

Dear Stakeholder:

Enclosed please find a copy of the Class 2 pre-decisional draft to clarify language regarding:

- **Liquid**
- **Visual Examination**
- **Nonconformances**

The pre-submittal meetings on this modification are scheduled for 2:00 p.m. to 4:00 p.m. and 6:00 p.m. to 8:00 p.m. on December 16, 2009 at the Courtyard by Marriott, 3347 Cerrillos Rd., Santa Fe, NM.

Thank you.

Pre-decisional Draft

Class 2 Permit Modification Request

Clarify Language Regarding Liquid

Clarify Language Regarding Visual Examination

Clarify Language Regarding Nonconformances

**Waste Isolation Pilot Plant
Carlsbad, New Mexico**

WIPP HWFP Number - NM4890139088-TSDF

December 2009

Table of Contents

Overview of the Permit Modification Request	4
Item 1 Overview of the Permit Modification Request	5
Regulatory Crosswalk – Item 1	12
Attachment A Table of Changes – Item 1	16
Table of Changes – Item 1	17
Attachment B Proposed Revised Permit Text – Item 1	23
Proposed Revised Permit Text – Item 1	24
Item 2 Overview of the Permit Modification Request	47
Regulatory Crosswalk – Item 2	51
Attachment A Table of Changes – Item 2	55
Table of Changes – Item 2	56
Attachment B Proposed Revised Permit Text – Item 2	58
Revised Permit Text – Item 2	59
Item 3 Overview of the Permit Modification Request	64
Regulatory Crosswalk – Item 3	68
Attachment A Table of Changes – Item 3	72
Table of Changes – Item 3	73
Attachment B Proposed Revised Permit Text – Item 3	74
Revised Permit Text – Item 3	75
Attachment C Figures, Drawings and/or Supporting Supplemental Information	78
Figure	79
Attachment D B6 Checklists	80

Pre-decisional Draft

Acronyms and Abbreviations

CBFO	Carlsbad Field Office
CFR	Code of Federal Regulations
CIS	Characterization Information Summary (CIS)
DOE	U.S. Department of Energy
DQO	Data Quality Objective
HWDU	Hazardous Waste Disposal Unit
mL	milliliter
NCR	nonconformance report
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
Permit	Hazardous Waste Facility Permit
Permittees	Carlsbad Field Office and Washington TRU Solutions LLC
PMR	Permit Modification Request
QAPD	Quality Assurance Program Document
RCRA	Resource Conservation and Recovery Act
TRU	transuranic
VE	visual examination
WAC	Waste Acceptance Criteria
WAP	Waste Analysis Plan
WIPP	Waste Isolation Pilot Plant
WTS	Washington TRU Solutions LLC

Pre-decisional Draft

Overview of the Permit Modification Request

This document contains three Class 2 Permit Modification Requests (**PMR**) to the Hazardous Waste Facility Permit (**Permit**) at the Waste Isolation Pilot Plant (**WIPP**), Permit Number NM4890139088-TSDF hereinafter referred to as the Permit.

This PMR is being submitted by the U.S. Department of Energy (**DOE**), Carlsbad Field Office (**CBFO**) and Washington TRU Solutions LLC (**WTS**), collectively referred to as the Permittees, in accordance with the Permit, Condition I.B.1 (20.4.1.900 New Mexico Administrative Code (**NMAC**) incorporating Title 40 Code of Federal Regulations (**CFR**) §270.42(b)). Modifications to the Permit are requested for the following items:

1. Clarify language regarding liquid
2. Clarify language regarding visual examination (**VE**).
3. Clarify language regarding nonconformances

Each of these items will be addressed separately within this Class 2 package.

These changes do not reduce the ability of the Permittees to provide continued protection to human health and the environment.

The requested modification to the WIPP Permit and related supporting documents are provided in this PMR. The Permittees have adopted the following conventions within this proposed modification

- Added text has been identified using red text and a double underline,
- Deleted text is shown using a ~~strikeout~~ font
- Direct quotes are indicated by italicized text.

Item 1

Overview of the Permit Modification Request

This PMR is being submitted by the DOE, and WTS, collectively referred to as the Permittees, in accordance with the Permit, Condition I.B.1 (20.4.1.900 NMAC incorporating 40 CFR §270.42(b)). This Item proposes the following:

1. Change the liquid prohibition and clarify the associated language:
 - Impose an overall 1 percent liquid limit for a waste container
 - Define a de minimus liquid volume for small internal containers
 - Prohibit overpacking and redistribution of untreated liquid as a means to mitigate liquid in excess of the liquid limit
2. Define the terms with regard to the liquid prohibition:
 - Observable liquid
 - Waste container
 - Internal container
3. Clarify throughout the Permit the terms “container,” “waste container,” “payload container,” “inner container,” “internal container,” and “residual liquid.”
4. Make editorial changes throughout the Permit to change “liquids” to “liquid.”

These changes do not reduce the ability of the Permittees to provide continued protection to human health and the environment.

The requested modification to the WIPP Permit and related supporting documents are provided in this PMR along with a description of the exact change being sought and the rationale for the changes. The following information specifically addresses how compliance has been achieved with Permit Condition I.B.1 for submission of this Class 2 PMR.

1. **20.4.1.900 NMAC (incorporating 40 CFR §270.42(b)(1)(i)), requires the applicant to describe the exact change to be made to the permit conditions and supporting documents referenced by the permit.**

This PMR proposes new definitions for “observable liquid,” “waste container,” and “Internal container.”

Pre-decisional Draft

This PMR also proposes clarifying language regarding the liquid prohibition in Permit Condition II.C.3 and Permit Attachment B, Section B-1c. It includes the following changes:

- The current term “liquid waste” is replaced with “liquid as follows” and the current language is replaced with a detailed list of bullets that more clearly delineates the liquid prohibition as it pertains to waste containers, internal containers, and waste items.
- The overall 1 percent limit for the waste container is unchanged.
- A de minimus volume of 60 milliliters (mL) is proposed for internal containers. This means that internal containers with 60 mL or less liquid will not be prohibited, even if the volume of liquid in the internal container exceeds the 3 percent liquid volume limit.
- A 3 percent by volume observable liquid limit is specified for internal containers.
- More than 3 percent liquid will be allowed in internal containers in situations where AK can demonstrate that the liquid does not exhibit the characteristic of ignitability, corrosivity, or reactivity.
- This PMR proposes language to clarify that overpacking or redistributing untreated liquid within the container will not be used as a method for meeting the liquid prohibition volume limits.

This PMR clarifies throughout the Permit the terms “container,” “waste container,” “payload container,” “inner container,” “internal container,” and “residual liquid.”

Language regarding the liquid prohibition is also revised in Attachment F, Section F-1c.

The Permittees have revised the Permit to clarify the aforementioned language in Permit Modules II and III as well as in Attachments B, B1, B3, B4, B6, B7, D, E, F, G, H2, I, J1, M1, and M2.

The Table of Changes and the redline strikeout in this modification describe each change that is being proposed. The redline strikeout also contains some changes related to Item 2 of this PMR package.

2. **20.4.1.900 NMAC (incorporating 40 CFR §270.42(b)(1)(ii)), requires the applicant to identify that the modification is a Class 2 modification.**

The proposed modification is classified as Class 2 Permit modification for the reason indicated below:

“Changes to waste sampling or analysis methods: ...other changes...” in accordance with 20.4.1.900 NMAC incorporating 40 CFR §270.42 Appendix I, Item B.1.d.

- 3. 20.4.1.900 NMAC (incorporating 40 CFR §270.42(b)(1)(iii)), requires the applicant to explain why the modification is needed.**

This modification is needed to clarify language in the Permit that has created confusion with regard to implementation. Specifically, the “liquid waste” prohibition in the current Permit contains language regarding pumping, pouring, and aspirating internal containers as a means of rendering them well-drained. While the Permittees have consistently applied this language to internal containers, the NMED recently pointed out that the language can also be interpreted as applying to any liquid, regardless of volume (such as liquid that desorbs from sludges) if such liquid is removable. Clarification is needed in three specific areas: what kind of liquid is allowed for disposal at the WIPP facility; how much liquid is allowed for disposal at the WIPP facility; what is the basis for measuring or estimating the volume of liquid. Reasons for the specific changes are provided below.

What kind of liquid is allowed at the WIPP facility?

Originally, the liquid prohibition was aimed at preventing liquid waste from being shipped to WIPP for management and disposal. There were a number of reasons for this; however, it was primarily aimed at minimizing the potential for contamination should retrieval of the waste be necessary after the originally proposed “Pilot Plant” Phase. The prohibition allowed for residuals remaining after reasonable attempts were made to drain liquid waste from an internal container. The liquid prohibition used the term “residual liquid” to describe what is allowed. The term “residual liquid” has been a source of confusion especially with regards to sludge waste. The term was first defined in the WIPP Waste Acceptance Criteria (**WAC**), WIPP-DOE-069, Revision 4.

Residual Liquid - Liquids in quantities of less than one volume percent of the waste container that result from: liquid residues remaining in well-drained internal containers; condensation of moisture; and liquid separation resulting from sludge or resin settling.

This is the version of the WAC that was used in preparing the original Permit Application and the definition is the Permittees’ operable definition for residual liquid. Although the definition itself was not codified in the Permit, it is used throughout.

Based on this definition, the Permittees considered the requirement for well drained containers as applying to internal containers in debris waste and not liquids that occur in containers of soils and gravels or homogeneous solids. Program implementation at the generator sites was based on this interpretation.

The original definition specifically accommodated liquid in sludge waste differently than liquid in debris waste, but the current prohibition in the Permit does not explicitly have this accommodation. To correct this, the term “residual liquid” is replaced throughout the Permit with “observable liquid.” Observable liquid is liquid that can be seen by a radiography operator or by someone performing visual examination of the waste. This terminology can be implemented consistently during characterization regardless of waste type. The operator no longer has to determine the source of the liquid, nor must he be concerned with the removability of the liquid or if the generator’s efforts to remove the liquid were reasonable. He simply needs to “observe” the liquid and estimate the volume.

Related to the question “What kind of liquid is allowed at the WIPP facility?” is the determination of ignitable, corrosive, or reactive waste. These are prohibited for management at the WIPP facility. Part of the process for determining that these prohibited items are not present is the determination that the Permit liquid volume limit is met. This process was included in the Permit based on an interpretation for the “RCRA empty container” definition (40 CFR 261.7).

Therefore, the answer to the question “What kind of liquid is allowed at the WIPP facility?” is “any observable liquid that is less than 1 percent by volume of the waste container, subject to other prohibitions regarding specific hazardous waste numbers.”

How much liquid is allowed for disposal at the WIPP facility?

There are three separate considerations in answering this question. First, there is an overall limit of 1 percent observable liquid in a waste container (the definition of a waste container is the next topic). Second, there is a 60 mL minimum volume that is set as a de minimus value for liquid consideration. Third, there is a 3 percent limit for internal containers when the acceptable knowledge record does not indicate the absence of D001, D002 or D003 waste.

Overall volume limits: The Environmental Protection Agency has imposed a repository waste liquid limit of 1 percent based on calculations performed as part of WIPP repository compliance with 40 CFR 191, Subparts B and C. This limit is met by enforcing a 1 percent limit on any waste shipped to the WIPP facility for disposal. There is a historical basis for the 1 percent and it has not posed an implementation problem for the Permittees. In the proposed modification, the Permittees retain this volume limit and apply it to the contents of a waste container. This means that the sum of all observable liquid, whether in internal containers or not, cannot exceed 1 percent of the waste container.

De minimus volume limit: The Permittees have concluded that there are numerous occasions when a generator must open a container for remediating very small volumes of liquid simply because the amount of liquid, though small, exceeds the current limit for an internal container. For example, Attachment A shows a small container in a 55-gallon drum of waste from the Savannah River Site. The amount of liquid was

Pre-decisional Draft

estimated by the operator to be 3 tablespoons (45 mL). It was the only liquid in the 55-gallon drum, and was, therefore, well below the 1 percent limit for the waste container (2,000 mL). However, under the current Permit, the small container had to be removed and drained. The hazards associated with remediating this small amount of liquid could have been avoided if a de minimus volume existed for internal containers, as proposed in this PMR. Similar waste streams are anticipated in the future as well as waste streams with vials, capillary-type labware, and other small containers.

In order to accommodate these types of debris waste, the Permittees are proposing that if a "small container" has less than 60 mL observable liquid (e.g., Attachment A) it would not be prohibited. This limit is based on several considerations. First, commonly used vials, such as scintillation vials typically range in size up to 40 mL. Second, a common type of container found in transuranic debris waste is the 2-liter poly bottle. Because of its common occurrence, the Permittees are proposing the 2-liter size as the upper limit for "small containers" and consequently define the de minimus volume as 3 percent of a 2-liter container, or 60 mL.

While capillary-type labware is used to contain liquid for specific purposes, it is not typically drained prior to disposal and therefore is excluded from the definition of an internal container.

Volume limit for internal containers: The Permittees are proposing to define the volume limit for internal containers to 3 percent. The rationale for this is related to the definition of a Resource Conservation and Recovery Act (RCRA) empty container in 20.4.1.200 NMAC (incorporating 40 CFR §261.7(b)(iii)). The regulations indicate that no more than 3 percent of the total capacity of the container may remain if the container is less than or equal to 119 gallons in size. Therefore, if a waste was generated with the 3 percent limit in mind, imposing a stricter limit may result in unnecessary remediation of a container that is otherwise acceptable for disposal.

Related to this, the Permittees are proposing that containers can have more liquid in them (up to 100% percent) as long as the generator can produce documentation from the AK record indicating that the liquid is not otherwise prohibited as ignitable, corrosive or reactive waste and the total volume of liquid in the waste container does not exceed 1 percent. Once again, the purpose of this revised condition is to avoid the hazards associated with unnecessary remediation of containers that are otherwise acceptable for disposal.

Therefore, the answer to the question "How much liquid is allowed for disposal at the WIPP facility?" is "no more than 1 percent in a waste container, no more than 3 percent in an internal container unless the internal container is small and the volume of observable liquid is less than 60 mL, or there is documentation that the liquid is not prohibited."

What is the basis for measuring or estimating the volume of liquid?

Pre-decisional Draft

This question is directly related to the definition of a “container” as it is used in the Permit. Currently, there are multiple uses for the term “waste container,” both as it relates to characterization and to the management and disposal at the WIPP facility. The uses are not consistent. For example, in the Waste Analysis Plan (WAP) a waste container is a unit for characterization and may be any size. In Permit Attachment M1 and elsewhere, the waste container is a unit for handling waste and can only be one of the “approved” containers. This inconsistent use leads to confusion when interpreting requirements that apply for waste containers. To mitigate this, the Permittees are proposing to standardize the definition and use of several types of containers including “waste containers,” “internal containers,” “containers of transuranic (TRU) mixed waste,” “shipping containers,” and “derived waste containers.” In this regard, the PMR proposes the following:

- The term “waste container” applies to the container that holds waste during characterization. Because this is the container to which the liquid volume limit is applied, overpacking a waste container would not work to remediate a waste container which exceeds the liquid volume limits.
- The term “internal container” is defined as a container inside a waste container. Drum liners, liner bags, plastic bags used for contamination control, capillary-type labware, and debris not intended to hold liquid at the time of original waste packaging are not internal containers.
- The term “payload container” has been deleted.
- The term “inner container” has been changed to either “waste container” or “internal container” depending upon the context of the use.
- Containers managed at the WIPP facility are referred to as “containers of TRU mixed waste” or “derived waste containers.”
- “Shipping containers” are the Type B packages used to ship waste to the WIPP facility.

In addition to the above definitions, the Permittees are proposing that overpacking a waste container or redistributing untreated liquid within the container shall not be used as a mechanism to meet the liquid volume limit. Therefore, the answer to the question “What is the basis for measuring or estimating the volume of liquid?” is:

- For the overall limit of 1 percent it is the waste container, which is the container that holds the waste during radiography or visual examination.
 - For containers inside waste containers it is the volume of each internal container.
4. **20.4.1.900 NMAC (incorporating 40 CFR §270.42(b)(1)(iv)), requires the applicant to provide the applicable information required by 40 CFR §§270.13 through 270.22, 270.62, 270.63, and 270.66.**

The regulatory crosswalk describes those portions of the Permit that are affected by this PMR. Where applicable, regulatory citations in this modification reference 20.4.1 NMAC revised March 1, 2009, incorporating 40 CFR (40 CFR Parts 264 and 270). Title 40 CFR §§270.16 through 270.22, 270.62, 270.63 and 270.66 are not applicable at WIPP. Consequently, they are not listed in the regulatory crosswalk table. Title 40 CFR §270.23 is applicable to the WIPP Hazardous Waste Disposal Units (**HWDUs**). This modification does not impact the conditions associated with the HWDUs.

- 5. 20.4.1.900 NMAC (incorporating 40 CFR §270.11(d)(1) and 40 CFR §270.30(k)), requires any person signing under paragraphs a and b must certify the document in accordance with 20.4.1.900 NMAC.**

The transmittal letter for this PMR contains the signed certification statement in accordance with Module I.F of the Permit.

Regulatory Crosswalk – Item 1					
Regulatory Citation(s) 20.4.1.900 NMAC (incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the HWFP or Permit Application	Yes	No
§270.13		Contents of Part A permit application	Attachment O, Part A		✓
§270.14(b)(1)		General facility description	Attachment A		✓
§270.14(b)(2)	§264.13(a)	Chemical and physical analyses	Attachment B		✓
§270.14(b)(3)	§264.13(b)	Development and implementation of waste analysis plan	Attachment B		✓
	§264.13(c)	Off-site waste analysis requirements	Attachment B	✓	
§270.14(b)(4)	§264.14(a-c)	Security procedures and equipment	Attachment C		✓
§270.14(b)(5)	§264.15(a-d)	General inspection requirements	Attachment D		✓
	§264.174	Container inspections	Attachment D		✓
§270.23(a)(2)	§264.602	Miscellaneous units inspections	Attachment D		✓
§270.14(b)(6)		Request for waiver from preparedness and prevention requirements of Part 264 Subpart C	NA		
§270.14(b)(7)	264 Subpart D	Contingency plan requirements	Attachment F		✓
	§264.51	Contingency plan design and implementation	Attachment F		✓
	§264.52 (a) & (c-f)	Contingency plan content	Attachment F		✓
	§264.53	Contingency plan copies	Attachment F		✓
	§264.54	Contingency plan amendment	Attachment F		✓
	§264.55	Emergency coordinator	Attachment F		✓
	§264.56	Emergency procedures	Attachment F		✓
§270.14(b)(8)		Description of procedures, structures or equipment for:	Attachment E		✓
§270.14(b)(8)(i)		Prevention of hazards in unloading operations (e.g., ramps and special forklifts)	Attachment E		✓
§270.14(b)(8)(ii)		Runoff or flood prevention (e.g., berms, trenches, and dikes)	Attachment E		✓
§270.14(b)(8)(iii)		Prevention of contamination of water supplies	Attachment E		✓
§270.14(b)(8)(iv)		Mitigation of effects of equipment failure and power outages	Attachment E		✓
§270.14(b)(8)(v)		Prevention of undue exposure of personnel (e.g., personal protective equipment)	Attachment E		✓
§270.14(b)(8)(vi) §270.23(a)(2)	§264.601	Prevention of releases to the atmosphere	Module II Module IV Attachment M2 Attachment N		✓
	264 Subpart C	Preparedness and Prevention	Attachment E		✓
	§264.31	Design and operation of facility	Attachment E		✓

Regulatory Crosswalk – Item 1					
Regulatory Citation(s) 20.4.1.900 NMAC (incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the HWFP or Permit Application	Yes	No
	§264.32	Required equipment	Attachment E Attachment F		✓
	§264.33	Testing and maintenance of equipment	Attachment D		✓
	§264.34	Access to communication/alarm system	Attachment E		✓
	§264.35	Required aisle space	Attachment E		✓
	§264.37	Arrangements with local authorities	Attachment F		✓
§270.14(b)(9)	§264.17(a-c)	Prevention of accidental ignition or reaction of ignitable, reactive, or incompatible wastes	Attachment E		✓
§270.14(b)(10)		Traffic pattern, volume, and controls, for example: Identification of turn lanes Identification of traffic/stacking lanes, if appropriate Description of access road surface Description of access road load-bearing capacity Identification of traffic controls	Attachment G		✓
§270.14(b)(11)(i) and (ii)	§264.18(a)	Seismic standard applicability and requirements	Part B, Rev. 6 Chapter B		✓
§270.14(b)(11)(iii-v)	§264.18(b)	100-year flood plain standard	Part B, Rev. 6 Chapter B		✓
	§264.18(c)	Other location standards	Part B, Rev. 6 Chapter B		✓
§270.14(b)(12)	§264.16(a-e)	Personnel training program	Permit Module II Attachment H		✓
§270.14(b)(13)	264 Subpart G	Closure and post-closure plans	Attachment I & J		✓
§270.14(b)(13)	§264.111	Closure performance standard	Attachment I		✓
§270.14(b)(13)	§264.112(a), (b)	Written content of closure plan	Attachment I		✓
§270.14(b)(13)	§264.112(c)	Amendment of closure plan	Attachment I		✓
§270.14(b)(13)	§264.112(d)	Notification of partial and final closure	Attachment I		✓
§270.14(b)(13)	§264.112(e)	Removal of wastes and decontamination/dismantling of equipment	Attachment I		✓
§270.14(b)(13)	§264.113	Time allowed for closure	Attachment I		✓
§270.14(b)(13)	§264.114	Disposal/decontamination	Attachment I		✓
§270.14(b)(13)	§264.115	Certification of closure	Attachment I		✓
§270.14(b)(13)	§264.116	Survey plat	Attachment I		✓
§270.14(b)(13)	§264.117	Post-closure care and use of property	Attachment J		✓
§270.14(b)(13)	§264.118	Post-closure plan; amendment of plan	Attachment J		✓
§270.14(b)(13)	§264.178	Closure/containers	Attachment I		✓

