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**RENEWAL APPLICATION  
APPENDIX B6**

**WASTE ISOLATION PILOT PLANT PERMITTEES' AUDIT AND SURVEILLANCE  
PROGRAM**



1 **RENEWAL APPLICATION**  
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1 **RENEWAL APPLICATION**  
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4 **WASTE ISOLATION PILOT PLANT PERMITTEES' AUDIT AND SURVEILLANCE**  
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7  
8 B6-1 Introduction

9 The Waste Isolation Pilot Plant (**WIPP**) Permittees' Audit and Surveillance Program shall ensure  
10 that: 1) ~~the operators of each generator/storage site (site)~~ certified characterization program and  
11 Permittee approved laboratory ~~that plan to transport transuranic (TRU) mixed waste to the WIPP~~  
12 ~~facility~~ conduct sampling and analysis of wastes in accordance with the current **WIPP** Waste  
13 Analysis Plan (**WAP**) (Renewal Application Chapter B); Additionally, the Permittees' Audit  
14 and Surveillance Program shall ensure and that 2) the information supplied by each site certified  
15 characterization program ~~to satisfy~~ the waste screening and acceptability requirements of  
16 Renewal Application Chapter B, Section B-4 ~~of the WAP~~ and is being managed properly. The  
17 Permittees will conduct these audits and surveillances ~~at~~ of each site certified characterization  
18 program and Permittee approved laboratory performing these activities in accordance with a  
19 standard operating procedure (**SOP**). New Mexico Environment Department (NMED) NMED  
20 personnel may observe these audits and surveillances to validate the implementation of WAP  
21 ~~requirements (Renewal Application Chapter B)~~ requirements ~~at~~ by each certified characterization  
22 program ~~site~~ and Permittee approved laboratory. Only personnel with appropriate U.S.  
23 Department of Energy (DOE) clearances will have access to classified information during audits.  
24 Classified information will not be included in audit reports and records. The audit SOP will  
25 contain steps for selecting audit personnel, reviewing applicable background information,  
26 preparing an audit plan, preparing audit checklists, conducting the audit, developing an audit  
27 report, and following up audit deficiencies. A deficiency is any failure to comply with an  
28 applicable provision of the WAP. The checklists for each site certified characterization program  
29 and Permittee approved laboratory shall include, at a minimum, the appropriate checklists found  
30 in Tables B6-1 through B6-6 for the summary category groups undergoing audit.  
31

32 B6-2 Audit Procedures

33 Audit procedures shall establish the responsibilities and methodology for planning, scheduling,  
34 performing, reporting, verifying, and closing announced and unannounced audits of sites  
35 certified characterization programs and Permittee approved laboratories. Records of ~~all~~ audit  
36 activities performed under the Permittee Audit and Surveillance Program shall be part of the  
37 WIPP Operating Record and maintained at the WIPP facility until closure. The NMED shall be  
38 provided unlimited access to these records.  
39

1 Approved procedures shall be used to describe audit activities and requirements. Procedures  
2 define the responsibilities of specific positions necessary to manage this audit program. The  
3 Permittees' manager who oversees the audit program shall ensure that the following tasks are  
4 performed:

- 5
- 6 • Schedule audits
- 7 • Designate lead auditor(s)
- 8 • Appoint auditor and lead auditor trainees
- 9 • Maintain auditor training and qualification records
- 10 • Assure that all auditors have been given appropriate training, including training on the  
11 WAP
- 12 • Assign auditors and lead auditors to perform annual certification audits
- 13 • Review and approve final audit reports
- 14 • Oversee tracking and closure of all deficiencies and any observations requiring action
- 15 • Assure records are entered into the WIPP Operating Record and are properly maintained  
16 until facility closure

#### 17 B6-3 Audit Position Functions

18 The Permittees will approve lead auditors, auditors, and technical specialists based upon the  
19 expertise required for the functions being examined according to the audit scope. The Permittees  
20 will supply auditors/technical specialists with expertise in the Resource Conservation and  
21 Recovery Act (**RCRA**) requirements and knowledge of the analysis and documentation methods  
22 required to verify the hazardous waste characterization performed by the sites certified  
23 characterization program. The Permittees shall identify all audit team members to NMED prior  
24 to the audit, and shall provide upon request the qualifications of all audit team members.  
25

