section occur.

During normal operations, the floor of the storage areas within the WHB Unit shall be visually inspected on a weekly basis to verify that it is in good condition and free of obvious cracks and gaps. Floor areas of the WHB Unit in use during off-normal events will be inspected prior to use and weekly thereafter. All TRU mixed waste containers located in the permitted storage areas shall be elevated at least 6 in. (15 cm) from the surface of the floor. TRU mixed waste containers that have been removed from Contact-Handled or Remote-Handled Packaging shall be stored at a designated storage area inside the WHB Unit so as to preclude exposure to the elements.

Secondary containment at the CH Bay Storage Area ~~and the Shielded Storage Area~~ inside the WHB Unit shall be provided by the WHB Unit floor (See Figure M1-1). The WHB Unit is engineered such that during normal operations, the floor capacity is sufficient to contain liquids upon release. Secondary Containment at the Derived Waste Storage Area of the WHB Unit will be provided by a polyethylene standard drum pallet. The Parking Area Unit and TRUDOCK Storage Area of the WHB Unit require no engineered secondary containment since no waste is to be stored there unless it is protected by the Contact-Handled or Remote-Handled Packaging.

Calculations to determine the floor surface area required to provide secondary containment in the event of a release are based on the maximum quantity of liquid which could be present within ten percent of one percent of the volume of all the containers or one percent of the capacity of the largest single container, whichever is greater.

Secondary containment at storage locations inside the RH Bay and Cask Unloading Room is provided by the cask. Secondary containment at storage locations inside the Transfer Cell is provided by the RH-TRU 72-B cask or ~~shielded insert~~ Shielded Insert. Secondary containment at storage locations in the Facility Cask Loading Room is provided by the ~~facility cask~~ Facility Cask. In the Hot Cell, waste containers are stored in either the drum carriage unit or in canister sleeves. The Lower Hot Cell provides secondary containment as described in section M1-f(2). In addition, the RH Bay, Hot Cell, and Transfer Cell contain 220-gallon (833-L) (Hot Cell), 11,400-gallon (43,152-L) (RH Bay), and 220-gallon (833-L) (Transfer Cell) sumps, respectively, to collect any liquids.

M1-1f(1) Secondary Containment Requirements for the WHB Unit

The maximum volume of TRU mixed waste on facility pallets that will be stored in the CH Bay Storage and Surge Storage Areas~~, and Shielded Storage Area~~ of the WHB is 18 facility pallets @ 2 TDOPs per pallet = 36 TDOPs of waste. 36 TDOPs @ 1,200 gal (4,540 L) per TDOP = 43,200 gal (163,440L) waste container capacity. 43,200 gal (163,440 L) x ten percent of the total volume = 4,320 gal (16,344 L) of waste. Since 4,320 gal (16,344 L) is greater than 1,200 gal (4,540 L), the configuration of possible TDOPs in the storage area is used for the calculation of secondary containment requirements. 4,320 gal (16,344 L) of liquid x one percent liquids = 43.2 gal (163.4 L) of liquid for which secondary containment is needed.

The maximum volume of TRU mixed waste that will be stored in the Derived Waste Storage Area of the WHB Unit is one SWB. 1 SWBs @ 496 gal (1,878 L) per SWB = 496 gal (1,878 L) waste container capacity. Since the maximum storage volume of 496 gal (1,878 L) is equal to the volume of the largest single container, the volume of the a single SWB is used for the calculation of secondary containment requirements. 496 gal (1,878 L) of liquid x one percent liquids = 4.96 gal (18.8 L) of liquid for which secondary containment is needed.

The maximum volume of TRU mixed waste that will be stored in the Hot Cell is ~~10~~ 13 RH TRU drums @ 55 gal (210 L) per drum = 715 gal (2,730 L) ~~550 gal (2100 L)~~ of waste in drums. ~~Additionally, 6 RH TRU facility canisters @ 235 gal (891L) per canister = 1,410 gal (5,346 L) of waste in canisters for a combined total 1,960 gal (7,419L). And 1,960 gal (7,419 L)~~ 715 gal (2,730 L) of waste x ten percent of total volume = ~~196 gal (741.9 L)~~ 71.5 gal (273 L) of waste. Secondary containment for liquids will need to have a capacity ~~196 gal (741.9L)~~ 71.5 gal (273 L). Since ~~196 gal (741.9 L)~~ 71.5 gal (273 L) is less than the volume of the single container of 235 gal (890 L) therefore, the larger volume is used for determining the secondary containment requirements. 235 gal (890 L) of waste x one percent liquids = 2.35 gal (8.9 L) of liquid needed for secondary containment.

The maximum volume of TRU mixed waste that will be stored in the Transfer Cell is one RH TRU ~~canister~~ Canister or one ~~RH TRU facility canister~~ Facility Canister @ 235 gal (890 L) per canister x ten percent of total volume = 23.5 gal (8.90 L) of waste. Since 23.5 gal (8.90 L) is less than the volume of the single container of 235 gal (890 L) therefore, the larger volume is used for determining the secondary containment requirements. 235 gal (890 L) of waste x one percent liquids = 2.35 gal (8.9 L) of liquid needed for secondary containment.

M1-1f(2) Secondary Containment Description

The following is a calculation of the surface area the quantities of liquid would cover. Using a conversion factor of 0.1337 ft^3/gal (0.001 m^3/L) and assuming the spill is 0.0033 ft (0.001 m) thick, the following calculation can be used:

gallons x cubic feet per gallon ÷ thickness in feet = area covered in square feet

CH Bay Storage Area ~~and Shielded Storage Area~~

43.2 gal x 0.1337 ft^3/gal ÷ 0.0033 ft = 1,750 ft^2 (162.7 m^2)

Hot Cell

2.35 gal x 0.1337 ft^3/gal ÷ 0.0033 ft = 95 ft^2 (8.8 m^2)

Transfer Cell

2.35 gal x 0.1337 ft^3/gal ÷ 0.0033 ft = 95 ft^2 (8.8 m^2)

The WHB Unit has 33,175 ft^2 (3,082 m^2) of floor space, the CH Bay Storage Area ~~in the northeast corner of the WHB Unit (Figure M1-7)~~ has ~~20,574~~ 26,151 ft^2 (~~1,911~~ 2,430 m^2) of floor space~~, and the Shielded Storage Area has 292.5 ft^2 (27.2 m^2) of floor space~~. The CH Bay

Storage Area ~~and Shielded Storage Area~~ requires 1,750 ft^2 (162.7 m^2) for containment, Thus, the floor area of the CH Bay Storage Area ~~and the Shielded Storage Area~~ of the WHB Unit provide sufficient secondary containment to contain a release of ten percent of one percent of the volume of all of the containers, or one percent of the capacity of the largest container, whichever is greater.

The Hot Cell and Transfer Cell are the only portions of the RH Complex managing RH TRU mixed waste outside of casks or canisters. The Hot Cell has 1,841 ft^2 (171 m^2) of floor space and the Transfer Cell has 1,003 ft^2 (93 m^2) of floor space. The Hot Cell and Transfer Cell require only 95 ft^2 for containment, therefore there is sufficient floor space to contain a release of ten percent of one percent of containers in these storage areas.

In addition, both the Hot Cell and the Transfer Cell each contain a 220 gal (833 L) sump that will collect any liquids that spill from containers.

Derived Waste Storage Area

The derived waste containers in the Derived Waste Storage Area will be stored on standard drum pallets, which provides approximately 50 gal (190 L) of secondary containment capacity. Thus the secondary containment capacity of the standard drum pallet is sufficient to contain a release of ten percent of one percent of the largest container (4.96 gal or 18.8 L).

Parking Area Unit

Containers of TRU mixed waste to be stored in the Parking Area Unit will be in Contact-Handled or Remote-Handled Packages. There will be no additional requirements for engineered secondary containment systems.

M1-1g Special Requirements for Ignitable, Reactive, and Incompatible Waste

Special requirements for ignitable, reactive, and incompatible waste are addressed in 20.4.1.500 NMAC (incorporating 40 CFR §§264.176 and 264.177). Permit Module II precludes ignitable, reactive, or incompatible waste at the WIPP. No additional measures are required.

M1-1h Closure

Clean closure is planned in accordance with 20.4.1.500 NMAC (incorporating 40 CFR §264.178) for all permitted container storage areas. The applicable areas and the plans for clean closure are detailed in Permit Attachment I.

M1-1i Control of Run On

The WHB Unit is located indoors which prevents run-on from a precipitation event. In addition, the CH TRU containers are stored on facility pallets, containment pallets, or standard drum pallets, which elevate the CH TRU mixed waste containers at least 6 in. (15 cm) off the floor, or in Contact-Handled or Remote-Handled Packages, so that any firewater released in the building will not pool around containers. Within the RH Bay, Cask Unloading Room, Transfer Cell, and Facility Cask Loading Room, waste containers are stored in casks or ~~shielded insert~~ Shielded

Inserts and protected from any potential run on. Any firewater released in the building will not pool around the waste containers as they are stored in casks, or ~~shielded insert~~ Shielded Inserts. Within the Hot Cell, there is no source of water during operations. However, control of run-on is provided by the Lower Hot Cell, which lies below a sloped floor surrounded by a grating and canister sleeves in the Hot Cell above.

In the Parking Area Unit, the containers of TRU mixed waste are always in Contact-Handled or Remote-Handled Packages which protect them from precipitation and run on. Therefore, the WIPP container storage units will comply with the requirements of 20.4.1.500 NMAC (incorporating 40 CFR §264.175(b)(4)).

TABLE M1-3
RH TRU MIXED WASTE HANDLING EQUIPMENT CAPACITIES

CAPACITIES FOR EQUIPMENT	
RH Bay Overhead Bridge Crane	140 tons main hoist 25 tons auxiliary hoist
RH-TRU 72-B Cask Transfer Car	20 tons
CNS 10-160B Cask Transfer Car	35 tons
Transfer Cell Shuttle Car	29 tons
Hot Cell Bridge Crane	15 tons
Overhead Powered Manipulator	2.5 tons
Facility Cask ~~Rotation Fixture~~ Rotating Device	No specific load rating
Cask Unloading Room Crane	25 tons
6.25 Ton Grapple Hoist	6.25 tons
Facility Cask Transfer Car	40 tons
MAXIMUM GROSS WEIGHTS OF RH TRU CONTAINERS	
RH TRU ~~Mixed Waste~~ Canister	8,000 lbs
55-Gallon Drum	1,000 lbs
~~RH TRU~~ Facility Canister	10,000 lbs
MAXIMUM NET EMPTY WEIGHTS OF EQUIPMENT	
~~Shielded~~ RH-TRU 72-B Cask	37,000 lbs
~~Shielded~~ CNS 10-160B Cask	57,500 lbs
Facility Cask	67,700 lbs
Shielded Insert	26,300 lbs

Figure M1-1
Waste Handling Building - CH TRU Mixed Waste Container Storage and Surge Areas ~~Unit~~

Figure M1-1a
Waste Handling Building Plan (Ground Floor)

Figure M1-2
Parking Area - Container Storage and Surge Areas ~~Unit~~

~~Figure M1-7~~
~~Waste Handling Building - Facility Pallet Temporary Storage Area~~

~~Figure M1-9~~
~~Configuration of Contact-Handled Transuranic Mixed Waste Unloading Docks in the Waste Handling Building~~

Figure M1-13
WIPP Facility Surface and Underground CH Transuranic Mixed Waste Process Flow Diagram

Figure M1-13
WIPP Facility Surface and Underground CH Transuranic Mixed Waste Process Flow Diagram (Continued)

~~Figure M1-14~~
~~Waste Handling Building Plan (Ground Floor)~~

Figure M1-16
~~RH-TRU~~ Facility Canister Assembly

Figure M1-18
RH-TRU 72-B Shipping Cask on Trailer

Figure M1-22a
~~Example of~~ RH-TRU 72-B Cask Transfer Car ~~(Side View)~~

Figure M1-22b
CNS 10-160B Cask Transfer Car

Figure M1-26
Surface and Underground RH Transuranic Mixed Waste Process Flow Diagram for
RH-TRU 72-B Shipping Cask

Figure M1-27
Surface and Underground RH Transuranic Mixed Waste Process Flow Diagram for
CNS 10-160B Shipping Cask

Figure M1-28
Schematic of the RH Transuranic Mixed Waste Process for RH-TRU 72-B Shipping Cask

Figure M1-30
RH Shielded Insert Assembly

Figure M1-31
Transfer Cell Shuttle Car

Figure M1-32
Facility Cask Rotating Device

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through the exhaust stack to the atmosphere. The filtration mode is activated manually or automatically if the radiation monitoring system detects abnormally high concentrations of airborne radioactive particulates (an alarm is received from the continuous air monitor in the exhaust drift of the active waste panel) or a waste handling incident with the potential for a waste container breach is observed. The filtration mode is not initiated by the release of gases such as VOCs.

Underground Ventilation Normal Mode Redundancy

The underground ventilation system has been provided redundancy in normal ventilation mode by the addition of a third main fan. Ductwork leading to that new fan ties into the existing main exhaust duct. Documentation for this addition of a third fan and associated ductwork will be submitted to NMED before receipt of TRU mixed waste.

Electrical System

The WIPP facility uses electrical power (utility power) supplied by the regional electric utility company. If there is a loss of utility power, TRU mixed waste handling and related operations will cease.

Backup, alternating current power will be provided on site by two 1,100-kilowatt diesel generators. These units provide 480-volt power with a high degree of reliability. Each of the diesel generators can carry predetermined equipment loads while maintaining additional power reserves. Predetermined loads include lighting and ventilation for underground facilities, lighting and ventilation for the TRU mixed waste handling areas, and the Air Intake Shaft hoist. The diesel generator can be brought on line within 30 minutes either manually or from the control panel in the Central Monitoring Room (CMR).

Uninterruptible power supply units are also on line providing power to predetermined monitoring systems. These systems ensure that the power to the radiation detection system for airborne contamination, the local processing units, the computer room, and the CMR will always be available, even during the interval between the loss of off-site power and initiation of backup diesel generator power.

M2-2a(4) RH TRU Mixed Waste Handling Equipment

The following are the major pieces of equipment used to manage RH TRU mixed waste in the geologic repository. A summary of equipment capacities is included in Table M2-3.

The Facility Cask Transfer Car

The Facility Cask Transfer Car is a self-propelled rail car (Figure M2-14) that operates between the Facility Cask Loading Room and the geologic repository. After the ~~facility cask~~ Facility Cask is loaded, the Facility Cask Transfer Car moves onto the waste hoist conveyance and is then transported underground. At the underground waste shaft station, the Facility Cask Transfer Car proceeds away from the waste hoist conveyance to provide forklift access to the ~~facility cask~~ Facility Cask.

Horizontal Emplacement and Retrieval Equipment

The Horizontal Emplacement and Retrieval Equipment (**HERE**) (Figure M2-15) emplaces canisters into a borehole in a room wall of an Underground HWDU. Once the canisters have been emplaced, the HERE then fills the borehole opening with a shield plug.

M2-2b Geologic Repository Process Description

Prior to receipt of TRU mixed waste at the WIPP facility, waste operators will be thoroughly trained in the safe use of TRU mixed waste handling and transport equipment. The training will include both classroom training and on-the-job training.

RH TRU Mixed Waste Emplacement

The Facility Cask Transfer Car is loaded onto the waste hoist and is lowered to the waste shaft station underground. At the waste shaft station underground, the ~~facility cask~~ Facility Cask is moved from the waste hoist by the Facility Cask Transfer Car (Figure M2-16). A forklift is used to remove the ~~facility cask~~ Facility Cask from the Facility Cask Transfer Car and to transport the ~~facility cask~~ Facility Cask to the Underground HWDU. There, the ~~facility cask~~ Facility Cask is placed on the HERE (Figure M2-17). The HERE is used to emplace the RH TRU mixed waste canister into the borehole. The borehole will be visually inspected for obstructions prior to aligning the HERE and emplacement of the RH TRU mixed waste canister. The ~~facility cask~~ Facility Cask is moved forward to mate with the shield collar, and the transfer carriage is advanced to mate with the rear ~~facility cask~~ Facility Cask shield valve. The shield valves on the ~~facility cask~~ Facility Cask are opened, and the transfer mechanism advances to push the canister into the borehole. After retracting the transfer mechanism into the ~~facility cask~~ Facility Cask, the forward shield valve is closed, and the transfer mechanism is further retracted into its housing. The transfer mechanism is moved to the rear, and the shield plug carriage containing a shield plug is placed on the emplacement machine. The transfer mechanism is used to push the shield plug into the ~~facility cask~~ Facility Cask. The front shield valve is opened, and the shield plug is pushed into the borehole (Figure M2-18). The transfer mechanism is retracted, the shield valves close on the ~~facility cask~~ Facility Cask, and the ~~facility cask~~ Facility Cask is removed from the HERE.

A shield ~~Shield~~ plug~~s~~ is a concrete filled cylindrical steel shell (Figure M2-21)~~, (29 in. (73 cm) in diameter),~~ approximately 61 in. long and 29 in. in diameter, made of concrete shielding material inside a 0.24 in. thick steel shell with a removable pintle at one end. Each shield plug has integral forklift pockets and weighs approximately 3,750 lbs. The shield plug is inserted with the pintle end closest to the HERE to ~~are inserted into the borehole (30 in. (75 cm) in diameter) after emplacement of the canister (approximately 26 in. (65 cm) in diameter). They~~ provide the necessary shielding ~~for the exposed end of the borehole~~, limiting the borehole radiation dose rate at 30 cm to less than 10 mrem per hour for a canister surface dose rate of 100 rem/hr. Additional shielding is provided at the direction of the Radiological Control Technician based on dose rate surveys following shield plug emplacement. This additional shielding is provided by the manual emplacement of one or more shield plug supplemental shielding plates and a retainer (Figures M2-19 and M2-20).

TABLE M2-3
RH TRU MIXED WASTE HANDLING EQUIPMENT CAPACITIES

CAPACITIES FOR EQUIPMENT	
41-Ton Forklift	82,000 lbs
MAXIMUM GROSS WEIGHTS OF RH TRU CONTAINERS	
Facility Canister	10,000 lbs
55-Gallon Drum	1,000 lbs
RH TRU Canister	8,000 lbs
MAXIMUM NET EMPTY WEIGHTS OF EQUIPMENT	
Facility Cask	67,700 lbs

Figure M2-12
WIPP Facility Surface and Underground CH Transuranic Mixed Waste Process Flow Diagram

Figure M2-12
WIPP Facility Surface and Underground CH Transuranic Mixed Waste Process Flow Diagram (Continued)

Figure M2-19
Shield Plug Supplemental Shielding Plate(s)

Figure M2-20
Shielding Layers to Supplement RH Borehole Shield Plugs

Figure M2-21
Shield Plug Configuration

Air samples will be collected in the underground to quantify airborne VOC concentrations as described in the following sections.

N-3a(1) Sampling Locations for Repository VOC Monitoring

The initial configuration for the repository VOC monitoring stations is shown in Figure N-1. All mine ventilation air which could potentially be impacted by VOC emissions from the Underground HWDUs identified as Panels 1 through 7 will pass monitoring Station VOC-A, located in the E-300 drift as it flows to the exhaust shaft. Air samples will be collected at two locations in the facility to quantify airborne VOC concentrations. VOC concentrations attributable to VOC emissions from open and closed panels containing CH TRU mixed waste will be measured by placing one VOC monitoring station just downstream from Panel 1 at VOC-A. The location of Station VOC-A will remain the same throughout the term of this Permit. The second station (Station VOC-B) will always be located upstream from the open panel being filled with waste (starting with Panel 1 at monitoring Station VOC-B (Figure N-1). In this configuration, Station VOC-B will measure VOC concentrations attributable to releases from the upstream sources and other background sources of VOCs, but not releases attributable to open or closed panels. The location of Station VOC-B will change when disposal activities begin in the next panel. Station VOC-B will be relocated to ensure that it is always upstream of the open panel that is receiving TRU mixed waste. Station VOC-A will also measure upstream VOC concentrations measured at Station VOC-B, plus any additional VOC concentrations resulting from releases from the closed and open panels. A sample will be collected from each monitoring station on designated sample days. For each quantified target VOC, the concentration measured at Station VOC-B will be subtracted from the concentration measured at Station VOC-A to assess the magnitude of VOC releases from closed and open panels.

