A.T. Kearney, Inc.
One Tabor Center, Suite 950
1200 Seventeenth Street
Denver, Colorado 80202
303 572 6175
Facsimile 303 572 6181

Management
Consultants

ENTERED

October 23, 1995

AT KEARNEY

Mr. Benito Garcia
State of New Mexico Environment Department
Hazardous and Radioactive Material Bureau
P.O. Box 26110
2044 Galisteo
Santa Fe, New Mexico 87502

Reference: Work Assignment No. G969; State of New Mexico Environment Department, Santa Fe, New Mexico; WIPP Disposal Phase Part B Permit Application Review; Deliverable, Review of Chapters A, B, and C

Dear Mr. Garcia:

Enclosed please find a copy of the review deliverable for Chapters A, B, and C of the WIPP Part B Permit Application, Revision 5.0. Also included are completed checklists identifying where, in the permit application, specific issues are discussed. We have provided the A.T. Kearney Part B checklist for Chapters A and B, but have used the NMED checklist for Chapter C (slightly revised for use in technical adequacy assessments rather than completeness determinations). All deliverables, including the checklists, are provided on disk, in WordPerfect 5.1, and hard copy.

In general, Chapters B and C of the permit application lack necessary and important detailed information. In particular, the Waste Analysis Plan, presented in Chapter C of the WIPP Part B permit application, Revision 5.0, is seriously lacking in necessary detail. Our concerns relative to Chapters A, B, and C are articulated in both General and Specific Comments. The General Comments for Chapter C also identify those Specific Comments that support the General Comment being discussed.

A.T. Kearney performed a thorough technical review of the permit application, and identified numerous technical issues that should be addressed by the applicant. Rather than make a determination regarding what NMED might consider important or unimportant, we chose to focus on providing NMED with a comprehensive review which presents concerns that are both technically and regulatorily valid. A.T. Kearney conducted the review in the same manner we conduct reviews for other regulated facilities to ensure consistency (e.g., no "special requirements" for this applicant). However, we also took into account our extensive understanding of the WIPP to craft our comments in such a fashion that the applicant can readily respond to the issues; that

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is, we attempted to fashion our comments with an understanding of the information available to the applicant, and how a satisfactory response to the comment could be provided by the applicant.

Since much of the information regarding waste handling, sampling and analysis and overall QA/QC procedures for all of the wastes to be accepted at WIPP are referenced in the 1995 QAPP, it is recommended that relevant portions of the QAPP be attached as an appendix to the permit application. Much of the information in Appendices C4 and C6 are taken directly from the QAPP, and the QAPP includes other sections that detail important aspects of waste analyses that should be included in the permit application (e.g. Section 5 of the 1995 QAPP). However, it must be emphasized that, due to time and cost constraints, we have not had the opportunity to thoroughly review the QAPP, Methods Manual, PDP, or DOE's response to NMED's comments on the 1994 QAPP. Therefore, although we recommend inclusion of portions of the QAPP, this cannot be construed to mean that we concur with the contents of the 1995 QAPP.

In addition, we have also crafted a comment requiring that any deviations from approved SW-846 methodologies receive EPA approval (Chapter C Specific Comment No. 56). In our September 21 conference call, NMED representatives indicated that NMED would investigate the appropriate approach relative to this issue; since information was not provided to A.T. Kearney at the time Chapter C comments were finalized, we elected to include a comment addressing this issue, which can be removed or reworded by NMED to conform with NMED decisions on this topic.

Also during our September 21, 1995 conference call, NMED representatives indicated that A.T. Kearney was not to perform a detailed review of Table C-1 contents. However, our QC commentor, who reviewed waste analysis information presented in the No Migration Variance Petition on behalf of EPA OSW, had generated numerous comments pertaining to the adequacy of this table, including questions regarding process knowledge inconsistencies, etc. We have included this commentary as Attachment A to this deliverable. Although we recognize that you did not request this information, we feel that the attachment contains valuable commentary that NMED may find of use and interest.

As indicated above, we performed a thorough review of Chapters A, B, and C, generating over 100 comments pertaining to Chapter C alone. Because it will not be possible to review each of these comments with DOE during the October 26, 1995 meeting, we recommend the following comments be discussed to ensure that the major issues are presented to the applicant:

- **Chapter A:** Specific Comment Nos. 1 and 2 should be reviewed, although the concerns expressed in these comments are also articulated in Chapter B comments.

- **Chapter B:** General Comments should be reviewed; if time allows, the specific comments may also be presented.

- **Chapter C:** General Comments should be reviewed, as well as the following Specific Comments:

  - **Section C-1, Facility Description:** Specific Comment Nos. 5, 8, 10, 11, 12, 13, 16, 17,

  - **Section C-2, Waste Parameters:** Specific Comment Nos. 22, 24, 29, Appendix C1 and C2

  - **Section C-3, Characterization Procedures and Frequency:** Specific Comment Nos. 34, 35, 36, 39, 41, 46, 48, 54,

  - **Section C-4, Laboratory Selection and Analytical Methods:** Specific Comment Nos. 55, 61, 67

  - **Section C-5, Verification of TRU Mixed Waste:** Specific Comment Nos. 83, 87, 89, 90

Our review also indicated that the permit application includes little information regarding RH waste. We have crafted commentary requesting this information, but realize that this may not yet be available. It is suggested that this information could be provided as a separate section within the permit application to avoid confusion with waste analysis requirements for CH waste.

The A.T. Kearney review focused on technical and regulatory issues. As such, we did not point out typographical and format errors, although it should be noted that the format for Chapter C is inconsistent relative to the subsection identifiers.

Please feel free to contact me or June Dreith (Chapter B) at 303-572-6175, or Paula Goggin Hugo (Chapters A and C), who can be reached at 703-836-6210, should you have any questions or require additional information.

Sincerely,

Connie Walker
Program Manager

cc: B. Hoditschek, NMED
S. Zappe, NMED
L. Knapp, ATK
J. Darabaris, ATK
J. Dreith, ATK
D. Walker, ATK
G. Starkebaum, ATK
M. Harman, ATK
N. Schofield, ATK
P. Goggin Hugo, ATK
J. Schliesmann-Merkle, ATK
H. Sellers, ATK
S. Narasimhachari, ATK
J. Wanslow, ICF

# WIPP PART B PERMIT APPLICATION REVIEW
# RCRA PART A APPLICATION

## CHAPTER A

## GENERAL COMMENTS

1. It is not clear whether many of the hazardous constituents listed on the tables of the appendices and the WAP are present within wastes shown on the Part A. For example the following compounds are listed in Table C6-7 of the WAP Appendix C6, but are not included in wastes presented in the Part A:

   P048 51-28-5 D030 121-14-2 D032 118-74-1

   - SVOCs: 2,4-dinitrophenol, 2,4-dinitrotoluene, hexachlorobenzene, hexachloroethane and pentachlorophenol

     67-72-1 D034 87-86-5 D037

   - Metals: Antimony, nickel, thallium, vanadium and zinc

     App 8,9 8,9 8,9 App 9 App 9 no EPA waste code

   Determine whether these and other constituents not included upon the Part A should be identified as being within other listed hazardous waste, and revise the Part A and Chapter C, (and associated tables and appendices), accordingly.

## SPECIFIC COMMENTS

1. DOE states, on page A-5 lines 26 through 28, the Waste Handling Building (WHB) has been designated as a miscellaneous unit (X99) also known as an "Other Subpart X Unit". However, the regulation states a unit can only be considered a miscellaneous unit if it does not fit the description of any other unit type. The WHB fits the description of a storage unit. Therefore, the WHB must be identified as a storage unit not a miscellaneous unit. Revise the Part A and Chapter A to identify the WHB as a storage unit.

2. The Part A application, in Figure A3-3 indicates that the overpack and repair room and overpack enclosure are not included in the portion of the Waste Handling Building to be considered as part of the Hazardous Waste Management Unit of this building. However, chapters B and D indicate that activities, which could include greater than 90 day storage, could occur within these areas. Also, these areas were considered part of the HWMU during the test phase, during which similar activities as those proposed for the test phase were to be conducted in these areas. Revise the permit application in all appropriate areas to include these portions of the WHB within the HWMU (area).

3. Figure A2-3 does not identify what the locations designated by "WQSP" are. Revise the figure to include this information.

4. Page A-9 states that the "original was signed by George Dials". This is not acceptable. Each revision of the Part A must be signed. Provide a signature for the Part A application.

original vs copy

we have signed original

# WIPP PART B PERMIT APPLICATION REVIEW
# FACILITY DESCRIPTION

## CHAPTER B

## GENERAL COMMENTS

1. Chapter B of the application is unacceptably vague, poorly organized, and difficult to follow. While the majority of the information is discussed in the following chapters of the application, Chapter B is supposed to acquaint the reader with waste management activities and units that require permitting in sufficient detail to understand what is proposed for the facility. The following should be addressed:

   - Chapter B uses undefined terminology that readers unfamiliar with the facility would not understand.

   - There is no clear identification of waste generators who may ship wastes to the facility, and the description of wastes is incomplete and inconsistent with Chapters A and C.

   - The description of the waste management activities (i.e., those for hazardous non-radioactive wastes) are poorly described, and there is no mention of the numerous other support buildings and areas that are essential to operations (including emergency response) at the RCRA permitted units.

   - Much of the topographic map information is not discussed, and the reader is referred with vague references to Section D for much of the required map information.

   - Overall, the discussion of traffic information is incomplete and lacking in detail. No discussion of rail traffic is provided and a description of underground traffic patterns and controls are missing.

   Revise Chapter B to include a more complete and consistent overview of the WIPP facility in general and the RCRA units requiring permitting in particular.

2. The description of activities conducted at the Waste Handling Building (WHB) are also unacceptably vague. Moreover, the WHB should be classified as a container storage unit, because the unit is used for the receipt, verification, and subsequent management of waste containers that arrive at the facility for disposal. Chapter B should be revised to address the following:

- The length of time the containers are staged in the WHB does not affect its classification as a storage unit.

- The extent of the building proposed to be permitted omits, without explanation, areas that appear to include essential waste management activities.
  overpack & repair room

- The reader is given no idea of typical waste handling practices conducted at the facility, including waste volumes arriving, being processed, and being emplaced on a daily basis.

- Chapter B provides no indication of the maximum storage capacity for contact-handled and remote-handled wastes, including where these wastes will be stored while awaiting characterization, paperwork verification, transportation to the underground, or resolution of mechanical problems related to waste handling equipment.

- The types and groupings of shipping and disposal containers managed in the WHB is incomplete and poorly described in Chapter B.

Overall, Chapter B must be revised to provide the application reader with a more complete and comprehensive overview of WHB activities. Forward referencing of other sections of the application (e.g., Chapter D) is acceptable in some cases, but should be minimized. Where forward referencing is used, the specific subsection should be identified, rather than vague references to the entire chapter.

# WIPP PART B PERMIT APPLICATION REVIEW
# FACILITY DESCRIPTION

## CHAPTER B

## SPECIFIC COMMENTS

1. **Chapter B, Introduction, Page B-1, Lines 6-9.**

Chapter B does not clearly identify the generators that will be eligible to ship waste to WIPP. The first paragraph of the Introduction section should clearly and explicitly state that the WIPP facility is to be used to dispose of waste generated at DOE sites across the country. A list of the DOE facilities that will be allowed to ship to WIPP should be included in Chapter B. Revise the application to clearly state that off-site generated waste will be disposed at the facility and to identify the generators that are approved for shipping wastes to the facility. Alternatively, revise the permit application to reference where in the permit application information of sufficient detail is included.

2. **Chapter B, Introduction, Page B-1, Lines 7-9 and 16-17.**

Use of the term "Hazardous Waste Management Unit" (HWMU) is inconsistently applied. The Part A indicates that HWMU is used to refer to one of the individual eight panels that form part of the geologic repository, with the WIPP considered a single Subpart X unit (comprised of HWMUs) requiring permitting. The term, HWMU is also used to refer to the Waste Handling Building (WHB), which is also considered a single separate permitted unit in the Part A. In contrast, in other portions of the application, the term HWMU is sometimes used to describe the entire subsurface area (all eight panels). Also, the application is not consistent when describing the WHB, implying that it is not considered a separate permitted unit. The term HWMU should either refer to a single panel, the entire repository, or the WHB, but not all three. Revise the application to use consistent terminology.

3. **Chapter B, Introduction, Page B-1, Lines 16-17.**

A miscellaneous unit is classified as a unit that does not meet the definition of any other unit for which EPA has promulgated specific performance and design standards. The Waste Handling Building (WHB) should be classified as a container storage unit, because the unit is used for the receipt, verification, and subsequent management of off-site generators or waste containers that arrive at the facility for disposal. The length of time the containers are staged in the WHB does not affect its classification as a storage unit. Furthermore, as described in Chapter C, waste containers that have paperwork discrepancies may be stored at the WHB (although the location of this

storage is not identified) for up to 30 days. This clearly requires that the WHB be classified as a RCRA container storage unit. Revise all applicable portions of the application to correctly refer to the WHB as a container storage unit, rather than a miscellaneous unit.

4. **Chapter B, Section B-1, General Description, Page B-8, Lines 6-13.**

The description of the types of wastes that may be shipped to WIPP is vague, fails to identify major waste categories, and is generally inconsistent with the waste descriptions in Chapter C. At a minimum, the four waste summary categories from Chapter C should be incorporated into Chapter B. Additionally, some indication of the types of contaminants that may be present in the wastes (i.e., some tie-in to the waste codes in the Part A application) should be briefly presented in Chapter B. Revise the application to be consistent with the waste description information in Chapter A and Chapter C.

5. **Chapter B, Section B-1, General Description, Page B-8, Lines 26-27.**

The discussion of management of RCRA hazardous (i.e., non-radioactive) waste should be expanded in Chapter B to describe the types of activities that generate hazardous-only waste, the location of the storage facility for these wastes, the time these wastes are stored (i.e., more than 90-days, less than 90-days), and identification of any on-site waste treatment conducted prior to shipment off-site. Even if the hazardous-only waste storage rooms do not require RCRA permitting, some acknowledgement of applicable regulations would be appropriate in Chapter B. Revise Chapter B to more clearly describe the management of derived hazardous-only wastes at the WIPP facility.

6. **Chapter B, Section B-1a, Definitions, Pages B-8 through B-9.**

Chapter B introduces many new terms that readers who are not familiar with the facility would not know. Such terms as low-level radioactive waste, contact handled waste, remote handled waste, transuranic waste, TRU mixed waste, TRUPACT, etc. should be defined early in application to acquaint the reader with these terms. Revise Section B-1 of the application to define additional WIPP-specific and DOE-specific terms that are used, or alternatively, provide a glossary to the application and reference the glossary definitions in the text of Chapter B.

7. **Chapter B, Section B-1, General Description, Section B-1b, Surface Hazardous Waste Management Unit, Page B-10, Lines 3-31; and Underground Hazardous Waste Management Units, Page B-11, Lines 6-9.**

Activities related to container storage and management practices in the WHB are unacceptably vague in Chapter B. While this information may be presented later in

Chapter D, Chapter B must acquaint the reader with overall activities at the WIPP facility requiring permitting. Chapter B must be revised to provide information on the typical waste handling practices conducted at the facility, including: typical and maximum waste volumes that may arrive per day, typical time it takes to emplace a waste container once it arrives on site (i.e., typical aboveground storage times), typical and maximum aboveground waste storage capacity, and typical and maximum waste emplacement rates (i.e., how many and what types of contact handled and remote handled containers can be moved underground in a typical day). If waste management activities take place 24 hours per day, then this should be explicitly stated. Revise Section B-1b of the application to provide this information. Note that cross-references to Chapter D will not be acceptable in this instance.