26 The lead auditor assigned to be the audit team leader must perform the following tasks:

- 27
- 28 • Concur that assigned auditors and technical specialists have the collective experience and  
29 training commensurate with the scope, complexity, or special nature of the activities to be  
30 audited
- 31 • Develop an audit plan and coordinate the preparation of an overall checklist to cover the  
32 scope of the audit, with consideration given to all nonconformances reported as specified  
33 in Renewal Application Appendix B3 (Quality Assurance Objectives and Data Validation  
34 Techniques for Waste Characterization Sampling and Analytical Methods) and to  
35 previous audit results from that site certified characterization program or Permittee  
36 approved laboratory
- 37 • Assign specific audit areas to individual auditors and technical specialists within their  
38 particular specialty and provide guidance on checklist development

- 1 • Review individual auditor checklists to assure complete coverage of assigned scope, and  
2 approve the checklists
- 3 • Conduct the audit at of the site certified characterization program or at the Permittee  
4 approved laboratory
- 5 • Encourage observers to participate according to the protocol established by the Permittees
- 6 • Communicate audit results at the conclusion of the audit, including any deficiencies and  
7 observations
- 8 • Prepare and sign the audit report
- 9 • Maintain complete records of each audit and transfer them to the manager when the audit  
10 report is issued

11 Auditors and technical specialists assigned to the specific audit will report to the audit team  
12 leader for supervision and may perform the following tasks:

- 13
- 14 • Attend any required specific training, and team orientation, and planning meetings as  
15 directed by the audit team leader
- 16 • Prepare specific audit checklists to verify that the WAP Quality Assurance Objectives  
17 (QAOS) are met for the areas being audited
- 18 • Obtain audit team leader approval of checklist
- 19 • Review acceptable knowledge documentation packages, test report data, and  
20 documentation of data verification activities
- 21 • Obtain and evaluate objective evidence by means of observation, document reviews, or  
22 the conduct of interviews with operators, analysts, technicians, and others necessary to  
23 determine the adequacy and effective implementation of the WAP
- 24 • Conduct inspection tours of waste generating stations, sampling areas and equipment,  
25 analytical laboratories, calibration facilities, administrative, and document control/record  
26 facility
- 27 • Complete checklist during the audit indicating the objective evidence observed verifies  
28 that the site certified characterization program or Permittee approved laboratory has met  
29 the QAOS for the program elements, methods, and the activities being audited. Add other  
30 items to the checklist as they are observed or as needed during the audit
- 31 • Prepare narrative statements for all deficiencies, and observations that clearly and  
32 concisely identify the conditions involved
- 33 • Prepare any portion of the final audit report assigned by the lead auditor.

1 Audits will be conducted at least annually for each site certified characterization program and  
2 Permittee approved laboratory involved in the waste characterization program. Both announced  
3 and unannounced audits will address the following:  
4

- 5 • Results of previous audits
  - 6 • Changes in programs or operations
  - 7 • New programs or activities being implemented
  - 8 • Changes in key personnel
- 9

#### 10 B6-4 Audit Conduct

11 The conduct of the audit shall commence with an entrance meeting, conducted by the audit team  
12 leader, with site certified characterization program or Permittee approved laboratory  
13 management personnel. At this meeting, the audit objectives and scope, the specific areas to be  
14 audited, the processes or functions to be observed, and the site certified characterization program  
15 or Permittee approved laboratory participation ~~laboratory participation~~ required, including site  
16 personnel interfaces, will be identified. The purpose of this meeting is to confirm the audit  
17 scope, discuss the audit sequence, establish channels of communication, and confirm the daily  
18 and exit meeting. Audits shall be performed using approved audit checklists that include the  
19 checklists in Tables B6-1 to B6-6 for the summary category groups undergoing audit.