The sampling locations were selected based on operational considerations. There are several different potential sources of release for VOCs into the WIPP mine ventilation air. These sources include incoming air from above ground and facility support operations, as well as open and closed waste panels. In addition, because of the ventilation requirements of the underground facility and atmospheric dispersion characteristics, any VOCs that are released open or closed panels may be difficult to detect and differentiate from other sources of VOCs at any underground or above ground location further downstream of Panel 1. By measuring VOC concentrations close to the potential source of release (i.e., at Station VOC-A), it will be possible to differentiate potential releases from background levels (measured at Station VOC-B).

N-3a(2) Sampling Locations for Disposal Room VOC Monitoring

For purposes of compliance with ~~the Section 311 of Public Law 108-137 and~~ Section 310 of Public Law 108-447, the VOC monitoring of airborne VOCs in underground disposal rooms in which waste has been emplaced will be performed as follows:

1. A sample head will be installed inside the disposal room behind the exhaust drift bulkhead and at the inlet side of the disposal room.

2. TRU mixed waste will be emplaced in the active disposal room.

3. When the active disposal room is filled, another sample head will be installed to the inlet of the filled active disposal room. (Figure N-3 and N-4)

4. The exhaust drift bulkhead will be removed and re-installed in the next disposal room so disposal activities may proceed.

5. A ventilation barrier will be installed where the bulkhead was located in the active disposal room's exhaust drift. Another ventilation barrier will be installed in the active disposal room's air inlet drift, thereby closing that active disposal room.

6. Monitoring of VOCs will continue in the now closed disposal room. Monitoring of VOCs will occur in the active disposal room and all closed disposal rooms in which waste has been emplaced until commencement of panel closure activities (i.e., completion of ventilation barriers in Room 1).

This sequence for installing sample locations will proceed in the remaining disposal rooms until the inlet air ventilation barrier is installed in disposal room one. An inlet sampler will not be installed in disposal room one because disposal room sampling proceeds to the next panel.

N-3b Analytes to Be Monitored

The nine VOCs that have been identified for repository and disposal room monitoring are listed in Table N-1. The analysis will focus on routine detection and quantification of these compounds in collected samples. As part of the analytical evaluations, the presence of other compounds will be investigated. The analytical laboratory will be directed to classify and report all of these compounds as Tentatively Identified Compounds (**TICs**).

TICs detected in ~~25~~ 10% or more of ~~the repository~~ any VOC monitoring samples (exclusive of those collected from Station VOC-B) that are VOCs listed in Appendix VIII of 20.4.1.200 NMAC (incorporating 40 CFR §261), collected over a running twelve-month timeframe, will be added to the target analyte lists for both the repository and disposal room VOC monitoring programs, unless the Permittees can justify the exclusion from the target analyte list(s).

TICs detected in the repository and disposal room VOC monitoring programs will be placed in the WIPP Operating Record and reported to NMED in the Semi-Annual VOC Monitoring Report as specified in Permit Condition IV.F.2.b.

N-3c Sampling and Analysis Methods

The VOC monitoring programs include a comprehensive VOC monitoring program established at the facility; equipment, training, and documentation for VOC measurements are already in place.

The method used for VOC sampling is based on the concept of pressurized sample collection contained in the U.S. Environmental Protection Agency (**EPA**) Compendium Method TO-15 (EPA, 1999). The TO-15 sampling concept uses 6-liter SUMMA® passivated (or equivalent) stainless-steel canisters to collect integrated air samples at each sample location. This conceptual method will be used as a reference for collecting the samples at WIPP. The samples

N-3e(2) Data Evaluation and Reporting for Disposal Room VOC Monitoring

When the Permittees receive laboratory analytical data from an air sampling event, the data will be validated as specified in Section N-5a, within ~~three (3)~~ ten (10) working days of receiving the laboratory analytical data. After obtaining validated data from an air sampling event, the data will be evaluated to determine whether the VOC concentrations in the air of any closed room, the active open room, or the immediately adjacent closed room exceeded the Action Levels for Disposal Room Monitoring specified in Permit Module IV, Table IV.F.3.b.

The Permittees shall notify the Secretary in writing, within five (5) working days of obtaining validated analytical results, whenever the concentration of any VOC specified in Permit Module IV, Table IV.D.1 exceeds the action levels specified in Permit Module IV, Table IV.F.3.b.

The Permittees shall submit to the Secretary the Semi-Annual VOC Monitoring Report specified in Permit Condition IV.F.2.b that also includes results from disposal room VOC monitoring.

N-4 Sampling and Analysis Procedures

This section describes the equipment and procedures that will be implemented during sample collection and analysis activities for VOCs at WIPP.

N-4a Sampling Equipment

The sampling equipment that will be used includes the following: 6-liter (L) stainless-steel SUMMA® canisters, VOC canister samplers, treated stainless steel tubing, and a dual filter housing. A discussion of each of these items is presented below.

N-4a(1) SUMMA® Canisters

Six-liter, stainless-steel canisters with SUMMA® passivated interior surfaces will be used to collect and store all ambient air and gas samples for VOC analyses collected as part of the monitoring processes. These canisters will be cleaned and certified prior to their use, in a manner similar to that described by Compendium Method TO-15. The canisters will be certified clean to below the required reporting limits for the VOC analytical method for the target VOCs (see Table N-2). The vacuum of certified clean samplers will be verified at the sampler upon initiation of a sample cycle.

N-4a(2) Volatile Organic Compound Canister Samplers

A conceptual diagram of a VOC sample collection unit is provided in Figure N-2. Such units will be used at monitoring Stations VOC-A and VOC-B and at sampling locations for disposal room measurements. The sampling unit consists of a sample pump, flow controller, sample inlet, inlet filters in series to remove particulate matter, vacuum/pressure gauge, electronic timer, inlet purge vent, two sampling ports, and sufficient collection canisters so that any delays attributed to laboratory turnaround time and canister cleaning and certification will not result in canister shortages. Knowledge of sampler flow rates and duration of sampling will allow calculation of sample volume. The set point flow rate will be verified before and after sample collection from the mass flow indication. Prior to their initial use and annually thereafter, the sample collection

(EPA, 1999) or EPA recommended procedures in SW-846 (EPA, 1996). Additional detail on analytical techniques and methods will be given in laboratory SOPs.

The Permittees will establish the criteria for laboratory selection, including the stipulation that the laboratory follow the procedures specified in the appropriate Air Compendium or SW-846 method and that the laboratory follow EPA protocols. The selected laboratory shall demonstrate, through laboratory SOPs, that it will follow appropriate EPA SW-846 requirements and the requirements specified by the EPA Air Compendium protocols. The laboratory shall also provide documentation to the Permittees describing the sensitivity of laboratory instrumentation. This documentation will be retained in the facility operating record and will be available for review upon request by NMED.

The SOPs for the laboratory currently under contract will be maintained in the operating record by the Permittees. The Permittees will provide NMED with an initial set of applicable laboratory SOPs for information purposes, and provide NMED with any updated SOPs on an annual basis.

Data validation will be performed by the Permittees. Copies of the data validation report will be kept on file in the operating record for review upon request by NMED.

N-5 Quality Assurance

The QA activities for the VOC monitoring programs will be conducted in accordance with the documents: *EPA Guidance for Quality Assurance Project Plans QA/G-5* (EPA, 2002)~~; *Guidance for the Data Quality Objectives Process, QA/G-4* (EPA, 2000)~~, and the *EPA Requirements for Preparing Quality Assurance Project Plans, QA/R-5* (EPA, 2001). The QA criteria for the VOC monitoring programs are listed in Table N-2. This section addresses the methods to be used to evaluate the components of the measurement system and how this evaluation will be used to assess data quality. The QA limits for the sampling procedures and laboratory analysis shall be in accordance with the limits set forth in the specific EPA Method referenced in standard operating procedures employed by either the Permittees or the laboratory. The Permittees standard operating procedures will be in the facility Operating Record and available for review by NMED at anytime. The laboratory standard operating procedures will also be in the facility Operating Record and will be supplied to the NMED as indicated in Section N-4e of this Attachment.

N-5a Quality Assurance Objectives for the Measurement of Precision, Accuracy, Sensitivity, and Completeness

QA objectives for this plan will be defined in terms of the following data quality parameters.

Precision. For the duration of this program, precision will be defined and evaluated by the RPD values calculated between field duplicate samples and between laboratory duplicate samples.

$$RPD = \left(\frac{(A-B)}{(A+B)/2} \right) * 100 \qquad \text{(N-2)}$$

N-5c Calibration Procedures and Frequency

Calibration procedures and frequencies for analytical instrumentation are listed in Section N-4e(4).

N-5d Data Reduction, Validation, and Reporting

A dedicated logbook will be maintained by the operators. This logbook will contain documentation of all pertinent data for the sampling. Sample collection conditions, maintenance, and calibration activities will be included in this logbook. Additional data collected by other groups at WIPP, such as ventilation airflow, temperature, pressure, etc., will be obtained to document the sampling conditions.

Data validation procedures will include at a minimum, a check of all field data forms and sampling logbooks will be checked for completeness and correctness. Sample custody and analysis records will be reviewed routinely by the QA officer and the laboratory supervisor.

Electronic Data Deliverables (**EDDs**) are provided by the laboratory prior to receipt of hard copy data packages. EDDs will be evaluated within three (3) working days of receipt to determine if VOC concentrations are at or above action levels in Table IV.F.3.b for disposal room monitoring data or concentrations of concern in Table IV.F.2.c for repository monitoring data. If the EDD indicates that VOC concentrations are at or above these action levels or concentrations, the hard copy data package will be validated within three (3) working days as opposed to the ten (10) working day time frame provided by Section N-3e(2).

Data will be reported as specified in Section N-3(e) and Permit Module IV.

Acceptable data for this VOC monitoring plan will meet stated precision and accuracy criteria. The QA objectives for precision, accuracy, and completeness as shown in Table N-2 can be achieved when established methods of analyses are used as proposed in this plan and standard sample matrices are being assessed.

N-5e Performance and System Audits

System audits will initially address start-up functions for each phase of the project. These audits will consist of on-site evaluation of materials and equipment, review of canister and sampler certification, review of laboratory qualification and operation and, at the request of the QA officer, an on-site audit of the laboratory facilities. The function of the system audit is to verify that the requirements in this plan have been met prior to initiating the program. System audits will be performed at or shortly after to the initiation of the VOC monitoring programs and on an annual basis thereafter.

Performance audits will be accomplished as necessary through the evaluation of analytical QC data by performing periodic site audits throughout the duration of the project, and through the introduction of third-party audit cylinders (laboratory blinds) into the analytical sampling stream. Performance audits will also include a surveillance/review of data associated with canister and sampler certification, a project-specific technical audit of field operations, and a laboratory performance audit. Field logs, logbooks, and data sheets will be reviewed weekly. Blind-audit

ATTACHMENT O

HAZARDOUS WASTE PERMIT APPLICATION PART A

TABLE OF CONTENTS

NOTE: The "Part A - Hazardous Waste Permit Application" is the document submitted by the Permittees. It refers to management, storage, and disposal of remote-handled (**RH**) transuranic

NM4890139088

XII. PROCESS—CODES AND DESIGN CAPACITIES (continued)

The Waste Isolation Pilot Plant (WIPP) geologic repository is defined as a "miscellaneous unit" under 40 CFR §260.10. "Miscellaneous unit" means a hazardous waste management unit where hazardous waste is treated, stored, or disposed of and that is not a container, tank, surface impoundment, waste pile, land treatment unit, landfill, incinerator, containment building, boiler, industrial furnace, or underground injection well with appropriate technical standards under 40 CFR Part 146, corrective action management unit, or unit eligible for research, development, and demonstration permit under 40 CFR §270.65. The WIPP is a geologic repository designed for the disposal of defense-generated transuranic (TRU) waste. Some of the TRU wastes disposed of at the WIPP contain hazardous wastes as co-contaminants. More than half the waste to be disposed of at the WIPP also meets the definition of debris waste. The debris categories include manufactured goods, biological materials, and naturally occurring geological materials. Approximately 120,000 cubic meters (m^3) of the 175,600 m^3 of WIPP wastes is categorized as debris waste. The geologic repository has been divided into ten discrete hazardous waste management units (HWMU) which are being permitted under 40 CFR Part 264, Subpart X.

During the Disposal Phase of the facility, which is expected to last 25 years, the total amount of waste received from off-site generators and any derived waste will be limited to 175,600 m^3 of TRU waste of which up to 7,080 m^3 may be remote-handled (RH) TRU mixed waste. For purposes of this application, all TRU waste is managed as though it were mixed.

On March 25, 1996, the DOE reached the conclusion that in order to comply with 40 CFR 191 §13 which regulates the long-term release of radionuclides from a geologic disposal facility, it is necessary to add magnesium oxide to each disposal room. This additive is to be placed as a backfill. The function of the backfill is to chemically alter the composition of brine that may accumulate in the disposal region. The result of the chemical alteration is to significantly reduce the solubility of the prevalent TRU radionuclides.

The process design capacity for the miscellaneous unit (composed of ten underground HWMUs in the geologic repository) shown in Section XII B, is for the maximum amount of waste that may be received from off-site generators plus the maximum expected amount of derived wastes that may be generated at the WIPP facility. In addition, two HWMUs have been designated as container storage units (S01) in Section XII. One is inside the Waste Handling Building (WHB) and consists of the contact-handled (CH) bay, conveyance loading room, waste hoist entry room, RH bay, cask unloading room, hot cell, transfer cell, and facility cask loading room. This HWMU will be used for waste receipt, handling, and storage (including storage of derived waste) prior to emplacement in the underground geologic repository. No treatment or disposal will occur in this S01 HWMU. The capacity of this S01 unit for storage is ~~87.7~~ 194.1 m^3, based on ~~40 standard waste boxes or seven-packs of drums on pallets and in~~ 36 ten-drum overpacks on 18 facility pallets, four CH Packages at the TRUDOCKs, one standard waste box of derived waste, two loaded casks and one 55-gallon drum of derived waste in the RH Bay, one loaded cask in the Cask Unloading Room, 13 55-gallon drums in the Hot Cell, one canister in the Transfer Cell and one canister in the Facility Cask Unloading Room ~~seven RH canisters in the transfer cell, and five RH canisters in the hot cell~~. The second S01 HWMU is the parking area

outside the WHB where the Contact- and Remote-Handled Package trailers and the road cask trailers will be parked awaiting waste handling operations. The capacity of this unit is ~~12~~ 50 Contact-Handled Packages and twelve Remote-Handled Packages ~~TRUPACT-IIs and three road casks or four rail casks~~ with a combined volume of ~~47.1~~ 242 m^3. ~~The railroad side tracks are included in this area to accommodate rail shipments of RH TRU mixed waste.~~ The HWMUs are shown in Appendix O3 as Figures O3-2, O3-3, and O3-4.

During the ten year period of the permit, up to ~~131,250~~ 129.750 m^3 of CH TRU mixed waste could be emplaced in Panels 1 to 7 and up to ~~3,250~~ 1,985 m^3 of RH TRU mixed waste could be emplaced in Panels ~~3~~ 4 to 7. Panels 8, 9 and 10 will be constructed under the initial term of this permit. These latter areas will not receive waste for disposal under this permit.

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RCRA PART A APPLICATION CERTIFICATION

The U.S. Department of Energy (DOE), through its Carlsbad Field Office, has signed as "owner and operator," and Washington TRU Solutions LLC, the Management and Operating Contractor (MOC), has signed this application for the permitted facility as "co-operator."

The DOE has determined that dual signatures best reflect the actual apportionment of Resource Conservation and Recovery Act (RCRA) responsibilities as follows:

The DOE's RCRA responsibilities are for policy, programmatic directives, funding and scheduling decisions, Waste Isolation Pilot Plant (WIPP) requirements of DOE generator sites, auditing, and oversight of all other parties engaged in work at the WIPP, as well as general oversight.

The MOC's RCRA responsibilities are for certain day-to-day operations (in accordance with general directions given by the DOE and in the Management and Operating Contract as part of its general oversight responsibility), including, but not limited to, the following: certain waste handling, monitoring, record keeping, certain data collection, reporting, technical advice, and contingency planning.

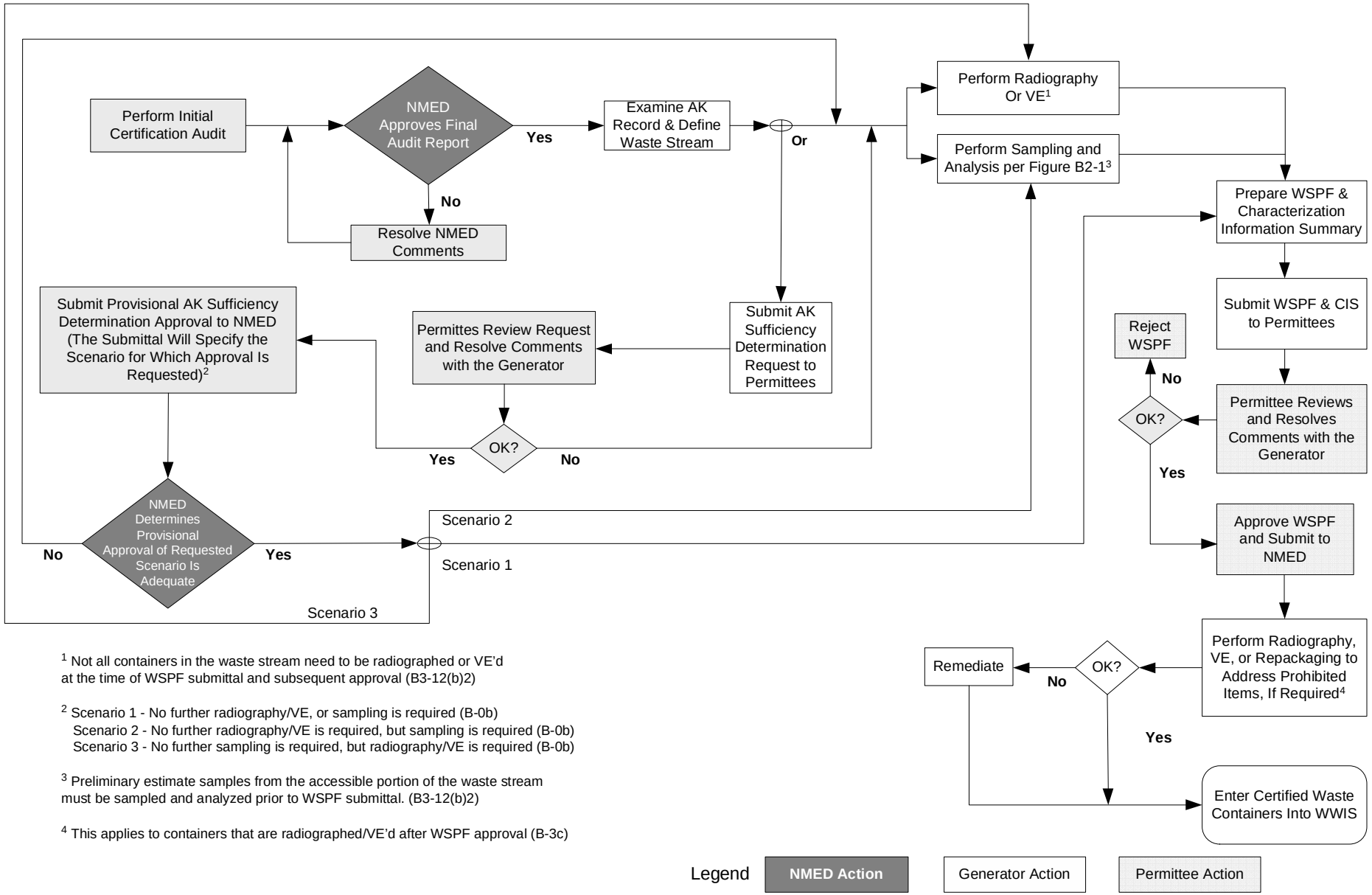
For purposes of the certification required by Title 20 of the New Mexico Administrative Code, Chapter 4, Part 1 (20.4.1 NMAC), Subpart IX, §270.11(d), the DOE's and the MOC's representatives certify, under penalty of law that this document and all attachments were prepared under their direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on their inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of their knowledge and belief, true, accurate, and complete for their respective areas of responsibility. We are aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Owner and Operator Signature:	*Original signed by ~~Inés R. Triay~~ David Moody*
Title:	~~Acting~~ Manager, Carlsbad Field Office
for:	U.S. Department of Energy
Date:	