Pre-decisional Draft

Regulatory Crosswalk – Item 1					
Regulatory Citation(s) 20.4.1.900 NMAC (incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the HWFP or Permit Application	Yes	No
§270.14(b)(13)	§264.601	Environmental performance standards-Miscellaneous units	Attachment I		✓
§270.14(b)(13)	§264.603	Post-closure care	Attachment I		✓
§270.14(b)(14)	§264.119	Post-closure notices	Attachment J		✓
§270.14(b)(15)	§264.142	Closure cost estimate	NA		✓
	§264.143	Financial assurance	NA		✓
§270.14(b)(16)	§264.144	Post-closure cost estimate	NA		✓
	§264.145	Post-closure care financial assurance	NA		✓
§270.14(b)(17)	§264.147	Liability insurance	NA		✓
§270.14(b)(18)	§264.149-150	Proof of financial coverage	NA		✓
§270.14(b)(19)(I), (vi), (vii), and (x)		Topographic map requirements Map scale and date Map orientation Legal boundaries Buildings Treatment, storage, and disposal operations Run-on/run-off control systems Fire control facilities	Attachment O Part A Part B, Rev. 6 Chapter B, E		✓
§270.14(b)(19)(ii)	§264.18(b)	100-year floodplain	Attachment O Part A Part B, Rev. 6 Chapter B, E		✓
§270.14(b)(19)(iii)		Surface waters	Attachment O Part A Part B, Rev. 6 Chapter B, E		✓
§270.14(b)(19)(iv)		Surrounding Land use	Attachment O Part A Part B, Rev. 6 Chapter B, E		✓
§270.14(b)(19)(v)		Wind rose	Attachment O Part A Part B, Rev. 6 Chapter B, E		✓
§270.14(b)(19)(viii)	§264.14(b)	Access controls	Attachment O Part A Part B, Rev. 6 Chapter B, E, F		✓
§270.14(b)(19)(ix)		Injection and withdrawal wells	Attachment O Part A Part B, Rev. 6 Chapter B, E, F		✓
§270.14(b)(19)(xi)		Drainage on flood control barriers	Part B, Rev. 6 Chapter B, E, F		✓
§270.14(b)(19)(xii)		Location of operational units	Part B, Rev. 6 Chapter B		✓

Regulatory Crosswalk – Item 1					
Regulatory Citation(s) 20.4.1.900 NMAC (incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the HWFP or Permit Application	Yes	No
§270.14(b)(20)		Other federal laws Wild and Scenic Rivers Act National Historic Preservation Act Endangered Species Act Coastal Zone Management Act Fish and Wildlife Coordination Act Executive Orders	Part B, Rev. 6 Chapter K		✓
§270.15	§264 Subpart I	Containers	Attachment M1		✓
	§264.171	Condition of containers	Attachment M1		✓
	§264.172	Compatibility of waste with containers	Attachment M1		✓
	§264.173	Management of containers	Attachment M1		✓
	§264.174	Inspections	Attachment D Attachment M1		✓
§270.15(a)	§264.175	Containment systems	Attachment M1		✓
§270.15(c)	§264.176	Special requirements for ignitable or reactive waste	Attachment E Permit Module II		✓
§270.15(d)	§264.177	Special requirements for incompatible wastes	Attachment E Permit Module II		✓
	§264.178	Closure	Attachment I		✓
§270.15(e)	§264.179	Air emission standards	Attachment E Attachment N		✓
§270.23	264 Subpart X	Miscellaneous units	Attachment M2		✓
§270.23(a)	§264.601	Detailed unit description	Attachment M2		✓
§270.23(b)	§264.601	Hydrologic, geologic, and meteorologic assessments	Permit Module IV Attachment M2		✓
§270.23(c)	§264.601	Potential exposure pathways	Permit Module IV Attachment M2 Attachment N		✓
§270.23(d)		Demonstration of treatment effectiveness	Permit Module IV Attachment M2 Attachment N		✓
	§264.602	Monitoring, analysis, inspection, response, reporting, and corrective action	Permit Module IV Attachment M2 Attachment N		✓
	§264.603	Post-closure care	Attachment J Attachment J1		✓
	264 Subpart E	Manifest system, record keeping, and reporting	Permit Module I Permit Module II Permit Module IV Attachment B		✓

Attachment A
Table of Changes – Item 1

Table of Changes – Item 1	
Affected Permit Section	List of Changes
Module II, Condition II.C.3.a.	<ul style="list-style-type: none"> Revise liquid prohibition (see changes to Attachment B, Section B-1c below)
Module II, Condition II.C.3.d.	<ul style="list-style-type: none"> Add "waste to read "waste container"
Module III, Condition III. A.	<ul style="list-style-type: none"> Add "containers of " to read as "containers of (TRU) mixed waste" Delete "containers" to read " (TRU) mixed waste"
Module III, Condition III. A.1.b.	<ul style="list-style-type: none"> Add "containers of" to read as "containers of TRU mixed waste" Delete "containers" to read "transuranic TRU mixed waste"
Module III, Condition III. A.1.e.	<ul style="list-style-type: none"> Add "containers of" to read as "containers of TRU mixed waste" Delete "containers" to read "TRU mixed waste"
Module III, Condition III. A.1.g.	<ul style="list-style-type: none"> Add "containers of" to read as "containers of CH TRU mixed waste" Delete "containers" to read "CH TRU mixed waste" Add "derived waste" to read as "derived waste container"
Module III, Condition III. A.1.i.	<ul style="list-style-type: none"> Add "containers of" to the title to read "Storage of containers of RH TRU mixed waste"
Module III, Condition III. A.1.j.	<ul style="list-style-type: none"> Add "derived waste" to read as "derived waste container"
Module III, Condition III. A.2.a.	<ul style="list-style-type: none"> Add "containers of" to read as "containers of TRU mixed waste" Delete "containers" to read "TRU mixed waste"
Module III, Condition III. A.2.b.	<ul style="list-style-type: none"> Delete "containers" to read "TRU mixed waste"
Module III, Condition III.C.	<ul style="list-style-type: none"> Add "containers of" to read as "containers of TRU mixed waste" Delete "containers" to read "TRU mixed waste"
Module III, Condition III.E.	<ul style="list-style-type: none"> Add "of TRU mixed waste" to read "containers of TRU mixed waste"
Attachment B, Section B-0	<ul style="list-style-type: none"> Delete "waste" to read "container"
Attachment B, Section B-0a	<ul style="list-style-type: none"> Editorial Change "liquids" to read "liquid" Add "waste" to read as "waste container" or "waste containers"
Attachment B, Section B-0b	<ul style="list-style-type: none"> Add "waste" to read as "waste containers"

Table of Changes – Item 1	
Affected Permit Section	List of Changes
Attachment B, Section B-1c	<ul style="list-style-type: none"> • Add the following text "Definitions specific to Section B-1c:" • Observable liquid-liquid that is observable using radiography or visual examination (VE) as specified in this WAP. • Waste container-the outermost container holding the waste during radiography or VE as specified in this WAP. • Internal container-a container inside a waste container. Drum liners, liner bags, plastic bags used for contamination control, capillary-type tubes, and debris not intended to hold liquid at the time of original waste packaging are not internal containers." • Delete the liquid waste definition "waste (waste shall contain as little residuals liquid as is reasonably achievable by pouring, pumping and/or aspirating, and internal containers shall contain less than 1 inch or 2.5 centimeters of liquid in the bottom of the container. (e.g., 55 gallon drum or standard waste box) may not exceed 1 percent volume of that container. Payload containers with U134 no detectable liquid.) • Add the following text: • "as follows" to read "liquid as follows" • Waste containers shall contain no more than 1 percent by volume observable liquid • Internal containers with more than 60 milliliters or 3 percent by volume observable liquid, whichever is greater, are prohibited if AK states the liquid could exhibit the characteristic of ignitability, corrosivity, and/or reactivity (EPA Hazardous Waste numbers D001, D002, D003). • Waste containers with hazardous waste number U134 assigned shall have no observable liquid. • Overpacking a waste container or redistributing untreated liquid shall not be used to meet the liquid volume limit."
Attachment B, Section B-1e	<ul style="list-style-type: none"> • Delete "the waste containers" • Delete "activities" and add "containers of TRU mixed waste"
Attachment B, Section B-3c	<ul style="list-style-type: none"> • Add "waste" to read as "waste container" • Add "observable" to read as "detect observable liquid" • Delete "wastes" and replace with "in excess of TSDF WAC limits" • Editorial Change "liquids" to read "liquid" • Add "in excess of TSDF WAC limits" • Change "liquid waste" to "liquid" • Delete "inner" and replace with "internal" to read as "internal containers" • Delete "payload" and replace with "waste"
Attachment B, Section B-4a(1)	<ul style="list-style-type: none"> • Delete "waste" and add "of TRU mixed waste" to read "containers of TRU mixed waste"

Table of Changes – Item 1	
Affected Permit Section	List of Changes
Attachment B, Section B-5a(1)	<ul style="list-style-type: none"> • Change "container" to "waste container" • Add "of TRU mixed waste" to read "container of TRU mixed waste"
Attachment B, Section B-5a(1)	<ul style="list-style-type: none"> • Change "waste container" to "container" • Add "of TRU mixed waste" to read "containers of TRU mixed waste"
Attachment B, Section B-5b	<ul style="list-style-type: none"> • Change "waste container" to "container" or "containers" • Add "of TRU mixed waste" to read "containers of TRU mixed waste" • Change "Specific Waste Container Information" to read "Specific Container Information"
Attachment B, Section B-5b(1)	<ul style="list-style-type: none"> • Delete "payload" and is now described as "container" • Add "of TRU mixed waste" to read "containers of TRU mixed waste" • Change "waste container" to "container" or "containers"
Attachment B, Section B-7	<ul style="list-style-type: none"> • Add "containers of" to read as "containers of TRU mixed waste" • Delete "containers" to read "TRU mixed waste"
Attachment B, Table B-5	<ul style="list-style-type: none"> • Delete "free" in the example of the Waste acceptance criteria • Editorial Change "liquids" to read "liquid" • Add "in excess of TSDF-WAC limits" • Add "criteria" to read "Waste acceptance criteria"
Attachment B, Section B-7, Table B-7	<ul style="list-style-type: none"> • Change "waste containers" to "containers"
Attachment B1, Section B1-3	<ul style="list-style-type: none"> • Add "waste" to read as "waste container" • Editorial Change: change the "C" in Container to a lower case "c" • Delete "be considered" and add "contain" • Add "information"
Attachment B1, Section B1-4	<ul style="list-style-type: none"> • Add "waste" to read as "waste container" • Delete "residual materials" • Add "waste" to read as "waste container"
Attachment B4, Section B4-2	<ul style="list-style-type: none"> • Add "waste" to read as "waste container"
Attachment B4, Section B4-2b	<ul style="list-style-type: none"> • Add new bullet "Information regarding whether liquid in internal containers could exhibit the characteristics of ignitability, corrosivity, and/or reactivity (EPA Hazardous Waste Numbers D001, D002, D003)." • Add "waste" to read as "waste container" • Delete "of waste (e.g., liquids exceeding TSDF-WAC limits,

Table of Changes – Item 1	
Affected Permit Section	List of Changes
	corrosives, ignitables, reactives and incompatible wastes)”
Attachment B4, Section B4-3b	<ul style="list-style-type: none"> • Editorial Change: Delete “if” and “a” • Add “potential for the” • Editorial Change: Add “to” and “the” • Add “of ignitability, corrosivity, and/or reactivity” • Add “if the waste” • Add “of TRU mixed waste” to read “container of TRU mixed waste”
Attachment B4, Section B4-3e	<ul style="list-style-type: none"> • Add “waste” to read as “waste container”
Attachment B4, Section B4-3g	<ul style="list-style-type: none"> • Add “waste” to read as “waste container”
Attachment B7, Section B7-1a	<ul style="list-style-type: none"> • Add “waste” to read as “waste container” • Editorial Change: “liquids” to read “liquid”. • Add “in excess of TSDF-WAC limits”
Attachment B7, Section B7-1b	<ul style="list-style-type: none"> • Add “waste” to read as “waste container” • Editorial Change: change the “C” in Container to a lower case “c” • Delete “be considered” and add “contain” • Add “information”
Attachment B7, Section B7-1c	<ul style="list-style-type: none"> • Delete “residual” and change “liquids” to “liquid” to read as “liquid” • Add “waste” to read as “waste container”
Attachment B7, Section B7-1e(2)	<ul style="list-style-type: none"> • Add “container” to read “waste container”
Attachment D, Section D-1b(1)	<ul style="list-style-type: none"> • Add “containers of” to read as “containers of TRU mixed waste” • Delete “containers” to read “TRU mixed waste” • Add “derived waste” to read as “derived waste containers”
Attachment E, Section E-2b	<ul style="list-style-type: none"> • Delete “nonliquid waste; in some cases, the Permit allows up to” • Add “no more than” • Delete “residual” • Add “containers of” to read as “containers of TRU mixed waste” • Delete “containers” to read “TRU mixed waste”

Table of Changes – Item 1	
Affected Permit Section	List of Changes
Attachment F, Section F-1c	<ul style="list-style-type: none"> Delete "waste" to read as "The containers" Add "containers of" to read as "containers of TRU mixed waste" and delete "containers" in the same line Change "Liquid waste" to "waste" Editorial Change: "liquids" to read "liquid" Add reference "(See Permit Attachment B, Section B-1c)" and delete the following; "TRU mixed waste for emplacement in the WIPP shall contains as little residual liquid as is reasonably achievable. All internal containers (e.g., bottles, cans, etc.) will be well-drained, but may contain residual liquids. As a guideline, residual liquids in well drained containers will be restricted to approximately one percent of the volume of the internal container. In no case shall the total liquid equal or exceed one volume percent of the waste container (i.e., drum, standard waste box [SWB], ten-drum overpack, or canister)."
Attachment F, Section F-1e(2)	<ul style="list-style-type: none"> Add "container of" to read as "container of RH TRU mixed waste" Delete "Payload Container"
Attachment F, Section F-4d(6)	<ul style="list-style-type: none"> Add "containers of" to read as "containers of TRU mixed waste" and delete "container" in the same line Change "waste containers" to "containers"
Attachment F, Section F-4d(10)	<ul style="list-style-type: none"> Change "waste container" to "containers"
Attachment F, Section F-4i	<ul style="list-style-type: none"> Revise the example and delete "no free liquids and less" Add "no more" Delete "residual" Editorial Change: "liquids" to read "liquid" Add "of TRU mixed waste" to read "container of TRU mixed waste"
Attachment G, Section G-3	<ul style="list-style-type: none"> Add "Containers of" to read as "containers of TRU mixed waste" Delete "payload container contained in a"
Attachment H2, Section H2	<p>Radiography Level 1</p> <ul style="list-style-type: none"> Delete "excess residual" Editorial Change: "liquids" to read "liquid" Delete "as defined in" Add "excess of the limit in" <p>Radiography Level 2</p> <ul style="list-style-type: none"> Delete "excess residual" Editorial Change: "liquids" to read "liquid" Delete "as defined" Add "excess of the limit in"

Table of Changes – Item 1	
Affected Permit Section	List of Changes
	<ul style="list-style-type: none"> • Delete "excess residual" • Add "excess of the limits" <p>Visual Examination (Level 1)</p> <ul style="list-style-type: none"> • Delete "excess residual" • Editorial Change: "liquids" to read "liquid" • Add "excess of the limit in" <p>Visual Examination (Level 2)</p> <ul style="list-style-type: none"> • Editorial Change: "liquids" to read "liquid" • Delete "as defined in the" • Add "in excess of the limit in the"
Attachment I, Section I-1a(1)	<ul style="list-style-type: none"> • Add "of TRU mixed waste" to read "containers of TRU mixed waste"
Attachment I3, Section I3-3b	<ul style="list-style-type: none"> • Delete "Liquid waste" • Replace with "Waste with liquid in excess of the TSDF-WAC limit of 1 percent by volume" • Delete "no liquids" • Replace with "liquid less than 1 volume percent"
Attachment J1	<ul style="list-style-type: none"> • Delete "waste" and add "of TRU mixed waste" to read "containers of TRU mixed waste"
Attachment M1, Section M1-1a	<ul style="list-style-type: none"> • Delete "liquid" • Add "containers" to read "waste containers" • Delete "This prohibition is enforced as a maximum residual liquids requirement. In no case shall the total liquid equal or exceed" • Add "with liquid in excess of"
Attachment M2, Section M2-2b	<ul style="list-style-type: none"> • Change "waste containers" to "containers"
Attachment B6, Table B6-1	<ul style="list-style-type: none"> • Revised B6-1 Waste Analysis (WAP) Checklist to be consistent with WAP changes described above.

Attachment B
Proposed Revised Permit Text – Item 1

Pre-decisional Draft

Proposed Revised Permit Text – Item 1:

Item - 1. Liquid

II.C.3.a. Liquids as follows: - ~~liquid waste is not acceptable at WIPP. Waste shall contain as little residual liquid as is reasonably achievable by pouring, pumping and/or aspirating, and internal containers shall contain less than 1 inch or 2.5 centimeters of liquid in the bottom of the container. Total residual liquid in any payload container (e.g., 55-gallon drum, standard waste box, etc.) may not exceed 1 percent volume of that container.~~

- Waste containers shall contain no more than 1 percent by volume observable liquid.
- Internal containers with more than 60 milliliters or 3 percent by volume observable liquid, whichever is greater, are prohibited if AK states the liquid could exhibit the characteristic of ignitability, corrosivity, and/or reactivity (EPA Hazardous Waste Numbers D001, D002, D003).
- Waste containers with Hazardous Waste Number U134 assigned shall have no observable liquid.
- Overpacking a waste container or redistributing untreated liquid within the container shall not be used to meet the liquid volume limit.

II.C.3.d. Chemical incompatibility - wastes incompatible with backfill, seal and panel closures materials, waste container and packaging materials, shipping container materials, or other wastes are not acceptable at WIPP.

III.A. DESIGNATED CONTAINER STORAGE UNITS

This Module authorizes the storage and management of containers 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.b. Storage locations and quantities - the Permittees may store containers of TRU mixed waste ~~containers~~ in 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.

Pre-decisional Draft

- III.A.1.e. Storage on pallets - the Permittees shall store containers of 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.g. CH TRU mixed waste storage time limit - the Permittees shall not store ~~a~~ containers of 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 derived waste container is full.
- III.A.1.i. Storage of containers 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:
- i. Derived Waste Storage Areas, where derived waste may be accumulated and stored until the derived waste container is full; and
- III.A.2.a. Storage containers - the Permittees shall store TRU mixed waste in containers specified in Permit Condition III.C.1. These containers of 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.

Pre-decisional Draft

III.C. CONDITION OF CONTAINERS

If a container holding TRU mixed waste is not in good condition (e.g., severe rusting, apparent structural defects) or if it begins to leak, the Permittees shall manage the containers of TRU mixed waste ~~containers~~ specified in Permit Condition III.C.1 as specified in Permit Attachment M1 and in compliance with 20.4.1.500 NMAC (incorporating 40 CFR §264.171).

III.E. MANAGEMENT OF CONTAINERS

The Permittees shall manage all containers of TRU mixed waste 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).

B-0 Introduction and Attachment Highlights

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.

B-0a Waste Characterization

Metals

Some of the TRU mixed waste to be emplaced in the WIPP facility contains metals for which 20.4.1.200 NMAC (incorporating 40 CFR §261.24), toxicity characteristics were established (EPA hazardous waste numbers D004 through D011). Cadmium, chromium, lead, mercury, selenium, and silver are present in discarded tools and equipment, solidified sludges, cemented laboratory liquids, and waste from decontamination and decommissioning activities. A large percentage of the waste consists of lead-lined gloveboxes, leaded rubber gloves and aprons, lead bricks and piping, lead tape, and other lead items. Lead, because of its radiation-shielding applications, is the most prevalent toxicity-characteristic metal present.

B-0a Waste Characterization

Nonhalogenated Volatile Organic Compounds

All waste characterization activities specified in this WAP and associated Permit Attachments

Pre-decisional Draft

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 waste container, as discussed in Section B-3:

- Radiography, which is an x-ray technique to determine physical contents of waste containers
- Visual examination of opened waste containers as an alternative way to determine their physical contents

B-0b AK Sufficiency Determination

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

B-0b AK Sufficiency Determination

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 waste 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 3, and NMED finds that the Permittees' provisional approval is adequate, radiography or VE of 100% of the waste containers in the waste stream is required, but chemical sampling and analysis is not required.

B-1c Waste Prohibited at the WIPP Facility

Definitions specific to Section B-1c:

- Observable liquid – liquid that is observable using radiography or visual examination (VE) as specified in this WAP.
- Waste container – the outermost container holding the waste during radiography or VE as specified in this WAP
- Internal container – a container inside a waste container. Drum liners, linerbags, plastic bags used for contamination control, capillary-type labware, and debris not intended to hold liquid at the time of original waste packaging are not internal containers.

The following TRU mixed waste are prohibited at the WIPP facility:

- liquid as follows: ~~waste (waste shall contain as little residual liquid as is reasonably~~

Pre-decisional Draft

~~achievable by pouring, pumping and/or aspirating, and internal containers shall contain less than 1 inch or 2.5 centimeters of liquid in the bottom of the container. Total residual liquid in any payload container (e.g., 55-gallon drum or standard waste box) may not exceed 1 percent volume of that container. Payload containers with U134 waste shall have no detectable liquid)~~

- Waste containers shall contain no more than 1 percent by volume observable liquid
 - Internal containers with more than 60 milliliters or 3 percent by volume observable liquid, whichever is greater, are prohibited if AK states the liquid could exhibit the characteristic of ignitability, corrosivity, and/or reactivity (EPA Hazardous Waste Numbers D001, D002, D003)
 - Waste containers with Hazardous Waste Number U134 assigned shall have no observable liquid
 - Overpacking a waste container or redistributing untreated liquid within the container shall not be used to meet the liquid volume limit
-
- non-radionuclide pyrophoric materials, such as elemental potassium
 - hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)
 - wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes
 - wastes containing explosives or compressed gases
 - wastes with polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization
 - wastes exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)
 - waste that has ever been managed as high-level waste and waste from tanks specified in Table B-8, unless specifically approved through a Class 3 permit modification
 - any ~~waste~~ container from a waste stream (or waste stream lot) which has not undergone either radiographic or visual examination of a statistically representative subpopulation of the waste stream in each shipment, as described in Permit Attachment B7.
 - any waste container from a waste stream which has not been preceded by an appropriate, certified WSPF (see Section B-1d)

B-1e Waste Generating Processes at the WIPP Facility

Waste generated as a result of ~~the waste containers handling and processing activities~~ containers of TRU mixed waste 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

Pre-decisional Draft

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-3c Radiography and Visual Examination

Radiography ~~is a~~ and visual examination (VE) are nondestructive qualitative and quantitative techniques ~~that involves X-ray scanning of waste containers~~ used to identify and verify waste container contents as specified in Permit Attachment B1. ~~Visual examination (VE) constitutes opening a container and physically examining its contents.~~ Generator/storage sites shall perform radiography or VE of 100 percent of CH TRU mixed waste containers in waste streams 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 waste containers as specified in Permit Attachment B1. Radiography and/or ~~visual examination~~ VE will be used, when necessary, to examine a waste container to verify its physical form. These techniques can detect observable liquid wastes in excess of TSDF WAC limits and containerized gases, which are prohibited for WIPP disposal. The prohibition of liquids in excess of TSDF WAC limits 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 numbers 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~~ numbers 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~~ internal 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~~ waste container (e.g., 55 gallon drum or SWB). The ~~payload~~ waste 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~~ internal containers is detected, the volume of liquid shall be added to the total for the ~~payload~~ waste 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).