20 Consistency of evaluation shall be ensured before the audit through site certified characterization  
21 program or Permittee approved laboratory Quality Assurance Project Plan (QAPjP) approval  
22 (see Renewal Application Appendix B5 (Quality Assurance Project Plan Requirements)). The  
23 QAPjPs for each site certified characterization program or Permittee approved laboratory shall  
24 incorporate the same requirements from Renewal Application Chapter B ~~the WAP~~. Objective  
25 evidence shall be examined (to the depth necessary) to determine if the identified activities,  
26 procedures, or QAOs are adequate and are being effectively implemented.  
27

28 Audits may not include all waste summary category groups, and thus some audit checklists or  
29 portions of checklists (Tables B6-1 through B6-6) may not be applicable to some sites certified  
30 characterization programs or Permittee approved laboratories (e.g., headspace gas sampling and  
31 analysis is not used because debris waste is not being analyzed by the site Permittee approved  
32 laboratory). In these instances, the Permittees shall indicate nonapplicability in the appropriate  
33 checklist row, and justify the exclusion under the “Comment” column. In addition, in cases  
34 where discrepancies exist between the audit checklists in Tables B6-1 through B6-6 and the  
35 Renewal Application, Renewal Application requirements take precedence. The Permittees may  
36 add to the checklists as necessary to clarify Renewal Application requirements, but any additions  
37 will be clearly designated on the checklists (i.e., redline the additions).  
38

39 Audits shall include site personnel interviews, document and record reviews, observations of  
40 operations, and any other activities deemed necessary by the auditors to meet the objectives of  
41 the audit. Observations or deficiencies identified during the audit will be investigated or  
42 evaluated, as necessary, to determine if they are isolated conditions or represent a general  
43 breakdown of the waste characterization quality assurance program. During audit interviews or  
44 audit meetings, site certified characterization program or Permittee approved laboratory

1 personnel may be advised of deficiencies identified within their areas of responsibility to  
2 establish a clear understanding of the identified condition.

3  
4 The site certified characterization program or Permittee approved laboratory personnel will be  
5 given the opportunity to correct any deficiency that can be corrected during the audit period.  
6 Deficiencies and observations will be documented and included as part of the final audit report.  
7 Those items that have been resolved during the audit (e.g., isolated deficiencies that do not  
8 require a root cause determination or actions to preclude recurrence), will be verified prior to the  
9 end of the audit, and the resolution will be described in the audit report. Those items that affect  
10 the quality of the program, and/or the data generated by that program, which are required by the  
11 WAP will be documented on a Corrective Action Report (CAR) and included as a part of the  
12 final audit report. The CAR will be entered into the Permittees' CAR tracking system and  
13 tracked until closure. The RCRA-related items will be uniquely identified within the CAR  
14 tracking system so that they can be tracked separately. The RCRA-related CARs identified by  
15 the site certified characterization program or Permittee approved laboratory during ~~self-audits~~  
16 self audits will be evaluated during the Permittees' audit and surveillance program and tracked in  
17 the Permittees' tracking systems.

18  
19 When a deficiency is identified by the audit team, the audit team member who identified the  
20 deficiency prepares the CAR. The Permittees review the CAR, determine validity (e.g., assures  
21 that a requirement has in fact been violated), classify the significance of the deficiency, assign a  
22 response due date, and issue the CAR to the site certified characterization program or Permittee  
23 approved laboratory. The site certified characterization program or Permittee approved  
24 laboratory reviews the CAR, evaluates the extent and cause of the deficiency, and provides a  
25 response to the Permittees indicating the remedial actions and actions taken to preclude  
26 recurrence. The Permittees review the response from the site certified characterization program  
27 or Permittee approved laboratory and, if acceptable, communicate the acceptance to the site  
28 certified characterization program or Permittee approved laboratory. The site certified  
29 characterization program or Permittee approved laboratory completes remedial actions and  
30 actions to preclude recurrence. After all corrective actions have been completed, the Permittees  
31 may schedule and perform a verification visit to assure that corrective actions have been  
32 completed and are effective. The NMED ~~personnel~~ may participate as observers in these  
33 verification visits. When all actions have been completed and verified as being effective, the  
34 CAR is closed by the Permittees' manager responsible for quality assurance. As part of the  
35 planning process for subsequent audits and surveillances, past deficiencies will be reviewed and  
36 the previous deficient activity or process is subject to reassessment.

37  
38 The sites certified characterization programs or Permittee approved laboratories shall submit  
39 corrective action plans to ~~eliminate~~ address the deficiency stated on the CAR, including:

- 40  
41 • ~~a resolution~~ of the acceptability of any data generated prior to the resolution of the  
42 corrective action-  
43  
44 • ~~The corrective action response will include~~ a discussion of the investigation performed to  
45 determine the extent and impact of the deficiency;

- 1
- 2 • a description of the remedial actions taken;
- 3
- 4 • determination of root cause, ~~and~~
- 5
- 6 • actions to preclude recurrence.
- 7

8 An exit meeting will be conducted by the lead auditor prior to departure of the audit team ~~from~~  
9 ~~the site or Permittee approved laboratory~~. This meeting will include site certified  
10 characterization program or Permittee approved laboratory management personnel, and may  
11 include DOE field office personnel. All draft audit results will be presented to the site certified  
12 characterization program or Permittee approved laboratory management personnel.