Co-Operator Signature:	*Original signed by Richard D. Raaz*
Title:	General Manager
for:	Washington TRU Solutions LLC
Date:	2/3/05

Figure O3-3
Waste Handling Building - CH TRU Mixed Waste Container Storage and Surge Areas ~~Unit~~

Figure O3-4
Parking Area-Container Storage and Surge Areas ~~Unit~~



[1] Not all containers in the waste stream need to be radiographed or VE'd at the time of WSPF submittal and subsequent approval (B3-12(b)2)

[2] Scenario 1 - No further radiography/VE, or sampling is required (B-0b)
Scenario 2 - No further radiography/VE is required, but sampling is required (B-0b)
Scenario 3 - No further sampling is required, but radiography/VE is required (B-0b)

[3] Preliminary estimate samples from the accessible portion of the waste stream must be sampled and analyzed prior to WSPF submittal. (B3-12(b)2)

[4] This applies to containers that are radiographed/VE'd after WSPF approval (B-3c)

Figure B-2
WASTE CHARACTERIZATION PROCESS

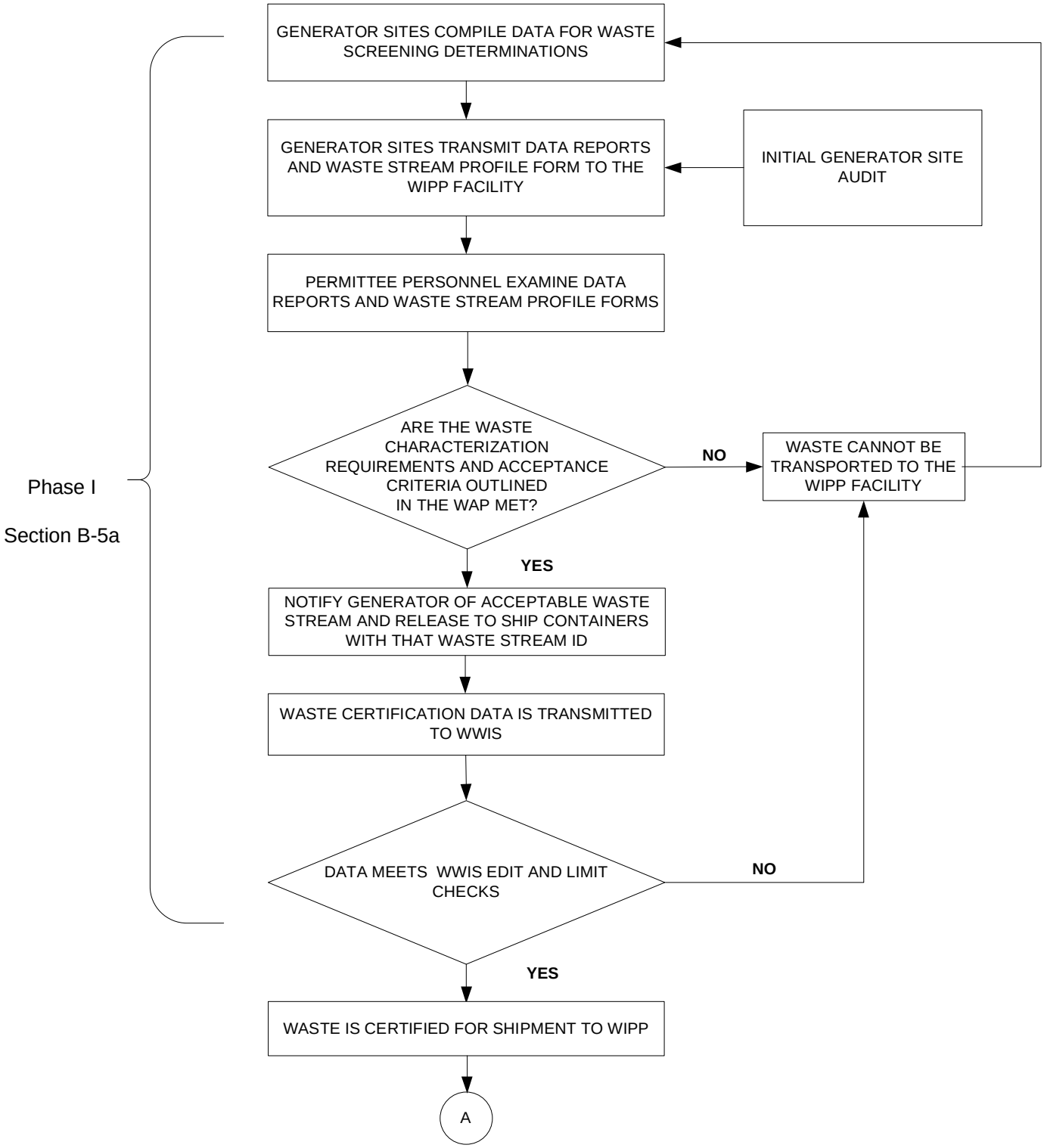


Figure B-~~5~~3
TRU Mixed Waste Screening and Verification Flow Diagram

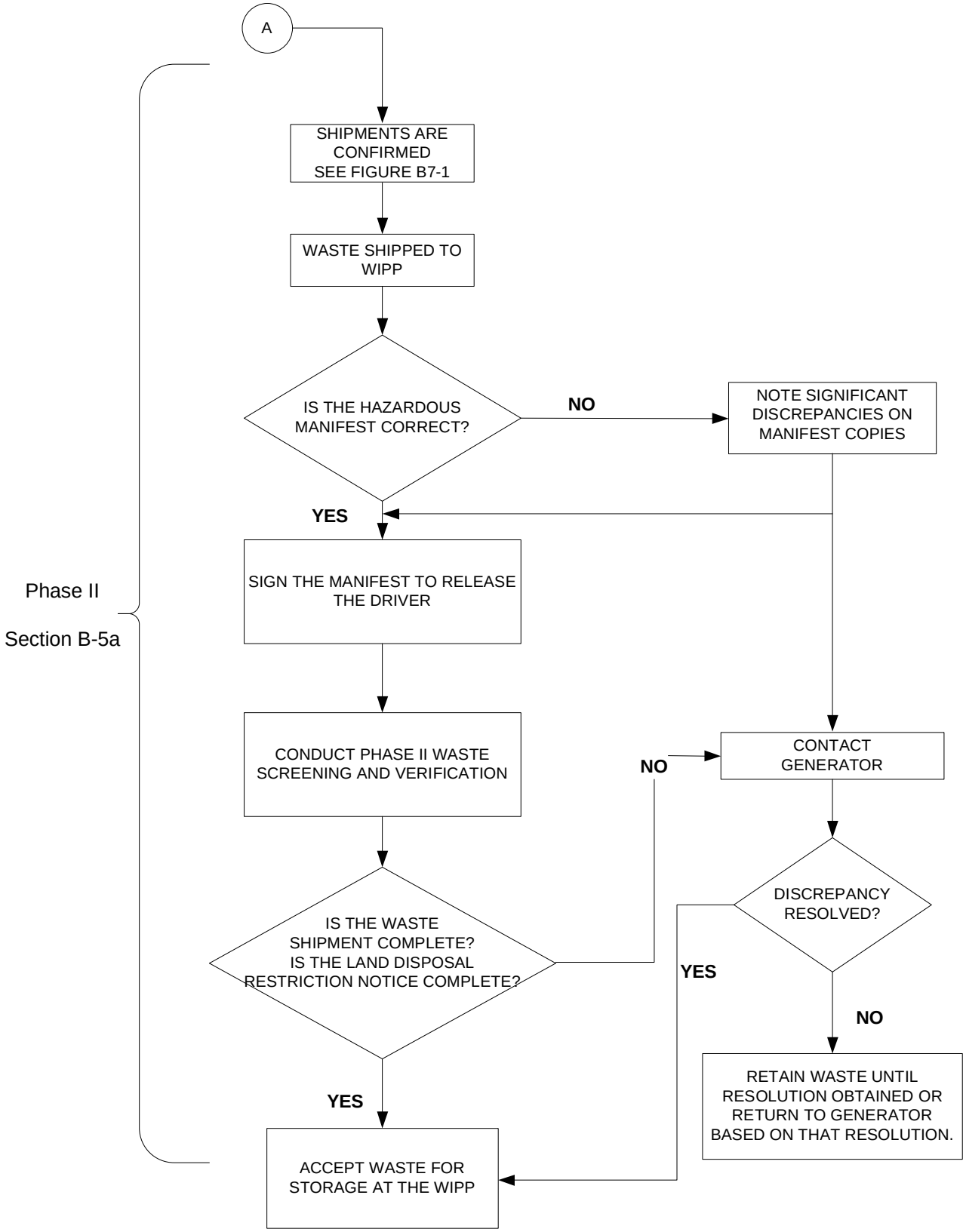
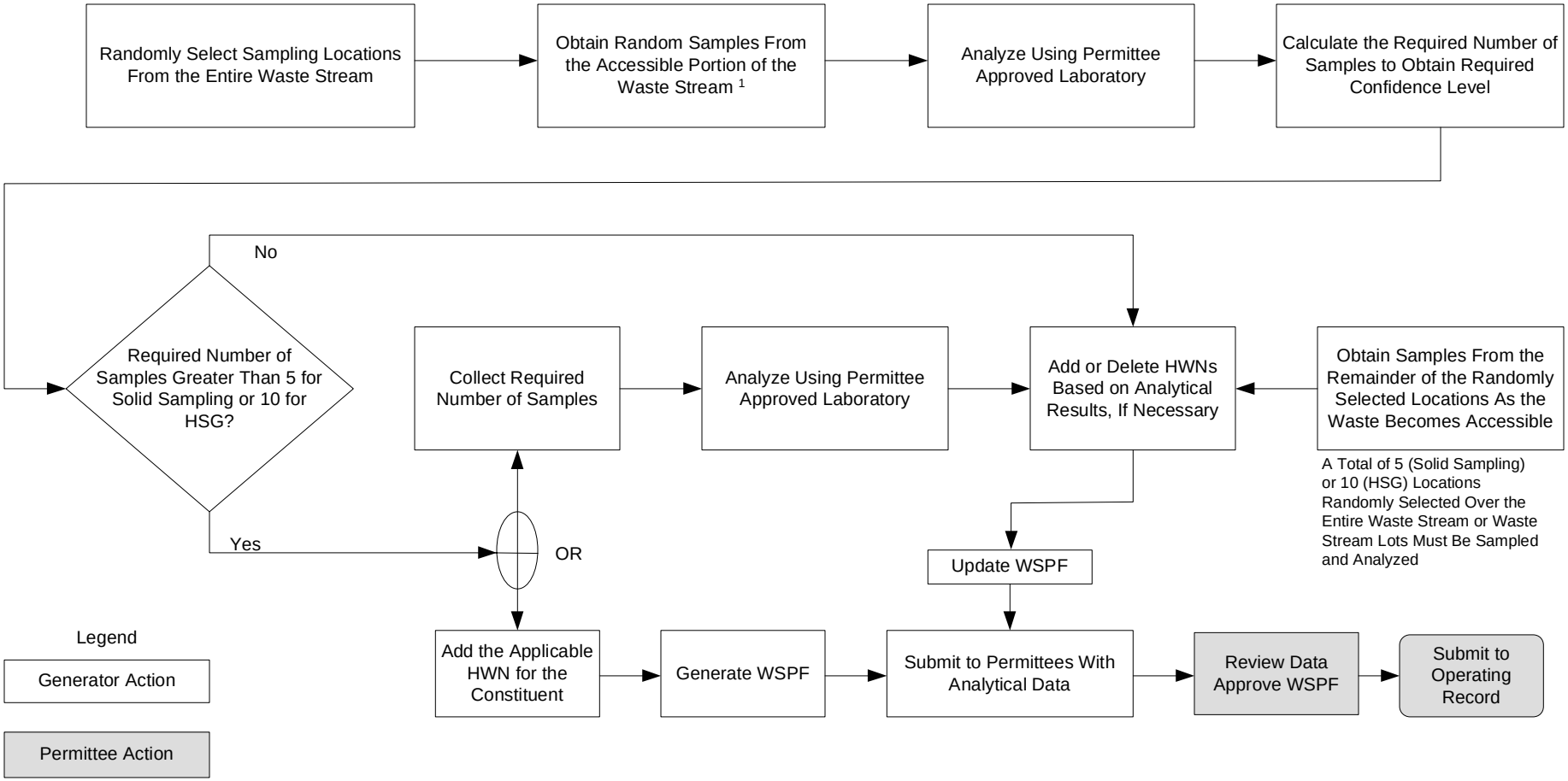


Figure B-~~5~~3
TRU Mixed Waste Screening and Verification Flow Diagram (continued)



[1] Samples Are Obtained From the First Five Available Random Locations for Solid Sampling and the First Ten Available Random Locations for Headspace Gas Sampling

Figure B2-1
~~Statistical~~ Approach ~~to~~ for Solid and Heasdspace Gas Sampling and Analysis ~~of Waste Streams of Retrievably Stored Homogneous Solids and Solid/Gravel~~ to Obtain Additional Waste Characterization Information