Pre-decisional Draft

B-4a(1) Data Quality Objectives

- Headspace-Gas Sampling and Analysis
 - To identify VOCs and quantify the concentrations of VOC constituents in ~~waste~~ containers of TRU mixed waste to resolve the assignment of EPA ~~Hazardous Waste~~ Waste ~~Numbers~~

B-5a(1) WWIS Description

The Permittees will use the WWIS to verify that all of the supplied data meet the edit and limit checks prior to the shipment of any TRU mixed waste to WIPP. The WWIS automatically will notify the generator/storage site if any of the supplied data fails to meet the requirements of the edit and limit checks via an appropriate error message. The generator/storage site will be required to correct the discrepancy with the waste or the waste data and re-transmit the corrected data prior to acceptance of the data by the WWIS. The Permittees will review data reported for each ~~waste~~ container of each shipment prior to providing notification to the shipping generator/storage site that the shipment is acceptable. Read-only access to the WWIS will be provided to NMED. Table B-7 contains a listing of the data fields contained in the WWIS that are required as part of this Permit.

The WWIS will generate the following:

- Waste Emplacement Report

This report will be added to the operating record to track the quantities of waste, date of emplacement, and location of authorized containers or container assemblies in the repository. The Permittees will document the specific panel room or drift that an individual ~~waste~~ container of TRU mixed waste is placed in as well as the row/column/height coordinates location of the container or containers assembly. This report will be generated on a weekly basis. Locations of containers or container assemblies will also be placed on a map separate from the WWIS. Reports and maps that are included as part of the operating record will be retained at the WIPP site, for the life of the facility.

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 begins with confirmation of the waste as required by Permit Attachment B7 after waste shipments are configured. After the waste shipment has arrived, the Permittees will screen the shipments to determine the completeness and accuracy of the EPA Hazardous Waste Manifest and the land disposal restriction notice completeness. The Permittees will verify there are no waste shipment irregularities and the ~~waste~~ containers of TRU mixed waste are in good condition. 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 of TRU mixed waste shipped, the Permittees shall ensure that the generator/storage sites provide the following information:

Specific ~~Waste~~ Container information:

Pre-decisional Draft

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

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

For shipments in the RH-TRU 72B cask, the identification number of the single ~~payload~~ container of TRU mixed waste 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 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:

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 by the Permittees.

B-7 Records Management and Reporting

All waste characterization data for each container of 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 WIPP Records Archive facility 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.

**TABLE B-5
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
S3000-Homogeneous Solids S4000-Soil/Gravel	<ul style="list-style-type: none"> Solidified inorganics Salt waste Solidified organics Contaminated soil/debris 	Physical waste form	Acceptable knowledge, radiography, and/or visual examination	<ul style="list-style-type: none"> Determine waste matrix Demonstrate compliance with waste acceptance criteria (e.g., no <u>free liquids in excess of TSDF-WAC limits</u>, no incompatible wastes, no compressed gases)
		Hazardous constituents <ul style="list-style-type: none"> Listed Characteristic 	Acceptable knowledge or statistical sampling ^a (see Tables B-3 and B-4)	<ul style="list-style-type: none"> Determine characteristic metals and organics Resolve the assignment of EPA hazardous waste numbers
S5000-Debris Waste	<ul style="list-style-type: none"> Uncategorized metal (metal waste other than lead/cadmium) Lead/cadmium waste Inorganic nonmetal waste Combustible waste Graphite waste Heterogeneous debris waste Composite filter waste 	Physical waste form	Acceptable knowledge, radiography, and/or visual examination	<ul style="list-style-type: none"> Determine waste matrix Demonstrate compliance with waste acceptance <u>criteria</u> (e.g., no <u>free liquids in excess of TSDF-WAC limits</u>, no incompatible wastes, no compressed gases)
		Hazardous constituents <ul style="list-style-type: none"> Characteristic Listed 	Statistical gas sampling and analysis ^a (see Table B-2)	<ul style="list-style-type: none"> Resolve the assignment of EPA hazardous waste numbers
		Hazardous constituents <ul style="list-style-type: none"> Characteristic 	Acceptable knowledge	<ul style="list-style-type: none"> 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
S3000-Homogeneous Solids S4000-Soil/Gravel	<ul style="list-style-type: none"> • Solidified inorganics • Salt waste • Solidified organics <ul style="list-style-type: none"> • Contaminated soil/debris 	Physical waste form	Acceptable knowledge, radiography, and/or visual examination	<ul style="list-style-type: none"> • Determine waste matrix • Demonstrate compliance with waste acceptance criteria (e.g., no free liquids <u>in excess of TSDF-WAC limits</u>, no incompatible wastes, no compressed gases)
		Hazardous constituents <ul style="list-style-type: none"> • Listed • Characteristic 	Statistical sampling ^a (see Tables B-3 and B-4)	<ul style="list-style-type: none"> • Determine characteristic metals and organics • Resolve the assignment of EPA hazardous waste numbers
S5000-Debris Waste	<ul style="list-style-type: none"> • Uncategorized metal (metal waste other than lead/cadmium) • Lead/cadmium waste • Inorganic nonmetal waste • Combustible waste • Graphite waste • Heterogeneous debris waste • Composite filter waste 	Physical waste form	Acceptable knowledge, radiography, and/or visual examination	<ul style="list-style-type: none"> • Determine waste matrix • Demonstrate compliance with waste acceptance <u>criteria</u> (e.g., no free liquids <u>in excess of TSDF-WAC limits</u>, no incompatible wastes, no compressed gases)
		Hazardous constituents <ul style="list-style-type: none"> • Characteristic • Listed 	Statistical gas sampling and analysis ^a (see Table B-2)	<ul style="list-style-type: none"> • Resolve the assignment of EPA hazardous waste numbers
		Hazardous constituents <ul style="list-style-type: none"> • Characteristic 	Acceptable knowledge	<ul style="list-style-type: none"> • Determine characteristic metals and organics

^a Applies to waste streams that require sampling.

**TABLE B-7
WIPP WASTE INFORMATION SYSTEM DATA FIELDS**

Disposal Module Data
Container ID ^c Disposal Date Disposal Location

^a This is not a complete list of the WWIS data fields.

^b Some of the fields required for characterization are also required for certification and/or transportation.

^c Container ID is the main relational field in the WWIS Database.

^d This is a multiple occurring field for each analyte, nuclide, etc.

^e These are logical fields requiring only a yes/no.

^f Required for 7-packs of 55-gal drums, 4-packs of 85-gal drums, or 3-packs of 100-gal drums to tie all of the drums in that assembly together. This facilitates the identification of waste containers in a shipment without need to breakup the assembly.

B1-3 Radiography

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 as a non-permanent record. A radiography data form is also used to document the Waste Matrix Code to 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. Waste ~~€~~containers whose contents prevent full examination of the remaining contents shall be subject to visual examination unless the site certifies that visual examination would provide no additional relevant information for that waste container based on the acceptable knowledge information for the waste stream. Such certification shall be documented in the generator/storage site's record.

For waste containers which contain classified shapes and undergo radiography, the radiography video and audio recording will be considered classified. The radiography data forms will not contain ~~be considered classified~~ information.

B1-4 Visual Examination

~~In lieu of radiography, the~~ The waste container contents may be verified directly by visual examination (VE) of the waste container contents. Visual examination may be performed on waste containers to verify the Waste Matrix Code and to verify that the container is properly included in the appropriate waste stream. Visual examination shall be conducted on a waste container to identify and describe all contents of a waste container, clearly identifying all ~~discernible~~ waste items, residual materials, packaging materials, or and waste material parameters in the waste container. All visual Visual examination activities shall be documented on video/audio media, or ~~alternatively~~, by using a second operator to provide additional

Pre-decisional Draft

verification by reviewing the contents of the waste container to ensure correct reporting. When VE is performed using a second operator, each operator performing the VE shall observe for themselves the waste being placed in the waste container or the contents within the examined waste container when waste is not removed. The results of all ~~visual examination~~ VE shall be documented on ~~visual examination~~ VE data forms.

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

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 waste container in the audited Waste Summary Category Group(s) will be examined during the Permittees' audit of a site (Section B4-3g). The consistent presentation of acceptable knowledge documentation among sites in auditable records¹ 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.

B4-2b Required TRU Mixed Waste Stream Information

- Information regarding whether liquid in internal containers could exhibit the characteristics of ignitability, corrosivity, and/or reactivity (EPA Hazardous Waste Numbers D001, D002, D003)

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

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.

Pre-decisional Draft

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
- 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
- Procedures to ensure radiography and visual examination include a list of prohibited items that the operator shall verify are not present in each waste 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
- Procedures for estimating waste material parameter weights

B4-3b Acceptable Knowledge Assembly and Compilation

- Review the required information to determine if the potential for the waste to exhibit a the hazardous characteristic of ignitability, corrosivity, and/or reactivity or if the waste may contain hazardous constituents included in the toxicity characteristics specified in 20.4.1.200 NMAC (incorporating 40 CFR §261), Subpart C. If a toxicity characteristic contaminant is identified and is not included as a listed waste, assign the toxicity characteristic number unless data are available that demonstrate that the concentration of the constituent in the waste is less than the toxicity characteristic regulatory level. When data are not available, the toxicity characteristic hazardous waste number for the identified hazardous constituent shall be applied to the mixed waste stream.
- Review the compiled information to provide an estimate of material parameter weights for each container of TRU mixed waste to be stored or disposed of at WIPP.

Pre-decisional Draft

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

- Review existing information based on the **waste** container identification number and document all differences in hazardous waste number assignments

B4-3g Audits of Acceptable Knowledge

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 **waste** 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.

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

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 **waste** container and containerized gases, which are prohibited from storage or disposal at the WIPP facility. The prohibition of liquids in excess of the TSDf-WAC limits 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.

B7-1b Radiography methods Requirement

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. **Waste** ~~C~~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 **waste** 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

Pre-decisional Draft

recordings.

For waste 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 contain classified information.

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 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:

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

B7-1e(2) Permittee Management Review

- The data indicate that the waste container 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.

D-1b(1) Container Inspection

Inspections of containers 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

Pre-decisional Draft

is stored in the facility cask; therefore, inspections in this area focus on the integrity of the facility cask.

Container inspections will be included as part of the surface TRU mixed waste handling areas (i.e. Parking Area Unit and WHB Unit) inspections described in Tables D-1 and D-1a. These inspections will also include the Derived Waste Storage Areas of the WHB Unit. The Derived Waste Storage Areas will consist of **derived waste** containers of 55 or 85-gallon drums or SWBs for CH TRU mixed waste and 55-gallon drums for RH TRU mixed waste. A Satellite accumulation area (**SAA**) may be required in an area adjacent to the TRUDOCKs for CH TRU mixed waste. A SAA may also be required in the RH Bay and Hot Cell for RH TRU mixed waste. These SAAs will be set up on an as needed basis at or near the point of generation and the derived waste will be discarded into the active derived waste container. All SAAs will be inspected in accordance with 20.4.1.300 NMAC (incorporating 40 CFR §262.34).

E-2b Runoff

TRU mixed waste received for emplacement at the WIPP facility must be certified under this Permit's Treatment, Storage, and Disposal Facility Waste Acceptance Criteria (**TSDF-WAC**) as ~~nonliquid waste~~; in some cases, the Permit allows up to **no more than** one percent ~~residual~~ liquids. The TSDF-WAC are procedural controls that must be met at the generator or storage site and the data must be verified by the WIPP facility staff prior to acceptance for the Disposal Phase and shipment to the WIPP facility. Permit Module II and Permit Attachment B contain information regarding TSDF-WAC requirements for shipping and discusses receipt and verification of the TRU mixed waste at the WIPP facility. Derived waste must also meet all TSDF-WAC requirements prior to disposal. Calculations in Permit Attachment M1 demonstrate that one percent ~~residual~~ liquid in **containers of** TRU mixed waste ~~containers~~ is easily contained by the WHB Unit floor.

F-1c Containers

The ~~waste~~ containers that will be used at the WIPP facility qualify as "containers," in accordance with 20.4.1.101 NMAC (incorporating 40 CFR §260.10). That is, they are "portable devices in which a material is stored, transported, treated, disposed of, or otherwise handled."

Containers of TRU mixed waste ~~containers~~, containing off-site waste, will not be opened at the WIPP facility. Derived waste containers are kept closed at all times unless waste is being added or removed.

~~Liquid waste~~, including "derived waste" containing liquids, will not be emplaced in the WIPP. **(See Permit Attachment B-1c).** ~~TRU mixed waste for emplacement in the WIPP shall contain as little residual liquid as is reasonably achievable. All internal containers (e.g., bottles, cans, etc.) will be well-drained, but may contain residual liquids. As a guideline, residual liquids in well-drained containers will be restricted to approximately one percent of the volume of the internal container. In no case shall the total liquid equal or exceed one volume percent of the waste container (i.e., drum, standard waste box [SWB], ten-drum overpack, or canister).~~

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

Pre-decisional Draft

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 container of RH TRU mixed waste payload container. In addition, the RH Bay has a concrete floor.

F-4d(6) Control of Spills or Leaking or Punctured Containers of CH and RH TRU Mixed Waste

CH TRU Mixed Waste

Should a breach of a container of CH TRU mixed waste container occur at the WIPP 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 overpack container (e.g., 85-gal drum, SWB, TDOP), except that TDOP's will be decontaminated, repaired/patched in accordance with 49 CFR §173 and §178 (e.g., 49 CFR §173.28), or returned to the generator. The decontamination of equipment and the overpacking of contaminated/damaged ~~waste~~ containers will be performed in the vicinity of the incident. For example, under normal operations CH TRU mixed waste will be handled only in the areas of the WHB Unit. Therefore, it is within these same areas 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.

RH TRU Mixed Waste

Should a breach of a container of RH TRU mixed waste container occur in the Hot Cell 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 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. 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 container of RH TRU mixed waste container may be managed as CH TRU mixed waste, depending on the surface dose rate.

F-4d(10) Emergency Termination Procedures

For ~~waste~~ containers, the analyses become documentation of the condition of the container at the time of emplacement. These containers will be placed in the underground without further action, once the radiological contamination is removed, unless there is visible evidence of hazardous waste spills or hazardous waste on the container and this contamination is considered likely to be released prior to emplacement in the underground. In no case shall these containers contain a total liquid content equal to, or which exceeds, one volume percent of the container.

F-4i Container Spills and Leakage

The waste received at the WIPP facility will meet stringent TSDF-WAC (e.g., ~~no free liquids and less no more~~ than one percent residual liquids), which will minimize the possibility of waste container degradation and liquid spills. Should a spill or release occur from a container of TRU mixed waste, following an initial assessment of the event, the WIPP facility will immediately take

Pre-decisional Draft

the following actions, in compliance with 20.4.1.500 NMAC (incorporating 40 CFR §264.52(a) and §264.171):

Pre-decisional Draft

G-3 Waste Handling Building Traffic

Containers of RH TRU mixed waste will arrive at the WIPP facility in a ~~payload container contained in a~~ shielded cask loaded on a tractor-trailer. Upon arrival, radiological surveys, security checks, and shipping documentation reviews will be performed, and the trailer carrying the cask will be moved into the Parking Area or directly into the RH Bay of the Waste Handling Building Unit.

H2 Radiography (Level 1)

Formal Training

- Project Requirements
- State and Federal Regulations
- Basic Principles of Radiography
- Radiography of Waste Forms (including the ability to identify liquids and compressed gases which will be verified by a radiography subject matter expert)
- Waste Stream-Specific Instruction (e.g., specific waste generating processes, typical packaging configurations, waste material parameters)

On-the-Job Training

- System Operation (equipment and procedures used by Level 1 radiographers)
- Identification of Packaging Configurations
- Identification of Waste Material Parameters/Waste Matrix Codes
- Identification of ~~excess residual~~ liquids as defined in excess of the limit in the TSDF-WAC, and compressed gases
- Verification of waste stream description

H2 Radiography (Level 2)

On-the-Job Training

- System Operation
- Identification of Packaging Configurations
- Identification of Waste Material Parameters/Waste Matrix Codes
- Identification of ~~excess residual~~ liquids as defined in excess of the limit in the TSDF-WAC and compressed gases
- Verification of waste stream description

Requalification of operators shall be based upon evidence of continued satisfactory performance (primarily video/audio reviews) and shall be done at least every two years. Unsatisfactory performance will result in disqualification. Unsatisfactory performance is defined as the misidentification of ~~excess residual~~ liquids in excess of the limits (as defined in the TSDF-WAC) or compressed gases in a training drum or a score of less than eighty percent (80%) on the comprehensive exam. Retraining and demonstration of satisfactory performance are required before a disqualified operator is again allowed to operate the radiography system for the Permittees.

Pre-decisional Draft

H2 Visual Examination (Level 1)

On-the-Job Training

- System Operation (equipment and procedures used by Level 1 visual examination personnel)
- Identification of Packaging Configurations
- Identification of Waste Material Parameters/Waste Matrix Codes
- Identification of ~~excess residual~~ liquids as defined in excess of the limit in the TSDF-WAC and compressed gases
- Verification of waste stream description

H2 Visual Examination (Level 2)

On-the-Job Training

- Identification of Packaging Configurations
- Identification of Waste Material Parameters/Waste Matrix Code
- Identification of Prohibited Items liquids as defined in the liquid in excess of the limit in the TSDF-WAC and compressed gases
- Verification of waste stream description

I-1a(1) Container Storage Units

Final or partial closure of the permitted container storage units (the Waste Handling Building Unit and Parking Area Unit) will be accomplished by removing all waste and waste residues. Indication of waste contamination will be based, among other techniques, on the use of radiological surveys as described in Permit Attachment I3. Radiological surveys use very sensitive radiation detection equipment to indicate if there has been a potential release of TRU mixed waste, including hazardous waste components, from a container of TRU mixed waste. This allows the Permittees to indicate potential releases that are not detectable from visible evidence such as stains or discoloration. Visual inspection and operating records will also be used to identify areas where decontamination is necessary. Contaminated surfaces will be decontaminated until radioactivity is below free release limits². Once surfaces are determined to be free of radioactive waste constituents, they will be tested for hazardous waste contamination. These surface decontamination activities will ensure the removal of waste residues to levels protective of human health and the environment. The facility is expected to require no decontamination at closure because any waste spilled or released during operations will be contained and removed immediately. Solid waste management units associated described in Permit Module VII will be subject to closure. In the event portions of these units which require decontamination cannot be decontaminated, these portions will be removed and the resultant wastes will be managed as appropriately.

I3-3b Nature of the TRU Mixed Waste

TRU mixed waste is defined as transuranic waste which is also a hazardous waste. The processes responsible for the radioactivity in the waste are, for the most part, the same processes responsible for making it a hazardous waste. Therefore, the TRU mixed waste forms

² The free release criteria for items, equipment, and areas is < 20 dpm/100 cm² for alpha radioactivity and < 200 dpm/100 cm² for beta-gamma radioactivity.

Pre-decisional Draft

are described in terms of both classes of waste (radioactive and hazardous). The Permit Treatment, Storage, and Disposal Facility Waste Acceptance Criteria (**TSDF-WAC**) in Module II places limits on the waste that can be shipped to the WIPP facility based on the characteristics of the waste form. According to the TSDF-WAC, certain waste forms with specific characteristics are not allowed at the WIPP facility. ~~Liquid waste~~ Waste with liquid in excess of the TSDF-WAC limit of 1 percent by volume is one waste form that is not allowed. Other limitations include, but are not limited to, a prohibition on pyrophoric materials, corrosive materials, ignitable waste, and compressed gases. Furthermore, TRU waste must contain 100 nanocuries or more of transuranic elements per gram of waste, which means that the radioactive component of the waste will always be present within the waste in significant concentrations. The TSDF-WAC limitations and restrictions are provided to ensure that any waste form received at the WIPP facility is stable and can be managed safely.

One benefit of waste form restrictions, such as ~~no liquids~~ liquids less than 1 volume percent, is that they limit the kinds of releases that could occur to those that would be readily detectable through visual inspection (i.e., large objects that fall out of ruptured containers) or through the use of radiation monitoring either locally or within the adjacent area to detect materials that have escaped from containers.

J1 Introduction

Background:

Upon receipt and inspection of the ~~waste containers~~ of TRU mixed waste in the waste handling building, the containers will be moved into the repository 2,150 feet (655 meters) below the surface. The containers will then be transported to a disposal room. (See Figure J1-1 for room and panel arrangement.) The initial seven disposal rooms are in Panel 1. Panel 1 is the first of eight panels planned to be excavated. Special supports and ground control corrective actions have been implemented in Panel 1 to ensure its stability. Upon filling an entire panel, that panel will be closed to isolate it from the rest of the repository and the ventilation system. During the period of time it takes to fill a given panel, an additional panel will be excavated. Sequential excavation of Panels 2 through 8 will ensure that these individual panels remain stable during the entire time a panel is being filled with waste. Ground control maintenance and evaluation with appropriate corrective action will be required to ensure that Panels 9 and 10 (ventilation and access drifts in the repository) remain stable.

M1-1a Containers with Residual Liquids

The Permit Treatment, Storage, and Disposal Facility (TSDF) Waste Acceptance Criteria (**WAC**) and the Waste Analysis Plan (Permit Attachment B) prohibit the shipment of liquid waste containers to the WIPP. ~~This prohibition is enforced as a maximum residual liquids requirement. In no case shall the total liquid equal or exceed~~ with liquid in excess of one volume percent of the waste container (e.g., drum, standard waste box [**SWB**], or canister). Since the maximum amount of liquid is one percent, calculations made to determine the secondary containment as required by 20.4.1.500 NMAC (incorporating §264.175) are based on ten percent of one percent of the volume of the containers, or one percent of the largest container, whichever is greater.