13  
14 The audit report will be prepared, approved, and issued to the site certified characterization  
15 program or Permittee approved laboratory within ~~thirty (30)~~ days of the completion of the audit  
16 by the Permittees. The NMED shall receive a copy of the audit report upon issuance for  
17 information purposes. A formal final audit report will be provided to NMED which will include  
18 WAP-related CAR resolution results and audit results that will include, as a minimum, sections  
19 describing the scope, purpose, summary of deficiencies, and observations in narrative format,  
20 completed audit checklists, audited procedures, and other applicable documents which provide  
21 evidence of WAP implementation. The report will also include an identification of the  
22 organization audited, the dates of the audit, and the requested response date. ~~NMED will make~~  
23 ~~the final audit report available for public review and comment~~. The audited site certified  
24 characterization program or Permittee approved laboratory will respond to any deficiencies and  
25 observations within ~~thirty (30)~~ days after receipt of any CARs and indicate the corrective action  
26 taken or to be taken. If the corrective action has not been completed, the response must indicate  
27 the expected date the action will be completed. The CARs applicable to WAP requirements shall  
28 be resolved prior to ~~waste shipment~~ receipt of waste affected by the CAR. Subsequent audits or  
29 specific verifications, announced or unannounced, will determine if the corrective action has  
30 been satisfactorily implemented. Deficiencies (e.g., items corrected during the audit ~~{CDAs}~~ and  
31 CARs) and observations will be tracked to completion according to established procedure(s). In  
32 addition, deficiencies will be trended to determine if similar situations exist system wide. Trend  
33 reports will be issued as necessary to provide a “lessons learned” announcement to other sites  
34 certified characterization programs or Permittee approved laboratories who might benefit from  
35 program improvements implemented as a result of resolutions to the specific situations  
36 discovered at the performance of these audits.

37  
38 The final audit report provided to NMED and audit records will be maintained at WIPP as a part  
39 of the Operating Record. These records will be included on the Record Inventory and  
40 Disposition Schedule and maintained on-site in either printed or electronic format until closure  
41 of the WIPP facility. The NMED shall be provided unlimited access to these records.

**Table B6-1 Waste Analysis Plan (WAP) Checklist**

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**Waste Analysis Plan (WAP)  
 General Checklist for use at  
 DOE's Certified Characterization Programs**

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

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	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist <sup>1</sup>	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
5	<p>Are procedures in place for <u>certified characterization programs</u> to submit an AK Sufficiency Determination (Determination Request) to the Permittees to meet all or part of the waste characterization requirements including:</p> <ul style="list-style-type: none"> <li>All information specified in <u>Renewal Application Appendix B4</u>, Section B4-3d</li> <li>Identification of relevant hazardous constituents, and correctly identifies all <u>applicable TC</u> and listed <u>EPA</u> hazardous waste numbers</li> <li>All hazardous waste number assignments must be substantiated by supporting data and, if not, whether this lack of substantiation compromises the interpretation</li> <li>Resolution of data discrepancies between different AK sources must be technically correct and documented</li> <li>The <u>Scenario 1 and Scenario 2 AKSD</u> AK Summary includes all the identification of waste material parameter weight <u>estimates</u> by percentage of the material in the waste stream, and determinations are technically correct</li> <li>All prohibited items specified in the TSDf-WAC should be addressed, and conclusions drawn are technically adequate and substantiated by supporting information</li> <li>If the AK record includes process control information specified in <u>Renewal Application Appendix B4</u>, Section B4-3b, the information should include procedures, waste manifests, or other documentation demonstrating that the controls were adequate and sufficient.</li> <li>The <u>certified characterization program</u> must provide the supporting information necessary to substantiate technical conclusions within the <u>AKSD</u> Request, and this information must be correctly interpreted.</li> </ul> <p>(Section B-0b)</p>					
6	<p>If a <u>certified characterization program</u> does not submit an <u>AKSD</u> request or if the <u>AKSD</u> request is not approved, are procedures in place for the <u>certified characterization program</u> to perform radiography or VE on 100 <u>percent</u> of the containers in a waste stream and chemical sampling and analysis on a representative sample of the waste stream using headspace gas sampling (<u>HSG</u>) and analysis (for debris waste) or solids sampling and analysis (for homogeneous solids or soils/gravel waste) as specified in <u>Renewal Application Appendices B1</u> and <u>B2</u>?</p> <p>(Section B-0b)</p>					