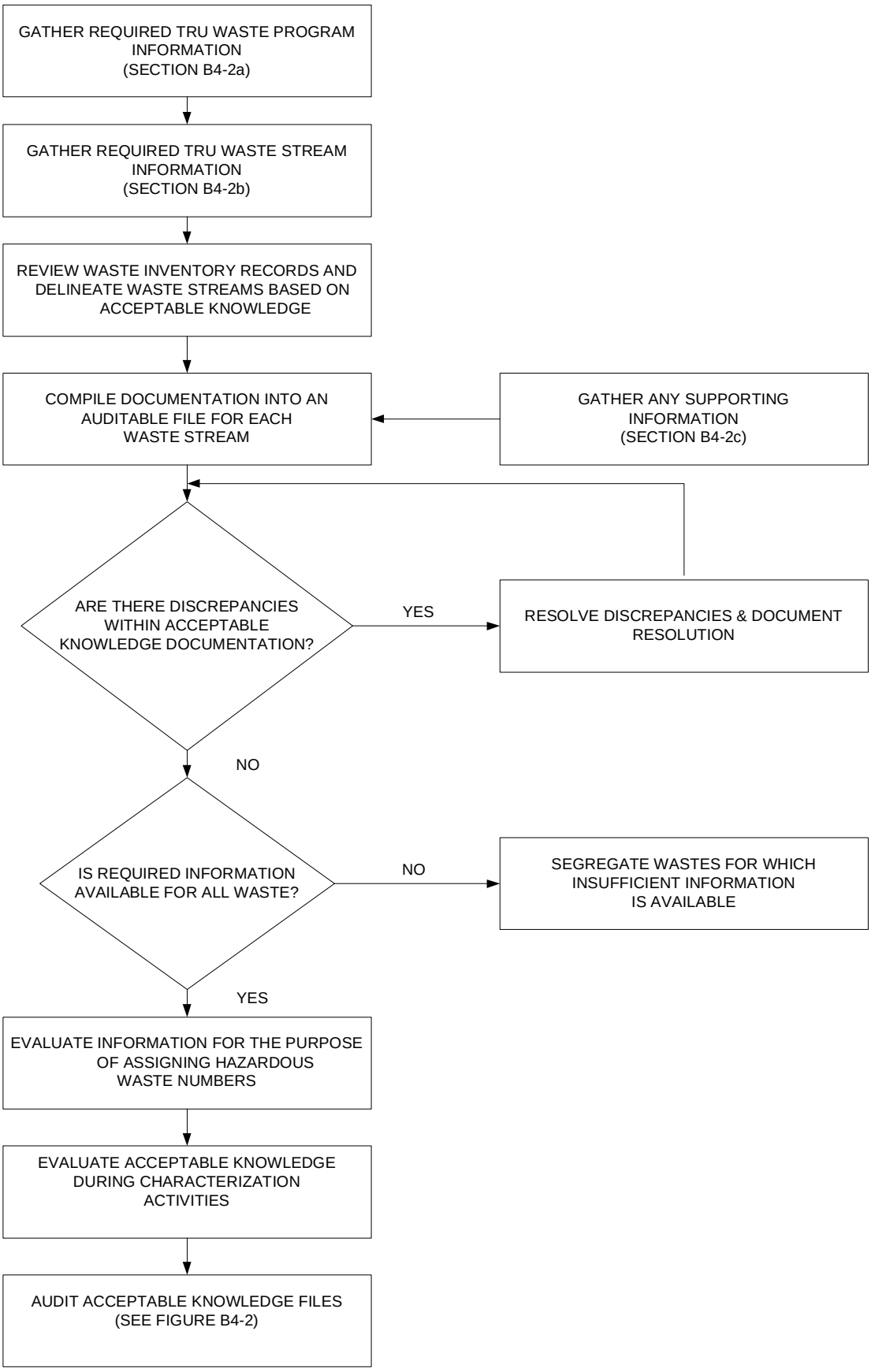


Figure B4-1
Compilation of Acceptable Knowledge Documentation

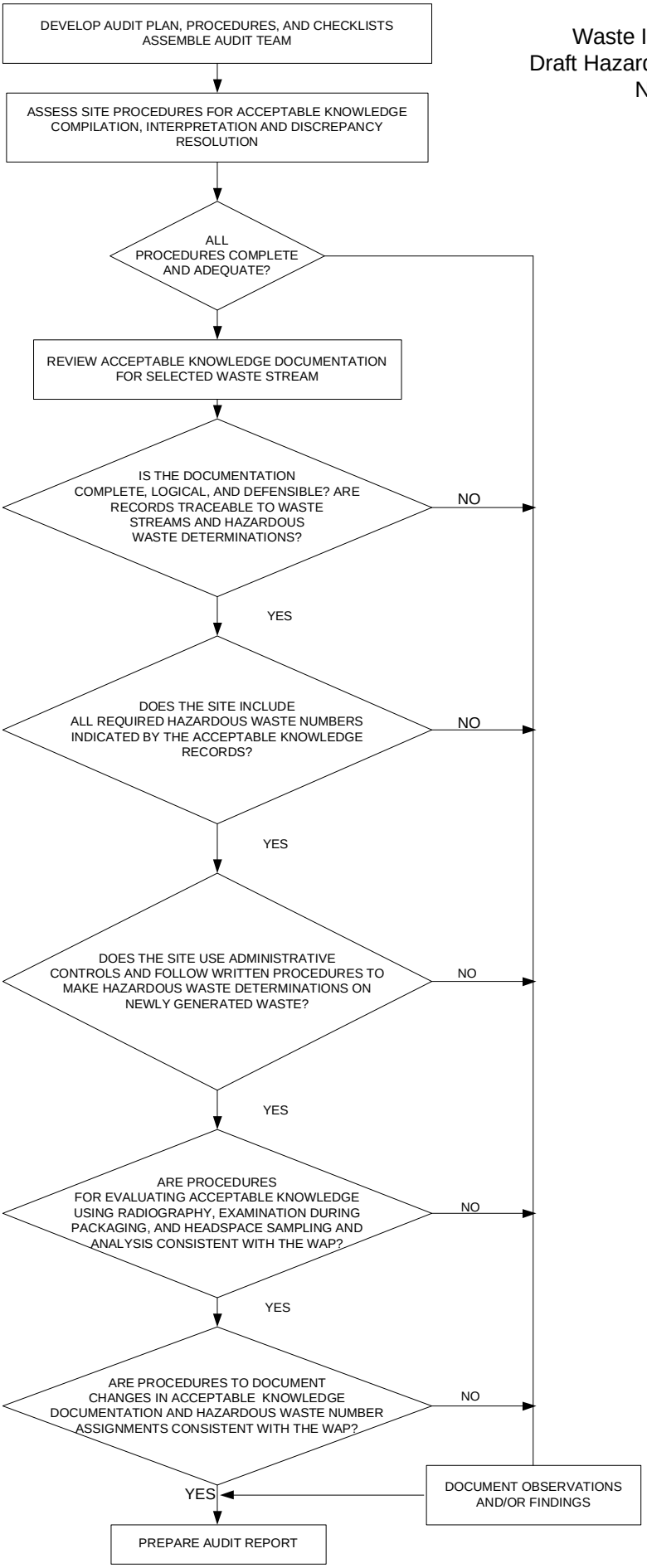


Figure B4-~~3~~2
Acceptable Knowledge Auditing

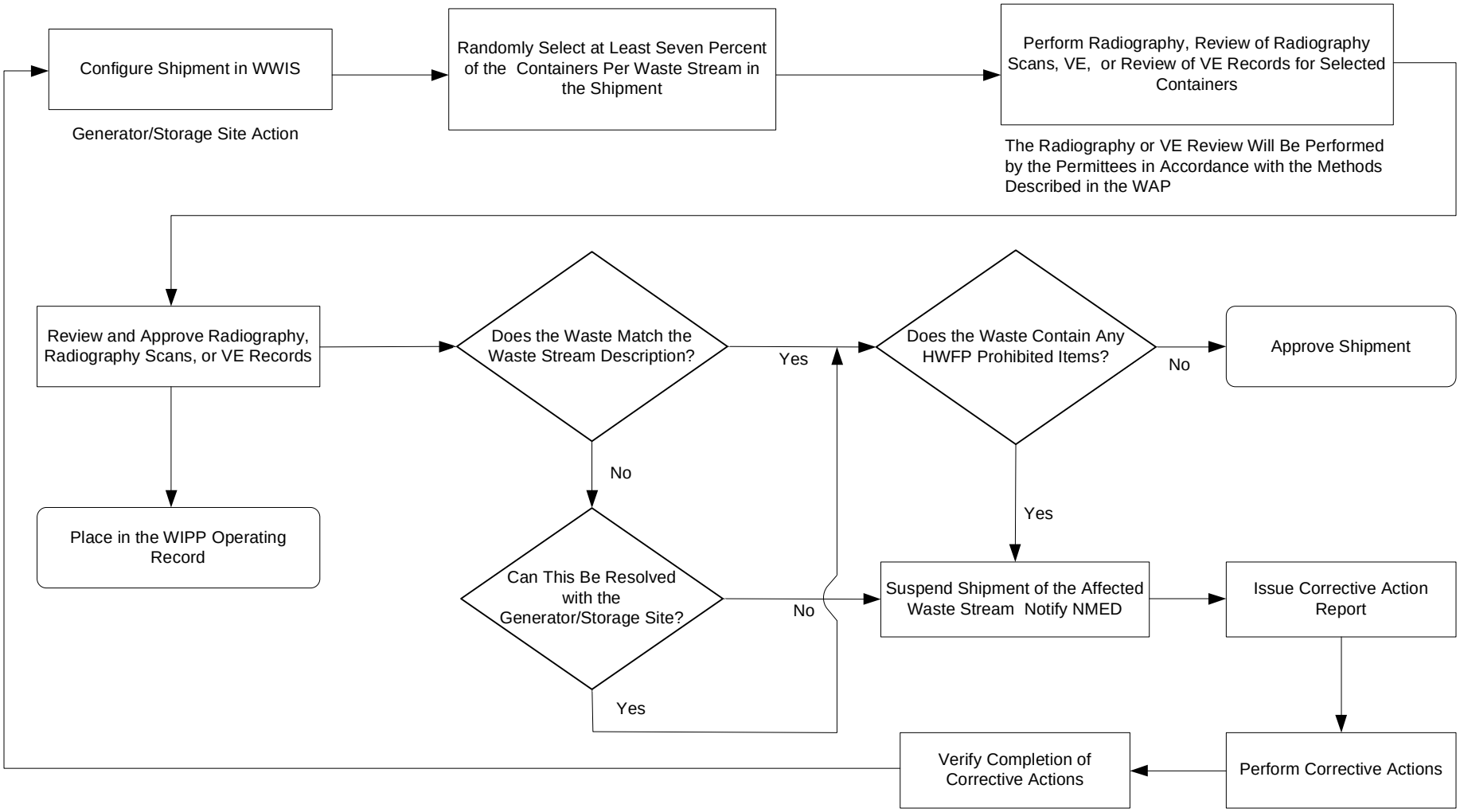


Figure B7-1
Waste Confirmation

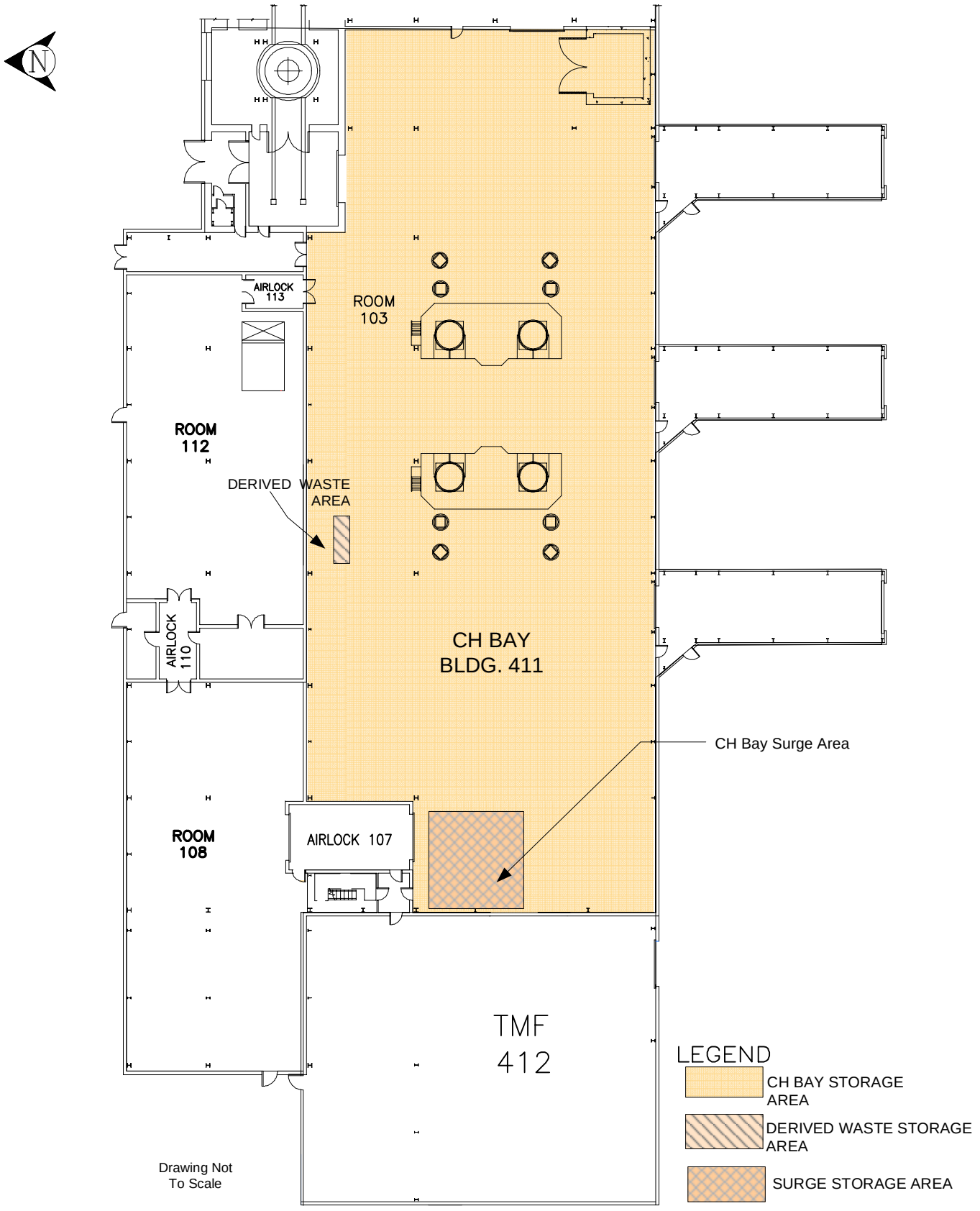


Figure M1-1
Waste Handling Building - CH TRU Mixed Waste Container Storage and Surge Areas

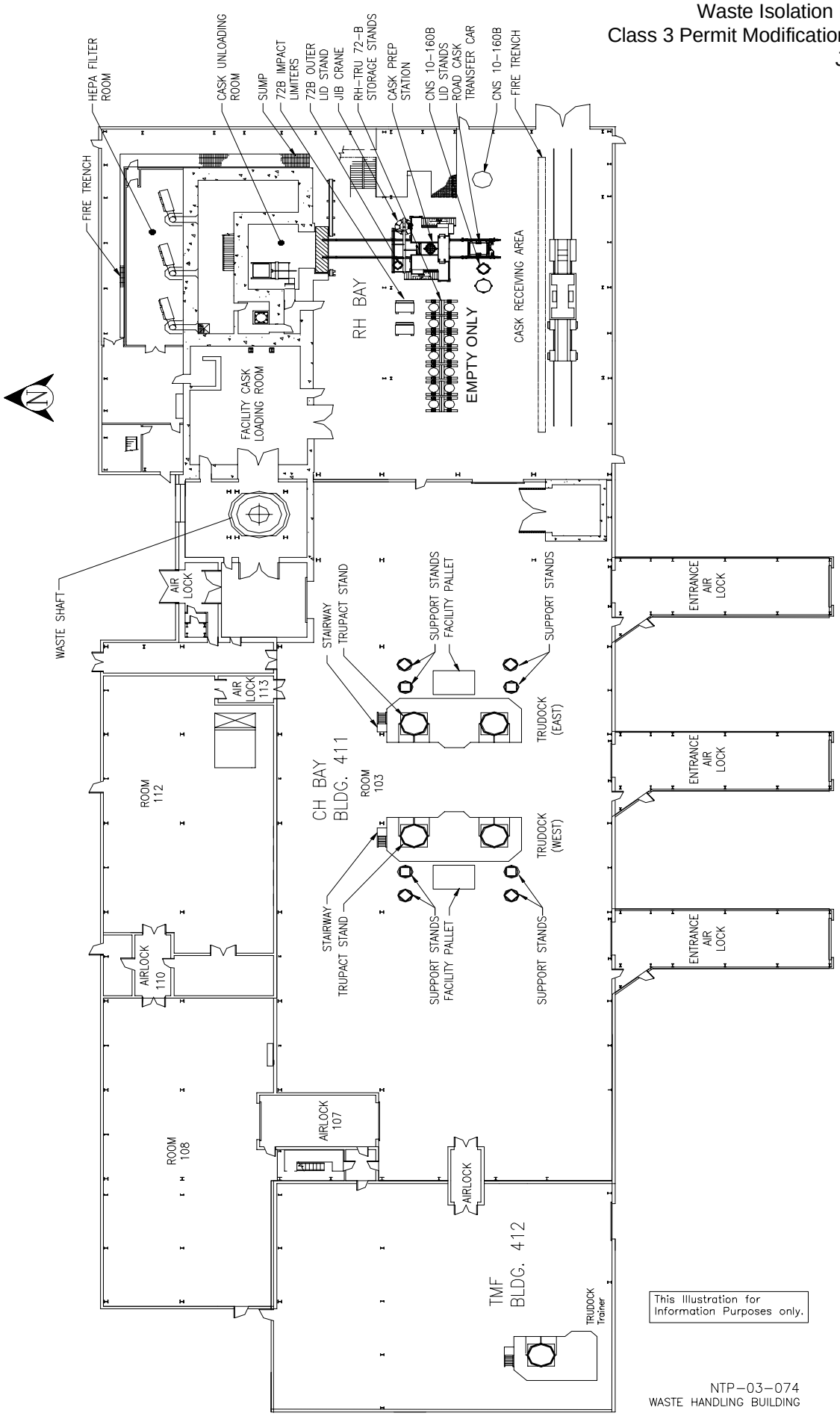


Figure M1-1a
Waste Handling Building Plan (Ground Floor)