M2-2b Geologic Repository Process Description

CH TRU Mixed Waste Emplacement

The emplacement of CH TRU mixed waste into the HWDUs will typically be in the order received and unloaded from the Contact Handled Packaging. There is no specification for the amount of space to be maintained between the **waste** containers themselves, or between the **waste** containers and the walls. Containers will be stacked in the best manner to provide stability for the stack (which is up to three containers high) and to make best use of available space. It is anticipated that the space between the wall and the container could be from 8 to 18 in. (20 to 46 cm). This space is a function of disposal room wall irregularities, container type, and sequence of emplacement. Bags of backfill will occupy some of this space. Space is required over the stacks of containers to assure adequate ventilation for waste handling operations. A minimum of 16 in. (41 cm) was specified in the Final Design Validation Report (Appendix D1, Chapter 12 of the WIPP RCRA Part B Permit Application (DOE, 1997)) to maintain air flow. Typically, the space above a stack of containers will be 36 to 48 in. (90 to 122 cm). However 18 in. (0.45 m) will contain backfill material consisting of bags of Magnesium Oxide (MgO). Figure M2-8 shows a typical container configuration, although this figure does not mix containers on any row. Such mixing, while inefficient, will be allowed to assure timely movement of waste into the underground. No aisle space will be maintained for personnel access to emplaced **waste** containers. No roof maintenance behind stacks of waste is planned.

Item 2

Overview of the Permit Modification Request

This PMR is being submitted by the DOE, and WTS, collectively referred to as the Permittees, in accordance with the Permit, Condition I.B.1 (20.4.1.900 New Mexico Administrative Code (**NMAC**) incorporating Title 40 Code of Federal Regulations (**CFR**) §270.42(b)). This modification proposes the following:

Clarify language regarding visual examination (**VE**)

These changes do not reduce the ability of the Permittees to provide continued protection to human health and the environment.

The requested modification to the WIPP Permit and related supporting documents are provided in this PMR along with a description of the exact change being sought and the rationale for the changes. The following information specifically addresses how compliance has been achieved with Permit Condition I.B.1 for submission of this Class 2 PMR.

- 1. 20.4.1.900 NMAC (incorporating 40 CFR §270.42(b)(1)(i)), requires the applicant to describe the exact change to be made to the permit conditions and supporting documents referenced by the permit.**

This modification proposes to make the changes to the Permit described below:

1. Clarify language regarding VE of waste in order to create more detailed and consistent requirements. This includes the following changes:
 - Delete the terms “visual examination technique” and “VE in lieu of radiography” from Permit Attachment B, Section B-3d and Permit Attachment B1, Section B1-4.
 - Clarify in Permit Attachment B1, Section B1-4 that when VE is performed using a second operator that it is the responsibility of each operator to observe for themselves the waste being examined.
 - Change “visual examination expert” to “VE Operator” in Permit Attachment B1, Section B1-4.
 - Change “packaging logs” to “packaging records” which is a broader term that includes packaging logs when they are available.
 - Change the term “visual examination records” to “waste container packaging records.”

Pre-decisional Draft

- Add “who witnessed the packaging of the waste” to the first bullet under VE requirements performed using two generator site personnel in Permit Attachment B1, Section B1-4.
 - Change “visual inspection” to “visual examination” and “Visual inspectors” to “Visual examination operators” in Permit Attachment B1, Section B1-4.
 - Add training requirements for VE operators related to examining waste items and determining when VE cannot be used to meet the required Data Quality Objectives (DQO).
 - Minor editorial changes to ensure consistent use of terms and acronyms in Permit Attachment B1, Section B1-4.
2. This modification adds language to Permit Attachment B3, Section B3-12b(2) requiring justification for selection of radiography or VE as the appropriate method for waste characterization to be included in the Characterization Information Summary (CIS). This change supports both the clarification of the VE method and the clarification of the liquid prohibition in Item 1 of this PMR.

The Permittees have revised the Permit to clarify the aforementioned language in Attachments B, B1, B3 and B6.

The Table of Changes and the redline strikeout in this modification describes each change that is being proposed. The redline strikeout also contains some changes related to Item 1 of this PMR package.

- 2. 20.4.1.900 NMAC (incorporating 40 CFR §270.42(b)(1)(ii)), requires the applicant to identify that the modification is a Class 2 modification.**

The proposed modification is classified as Class 2 Permit modification for the reason indicated below:

“Changes to waste sampling or analysis methods: ...other changes...” in accordance with 20.4.1.900 NMAC incorporating 40 CFR §270.42 Appendix I, Item B.1.d.

- 3. 20.4.1.900 NMAC (incorporating 40 CFR §270.42(b)(1)(iii)), requires the applicant to explain why the modification is needed.**

This modification, to clarify language regarding VE, is being submitted in order to create more detailed and consistent requirements. This change has been prepared in response to questions raised by the NMED during audits of generator site waste characterization activities as documented in a letter dated September 2, 2008, “*NMED Approval of the Los Alamos National Laboratory/Central Characterization Project Final Audit Report, Audit A-08-16*”.

Pre-decisional Draft

Reasons for the specific changes described are provide below:

- An editorial change was made regarding the terms “visual examination technique” and “VE in lieu of radiography” in Permit Attachment B, Section B-3d and Permit Attachment B1, Section B1-4 to clarify that VE is the same for newly generated and retrievably stored waste.
- Clarifying language in Permit Attachment B1, Section B1-4 to require that when VE is performed using a second operator that it is the responsibility of each operator to observe for themselves the waste being examined is needed to provide more detailed requirements. Currently the Permit requires the second operator to simply verify “by reviewing the contents of the waste container to ensure correct reporting.” To ensure that this verification is more than a paper review by the second operator additional detail is needed to require direct observation of the waste by both operators.
- Changing “visual examination expert” to “VE Operator” in Permit Attachment B1, Section B1-4 is needed to ensure that VE is recorded in sufficient detail so that any VE operator and not just the VE expert can identify the associated waste parameters. This will ensure consistent reporting of VE information.
- Correcting “visual examination records” to “waste container packaging records” and the related discussion concerning packaging records in Permit Attachment B1, Section B1-4 (paragraph 5) is required because the purpose of this paragraph is to allow the use of existing waste container packaging records. Requirements for recording the performance of VE are provided in the two preceding paragraphs in Permit Attachment B1, Section B1-4, but detailed requirements regarding the use of packaging records were not previously included.
- Adding “who witnessed the packaging of the waste” to the first bullet under VE requirements performed using two generator site personnel in Permit Attachment B1, Section B1-4 is needed as a minimum requirement for determining the usability of packaging records. This is consistent with existing language in Permit Attachment B7, Section B7-1c.
- Changing “visual inspection” to “visual examination” and “Visual inspectors” to “Visual examination operators” in Permit Attachment B1, Section B1-4 is required because “visual inspection” and “visual inspectors” are not defined in the permit.
- Additional training requirements for VE operators related to identifying all waste items in waste containers and identifying when VE cannot be used to meet the VE Data Quality Objectives are needed so that operators can recognize situations when visual examination of the waste in accordance with the Permit is not adequate.

Pre-decisional Draft

- Minor editorial changes are required to ensure consistent use of terms and acronyms in Permit Attachment B1, Section B1-4.
- This modification adds language requiring justification for selection of radiography or VE as the appropriate method for waste characterization to be included in the CIS. This change is needed so that the Permittees can determine if the appropriate characterization method is selected for each waste stream. The generator storage site will have to submit appropriate justification for the method that they select with the CIS attached to the Waste Stream Profile Form submitted to the Permittees for approval. A Waste Stream Profile Form cannot be approved by the Permittees without this justification. This change is related to the change in Item 1 of the PMR regarding the definition of “observable liquid.” The addition of this requirement in Permit Attachment B3, Section B3-12b(2) requires the Permittees to review and approve the method the generator site will use to observe liquid in the waste container.

4. 20.4.1.900 NMAC (incorporating 40 CFR §270.42(b)(1)(iv), requires the applicant to provide the applicable information required by 40 CFR §§270.13 through 270.22, 270.62, 270.63, and 270.66.

The regulatory crosswalk describes those portions of the Permit that are affected by this PMR. Where applicable, regulatory citations in this modification reference 20.4.1 NMAC revised March 1, 2009, incorporating 40 CFR (40 CFR Parts 264 and 270). Title 40 CFR §§270.16 through 270.22, 270.62, 270.63 and 270.66 are not applicable at WIPP. Consequently, they are not listed in the regulatory crosswalk table. Title 40 CFR §270.23 is applicable to the WIPP Hazardous Waste Disposal Units (HWDUs). This modification does not impact the conditions associated with the HWDUs.

5. 20.4.1.900 NMAC (incorporating 40 CFR §270.11(d)(1) and 40 CFR §270.30(k)), requires any person signing under paragraphs a and b must certify the document in accordance with 20.4.1.900 NMAC.

The transmittal letter for this PMR contains the signed certification statement in accordance with Module I.F of the Permit.

Pre-decisional Draft

Regulatory Crosswalk – Item 2					
Regulatory Citation(s) 20.4.1.900 NMAC (incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the HWFP or Permit Application	Yes	No
§270.13		Contents of Part A permit application	Attachment O, Part A		✓
§270.14(b)(1)		General facility description	Attachment A		✓
§270.14(b)(2)	§264.13(a)	Chemical and physical analyses	Attachment B	✓	
§270.14(b)(3)	§264.13(b)	Development and implementation of waste analysis plan	Attachment B	✓	
	§264.13(c)	Off-site waste analysis requirements	Attachment B	✓	
§270.14(b)(4)	§264.14(a-c)	Security procedures and equipment	Attachment C		✓
§270.14(b)(5)	§264.15(a-d)	General inspection requirements	Attachment D		✓
	§264.174	Container inspections	Attachment D		✓
§270.23(a)(2)	§264.602	Miscellaneous units inspections	Attachment D		✓
§270.14(b)(6)		Request for waiver from preparedness and prevention requirements of Part 264 Subpart C	NA		
§270.14(b)(7)	264 Subpart D	Contingency plan requirements	Attachment F		✓
	§264.51	Contingency plan design and implementation	Attachment F		✓
	§264.52 (a) & (c-f)	Contingency plan content	Attachment F		✓
	§264.53	Contingency plan copies	Attachment F		✓
	§264.54	Contingency plan amendment	Attachment F		✓
	§264.55	Emergency coordinator	Attachment F		✓
	§264.56	Emergency procedures	Attachment F		✓
§270.14(b)(8)		Description of procedures, structures or equipment for:	Attachment E		✓
§270.14(b)(8)(i)		Prevention of hazards in unloading operations (e.g., ramps and special forklifts)	Attachment E		✓
§270.14(b)(8)(ii)		Runoff or flood prevention (e.g., berms, trenches, and dikes)	Attachment E		✓
§270.14(b)(8)(iii)		Prevention of contamination of water supplies	Attachment E		✓
§270.14(b)(8)(iv)		Mitigation of effects of equipment failure and power outages	Attachment E		✓
§270.14(b)(8)(v)		Prevention of undue exposure of personnel (e.g., personal protective equipment)	Attachment E		✓
§270.14(b)(8)(vi) §270.23(a)(2)	§264.601	Prevention of releases to the atmosphere	Module II Module IV Attachment M2 Attachment N		✓

Pre-decisional Draft

	264 Subpart C	Preparedness and Prevention	Attachment E		✓
	§264.31	Design and operation of facility	Attachment E		✓
	§264.32	Required equipment	Attachment E Attachment F		✓
	§264.33	Testing and maintenance of equipment	Attachment D		✓
	§264.34	Access to communication/alarm system	Attachment E		✓
	§264.35	Required aisle space	Attachment E		✓
	§264.37	Arrangements with local authorities	Attachment F		✓
§270.14(b)(9)	§264.17(a-c)	Prevention of accidental ignition or reaction of ignitable, reactive, or incompatible wastes	Attachment E		✓
§270.14(b)(10)		Traffic pattern, volume, and controls, for example: Identification of turn lanes Identification of traffic/stacking lanes, if appropriate Description of access road surface Description of access road load-bearing capacity Identification of traffic controls	Attachment G		✓
§270.14(b)(11)(i) and (ii)	§264.18(a)	Seismic standard applicability and requirements	Part B, Rev. 6 Chapter B		✓
§270.14(b)(11)(iii-v)	§264.18(b)	100-year flood plain standard	Part B, Rev. 6 Chapter B		✓
	§264.18(c)	Other location standards	Part B, Rev. 6 Chapter B		✓
§270.14(b)(12)	§264.16(a-e)	Personnel training program	Permit Module II Attachment H		✓
§270.14(b)(13)	264 Subpart G	Closure and post-closure plans	Attachment I & J		✓
§270.14(b)(13)	§264.111	Closure performance standard	Attachment I		✓
§270.14(b)(13)	§264.112(a), (b)	Written content of closure plan	Attachment I		✓
§270.14(b)(13)	§264.112(c)	Amendment of closure plan	Attachment I		✓
§270.14(b)(13)	§264.112(d)	Notification of partial and final closure	Attachment I		✓
§270.14(b)(13)	§264.112(e)	Removal of wastes and decontamination/dismantling of equipment	Attachment I		✓
§270.14(b)(13)	§264.113	Time allowed for closure	Attachment I		✓
§270.14(b)(13)	§264.114	Disposal/decontamination	Attachment I		✓
§270.14(b)(13)	§264.115	Certification of closure	Attachment I		✓
§270.14(b)(13)	§264.116	Survey plat	Attachment I		✓
§270.14(b)(13)	§264.117	Post-closure care and use of property	Attachment J		✓
§270.14(b)(13)	§264.118	Post-closure plan; amendment of plan	Attachment J		✓
§270.14(b)(13)	§264.178	Closure/containers	Attachment I		✓

Pre-decisional Draft

§270.14(b)(13)	§264.601	Environmental performance standards-Miscellaneous units	Attachment I		✓
§270.14(b)(13)	§264.603	Post-closure care	Attachment I		✓
§270.14(b)(14)	§264.119	Post-closure notices	Attachment J		✓
§270.14(b)(15)	§264.142	Closure cost estimate	NA		✓
	§264.143	Financial assurance	NA		✓
§270.14(b)(16)	§264.144	Post-closure cost estimate	NA		✓
	§264.145	Post-closure care financial assurance	NA		✓
§270.14(b)(17)	§264.147	Liability insurance	NA		✓
§270.14(b)(18)	§264.149-150	Proof of financial coverage	NA		✓
§270.14(b)(19)(l), (vi), (vii), and (x)		Topographic map requirements Map scale and date Map orientation Legal boundaries Buildings Treatment, storage, and disposal operations Run-on/run-off control systems Fire control facilities	Attachment O Part A Part B, Rev. 6 Chapter B, E		✓
§270.14(b)(19)(ii)	§264.18(b)	100-year floodplain	Attachment O Part A Part B, Rev. 6 Chapter B, E		✓
§270.14(b)(19)(iii)		Surface waters	Attachment O Part A Part B, Rev. 6 Chapter B, E		✓
§270.14(b)(19)(iv)		Surrounding Land use	Attachment O Part A Part B, Rev. 6 Chapter B, E		✓
§270.14(b)(19)(v)		Wind rose	Attachment O Part A Part B, Rev. 6 Chapter B, E		✓
§270.14(b)(19)(viii)	§264.14(b)	Access controls	Attachment O Part A Part B, Rev. 6 Chapter B, E, F		✓
§270.14(b)(19)(ix)		Injection and withdrawal wells	Attachment O Part A Part B, Rev. 6 Chapter B, E, F		✓
§270.14(b)(19)(xi)		Drainage on flood control barriers	Part B, Rev. 6 Chapter B, E, F		✓
§270.14(b)(19)(xii)		Location of operational units	Part B, Rev. 6 Chapter B		✓
§270.14(b)(20)		Other federal laws Wild and Scenic Rivers Act National Historic Preservation Act Endangered Species Act Coastal Zone Management Act Fish and Wildlife Coordination Act Executive Orders	Part B, Rev. 6 Chapter K		✓

Pre-decisional Draft

§270.15	§264 Subpart I	Containers	Attachment M1		✓
	§264.171	Condition of containers	Attachment M1		✓
	§264.172	Compatibility of waste with containers	Attachment M1		✓
	§264.173	Management of containers	Attachment M1		✓
	§264.174	Inspections	Attachment D Attachment M1		✓
§270.15(a)	§264.175	Containment systems	Attachment M1		✓
§270.15(c)	§264.176	Special requirements for ignitable or reactive waste	Attachment E Permit Module II		✓
§270.15(d)	§264.177	Special requirements for incompatible wastes	Attachment E Permit Module II		✓
	§264.178	Closure	Attachment I		✓
§270.15(e)	§264.179	Air emission standards	Attachment E Attachment N		✓
§270.23	264 Subpart X	Miscellaneous units	Attachment M2		✓
§270.23(a)	§264.601	Detailed unit description	Attachment M2		✓
§270.23(b)	§264.601	Hydrologic, geologic, and meteorologic assessments	Permit Module IV Attachment M2		✓
§270.23(c)	§264.601	Potential exposure pathways	Permit Module IV Attachment M2 Attachment N		✓
§270.23(d)		Demonstration of treatment effectiveness	Permit Module IV Attachment M2 Attachment N		✓
	§264.602	Monitoring, analysis, inspection, response, reporting, and corrective action	Permit Module IV Attachment M2 Attachment N		✓
	§264.603	Post-closure care	Attachment J Attachment J1		✓
	264 Subpart E	Manifest system, record keeping, and reporting	Permit Module I Permit Module II Permit Module IV Attachment B		✓

Pre-decisional Draft

**Attachment A
Table of Changes – Item 2**

Pre-decisional Draft

Table of Changes – Item 2	
Affected Permit Section	List of Changes
Attachment B, Section B-3c	<ul style="list-style-type: none"> • Editorial Change: Delete "is a" • Add "and visual examination (VE) are" • Editorial change to change "technique" to read "techniques" • Delete " that involves X-ray scanning of waste containers" • Add "used" • Add "as specified in Permit Attachment B1." • Delete " Visual Examination (VE) constitutes opening a container and physically examining its contents." • Change "waste codes" to "waste numbers"
Attachment B, Section B-3d.	<ul style="list-style-type: none"> • Revise example by deleting "the technique" to read "using VE" • Revise example by deleting "in lieu of radiography" to read "or VE"
Attachment B, Section B-3d(1)	<ul style="list-style-type: none"> • Add "using VE" to clarify that VE will either be used during packaging or radiography.
Attachment B1, Section B1-4	<ul style="list-style-type: none"> • Delete "in lieu of radiography, the" • Add "The" • Add Acronym "(VE)" • Add "on a waste container" • Add "identify and" • Delete "all the contents of a waste container, clear identifying all discernible" • Editorial Change: Delete "or" and replace with "and" • Add "in the waste container" • Delete "All visual" and replace with "Visual" • Editorial Change: Delete "alternatively" • Add "When VE is performed using a second operator, each operator performing the VE shall observe for themselves the waste being placed in the waste container or the contents within the examined waste container when waste is not removed." • Delete "Visual Examination" and replace with "VE" • Delete "Visual Examination expert" and replace with "VE operator" • Add language to clarify bullet " who witnessed the packaging of the waste" • Delete "logs" and replace with "records" • Delete "be considered" and replace with "contain"

Pre-decisional Draft

Table of Changes – Item 2	
Affected Permit Section	List of Changes
	<ul style="list-style-type: none"> • Delete "Visual Examination" and replace with "Waste container packaging" • Delete "for characterization of TRU mixed waste. The visual examination" and replace with "to meet the VE data quality objectives (DQOs)(Permit Attachment B Section B-4a(1). These" • Add " for either VE recorded on video/audio media or VE performed by two generator site personnel" • Delete "visual examination and replace with "waste container packaging or VE" • Delete "inspectors" and replace with "examination operators" • Delete "expected" • Delete "on" and replace with "to examine the" • Add "Training will include the following regardless of Summary Category Group: <ul style="list-style-type: none"> -Identifying and describing the contents of a waste container by examining all items in waste containers of previously packaged waste -Identifying when VE cannot be used to meet the DQOs." • Delete "personnel" and replace with "operators"
Attachment B3, Section B3-12b(2)	<ul style="list-style-type: none"> • Add new bullet "A justification for the selection of radiography and/or VE as an appropriate method for characterizing the waste."
Attachment B6, Table B6-1	<ul style="list-style-type: none"> • Revised B6-1 Waste Analysis (WAP) Checklist to be consistent with WAP changes described above.

Pre-decisional Draft

Attachment B
Proposed Revised Permit Text – Item 2

Pre-decisional Draft

Proposed Revised Permit Text – Item 2:

Item - 2. VE

B-3c Radiography and Visual Examination

Radiography is a ~~and visual examination (VE) are~~ nondestructive qualitative and quantitative techniques ~~that involves X-ray scanning of waste containers used~~ to identify and verify waste container contents ~~as specified in Permit Attachment B1~~. ~~Visual examination (VE) constitutes opening a container and physically examining its contents.~~ Generator/storage sites shall perform radiography or VE of 100 percent of CH TRU mixed waste containers in waste streams 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 ~~waste~~ containers as specified in Permit Attachment B1. Radiography and/or ~~visual examination~~ ~~VE~~ will be used, when necessary, to examine a waste container to verify its physical form. These techniques can detect ~~observable liquid wastes in excess of TSDF WAC limits~~ and containerized gases, which are prohibited for WIPP disposal. The prohibition of liquids ~~in excess of TSDF WAC limits~~ 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 numbers 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~~ ~~numbers~~ 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~~ ~~internal~~ 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~~ ~~waste~~ container (e.g., 55 gallon drum or SWB). The ~~payload~~ ~~waste~~ 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~~ ~~internal~~ containers is detected, the volume of liquid shall be added to the total for the ~~payload~~ ~~waste~~ 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

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

Pre-decisional Draft

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).

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. 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 using VE 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 actions² 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.

B1-4 Visual Examination

~~In lieu of radiography, the~~ The waste container contents may be verified directly by visual examination (VE) of the waste container contents. Visual examination may be performed on waste containers to verify the Waste Matrix Code and to verify that the container is properly included in the appropriate waste stream. Visual examination shall be conducted on a waste container to identify and describe all contents of a waste container, clearly identifying all discernible waste items, ~~residual materials~~, packaging materials, or and waste material parameters in the waste container. All visual Visual examination activities shall be documented on video/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. When VE is performed using a second operator, each operator performing the VE shall observe for themselves the waste being placed in the waste container or the contents within the examined waste container when waste is not removed. The results of all ~~visual examination~~ VE shall be documented on ~~visual examination~~ VE data forms.