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	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist <sup>1</sup>	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
7	Are procedures in place to ensure that the <u>certified characterization program</u> s complete a Waste Stream Profile Form (WSPF) and Characterization Information Summary (CIS) as specified in <u>Renewal Application Appendix B3</u> , Sections B3-12b(1) and B3-12b(2)?  (Section B-0c)					
8	<u>If all of the waste within a waste stream is not be accessible for sampling and analysis at one time does the certified characterization program use the methods specified in Renewal Application Appendix B2 (Statistical Methods Used in Sampling and Analysis) to address the requirements for selecting waste containers used for characterization of waste streams?</u>  (Section B-1a)					
9	Are procedures in place to ensure that the <u>certified characterization program</u> assigns EPA hazardous waste numbers associated with the waste? If so, do these assigned EPA hazardous waste numbers correspond to the permitted EPA hazardous waste numbers in Table B-1? Are there any assigned EPA hazardous waste numbers that are not permitted EPA hazardous waste numbers on the Table B-1? If so, did the <u>certified characterization program</u> reject the waste for shipment to and disposal at WIPP? Did the <u>certified characterization program or TRU waste site</u> assign state hazardous waste codes or numbers? If so, is it assigned to waste that is permitted at WIPP?  (Section B-1b)					
10	Are procedures in place to ensure that Summary Category Groups are defined as follows:  S3000- Homogeneous solids are solid material, inorganic process residues, inorganic sludges, salt waste, and pyrochemical salt waste excluding soils, that do not meet NMED criteria for classification as debris and are at least 50 percent by volume homogeneous solids or comprise the majority of the waste stream  S4000- Waste streams that are at least 50 percent by volume soils/gravel, or comprise the majority of the waste stream  S5000- Waste streams that are at least 50 percent volume materials that meet the NMED criteria for debris, or comprise the majority matrix of materials. The criteria for debris are solid materials intended for disposal that exceed 2.36 inch particle size and is a manufactured object, plant or animal matter, or natural geologic material. Particles smaller than 2.36 inches ( <u>60 millimeters</u> ) in size may be considered debris if the debris is a manufactured object and if it is not a particle of S3000 or S4000 material.  (Section B-0a)					

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	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist <sup>1</sup>	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
11	<p>Does the <u>certified characterization program</u> have procedures in place to ensure that the following waste characterization parameters will be obtained:</p> <ul style="list-style-type: none"> <li>Determination whether TRU mixed waste streams comply with the applicable provisions of the TSDF-WAC</li> <li>Determination whether TRU mixed wastes exhibit a hazardous characteristic per 20.4.1.200 NMAC (<u>incorporating</u> 40 CFR 261 Subpart C)</li> <li>Determination whether TRU mixed wastes are listed per 20.4.1.200 NMAC (<u>incorporating</u> 40 CFR 261 Subpart D)</li> <li>Estimation of waste material parameter weights <u>per container through the performance of radiography or VE, or estimates for the waste stream in the AK for the waste with approved Scenario 1 or Scenario 2 AKSD</u></li> </ul> <p>(Section B-2)</p>					
12	<p>Are procedures in place to ensure that waste streams identified to contain incompatible materials or materials incompatible with waste containers cannot be <u>received at WIPP</u> unless treated to remove the incompatibility?</p> <p>(Section B-1c)</p>					
13	<p>Are procedures in place to ensure that the <u>certified characterization program</u> uses acceptable knowledge and, as necessary, headspace-gas sampling and analysis, radiography <u>and/or V</u>isual Examination, and homogeneous <u>solids and soils/gravel</u> waste sampling and analysis as specified in Table B-7?</p> <p>(Section B-3)</p>					