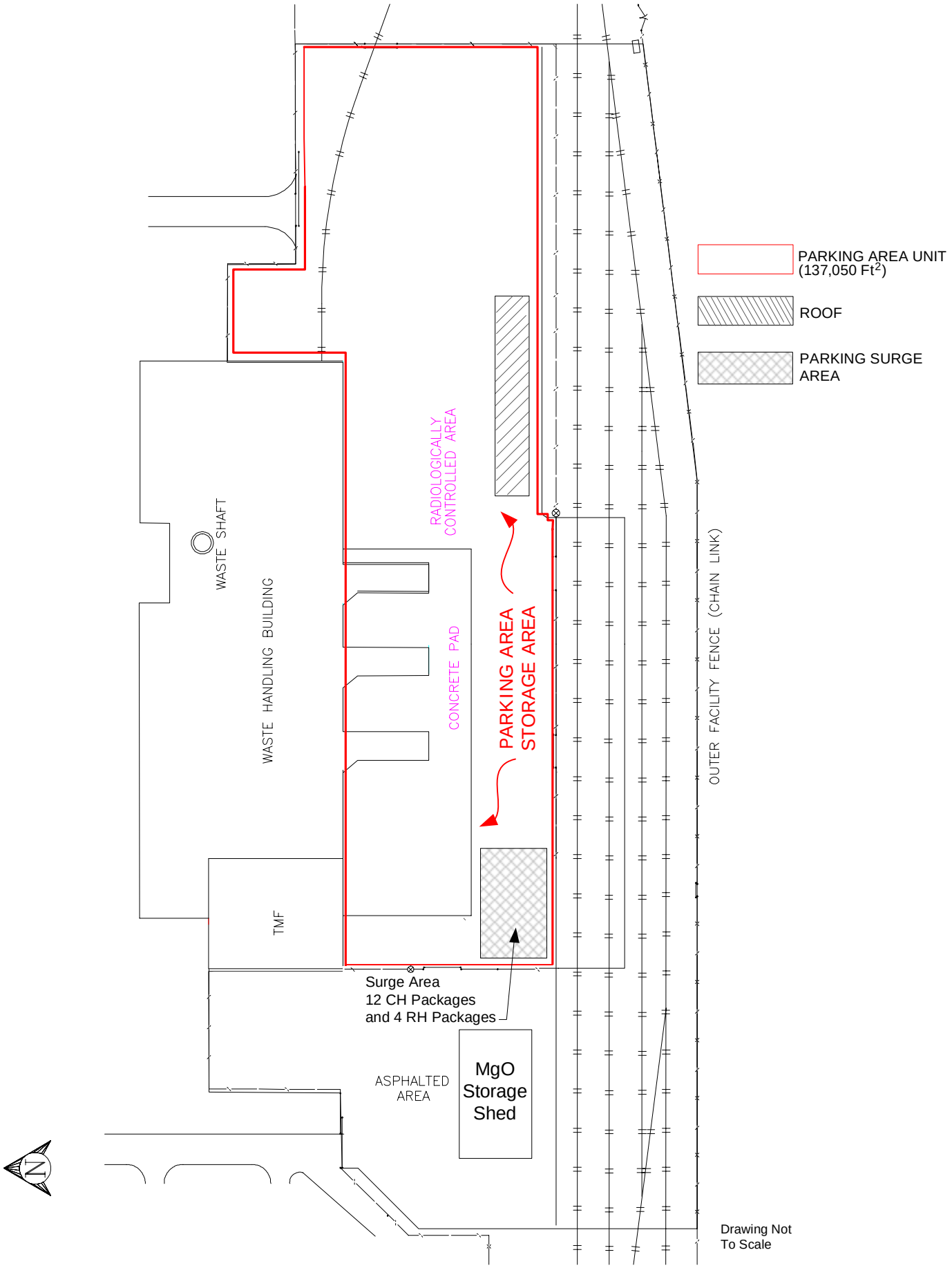


Figure M1-2
Parking Area - Container Storage and Surge Areas

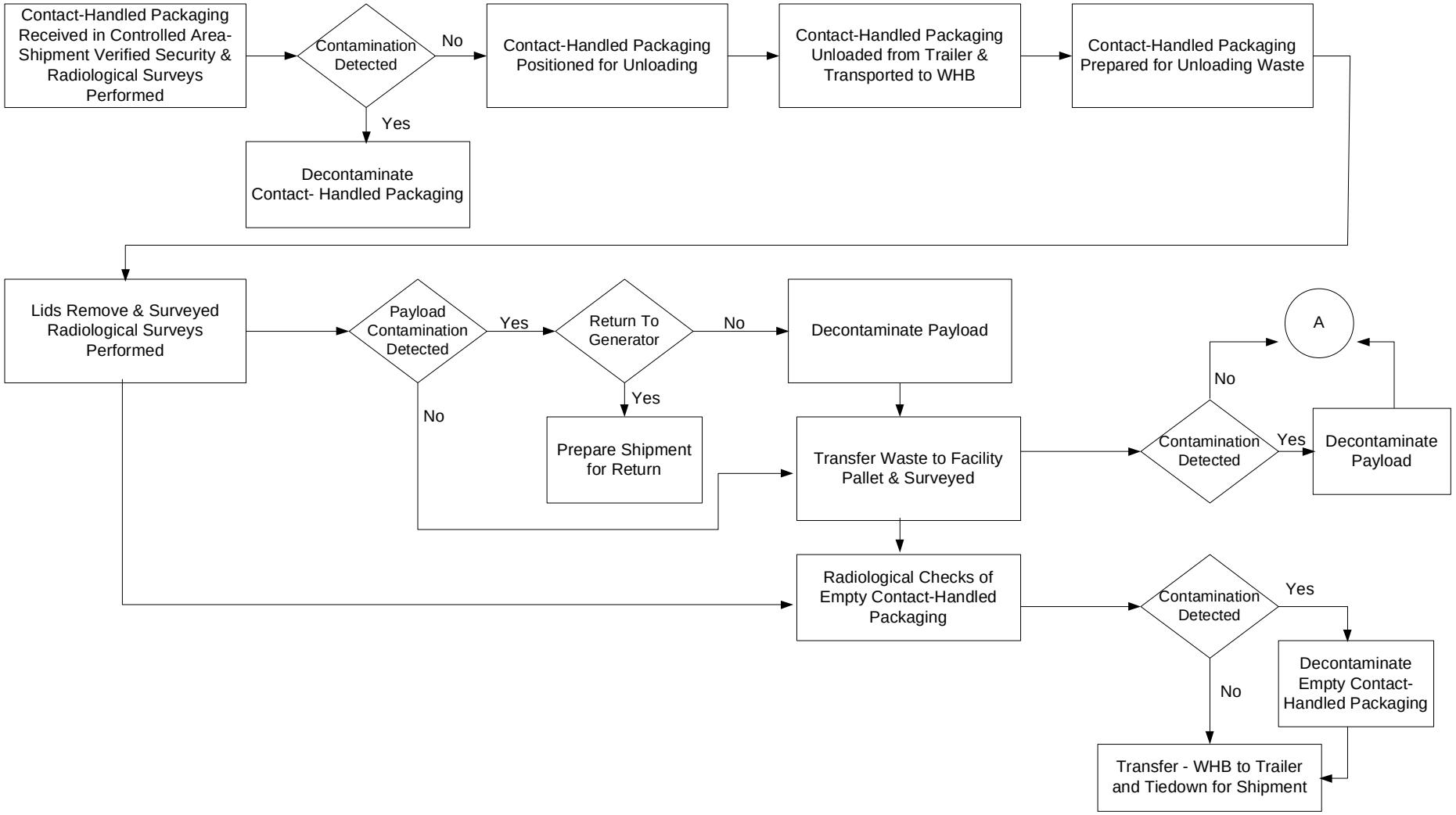


Figure M1-13

WIPP Facility Surface and Underground CH Transuranic Mixed Waste Process Flow

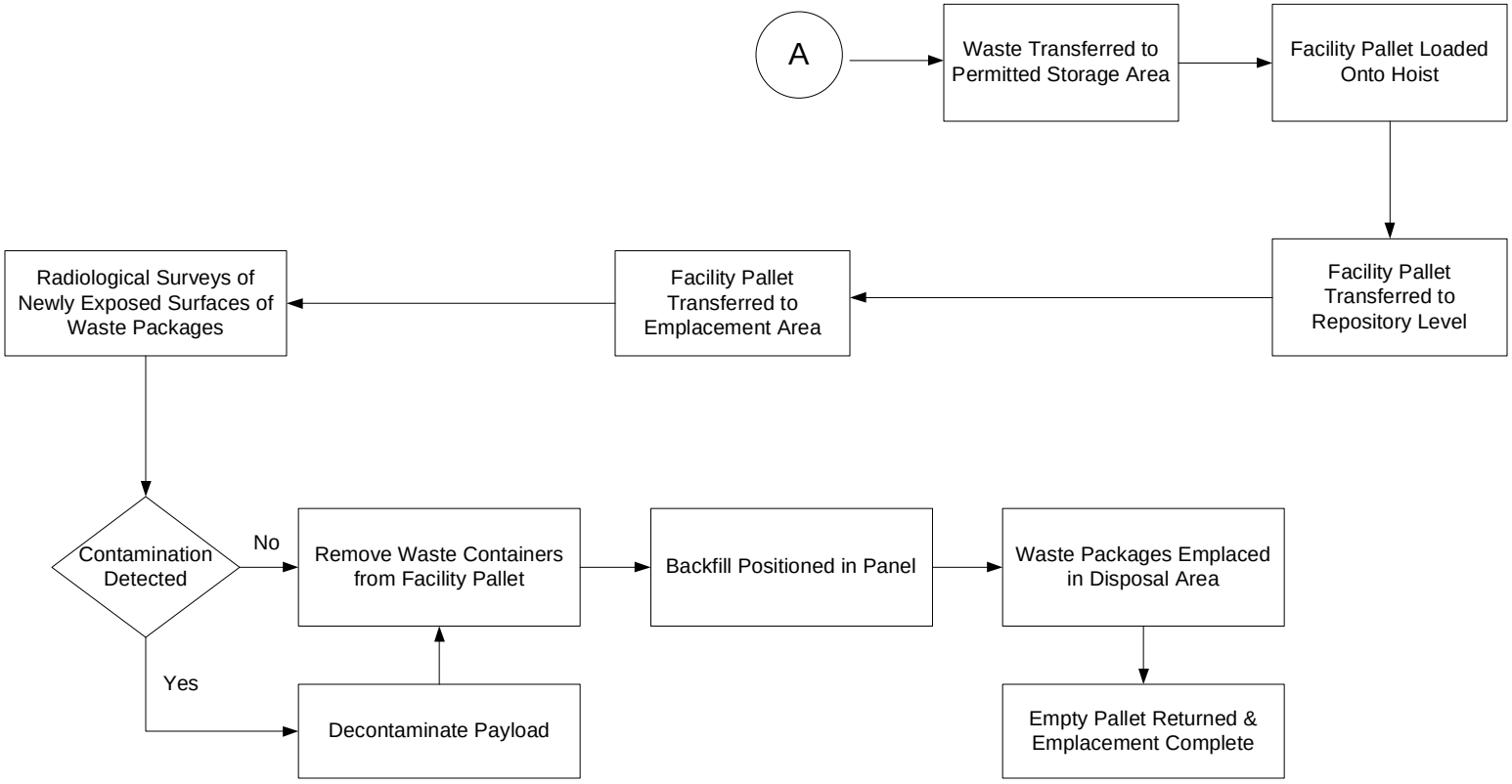


Figure M1-13

WIPP Facility Surface and Underground CH Transuranic Mixed Waste Process Flow (continued)

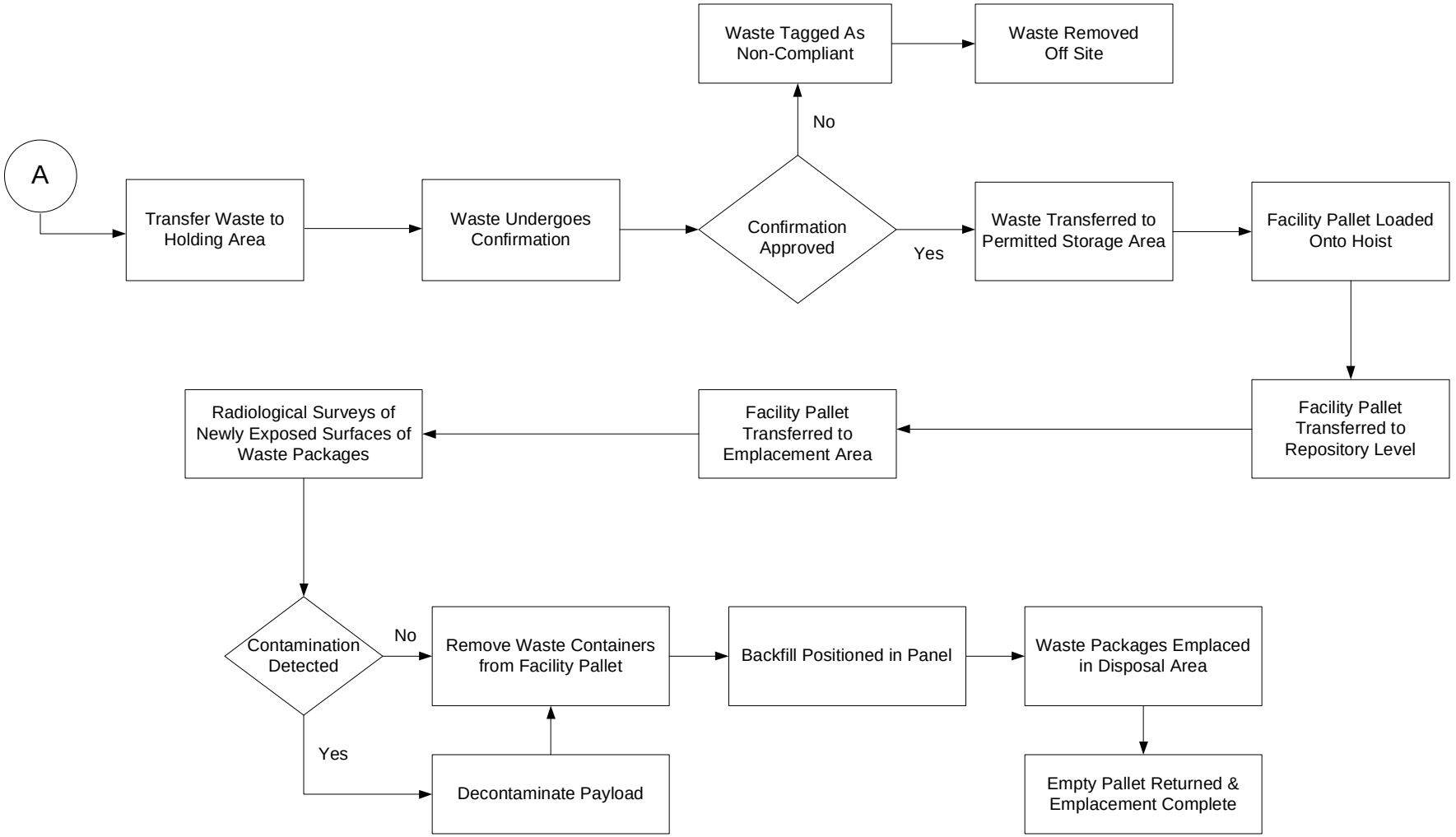


Figure M1-13

WIPP Facility Surface and Underground CH Transuranic Mixed Waste Process Flow (continued)

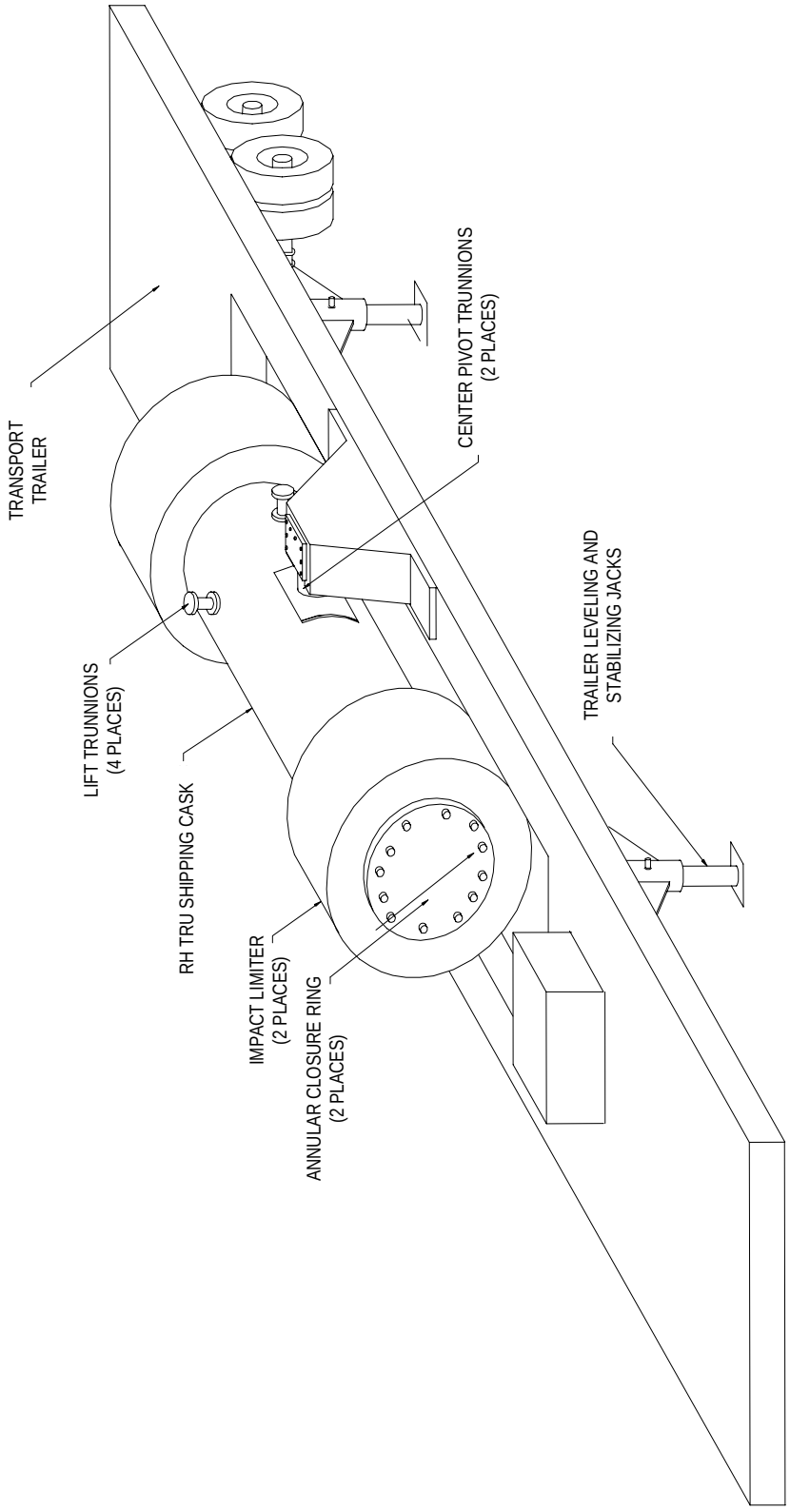


Figure M1-18
RH-TRU 72-B Shipping Cask on Trailer

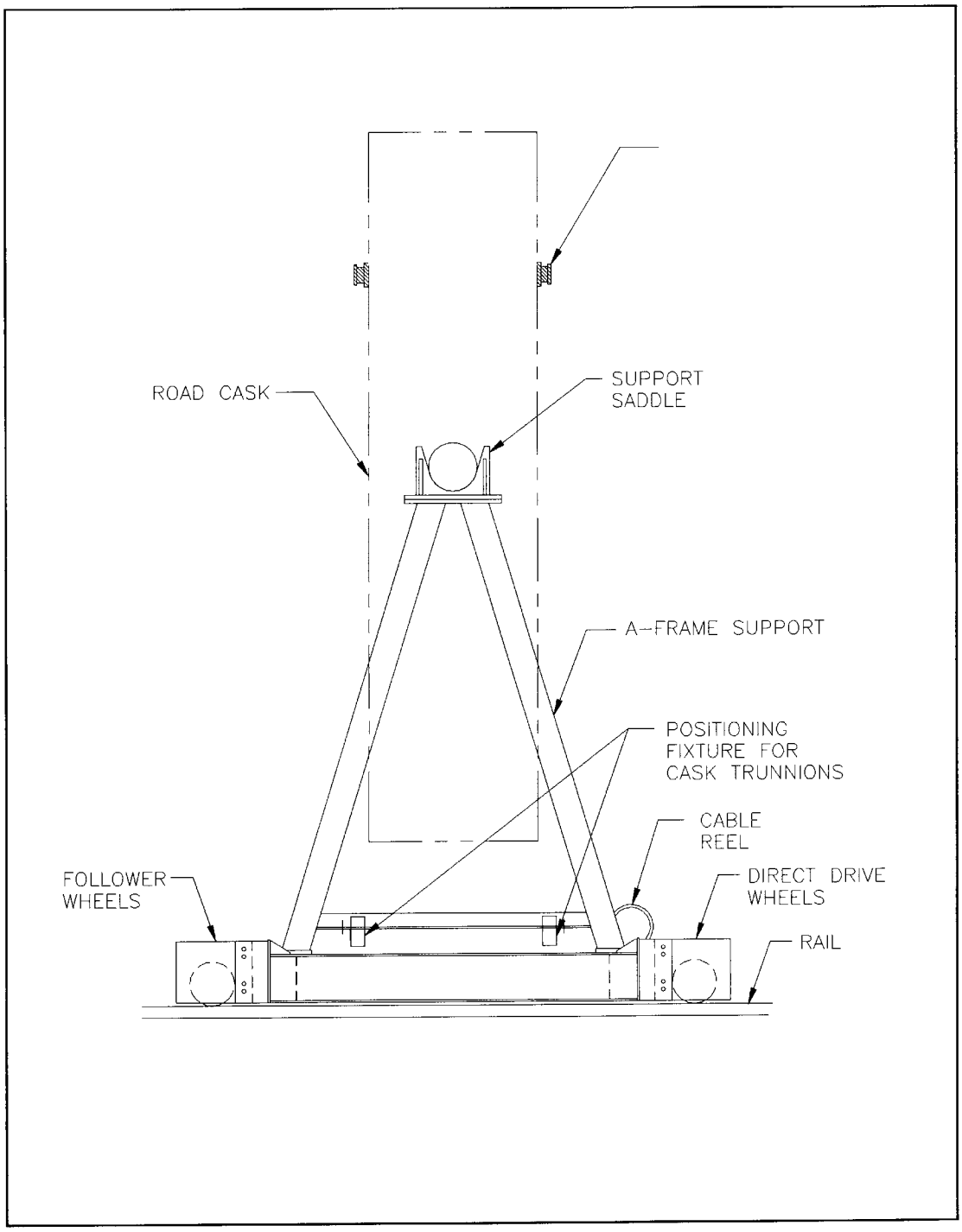
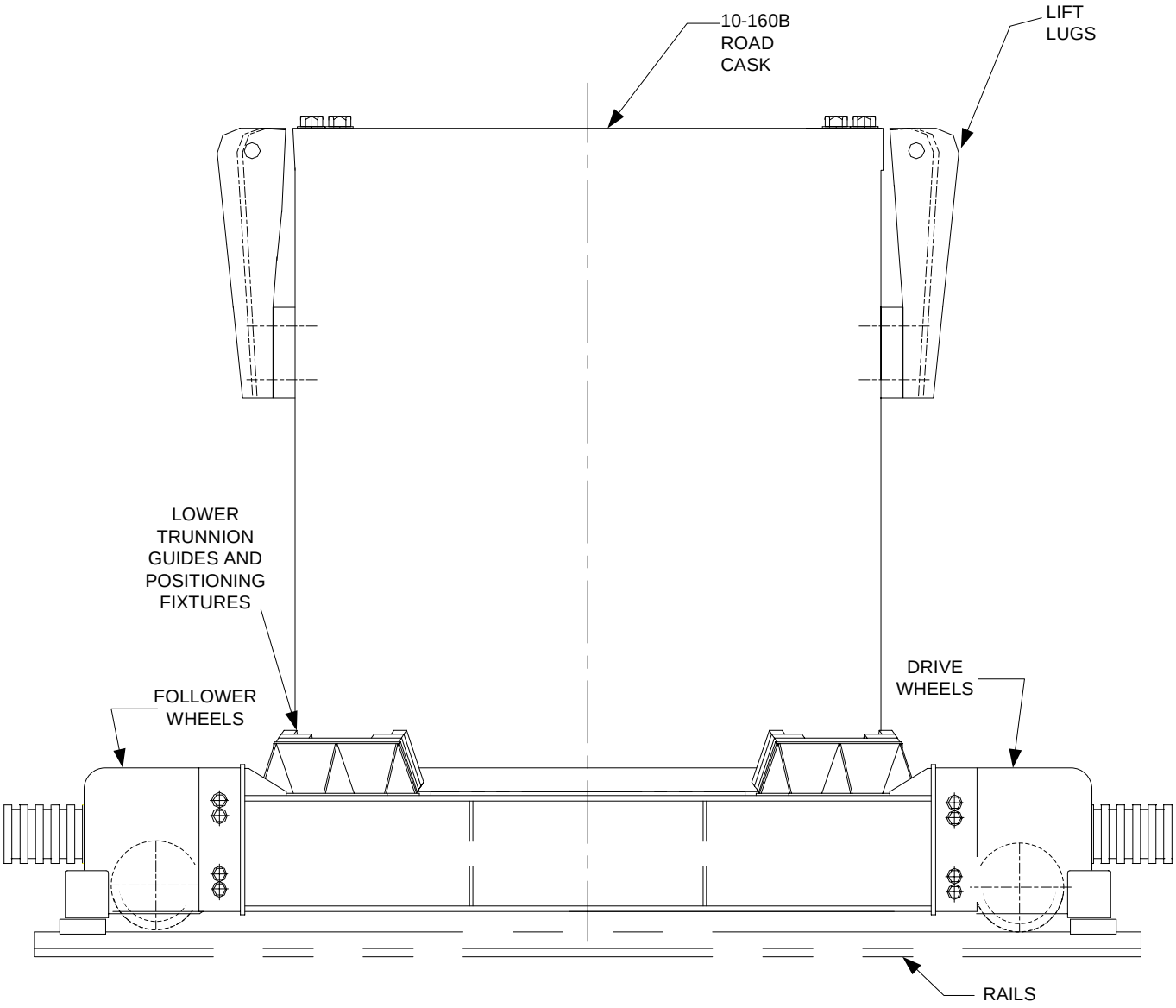