8. **Chapter B, Section B-1, General Description, Section B-1b, Surface Hazardous Waste Management Unit, Page B-10, Line 3.**

The extent of the building housing the WHB that is to be permitted requires clarification. Figure B-3 in the application indicate that the overpack and repair room and the site derived waste room are <u>not</u> part of the WHB. It is not clear why these are excluded. Activities that are conducted in these other rooms that excludes them from RCRA permitting should be explicitly described in Chapter B. Revise Section B-1b and other applicable portions of the permit application to clearly indicate why the WHB includes only a portion of the floor space of the building in which it is located. Alternatively, revise the permit application to include the overpack and repair room in the permitted portion of the WHB.

9. **Chapter B, Section B-1, General Description, Section B-1b, Surface Hazardous Waste Management Unit, Page B-10, Line 12-26; and Underground Hazardous Waste Management Unit, Page B-10, Line 35-36.**

The types of containers managed at the WIPP is poorly described throughout Chapter B. This chapter should include a thorough summary of shipping containers and disposal containers to be handled at WIPP. The description of the shipping containers should clearly identify the types, volumes, and numbers of interior packaged containers they can contain, and whether they are used for contact-handled or remote-handled waste. The description of the disposal containers and subsequent groupings of containers for disposal (i.e., four packs, seven packs, standard waste boxes) should clearly identify the container types, volumes, and types of wastes they can contain. While this information may be presented in Chapter D, since container information is introduced in Chapter B, it should be presented in a complete and understandable manner. Revise Chapter B accordingly.

10. **Chapter B, Section B-1, General Description, Section B-1b, Underground Hazardous Waste Management Units, Page B-10, Lines 35-42 and Page B-11, Lines 1-9.**

The application indicates that each disposal panel has the capacity to hold an average of 612,795 cubic feet of CH TRU mixed waste and 23,000 cubic feet of RH TRU mixed waste. When multiplied by the proposed number of disposal panels (8) the total capacity of the underground HWMU would be 5,086,360 cubic feet. This is less than the 6,200,000 cubic feet capacity listed on page B-8 (Lines 1-3). Revise the permit application to correct this discrepancy and to identify the location of additional disposal capacity.

In addition, revise the permit application to include the maximum volume of waste that may be awaiting underground disposal at any one time. Also, revise Section B-1b to clearly identify where each of the container types mentioned on page B-11 will be stored while awaiting underground transfer.

11. **Chapter B, Section B-1, General Description, Section B-1c, The WIPP Site, Page B-12, Lines 1-2.**

The additional areas of the facility that support waste management activities must be explicitly identified and described in Chapter B of the application. These other areas are referenced in other sections of the application, but are not described elsewhere in the application. Describe the location, purpose, and support activities and support equipment and personnel that are located at the following: Support Building, Exhaust Filter Building, Central Monitoring Room, Guard and Security Services Building, Emergency Operations Center, Safety and Emergency Services Building, Transuranic Package Transporter Maintenance Facility, Engineering Building, Pumphouse, Training Building, and other unspecified warehouse and maintenance buildings mentioned on page F-11 (line 23), as applicable. Revise Section B-1c to clearly describe the additional areas of the facility that support operations in the permitted areas of the facility.

12. **Chapter B, Section B-1, General Description, Section B-1c, The WIPP Site, Page B-12, Lines 4-5.**

The text of Section B-1c states that areas of the WHB used for contingency response are part of the WIPP facility requiring permitting. Explain, therefore, why the contact handled overpack and repair room is not shown as part of the WHB on Figure B-3. Revise Chapter B to justify the extent of the WHB that is proposed to be included in the facility permit.

13. **Chapter B, Section B-2, Topographic Maps, Section B-2a, General Requirements, Page B-13.**

The location of the closest environmental and human receptors used for compliance with the environmental performance standards of 20 NMAC 4.1, Subpart V, Subpart X should be identified on the appropriate facility map. Revise Chapter B figures to identify these additional site features.

14. **Chapter B, Section B-2, Topographic Maps, Section B-2a, General Requirements, Page B-13, Lines 14-15.**

The text of Section B-2a states that there are no hydrocarbon production wells within the land withdrawal boundaries. Figure B-17, however, shows a number of producing oil and/or gas wells within the WIPP site boundary (e.g., WQSP). Revise Chapter B to address this discrepancy.

water quality wells

15. **Chapter B, Section B-2, Topographic Maps, Section B-2a, General Requirements, Page B-13, Lines 19-25.**

Merely referencing the reader to Chapter D for information on hazardous waste management areas, buildings, structures, sewers, loading and unloading areas, fire-control facilities, flood-control and drainage barriers, runoff control systems and TRU mixed waste handling areas does not fulfill the requirements of 20 NMAC 4.1, Subpart V. This information is required to be provided on a topographic map(s) of the facility. Either revise Section B-2a to include figures showing this additional information, or identify the specific text sections and specific Figures in Chapter D that provide this information. Cross-references to Chapter D will not be acceptable.

16. **Chapter B, Section B-2, Topographic Maps, Section B-2b, Additional Requirements for Land Disposal Facilities, Page B-14, Lines 6-10.**

more as note ~~comment~~, in cover letter

It should be noted that 90-day hazardous waste tanks and containers are required to comply with the new 40 CFR Subpart CC (which affect containers if any stabilization is being performed in the containers and may affect procedures used to fill waste containers). Revise Chapter B to acknowledge the regulations that may be applicable to derived hazardous-only wastes at the WIPP facility.

17. **Chapter B, Section B-4, Traffic Information, Pages B-16 through B-18.**

The traffic information section of Chapter B is not sufficiently detailed. The section should clearly describe the types of traffic at the facility, including not only the waste handling trucks, but also the movement of other vehicles on shared roadways at the facility. Indicate what traffic is expected in the active portions of the facility, including types of vehicles, number of vehicles, and transportation routes. The

location of signs, traffic signals and established speed limits must be explicitly discussed. Additionally, procedures to ensure safe passage of pedestrians should be discussed. Describe how speed limits and other traffic safety requirements will be enforced. Revise Section B-4 of the application to provide additional details on expected traffic of all types at the facility and procedures in place to ensure safe movement of all vehicles, trains, and people at the facility.

**18. Chapter B, Section B-4, Traffic Information, Page B-17, Lines 2-3.**

Traffic patterns that involve rail transport are not discussed. Describe how rail transport of waste at the facility will take place, with respect to traffic patterns, use of various rail spurs, access control, signs, lights or barriers at roadway crossings, transport speeds, volume of rail transport expected, load bearing capacities of the rail lines, typical and maximum time from arrival to unloading, procedures to move the waste from the rail cars to the WHB, etc. Revise Section B-4 to describe in detail traffic patterns that involve rail transport of wastes.

**19. Chapter B, Section B-4, Traffic Information, Page B-17, Lines 8-9.**

The alternate route that waste transport trucks may use to reach the WHB is not clear. It appears that the alternate route will require crossing railroad tracks. Provide a diagram clearly showing this alternate route, and describe when the alternate route may be used and when it will not be used. Revise Section B-4 to describe what safety measures are in place to ensure that transportation accidents will not occur where truck and rail traffic cross.

**20. Chapter B, Section B-4, Traffic Information, Page B-18, Lines 1-3.**

Issues such as speed limits, traffic signs, number and types of vehicles, road surfaces and load-bearing requirements for roads inside the mine need to be addressed. Revise Section B-4 of the application to discuss underground traffic patterns in greater detail.

**21. Chapter B, Figure B-19, WIPP Traffic Flow Diagram.**

The traffic flow diagram shows only part of the transport route to the WHB. The diagram should also show the transport route empty trucks will take when leaving the facility. Revise Section B-4 to describe transport routes to and from the waste management units.

**22. Chapter B, Figure B-6, WIPP Surface Structures.**

Explain why a description of the hazardous waste activities that take place at Buildings 474, 474A and 474B are not described in the text of the application. Revise the general description section of Chapter B to identify other activities related

to hazardous waste management at the WIPP facility, and explain why a permit to conduct these activities is not necessary.

**23. Chapter B, Figure B-8, Underground Waste Transport Route.**

Figure B-8 provides transportation to the panel but not from the panel. Since the narrative on page B-18 states that underground traffic will travel on separate paths, the application should identify all transport routes. Revise Section B-4 and Figure B-8 of the application to describe underground transportation in greater detail.

**24. Chapter B, Figure B-15, 1995 Average Yearly Cattle Density Within 50-Mile Radius of the WIPP Facility.**

Figure B-15 includes a statement indicating that only 62,852 cattle are allowed within a 50-mile radius of the WIPP facility. An explanation of this statement should be provided in the text. Revise Chapter B accordingly.

**25. Topographic Maps, Map B-10.**

The key for Map B-10 indicates that the fire control facilities are addressed in Chapter G. This information should be provided in the narrative in Section B. While referencing another system is often acceptable, the reference must be specific enough so that the information can be readily located. Provide a specific reference in Chapter G, including tables, figures, or section number(s).

**26. Topographic Maps: General**

None of the topographic maps address the requirement to include the location of the sewer system and wastewater control units. Revise the permit application to provide the location of underground pipes which transport sewage. Address where stormwater is separated from the sewage system if only one process system manages this type of waste.

**27. Topographic Maps: General**

The application must address drainage barriers. The topographic map must provide the location of drainage carriers used to divert surface water. Page F-16 specifies that Appendix D-3 of this permit application displays the water diversion system that has been constructed. Provide this information in Section B.

# WIPP PART B PERMIT APPLICATION REVIEW
# WASTE ANALYSIS PLAN

## CHAPTER C

## GENERAL COMMENTS

1. In general, the Waste Analysis Plan presented in Chapter C of the WIPP Part B permit application, Revision 5.0, lacks important and necessary detail. Specific concerns regarding waste sampling/analysis, acceptable knowledge, RH waste characterization, and verification procedures are presented in General Comments, below. In addition, the permit application does not adequately address the following:

   - Discrepancy resolution (e.g., waste stream identification via process knowledge vs. analytical results). For example, refer to General Comment No. 3 and Specific Comment Nos. 2, 71, 72, 75, and 85.

   - Potential for development of explosive conditions in the subsurface from hydrogen and/or methane generated by canister corrosion and biodegradation, respectively. For example, refer to Specific Comment Nos. 4, 13 and 16.

   - Waste acceptance criteria relative to VOCs. For example, refer to Specific Comment Nos. 12 and 14.

   - Waste incompatibilities. For example, refer to Specific Comment Nos. 13, 17 and 18, and commentary on Appendix C1.

   - Headspace gas. For example, refer to commentary on Appendix C2.

   - QA/QC. For example, refer to Specific Comment Nos. 46, 47, and 50-54.

   Chapter C of the Part B permit application must be revised to provide additional information on these topics and to address these and other concerns pertaining to these issues, which are articulated in Specific Comments, presented below.

2. Chapter C of the permit application does not provide sufficient discussion of sampling and analyses intended to characterize waste at the generator site and how this information will be verified and checked by the generator. It also does not include waste analyses data that are currently available, and does not include volumetric data regarding how much waste from each waste summary category is anticipated for disposal at WIPP. For example, the permit application pays only cursory attention to sampling and analyses procedures for Waste Summary Categories S3000 and S4000, and does not discuss how many drums of waste from these categories will be

sampled, analyzed, and statistically evaluated prior to shipment, as detailed in the 1995 QAPP, Section 5.0. [The QAPP (1995) indicates that all drums will undergo headspace gas analyses and RTR, with limited visual examination of all waste categories and limited confirmatory sampling of Waste Summary Categories S3000 and S4000.] Revise Chapter C of the permit application to include more detailed information regarding sampling and analyses performed at the generator site, verification and checking of this information, and to include available waste analyses data. For example, refer to Specific Comment Nos. 8, 11, and 21-63.

3. The WAP indicates that acceptable knowledge will be used to characterize waste intended for WIPP. As stated in EPA guidance, acceptable knowledge can be broadly defined to include "process knowledge" information, waste analysis data from facilities that generate waste, and/or the disposal facility's records (in this case, WIPP) performed before the effective date of RCRA regulations. Acceptable knowledge can be used in lieu of obtaining and analyzed samples of the material to be disposed of as it enters the WIPP, prior to disposal. The WAP implies that the process knowledge aspect of acceptable knowledge will be used for the majority of waste characterization. In fact, other WIPP documents indicate that up to 80% of the waste intended for WIPP may be debris or special waste, and will thus be characterized primarily via process knowledge. However, the WAP does not include a sufficiently detailed description of the processes associated with waste generation, which is necessary to demonstrate that process knowledge will suffice as a major portion of the "acceptable knowledge" characterization activity. For example, Table C-1 does not provide sufficient information to determine whether the wastes result from a consistent or batch process and the specific process/operation that the waste was generated by. Revise the permit application to include more detail regarding the specific processes associated with waste generation. Also include a detailed discussion regarding how each site will implement process knowledge to identify wastes; consistent implementation is required to ensure that each site uses the same standards, criteria, etc. when identifying waste via process knowledge. Refer to Attachment A, for specific examples of these deficiencies requiring revision, and Specific Comment Nos. 11, 19, 27, 31, 32, 35, 39, 40, and 41.

4. The 1995 QAPP addresses the CH waste characterization, but does not address waste characterization activities for the RH waste. Section 1.2.1, page 9 of 40 of the QAPP (1995a) states that the 1995 QAPP "currently addresses only contact-handled TRU waste characterization activities. Future revisions will include requirements for both CH TRU and remote handled TRU wastes." In light of this statement, the WAP cannot reference the 1995 QAPP for RH QA/QC activities, or sampling and analysis activities for RH TRU mixed waste. The WAP also states that RH information will be included in the Methods Manual when complete; however, the permit application must also include this information. Revise the permit application to include or reference complete characterization requirements for RH waste. Refer to Specific Comment Nos. 30 and 58.

5. The permit application exhibits numerous inconsistences between chapter text, tables, figures, appendices and referenced documents, as well as terminology discrepancies and inconsistencies. Specifically, inconsistencies between the tables submitted attached to the WAP and the tables within the appendices are apparent; e.g., the target analyte lists and the methods to be used are variable from table to table. Revise the permit application to rectify these inconsistencies. For example, to ensure consistency of the quality of data among all generators, include one table which provides a comprehensive list of the compounds of interest and the associated methods, or justify the method variations. Refer to Attachment A for detailed commentary. Also refer to Specific Comment Nos. 5 and 8.

6. There are numerous instances where the permit application only presents the positive side of an event and never addresses the negative side of the same event. The following are examples:

   - DOE indicates that RTR will confirm that the physical form of the waste matches the waste stream description, but does not state what will be done if RTR does not confirm the description.

   - DOE states that annual concentration comparisons of VOC drum content and risk-based level (presumably included in Chapter D) will confirm that VOC monitoring is not necessary to protect human health, but does not state what procedures DOE will enact if this comparison shows VOC levels to be above the health-based standards defined by DOE.

   Revise the permit application to address these and similar situations equally. For example, refer to Specific Comment Nos. 21, 68, 71 and 77.

7. The Phase I and II waste shipment screening and verification program (including the waste profile form, off-site generator audits, manifest examination, waste tracking, LDR notice, visual verification, data transmittal, data verification and records management) is inadequate and lacking in detail. The chapter must be revised to include all the information necessary at a sufficient level of detail. Refer to Specific Comment Nos. 64-106.

# WIPP WASTE ANALYSIS PLAN REVIEW

## CHAPTER C

## SPECIFIC COMMENTS

1. **Chapter C, C-1 Facility Description, Section C-1a, Description of Processes and Activities at the WIPP, Page C-5, Lines 2-7.**

   The permit application states that "waste from DOE ... sites... (that meet) the WAC will be disposed of at the WIPP facility." However, the permit application does not indicate which sites will provide the majority of wastes to be shipped to WIPP. Revise the permit application to identify the specific sites that may be principal sources of TRU-mixed waste. Ensure that Figure C-3 is complete and accurate.