UNACCEPTABLE WASTE

14	<p>Are procedures in place to ensure that the <u>certified characterization program</u> ensures, through administrative and operational procedures and characterization techniques, that waste containers do not include the following unacceptable waste:</p> <ul style="list-style-type: none"> <li>liquid waste <u>For purposes of demonstrating compliance with the liquid waste prohibition, the following conditions shall apply when using the radiography and/or VE waste characterization methods:</u></li> <li><u>“Free-standing liquid”, observable liquid fraction of S3000 or S4000 waste. The observable free-standing liquid fraction of TRU mixed waste in an internal container shall be no more than one percent of the internal container volume.</u></li> </ul>					
----	---	--	--	--	--	--

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist <sup>1</sup>	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
	<ul style="list-style-type: none"> <li>• <u>“Residual liquid”, the observable quantity of liquid allowed to remain in an otherwise empty internal container and the residual liquid shall be no more than that reasonably expected after all wastes have been removed that can be removed using the practices commonly employed to remove material from that type of container (e.g., pouring, pumping, and aspirating), and after emptying, no more than one inch or 2.5 centimeters of residual liquid remains in the bottom of the container. Total residual liquid in any payload container (e.g., 55 gallon drum or standard waste box (SWB)) shall be no more than one percent volume of that container.</u></li> <li>• <u>Payload containers with hazardous waste number U134 assigned shall have no observable liquid.</u></li> <li>• <u>When using a container identified in Renewal Application Appendix M1, Section M1-1b as an overpack payload container the following shall apply:</u> <ol style="list-style-type: none"> <li>1. <u>Containers are considered overpacked and not direct loaded regardless of the presence or absence of the container lid; and</u></li> <li>2. <u>The observable free-standing liquid fraction of TRU mixed waste in any internal container, inside the overpacked container, shall be no more than one percent of the internal container volume; and</u></li> <li>3. <u>Only residual quantities of liquid shall remain in an otherwise empty internal container inside the overpacked container; and</u></li> <li>4. <u>All observable liquid shall be included in the overpacked container total volume calculation and the result shall not exceed one percent of the overpacked container volume.</u></li> <li>5. <u>The overpack payload container total limit is the sum of the one percent total volume limit for each overpacked container.</u></li> </ol> </li> <li>• non-radionuclide pyrophoric materials</li> <li>• hazardous wastes not occurring as co-contaminants with TRU wastes (non-mixed hazardous wastes)</li> <li>• wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes</li> <li>• wastes containing explosives or compressed gases</li> <li>• wastes with polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization</li> </ul>					

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	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist <sup>1</sup>	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
	<ul style="list-style-type: none"> <li>wastes exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)</li> <li>waste that has ever been managed as high-level waste and waste from tanks specified in Table B-2, unless specifically approved through a Class 3 permit modification</li> <li>any waste container from a waste stream (or waste stream lot) which has not undergone either <u>radiography</u> or <u>VE</u> of a statistically representative subpopulation of the wastes stream in each shipment as described in <u>Renewal Application Appendix B7</u>, <u>unless a Scenario 1 or Scenario 2 AKSD has been approved for the waste stream</u> any waste container from a waste stream which has not been preceded by an appropriate, certified <u>WSPF</u> (Section B-1d)</li> </ul> (Section B-1c)					

**WASTE ACCEPTANCE CONTROL**

15	Are procedures in place to ensure that the <u>certified characterization program</u> uses a WSPF which includes, at a minimum, <u>WSPF information and the CIS elements found in Renewal Application Appendix B3, Section B3-12b(1) and Section B3-12b(2)</u> prior to waste disposal at the WIPP?  (Section B-1d)					
16	Are procedures in place to ensure that additional WSPFs are provided to WIPP and NMED for waste streams or portions of waste streams that are reclassified based upon waste characterization information?  (Section B-1d)					