Figure M1-22a
RH-72B Cask Transfer Car



This Illustration for Information
Purposes Only

Figure M1-22b
10-160B Cask Transfer Car

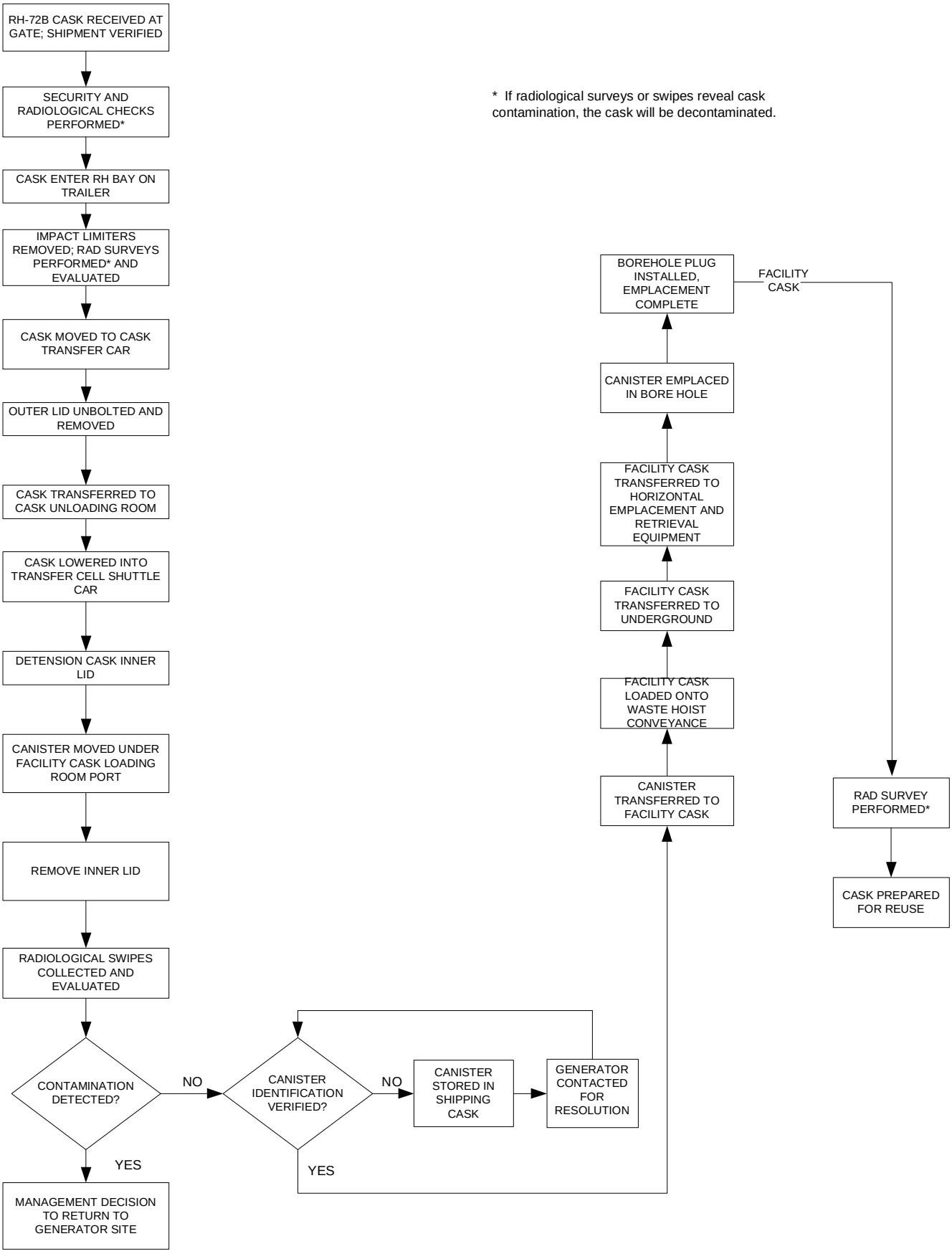


Figure M1-26
Surface and Underground RH Transuranic Mixed Waste Process Flow Diagram for RH-TRU 72-B Shipping Cask

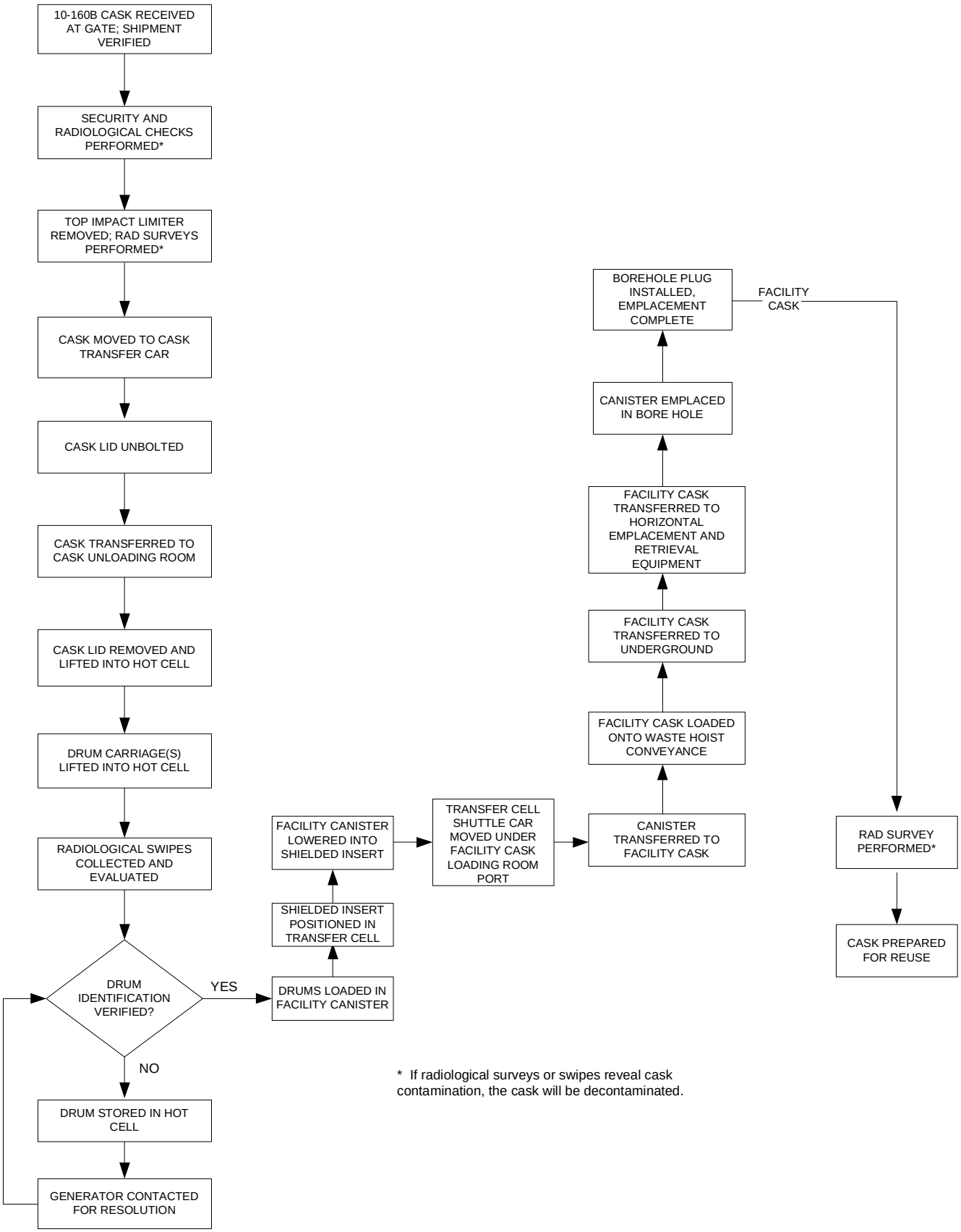
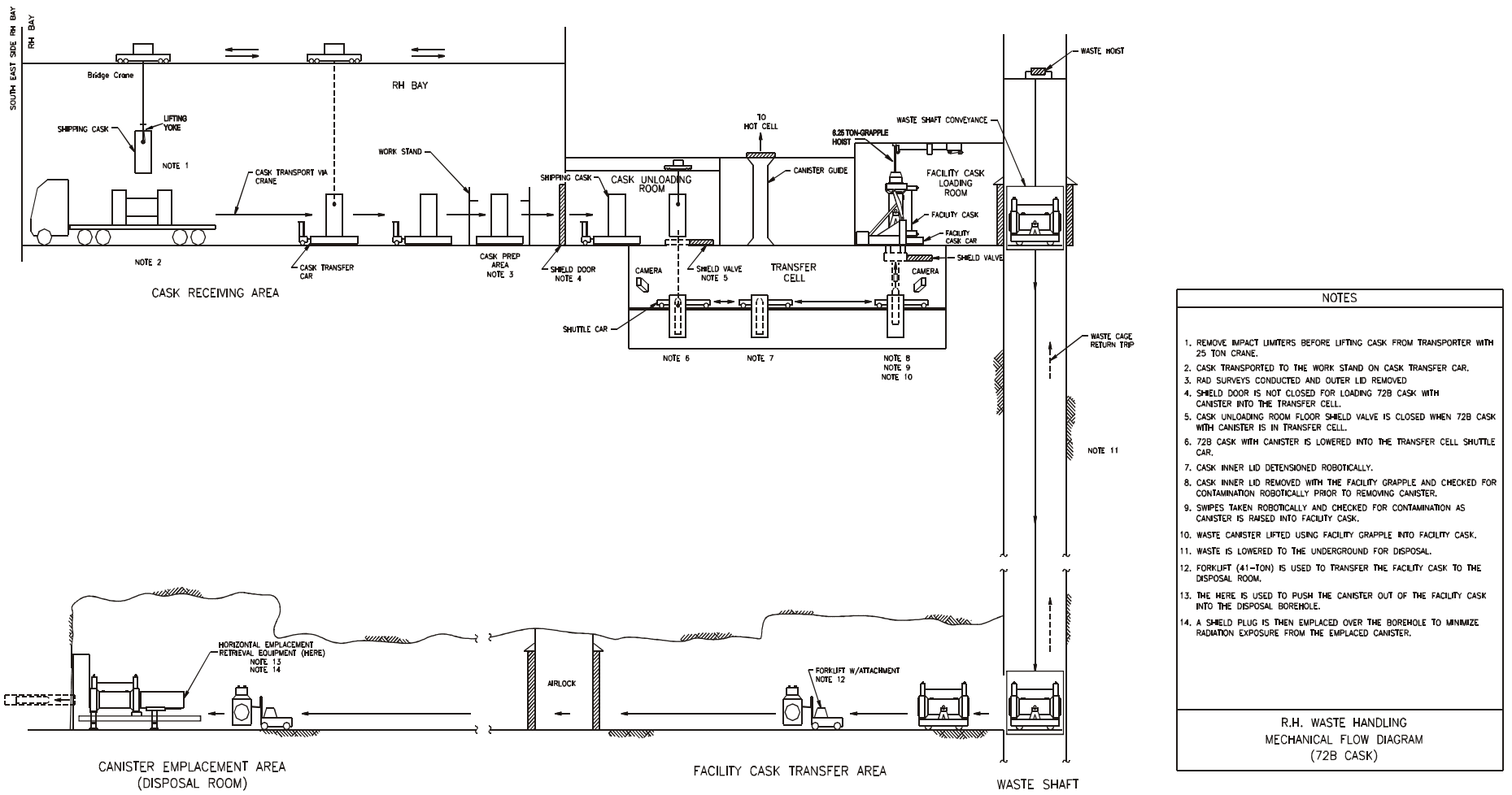


Figure M1-27
Surface and Underground RH Transuranic Mixed Waste Process Flow Diagram for CNS 10-160B Shipping Cask



NOTES

1. REMOVE IMPACT LIMITERS BEFORE LIFTING CASK FROM TRANSPORTER WITH 25 TON CRANE.
2. CASK TRANSPORTED TO THE WORK STAND ON CASK TRANSFER CAR.
3. RAD SURVEYS CONDUCTED AND OUTER LID REMOVED
4. SHIELD DOOR IS NOT CLOSED FOR LOADING 72B CASK WITH CANISTER INTO THE TRANSFER CELL.
5. CASK UNLOADING ROOM FLOOR SHIELD VALVE IS CLOSED WHEN 72B CASK WITH CANISTER IS IN TRANSFER CELL.
6. 72B CASK WITH CANISTER IS LOWERED INTO THE TRANSFER CELL SHUTTLE CAR.
7. CASK INNER LID DETENSIONED ROBOTICALLY.
8. CASK INNER LID REMOVED WITH THE FACILITY GRAPPLE AND CHECKED FOR CONTAMINATION ROBOTICALLY PRIOR TO REMOVING CANISTER.
9. SWIPES TAKEN ROBOTICALLY AND CHECKED FOR CONTAMINATION AS CANISTER IS RAISED INTO FACILITY CASK.
10. WASTE CANISTER LIFTED USING FACILITY GRAPPLE INTO FACILITY CASK.
11. WASTE IS LOWERED TO THE UNDERGROUND FOR DISPOSAL.
12. FORKLIFT (41-TON) IS USED TO TRANSFER THE FACILITY CASK TO THE DISPOSAL ROOM.
13. THE HERE IS USED TO PUSH THE CANISTER OUT OF THE FACILITY CASK INTO THE DISPOSAL BOREHOLE.
14. A SHIELD PLUG IS THEN EMPLACED OVER THE BOREHOLE TO MINIMIZE RADIATION EXPOSURE FROM THE EMPLACED CANISTER.

R.H. WASTE HANDLING
MECHANICAL FLOW DIAGRAM
(72B CASK)

Figure M1-28

Schematic of the RH Transuranic Waste Process for the RH-TRU 72B Shipping Cask

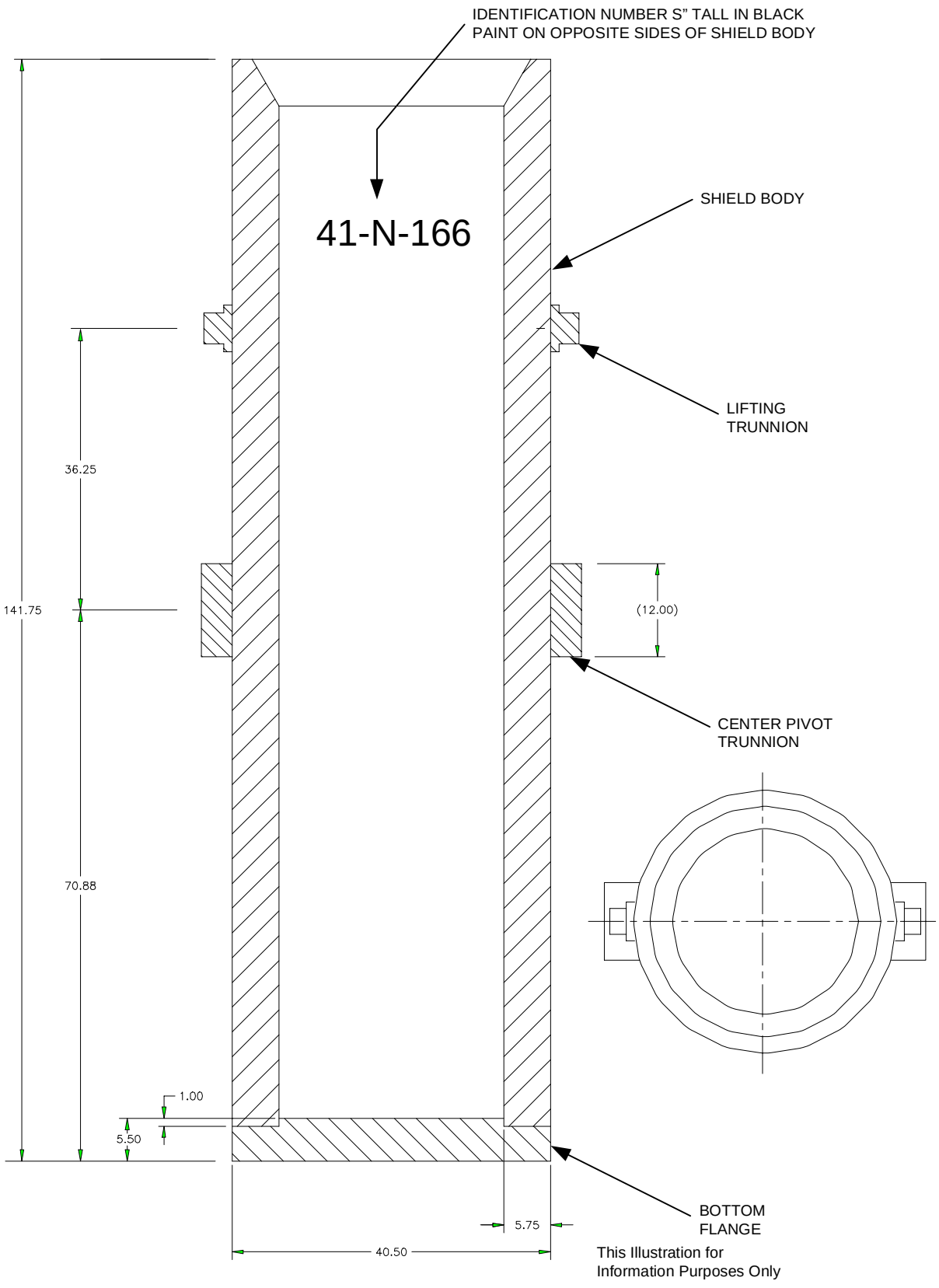


Figure M1-30
RH Shielded Insert Assembly

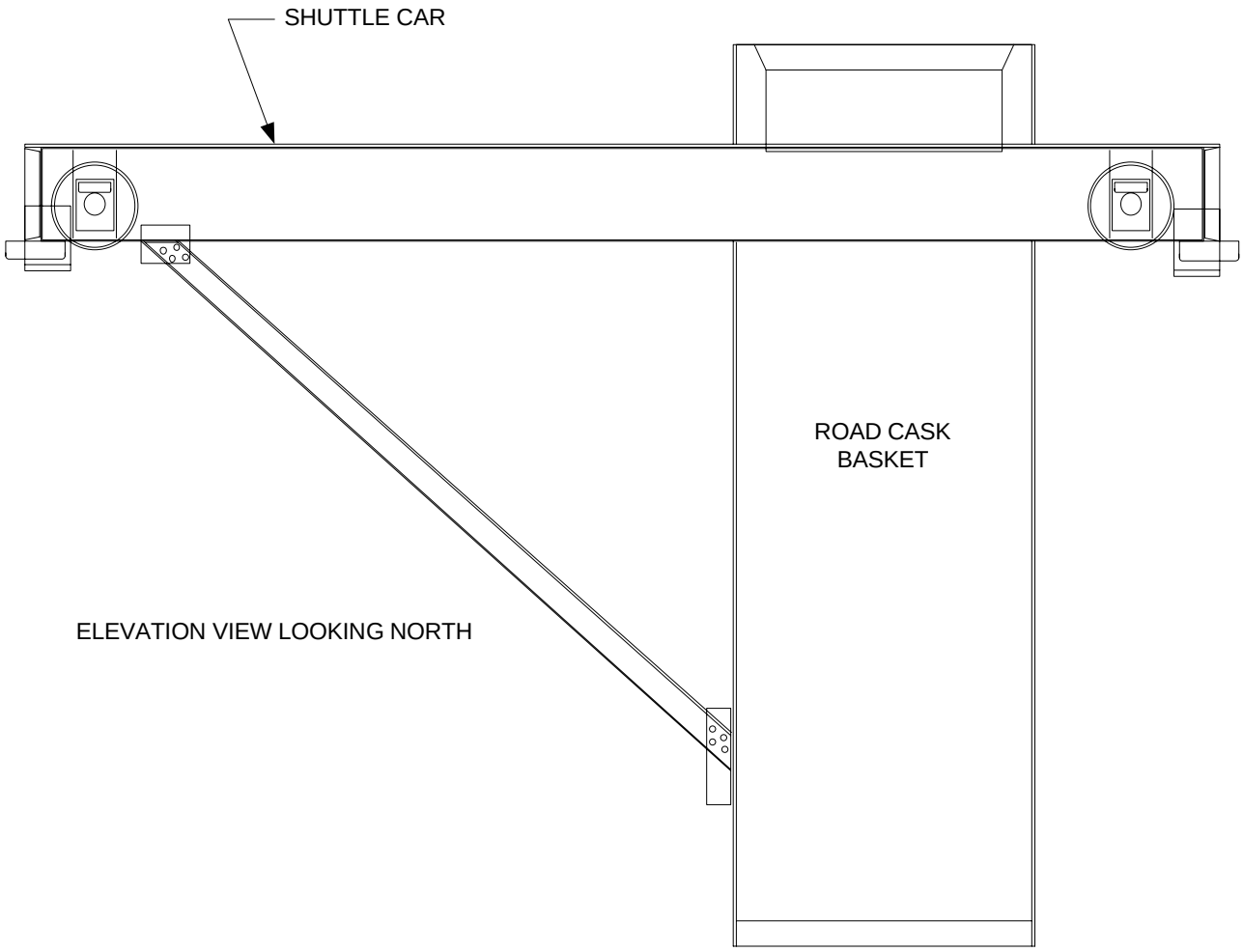
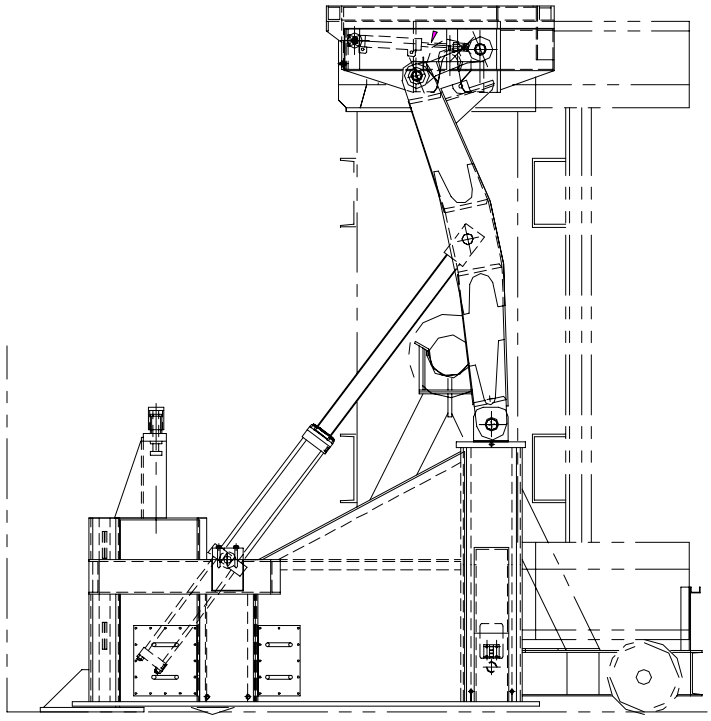
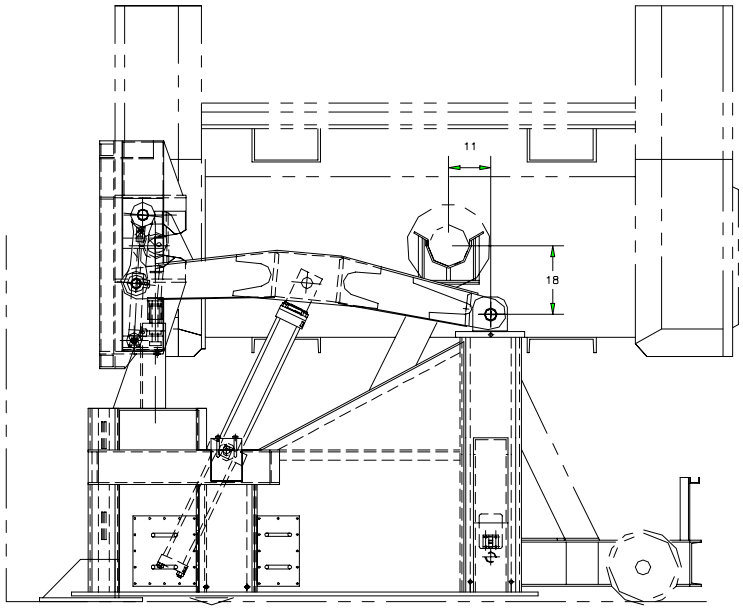