2. **Chapter C, C-1 Facility Description, Section C-1a, Description of Processes and Activities at the WIPP, Page C-5, Lines 18-22.**

   The permit application indicates that discrepancy resolution shall occur, but does not provide sufficient detail regarding how this will be undertaken. Further, the permit application does not address how damaged waste containers will be managed in sufficient detail, including the need for overpacking, where this activity will take place, how long drums may be maintained in an overpack area prior to management, etc. This section also does not provide a sufficient overview of waste management once in the subsurface, including waste loading options/orders, anticipated time to fully load a room and panel, backfill emplacement (e.g., whether backfill is considered and the impact that backfill could have on waste stabilization, including gas generation), and timing of panel seal emplacement (partial closure). Revise the permit application to include a sufficient overview of these elements. Alternatively, revise the permit application to reference where, in the permit application, these specific elements are addressed.

3. **Chapter C, C-1 Facility Description, Section C-1a, Description of Processes and Activities at the WIPP, Page C-5, Lines 13-14 and 37-38.**

   The permit application indicates that decontamination of CH and RH waste canisters could be required, but does not provide sufficient detail regarding how waste generated from RH waste container decontamination activities will be managed. Revise the permit application to indicate how this decontamination waste will be managed. Alternatively, revise the permit application to reference where, in the permit application, this information is detailed.

4. **Chapter C, C-1 Facility Description, Section C-1a, Description of Processes and Activities at the WIPP, Page C-5, Lines 13-14 and 37-38.**

The permit application states that the amount of RH TRU mixed waste disposed in each panel is limited, based on thermal and geomechanical considerations. However, the permit application does not indicate whether other considerations, such as gas generation potential via canister corrosion, will also be taken into account. Revise the permit application to discuss these considerations more thoroughly and to describe how RH and CH waste emplacement will occur relative to these limitations. Alternatively, revise the permit application to reference where in the application these concerns are addressed.

5. **Chapter C, C-1 Facility Description, Section C-1b, Identification of TRU Mixed Waste Managed at the WIPP Facility, Pages C-6 through C-9.**

The permit application provides a brief overview of the waste stream concept as well as waste summary categories, but the discussions are incomplete and do not integrate other waste designators presented on tables (e.g., final waste form group, Table C-1, waste categories in Appendix C1), or waste designations referenced within supporting documentation (e.g., waste profiles, waste matrix codes, waste material parameters). Revise the permit application to include a more complete discussion of these waste designators. While it is understood that some of these subdivisions (e.g., content codes) were developed for waste description other than RCRA, a discussion regarding how these waste categories interrelate would be helpful since appendices and tables still include these designators.

6. **Chapter C, C-1 Facility Description, Section C-1b, Identification of TRU Mixed Waste Managed at the WIPP Facility, Page C-7, Lines 10-14.**

The permit application indicates that sorting waste by waste streams will minimize the variability of hazardous constituent concentrations among waste containers, but this is not supported by information presented within the permit application. For example, the waste streams "solidified process residues" and "solidified wastewater treatment sludge" apparently contain similar constituents, but concentration of the constituents is not discussed. It is therefore not apparent how this division will "minimize the variability of hazardous constituent concentrations among waste containers" in all instances. Further, the statement following this discussion pertaining to waste sampling is out of place, as sampling and analyses of specific waste categories is yet to be introduced in the text, and the sentence does not designate which waste categories will be sampled and analyzed for hazardous constituents. Also, this does not distinguish between waste in storage vs. newly generated waste, for which the proposed sampling and analyses applies. Revise the permit application to address these concerns.

7. **Chapter C, C-1 Facility Description, Section C-1b, Identification Of TRU Mixed Waste Managed at the WIPP Facility, Page C-7, Lines 24-26.**

The permit application indicates that if new hazardous waste codes are identified for a given waste stream, "those wastes" cannot be accepted at WIPP without a permit modification. However, it is not clear whether shipment of a particular waste stream from all generator sites will cease, or whether shipment of the specific waste stream from the generator site that detected the discrepancy will cease if the new code is identified. This is important because potentially, unless shipment of entire waste stream is ceased, there is the possibility that hazardous waste not on the Part A could be shipped. It is also very unclear how a new EPA waste code could be identified (e.g., process knowledge, sampling and analyses, headspace gas, etc.). Revise the permit application to address these concerns.

3d A 8. **Chapter C, C-1 Facility Description, Section C-1b, Identification Of TRU Mixed Waste Managed at the WIPP Facility, Page C-8, Lines 14-43.**

The permit application includes brief summaries of the waste summary categories proposed for acceptance at WIPP. However, these discussions are too general and should include more detailed discussion of waste within these categories, including waste parameters, waste streams, etc. Also, specific attention should be paid to the hazardous waste potentially present within each waste summary category. Revise the permit application to include this information.

9. **Chapter C, C-1 Facility Description, Section C-1b, Facility Description, Identification of TRU Mixed Waste Managed at the WIPP Facility, Page C-9, Lines 8-11.**

The permit application implies that 20 NMAC 4.1 Subpart VIII, § 268.2(g) requires visual inspection to determine whether a waste is considered to be debris. However, the permit application also indicates that visual inspection will not be conducted for all drums suspected of containing debris wastes, implying that this regulatory requirement will not be met. Revise the permit application to clarify the regulatory requirement for visual examination.

10. **Chapter C, C-1 Facility Description, Section C-1b, Identification of TRU Mixed Waste Managed at the WIPP Facility, Page C-9, Lines 24-28.**

The permit application indicates that a waste summary category for "special wastes" has been designated. However, Table C-1 indicates only one unique waste stream falls under this category (RF-W028), which could also be included under summary category group S5000, debris waste. Revise the permit application to provide more detail regarding why this grouping is necessary, including more detail regarding specific anticipated waste streams.

S1A 11. **Chapter C, C-1 Facility Description, Section C-1b, Identification of TRU Mixed Waste Managed at the WIPP Facility, Pages C-10 to C-11.**

The permit application presents an abbreviated discussion of hazardous constituents present within WIPP waste, indicating that these have been determined, primarily, through the use of acceptable knowledge (process knowledge). This would imply that summary analytical data are not available. 20 NMAC 4.1, Subpart IX 270.14(b) requires "chemical and physical analyses of the hazardous waste and hazardous debris to be handled at the facility. At a minimum, these analyses shall contain all the information which must be known to treat, store, or dispose of the waste properly in accordance with Part 264 of this chapter." While it is understood that the applicant believes acceptable knowledge can be used to characterize waste, confirmation that the processes identified indeed contain the identified hazardous waste is required. Revise the permit application to include summary tables presenting waste analyses information acquired to date. Prepare these tables in a format that can be readily compared with Table C-1, so that a summary understanding of available waste analyses information for each waste stream unique ID can be achieved. Reference additional documentation for any detailed or backup information as necessary.

12. **Chapter C, C-1 Facility Description, Section C-1b, Identification of TRU Mixed Waste Managed at the WIPP Facility, Page C-11, Lines 9-10.**

The permit application states that "headspace-gas volatile organic compounds (VOC) concentrations resulting in emissions not protective of human health and the environment" will not be accepted. This criteria is very vague, and does not state the specific concentration values or other limitations that must be met to meet this standard. Revise the permit application to include the specific information that is required to meet this demonstration. This is particularly important, since this information is critical to determining whether the WIPP can meet performance standards established for Subpart X units described in 20 NMAC 4.1 Subpart V, Part 264.601. The WIPP Waste Acceptance Criteria, December, 1991 (WIPP-DOE-069) provides requirements for compliance with RCRA relative to headspace gas analyses, including flammability assessments, but these values were developed in response to conditional Test Phase No Migration requirements. Revise the permit application to indicate whether DOE intends to maintain these criteria during the operational phase.

13. **Chapter C, C-1 Facility Description, Section C-1b, Identification of TRU Mixed Waste Managed at the WIPP Facility, Page C-11, Lines 11-13.**

The permit application states that compatibilities relative to containers, casks, waste, and TRUPACT II materials must be demonstrated. However, a critical incompatibility at WIPP is the reaction of Salado brines with the steel waste containers, which could result in the generation of hydrogen gas. Additionally, methane gas will develop through microbial decay. According to 20 NMAC 4.1

Subpart II, 261.23 (a): "A solid waste exhibits the characteristic of reactivity if a representative sample of the waste has any of the following properties: ...(3) It forms potentially explosive mixtures with water; and (4) it is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement." Clearly, this could result in the management of reactive waste, in violation of WAP requirements. In addition, the No Migration Variance Petition submitted by DOE to the U.S. EPA on May 31, 1995 indicates on Page 3-68 that waste degradation by microbial action may occur and could generate sufficient quantities of methane so that "a potentially explosive mixture could emerge after a period of 20 years." Revise the permit application in the appropriate locations, to address the issue of explosive gas generation including, but not limited to: conditions under which this may occur; mitigating measures that will be taken to ensure conditions do not develop; actions that should be taken if explosive conditions develop; and monitoring that will take place to monitor development of these conditions.

14. **Chapter C, C-1 Facility Description, Section C-1b, Identification of TRU Mixed Waste Managed at the WIPP Facility, Page C-11, Lines 21-24.**

The WIPP Waste Acceptance Criteria (DOE, 1991) indicate numerous criteria that are based upon RCRA limitations. These include limitations on non-radionuclide pyrophorics, requisite documentation for sampling and analytical protocols, container VOC limitations, etc. Many of these are not reflected within the list presented in the waste analysis plan. Revise the permit application to include these limitations. Alternatively, provide justification why these elements are not included, particularly why any VOC headspace limitations are no longer included. Also indicate whether DOE will generate a modified WAC relative to the December 1991 version.

15. **Chapter C, C-1 Facility Description, Section C-1b, Identification of TRU Mixed Waste Managed at the WIPP Facility, Pages C-11 to C-12.**

The WAP indicates in this section that each waste stream will be accompanied by a waste profile form, but does not indicate whether each waste stream within each shipment will have the form, or if the form will be presented once for each waste stream. Also, the information presented upon the Waste Profile Form is incomplete, as it does not include waste analyses information, RTR results, visual examination results, etc. (see Specific Comment Nos. 75-78). If this form is not intended to be provided for each drum or shipment, provision of sampling and analyses results for each shipment/drum cannot be included. However, if this form is not intended for inclusion on a drum or shipment basis, the WAP must be revised to include the specific forms that shall be provided for each waste shipment. Revise the permit application to address these concerns.

16. **Chapter C, C-1 Facility Description, Section C-1b, Identification of TRU Mixed Waste Managed at the WIPP Facility, Pages C-13, Line 23-26.**

The permit application states that DOE will "manage TRU mixed waste in a manner that mitigates the buildup of explosive of flammable gases within the waste," and goes on to imply that the single way this shall occur is by use of HEPA filters to vent drums. However, as indicated in Specific Comment No. 13 above, the development of explosive conditions could result from brine contact upon the steel drum containers, as well as through biodegradation. The permit application does not include sufficient information to ensure that wastes will be managed in such a manner as to mitigate explosive condition development. Revise the permit application to more thoroughly discuss those measures to be taken to mitigate the development of explosive conditions, including but not limited to, waste loading considerations, air circulation handling factors, monitoring programs, etc.

17. **Chapter C, C-1 Facility Description, Section C-1b, Identification of TRU Mixed Waste Managed at the WIPP Facility, Page C-13, Line 28-34.**

The WAP states that results of compatibility assessment presented in Appendix C1 indicate that "no wastes were found to be incompatible either with each other or with waste containers." However, the permit application should point out that Appendix C1 provides a long list of potential incompatibilities which DOE believes were resolved. Also, as indicated in Comment No. 13 above, although this compatibility assessment apparently includes reactions between brine and waste, it does not specifically include an evaluation of brine and steel waste containers. Although code 1a (see Appendix C1) could be construed to do so, this code also states that "the potential for head and gas generation by reactions of synthetic or naturally occurring WIPP brines with metals in test waste forms will be measured as part of the test program." With the abandonment of the test phase and many gas generation programs, it is unclear whether this assessment has--or will--take place. It is also unclear, based upon information provided in Appendix C1, whether the compatibility assessment truly ruled out all incompatibilities, since many of the discussions state that additional information will be acquired during the test programs, which have apparently been ceased. Revise the permit application to address these concerns. See Appendix C1 comments for additional questions pertaining to compatibility assessments.

18. **Chapter C, C-1 Facility Description, Section C-1b, Identification of TRU Mixed Waste Managed at the WIPP Facility, Page C-13, Lines 35-37.**

The permit application states that newly identified waste contain the "same chemical and physical forms as the waste for which the compatibility analysis was performed, they were considered to be covered by the previous analysis," and hence, exhibited no incompatibilities. However, supporting documentation for this assertion is not

included within the permit application. Additionally, the compatibility analyses was conducted for Rocky Flats waste only, and it is not apparent that all hazardous waste identified in the Part A of the permit application were considered in the compatibility assessment. Revise the permit application to address these concerns.

19. **Chapter C, C-1 Facility Description, Section C-1c, Waste-Generating Processes, Page C-14, Lines 13-42.**

The text of the permit application includes a brief description of processes that generate waste, but does not sufficiently detail processes generating the specific summary category groups, waste form groups, or waste streams presented in Table C-1. This table includes some information pertaining to waste generating processes, but it is not complete for each waste stream discussed. Revise the permit application to include a more comprehensive discussion of waste generating processes for each of the identified waste streams, preferably on a facility basis. Also see Attachment A for additional commentary.

20. **Chapter C, C-1 Facility Description, Section C-1c, Waste-Generating Processes, Page C-15, Lines 16-29.**

The discussion indicates that decontamination process may introduce wastes not present within the specific TRU-mixed waste that is within the derived waste. Decontamination can be accomplished using non-hazardous materials, such as Radiacwash (which contains citric acid) to avoid introduction of such waste. Revise the permit application to specifically discuss why hazardous material is a necessary part of decontamination or cleanup activities. Alternatively, revise the permit application to indicate that non-hazardous materials will be used for decontamination or cleanup activities.

21. **Chapter C, C-2 Waste Parameters, Section C-2b, Criteria and Rationale for Parameter Selection, Page C-17, Lines 2 and 3.**

This section states RTR will confirm that the physical form matches the waste stream description. Revise the permit application to provide a detailed discussion of what will happen if RTR indicates the physical form does not match the waste stream description. Also, the terminology "waste stream description" is inconsistently used. The "i.e." which follows that term lists the four summary waste categories. Revise the permit application to address these issues.

22. **Chapter C, C-2 Waste Parameters, Section C-2b, Page C-17, Line 14.**

This section states that Appendix C-2 provides the headspace gas analytical data. The application does not include dispersion modelling results to indicate the headspace gas constituent concentrations inside the mine and outside the mine at the compliance

point. Also, a comparison of the dispersion modelling results with health-based limits (HBLs) is not provided. Revise the application to include two tables showing the dispersion modeling results as well as a comparison of those results and the HBLs, or reference where in the application this information is provided. Comments pertaining to headspace gas data are included in Appendix C2 comments

23. **Chapter C, C-2 Waste Parameters, Section C-2b, Page C-17, Line 15.**

This section uses the terminology "representatively sampled." Revise the permit application to provide a discussion regarding the meaning of this term.

24. **Chapter C, C-2 Waste Parameters, Section C-2b, Page C-17, Lines 17-21.**

The permit application states that homogeneous solid waste in a salt matrix cannot be readily representatively sampled and process knowledge demonstrates no organic constituents are present in the waste; hence, salt waste is exempted from the sampling and VOC and SVOC analytical requirements. However, there are several examples of thermal residues (e.g., RF-M001, SR-W053) listed in Table C-1 that contain numerous VOCs, some of which are chlorinated. Furthermore, Table C-4 Pages C-76 through C-79 specifically states homogenous solids/salt waste will be sampled. Clarify this apparent contradiction with the "no-sampling" assertions on Page C-17, as noted above. Revise the application to provide a discussion of the analyses (e.g., VOCs, SVOCs, inorganics) that will be performed, if applicable. Alternatively, revise the permit application to include a detailed discussion and supporting documentation justifying the "no-sampling" assertion for salt waste. Also, high-temperature molten extraction process information is not included. Revise the permit application to provide a discussion about the extraction process.