**LABORATORY QUALIFICATION**

17	Are procedures in place to ensure that the <u>certified characterization program</u> conduct analyses using laboratories that are qualified through participation in the Performance Demonstration Program (PDP)?  (Section <u>B-3e</u> )					
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		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
18	Are procedures in place to ensure that the <u>certified characterization programs</u> conduct analyses using laboratories that implement the analytical methods through laboratory-documented standard operating procedures (SOPs) that ensure that analytical QAOs are met?  (Section <u>B-3e</u> )					
19	Are procedures in place to ensure that documented laboratory QA/QC programs include the following: <ul style="list-style-type: none"> <li>• Facility organization</li> <li>• List of equipment/instrumentation</li> <li>• Operating procedures</li> <li>• Laboratory QA/QC procedures</li> <li>• Quality assurance review</li> <li>• Laboratory records management</li> </ul> (Section B-4a(4))					
<b>GENERAL SAMPLING AND ANALYTICAL REQUIREMENTS</b>						
20	Are procedures in place to ensure that <u>representative headspace gas sampling and analysis used by certified characterization programs to resolve the assignment of EPA hazardous waste numbers for debris waste streams for which a Scenario 1 or Scenario 3 AKSD Request has not been approved by the Permittees?</u>  <u>Are procedures in place to ensure that waste containers for sampling and analysis are selected randomly from the population of containers for the waste stream? Is representativeness of containers selected for waste subjected to headspace gas sampling and analysis validated by the certified characterization program and by the Permittees via examination of documentation that shows that random samples were collected.</u>  <u>Are procedures in place to ensure the HSG sampling method provided in Renewal Application Appendix B1 is used by certified characterization programs to resolve the assignment of TC EPA hazardous waste numbers on the VOCs in the void volume of randomly selected waste containers?</u>  (Section <u>B-3c</u> )					

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		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
21	<p>Are procedures in place to ensure <u>debris waste streams that do not have a Scenario 1 or Scenario 3 AKSD approved by the Permittees, containers are selected in accordance with Renewal Application Appendix B2 from those waste streams must be sampled and analyzed for VOCs in the HSG. Is a statistically selected portion of homogeneous solids and soils/gravel waste streams sampled and analyzed for RCRA-regulated total VOCs, SVOCs, and metals when those waste streams do not have a Scenario 1 or Scenario 3 AKSD approved by the Permittees?</u></p> <p>(Section <u>B-3f</u>)</p>					
22	<p>Are procedures in place to ensure that <u>waste containers for sampling and analysis are selected randomly from the population of containers for the waste stream? Is Representativeness of containers selected for waste subjected to homogeneous solids and soils/gravel sampling and analysis validated by the certified characterization program and by the Permittees via examination of documentation that shows that random samples were collected?</u></p> <p>(Section <u>B-3d</u>)</p>					
23	<p><u>Are procedures in place to determine if a waste exhibits a TC for compounds specified in 20.4.1.200 NMAC (incorporating 40 CFR §261, Subpart C), the certified characterization program uses the results from these analyses to determine if a waste exhibits a TC. Is the mean concentration of TC contaminants calculated for each waste stream such that it can be reported with an upper 90 percent confidence limit (UCL<sub>90</sub>)?</u></p> <p>(Section <u>B-3d</u>)</p>					
24	<p>Are procedures in place to ensure that <u>acceptable knowledge is used in TRU mixed waste characterization activities:</u></p> <ul style="list-style-type: none"> <li>• <u>To delineate TRU mixed waste streams</u></li> <li>• <u>To assess whether TRU mixed wastes comply with the TSDF-WAC</u></li> <li>• <u>To assess whether TRU mixed wastes exhibit a hazardous characteristic (20.4.1.200 NMAC, incorporating 40 CFR §261 Subpart C)</u></li> <li>• <u>To assess whether TRU mixed wastes are listed (20.4.1.200 NMAC, incorporating 40 CFR §261 Subpart D)</u></li> <li>• <u>To estimate waste material parameter weights when seeking a Scenario 1 or a Scenario 2 AKSD</u></li> </ul> <p>(Section <u>B-3a</u>)</p>					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist <sup>1</sup>	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
25	<p>Are procedures in place to ensure that radiography and/or visual examination are used as necessary to:</p> <ul style="list-style-type: none"> <li>• Examine a waste container to determine the physical form</li> <li>• Identify liquids and containerized gases</li> <li>• Verify the physical form matches the waste stream description</li> </ul> <p>(Section B-3b)</p>					
26	<p><u>Are procedures in place to ensure that, a statistically selected portion of homogeneous solids and soils/gravel waste streams must be sampled and analyzed for RCRA-regulated total VOCs, SVOCs, and metals when those waste streams do not have a Scenario 1 or Scenario 3 AKSD approved by the Permittees.</u></p> <p>(Section B-3f)</p>					
27	<p>Are procedures in place to ensure that <u>the packaging configuration, type and number of filters, and rigid liner vent hole presence and diameter necessary to determine the appropriate DAC in accordance with Renewal Application Appendix B1, Section B1-1, are documented as part of the characterization information collected during packaging, radiography, and/or VE for those containers of debris waste that will undergo HSG sampling and analysis?</u></p> <p>(Section B-3g)</p>					
<b>DATA GENERATION, VERIFICATION, VALIDATION, DOCUMENTATION, AND QUALITY ASSURANCE</b>						
28	<p>Are procedures in place to ensure that the following Data Quality Objectives are met:</p> <ul style="list-style-type: none"> <li>• Use Acceptable Knowledge to delineate TRU mixed waste streams, assess whether TRU mixed wastes comply with the applicable requirements of the TSDF-WAC, assess whether TRU mixed wastes exhibit a hazardous characteristic, assess whether TRU mixed wastes are listed and to estimate waste material parameter weights <u>when seeking a Scenario 1 or a Scenario 2 AKSD.</u></li> <li>• Use Headspace gas sampling and analysis, as necessary, to identify and quantify VOCs in <u>debris</u> waste containers to resolve the assignment of EPA hazardous waste numbers</li> </ul>					