Figure M1-31
Transfer Cell Shuttle Car



FRONT ELEVATION
CASK VERTICAL



FRONT ELEVATION
CASK HORIZONTAL

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Information Purposes Only

SDDWH099.2

Figure M1-32
Facility Cask Rotating Device

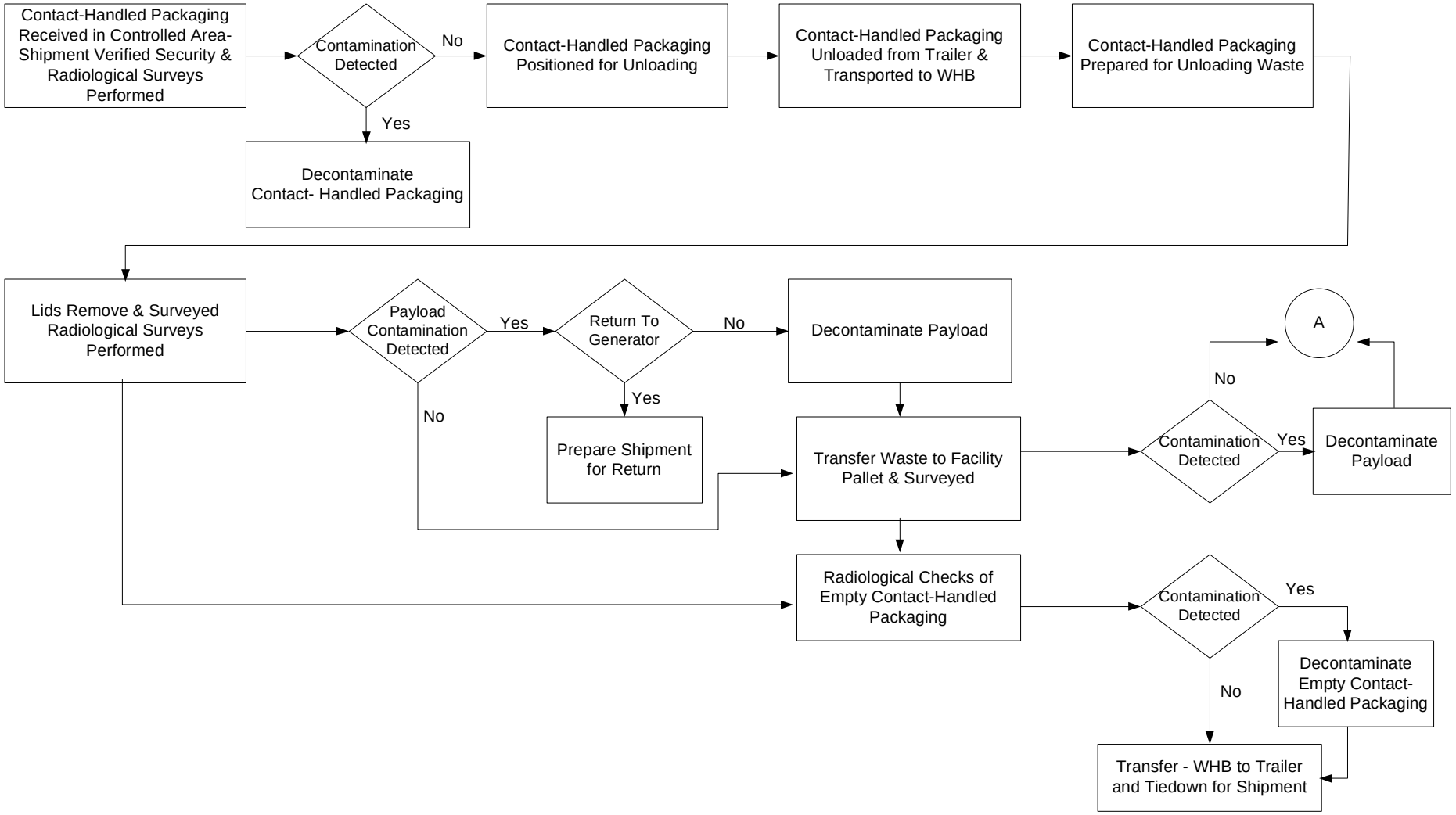


Figure M2-12

WIPP Facility Surface and Underground CH Transuranic Mixed Waste Process Flow

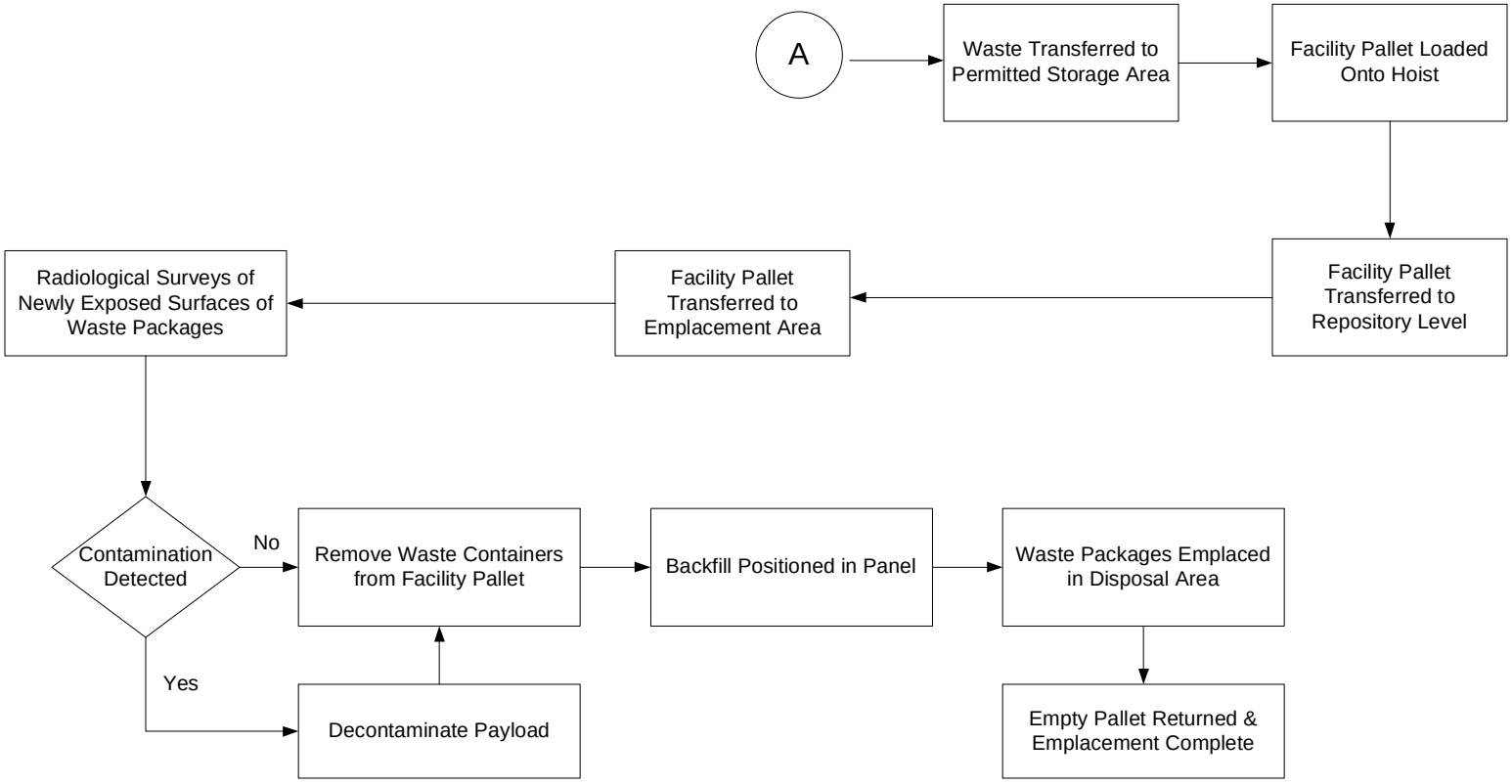


Figure M2-12

WIPP Facility Surface and Underground CH Transuranic Mixed Waste Process Flow (continued)

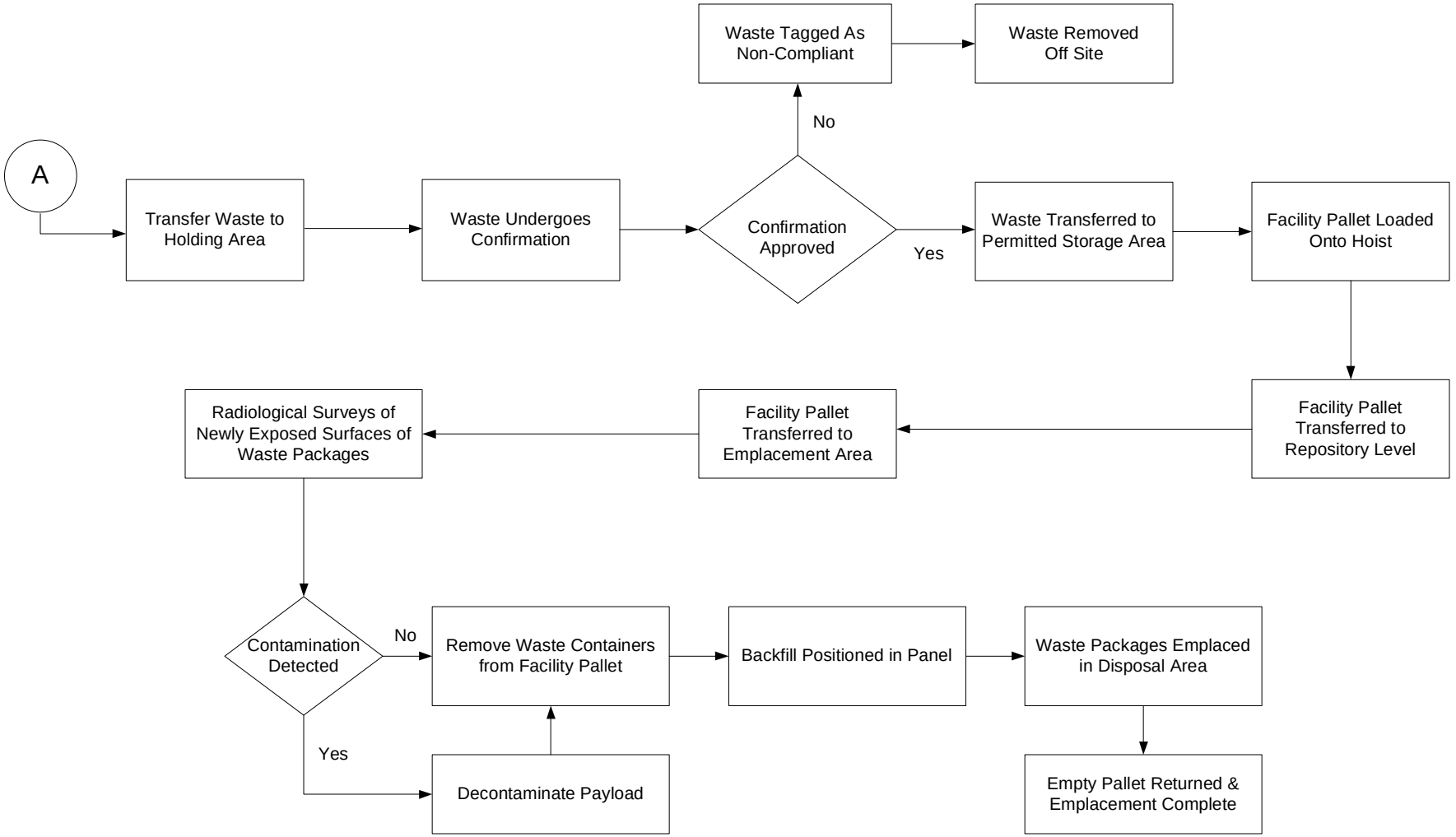
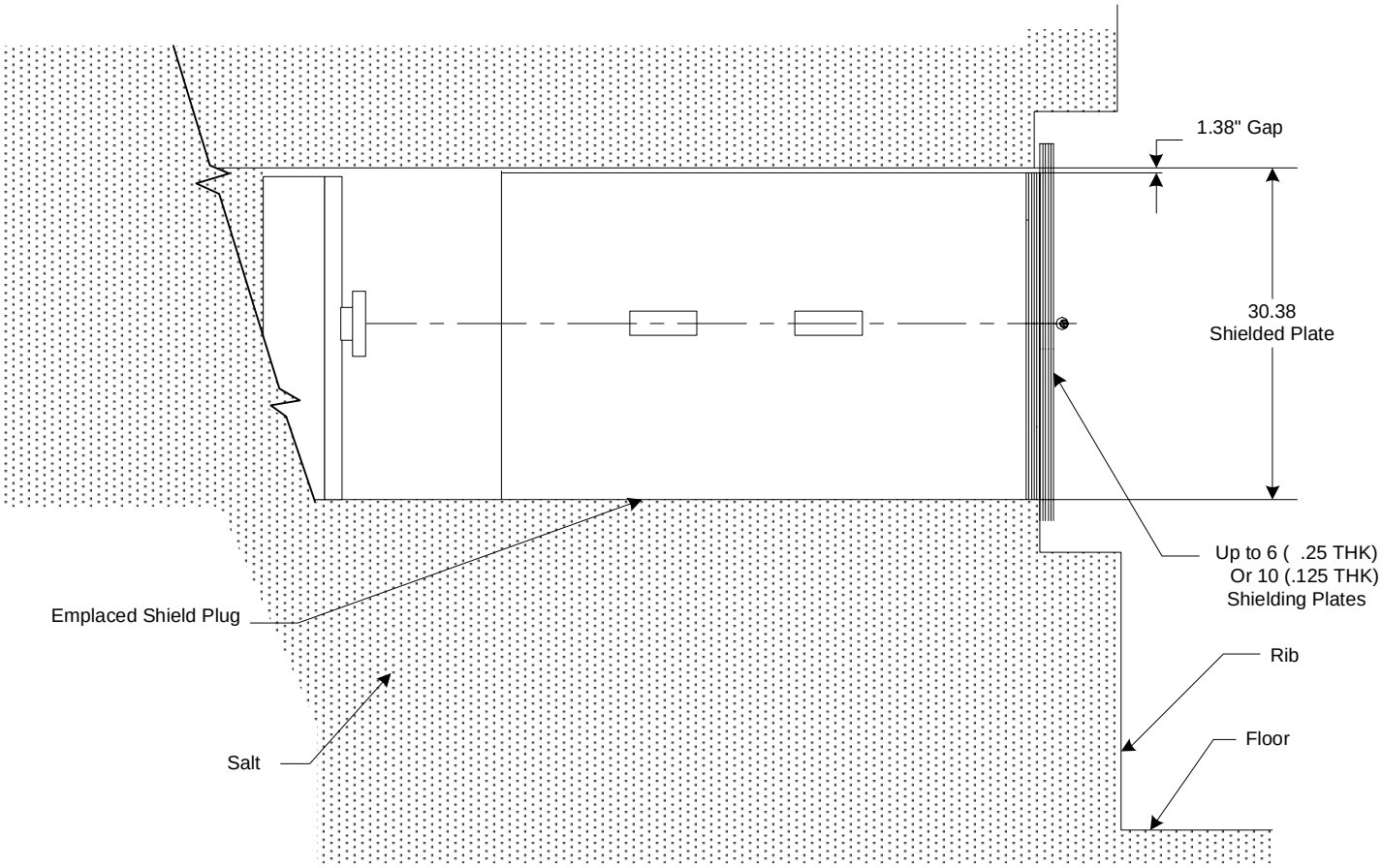


Figure M2-12

WIPP Facility Surface and Underground CH Transuranic Mixed Waste Process Flow (continued)



Section of Bore Hole Showing The Shield and
Supplemental Shielding Plate(s)

Figure M2-19
Shield Plug Supplemental Shielding Plate(s)