- The video/audio media shall record the waste packaging event for the waste container such that all waste items placed into the waste container are recorded in sufficient detail and shall contain an inventory of waste items in sufficient detail that another trained ~~visual examination expert~~ VE operator can identify the

Pre-decisional Draft

associated waste material parameters.

- 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.

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

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

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

~~Visual examination~~ Waste container packaging records may be used for ~~characterization of TRU mixed waste. The visual examination to meet the VE data quality objectives (DQOs) (Permit Attachment B, Section B-4a(1)).~~ These records must meet the minimum requirements listed above for either VE recorded on video/audio media or VE performed by two generator site personnel and shall be reviewed by operators trained and qualified to the requirements listed below. The VE operators will prepare data forms based on the ~~visual examination~~ waste container packaging or VE 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~~ VE shall be developed. Visual ~~inspectors~~ examination operators 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 to examine the types of waste that are generated, stored, and/or characterized at that particular site. Visual examination personnel shall be requalified once every two years. Training will include the following regardless of Summary Category Group:

- Identifying and describing the contents of a waste container by examining all items in waste containers of previously packaged waste

Pre-decisional Draft

- Identifying when VE cannot be used to meet the DQOs.

Visual examination ~~personnel~~ operators shall be requalified once every two years.

Each ~~visual examination~~ VE facility shall designate a ~~visual examination~~ VE expert. The ~~visual examination~~ VE 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~~ VE expert shall be responsible for the overall direction and implementation of the ~~visual examination~~ VE at that facility. The Permittees shall require site QAPjPs to specify the selection, qualification, and training requirements of the ~~visual examination~~ VE expert.

B3-12b(2) Characterization Information Summary

- A justification for the selection of radiography and/or VE as an appropriate method for characterizing the waste.

Item 3

Overview of the Permit Modification Request

This PMR is being submitted by the DOE, and WTS, collectively referred to as the Permittees, in accordance with the Permit, Condition I.B.1 (20.4.1.900 New Mexico Administrative Code (**NMAC**) incorporating Title 40 Code of Federal Regulations (**CFR**) §270.42(b)). This modification proposes the following:

Clarify language regarding nonconformances.

These changes do not reduce the ability of the Permittees to provide continued protection to human health and the environment.

The requested modification to the WIPP Permit and related supporting documents are provided in this PMR along with a description of the exact change being sought and the rationale for the changes. The following information specifically addresses how compliance has been achieved with Permit Condition I.B.1 for submission of this Class 2 PMR.

1. **20.4.1.900 NMAC (incorporating 40 CFR §270.42(b)(1)(i)), requires the applicant to describe the exact change to be made to the permit conditions and supporting documents referenced by the permit.**

This PMR proposes to clarify language to ensure that nonconformances noted during waste characterization have been dispositioned before shipment. The changes include:

- Some existing language in Permit Attachment B3, Section B3-13, Nonconformances was replaced with the following:
"Any waste container for which a nonconformance report (NCR) has been written will not be shipped to the WIPP facility unless the condition that led to the NCR for that container has been dispositioned in accordance with the Permittees' Quality Assurance Program Document (QAPD)."
- The following language was added to Permit Attachment B3, Section B3-13.
"For any container selected for confirmation in accordance with Permit Attachment B7, the Permittees will examine respective NCR documentation to verify NCRs for the waste container have been dispositioned."

Similar language is placed in Permit Attachment B7, Section B7-1a.

Pre-decisional Draft

The Permittees have determined that only language in Attachment B3 requires clarification. No change is required in Permit Attachment B as the language in Permit Attachment B, Section B-5a(2) already indicates that no container with unresolved discrepancies will be managed, stored or disposed at WIPP.

In addition to changes described above the following changes are proposed:

- Minor editorials including changing “nonconformance report” to “NCR” and to correct a spelling.

Change reporting requirement for non-administrative nonconformances identified at the Site Project Manager level in Permit Attachment B3, Section B3-13 (4) from 5 calendar days to 7 calendar days.

The Permittees have revised the Permit to clarify the aforementioned language in Permit Attachments B3, B6, and B7.

The Table of Changes and the redline strikeout in this modification describes each change that is being proposed.

2. 20.4.1.900 NMAC (incorporating 40 CFR §270.42(b)(1)(ii)), requires the applicant to identify that the modification is a Class 2 modification.

The proposed modification is classified as Class 2 Permit modification for the reason indicated below:

“Changes to waste sampling or analysis methods: ...other changes...” in accordance with 20.4.1.900 NMAC incorporating 40 CFR §270.42 Appendix I, Item B.1.d.

3. 20.4.1.900 NMAC (incorporating 40 CFR §270.42(b)(1)(iii)), requires the applicant to explain why the modification is needed.

This PMR is needed to clarify the manner in which the NCR program is implemented and to make the requirements for resolving or dispositioning nonconformance reports applicable to a waste container prior to shipping that container to the WIPP facility.

The changes listed below are needed to provide additional assurance that waste containers are not shipped with NCRs that have not been dispositioned.

- Some existing language in Permit Attachment B3, Section B3-13, Nonconformances was replaced with the following:
“Any waste container for which a nonconformance report (NCR) has been written will not be shipped to the WIPP facility unless the condition that led to the NCRs for that container has been dispositioned in accordance with

Pre-decisional Draft

the Permittees' Quality Assurance Program Document (QAPD)."

This change makes it explicit that NCRs pertaining to a container must be dispositioned for that container before it is shipped to the WIPP facility.

- The following language was added to Permit Attachment B3, Section B3-13 to require an additional check by the Permittees that NCRs have been dispositioned.

"For any container selected for confirmation in accordance with Permit Attachment B7, the Permittees will examine respective NCR documentation to verify NCRs for the waste container have been dispositioned."

Similar language is placed in Permit Attachment B7, Section B7-1a.

The minor editorials including changing "nonconformance report" to "NCR" and to correct a spelling error are needed to ensure consistent use of acronyms and make a required correction.

Changing the reporting requirement for non-administrative nonconformances identified at the Site Project Manager level in Permit Attachment B3, Section B3-13 from 5 calendar days to 7 calendar days is needed to allow time for screening and reporting in order to accommodate long weekends and holidays.

- 4. 20.4.1.900 NMAC (incorporating 40 CFR §270.42(c)(1)(iv)), requires the applicant to provide the applicable information required by 40 CFR §§270.13 through 270.22, 270.62, 270.63, and 270.66.**

The regulatory crosswalk describes those portions of the Permit that are affected by this PMR. Where applicable, regulatory citations in this modification reference 20.4.1 NMAC revised March 1, 2009, incorporating 40 CFR (40 CFR Parts 264 and 270). Title 40 CFR §§270.16 through 270.22, 270.62, 270.63 and 270.66 are not applicable at WIPP. Consequently, they are not listed in the regulatory crosswalk table. Title 40 CFR §270.23 is applicable to the WIPP Hazardous Waste Disposal Units (HWDUs). This modification does not impact the conditions associated with the HWDUs.

Pre-decisional Draft

- 5. 20.4.1.900 NMAC (incorporating 40 CFR §270.11(d)(1) and 40 CFR §270.30(k)), requires any person signing under paragraphs a and b must certify the document in accordance with 20.4.1.900 NMAC.**

The transmittal letter for this PMR contains the signed certification statement in accordance with Module I.F of the Permit.

Pre-decisional Draft

Regulatory Crosswalk – Item 3					
Regulatory Citation(s) 20.4.1.900 NMAC (incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the HWFP or Permit Application	Yes	No
§270.13		Contents of Part A permit application	Attachment O, Part A		✓
§270.14(b)(1)		General facility description	Attachment A		✓
§270.14(b)(2)	§264.13(a)	Chemical and physical analyses	Attachment B		✓
§270.14(b)(3)	§264.13(b)	Development and implementation of waste analysis plan	Attachment B	✓	
	§264.13(c)	Off-site waste analysis requirements	Attachment B	✓	
§270.14(b)(4)	§264.14(a-c)	Security procedures and equipment	Attachment C		✓
§270.14(b)(5)	§264.15(a-d)	General inspection requirements	Attachment D		✓
	§264.174	Container inspections	Attachment D		✓
§270.23(a)(2)	§264.602	Miscellaneous units inspections	Attachment D		✓
§270.14(b)(6)		Request for waiver from preparedness and prevention requirements of Part 264 Subpart C	NA		
§270.14(b)(7)	264 Subpart D	Contingency plan requirements	Attachment F		✓
	§264.51	Contingency plan design and implementation	Attachment F		✓
	§264.52 (a) & (c-f)	Contingency plan content	Attachment F		✓
	§264.53	Contingency plan copies	Attachment F		✓
	§264.54	Contingency plan amendment	Attachment F		✓
	§264.55	Emergency coordinator	Attachment F		✓
	§264.56	Emergency procedures	Attachment F		✓
§270.14(b)(8)		Description of procedures, structures or equipment for:	Attachment E		✓
§270.14(b)(8)(I)		Prevention of hazards in unloading operations (e.g., ramps and special forklifts)	Attachment E		✓
§270.14(b)(8)(ii)		Runoff or flood prevention (e.g., berms, trenches, and dikes)	Attachment E		✓
§270.14(b)(8)(iii)		Prevention of contamination of water supplies	Attachment E		✓
§270.14(b)(8)(iv)		Mitigation of effects of equipment failure and power outages	Attachment E		✓
§270.14(b)(8)(v)		Prevention of undue exposure of personnel (e.g., personal protective equipment)	Attachment E		✓
§270.14(b)(8)(vi) §270.23(a)(2)	§264.601	Prevention of releases to the atmosphere	Module II Module IV Attachment M2 Attachment N		✓

Pre-decisional Draft

	264 Subpart C	Preparedness and Prevention	Attachment E		✓
	§264.31	Design and operation of facility	Attachment E		✓
	§264.32	Required equipment	Attachment E Attachment F		✓
	§264.33	Testing and maintenance of equipment	Attachment D		✓
	§264.34	Access to communication/alarm system	Attachment E		✓
	§264.35	Required aisle space	Attachment E		✓
	§264.37	Arrangements with local authorities	Attachment F		✓
§270.14(b)(9)	§264.17(a-c)	Prevention of accidental ignition or reaction of ignitable, reactive, or incompatible wastes	Attachment E		✓
§270.14(b)(10)		Traffic pattern, volume, and controls, for example: Identification of turn lanes Identification of traffic/stacking lanes, if appropriate Description of access road surface Description of access road load-bearing capacity Identification of traffic controls	Attachment G		✓
§270.14(b)(11)(i) and (ii)	§264.18(a)	Seismic standard applicability and requirements	Part B, Rev. 6 Chapter B		✓
§270.14(b)(11)(iii-v)	§264.18(b)	100-year flood plain standard	Part B, Rev. 6 Chapter B		✓
	§264.18(c)	Other location standards	Part B, Rev. 6 Chapter B		✓
§270.14(b)(12)	§264.16(a-e)	Personnel training program	Permit Module II Attachment H		✓
§270.14(b)(13)	264 Subpart G	Closure and post-closure plans	Attachment I & J		✓
§270.14(b)(13)	§264.111	Closure performance standard	Attachment I		✓
§270.14(b)(13)	§264.112(a), (b)	Written content of closure plan	Attachment I		✓
§270.14(b)(13)	§264.112(c)	Amendment of closure plan	Attachment I		✓
§270.14(b)(13)	§264.112(d)	Notification of partial and final closure	Attachment I		✓
§270.14(b)(13)	§264.112(e)	Removal of wastes and decontamination/dismantling of equipment	Attachment I		✓
§270.14(b)(13)	§264.113	Time allowed for closure	Attachment I		✓
§270.14(b)(13)	§264.114	Disposal/decontamination	Attachment I		✓
§270.14(b)(13)	§264.115	Certification of closure	Attachment I		✓
§270.14(b)(13)	§264.116	Survey plat	Attachment I		✓
§270.14(b)(13)	§264.117	Post-closure care and use of property	Attachment J		✓
§270.14(b)(13)	§264.118	Post-closure plan; amendment of plan	Attachment J		✓
§270.14(b)(13)	§264.178	Closure/containers	Attachment I		✓

Pre-decisional Draft

§270.14(b)(13)	§264.601	Environmental performance standards-Miscellaneous units	Attachment I		✓
§270.14(b)(13)	§264.603	Post-closure care	Attachment I		✓
§270.14(b)(14)	§264.119	Post-closure notices	Attachment J		✓
§270.14(b)(15)	§264.142	Closure cost estimate	NA		✓
	§264.143	Financial assurance	NA		✓
§270.14(b)(16)	§264.144	Post-closure cost estimate	NA		✓
	§264.145	Post-closure care financial assurance	NA		✓
§270.14(b)(17)	§264.147	Liability insurance	NA		✓
§270.14(b)(18)	§264.149-150	Proof of financial coverage	NA		✓
§270.14(b)(19)(l), (vi), (vii), and (x)		Topographic map requirements Map scale and date Map orientation Legal boundaries Buildings Treatment, storage, and disposal operations Run-on/run-off control systems Fire control facilities	Attachment O Part A Part B, Rev. 6 Chapter B, E		✓
§270.14(b)(19)(ii)	§264.18(b)	100-year floodplain	Attachment O Part A Part B, Rev. 6 Chapter B, E		✓
§270.14(b)(19)(iii)		Surface waters	Attachment O Part A Part B, Rev. 6 Chapter B, E		✓
§270.14(b)(19)(iv)		Surrounding Land use	Attachment O Part A Part B, Rev. 6 Chapter B, E		✓
§270.14(b)(19)(v)		Wind rose	Attachment O Part A Part B, Rev. 6 Chapter B, E		✓
§270.14(b)(19)(viii)	§264.14(b)	Access controls	Attachment O Part A Part B, Rev. 6 Chapter B, E, F		✓
§270.14(b)(19)(ix)		Injection and withdrawal wells	Attachment O Part A Part B, Rev. 6 Chapter B, E, F		✓
§270.14(b)(19)(xi)		Drainage on flood control barriers	Part B, Rev. 6 Chapter B, E, F		✓
§270.14(b)(19)(xii)		Location of operational units	Part B, Rev. 6 Chapter B		✓
§270.14(b)(20)		Other federal laws Wild and Scenic Rivers Act National Historic Preservation Act Endangered Species Act Coastal Zone Management Act Fish and Wildlife Coordination Act Executive Orders	Part B, Rev. 6 Chapter K		✓

Pre-decisional Draft

§270.15	§264 Subpart I	Containers	Attachment M1		✓
	§264.171	Condition of containers	Attachment M1		✓
	§264.172	Compatibility of waste with containers	Attachment M1		✓
	§264.173	Management of containers	Attachment M1		✓
	§264.174	Inspections	Attachment D Attachment M1		✓
§270.15(a)	§264.175	Containment systems	Attachment M1		✓
§270.15(c)	§264.176	Special requirements for ignitable or reactive waste	Attachment E Permit Module II		✓
§270.15(d)	§264.177	Special requirements for incompatible wastes	Attachment E Permit Module II		✓
	§264.178	Closure	Attachment I		✓
§270.15(e)	§264.179	Air emission standards	Attachment E Attachment N		✓
§270.23	264 Subpart X	Miscellaneous units	Attachment M2		✓
§270.23(a)	§264.601	Detailed unit description	Attachment M2		✓
§270.23(b)	§264.601	Hydrologic, geologic, and meteorologic assessments	Permit Module IV Attachment M2		✓
§270.23(c)	§264.601	Potential exposure pathways	Permit Module IV Attachment M2 Attachment N		✓
§270.23(d)		Demonstration of treatment effectiveness	Permit Module IV Attachment M2 Attachment N		✓
	§264.602	Monitoring, analysis, inspection, response, reporting, and corrective action	Permit Module IV Attachment M2 Attachment N		✓
	§264.603	Post-closure care	Attachment J Attachment J1		✓
	264 Subpart E	Manifest system, record keeping, and reporting	Permit Module I Permit Module II Permit Module IV Attachment B		✓

Pre-decisional Draft

**Attachment A
Table of Changes – Item 3**

Table of Changes – Item 3

Table of Changes – Item 3	
Affected Permit Section	List of Changes
Attachment B3, Section B3-13	<ul style="list-style-type: none"> • Delete "The Permittees shall require participating sites reconcile and correct nonconforming items as appropriate in accordance with the Permittees' Quality Assurance Program Description (QAPD)." • Add "Any waste container for which a nonconformance report (NCR) has been written will not be shipped to the WIPP facility unless the condition that led to the NCR for that container has been dispositioned in accordance with the Permittees' Quality Assurance Program Description (QAPD)." • Add "For any container selected for confirmation in accordance with Permit Attachment B7, the Permittees will examine respective NCR documentation to verify NCRs have been dispositioned." • Delete "nonconformance report" and replace "NCR" • Delete "useability" and replace with "usability of" • Delete "five (5)" and replace with "seven" calendar days • Editorial Change: Change "thirty (30)" to "30"
Attachment B7, Section B7-1a	<ul style="list-style-type: none"> • Add "For any container selected for confirmation in accordance with the process above, the Permittees will examine respective NCR documentation to verify NCRs have been dispositioned as required by Permit Attachment B3, Section B3-13."
Attachment B6, Table B6-1	<ul style="list-style-type: none"> • Revised B6-1 Waste Analysis (WAP) Checklist to be consistent with WAP changes described above.

Pre-decisional Draft

Attachment B
Proposed Revised Permit Text – Item 3

Pre-decisional Draft

Proposed Revised Permit Text – Item 3:

Pre-decisional Draft

Item - 3. NCR

B3-13 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 items shall be identified by marking, tagging, or segregating, and the affected generator/storage site(s) notified. ~~The Permittees shall require participating sites reconcile and correct nonconforming items as appropriate in accordance with the Permittees' Quality Assurance Program Description (QAPD).~~ Any waste container for which a nonconformance report (NCR) has been written will not be shipped to the WIPP facility unless the condition that led to the NCR for that container has been dispositioned in accordance with the Permittees' Quality Assurance Program Document (QAPD). Disposition of nonconforming items shall be identified and documented. The QAPjPs shall identify the person(s) responsible for evaluating and dispositioning nonconforming items and shall include referenced procedures for handling them. For any container selected for confirmation in accordance with Permit Attachment B7, the Permittees will examine respective NCR documentation to verify NCRs have been dispositioned.

Management at all levels shall foster a "no-fault" attitude to encourage the identification of nonconforming items and processes. Nonconformances may be detected and identified by anyone performing WAP activities, including:

~~A nonconformance report~~ NCR shall be prepared for each nonconformance identified. Each ~~nonconformance report~~ NCR shall be initiated by the individual(s) identifying the nonconformance. The ~~nonconformance report~~ NCR shall then be processed by knowledgeable and appropriate personnel. For this purpose, a ~~nonconformance report~~ NCR including, or referencing as appropriate, results of laboratory analysis, QC tests, audit reports, internal memoranda, or letters shall be prepared. The ~~nonconformance report~~ NCR must provide the following information:

- An indication of the potential ramifications and overall ~~useability~~ usability of the data, if applicable

The Permittees shall require the Site Project Manager to oversee the ~~nonconformance report~~ NCR process and be responsible for developing a plan to identify and track all nonconformances and report this information to the Permittees. The Site Project Manager is also responsible for notifying project personnel of the nonconformance and verifying completion of the corrective action for nonconformances.

Nonconformance to DQOs

For any non-administrative nonconformance related to applicable requirements specified in this WAP which are first identified at the Site Project Manager signature release level (i.e., a failure to meet a data quality objective DQO), the Permittees shall receive written notification within ~~five (5)~~ seven calendar days of identification and shall also receive a ~~nonconformance report~~ NCR within ~~thirty (30)~~ calendar days of identification of the incident. The Permittees shall require the generator/storage site to implement a corrective action which remedies the nonconformance prior to management, storage, or disposal of the waste at WIPP. The Permittees shall send NMED a monthly summary of nonconformances identified during the previous month, indicating the number of nonconformances received and the generator/storage

Pre-decisional Draft

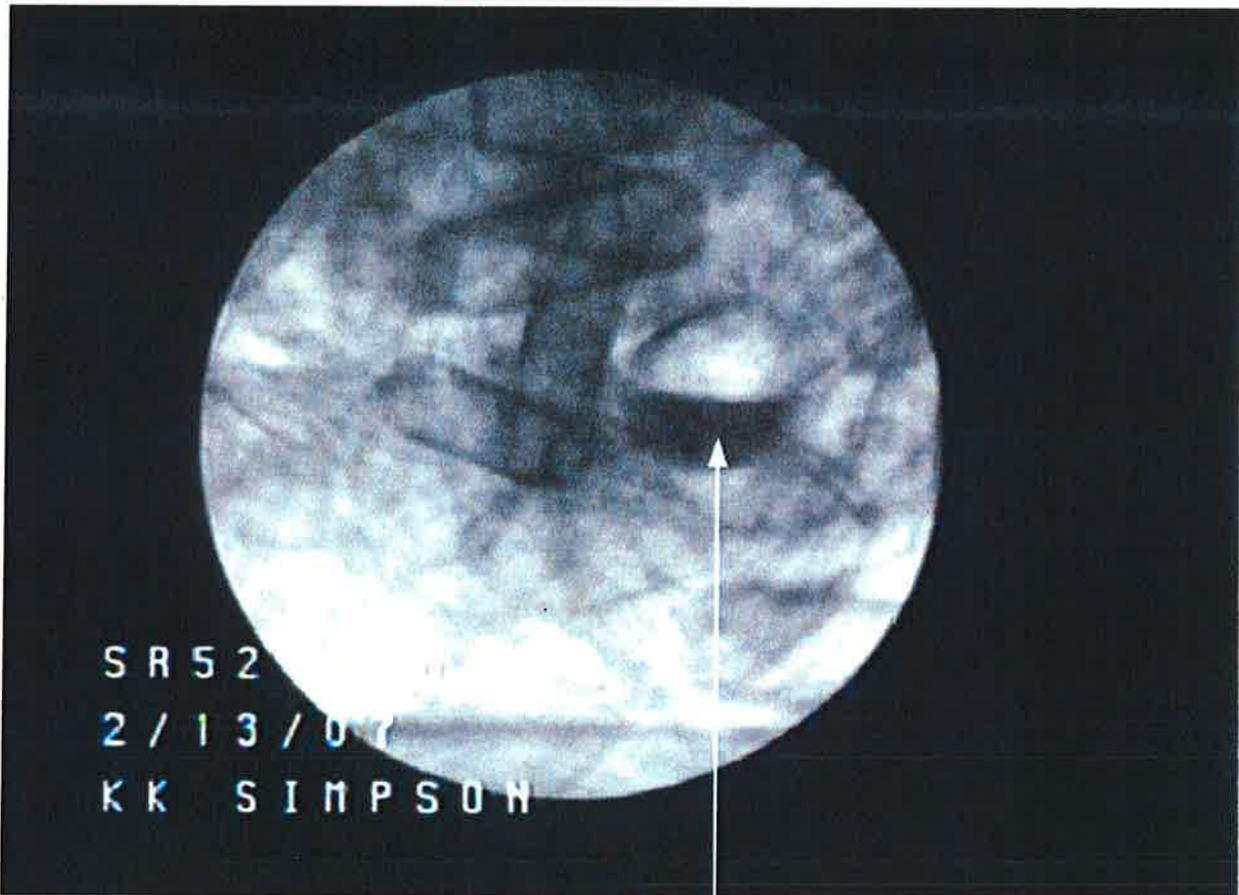
sites responsible.