25. **Chapter C, C-2 Waste Parameters, Section C-2b, Page C-17, Lines 22 and 23.**

This section states that a limited number of waste streams in the organic sludges final waste form contain transformer oils with PCBS. "Organic sludges" is not a final waste form (noted on Page C-3, Lines 18-20). Revise the permit application to clarify this apparent inconsistency in final waste form terminology. Also, revise the permit application to include a detailed discussion and supporting documentation justifying why other PCB-contaminated waste streams/final waste forms (e.g., solidified organics) will not be sampled and analyzed for PBCs. Alternatively, provide the information supporting the assertion that the remaining waste streams/final waste forms do not contain PCBs.

26. **Chapter C, C-2 Waste Parameters, Section C-2b, Page C-17, Lines 24-30.**

This section provides brief discussion regarding totals analysis and TCLP, and references Appendix C3 for additional information. However, neither the text nor the appendix provide a table of the TC concentrations and the TC concentrations times a factor of 20. Revise the permit application to provide a table in the text which includes complete and accurate information regarding the TC concentrations and the TC concentrations times a factor of 20.

27. **Chapter C, C-2 Waste Parameters, Section C-2b, Page C-17, Lines 31 and 32.**

The permit application states that documented acceptable knowledge will be used to determine types and quantities of listed and TC waste that cannot be directly sampled. However, no details are provided to justify the use of acceptable knowledge for this purpose. Revise the permit application to include a detailed discussion and supporting documentation justifying the use of acceptable knowledge to determine types and quantities of listed and TC wastes that cannot be directly sampled. (Refer to General Comment No. 3.)

28. **Chapter C, C-2 Waste Parameters, Section C-2b, Page C-17, Line 32.**

In this section, the terminology "directly sampled" is used. Revise the permit application to provide a discussion regarding the meaning of this terminology and how it differs from the terminology of "representatively sampled," as used earlier on this Page in Line 15. (Refer to Specific Comment No. 23.)

29. **Chapter C, C-2 Waste Parameters, Section C-2b, Page C-17, Lines 31-34.**

The permit application indicates that debris waste cannot be directly sampled, but does not indicate that special waste cannot be directly sampled. However, Table C-4 notes that both Debris Waste and special waste will be characterized for hazardous constituents using acceptable knowledge. Revise the permit application to discuss the ability to directly sample special waste.

30. **Chapter C, C-2 Waste Parameters, Section C-2b, Page C-17, Lines 35 and 36.**

This section mentions Table C-4, which contains summary information pertaining to stored and newly-generated wastes and CH wastes. However, Table C-4 does not include information regarding RH wastes. Revise Table C-4 to include this information, or justify why RH wastes are not addressed in this table.

31. **Chapter C, C-3 Characterization Procedures and Frequency, Newly- Generated Wastes, Page C-18, Lines 8-14.**

The permit application states that for "newly-generated wastes, verification that the processes generating the waste have operated within the established written procedures will take place." Revise the permit application to clarify what procedures are referenced by this statement. Discuss whether these procedures are WIPP-based protocols for waste generation and ensure that these are standard procedures that are available to each generator site.

32. **Chapter C, C-3 Characterization Procedures and Frequency, Newly- Generated Wastes, Page C-18, Lines 13-18.**

The permit application states that a "second, independent operator" will perform verification review of process information. Revise the permit application to discuss whether this independent reviewer is independent of DOE, and/or the generator site. Additionally, revise the permit application to indicate what guidance will be used to perform the verification procedure, and include a discussion on the documentation procedures that will be maintained for this verification review.

33. **Chapter C, C-3 Characterization Procedures and Frequency, Newly- Generated Wastes, Page C-18, Lines 22-23.**

This section states that "all newly-generated waste containers will undergo headspace-gas analysis for total VOC." However, the permit application also states that for RH-TRU mixed wastes, headspace sampling would not be performed. Revise the permit application to clarify whether the newly-generated RH-TRU mixed wastes would also undergo headspace-gas sampling and analysis.

34. **Chapter C, C-3 Characterization Procedures and Frequency, Newly- Generated Wastes, Page C-18, Lines 27-30.**

The application states that "newly-generated waste streams of homogenous solids and soils/gravel wastes will be randomly sampled once per year or once per process batch. Sampling frequency of once per year is only allowed if a process has operated within established bounds. Otherwise, the waste must be considered as process batches." DOE has not provided sufficient information to demonstrate that one sample per year or process batch is sufficient to representatively capture the variability in constituent concentrations. Revise the permit application to provide sufficient information to justify the sampling frequency. Also, revise the permit application to explain how DOE will determine what "established bounds" are and how DOE will know/verify this when samples are only taken on an annual basis.

35. **Chapter C, C-3 Characterization Procedures and Frequency, Newly- Generated Wastes, Page C-18, Lines 36-43.**

The application discusses the use of acceptable knowledge for newly-generated debris and special wastes. Since debris and special wastes are highly variable and non-homogenous wastes, the permit application should specify how characterization via process knowledge will take place (refer to General Comment No. 3). Also, "process knowledge" that a particular hazardous waste is present does not always ensure that the waste has been properly characterized, as concentration is also required to determine whether a waste is hazardous by toxicity characteristics. Also, since no sampling and analysis is proposed for debris waste and special wastes, it is unclear what contingencies will be used in the event that there is little or no process knowledge available for a particular waste type. Revise the permit application to address these concerns.

36. **Chapter C, C-3 Characterization Procedures and Frequency, Newly- Generated Wastes, Page C-18, Line 42.**

Characterization procedures for newly-generated special wastes are unclear. The application states that acceptable knowledge is sufficient for characterization of special wastes. However, since the special waste category and these processes that generate special wastes are not clearly defined (refer to Specific Comment No. 10) relying on "acceptable knowledge" may be insufficient. Revise the permit application to provide more concrete guidance in the WAP regarding characterization of special wastes.

37. **Chapter C, C-3 Characterization Procedures and Frequency, Stored Wastes, Page C-19, Line 2.**

The permit application indicates that "all retrievably stored waste containers will be examined using RTR or (emphasis added) visual examination." However, the referenced QAPP and Figure C-1 indicate that all retrievably stored waste containers will undergo RTR, and a percentage/subset of these will be visually examined. Revise the permit application to clarify this discrepancy.

38. **Chapter C, C-3 Characterization Procedures and Frequency, Stored Wastes, Page C-19, Lines 11-14.**

Revise the permit application to clarify whether sampling of inner layers of confinement will be performed if the headspace of the inner layers is less that 1 liter.

39. **Chapter C, C-3 Characterization Procedures and Frequency, Stored Wastes, Page C-19, Lines 15-17 and 26-33.**

Lines 15-17 state "a statistically selected portion of homogeneous solids and soil/gravel wastes will be sampled for hazardous waste constituents and toxicity characteristic..." DOE does not provide a description of the statistical procedure used to determine which drums are going to be sampled. Also, DOE does not provide an explanation as to how DOE will establish the necessary sampling frequencies (i.e, how will DOE define the levels of accuracy and precision needed in subsequent waste characterization). Revise the permit application to address these concerns.

In addition, the use of the 90% UCL for toxicity characteristic analysis (Lines 26-33) appears low and is not justified. In previous Part B applications, a UCL of 95% was suggested by NMED. Revise the permit application to justify the use of 90% UCL.

Same for QAPP Disc.

40. **Chapter C, C-3 Characterization Procedures and Frequency, Stored Wastes, Page C-20, Lines 9-15.**

The application discusses the use of acceptable knowledge for retrievably stored debris wastes, but special wastes are not discussed. Revise the permit application to discuss how special wastes will be characterized.

41. **Chapter C, C-3 Characterization Procedures and Frequency, Stored Wastes, Page C-20, Lines 9-15.**

The use of process knowledge to characterize debris waste which has been in storage at the various sites for a long period of time may be questionable relative to reliability of available information, and requires elaboration. Although RCRA allows the use of process knowledge for waste characterization where appropriate, an initial chemical analyses of a waste stream to determine a "baseline" is often required. Since WIPP does not intend to perform on-site analyses and only a limited waste analyses at the generator sites, verification of process knowledge relative to RCRA waste/constituents requires significant elaboration within the application. Revise the permit application to provide a discussion regarding how "acceptable knowledge" will be documented. Also, include in the application the guidance and training which is provided to site personnel to ensure that each site uses the same acceptable knowledge for consistency of identification. (Refer to General Comment Nos. 2 and 3 for additional commentary.)

42. **Chapter C, C-3 Characterization Procedures and Frequency, Section C-3a, Special Characterization Requirements for TRU Mixed Waste, Page C-20, Lines 25-41.**

The application provides a very general outline of special characterization requirements for TRU wastes that will be sent to the WIPP site. However, the requirements discussed lack detail. Revise the permit application to provide more definitive details regarding the procedures that will be implemented to assure adequate waste characterization by generator sites.

Also, the permit application should indicate who will review the individual generator site QAPjPs and ensure proper characterization from each individual site. Revise the permit application to provide a more thorough discussion of special waste characterization data validation and useability controls.

43. **Chapter C, C-3 Characterization Procedures and Frequency, Section C-3a, Special Characterization Requirements for TRU Mixed Waste, Page C-20, Line 34.**

The permit application states that the raw data will be reported in a "standard format." To ensure consistency among all generator sites, revise the permit application to include this standard format.

44. **Chapter C, C-3 Characterization Procedures and Frequency, Section C-3a, Special Characterization Requirements for TRU Mixed Waste, Page C-20, Line 37.**

The second bullet on the bottom of this page states that "all data must receive an independent review." Revise the permit application to indicate who will perform the independent technical review.

45. **Chapter C, C-3 Characterization Procedures and Frequency, Section C-3a, Special Characterization Requirements for TRU Mixed Waste, Page C-21, Lines 1-5.**

Revise the permit application to outline the verification procedures that will be used by the WIPP facility to verify the generator data packages. Include how this verification process will be documented, or reference where, in the permit application, this information is provided.

46. **Chapter C, C-3 Characterization Procedures and Frequency, Section C-3b, Quality Assurance Sampling and Analysis Requirements, Page C-21, Lines 8-17.**

The QA/QC practices that are referenced in Section C-3b of the WAP must be described in more detail. Revise the permit application to include a more detailed discussion of DQOs, data generation, data transmittal, data verification, and data management. Alternatively, reference the 1995 QAPP as applicable, and include sections as Appendices to the permit application.

47. **Chapter C, C-3 Characterization Procedures and Frequency, Section C-3b, Quality Assurance Sampling and Analysis Requirements, Data Quality Objectives, Page C-21, Lines 19-32.**

Although the facility plans to characterize the debris and special wastes through process knowledge, these waste characterization parameters should also be included in the DQOs for the WAP. Revise the permit application to address this concern.

48. **Chapter C, C-3 Characterization Procedures and Frequency, Section C-3b, Quality Assurance Sampling and Analysis Requirements, Data Generation, Page C-22, Lines 29-32.**

The permit application states that standardized formats will be used by each generator to report waste characterization data. DOE has indicated in response to NMED, comments on the QAPP (Rev. B), that it will not require a standardized form, but a listing of those elements that must be included should be provided. Revise the permit application to include this.

49. **Chapter C, C-3 Characterization Procedures and Frequency, Section C-3b, Quality Assurance Sampling and Analysis Requirements, Data Generation, Page C-22, Lines 20-27.**

The WAP must be revised to include chain-of-custody procedures for all samples.

50. **Chapter C, C-3 Characterization Procedures and Frequency, Section C-3b, Quality Assurance Sampling and Analysis Requirements, Data Generation, Page C-22, Lines 34-42.**

This section of the application discusses the audits that the WIPP personnel will perform of the generator waste characterization programs. However, the discussion provided is vague. Revise the permit application to include a more complete discussion, or reference where this information is addressed in the permit application.

51. **Chapter C, C-3 Characterization Procedures and Frequency, Section C-3b, Quality Assurance Sampling and Analysis Requirements, Data Generation, Page C-23, Lines 1-4.**

This section of the application states that the DOE will audit the laboratories. Revise the permit application to discuss the requirements or criteria that the laboratory audits are based on. Include a list of the DOE-approved laboratories that may be used to characterize waste for the generator sites (i.e., those sites which may use off-site laboratories).

52. **Chapter C, C-3 Characterization Procedures and Frequency, Section C-3b, Quality Assurance Sampling and Analysis Requirements, Data Transmittal, Page C-23, Lines 10-23.**

Since the validation information is intended to be used as a part of the process knowledge information, the permit application should be revised to identify the contents of the data validation package to ensure consistency among all of the generator sites. Also, provide more detail on the electronic deliverable format that may be used by all sites that will submit their reports in this format. Revise the permit application to address these concerns.

53. **Chapter C, C-3 Characterization Procedures and Frequency, Section C-3b, Quality Assurance Sampling and Analysis Requirements, Data Transmittal, Page C-24, Lines 5-7.**

Revise the permit application to specify what the "inventory check" mentioned in the application will include.

54. **Chapter C, C-3 Characterization Procedures and Frequency, Section C-3b, Quality Assurance Sampling and Analysis Requirements, Records Management, Page C-24, Lines 17-19.**

The second bullet in this section refers to Waste Acceptance Checklists. Revise the permit application to discuss when this checklist is used, and to include an example of such a checklist in the application. Also, revise the permit application to discuss what is included in the relevant WIPP Waste Information System (WWIS) data printouts.

55. **Chapter C, C-4 Laboratory Selection and Analytical Methods, Page C-24, Lines 28-34.**

The application frequently references SW-846 and the Methods Manual, indicating that various SW-846 methods may be used for the proposed analyses. However, the WAP implies that SW-846 methods have been included in the Methods Manual, but it is unclear exactly how (or if) these methods were "adapted" or modified for inclusion

in the Methods Manual. All methods which DOE proposes to use must be from SW-846 or must be EPA-approved. Revise the permit application to address these concerns.

Also, either reference only the methods in the Methods Manual or SW-846, as it is unclear when methods from SW-846 are being used and when methods from the Methods Manual are being used. If only the methods in the Methods Manual are to be used, applicable portions of this document must be included as part of the permit application. Revise the permit application to address these concerns.

56. **Chapter C, C-4 Laboratory Selection and Analytical Methods, Page C-24, Lines 30-34.**

The permit application states that the laboratories may use a method that "demonstrates acceptable equivalent performance." However, the application does not clarify what is considered to be "acceptable." Revise the permit application to clarify the term "acceptable."

The permit application must be revised to state whether alternate methods will be EPA-approved or only DOE-approved. If the methods are to be compared to EPA SW-846 methods, any deviations and variances must also be EPA-approved. The application must ensure demonstration of the deviations and also specify exactly when these method approvals will take place (i.e., prior to shipment of the wastes to the WIPP facility). Revise the permit application to address these concerns.

57. **Chapter C, C-4 Laboratory Selection and Analytical Methods, Page C-24, Lines 28-40.**

The permit application does not ensure that comparable and consistent data will be obtained, based on the information outlined in the application and the associated appendices. For example, Tables C-6 and C-7 of the WAP list various methods that may be used by the laboratories for the analysis of total VOCs, SVOCs, and metals. The methods listed here are inconsistent with those listed in the 1995 QAPP. Specifically, for total VOCs analysis the WAP lists methods 8020, 8021, 8024 8240 or 8260 for the analysis of benzene. The QAPP however, lists only 8240A and 8260B. This is a key issue since the WAP references the QAPP for the QA/QC limits, procedures and information for the parameters. However, if different methods from those listed in the QAPP may be used, then the referenced QA/QC information from the QAPP is not appropriate.