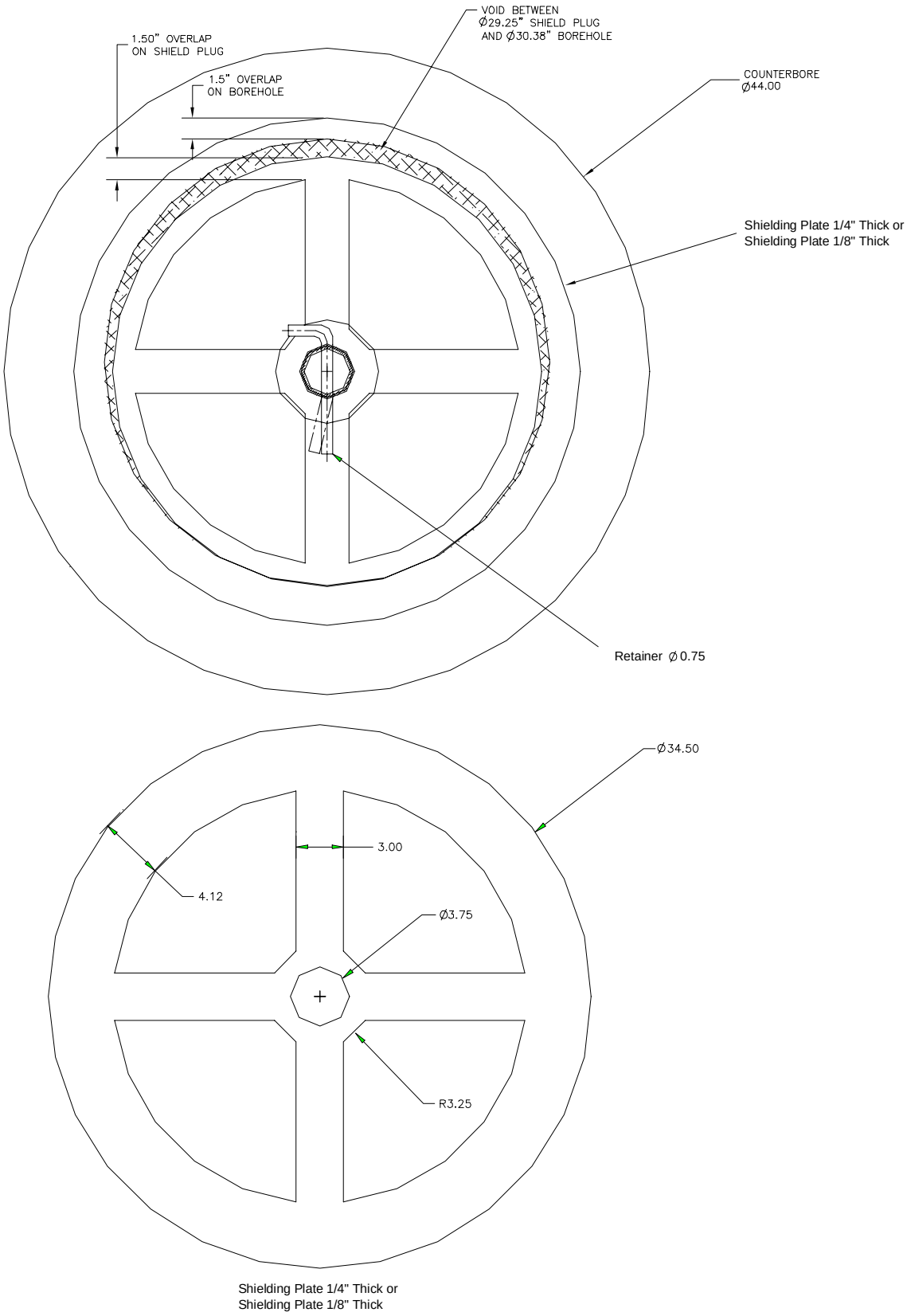
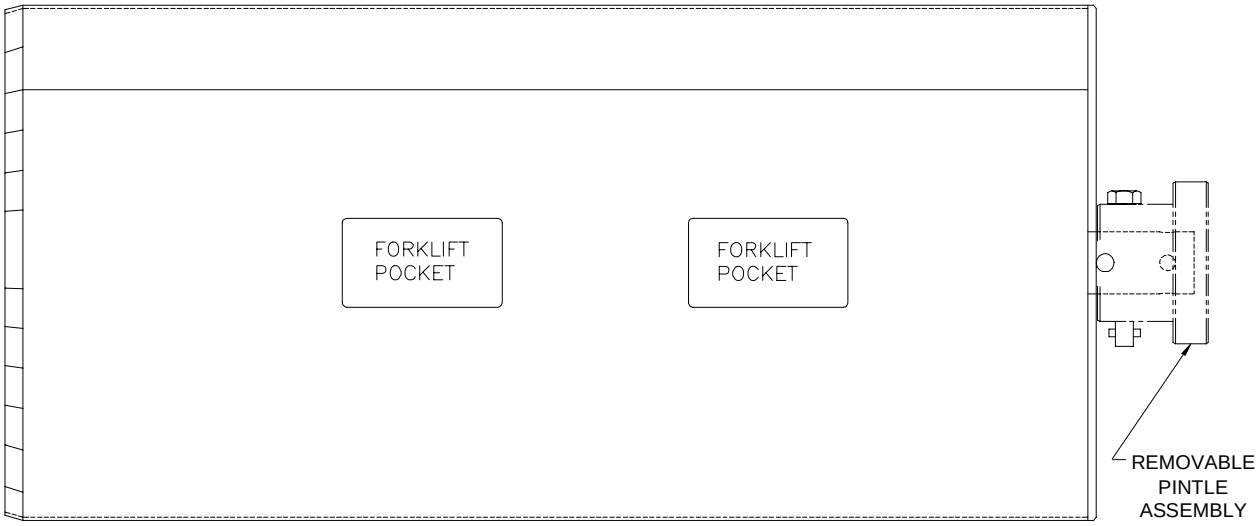


Figure M2-20
Shielding Layers to Supplement RH Borehole Shield Plugs



TYPICAL DIMENSION: APPROXIMATELY 29 INCHES DIAMETER X 61 INCHES SHIELDING LENGTH

Composition: Cylindrical steel shell filled with concrete
Weight: Approximately 3750 pounds

Figure M2-21
Shield Plug Configuration

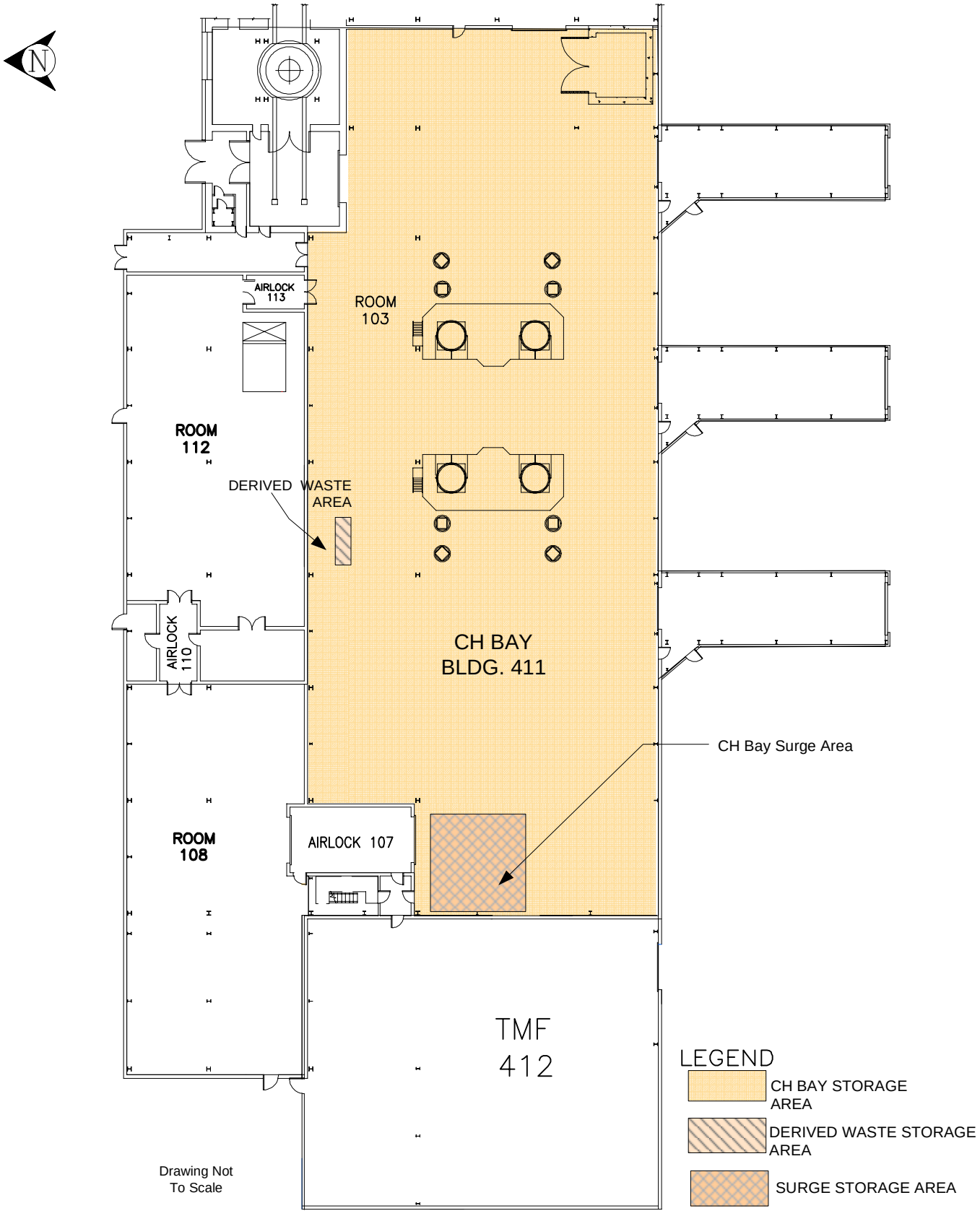


Figure O3-3
Waste Handling Building - CH TRU Mixed Waste Container Storage and Surge Areas

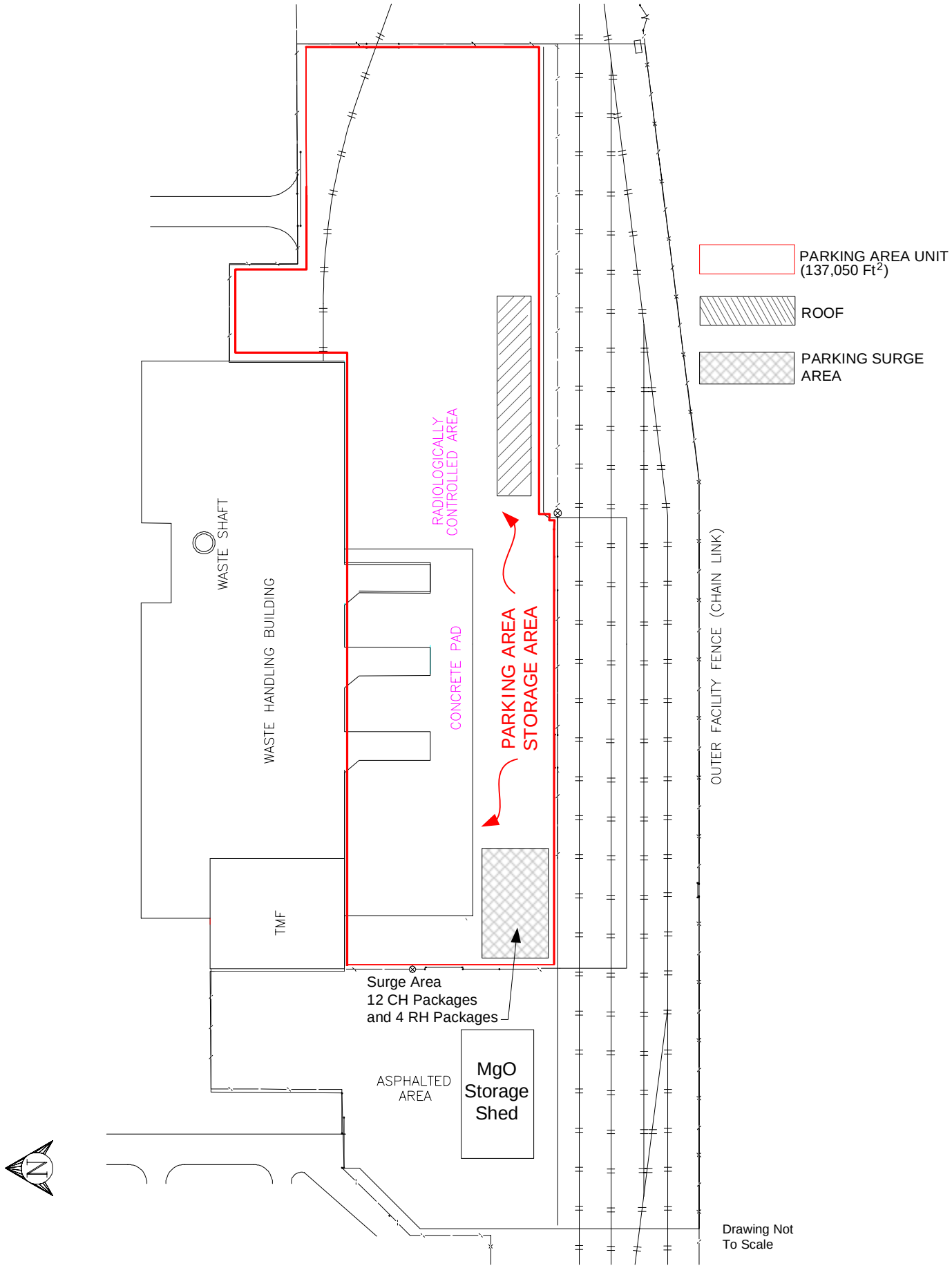


Figure O3-4
Parking Area - Container Storage and Surge Areas

EXHIBIT B

EXCEPTIONS TO CHANGES TO DRAFT PERMIT

EXHIBIT B

EXCEPTIONS TO EXHIBIT A

PARTY MAKING EXCEPTIONS: Citizens for Alternatives to Radioactive Dumping (CARD)

LANGUAGE AND ISSUES EXCEPTED:

1. Module IV.D, Volatile Organic Compound Limits
   Module IV.D.1, Room-Based Limits
   Module IV.D.2, Determination of VOC Room-Based Limits
   Figure M1-1a, Waste Handling Building Plan (Ground Floor)
   Attachment N-1, Introduction to VOC Compound Monitoring Plan
   Attachment N-1a, Background to VOC Compound Monitoring Plan
   Attachment N-lb, Objectives of the VOC Compound Monitoring Plan
   Attachment N-2, Target VOCs
   Attachment N-3, Monitoring Design
   Attachment N-3a, Sampling Locations

2. Removing the RH prohibition in Module II and Attachment B-1c, Waste Prohibited at the WIPP Facility.

3. Specific issues that must be excepted from the restrictions of this Stipulation:
   a. Disparate Impact Study for WIPP routes (or lack thereof);
   b. Lack of safety in the Waste Handling Building;
   c. RH emplacement issues;
   d. RH handling in the Hot Cell Building;
   e. Low-level alpha detection in the underground (repository).

4. CARD reserves the right to bring the language and issues listed above as a formal party to the hearing on the draft permit and to litigate on these issues.

Signed by:

for CARD

EXHIBIT
tabbies
B-CARD

EXHIBIT B

EXCEPTIONS TO EXHIBIT A

PARTY MAKING EXCEPTIONS: Concerned Citizens for Nuclear Safety (CCNS)

LANGUAGE AND ISSUES EXCEPTED:

1. Removing RH prohibition in Module II and Attachment B-1c, Waste Prohibited at the WIPP Facility.

2. Use of Hot Cell for waste handling and storage as identified in Table III.A.1, Waste Handling Building (WHB) Unit.

3. CCNS reserves the right to bring the language and issues listed above as a formal party to the hearing on the draft permit and to litigate on these issues.

Signed by: Joni Arends 5.4.06

EXHIBIT
tabbies
B-CCNS

State of New Mexico
ENVIRONMENT DEPARTMENT
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Telephone (505) 428-2500
Fax (505) 428-2567
www.nmenv.state.nm.us

BILL RICHARDSON
GOVERNOR

RON CURRY
SECRETARY

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

May 9, 2006

Dear Commenter on the WIPP Draft Permit:

On February 27, 2006, the New Mexico Environment Department (**NMED**) mailed a letter to the 11 individuals and organizations that had submitted a notice of opposition to and request for hearing on NMED's draft permit for the Waste Isolation Pilot Plant (**WIPP**) facility, issued November 23, 2005 (**Draft Permit**). The letter stated that NMED was convening a meeting on March 9, 2006 pursuant to 20.4.1.901.A(4) NMAC, which states that the NMED, in conjunction with the applicants, must respond to requests for hearings and notices of opposition to draft permits issued under the State Hazardous Waste Act in an effort to resolve those issues that gave rise to the hearing request(s). Although 20.4.1.901.A(4) NMAC allows an opponent to withdraw their hearing request if the negotiations satisfactorily resolve their concerns, no person or entity participating in such negotiations is required to do so. In addition, the results of any such negotiations are not binding on any individuals or organizations that chose not to participate and do not affect non-participants' requests for hearing.

Participants at the meeting included NMED; the WIPP permittees (the United States Department of Energy, the owner and co-operator of WIPP, and Washington TRU Solutions, LLC, the co-operator of WIPP); Southwest Research and Information Center (**SRIC**); Concerned Citizens for Nuclear Safety (**CCNS**); Citizens for Alternatives to Radioactive Dumping (**CARD**); the New Mexico Attorney General's Office (**AGO**); and other individuals who participated by telephone. The participants continued their meetings on March 10, March 14-17, March 24, April 3-7, April 10-14 and May 3, 2006.

As a result of the negotiations during these meetings, some of the participants executed and signed the enclosed *Stipulation on Changes to Language in the Draft Permit for the Waste Isolation Pilot Plant* (**Stipulation**). The Stipulation summarizes the agreement that was reached among the signatories (**the Parties**). Stipulation Exhibit A sets forth agreed to changes in the Draft Permit in redline/strikeout format (the Parties to the Stipulation also agreed to unchanged language in the Draft Permit). Stipulation Exhibits B-CCNS and B-CARD indicate that CCNS and CARD, respectively, also agree to the changes and unchanged language, except for specific language or issues related to the Draft Permit as changed by Exhibit A and identified on their

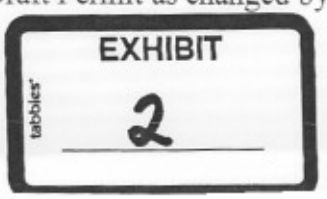


Exhibit Bs to which they do not agree and preserve their rights to object, oppose, or propose alternative language regarding these areas of disagreement.

Because you submitted written comments on the Draft Permit, we have enclosed a copy of the Stipulation and the pages from the Draft Permit that reflect the agreed to changes. There is still time for you to participate in this negotiation process. NMED urges you to review the Stipulation and the exhibits. If you agree with the proposed changes to the Draft Permit, as shown in Exhibit A, you may complete your own Exhibit B (a blank Exhibit B is enclosed) by writing your name in the blank after "PARTY MAKING THE EXCEPTIONS" and writing "No exceptions" after "LANGUAGE AND ISSUES EXCEPTED". If you generally agree with the proposed changes to the Draft Permit, as shown in Exhibit A, but have some reservations or specific language to which you wish to preserve your rights to object or oppose at a public hearing or on appeal, you may list these reservations in your own Exhibit B after "LANGUAGE AND ISSUES EXCEPTED". If you choose to submit an Exhibit B, you must sign and date it, and file it with the Hearing Clerk no later than the close of the public hearing at:

Hearing Clerk
Harold Runnels Building – Room N2150
1190 S. St. Francis Drive
P.O. Box 26110
Santa Fe, NM 87502

Regardless of whether or not you choose to submit an Exhibit B, NMED encourages you to attend the upcoming public hearing either in Carlsbad or in Santa Fe. Information on the dates and times for the hearing were sent to you on March 28, 2006 and are also listed on the NMED web page at <http://www.nmenv.state.nm.us/wipp/>.

Thank you again for your interest in the WIPP Permit. Please call the NMED's Hazardous Waste Bureau at (505) 428-2500 if you have any questions or require additional information.

Sincerely,

James P. Bearzi
Chief
Hazardous Waste Bureau

STATE OF NEW MEXICO
BEFORE THE SECRETARY OF ENVIRONMENT

IN THE MATTER OF THE APPLICATION FOR A CLASS 3 MODIFICATION TO THE HAZARDOUS WASTE FACILITY PERMIT FOR THE WASTE ISOLATION PILOT PLANT, CARLSBAD, NEW MEXICO EPA ID NO. NM 4890139088	))))))	No. HWB 06-01 (M)

CERTIFICATE OF SERVICE

I hereby certify that on May 9, 2006, a copy of the Notice of Filing of Stipulation with attachments was mailed by first class mail, overnight mail or e-mailed to:

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Questa, NM 87556

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Domenici Law Firm, P.C.
320 Gold Ave SW, Suite 100
Albuquerque, NM 87102

* denotes first class mail delivery, all others are by e-mail
** denotes overnight mail delivery

Charles F. Noble

Charles F. Noble, Assistant General Counsel
New Mexico Environment Department