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

For any container selected for confirmation in accordance with the process above, the Permittees will examine respective NCR documentation to verify NCRs have been dispositioned as required by Permit Attachment B3, Section B3-13.

Pre-decisional Draft

Attachment C
Figures, Drawings, and/or Supplemental Information



Liquid within internal container
(approx 45 mL)

Pre-decisional Draft

**Attachment D
B6 Checklists**

Table B6-1 Waste Analysis Plan (WAP) Checklist

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**Waste Analysis Plan (WAP)
 General Checklist for use at
 DOE's Generator/Storage Sites**

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist ¹	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
WASTE STREAM IDENTIFICATION						
1	Does the generator/storage site define "waste stream" as waste material generated from a single process or from an activity that is similar in material, physical form, and hazardous constituents? (Attachment B Section B-0a)					
2	Are procedures in place to ensure that the generator/storage site assigns one of the Summary Category Groups (S3000-homogeneous solids, S4000-soils/gravel, S5000-debris waste) to each waste stream? (Section B-1b)					
3	Are procedures in place to ensure that the generator/storage site assigns Waste Matrix Code Groups (e.g., solidified inorganics, solidified organics, salt waste, soils, combustible waste, filters, graphite, heterogeneous debris waste, inorganic nonmetal waste, lead/cadmium metal, uncategorized metal) to each waste stream? (Section B-0a)					
4	Are procedures in place to ensure that the generator/storage site assigns a Waste Stream WIPP Identifier (ID) to each waste stream? (Section B3-12b(1))					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist ¹	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
4a	<p>Are procedures in place for generator/storage sites to submit an AK Sufficiency Determination (Determination Request) to the Permittees to meet all or part of the waste characterization requirements including:</p> <ul style="list-style-type: none"> All information specified in Permit Attachment B4, Section B4-3d Identification of relevant hazardous constituents, and correctly identifies 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 includes all the identification of waste material parameter weights by percentage of the material in the waste stream, and determinations are technically correct All prohibited items specified in the TSDF-WAC should be addressed, and conclusions drawn are 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. <p>(Section B-0b)</p>					
4b	<p>If a generator/storage site does not submit a Determination Request or if the Determination Request is not approved, are procedures in place for the generator/storage site to perform radiography or VE on 100% of the waste 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?</p> <p>(Section B-0b)</p>					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist 1	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
4c	Are procedures in place to ensure that the generator/storage sites complete a Waste Stream Profile Form (WSPF) and Characterization Information Summary (CIS) as specified in Permit Attachment B3, Sections B3-12b(1) and B3-12b(2)? (Section B-0c)					
5	Are procedures in place to ensure that the generator/storage site divides waste streams into waste stream lots if all of the waste within a waste stream is not accessible for sampling and analysis, as required, at one time? If so, is the division of waste streams into waste stream lots based on staging, transportation and handling issues? (Section B-1a)					
6	Are procedures in place to ensure that the generator/storage site assigns EPA hazardous waste numbers associated with the waste? If so, do these assigned EPA hazardous waste numbers correspond to the permitted EPA hazardous waste numbers in Table B-9? Are there any assigned EPA hazardous waste numbers that are not permitted EPA hazardous waste numbers on the Table B-9? If so, did the generator/storage site reject the waste for shipment to and disposal at WIPP? Did the generator assign a state hazardous waste codes or numbers? If so, is it assigned to waste that is permitted at WIPP? (Section B-1b)					
7	Are procedures in place to ensure that Summary Category Groups are defined as follows: S3000- Homogeneous solids are solid material, inorganic process residues, inorganic sludges, salt waste, and pyrochemical salt waste excluding soils, that do not meet NMED criteria for classification as debris and are at least 50 percent by volume homogeneous solids or comprise the majority of the waste stream S4000- Waste streams that are at least 50 percent by volume soil/gravel, or comprise the majority of the waste stream S5000- Waste streams that are at least 50 percent volume materials that meet the NMED criteria for debris, or comprise the majority matrix of materials. The criteria for debris are solid materials intended for disposal that exceed 2.36 inch particle size and is a manufactured object, plant or animal matter, or natural geologic material. Particles smaller than 2.36 inches in size may be considered debris if the debris is a manufactured object and if it is not a particle of S3000 or S4000 material. (Section B-0a)					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist ¹	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
8	Does the generator/storage facility have procedures in place to ensure that the following waste characterization parameters will be obtained: <ul style="list-style-type: none"> Determination whether TRU mixed waste streams comply with the applicable provisions of the TSDF-WAC Determination whether TRU mixed wastes exhibit a hazardous characteristic per 20.4.1.200 NMAC (incorporating 40 CFR 261 Subpart C) Determination whether TRU mixed wastes are listed per 20.4.1.200 NMAC (incorporating 40 CFR 261 Subpart D) Estimation of waste material parameter weights (Section B-2)					
9	Are procedures in place to ensure that waste streams identified to contain incompatible materials or materials incompatible with waste containers cannot be shipped unless treated to remove the incompatibility? (Section B-1c)					
10	Are procedures in place to ensure that the generator/storage site uses acceptable knowledge and, as necessary, headspace-gas sampling and analysis, radiography, (visual examination), and homogeneous waste sampling and analysis as specified in Table B-5? (Section B-3)					
UNACCEPTABLE WASTE						
12	Are procedures in place to ensure that the generator/storage site ensures, through administrative and operational procedures and characterization techniques, that waste containers do not include the following unacceptable waste: <ul style="list-style-type: none"> liquid as follows: waste (waste shall contain as little residual liquid as is reasonably achievable by pouring, pumping and/or aspirating, and internal containers shall contain less than 1 inch or 2.5 centimeters of liquid in the bottom of the container. Total residual liquid in any payload container may not exceed 1 percent volume of that container. Payload containers with U134 waste shall have no detectable liquid). <ul style="list-style-type: none"> Waste containers shall contain no more than 1 percent by volume observable liquid Internal containers with more than 60 milliliters or 3 percent by volume observable liquid, whichever is greater, are prohibited if AK states the liquid could exhibit the characteristic of ignitability, corrosivity, and/or reactivity (EPA Hazardous Waste numbers D001, D002, D003) Waste containers with Hazardous Waste number U134 assigned shall have no observable liquid Overpacking a waste container or redistributing untreated liquid within 					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist ¹	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
	<p>the container shall not be used to meet the liquid volume limit</p> <ul style="list-style-type: none"> non-radionuclide pyrophoric materials hazardous wastes not occurring as co-contaminants with TRU wastes (non-mixed hazardous wastes) wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes wastes containing explosives or compressed gases (continued below) 					
12a	<ul style="list-style-type: none"> wastes with polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization wastes exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, of D003) waste that has ever been managed as high-level waste and waste from tanks specified in Table B-8, unless specifically approved through a Class 3 permit modification any waste container from a waste stream (or waste stream lot) which has not undergone either radiographic or visual examination of a statistically representative subpopulation of the wastes stream in each shipment as described in Permit Attachment B7 any waste container from a waste stream which has not been preceded by an appropriate, certified Waste Stream Profile Form (see Section B-1d) <p>(Section B-1c)</p>					
WASTE ACCEPTANCE CONTROL						
14	<p>Are procedures in place to ensure that the generator/storage site uses a Waste Stream Profile Form (WSPF) which includes, at a minimum, the information indicated on the attached WSPF found in Figure B-1 and a Characterization Information Summary (CIS) prior to waste disposal at the WIPP?</p> <p>(Section B-1d)</p>					
16	<p>Are procedures in place to ensure that additional WSPFs are provided to WIPP and NMED for waste streams or portions of waste streams that are reclassified based upon waste characterization information?</p> <p>(Section B-1d)</p>					
LABORATORY QUALIFICATION						
17	<p>Are procedures in place to ensure that the generator/storage site conduct analyses</p>					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist ¹	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
	using laboratories that are qualified through participation in the Performance Demonstration Program (PDP) for headspace gas sampling and analysis, and PDP homogeneous waste sampling and analysis? (Section B-3a(3))					
18	Are procedures in place to ensure that the generator/storage sites conduct analyses using laboratories that implement the analytical methods through laboratory-documented standard operating procedures (SOPs) that ensure that analytical QAOs are met? (Section B-3a(3))					
19	Are procedures in place to ensure that documented laboratory QA/QC programs include the following: <ul style="list-style-type: none"> • Facility organization • List of equipment/instrumentation • Operating procedures • Laboratory QA/QC procedures • Quality assurance review • Laboratory records management (Section B-4a(4))					
GENERAL SAMPLING AND ANALYTICAL REQUIREMENTS						
20	Are procedures in place to ensure that headspace gas sampling and analysis shall be used to: <ul style="list-style-type: none"> • Determine the types and concentrations of VOCs in the void volume of waste containers • VOC constituents shall be compared to those assigned by Acceptable Knowledge (Section B-3a(1))					
22	Are procedures in place to ensure that compounds not on the list of target analytes are reported as tentatively identified compounds (TICs) and that the TIC will be added to the target analyte list if it appears in the 20.4.1.200 NMAC (incorporating 40 CFR 261) Appendix VIII list and if they are reported in 25% of the waste containers sampled from a given waste stream? (Section B-3a(1))					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist ¹	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
23	Are procedures in place to ensure that a randomly selected set of samples will be collected through core sampling or other EPA approved sampling from the population of waste containers for homogeneous and soil/gravel waste streams? Are procedures in place that a sufficient number of samples are collected to evaluate the toxicity characteristic of a waste stream at a 90 percent Upper Confidence limit as specified in Attachment B2? (Section B-3a(2))					
24	Are procedures in place to ensure that total analyses or TCLP of VOCs, SVOCs, and RCRA-regulated metals are performed on all core samples to determine if the waste exhibits a toxicity characteristic? (Section B-3a(2))					
25	Are procedures in place to ensure that Acceptable Knowledge is used in waste characterization activities to delineate TRU mixed waste streams, to assess whether TRU mixed wastes comply with the TSDf-WAC, to assess whether TRU mixed waste exhibits a hazardous characteristic (20.4.1.200 NMAC, incorporating 40 CFR 261 Subpart C), and to assess whether TRU wastes are listed (20.4.1.200 NMAC, incorporating 40 CFR 261 Subpart D), and to estimate waste material parameter weights? (Section B-3b)					
26	Are procedures in place to ensure that radiography and/or visual examination are used as necessary to: <ul style="list-style-type: none"> • Examine a waste container to determine the physical form • Identify <u>observable liquids in excess of TSDf WAC limits</u> and containerized gases • Verify the physical form matches the waste stream description (Section B-3c)					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist ¹	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
27	<p>Are procedures in place to ensure that the following characterization activities shall occur for newly generated wastes:</p> <ul style="list-style-type: none"> • Acceptable Knowledge for all wastes, with sampling and analysis as necessary to augment AK including; <ul style="list-style-type: none"> - Either visual examination during packaging or radiography (or VE in lieu of radiography) after packaging for all waste containers, ensuring this occurs prior to any treatment designed to supercompact waste - Headspace gas analysis for randomly selected containers, except for qualifying waste containers belonging to LANL sealed sources waste streams - Total VOC, SVOC, and Metals analyses for a selected number of homogeneous solids and soil/gravel waste containers as specified in Attachment B2 - Evaluation of any TICs found in headspace gas and totals analyses <p>(Section B-3d(1))</p>					
27a	<p>Are procedures in place to ensure that the visual examination during packaging for all waste containers includes the documentation of packaging configuration, type and number of filters, and rigid liner vent hole presence and diameter necessary to determine the appropriate DAC in accordance with Permit Attachment B1, Section B1-1?</p> <p>(Section B-3d(1))</p>					
28	<p>Are procedures in place to ensure that the following characterization activities shall occur for retrievably stored wastes:</p> <ul style="list-style-type: none"> • Acceptable Knowledge for all wastes, with sampling and analysis as necessary to augment AK including; <ul style="list-style-type: none"> - Visual examination or radiography for all waste containers - Headspace gas analysis for randomly selected containers except for qualifying waste containers belonging to LANL sealed sources waste streams - Total VOC, SVOC, and Metals analyses for a statistically selected number of homogeneous solids and soil/gravel waste containers as specified in Attachment B2 - Evaluation of any TICs found in headspace gas and totals analyses <p>(Section B-3d(2))</p>					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist ¹	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
DATA GENERATION, VERIFICATION, VALIDATION, DOCUMENTATION, AND QUALITY ASSURANCE						
30	<p>Are procedures in place to ensure that the following Data Quality Objectives are met:</p> <ul style="list-style-type: none"> Use Acceptable Knowledge to delineate TRU mixed waste streams, assess whether TRU mixed wastes comply with the applicable requirements of the TSDF-WAC, assess whether TRU mixed wastes exhibit a hazardous characteristic, assess whether TRU mixed wastes are listed and to estimate waste material parameter weights Use Headspace gas sampling and analysis, as necessary, to identify and quantify VOCs in waste containers of TRU mixed waste to resolve the assignment of EPA hHazardous wWaste nNumbers Perform totals analyses of homogeneous solids and soils/gravel wastes to establish if the waste is hazardous based on the toxicity characteristics levels in 20.4.1.200 NMAC through a comparison of the upper confidence limits (UCL₉₅) of the mean concentrations to resolve the assignment of hazardous waste numbers Use radiography or visual examination to determine physical waste form, the absence of prohibited items, and additional waste characterization techniques that may be used based on Summary Category Groups <p>(Section B-4a(1))</p>					
31	<p>Are procedures in place to ensure that the following Quality Assurance Objectives are adequately defined and assessed for each characterization method:</p> <ul style="list-style-type: none"> Precision as a measure of the mutual agreement among multiple measurements. Accuracy as the degree of agreement between a measurement result and a true or known value. Completeness is a measure of the amount of valid data obtained from a method compared to the total amount of data obtained that is expressed as a percentage. Comparability is the degree to which one data set can be compared to another data set. Representativeness as an expression of the degree to which data represent characteristics of a population. <p>(Section B-4a(2))</p>					
32	<p>With respect to data generation, are procedures in place to ensure that the generator/storage site's waste characterization program meets the following general</p>					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist ¹	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
	requirements: <ul style="list-style-type: none"> Analytical data packages and batch data reports must be reported accurately in a pre-approved format, must be maintained in permanent files, and must be traceable? All data must receive a technical review by another qualified analyst or the technical supervisor, and the laboratory QA officer? (Section B3-10a)					
33	Are procedures in place to ensure that the generator/storage site performs validation of waste characterization data for each waste container? (Section B-4)					
34	Are procedures in place to ensure that the generator/storage site has a pre-approved format for reporting waste characterization data? (Section B-4a(4))					
35	Are procedures in place to ensure that the generator/storage site prepares analytical, testing, and sampling batch data reports to meet the requirements of their own site-specific QAPjP and/or SOPs? (Section B-4a(4))					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist ¹	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
36	<p>Are procedures in place to ensure that all raw data is collected and managed at the data generation level in accordance with the following criteria:</p> <ul style="list-style-type: none"> All raw data shall be signed and dated in reproducible ink by the individual collecting the data, or signed and dated using electronic signatures All data shall be recorded clearly, legibly, and accurately in field and laboratory records and include all applicable sample identification numbers All changes to original data shall be lined out, initialed, and dated by the individual making the change. Original data may not be obliterated or otherwise be made unreadable All data shall be transferred and reduced from field and laboratory records completely and accurately All field and laboratory records shall be maintained as specified in Table B-6 of Attachment B Data shall be organized into standard reporting formats for reporting purposes. All electronic and video data must be stored to ensure that waste container, sample and QC data are readily retrievable <p>(Section B3-10a)</p>					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist ¹	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
37	<p>Are procedures in place to ensure that 100 % of batch data reports are subject to independent technical review by an individual qualified to review the data. The reviewer shall release the data through signature with an associated review checklist prior to characterization of the associated waste and shipment to the WIPP. The review shall ensure the following, as applicable:</p> <ul style="list-style-type: none"> Data generation and reduction were conducted according to the methods used and reported in the proper units and significant figures Calculations have been verified by a valid calculation program, a spot check of verified calculation programs, and/or a 100 percent check of all hand calculations The data have been reviewed for transcription errors The testing, sampling, and analytical QA documentation for BDRs is complete and includes, as applicable, raw data, DAC and equilibrium calculations and times, calculation records, chain of custody forms, calibration records, QC sample results and copies or originals of gas canister sample tags. All QC sample results are within established control limits, and if not, the data has been appropriately qualified Reporting flags were assigned correctly Sample holding times and preservation requirements were met, or exceptions documented Radiography tapes are reviewed on a waste container basis at a minimum of once per testing batch or once per day of operation, whichever is less frequent. The radiography tape will be reviewed against the data on the radiography form to ensure that data are complete and correct Field sampling records are complete QAOs have been met <p>(Section B3-10a(1))</p>					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist ¹	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
40	<p>Are procedures in place to ensure that 100 percent of all batch data reports receive a Site Project Manager signature release with an associated review checklist prior to characterization of the associated waste and shipment to the WIPP. This release shall ensure the following:</p> <ul style="list-style-type: none"> The Site Project Manager or designee shall determine the validity of the drum age criteria (DAC) assignment made at the data generation level based upon an assessment of the data collection and evaluation necessary to make the assignment. Testing batch QC checks were properly performed. Radiography data are complete and acceptable based on evidence of videotape review of one waste container per day or once per testing batch, whichever is less frequent Sampling batch QC checks were properly performed, and meet the established QAOs and are within established data useability criteria Analytical batch QC checks were properly performed and meet the established QAOs and are within established data useability criteria Online batch QC checks were properly performed and meet the established QAOs and are within established data useability criteria Proper procedures were followed to ensure representative samples of headspace gas and homogeneous solids and soil/gravel were taken Data generation level independent technical review, validation, and verification have been performed as evidenced by the completed review checklists and appropriate signature releases. Batch Data Batch Data Reports are complete and data properly reported Verify that data are within established data assessment criteria and meet all applicable QAOs <p>(Section B3-10(b)(1))</p>					
42	<p>Are procedures in place to ensure that a repeat of the data review process at the data generation level will be performed on a minimum of one randomly chosen waste container every quarter to determine if the verification and validation is performed according to documented procedures?</p> <p>(Section B3-10b)</p>					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist ¹	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
43	Are procedures in place and checklists are available to prepare a Site Project Manager (SPM) Summary and a Data Validation Summary (the summaries may be in the same document)? The SPM Summary includes a validation checklist for each batch that is of sufficient detail to document all aspects of a batch data report that could affect data quality. The Data Validation Summary must identify each Batch Data Report reviewed, describe how the validation was performed, identify all problems, and identify all acceptable and unacceptable data. Summaries must include release signatures. (Section B3-10b(2))					
44	Are procedures in place to ensure that non-administrative, WAP-related nonconformances first identified at the site project manager level are reported to the Permittees within five-seven (57) calendar days of identification, that nonconformance reports are prepared within thirty (30) calendar days, and that corrective action is implemented prior to waste shipment? (Section B3-13)					
45	Are procedures in place to ensure that <u>any waste container for which a nonconformance report has been written will not be shipped to the WIPP facility unless the condition areis</u> appropriately identified, reconciled, corrected, and documented? Are nonconformance reports prepared for nonconformances identified? Are nonconformances identified and tracked, and does the Site Project Manager oversee the nonconformance report process? (Section B3-13)					
SAMPLE CONTROL						
46	Are procedures in place to ensure that the site's sample handling and control program includes the following: <ul style="list-style-type: none"> • Field documentation of samples including point of origin, date of sample, container identification, sample type, analysis requested, and chain-of-custody (COC) number? • Proper labeling and/or tagging including proper sample numbering, sample identification, sample date, sampling conditions, and analysis requested? • COC record including name of sample relinquisher, sample receiver, and date and time of sample transfer? and • Proper sample handling and preservation? (Section B-4a(3))					
47	Are procedures in place to ensure that the site's QAPjP or site-specific procedures includes COC forms to control the sample from the point of origin to the final analysis result reporting?					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist 1	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
	(Section B-4a(3))					
DATA TRANSMITTAL						
48	Are procedures in place to ensure that the generator/storage site transmits data by hard copy or electronic copy from the data generation level to the site project level? If electronic, does the generator/site have a hard copy available on demand? (Section B-4a(6))					
50	Are procedures in place to ensure that the generator/storage site inputs the data into the WWIS manually or electronically? (Section B-4a(6))					
51	Are procedures in place to ensure that the generator/storage site enters the data into the WWIS in the exact format required by the database? (Section B-4a(6))					
51a	Are procedures in place to ensure that 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 in the WWIS? (Section B3-12b(4))					
52	Are procedures in place to ensure all of the data presented on Table B-7 of the Permit is transmitted to the WWIS? (Table B-7)					
RECORDS AND RECORD MANAGEMENT						
55	Are procedures in place to ensure that the generator/storage site's hard copy and/or electronic data reports follow the Permittees format requirements? (Section B-4a(4))					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist ¹	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
56	<p>Are procedures in place to ensure that hard copy or electronic Waste Stream Profile Form will include the following:</p> <ul style="list-style-type: none"> • Generator/storage site name • Generator/storage site EPA ID • Date of audit report approval by NMED (if obtained) • Original generator of waste stream • Whether waste is Contact-Handled or Remote-Handled • Waste Stream WIPP Identification Number • Summary Category Group • Waste Matrix Code Group • Waste Material Parameter Weight Estimates per unit of waste • Waste stream name • A description of the waste stream • Applicable EPA hazardous waste codes numbers • Applicable TRUCON codes • A listing of acceptable knowledge documentation used to identify the waste stream • The waste characterization procedures used and the reference and date of the procedure • Certification signature of Site Project Manager, name, title, and date signed <p>(Section B3-12b(1))</p>					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist ¹	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
56a	<p>Are procedures in place to ensure that hard copy or electronic Characterization Information Summary will include the following:</p> <ul style="list-style-type: none"> Data reconciliation with DQOs Headspace gas summary data listing the identification numbers of samples used in the statistical reduction, the maximum, mean, standard deviation, UCL₉₀, RTL, and associated EPA hazardous waste numbers that must be applied to the waste stream. Total metal, VOC, and SVOC analytical results for homogeneous solids and soil/gravel (if applicable). TIC listing and evaluation. Radiography and visual examination summary to document that all prohibited items are absent in the waste (if applicable). A complete listing of all container identification numbers used to generate the Waste Stream Profile Form, cross-referenced to each Batch Data Report. Complete AK summary, including stream name and number, point of generation, waste stream volume (current and projected), generation dates, TRUCON codes, Summary Category Group, Waste Matrix Code(s) and Waste Matrix Code Group, other TWBIR information, waste stream description, areas of operation, generating processes, RCRA determinations, radionuclide information, all references used to generate the AK summary, and any other information required by Permit Attachment B4, Section B4-2b. Method for determining Waste Material Parameter Weights per unit of waste. 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. <u>A justification for the selection of radiography and/or VE as an appropriate method of characterizing the waste.</u> <p>(Section B3-12b(2))</p>					
56b	<p>Are procedures in place to assure that ongoing container characterization results are cross referenced to Batch Data Reports?</p> <p>(Section B3-12b)</p>					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist ¹	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
58	Are procedures in place to ensure that project level reports are compiled into Characterization Information Summaries? (Section B3-12b)					
59	Are procedures in place to ensure that the generator/storage site uses forms for data reporting that are pre-approved forms in site-specific documentation? (Section B3-12)					
60	Are procedures in place to ensure that the generator/storage site's site project manager submits to the WIPP facility a summary of the waste stream information and reconciliation with data quality objectives (DQOs) once a waste stream is characterized? (Section B-4a(6))					
61	Are procedures in place to ensure that the generator/storage site project office completes a WSPF based on the Batch Data Reports? (B3-12b)					
62	Are procedures in place to ensure that the generator/storage Site Project Manager submits the WSPF to the Permittees for approval along with the accompanying Characterization Information Summary for that waste stream? (Section B-4a(6))					
63	Are procedures in place to ensure that the generator/storage site maintains records related to waste characterization sampling and analysis activities in the testing, sampling or analytical facilities files, or site project files for those facilities located on-site? (Section B-4a(7))					
64	Are procedures in place to ensure that the appropriate documented training and indoctrination is performed for all individuals and that procedures are documented in site specific QAPJPs and procedures? (Section B3-14)					
65	Are procedures in place to ensure that the generator/storage site requires contract waste analytical facilities to forward testing, sampling and analytical records along with testing, sampling and analytical batch data reports to the site project office for inclusion in the sites project files? (Section B-4a(7))					
66	Are procedures in place to ensure that the generator/storage site has an appropriate records inventory and disposition schedule (RIDS) or equivalent that was prepared					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist ¹	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
	and approved by appropriate site personnel? (Section B-4a(7))					
67	Are procedures in place to ensure that the generator/storage site maintains all records relevant to an enforcement action, regardless of disposition, until they are no longer needed for enforcement action, and then dispositioned per the approved RIDS? (Section B-4a(7))					
68	Are procedures in place to ensure that the generator/storage site maintains records that are designated as Lifetime Records for the life of the waste characterization program plus six years or that the records have been transferred to the WIPP Records Archive facility? Lifetime Records include: <ul style="list-style-type: none"> • Field sampling data forms, • Field and laboratory COC forms, • Test facility and laboratory Batch Data Reports, • Waste Stream Characterization Package, • Sampling plans, • Data reduction, validation, and reporting documentation, • Acceptable knowledge documentation, • WSPF and Characterization Information Summary (Section B-4a(7), Table B-6)					
69	Are procedures in place to ensure that the generator/storage site maintains records that are designated as Non-Permanent Records for ten years from the date of record generation, and then dispositioned according per the approved RIDS or transferred					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist ¹	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
	to the WIPP Records Archive facility? Non-Permanent Records include: <ul style="list-style-type: none"> • Nonconformance documentation, • Variance documentation, • Assessment documentation, • Gas canister tags, • Methods performance documentation, • PDP documentation, • Sampling equipment certifications, • Calculations and related software documentation, • Training/qualification documentation, • QAPJP documentation (all revisions), • Calibration documentation, • Analytical raw data, • Procurement documentation, • QA procedures (all revisions), • Technical implementing procedures (all revisions), and • Audio/video recording (radiography, visual, etc.). (Section B-4a(7), Table B-6)					
70	Are procedures in place to ensure that the generator/storage site has raw data that is identifiable and legible, and provides documentary evidence of quality? (Section B-4a(7))					
71	Are procedures in place to ensure that if the generator/storage site ceases to operate, that all records be transferred before closeout? (Section B-4a(7))					
SHIPMENT						
72	Are procedures in place to ensure that the generator/storage site accurately completes an EPA Hazardous Waste Manifest prior to shipping the waste to WIPP that contains the following information:					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist ¹	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
	<ul style="list-style-type: none"> Generator/storage site name and EPA ID Generator/storage site contact name and phone number Quantity of waste List of up to six state and/or federal hazardous waste numbers in each line item Listing of all container IDS Signature of authorized generator representative (Section B-5b)					
73	Are procedures in place to ensure that the generator/storage site accurately completes the following container specific information: <ul style="list-style-type: none"> Waste stream identification number List of hazardous waste numbers per container Certification data Shipping data (Section B-5b)					