The WAP must provide a set of exact analytical methods that each site must use. If each site is able to use a different method, comparison of data sets will then become difficult. Revise the permit application to address this. Also, revise the permit

application to provide complete QA/QC information for all of the methods listed in the WAP.

58. **Chapter C, C-4 Laboratory Selection and Analytical Methods, Page C-25, Lines 1-6.**

The QAPP lists only the analytical methods for CH waste, but no analytical methods for RH waste are included. Revise the permit application to provide the parameters, methods, and QA/QC procedures that are to be used for RH waste. (See General Comment No. 5).

59. **Chapter C, C-4 Laboratory Selection and Analytical Methods, Page C-25, Lines 9-13.**

The permit application does not sufficiently describe data validation procedures. Revise the permit application to either provide the appropriate validation guidance (e.g., USEPA CLP National Functional Guidelines for Organic and Inorganic Data Review), or include the specific data validation procedures to be used for each analyses. Revise the permit application to incorporate applicable section of the QAPP. Data validation information should include:

- All criteria for the acceptance, rejection or qualification of all data;
- The checklists that are to be used;
- Definition of all qualifiers that may be applied to the data during the validation; and
- A discussion of the corrective action measures that may be taken on all unusable data.

60. **Chapter C, C-4 Laboratory Selection and Analytical Methods, Headspace Gas Sampling and Analysis, Page C-25, Lines 19-26.**

The permit application does not include quantification of hydrogen and methane. These parameters are included in Table C6-1 of Appendix C6 of the 1995 QAPP, as well as the February 1995 Performance Demonstration Plan (PDP); however, there is no mention of these compounds in the application. Justify not including these constituents in the document (refer to Specific Comment No. 13) and if these are to be included, the WAP must be revised to include the associated QA/QC and analytical procedures. Also, the DQOs should be revised to include sampling and analysis for these parameters. Revise the permit application to address these concerns.

61. **Chapter C, C-4 Laboratory Selection and Analytical Methods, RTR, Page C-25, Lines 28-35.**

The document states that RTR will be used to determine that the wastes do not contain free liquids. Revise the permit application to provide a more thorough discussion of the RTR process, including how an accurate measurement of < 1% can be made to determine the free liquids. With such a precise amount (1%) it is not clear how a visual reading will derive the required accuracy. Since each RTR reader is different in their interpretation, it is not clear if this method will produce such accurate and verifiable results. Revise the permit application to provide more information regarding how consistency between RTR examiners will be ensured.

62. **Chapter C, C-4 Laboratory Selection and Analytical Methods, RTR, Page C-25, Line 29.**

This section states that "RTR, or the equivalent, will be used." Revise the permit application to specify the other "equivalent" method options.

63. **Chapter C, C-4 Laboratory Selection and Analytical Methods, Total VOCs, SVOCs, and Metals, Page C-26, Lines 1-8.**

It appears that the SVOCs methods in the Methods Manual incorporates analytical "cleanup" methods; however, the WAP does not reference any relevant SW-846 cleanup methods. Revise the permit application to indicate whether cleanup methods for soils that are analyzed for SVOCs will be performed. If so, include these analytical method numbers in the WAP.

64. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5a, Phase I Waste Shipment Screening and Verification, Page C-26, Line 26; and Page C-27 Line 1.**

This section uses the terminologies "acceptance" and "approval," respectively, in conjunction with Phase I, and Section C-5b Page C-27, Lines 1 and 7 use the terminologies "acceptance" and "approval," respectively, in conjunction with Phase II. This apparent inconsistent use of terminologies is confusing. Terms such as pre-acceptance or pre-approval should be used in conjunction with Phase I, while Phase II terminology should include terms such as acceptance or approval. Revise the permit application to reflect proper and consistent terminology.

65. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5a, Phase I Waste Shipment Screening and Verification, Page C-26, Lines 28 and 29.**

This section provides information regarding Phase II screening and verification at the WIPP facility. However, this section is focussed on Phase I. Remove this Phase II statement from the Phase I discussion.

66. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5a, Phase I Waste Shipment Screening and Verification, Page C-26, Line 31.**

This section uses the term "sufficient." Revise the permit application to explain what is the meaning of this term.

67. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5a, Phase I Waste Shipment Screening and Verification, Page C-26, Line 32.**

The permit application refers to data packages that are acceptable to WIPP facility personnel. However, no other information is provided regarding this acceptable data package. Revise the permit application to include a detailed discussion of the data packages that will be evaluated, including the specific content of these packages.

68. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5a, Phase I Waste Shipment Screening and Verification, Page C-26, Line 33.**

This states the "manager can make a determination that the waste stream characterization meets the WAP requirements," but the application does not address the opposing side of that event. Revise the permit application to discuss what will happen if the manager determines the waste stream characterization does not meet the WAP requirements.

69. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5a, Phase I Waste Shipment Screening and Verification, Page C-26, Lines 36 and 37.**

The permit application states the waste stream has been adequately characterized according to the WIPP facility-approved QAPjP. It is not clear if WIPP approves the site-specific QAPjPs and/or the generator approves it. Revise the permit application to clarify who will approve site QAPjPs, and include portions of the QAPP as necessary.

70. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5a, Phase I Waste Shipment Screening and Verification, Page C-26, Lines 36 and 37.**

This states the waste stream has been adequately characterized according to the QAPP DQOs. It is unclear if the adequate characterization occurs according to the entire QAPP or just the DQOs. Revise the permit application to clarify this statement.

71. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5a, Phase I Waste Shipment Screening and Verification, Page C-27, Lines 4-6.**

This section of the permit application discusses what will take place if discrepancies arise upon WIPP review of the generator Waste Stream Profile Form. However, if

discrepancies arise at the generator before providing any information to WIPP, how the generator will resolve the discrepancies is never discussed. Revise the permit application to provide this information.

72. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5a, Phase I Waste Shipment Screening and Verification, Page C-27, Lines 4-6.**

This segment states if waste discrepancies arise, the generator will be contacted and required to provide additional information to resolve the discrepancy before any waste from that waste stream is shipped to the WIPP. However, the permit application does not indicate the personnel position at WIPP which will have the responsibility, authority, and accountability to contact the generator. The permit application also does not specify the personnel position at WIPP which will acquire the necessary additional information from the generator to resolve the discrepancy. Revise the permit application to provide this information.

73. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5a, Phase I Waste Shipment Screening and Verification, Page C-27, Line 8; and Section C-5b Page C-30 Line 24.**

These sections both use the term "per container." Revise the permit application to provide an explanation of the term "per container."

74. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5a, Phase I Waste Shipment Screening and Verification, Page C-27, Line 20.**

This section uses the term "periodic." Revise the permit application to clarify what is meant by the term "periodic" review.

75. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5a, Phase I Waste Shipment Screening and Verification, Page C-27, Lines 24-35; and Page C-28, Lines 1-6.**

This section presents numerous Waste Stream Profile Form examinations that will be conducted by WIPP personnel. However, specific personnel positions which will be responsible for these examinations are never mentioned, along with their authority and accountability. Revise the permit application to include a discussion of the specific personnel positions responsible for these activities. Demonstrate that these personnel positions have commensurate authority and accountability. Provide a mechanism by which these examinations are ensured to occur.

Also, there is no mention of discrepancy resolution, if any discrepancies arise during these examinations. Revise the permit application examination process to include discrepancy resolution.

76. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5a, Phase I Waste Shipment Screening and Verification, Page C-27, Line 24.**

This section states the WIPP personnel will review the Waste Stream Profile Form. However, the text never mentions whether or not an initial review of the form is conducted by the generator. Revise the permit application to include an initial review of the Waste Stream Profile Form by responsible, authoritative and accountable personnel positions at the generator.

77. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5a, Phase I Waste Shipment Screening and Verification, Page C-27, Line 24.**

The permit application states that WIPP personnel will verify that the Waste Stream Profile Form is complete and accurate. Revise the permit application to provide a detailed discussion of what will occur if the form is incomplete and inaccurate.

78. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5a, Phase I Waste Shipment Screening and Verification, Page C-27, Line 26.**

The permit application uses the terms "waste-stream description" and "final waste form summary category." However, these terms are not consistent with Figure C-4, the Waste Stream Profile Form. Revise the permit application to clarify if the "waste stream description" is the same as "waste stream ID #" on the form. Explain whether the "final waste form summary category" is one item or two, as the form lists two separate entries as "final waste form name" and "summary category #". Also, revise the entire permit application to use all terminology consistently.

79. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5a, Phase I Waste Shipment Screening and Verification, Page C-27, Lines 34 and 35.**

This section mentions "current" WAC certification. However, the permit application includes no explanation of the term "current." Revise the permit application to include a discussion of "current" WAC certification.

80. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5a, Phase I Waste Shipment Screening and Verification, Page C-28, Line 1.**

This section states that WIPP personnel will perform three verification activities. However, the permit application does not adequately discuss three verification activities, including the process by which the verification activities will occur, and the mechanism ensuring that the verifications occur. Revise the permit application to provide a detailed discussion of the three verification activities.

81. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5a, Phase I Waste Shipment Screening and Verification, Page C-28, Line 1.**

The permit application mentions "process tolerance limits" for the first and only time. However, a detailed explanation is not provided for this terminology. This notation is an artifact from the previous permit application, as well as the original version of EPA's Waste Analysis Plan Guidance. EPA now refers to "process tolerance limits" as "operating acceptance limits." Revise the permit application by changing the reference from "process tolerance limits" to "operating acceptance limits," if applicable.

82. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Page C-28, Lines 8 and 10.**

This section of the permit application presents the title of this section, but it is referenced inconsistently. Line 8 states the title as "waste screening," and Line 10 states the title as "waste shipment screening." Line 10 is consistent with the Phase I title. Revise the permit application to correctly and consistently use the Phase II title.

83. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Page C-28, Lines 18-33.**

This section presents information which must be provided by the generator with each container shipped to WIPP. However, this information list is incomplete. The information should also include, at a minimum: generator EPA ID number, generator technical contact name, and generator technical contact telephone number. The waste characterization data should include a detailed description of the constituents, summary of the waste characteristics, and the waste data package numbers as supporting documentation.

Also, the information should be provided on a standard form to avoid inconsistencies. To illustrate, the "information for each container," which is listed in Section C-5b, Page C-28, Lines 18-33 is inconsistent with the "information associated with each container" which is listed in the same section on Page C-29, Lines 14-24. These inconsistencies demonstrate the need for a standard form. Revise the permit application to include a standard form presenting all of the necessary information.

84. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Page C-28, Lines 37-39.**

The permit application states the verification of information provided for each container will be performed. However, the specifics of the verification process are not presented, along with a mechanism used to ensure that the verification takes

place. Revise the permit application to include a detailed discussion of the verification process and assurance mechanism.

85. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Page C-28, Lines 41-43.**

This portion of the text provides information about the discrepancy resolution process, but this information lacks detail. Additional information is needed regarding the discrepancy resolution process which includes, but should not be limited to the following: the WIPP personnel position responsibility, authority and accountability for contacting the generator and following through the discrepancy resolution process; where the waste will be stored during the resolution period; what happens if the two discrepancy resolution time periods are exceeded; and a mechanism by which this process is ensured to occur.

Also, the permit application must be clarified regarding the discrepancy resolution process. The permit application indicates that generator personnel will be contacted by WIPP personnel, but the application does not specify the generator personnel positions that will be contacted (e.g., the technical contact, personnel other than the technical contact). Also, the length of time listed for contacting the generator is 15 days, but the application should clarify how the 15 days are calculated (e.g., from the date of waste container receipt, from the date of discrepancy discovery). The length of time for discrepancy resolution is 30 days, and the permit application also must clarify how the 30 days is calculated (e.g., from the date of waste container receipt, from the date of discrepancy discovery, from the date of generator notification regarding discrepancy discovery). Revise the permit application to address these concerns.

86. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Page C-29, Lines 1-3.**

This portion of the permit application states that both individual rejected waste containers and entire waste shipments that have been rejected will be transported back to the generator. However, a process by which this shipping/transporting occurs is not presented, along with a mechanism used to ensure that the shipping/transporting of rejected containers to the generator occurs. Revise the permit application to provide a detailed discussion of the shipping/transporting process and assurance mechanism.

87. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Examination of the EPA Hazardous Waste Manifest and Associated Waste Tracking Information, Page C-29, Lines 6 and 7.**

The permit application states that WIPP personnel will review the manifest for completeness. However, this is inconsistent with Section C-5b, Page C-28, Line 13, which states completeness and accuracy will both be reexamined. More importantly, the permit application does not address manifest requirements adequately, as required in 20 NMAC Section 4.1, Section V, 264.70-72. Revise the permit application to address these concerns.

88. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Examination of the EPA Hazardous Waste Manifest and Associated Waste Tracking Information, Page C-29, Lines 7 and 8.**

This portion of the permit application states the manifest is reviewed and signed in order to release the driver. Revise the permit application to provide a detailed discussion regarding actions that will be taken if a discrepancy is found on the manifest before it is signed to release the driver.

89. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Examination of the EPA Hazardous Waste Manifest and Associated Waste Tracking Information, Page C-29, Lines 8-11.**

This portion of the permit application states that waste container identification numbers will be noted and checked against the WWIS database for shipment completeness. However, there is no other information provided on the process by which this completeness check occurs, and the mechanism that ensures this check will be performed. Revise the permit application to provide a shipment completeness check process, and a mechanism ensuring performance of the completeness check.

90. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Examination of the EPA Hazardous Waste Manifest and Associated Waste Tracking Information, Page C-29, Lines 11-24.**

This section mentions the WWIS computer database, lists a few information items included in the database, and states that there are other information items in the database that are not mentioned in the text. Revise the permit application to provide a detailed discussion on the WWIS computer database, including but not limited to, information such as what type of data are stored in it; what type of reports are generated by it; how often reports are generated; to whom are the reports distributed; what personnel positions have access to it; what type of access do they have; and the DOE personnel positions responsible, with the authority and accountable for WWIS.

91. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Examination of the EPA Hazardous Waste Manifest and Associated Waste Tracking Information, Page C-29, Lines 12 and 13.**

This section of the permit application states that the WWIS computer database will maintain the waste tracking information as it is developed on site. The phrase "as it is developed on site" is unclear. Revise the permit application to clarify this phrase.

92. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Examination of the EPA Hazardous Waste Manifest and Associated Waste Tracking Information, Page C-29, Lines 29-31.**

This portion of the document states that any information in WWIS that is required to be retained in the operating record will be excerpted and printed, and the hard copy will be retained. It is unclear what information from the WWIS is required to be retained; how long the information in WWIS will be retained in the operating record; how and what information will be excerpted; how long the hard copy will be retained; and where the hard copy will be retained. Revise the application to include this information, or to reference where this information is discussed.

93. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Examination of Land Disposal Restriction Notice, Page C-29, Lines 34 and 35.**

This states that the WIPP facility may dispose of land disposal restricted (LDR) waste if their no-migration variance petition (NMVP) is successful. Revise the permit application to provide a discussion of the waste management relative to LDR requirements if the NMVP is not successful.

94. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Examination of Land Disposal Restriction Notice, Page C-29, Lines 35 and 36.**

The permit application states that the generator must provide, to the WIPP facility, an LDR determination and notice that the waste is not prohibited from land disposal because the waste is covered by a no-migration variance determination (NMVD). The text notes that this statement assumes a NMVD will be granted by EPA. However, should such a variance be granted, it is possible that <u>not</u> all of the Part A hazardous waste will be included. Therefore, an LDR determination and notice form example should be provided. Revise the permit application to include a LDR determination and notice form, including any and all of the necessary information.

95. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Examination of Land Disposal Restriction Notice, Page C-30, Line 2.**

This section states the wastes will be in conformance with conditions of the NMVD. However, no specifics are provided regarding how this conformance will occur and be ensured to occur. Revise the permit application to include the process by which the NMVD-condition waste conformance occurs, and the mechanism that ensures this conformance.

96. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Visual Verification, Page C-30, Line 8.**

The permit application states that written procedures will be used to perform visual verification. However, these procedures are not provided. Revise the permit application to include a detailed discussion of the visual verification procedures that will be used, and provide these procedures as an attachment or appendix to the permit application.

97. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Visual Verification, Page C-30, Lines 12-19.**

This portion of the permit application presents the items that will be inspected during the visual verification. However, this list is incomplete and requires clarification. For example, although the number and type of containers will be inspected for matching the manifest, no mention is made of noting any discrepancies found as a result of this inspection. Also, although the application states that the "container defects" will be inspected, the permit application should state that the container condition will be inspected and container defects will be noted. Revise the permit application to include a complete and consistent list of the items that will be inspected and the possible findings.

Also, although deficiencies, discrepancies and defects will be noted as part of the visual inspection, the permit application includes no mention of processes to resolve these problems and a mechanism to ensure problem resolution occurs. Revise the permit application to include a detailed discussion on the problem resolution process, and the mechanism used to ensure problem resolution occurs.

98. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Waste Shipment Screening QA/QC, Page C-30, Line 26.**

The permit application briefly mentions waste shipment screening QA/QC, but does not specify the QA/QC practices employed. Revise the permit application to provide

a detailed discussion of the waste shipment screening QA/QC practices employed, and include appropriate parts of the QAPP, as necessary.

99. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Waste Shipment Screening QA/QC, Page C-30 Lines 31 and 32.**

This portion states that QA/QC practices are extended to records management, but do not specify the QA/QC practices employed. Revise the permit application to provide a detailed discussion of the QA/QC practices employed for records management, and include appropriate parts of the QAPP, as necessary.

100. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Data Transmittal, Page C-30, Lines 36 and 37.**

The permit application states that generators will transmit data reports to the WWIS in accordance with the QAPP protocols. However, the permit application includes no details regarding these protocols and the specific location of the protocols in the QAPP. Revise the permit application to include a detailed discussion of the data report transmittal protocols. Attach or append the specific QAPP sections in part or in whole, as appropriate.

101. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Data Transmittal, Page C-30, Lines 37 and 38.**

This section of the permit application states that the WIPP facility will use approved written procedures/SOPs for all functions affecting the WWIS. Neither a discussion regarding the procedures/SOPs nor the procedures/SOPs themselves are provided. Revise the permit application to include a detailed discussion of the procedures/SOPs. Attach or append the procedures/SOPs to the permit application, as appropriate.

102. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Data Verification, Page C-31, Lines 2 and 3.**

The permit application states that the WIPP has established approved written procedures for waste screening determinations. However, neither a discussion regarding the procedures nor the procedures themselves are provided in the permit application. Revise the permit application to include a detailed discussion of the procedures. Attach or append the procedures to the permit application.

103. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Data Transmittal, Page C-31, Lines 2-6 .**

This section restates the introduction to this section found on Page C-28, Lines 12-15. However, a more detailed discussion of data verification through waste screening determinations should be provided in this portion of the permit application. In fact, the term "accuracy" was left out of the determination of manifest completeness. Revise the permit application to include a more detailed discussion of data verification through waste screening determinations. Include the term "accuracy" to be consistent with previous sections.

104. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Records Management, Page C-31, Lines 8 and 9.**

This section states that the WIPP manages all data and documents associated with waste characterization according to written procedures. However, neither a discussion regarding the procedures nor the procedures themselves are provided. Revise the application to include a more detailed discussion of the procedures. Attach or append the procedures to the permit application.

105. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Waste Tracking QA/QC, Page C-31, Line 12.**

This section states that TRANSCOM will provide feedback to the WIPP facility via satellite on the location and status of each waste shipment during transport. However, no details are provided regarding TRANSCOM, its feedback, and waste shipment status. Revise the permit application to provide a more detailed discussion of TRANSCOM, its feedback and waste shipment status.

106. **Chapter C, C-5 Verification of TRU Mixed Waste, Section C-5b, Phase II Waste Screening and Verification, Data Transmittal, Page C-31, Lines 13 and 14.**

This segment states that the WIPP maintains approved written procedures for tracking TRU-mixed waste shipments via TRANSCOM. However, neither a discussion regarding the procedures, nor the procedures themselves are provided. Revise the application to include a more detailed discussion of the procedures for tracking TRU-waste shipments.

## COMMENTS: TABLES AND FIGURES

107. **Chapter C, Table C-1, Pages C-33 through C-72.**

Refer to Attachment A for detailed commentary regarding table contents. Also revise the table to address the following:

- Footnote d indicates that reactive, ignitable, or corrosive characteristics were previously identified for some Table C-1 waste streams, but these are no longer identified with the waste stream. Revise the permit application to address, on a unique waste stream (facility specific) basis, why this has occurred.

- Footnote e indicates that EPA hazardous waste codes were not reported by the generator at this time. Is this because generator sites have not completed their process knowledge analysis, or because the generator sites did not believe hazardous wastes were present? Clarify why the codes were not reported at this time.

108. **Chapter C, Table C-3, Page C-75.**

This table indicates that the majority of screening mechanisms to ensure reactive wastes are not included in WIPP TRU-mixed waste are based upon process knowledge, an goes onto indicate that Appendix C1 shows most of the reactions will not occur. However, numerous questions have been raised regarding the contents of Appendix C1, including whether the incompatibilities identified by the comparison process are indeed resolved by the indicated methods, particularly when the incompatibility assessment indicates that additional test information is required. Further, the potential for explosive conditions to develop in the subsurface has not been addressed (See General Comment No.2). After addressing text commentary on these issues, revise Table C-3 accordingly.

109. **Chapter C, Table C-4, Pages C-77 through C-79.**

Table C-4 indicates that the purpose of RTR or visual examination is to verify waste matrix, but the purpose should also include verification of process knowledge (which is not necessarily inherent when verifying waste matrix). Additionally, this table states that RTR <u>or</u> visual examination will take place for CH TRU-mixed stored homogenous solids and soils and gravel waste, while Figures C-1 and C-2 indicate that <u>all</u> drums of retrievably stored waste will undergo RTR. Also, a purpose of headspace gas analyses - particularly TIC identification - is to identify hazardous constituents within the waste and to use this information to confirm process knowledge. It is also unclear whether determining "total quantities" of constituents

includes the determination of the presence of individual metals, SVOCs, etc. Revise the permit application to address these issues.

110. **Chapter C, Tables C-2, C-5 and C-6, Pages C-73, C-74, C-80, C-81 and C-82.**

DOE has listed 33 organic (when counting xylenes and cresols as one each) and nine inorganic parameters of interest in Table C-2. Table C-5 presents a summary of hazardous waste characterization requirements for TRU mixed waste. Under the heading of Headspace Gases, DOE has listed 14 flammable VOCs and seven non-flammable VOCs (a total of 21 constituents). Revise the permit application to explain why methylene chloride, trichloroethene, and 1,1,1-trichloroethane (listed as combustibles by NIOSH) are listed as non-flammable VOCs. Also, revise the permit application to explain why 12 of the 33 VOCs and SVOCs listed on Table C-2 as parameters of interest were omitted from the Headspace Gases category (i.e., explain why headspace gas samples will not be analyzed for all the VOCs/SVOCs listed on Table C-2.

In addition, Table C-5 presents a summary of hazardous waste characterization requirements for TRU mixed waste. Under the heading of Total VOCs, DOE has listed 25 VOCs and five SVOCs. Revise the permit application to explain why isobutanol, 1,1,2-trichloroethane, and trichloromethane are listed on Table C-2 as parameters of interest were omitted from the Total VOCs category.

Table C-6 presents the headspace target analyte list and methods. This table only contains 20 of the 28 VOCs and none of the SVOCs listed on Table C-2. Also, Table C-6 is missing trichlorofluoromethane which is listed on Table C-5 as an analyte under flammable VOCs under the Headspace Gases category. Revise the permit application to explain why the missing constituents were omitted form Table C-6.

111. **Chapter C, Table C-5, Pages C-80 and C-81.**

Table C-5 does not include all of the compounds outlined in Table 1-3 of the QAPP. For example, for headspace gases, hydrogen and methane are included for analysis in the QAPP, but not the WAP. Several other volatiles, semivolatiles, and metals parameters are not consistent with what is presented in the QAPP.

The list of flammable and nonflammable VOCs of interest between the WAP and QAPP are also different. For example, Table 12-2 of the QAPP lists bromoform, formaldehyde, hydrazine, and tetrachloroethane as nonflammable VOCs of interest; however, the WAP does not include these compounds. Ensure that the document is consistent and that all of the parameters of interest are included in the WAP.

Additionally, the analytes listed on Table C-5 are not consistent with the tables listed in the appendices. For example, the following compounds are listed on Table C6-7 but are included in Tables C-2, C-5 or C-8 of the WAP:

- SVOCs: 1,4-dichlorobenzene, 2,4-dinitrophenol, 2,4-dinitrotoluene, hexachlorobenzene, hexachloroethane and pentachlorophenol; and

- Metals: Antimony, nickel, thallium, vanadium and zinc;

Revise the permit application so that all tables in the appendices, QAPP, and the application are consistent. Alternatively, justify these differences. Revise the permit application to include one comprehensive analytical parameter list which includes the target analytes, method number and the associated QAOs, and ensure that all analytical parameters that are necessary to characterize all wastes to be disposed of at WIPP are included in the WAP.

112. **Chapter C, Table C-8, Page C-85.**

The WAP itself does not consistently identify analytical methods. For example, Table C-8 lists all of the analytical methods to be used for total metals analysis; however, Table C6-9 of Appendix C6 lists more recent versions of these methods. For example, Method 6010 is referenced in Table C-8; however, Table C6-9 of lists Method 6010A for the same analysis. Such inconsistencies may not result in comparable data among all generators. Revise the permit application to include a comprehensive consistent list of all of the methods to be used in the waste characterization for disposal at the WIPP facility.

113. **Chapter C, Table C-9, Page C-86**

Table C-9 lists the Phase I waste screening parameters and determination methods. However, the Table must be revised to address the following deficiencies:

- The terminology used in Table C-9 is confusing when compared to the terminology used in the rest of Chapter C. Define the following terms and provide cross references to any and all associated terms: "waste matrix code group" and "waste matrix category."

- Table C-9 uses the term "waste categories." Revise the permit application to clarify this term because it is unclear whether or not it refers to other terms such as "summary category" or "waste matrix category." Revise the table and entire permit application to use correct and consistent terminology.

- Table C-9 references Appendix C1, which presents the compatibility issue. It is unclear how this compatibility analysis will be applied to the WIPP wastes

and is ensured to be implemented. It is also unclear how the eleven final waste forms and/or the four summary categories relate to Table C1-1's "waste category." See specific comments, Appendix C1.

Table C-9 has been found to be inadequate with respect to waste screening and verification issues. There is little correlation between this table and the associated text found on pages C-26 through C-28. For example, the text makes note of four verification points:

- Waste characterization data package completeness review and acceptance;
- Generator site QAPjP audit program providing on-site verification;
- Waste characterization data meets acceptance criteria to comply with WAP; and
- Waste Profile Form (WPF) completeness review.

However, the table does not specifically address these four verification points. Revise the table accordingly.

114. **Chapter C, Figures C-1 and C-2, pages C-87 and C-88.**

The 1994 QAPP included a verification step relative to the headspace gas that would be conducted to ensure that gas detected is consistent with that anticipated via process knowledge. However, this important step has been removed from the tables included in the Part B permit application, and was also removed from the 1995 QAPP. Revise the permit application to include this step.

115. **Chapter C, Figure C-4, Page C-90.**

Figure C-4 presents the waste profile form. The form is not consistent with the information provided in the text and is inadequate for the following reasons:

- The text states the generator's EPA identification (ID) number will be included on the form. However, there is no line provided for the generator's EPA ID number. Provide the title and space on the form for the generator's EPA ID number.
- The technical contact is listed on the form. However, there is no line on the form for the technical contact's phone number. Provide the title and space on the form for the technical contact's phone number.

- A space is provided for the original generator's name. However, a space is not provided for the original generator's EPA ID number. Provide the title and space for the original generator's EPA ID number.

- The form does not address waste characterization issues, such as ignitability, corrosivity, reactivity and compatibility. Revise the form to include "Yes" and "No" check off boxes for ignitable, corrosive, reactive and compatible wastes.

- Waste analysis information is not provided.

116. **Chapter C, Figure C-5, Page 91.**

Figure C-5 presents the waste shipment screening process. However, the flow diagram shown in this figure is not consistent with the information presented in the text. Section C-5a Page C-26, Lines 32-34, states the generator site project manager determines where the waste stream characterization meets the WAP requirements. However, this early determination step should include a decision box and an associated discrepancy resolution process in the flow diagram shown in Figure C-5. Revise the flow diagram to include this. Also, revise the flow diagram to indicate specifically, where WAP requirements are deemed to be met.

Also, the first decision box in the flow diagram regarding waste characterization requirements does not allow for an associated discrepancy resolution process. Revise the diagram to include this.

Phase II of the flow diagram shown in Figure C-5 lists four questions implying simultaneous resolution. However, in actuality, these questions are not addressed at the same time. The question regarding manifest completeness is addressed first in order to sign the manifest and release the driver, as stated in Section C-5b Page C-28 Lines 16 and 17. Only after that are the next three questions regarding shipment completeness, LDR notification completeness and visual examination result addressed. Therefore, Figure C-5 should be revised to include two sets of decision boxes that each include discrepancy resolution processes. One set must address the manifest completeness issue, a discrepancy resolution process and resultant signing of the manifest. The other set must address the three remaining issues and a discrepancy resolution process. Revise the flow diagram shown in Figure C-5 to reflect this.

After the three remaining issues are addressed and discrepancies are resolved, there is no resultant box. The resultant box should state wastes are accepted/approved for disposal at WIPP. Revise the permit application accordingly.

The rejection box shown in Figure C-5 (Phase II) does not state that the waste will be shipped back to the generator when the waste is rejected, either in part or whole. Revise the rejection box in Figure C-5 to reflect this.

## COMMENTS - CHAPTER C APPENDICES

### APPENDIX C1

1. **Appendix C1, Pages C1-2 through C1-3.**

   The permit application provides groupings of constituents that were considered in the compatibility assessments. However, comparison of these groups with constituents present in listed wastes shown in the Part A shows that not all of the constituents comprising wastes upon the Part A are explicitly shown to have been considered in the compatibility assessments. Although the presence of some wastes (e.g., cadmium) may be assumed within groups shown in this appendix, the appendix should specify this to demonstrate that all hazardous waste slated for shipment to WIPP was considered in the assessment. Revise Appendix C1 to include compatibility assessments for all constituents present within the wastes shown on the Part A. Alternatively, modify Appendix C1 to justify these exclusions.

2. **Appendix C1, Page C1-3, Lines 31-33.**

   Revise Appendix C1 to discuss the chemical differences between Brines A and B, used in the compatibility assessments, and to state which brine was used in each compatibility assessment.

3. **Appendix C1, Page C1-4, Lines 11-12.**

   Appendix C1 states that Purple K and FORAY contain no reactive compounds, but does not provide a list of compounds present in these fire suppressants to confirm this assertion. Revise Appendix C1 to include this information.

4. **Appendix C1, Page C1-5, Lines 29-31.**

   Appendix C1 indicates that the information presented in this appendix applies to the test phase. However, additional generator sites shall ship waste to WIPP during the disposal phase, and this compatibility assessment should be updated to include these wastes. Revise Appendix C1 to include wastes generated from sites other than Rocky Flats and INEL that may ship waste, and to include any additional wastes from these two sites not included in the compatibility assessment. Alternatively, revise Appendix C1 to specifically discuss each new waste identified and to state why this waste "fits" into previous compatibility assessments.

5. **Appendix C1, Pages C1-97 through C1-110.**

Appendix C1 indicates that for a number of the incompatibilities noted, test program activities will be conducted to resolve any compatibility issues. However, test phase activities planned for WIPP were cancelled, and it is unclear whether these activities were (or will be) carried out under other programs (note that recently, DOE has indicated that many of its gas-generation related test programs have been cancelled). Revise Appendix C1 to discuss whether test programs are continuing for the referenced incompatibilities, the results of these assessments (if available; if not, state how the compatibility issue shall be resolved), and any alternative studies conducted to address the compatibility issues presented in this portion of Appendix C1.

## APPENDIX C2

1. The detailed data table presented in Appendix C-2 and subsequently, the summary data table include results from all of the eleven final waste forms except one, which is the soils. Include results from the soils' waste type in the detailed and summary data tables.

2. The summary data table includes ethane, methane and propane, but the detailed data table does not. Provide the results for ethane, methane and propane in the detailed data table which were used to generate the summary data table.

3. Several constituents listed in the summary and detailed data tables are not listed in Tables C-5 and C-6. These constituents include: 1,1,2,2-tetrachloroethane; 1,1-dichloroethane; 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; bromoform; (cis)-1,2-dichloroethylene; and cyclohexane. Provide justification for including these constituents in Appendix C2's tables, but not in Tables C-5 and C-6.

4. Furthermore, Appendix C2, Page C2-1, Lines 4 and 5 state the results are from RFETS and INEL, and are not from any of the other generator sites. Clarify whether results from all other generator sites intending to ship waste to WIPP are available.

5. Table C2-1 presents weighted average concentrations of headspace gas, but the document does not describe, specifically, how these values are calculated relative to the data included in Appendix C2 and the entire waste inventory intended for disposal at WIPP. That is, how specific non-detects, qualified values, etc. are managed relative to these calculations are not included. Revise the permit application to include a discussion regarding how these values were calculated. Also include, upon this table, maximum, minimum, and median values.

6. Revise Appendix C2 to include a table which presents the weighted average, maximum, minimum, and median values for each constituent relative to waste matrix code group. Indicate, also, which waste summary group these matrix code groups are included within. Also indicate the hazardous waste code for the waste matrix code group; alternatively, indicate whether different hazardous waste codes apply to different site-specific drums within each waste matrix code group.

7. Revise this appendix to include an explanation of the multiple decimal points included in some data reported.

8. Data presented on these tables often indicate exceptionally high values of all constituents for a given drum analyzed, but these values were sometimes accompanied by a "U" designator, indicating that the analyte was undetected and was reported at the MDL. Explain the origin of these values (e.g., interference). Also explain why some values are accompanied by the designator "a" which indicates the result is an average of more than one result, while other data are apparently single sample values. Also explain why, when an analyte exceeded the calibration range, sample dilution was not performed.

## APPENDIX C3

No commentary necessary.

## APPENDIX C4

## GENERAL COMMENTS

1. In general, the information describing the equipment maintenance and calibration should contain more standardized information. The text generally states that requirements are based on manufacturer's recommendations; however, this is insufficient to ensure consistency between generator sites.

2. The WAP must be revised to include the numbers and types of sampling containers. If this information is included in the QAPP, then provide a specific reference to where it may be found.

3. Although the 1995 QAPP discusses the maintenance of field sampling equipment and sample preservation and storage techniques, this information has not been included in the WAP or referenced to the QAPP. Revise the permit application to include such information.

4. Revise the WAP to include proper packing and shipping procedures.

## SPECIFIC COMMENTS

1. **Appendix C-4, Section C4-1 Headspace-Gas Sampling, Sampling Heads, Page C4-6, Line 10.**

   Revise the permit application to provide procedures to prevent outside air from entering the drums.

2. **Appendix C-4, Section C4-1 Headspace-Gas Sampling, Sampling Heads, Page C4-7, Lines 1-3.**

   Revise the permit application to define what flow of QC gases is considered to be "excess."

3. **Appendix C-4, Section C4-1 Headspace-Gas Sampling, Sampling Heads, Page C4-7, Lines 9-14.**

   If the 208-liter poly bag is torn or breached, clarify whether there is an alternative headspace gas sampling location relative to the deteriorated areas (e.g., next to the tear, opposite side of the poly bag, etc.). Also, discussion of headspace gas volume estimation should be included. Revise the permit application to address these issues.

4. **Appendix C-4, Section C4-1 Headspace-Gas Sampling, Sampling Heads, Page C4-8, Lines 1-3.**

   The text states that the "Site SOPs must address how information is to be documented when the estimated available headspace volume is less than 1L." It is unclear how consistency among the various generator sites will be established if each site SOPs address these issues differently. Revise the appendix to provide information on the documentation procedures each generator should adhere to ensure consistency.

5. **Appendix C-4, Section C4-2 Sampling of Homogenous Solids and Soil/Gravel, Page C4-11, Lines 20-38.**

   The text does not clearly indicate the number of the samples that will be taken, as well as the sample size. Revise the permit application to address this concern.

6. **Appendix C-4, Section C4-2 Sampling of Homogenous Solids and Soil/Gravel, Page C4-10, Lines 8-23.**

   The Appendix indicates that the coring device sleeve material must be of a rigid material that is "unlikely to affect the composition and/or concentrations of target analytes in the sample core." Revise the permit application to provide a list of acceptable sleeve materials within the document, including references for these

assessments and how these determinations will be made prior to any sampling of the waste. It is presumed that the sleeve length will be determined by examination of radiographic information.

7. **Appendix C-4, Section C4-2 Sampling of Homogenous Solids and Soil/Gravel, Page C4-12, Lines 4-7.**

   Revise the permit application to define what constitutes a "representative subsection" of the core as it pertains to samples collected for analyses of semi-VOCs, PCBs, and metals.

8. **Appendix C-4, Section C4-2 Sampling of Homogenous Solids and Soil/Gravel, Page C4-12, Lines 22-35.**

   Clarify whether the collocated core methodology is a duplicate sample collection methodology intended to collect samples from almost the same location within the drum. Page C4-12 of the text states that "if the visual examination detects inconsistencies in the waste at the sample location then another sample location may be randomly selected," but the appendix does not indicate what kind of inconsistencies may be observed for homogenous solids. Revise the permit application to address these concerns.

9. **Appendix C-4, C4-4 Radiography, Section C4-4a Methods Requirements, Page C4-18, Lines 5-20.**

   The permit application indicates that standardization of procedures relative to radiography and operator qualification is a "must," but detail regarding implementation if this standardization is lacking. Revise the permit application to address this concern.

   Also, revise the permit application to clarify how variations in radiographic technologies could potentially impact data quality and comparability. Also, include the permit application revision clarification regarding whether the operator will identify the nature/form of material parameters, which could impact additional testing (e.g., the presence of inner bags requiring sampling).

10. **Appendix C-4, C4-4 Radiography, Section C4-4a Methods Requirements, Page C4-18, Lines 22-29.**

    Revise the permit application to clarify whether an independent drum replicate will be collected, and by whom (ensure that it is personnel other than that who performed the first examination).

11. **Appendix C-4, C4-4 Radiography, Section C4-4a Methods Requirements, Page C4-19, Lines 1-2.**

Revise the permit application to indicate who will develop and implement the RTR training program. Ensure that the program is consistent among all of the generator sites.

12. **Appendix C-4, C4-4 Radiography, Section C4-4a Methods Requirements, Page C4-19, Lines 36-40.**

Revise the permit application to clarify how a visual examination expert is trained. Discuss the programmatic objectives that govern whether a visual examination expert determines the extent to which waste segregation should be performed. The criteria used for this methodology should be standard and consistent for all generator sites.

## APPENDIX C5

1. The summary category numbers are listed in "Summary Category" column. However, the summary category names are not provided. Revise Appendix C5 to include the summary category names.

2. Various RTR codes are listed in the "Applicable RTR Codes" column. Code B pertains to waste form identification, and code C pertains to waste matrix parameter. However, no details are provided regarding the waste form identifications and waste matrix parameters. Revise Appendix C5 to include a listing of all the possible waste form identifiers and waste matrix parameters, and a cross-reference between them and the four summary categories and 11 final waste forms.

3. RTR codes D, E and F pertain to the verification of the absence of free liquids. However, a D, E or F designation is not included for S4000 (Soils/Gravel Waste) and S7000 (Special Wastes). Revise Appendix C5 to provide justification for not performing a free liquids examination on all wastes. In those cases where free liquids examination cannot occur, provide assurance through adequate documentation that free liquids will not be present and that it does not compromise the validity of the waste characterization.

4. RTR code G indicates RTR examination is sometimes negated. Revise Appendix C5 to provide justification for the negation of RTR examination. In those cases where RTR examination is negated, provide assurance through adequate documentation that it does not compromise the validity of the waste characterization.

5. RTR code H pertains to the use of process knowledge. Code H is noted for S3000 (Homogeneous Solids) Inorganic Waste Water Treatment Sludge (second listing on page C5-1) and Solidified Liquid (second listing on page C5-2). Code H is not noted for

S5000 (Debris Waste) and S7000 (Special Waste). These notations and lack of notations are not consistent with Chapter C. Revise Appendix C5 to provide justification for these notations and lack of notations. In those cases where process knowledge is used, provide assurance through adequate documentation that it does not compromise the validity of the waste characterization.

## APPENDIX C6

1. **Appendix C6, Section C6-1, Page C6-1, Lines 16-33, Page C6-2, Lines 1-27.**

   For the precision, accuracy, completeness, comparability and representativeness information provided in Appendix C6, revise the permit application to discuss the kind of corrective actions that may be implemented if these parameters exceed the stated QC limits for each of the analyses.

2. **Appendix C6, Section C6-2, Page C6-2, Lines 40-47.**

   Revise the permit application to provide the precision QC limit for homogenous solids and soil/gravel.

3. **Appendix C6, Section C6-2, Page C6-3, Lines 11-13.**

   Revise the permit application to provide more detail and to discuss how comparability will be measured. The document simply states that "consistent use and application of uniform procedures, sampling equipment, and measurement units will ensure that operations are comparable." Discuss how this will be verified and achieved.

4. **Appendix C6, Section C6-3, Page C6-6, Lines 5-35.**

   Revise the permit application to demonstrate how the minimum detectable concentration will be practically achieved. Also, provide additional clarification as to the assumptions made for the listed equations.

5. **Appendix C6, Section C6-3, Page C6-6, Lines 39-41.**

   Revise the application to clarify how the expert panel that is to determine total uncertainty will be selected. Also, include the criteria for determining uncertainty (so that it is applied in a standard manner to all generator sites). Finally, clarify how an uncertainty determined by an expert panel (which will be more qualitative than quantitative) will be determined to the 90% confidence level. Revise the permit application to address these concerns.

6. **Appendix C6, Section C6-5, Page C6-8, Lines 34-39.**

Revise the permit application to indicate whether sediment/soil and wastes samples are screened prior to analysis. If this is intended, clarify this within the application and reference the appropriate SW-846 methods (3810 headspace or 3820 hexadecane extraction and screening).

7. **Appendix C6, table C6-8, Page C6-23:**

The specific sample for which the accuracy measurement applies should be defined. For example, indicate whether the accuracy limits are for matrix spike or the laboratory control samples. Additional QA/QC are also associated with ICP and AA analyses, but these are not shown on Table C6-8. Revise the table/text to include such information, as well as the associated recovery limits.

## APPENDIX C7

No commentary necessary.

## APPENDIX C8

1. **Appendix C8, Page C8-1, Lines 11 and 12.**

Appendix C8 introduces a standard operating procedure for conducting audits, and the procedure is mentioned several other times in the Appendix. However, the procedure is never provided. Revise the permit application to include this procedure.

2. **Appendix C8, Page C8-1, Lines 14 and 15.**

This appendix states that the audit checklists will be customized for each generator. This "customization" creates great opportunity for inconsistencies among audits as a result of the subjectiveness of the audit checklist preparer. One master audit checklist should be used for all generators to keep the audit process consistent and objective. It is understood not all sections of the audit checklist will apply to all generators. In that case, a "not applicable" response is appropriate. Prepare a master audit checklist and include it in the permit application.

3. **Appendix C8, Page C8-1, Line 28.**

Appendix C8 presents a managerial position and several associated responsibilities. However, the commensurate authority and accountability are never noted, along with the

responsibilities. Revise the permit application to include authority and accountability commensurate to the responsibilities given.

4. **Appendix C8, Page C8-3, Lines 4 and 5.**

Appendix C8 states that audits will be conducted at least annually for each generator, with both announced and unannounced audits. However, it is not mentioned if initial start-up audits will be conducted at each generator. Also, it is unclear if both announced and unannounced audits will be conducted at least annually, or if just one or the other will be conducted at least annually. Revise the permit application to clarify these points regarding initial start-up, announced and unannounced audits.

5. **Appendix C8, Page C8-3, Line 32.**

This appendix states that the generator will be requested to respond to the audit report within 30 days. The generator should not be requested to respond; they should be required to respond. Revise the permit application to state the generator will be required to respond, and provide a mechanism by which this response is ensured to occur.

6. **Appendix C8, Page C8-3, Lines 32-34.**

This appendix states that the generator will respond and provide corrective action information. Revise the permit application to include a detailed discussion of what will happen if the generator does not respond at all to the audit report findings.

7. **Appendix C8, Page C8-3, Line 35; and Page C8-4, Lines 1 and 2.**

Appendix C8 states subsequent audits will determine if corrective actions were satisfactorily implemented. Revise the permit application to include a discussion regarding the consequences if the generator does not satisfactorily implement corrective actions.

8. **Appendix C8, Page C8-4, Lines 1 and 2.**

Appendix C8 states that the audit events will be tracked and issued to the DOE and site management. Revise the permit application to include a detailed discussion of the tracking system (e.g., what items will be tracked, how they will be tracked). Include a copy of the tracking report which will be issued. Specify who the report will be issued to at the WIPP facility and the off-site generators, as the terms "DOE" and "site management" could refer to WIPP or the generator. Provide a discussion of what will happen if the information tracked for a generator indicates unsatisfactory performance, either on a one-time or recurring basis (e.g., written reprimands, written warnings, suspension from shipping wastes to WIPP, expulsion from the WIPP waste shipment program, WIPP representative with the responsibility, authority and accountability for

these items). Additionally, revise the permit application to define the criteria to determine satisfactory and unsatisfactory performance.

9. **Appendix C8, Page C8-4, Line 4.**

Appendix C8 states that the audit records will be maintained in the WIPP operating record until closure of the facility. However, this statement is inconsistent with Appendix C8, Page C8-1, Lines 23-26 which state that the records will be maintained at WIPP in the operating record for at least three years before being transferred to the WIPP Permanent Records System for permanent storage. Revise the permit application to clarify this inconsistency.

10. **Appendix C8, Table C8-1.**

This appendix presents an example audit checklist. However, this checklist is inadequate. The checklist should include the following, at a minimum: auditors' names; auditors' signatures; type of audit (e.g., initial, announced, unannounced); names of the generator personnel interviewed; notation of the sections for which the generator personnel were interviewed; and the version of the QAPP used in conjunction with the audit. Revise the checklist to include these items.

11. **Appendix C8, Table C8-1.**

This audit checklist is incomplete. To illustrate, the checklist asks if documentation exists but does not inquire if the documentation is adequate. Also, the checklist asks if personnel qualifications are current, but does not provide a list of the qualifications; the checklist also asks if an activity has been conducted, but does not inquire if the activity has been conducted satisfactorily. Additionally, the checklist asks if measures have been taken, but does not provide a listing of the measures taken. Revise the checklist to address all audit areas more thoroughly.

12. **Appendix C8 Table C8-1.**

This checklist does not include "Section C" in the Quality Assurance Objectives portion. Correct the checklist with respect to inclusion of Section C.