Table B6-3 Acceptable Knowledge (AK) Checklist

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Acceptable Knowledge (AK) Checklist¹

	WAP Requirement ² (Insert Site) Audit (Insert Audit #) Table B6-3 Acceptable Knowledge (AK) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
GENERAL REQUIREMENTS						
134	Are the primary document(s) required in Permit Attachment B4 containing acceptable knowledge information available? (Section B4-2)					
135	Has the generator developed a methodology whereby a logical sequence of acceptable knowledge information that progresses from general facility to more detailed waste-specific information can be acquired? (Section B4-2)					
136	Does the site have adequate procedures in place to ensure that the Acceptable Knowledge process is adequately implemented? Do these procedures facilitate the mandatory traceability analysis performed for each Summary Waste Category Group examined during the audit? (Section B4-2)					
137	Does the generator site's TRU mixed waste management program information clearly define (or provide a methodology for defining) waste categorization schemes and terminology, provide a breakdown of the types and quantities of TRU mixed waste generated/stored at the site, and describe how waste is tracked and managed at the generator site (including historical and current operations? Do procedures ensure that waste streams are adequately identified? (Section B4-2a)					
138	Does site documentation procedures indicate that the site will document, justify, and consistently define waste streams and assign EPA hazardous waste numbers? (Section B4-2b)					

	WAP Requirement ² (Insert Site) Audit (Insert Audit #) Table B6-3 Acceptable Knowledge (AK) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
REQUIRED AND SUPPLEMENTAL INFORMATION						
140	<p>Does the generator site document that the following must be included in the acceptable knowledge record:</p> <ol style="list-style-type: none"> 1. Map of the site with the areas and facilities involved in TRU waste generation, treatment, and storage identified 2. Facility mission description as related to TRU waste generation and management (e.g., nuclear weapons research may involve metallurgy, radiochemistry, and nuclear physics operations that result in specific waste streams) 3. Description of the operations that generate TRU waste at the site (e.g., plutonium recovery, weapons design, or weapons fabrication) 4. Waste identification or categorization schemes used at the facility (e.g., item description codes, content codes) 5. Types and quantities of TRU mixed waste generated, including historical generation through future projections 6. Correlation of waste streams generated from the same building and process, as appropriate (e.g., sludge, combustibles, metals, and glass) 7. Waste certification procedures for retrievably stored and newly generated wastes to be sent to the WIPP facility <p>(Section B4-2a)</p>					

	WAP Requirement ² (Insert Site) Audit (Insert Audit #) Table B6-3 Acceptable Knowledge (AK) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
141	<p>Does the generator site document that the following shall be collected for each waste stream:</p> <ul style="list-style-type: none"> A. Area(s) and/or building(s) from which the waste stream was or is generated B. Waste stream volume and time period of generation (e.g., 100 standard waste boxes of retrievable stored waste generated from June 1977 through December 1977) C. Waste generating process described for each building (e.g., batch waste stream generated during decommissioning operations of glove boxes), including processes associated with U134 waste generation, if applicable. D. Process flow diagrams (e.g., a diagram illustrating glove boxes from a specific building to a size reduction facility to a container storage area). In the case of research/development, analytical laboratory waste, or the similar processes where process flow diagrams cannot be created, a description of the waste generating processes, rather than a formal process flow diagram, may be included if this modification is justified and the justification is placed in the auditable record E. 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 chemical 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. F. <u>Information regarding whether liquid in internal containers could exhibit the characteristics of ignitability, corrosivity, and/or reactivity (EPA Hazardous Waste Numbers D001, D002, D003).</u> <p>(Section B4-2b)</p>					
142	<p>Do site documents/procedures require that the facility will provide a summary to the Permittees that summarizes all information collected, including basis and rationale for all waste stream designations? Is an example of this summary available for audit review? If discrepant hazardous waste data exist in required information, do sites assign all hazardous waste numbers unless the sites choose to justify otherwise? (Section B4-2b)</p>					
143	<p>Do site procedures indicate that if the required AK information is not available for a particular waste stream, that the waste stream will not be eligible for an AK Sufficiency Determination? (Section B4-2)</p>					

	WAP Requirement ² (Insert Site) Audit (Insert Audit #) Table B6-3 Acceptable Knowledge (AK) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
144	Have the following procedures been prepared?: A. Procedures for identifying and assigning the physical waste form of the waste B. Procedures for delineating waste streams and assigning Waste Matrix Codes C. Procedures for resolving inconsistencies in acceptable knowledge documentation D. Procedures for headspace gas sampling and analysis, visual examination and/or radiography, and homogeneous waste sampling and analysis, if applicable E. For newly generated waste, procedures describing process controls used to ensure prohibited items (specified in the WAP, Permit Attachment B) are documented and managed F. Procedures to ensure radiography and visual examination include a list of prohibited items that the operator shall verify are not present in each <u>waste container</u> , of waste (e.g. liquids exceeding TSDF-WAC limits, corrosives, ignitables, reactives, and incompatible wastes) G. Procedures to document how changes to Waste Matrix Codes, waste stream assignment, and associated Environmental Protection Agency hazardous waste numbers based on material composition are documented for any waste H. Procedures for assigning EPA hazardous waste numbers to TRU mixed waste I. Procedures for estimating waste material parameter weights (Section B4-2b)					
145	Does the generator provide procedures or written commitment to collect supporting acceptable knowledge information, as available and as necessary to augment mandatory information? (Section B4-2c)					

	WAP Requirement ² (Insert Site) Audit (Insert Audit #) Table B6-3 Acceptable Knowledge (AK) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
145a	<p>For waste containers that belong to LANL sealed sources waste streams, and for which headspace gas sampling and analysis is not required, are there procedures in place to assure the collection of the following supplemental AK?:</p> <ul style="list-style-type: none"> A. Documentation that the waste container contents meet the definition of sealed sources per 10 CFR §30.4 and 10 CFR §835.2 (effective January 1, 2004) B. Documentation of the certification of the sealed sources as U.S. Department of Transportation Special Form Class 7 (Radioactive) Material per 49 CFR §173.403 (effective October 1, 2003) C. Documentation of contamination survey results that validate the integrity of each sealed source per 10 CFR §34.27 (effective January 1, 2004). D. AK documentation does not indicate the use of VOCs or VOC-bearing materials as constituents of the sealed sources. E. The outer casing of each sealed source must be of a non-VOC bearing material, which must be verified at the time of packaging. F. AK documentation that includes but is not limited to, as available and as necessary to determine the hazardous constituents associated with sealed sources, the following: source manufacturer's sales catalogues, original purchase records, source manufacturer's fabrication documents, source manufacturer's drawings, source manufacturer's fuel capture assembly reports, source manufacturer's operational procedures for cleanliness requirements, source manufacturer's shipping documents, source manufacturer's welding records, transuranic batch material records, and information from national databases (e.g., NMMSS). All of this information may not and need not be available for each source, but sufficient information must be included in the auditable record to derive an adequate understanding of source construction and history to ensure that no VOCs are present in association with the sealed source itself that would render the source hazardous. If AK data indicate that assignment of a hazardous waste number related to organic materials is required in association with a source, this specific source will be assigned to a separate waste stream and that waste stream will be subject to headspace gas sampling unless a separate AK Sufficiency Determination is approved for the waste stream. <p>(Section B4-2c)</p>					
146	<p>Does the generator site document that all specific, relevant supplemental information used in the acceptable knowledge process will be identified and its use explained? Is all necessary supplemental information assembled and has it been appropriately used?</p> <p>(Section B4-2c)</p>					

	WAP Requirement ² (Insert Site) Audit (Insert Audit #) Table B6-3 Acceptable Knowledge (AK) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
147	Does the generator site discrepancy analysis documentation (for acceptable knowledge supporting and required documentation) indicate that if discrepancies are detected, site must include all hazardous waste numbers indicated in the required and supporting information unless the site chooses to justify an alternative assignment and document justification in the auditable record? (Section B4-2c)					
TRAINING						
148	Does the generator site have procedures to ensure that all personnel involved with acceptable knowledge waste characterization have the following training, and is this training documented? A. WIPP WAP in Permit Attachment B and the TSDF-WAC specified in this permit B. State and Federal RCRA regulations associated with solid and hazardous waste characterization C. Discrepancy resolution and reporting D. Site-specific procedures associated with waste characterization using acceptable knowledge (Section B4-3a)					
PROCEDURES						
149	Has the generator site developed the following procedures, and are these					

	WAP Requirement ² (Insert Site) Audit (Insert Audit #) Table B6-3 Acceptable Knowledge (AK) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	<p>procedures technically sufficient?</p> <p>A. Sites must prepare and implement a written procedure outlining the specific methodology used to assemble acceptable knowledge records, including the origin of the documentation, how it will be used, and any limitations associated with the information (e.g., identify the purpose and scope of a study that included limited sampling and analysis data).</p> <p>B. Sites must develop and implement a written procedure to compile the required acceptable knowledge record.</p> <p>C. Sites must develop and implement a written procedure that ensures unacceptable wastes (e.g., reactive, ignitable, corrosive) are identified and segregated from TRU mixed waste populations sent to WIPP.</p> <p>D. Sites must prepare and implement a written procedure to evaluate acceptable knowledge and resolve discrepancies. If different sources of information indicate different hazardous wastes are present, then sites must include all sources of information in its records and conservatively assign all potential hazardous waste numbers, unless the site chooses to justify an alternative assignment and document the justification in the auditable record. The assignment of hazardous waste numbers shall be tracked in the auditable record to all required documentation.</p>					
149a	E. Sites must prepare and implement a written procedure to identify hazardous wastes and assign the appropriate hazardous waste numbers to each waste stream. The following are minimum baseline requirements/standards that site-specific procedures must include to ensure comparable and consistent					

	WAP Requirement ² (Insert Site) Audit (Insert Audit #) Table B6-3 Acceptable Knowledge (AK) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	characterization of hazardous waste: 1. ___ Compile all of the required information in an auditable record. 4-2. ___ Review the compiled information and delineate TRU mixed waste streams. Delineation of waste streams must comply with the WAP definition: 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. 2-3. ___ Review the compiled information to determine if the waste stream is compliant with the TSDF-WAC 3-4. ___ Review the required information to determine if the waste is listed under 20.4.1.200 NMAC (incorporating 40 CFR § 261), Subpart D. Assign all listed hazardous waste numbers, unless the site chooses to justify an alternative assignment and document the justification in the auditable record. 4-5. ___ Review the required information to determine if the <u>potential for the waste to exhibit a the hazardous characteristic of ignitability, corrosivity, and/or reactivity</u> or if the waste may contain hazardous constituents included in the toxicity characteristics specified in 20.4.1.200 NMAC (incorporating 40 CFR § 261, Subpart C. If a toxicity characteristic contaminant is identified and is not included as a listed waste, assign the toxicity characteristic number, unless data are available which demonstrates that the concentration of the constituent in the waste is less than the toxicity characteristic regulatory level. When data are not available, the toxicity characteristic hazardous waste number for the identified hazardous constituent must be applied to the mixed waste stream. 5-6. ___ Review the compiled information to provide an estimate of the material parameter weights for each container <u>of TRU mixed waste</u> to be stored or disposed of at WIPP. For newly generated waste, procedures shall be developed and implemented to characterize hazardous waste using acceptable knowledge prior to packaging.					
149b	F. Sites shall ensure that results of audits of the TRU mixed waste characterization programs at the site are available in the records. G. Sites shall identify all process controls (implemented to ensure that the waste contains no prohibited items and to control hazardous waste content and/or					

	WAP Requirement ² (Insert Site) Audit (Insert Audit #) Table B6-3 Acceptable Knowledge (AK) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	<p>physical form) that have been applied to retrievably stored waste and/or may presently be applied to newly generated waste. Process controls are applied <u>at the time</u> of waste generation/packaging to control waste content, whereas any activities performed <u>after</u> waste generation/packaging to identify prohibited items, hazardous waste content, or physical form are waste characterization activities, not process controls. The AK record must contain specific process control and supporting documentation identifying when these process controls are used to control waste content. See Permit Attachment B, Section B-2 for programmatic requirements related to process controls.</p> <p>(Section B4-3b)</p>					
150	<p>Does the site have implemented procedures which comply with the following criteria to establish acceptable knowledge records:</p> <p>A. Acceptable knowledge information shall be compiled in an auditable record, including a road map for all applicable information.</p> <p>B. The overview of the facility and TRU mixed waste management operations in the context of the facility's mission shall be correlated to specific waste stream information.</p> <p>C. Correlations between waste streams, with regard to time of generation, waste generating processes, and site-specific facilities shall be clearly described. For newly generated wastes, the rate and quantity of waste to be generated shall be defined.</p> <p>D. A reference list shall be provided that identifies documents, databases, Quality Assurance protocols, and other sources of information that support the acceptable knowledge information.</p> <p>D-E Container inventories for TRU mixed waste in retrievable storage shall be delineated into waste streams by correlating the container identification to all of the required and supporting AK information.</p> <p>(Section B4-3c)</p>					
151	<p>If the generator site submitted an AK Sufficiency Determination Request for a specific waste stream, did the site provide all of the requisite information including the identification of the applicable scenario for which approval is sought?</p> <p>(Section B-0b)</p>					
AUGMENTATION OF ACCEPTABLE KNOWLEDGE						
152	<p>Does the generator site have written procedures for the augmentation of all acceptable knowledge information using sampling and analysis. Sampling and analysis consists of radiography, visual examination, headspace gas, and homogeneous waste sampling and analysis. Do site procedures indicate that the</p>					

	WAP Requirement ² (Insert Site) Audit (Insert Audit #) Table B6-3 Acceptable Knowledge (AK) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	following sampling and analysis will be conducted based upon the results of the Determination Request Any scenario denied - 100% RTR or VE and statistical HSG or solids S&A Scenario 1 Granted -No sampling and analysis radiography/visual examination is required Scenario 2 Granted-Radiography/visual examination is not required but statistical HSG or solids S&A is required Scenario 3 Granted-100% RTR or VE is required, sampling and analysis is not required (Section B4-1, B-0b)					
155	Does the generator site have procedures for reevaluating acceptable knowledge if the results of the waste characterization indicate that the waste to be shipped does not match the approved waste stream or if the data from radiography or visual examination for waste streams without an AK Sufficiency Determination exhibit this discrepancy? Does this procedure describe how the waste is reassigned, acceptable knowledge reevaluation, and appropriate hazardous waste codes numbers are assigned? (Section B4-3e)					
156	Do site procedures indicate that debris waste are assigned toxicity characteristic EPA numbers based on AK regardless of the quantity or concentration? (B4-3e)					

	WAP Requirement? (Insert Site) Audit (Insert Audit #) Table B6-3 Acceptable Knowledge (AK) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
CRITERIA FOR ASSEMBLING AN ACCEPTABLE KNOWLEDGE RECORD DELINEATING THE WASTE STREAM						
158	<p>If wastes are reassigned to a different waste matrix code based on site visual examination or radiography or Permittee confirmation activities, does the generator site have written documentation to ensure that the following steps are followed:</p> <ul style="list-style-type: none"> A. Review existing information based on the <u>waste</u> container identification number and document all differences in hazardous waste number assignments B. If differences exist in the hazardous waste numbers that were assigned, reassess and document all required acceptable knowledge information (Section B3-b) associated with the new designation C. Reassess and document all sampling and analytical data associated with the waste D. Verify and document that the reassigned waste matrix code was generated within the specified time period, area and buildings, waste generating process, and that the process material inputs are consistent with the waste material parameters identified during radiography or visual examination E. Record all changes to acceptable knowledge records F. If discrepancies exist in the acceptable knowledge information for the revised waste matrix code, document the segregation of the affected portion of the waste stream, and define the actions necessary to fully characterize the waste <p>(Section B4-3e)</p>					
161	<p>Do site procedures ensure that headspace gas and solid/soil analytical data are used to resolve AK assignments for hazardous waste, as necessary? If a constituent is detected in headspace gas that the site believes isn't from the waste process, the site must provide documentation to support any determination that organic constituents are associated with packaging materials, radiolysis, or other uses not consistent with solvent use. If the source of the detected headspace gas solvents cannot be identified, the appropriate F listing will be assigned. If a constituent in a listed waste is present in solid/soil analytical results, the appropriate listed waste shall be added to the waste stream. F-listed waste assigned by acceptable knowledge shall not be removed based on headspace gas or solids analysis. In the case of totals/TCLP analysis, do procedures reflect the allowance for concentration assessments, wherein sites may add or remove total/TCLP and non-toxic F003 constituents found in headspace and solid/soil analyses?</p> <p>(Section B4-3e)</p>					