## ATTACHMENT A

**Inconsistencies and Detailed Comments**
**Table C-1**

I. Wastestream Classification/"Process Knowledge Issues"

Table C-1, "TRU Mixed Waste characterization Information," (pages C-33 through C-72) provided wastestream descriptions; EPA Hazardous Waste Codes; and wastestream names, unique identifiers, and Final Waste Form Groups by Summary Category Groups. An evaluation of the information presented in Table C-1 and subsequent comparison with the information on waste classification and generation rates presented in Table 4-7, "Identification/Classification of CH TRU Waste Streams to be Disposed of at the WIPP Facility," (WIPP No-Migration Variance Petition [WIPP NMVP, pages 4-15 through 4-87) and Table 4-8, "Identification/Classification of RH TRU Waste Streams to be Disposed of at the WIPP Facility" (WIPP NMVP, V.1, pages 4-88 through 4-95) revealed numerous inconsistencies and discrepancies. The following questions are examples of incomplete or misleading information presented in Tables C-1, 4-7, and 4-8.

(1) Table C-1 does not provide waste descriptions for the following wastestreams identified on Table 4-7 of the NMVP:

- AE-W038 - Solidified Inorganics
- AE-W039 - Solidified Organics
- AE-W040 - Solidified Inorganic
- AE-W041 - Lead/Cadmium Metal Waste
- AE-W042 - Lead/Cadmium Metal Waste
- MU-W002 - Heterogeneous Waste

Waste descriptions (along with the other information listed in Table C-1) should be provided for these wastestreams.

(2) Table C-1 indicates that wastestream KA-W016 has not yet been generated; however, Table 4-8 of the NMVP reports that 1.1E+1 cubic meters are currently stored.

(3) Table C-1 lists wastestream IN-W157 as a Solidified Process Residue within the Solidified Inorganics Final Waste Form Group under the Homogeneous Solids - S3000 Summary Category Group Description. The waste description is as follows:

> "This waste comes form the Rocky Flats Plant (RFP). It contains alcohols and organic acids such as ethylene

diamine tetra acetic acid (Versenes) set in portland and magnesia cements."

(A) Based on this description, the waste does not appear to be an "inorganic" waste.

(B) Based on the "Basis for Classification" presented for the wastes in Table 4-7 of the NMVP, the description in Table C-1 appears to be incomplete as Table 4-7 indicates that trichloroethylene; carbon tetrachloride; 1,1,1-trichloroethane; methylene chloride; methanol; xylene; and 1,1,2-trichloro-1,2,2-trifluoroethane are also present.

(C) The detail of this waste description (and for that matter, the detail of all the other waste descriptions listed in Table C-1) is not sufficient to determine: (1) whether the wastes results from a consistent process or batch process; (2) the specific process/operation that the waste resulted; and (3) what raw materials or chemical inputs were present.

(4) Wastestream IN-W177 is listed as a Solidified Inorganic on page C-33 of Table C-1, yet in Table 4-7 of the NMVP, page 4-21, this wastestream is listed as a Solidified Organic.

(5) Table C-1 provides the following waste descriptions for wastestream IN-W188, a Solidified Process Residues within the Solidified Inorganics Final Waste Form Group:

> "This waste is from RFP. The waste consists of sludge from floor drains in a Pu process facility that have been cemented in portland cement; described as poor grade."

In addition, based on Table 4-7, this waste has beryllium; cadmium; chromium; lead; mercury; chloroform; 1,2-dichloroethane; trichloroethylene; tetrachloroethylene; 1,1,2-trifluoroethane; carbon tetrachloride; 1,1,1-trichloroethane; methylene chloride; methanol; n-butyl alcohol; and xylenes. The waste description given in Table C-1 does not adequately describe this wastestream as this material does not appear to be an "inorganic waste."

(6) Neither Table C-1 nor Tables 4-7 or 4-8 of the NMVP listed relevant drum numbers; therefore, we were unable to match headspace gas sampling results with specific wastestreams to see if there were any correlations between VOC concentrations and waste classification/type.

(7) Wastestream IN-W220 is described as Solidified Process Residues within the Solidified Inorganics Final Waste Form Group under the Homogeneous Summary Category. The waste description provided in Table C-1 is as follows:

> "This wastestream includes waste generated at Argonne National Laboratory-East (ANL-E) and solid wet sludge from RFP. The ANL-E waste is derived from research activities performed in a laboratory environment. The waste includes concrete and laboratory apparatus. The RFP solid wet sludge is cemented or dewatered sludge precipitated from aqueous waste treatment processes. Soils that are not contaminated with or by chemicals are also included."

(A) Clarify how DOE decided to classify this wastestream as a homogeneous mixture when it includes laboratory wastes, debris, and soil from two different DOE sites.

(B) Although this material was classified as an inorganic, Table 4-7 lists 11 organic constituents as the basis for classification; clarify this discrepancy.

(C) Clarify why this material is considered solidified when it has concrete, debris, and sludges that are either cemented or dewatered.

(8) Wastestream IN-W228 is described as Solidified Wastewater Treatment Sludges within the Solidified Inorganics Final Waste Form Group under the Homogeneous Summary Category. The waste description provided in Table C-1 is as follows:

> "This wastestream, generated at RFP, consists of wet sludge from treatment of all other plant radioactive and/or chemical contaminated wastes and further treatment of the first stage effluent. Some pre-1973 wastes may include non-sludge wastes such as electrical motors, mercury, and lithium, batteries, bottles of liquid chemicals, and small amounts of mercury in pint bottles. Portland cement was added to absorb the residual liquids."

(A) Clarify how DOE decided to classify this wastestream as a homogeneous mixture, when it is derived from the treatment of "all

other plant radioactive and/or contaminated wastes," and contains motors, bottles, batteries, and soil.

(B) Although this material was classified as an inorganic, Table 4-7 lists 11 organic constituents as the basis for classification. Clarify this discrepancy.

(C) Clarify when this material is considered solidified when it contains sludge, motors, bottles, and portland cement (to absorb liquid).

(D) Clarify how the portland cement was added to the bottles in the drums, or whether bottles were emptied into the drums and then portland cement was added.

(9) Wastestream LL-W019 is described as Solidified Waste within the Solidified Inorganics Final Waste Form Group under the Homogeneous Summary Category. The waste description provided in Table C-1 is as follows:

> "50 to 90 percent of this waste matrix consists of liquids solidified in 1- to 5-gallon plastic containers using portland cement or Aquaset for the water-based liquids and Envirostone or Petroset for the oil-based liquids. The remainder consists of glove box waste."

(A) Table 4-7 of the NMVP indicates that the basis for classification of this waste is D040 and F002 (trichloroethylene and spent halogenated solvents, respectively). Clarify then why was this wastestream classified as a Solidified Inorganic.

(B) Based on the waste description, the wastestream appears to be a mixture of water-based liquids, oil-based liquids, and glove box materials. Clarify why then this wastestream was placed in the "Homogeneous" Summary Category.

(10) Other examples of insufficient waste descriptions include the description given for wastestream OR-W042, Inactive Storage Tank Contents-MTRU Sludge, under the Solidified Inorganics Final Waste Form Group within the Homogeneous Summary Category. This waste is described in Table C-7 as follows:

> "This wastestream is comprised of MTRU sludge that has settled and separated from wastewater that has been stored in large underground storage tanks. The waste is a product of past operations at ORNL involving various

nuclear research and radioisotope fabrication processes. Note: This stream may contain TSCA waste at unknown levels."

(A) Table 4-7 of the NMVP indicates that the basis for classification of this waste is cadmium, chromium, lead, and mercury. Clarify how DOE can use the above process description to determine that there are no other RCRA contaminants (organic or inorganic) present in this wastestream.

(B) DOE has stated that waste with equal to or more than 50 ppm polychlorinated biphenyls (PCBs) will not be accepted for disposal at the WIPP (page C-11). However, the NMVP indicates that only solidified organic sludges will be sampled for PCBs (Table C-7, page C-84). Assuming that the statement referring to TSCA waste includes PCBs, DOE should determine whether this wastestream contains less than 50 ppm PCBs (i.e., DOE stated that it will only analyze solidified organics for PCBs).

(11) Wastestream RF-W040 is described as Incinerator Ash/TRM within the Solidified Inorganics Final Waste Form Group under the Homogeneous Summary Category. The waste description provided in Table C-1 is as follows:

"This wastestream was previously named "fluidized bed incinerator ash (TRU)-mixed." Ash is generated from operation of a fluidized bed incinerator in Building 766 or an incinerator in RFP Building 771. The incinerator was used to burn office trash, combustible waste generated in process areas, combustible oils form the refrigeration units, diesel fuel, and crank case oils. The oil has been accumulated as a low-level mixed waste. Fluid bed incinerator ash was packaged in 55-gallon drums lined with a rigid polyethylene liner and one bag liner. It is a portion of the wastestream entitled: fluidized bed incinerator ash/LLW mixed" in the inventory report. The ash normally assays as low-level waste (LLW), but this portion was found to be TRU."

(A) Table 4-7 of the NMVP indicates that the basis for classification of this waste is the eight TC metals, 1,1,1-trichloroethane, carbon tetrachloride, methylene chloride, 1,1,2-trichloro-1,2,2-trifluoroethane, and methyl ethyl ketone. DOE should explain why incinerator ash generated from the description of office wastes and

various oils would contain the five volatile organic constituents listed above.

(B) Clarify whether DOE has considered the potential for other non-volatile constituents such as particles of incomplete combustion (PICs) or dioxins (particularly if DOE is incinerating chlorinated organics) to be present in thermal treatment residues. Are there any sampling data to support such as conclusion?

(C) There are several other examples of thermal residues listed in Table C-1 (e.g., RF-M001 and SR-W052) that also contain numerous volatile organic constituents (some of which are chlorinated). Revise the permit application to clarify the statement made on page C-4 that for RH TRU waste forms (which are primarily thermally treated wastes), some CH TRU waste sampling activities would not be appropriate (e.g., headspace-gas sampling). This statement implies that there may not be any volatile organic constituents present in the waste, which is in conflict with the process information presented in Table C-1.

(12) Wastestream RL-M017 is described as TRU Mixed Organic Labpacks within the Solidified Organics Final Waste Form Group under the Homogeneous Summary category. The waste description provide in Table C-1 is as follows:

> "This wastestream consists primarily of organic labpacks. Some of the contains contain inorganic debris (metals), organic debris (plastic and cellulosics)."

(A) Although the waste description indicates that this wastestream has inorganics, Tables C-1 and 4-7 of the NMVP show the wastestream as only being listed as F003; no inorganic contaminants (including lead) are listed on either table. Clarify this discrepancy.

(B) Clarify how DOE decided to classify this wastestream as a homogeneous mixture when it is derived from laboratory labpacks with organics, metals, plastic, and cellulosics. Would drums of organic labpacks, combustible waste, and debris be considered homogeneous?

(13) The adequacy of the waste descriptions derived by process knowledge in Table C-1 is questionable relative to the waste descriptions provided for wastestreams IN-W311, IN-W312, and IN-W314:

- IN-W311 - "This waste was generated at the RFP." Waste codes D028 and F001.

- IN-W312 - "Pyrochemical salt consists of used chloride salts from pyrochemical processes such as electrorefining, molten salt extraction, or direct oxide reduction." (No waste codes.)

- IN-W314 - "This waste, generated at the RFP, consists of chunks of salt and ceramic." Waste code F001.

Clarify whether these really three different types of wastes, or does this exemplify the variation in either process knowledge/waste descriptions or individuals who were responsible for developing waste descriptions.

(14) Wastestreams IN-W254 have the same waste description:

> "This waste comes from RFP. It consists of leaded rubber gloves, and aprons. A limited amount of leaded gloves, lead bricks, and lead sheeting may also be present."

However, IN-W252 has D008, D022, D028, D029, F001, and F005, while IN-254 has D008, F001, and F002. they also share TRUCON Code ID 223A. Based on the waste description, it appears as through both wastestreams would contain the same materials, yet DOE determined that one of the wastestreams had more constituents than the other wastestream. Clarify this discrepancy.

(15) Wastestream IN-W330 is listed as Plastic/Rubber Debris under the Combustible Final Waste Form group within the Debris Waste Summary Category. The waste description listed in Table C-1 states that "...One drum contains liquid mercury." However, neither Table C-7 nor 4-7 of the NMVP lists mercury as a basis for classification or EPA Hazardous Waste Code. In addition, clarify whether it would be possible to segregate the one drum of liquid mercury from this wastestream, solidify it, and group it with the other solidified inorganics wastestreams.

(16) The methodology for determining final waste from groups is unclear. For example, wastestream IN-W169 is listed in Table C-1 as Predominantly Combustible Debris under the Heterogeneous Final Waste Form Group within the Debris Waste Summary Category Group. The waste description is as follows:

> "The wastestream is from RFP and primarily consists of line- and non-line generated dry combustible materials

> such as paper, rags, plastics, surgical gloves, cloth overalls and booties, cardboard, wood, wood filter frames, and laundry lint. Some combustibles may be damp or moist. Limited amounts of non-combustibles such as glass, concrete, cement, lead, glove box gloves, batteries, and metal scrap may also be present."

Wastestream IN-W336 is listed as Combustible Debris under the Combustible Final Waste Form Group within the Debris Waste Summary Category Group. The waste description is as follows:

> "This wastestream, generated at Battle Columbus Laboratories, contains such combustibles items as wood, plastic suits, nylon-reinforced plastic tent structures, shoe covers, rubber gloves, and air hoses. The waste is from decontamination and deactivation of the Pu laboratory."

Clarify why one wastestream is classified as a Heterogeneous, Predominantly Combustible Debris, while the other wastestream is classified as Combustible, Combustible Debris, when both waste descriptions are very similar.

(17) Wastestream NT-W001 is listed as Heterogeneous Debris, Uncategorized, under the Heterogeneous Final Waste Form Group within the Debris Waste Summary Category. The waste description listed in Table C-1 states that:

> "This wastestream consists of glovebox parts, ....Most of the waste is handled (CH) TRU waste; one and 3 drums are remotely handled (RH). The wastestream was generated at Lawrence Livermore National Laboratory...."

(A) Clarify what is meant by the statement: "...one and 3 drums are remotely handled (RH)...."

(B) Table C-1 does not appear to identify (track) the RH component of this wastestream; clarify whether the RH portion of this wastestream has been accounted for.

(18) Wastestream OR-W045 is listed at CH TRU Uncategorized under the Heterogeneous Final Waste Form Group within the Debris Waste Summary Category. The waste description listed in Table C-1 states that:

> "This stream consists of CH TRU waste which is not classified. The physical form is either solid, liquid,

> mixed (both solidified and liquid) or unknown. Note this stream may contain TSCA waste at unknown levels."

Based on the description of this waste, it could contain anything and, therefore, should be classified as Unknown, Summary Category 8000. Clarify this discrepancy.

(19) Wastestream IN-W247 is listed as Uncategorized Unknown under the Inorganic Nonmetal Final Waste Form Group within the Debris Waste Summary Category. The waste description listed in Table C-1 states that:

> "This wastestream, generated at the RFP, consists of boronated glass rings used to minimize neutron multiplication in liquid storage tanks. Unleached rashig rings were unused from 1971-1979 as a separate stream and then combined leached rashig rings. The rings are about 1.75 inches high and 1.5 inches in diameter, with a 0.25 inch wall thickness. The rings are heat- and chemical- resistant borosilicate glass. Some of the rings which had above-discard amounts of Pu, were leached with nitric acid to recover the Pu and then rinsed with water and dried. Some of the rings may be contaminated with small amounts of oil."

Clarify why this wastestream, which has a very detailed description and includes several EPA codes (and is actually more detailed than many of the other known wastes), is classified as Uncategorized Unknown.

(20) The waste description for Wastestream RF-W041 states that the wastestream is currently characterized by process knowledge and sample analysis using the Extraction Procedure (EP) Toxicity Test. Either the site's characterization procedure or the waste description must be updated to reflect the adoption of the Toxicity Characteristic Leaching Procedure (TCLP). Revise the application accordingly.