	WAP Requirement ² (Insert Site) Audit (Insert Audit #) Table B6-3 Acceptable Knowledge (AK) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
162	If sampling and analysis conducted to augment AK determines that a hazardous constituent as identified in headspace gas sampling or soil/homogeneous waste sampling is present in the waste, does the generator site indicate that they will: 1) assign the hazardous waste number to the entire waste stream as applicable, or 2) segregate drums containing detectable concentrations of solvent into a separate waste stream, and assign applicable hazardous waste numbers? (Section B4-3e)					
163	Does the generator site document, justify, and consistently delineate waste streams and assign hazardous waste codes numbers based on site specific permit requirements or state-enforced agreements? (Section B4-3e)					
164	Does the generator site have written methodologies for determining the mean concentration of solvent VOCs detected by either headspace gas analysis or homogeneous waste sampling for each waste stream or waste stream lot, and are all data ("U" flags designated as one half the MDL and "J" flags, which are less than the PRQL but greater than the MDL)? (Section B4-3e)					
165	Do procedures ensure that spent solvent assignments are made by using the UCL ₉₀ (of mean concentration), and comparing this with the PRQLs? If the UCL ₉₀ exceeds the PRQL, is acceptable knowledge reevaluated and determine potential source of the constituent? (Section B4-3e)					
167	Does the site have written procedures for situations where concentrations of some VOCs are orders of magnitude higher than other target analytes? In these cases, elevated MDLs may be generated, and those constituents with an elevated MDL but "U" designation will not be used in mean calculations. (Section B4-3e)					

	WAP Requirement ² (Insert Site) Audit (Insert Audit #) Table B6-3 Acceptable Knowledge (AK) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
DATA QUALITY REQUIREMENTS						
168	<p>Are acceptable knowledge processes consistently applied among all generator sites, and does each generator site comply with the following data quality requirements for acceptable knowledge documentation:</p> <p>A. Precision - Precision is the agreement among a set of replicate measurements without assumption of the knowledge of a true value. The qualitative determinations, such as compiling and assessing acceptable knowledge documentation, do not lend themselves to statistical evaluations of precision. However, the acceptable knowledge information will be addressed by the independent review of acceptable knowledge information during internal and external audits.</p> <p>B. Accuracy - Accuracy is the degree of agreement between an observed sample result and the true value. The percentage of waste containers which require reassignment to a new waste matrix code and/or designation of different hazardous waste numbers based on sampling and analysis data and discrepancies identified by the Permittees during waste confirmation will be reported as a measure of acceptable knowledge accuracy.</p> <p>C. Completeness - Completeness is an assessment of the number of waste streams or number of samples collected to the number of samples determined to be useable through the data validation process. The acceptable knowledge record must contain 100 percent of the information (Permit Attachment B4-3) The useability of the acceptable knowledge information will be assessed for completeness during audits.</p> <p>D. Comparability - Data are considered comparable when one set of data can be compared to another set of data. Comparability is ensured through sites meeting the training requirements and complying with the minimum standards outlined for procedures that are used to implement the acceptable knowledge process. All sites must assign hazardous waste codes numbers in accordance with Permit Attachment B4-4 and provide this information regarding its waste to other sites who store or generate a similar waste stream.</p> <p>E. 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 codes numbers (e.g., purpose and scope of information, date of publication, type and extent to which waste parameters are addressed).</p>					

	WAP Requirement ² (Insert Site) Audit (Insert Audit #) Table B6-3 Acceptable Knowledge (AK) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	(Section B3-9)					
169	Does the generator site 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 confirmation using radiography, review of radiography audio/video recordings, or visual examination, or review of visual examination records. In addition, the acceptable knowledge process and waste stream documentation must be evaluated through internal assessments by generator/storage site quality assurance organizations. (Section B4-3e)					

1. NMED expects a traceability analysis to be performed, the results of which should be presented on this checklist under the "Examples of Implementation" column. Further, the traceability analysis process and results should be discussed in the Final Audit Report.
2. The WAP requirements should be presented in documents, such as procedures. Each of the questions posed under WAP requirements are meant to determine whether procedures are in place or whether documents are evident which demonstrate that the specific WAP requirement is or can be met.

Table B6-5 Radiography Checklist

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Radiography Checklist

	WAP Requirement ¹ (Insert Site) Audit (Insert Audit #) Table B6-5 Radiography Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
QUALITY ASSURANCE OBJECTIVES						
233	<p>Are process procedures in place to meet the following Quality Assurance Objectives?:</p> <p><u>Precision</u></p> <ul style="list-style-type: none"> Does the site describe in its QAPjP and SOP(s) activities to reconcile 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? And additionally, activities to verify the precision of radiography prior to use by tuning precisely enough to demonstrate compliance with QAOs through viewing an image test pattern? <p><u>Accuracy</u></p> <ul style="list-style-type: none"> Was accuracy 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 					
233a	<p><u>Completeness</u></p> <ul style="list-style-type: none"> Was an audio/videotape (or equivalent media) of the radiography examination and a radiography data form validated according to the requirements in Section B3-10? Was an audio/videotape (or equivalent media) of the radiography examination and a radiography data form obtained for 100% of the waste containers subject to radiography? <p><u>Comparability</u></p> <ul style="list-style-type: none"> Is comparability ensured through the use of standardized radiography procedures and operator training and qualifications <p>(Section B3-4a)</p>					

	WAP Requirement ¹ (Insert Site) Audit (Insert Audit #) Table B6-5 Radiography Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
CHARACTERIZATION AND SYSTEM REQUIREMENTS						
<u>234</u>	Does the site have procedures to ensure that radiography is used to identify and verify waste container contents and verify the waste's physical form? Does the site have procedures to identify prohibited materials? (Section B-3c; B1-3)					
<u>235</u>	Do procedures or other supporting documentation ensure that <u>every</u> waste container will undergo radiography and/or VE as necessary to augment AK? (Section B-3c)					
<u>236</u>	Do procedures ensure that <u>waste</u> containers whose contents prevent full examination are examined by visual examination rather than by radiography unless the site certifies that visual examination would provide no additional relevant information for that <u>waste</u> container based on the AK information for the waste stream? (Section B1-3)					
<u>237</u>	Do procedures or other supporting documentation ensure that the physical form determined by radiography is compared with the waste stream descriptions? If discrepancies are noted, will a new waste stream be identified? (Section B-3c)					
<u>238</u>	Are there procedures to ensure the data is obtained from an audio/video recorded scan provided by trained radiography operators? (Section B1-3)					
<u>239</u>	Were all activities required to achieve the radiography objective described in site Quality Assurance Project Plans (QAPjPs) and Standard Operating Procedures (SOPs)? (Section B3-4)					
<u>240</u>	Did the radiography system consist of the following equipment or equivalent: <ul style="list-style-type: none"> • an X-ray producing device? • an imaging system? • an enclosure for radiation protection? • a waste container handling system? • an audio/video recording system or equivalent? • an operator control and data acquisition station? (Section B1-3)					

	WAP Requirement ¹ (Insert Site) Audit (Insert Audit #) Table B6-5 Radiography Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
241	Did the X-ray producing device have controls which allow the operator to vary voltage, thereby controlling image quality? Was it possible to vary the voltage, typically between 150-400 kV, to provide an optimum degree of penetration through the waste? Was high-density material examined with the X-ray device set on the maximum voltage? Was low-density material examined at lower voltage settings to improve contrast and image definition? (Section B1-3)					
242	Do procedures or other documentation ensure that an audio/videotape or equivalent is made of the waste container scan and maintained as a non-permanent record? (Section B1-3)					
DATA COMPILATION						
243	Are there procedures to ensure that a radiography data form is used to document the waste matrix code, ensure the waste container contains no ignitable, corrosive or reactive waste by documenting the absence of <u>observable liquids</u> 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? (Section B1-3)					
245	If radiography indicates that the waste does not match the waste stream description, do procedures ensure that the appropriate corrective action was taken? (Section B-3c)					
246	If a discrepancy is noted, do procedures ensure that the proper waste stream assignment is determined, the correct hazardous waste <u>codes-numbers</u> assigned, and the resolution documented? (Section B-3c)					
TRAINING						
247	Do site procedures ensure that only trained personnel are allowed to operate radiography equipment? (Section B1-3)					
248	Do site procedures ensure that training requirements for radiography operators is based upon existing industry standard training requirements? (Section B1-3)					

	WAP Requirement ¹ (Insert Site) Audit (Insert Audit #) Table B6-5 Radiography Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
249	Does the documented training program provide radiography operators with both formal and on-the-job training (OJT)? (Section B1-3)					
250	Does the documented training program ensure that the radiography operators are instructed in the specific waste generating practices and typical packaging configurations expected to be found in each waste stream at the site? (Section B1-3)					
251	Does the documented training program ensure that the OJT and apprenticeship are conducted by an experienced, qualified radiography operator prior to qualification of the candidate? (Section B1-3)					
252	Is the documented training program site specific? (Section B1-3)					
262	Does the documented training program ensure that a training drum with various container sizes is scanned by each operator on a biannual basis? Is the videotape reviewed by a supervisor to ensure that operator's interpretations remain consistent and accurate? (Section B1-3)					
263	Do site procedures ensure that the site prepares Testing Batch Data Reports or equivalent which includes all data pertaining to radiography for up to 20 waste containers without regard to waste matrix? (Section B3-10)					
QUALITY ASSURANCE						
265	Does the documented training program ensure that the imaging system characteristics are verified on a routine basis? (Section B1-3)					

	WAP Requirement ¹ (Insert Site) Audit (Insert Audit #) Table B6-5 Radiography Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
266	Do procedures ensure that independent replicate scans and replicate observations of the video output of the radiography process are performed under uniform conditions and procedures? Are independent replicate scans performed on one waste container per day or per testing batch of 20 samples, which ever is less frequent? Are independent observations of one scan (not the replicate scan) performed once per day or per testing batch, which ever is less frequent, by a qualified radiography operator (other than the individual who performed the first examination)? (Section B1-3)					
267	Do procedures ensure that oversight functions include periodic audio/videotape reviews of accepted waste containers, are performed by qualified radiography personnel (other than the operator who dispositioned the waste container)? (Section B1-3)					
268	Is the site project manager responsible for monitoring the quality of the radiography data and calling for corrective action, when necessary? (Section B1-3)					
DATA VALIDATION, REVIEW, VERIFICATION AND REPORTING						
277	Do procedures ensure that all applicable data generation review verification and validation activities specified in B3-10 are followed, including all signatory releases? (Section B3-10)					
278	Do procedures ensure that radiography tapes have been reviewed at a frequency of one waste container per day or once per testing batch, whichever is less frequent, to ensure data are correct and completed? (Section B1-3)					
279	Do procedures ensure that all applicable project-level signatory releases and DQOs (Section B3-11) as specified in the WAP are performed? (Section B3-10b)					
282	At the data generation level, do procedures ensure that all electronic and video data stored appropriately to ensure that waste container, sample, and associated QA data are readily retrievable? Are radiography tapes reviewed, at a frequency of one waste container per day or once per testing batch, whichever is less frequent, against the data reported on the radiography form? (Section B3-10a, B3-10a(1))					

	WAP Requirement ¹ (Insert Site) Audit (Insert Audit #) Table B6-5 Radiography Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
283	At the project level, do procedures require the Site Project Manager to certify that the radiography data are complete and acceptable based on the videotape review of at least one waste container per testing batch or daily, whichever is less frequent? (Section B3-10b(1))					

- i. The WAP requirements should be presented in documents, such as procedures. Each of the questions posed under WAP requirements is meant to ask whether procedures are in place or whether documents are evident which demonstrate that the specific WAP requirement is or can be met.

Table B6-5 Radiography Checklist

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Radiography Checklist

	WAP Requirement ¹ (Insert Site) Audit (Insert Audit #) Table B6-5 Radiography Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
QUALITY ASSURANCE OBJECTIVES						
<u>233</u>	<p>Are process procedures in place to meet the following Quality Assurance Objectives?:</p> <p><u>Precision</u></p> <ul style="list-style-type: none"> Does the site describe in its QAPjP and SOP(s) activities to reconcile 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? And additionally, activities to verify the precision of radiography prior to use by tuning precisely enough to demonstrate compliance with QAOs through viewing an image test pattern? <p><u>Accuracy</u></p> <ul style="list-style-type: none"> Was accuracy 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 					
<u>233a</u>	<p><u>Completeness</u></p> <ul style="list-style-type: none"> Was an audio/videotape (or equivalent media) of the radiography examination and a radiography data form validated according to the requirements in Section B3-10? Was an audio/videotape (or equivalent media) of the radiography examination and a radiography data form obtained for 100% of the waste containers subject to radiography? <p><u>Comparability</u></p> <ul style="list-style-type: none"> Is comparability ensured through the use of standardized radiography procedures and operator training and qualifications <p>(Section B3-4a)</p>					

	WAP Requirement ¹ (Insert Site) Audit (Insert Audit #) Table B6-5 Radiography Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
CHARACTERIZATION AND SYSTEM REQUIREMENTS						
234	Does the site have procedures to ensure that radiography is used to identify and verify waste container contents and verify the waste's physical form? Does the site have procedures to identify prohibited materials? (Section B-3c; B1-3)					
235	Do procedures or other supporting documentation ensure that every waste container will undergo radiography and/or VE as necessary to augment AK? (Section B-3c)					
236	Do procedures ensure that waste containers whose contents prevent full examination are examined by visual examination rather than by radiography unless the site certifies that visual examination would provide no additional relevant information for that waste container based on the AK information for the waste stream? (Section B1-3)					
237	Do procedures or other supporting documentation ensure that the physical form determined by radiography is compared with the waste stream descriptions? If discrepancies are noted, will a new waste stream be identified? (Section B-3c)					
238	Are there procedures to ensure the data is obtained from an audio/video recorded scan provided by trained radiography operators? (Section B1-3)					
239	Were all activities required to achieve the radiography objective described in site Quality Assurance Project Plans (QAPjPs) and Standard Operating Procedures (SOPs)? (Section B3-4)					
240	Did the radiography system consist of the following equipment or equivalent: <ul style="list-style-type: none"> • an X-ray producing device? • an imaging system? • an enclosure for radiation protection? • a waste container handling system? • an audio/video recording system or equivalent? • an operator control and data acquisition station? (Section B1-3)					

	WAP Requirement ¹ (Insert Site) Audit (Insert Audit #) Table B6-5 Radiography Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
241	Did the X-ray producing device have controls which allow the operator to vary voltage, thereby controlling image quality? Was it possible to vary the voltage, typically between 150-400 kV, to provide an optimum degree of penetration through the waste? Was high-density material examined with the X-ray device set on the maximum voltage? Was low-density material examined at lower voltage settings to improve contrast and image definition? (Section B1-3)					
242	Do procedures or other documentation ensure that an audio/videotape or equivalent is made of the waste container scan and maintained as a non-permanent record? (Section B1-3)					
DATA COMPILATION						
243	Are there procedures to ensure that a radiography data form is used to document the waste matrix code, ensure the waste container contains no ignitable, corrosive or reactive waste by documenting the absence of <u>observable liquids</u> 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? (Section B1-3)					
245	If radiography indicates that the waste does not match the waste stream description, do procedures ensure that the appropriate corrective action was taken? (Section B-3c)					
246	If a discrepancy is noted, do procedures ensure that the proper waste stream assignment is determined, the correct hazardous waste <u>codes-numbers</u> assigned, and the resolution documented? (Section B-3c)					
TRAINING						
247	Do site procedures ensure that only trained personnel are allowed to operate radiography equipment? (Section B1-3)					
248	Do site procedures ensure that training requirements for radiography operators is based upon existing industry standard training requirements? (Section B1-3)					

	WAP Requirement ¹ (Insert Site) Audit (Insert Audit #) Table B6-5 Radiography Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
249	Does the documented training program provide radiography operators with both formal and on-the-job training (OJT)? (Section B1-3)					
250	Does the documented training program ensure that the radiography operators are instructed in the specific waste generating practices and typical packaging configurations expected to be found in each waste stream at the site? (Section B1-3)					
251	Does the documented training program ensure that the OJT and apprenticeship are conducted by an experienced, qualified radiography operator prior to qualification of the candidate? (Section B1-3)					
252	Is the documented training program site specific? (Section B1-3)					
262	Does the documented training program ensure that a training drum with various container sizes is scanned by each operator on a biannual basis? Is the videotape reviewed by a supervisor to ensure that operator's interpretations remain consistent and accurate? (Section B1-3)					
263	Do site procedures ensure that the site prepares Testing Batch Data Reports or equivalent which includes all data pertaining to radiography for up to 20 waste containers without regard to waste matrix? (Section B3-10)					
QUALITY ASSURANCE						
265	Does the documented training program ensure that the imaging system characteristics are verified on a routine basis? (Section B1-3)					

	WAP Requirement ¹ (Insert Site) Audit (Insert Audit #) Table B6-5 Radiography Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
266	Do procedures ensure that independent replicate scans and replicate observations of the video output of the radiography process are performed under uniform conditions and procedures? Are independent replicate scans performed on one waste container per day or per testing batch of 20 samples, which ever is less frequent? Are independent observations of one scan (not the replicate scan) performed once per day or per testing batch, which ever is less frequent, by a qualified radiography operator (other than the individual who performed the first examination)? (Section B1-3)					
267	Do procedures ensure that oversight functions include periodic audio/videotape reviews of accepted waste containers, are performed by qualified radiography personnel (other than the operator who dispositioned the waste container)? (Section B1-3)					
268	Is the site project manager responsible for monitoring the quality of the radiography data and calling for corrective action, when necessary? (Section B1-3)					
DATA VALIDATION, REVIEW, VERIFICATION AND REPORTING						
277	Do procedures ensure that all applicable data generation review verification and validation activities specified in B3-10 are followed, including all signatory releases? (Section B3-10)					
278	Do procedures ensure that radiography tapes have been reviewed at a frequency of one waste container per day or once per testing batch, whichever is less frequent, to ensure data are correct and completed? (Section B1-3)					
279	Do procedures ensure that all applicable project-level signatory releases and DQOs (Section B3-11) as specified in the WAP are performed? (Section B3-10b)					
282	At the data generation level, do procedures ensure that all electronic and video data stored appropriately to ensure that waste container, sample, and associated QA data are readily retrievable? Are radiography tapes reviewed, at a frequency of one waste container per day or once per testing batch, whichever is less frequent, against the data reported on the radiography form? (Section B3-10a, B3-10a(1))					

	WAP Requirement ¹ (Insert Site) Audit (Insert Audit #) Table B6-5 Radiography Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
283	At the project level, do procedures require the Site Project Manager to certify that the radiography data are complete and acceptable based on the videotape review of at least one waste container per testing batch or daily, whichever is less frequent? (Section B3-10b(1))					

- i. The WAP requirements should be presented in documents, such as procedures. Each of the questions posed under WAP requirements is meant to ask whether procedures are in place or whether documents are evident which demonstrate that the specific WAP requirement is or can be met.

Table B6-6 Visual Examination (VE) Checklist

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Visual Examination (VE) Checklist

	WAP Requirement ¹ (Insert Site) Audit (Insert Audit #) Table B6-6 Visual Examination (VE) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
TRAINING						
296	Is there documentation which shows that a standardized training program for visual examination personnel-operators has been developed? Is it specific to the site and include the various waste configurations generated/stored at the site? (Section B1-4)					
297	Is there documentation which shows that the visual inspectors-examination operators receive training on the specific waste generating processes, typical packaging configurations, and waste material parameters expected to be found in each waste-Waste matrix-Matrix code-Code at the site? (Section B1-4)					
298	Are the visual examination personnel-operators requalified once every two years? (Section B1-4)					
298a	<u>Does the training include the following regardless of Summary Category Group?</u> <ul style="list-style-type: none"> • <u>Identifying and describing the contents of a waste container by examining all items in waste containers of previously packaged waste.</u> • <u>Identifying when VE cannot be used to meet the DQOs.</u> 					
VISUAL EXAMINATION EXPERT REQUIREMENTS						
300	Does documentation ensure that the site has designated a visual examination expert? Is the visual examination expert familiar with the waste generating processes that have taken place at the site? Is the visual examination expert familiar with all of the types of waste being characterized at that site? (Section B1-4)					
301	Does documentation ensure that the visual examination expert shall be responsible for the overall direction and implementation of the visual examination aspects of the program? Does the site's QAPJP specify the selection, qualification, and training requirements of the visual examination expert? (B1-4)					
VISUAL EXAMINATION PROCEDURES						
304	Do procedures indicate that all visual examination activities are recorded- <u>documented</u> on audio/videotape or alternatively- by using a second operator to provide additional verification by reviewing the contents of the waste container to					

	WAP Requirement ¹ (Insert Site) Audit (Insert Audit #) Table B6-6 Visual Examination (VE) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	ensure correct reporting? (Section B1-4)					
304a	<u>Are procedures in place to ensure that when VE is performed using a second operator, each operator performing the VE observe for themselves the waste being placed in the waste container or the waste contents within the examined waste container when waste is not removed?</u>					
313	Do site procedures ensure that when liquids <u>are-is</u> found, the non-transparent <u>internal</u> container holding the liquid will be assumed to be filled with liquid and this volume will be added to the total liquid in the <u>payload-waste</u> container? The <u>payload-waste</u> container would then be rejected and/or repackaged to exclude the container if it is over the TSDF-WAC limits. (Section B-3c)					

	WAP Requirement ¹ (Insert Site) Audit (Insert Audit #) Table B6-6 Visual Examination (VE) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
314	<p>Are process procedures in place to meet the following Quality Assurance Objectives?:</p> <p><u>Precision</u></p> <p>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.</p> <p><u>Accuracy</u></p> <p>Accuracy is maintained by requiring operators to pass a comprehensive examination and demonstrate satisfactory performance in the presence of the VE expert during their initial qualification and subsequent requalification.</p>					

	WAP Requirement ¹ (Insert Site) Audit (Insert Audit #) Table B6-6 Visual Examination (VE) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
314a	<p><u>Completeness</u></p> <p>A validated VE data form will be obtained for 100 percent of the waste containers subject to VE.</p> <p><u>Comparability</u></p> <p>The comparability of VE data from different operators shall be enhanced by using standardized VE procedures and operator qualifications.</p> <p>(Section B3-4b)</p>					

i. The WAP requirements should be presented in documents, such as procedures. Each of the questions posed under WAP requirements is meant to ask whether procedures are in place or whether documents are evident which demonstrate that the specific WAP requirement is or can be met.