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		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
	<ul style="list-style-type: none"> <li>Perform totals analyses of homogeneous solids and soils/gravel wastes to establish if the waste is hazardous based on the <b>TC</b> levels in 20.4.1.200 NMAC through a comparison of the upper confidence limits (UCL<sub>90</sub>) of the mean concentrations to resolve the assignment of <b>TC</b> <b>EPA</b> hazardous waste numbers</li> <li>Use radiography or visual examination to determine physical waste form, the absence of prohibited items, and additional waste characterization techniques that may be used based on Summary Category Groups</li> </ul> <p>(Section B-4a(1))</p>					
<b>29</b>	<p>Are procedures in place to ensure that the following Quality Assurance Objectives are adequately defined and assessed for each characterization method:</p> <ul style="list-style-type: none"> <li>Precision as a measure of the mutual agreement among multiple measurements.</li> <li>Accuracy as the degree of agreement between a measurement result and a true or known value.</li> <li>Completeness is a measure of the amount of valid data obtained from a method compared to the total amount of data obtained that is expressed as a percentage.</li> <li>Comparability is the degree to which one data set can be compared to another data set.</li> <li>Representativeness as an expression of the degree to which data represent characteristics of a population.</li> </ul> <p>(Section B-4a(2))</p>					
<b>30</b>	<p>With respect to data generation, are procedures in place to ensure that the <b>certified characterization program</b>'s waste characterization program meets the following general requirements:</p> <ul style="list-style-type: none"> <li>Analytical data packages and batch data reports must be reported accurately in a pre-approved format, must be maintained in permanent files, and must be traceable?</li> <li>All data must receive a technical review by another qualified analyst or the technical supervisor, and the laboratory QA officer?</li> </ul> <p>(Section B3-10a)</p>					

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		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
31	Are procedures in place to ensure that the <u>certified characterization program</u> performs validation of waste characterization data for each waste container?  (Section B-4)					
32	Are procedures in place to ensure that the <u>certified characterization program</u> has a pre-approved format for reporting waste characterization data?  (Section B-4a(4))					
33	Are procedures in place to ensure that the <u>certified characterization program</u> prepares analytical, testing, and sampling batch data reports to meet the requirements of their own site-specific QAPjP and/or SOPs?  (Section B-4a(4))					

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		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
<b>34</b>	<p>Are procedures in place to ensure that all raw data is collected and managed at the data generation level in accordance with the following criteria:</p> <ul style="list-style-type: none"> <li>• All raw data shall be signed and dated in reproducible ink by the individual collecting the data, or signed and dated using electronic signatures</li> <li>• All data shall be recorded clearly, legibly, and accurately in field and laboratory records and include all applicable sample identification numbers</li> <li>• All changes to original data shall be lined out, initialed, and dated by the individual making the change. Original data may not be obliterated or otherwise be made unreadable</li> <li>• All data shall be transferred and reduced from field and laboratory records completely and accurately</li> <li>• All field and laboratory records shall be maintained as specified in Table B-9 of <a href="#">Chapter B</a></li> <li>• Data shall be organized into standard reporting formats for reporting purposes.</li> <li>• All electronic and video data must be stored to ensure that waste container, sample and QC data are readily retrievable</li> </ul> <p>(Section B3-10a)</p>					

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

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		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
36	<p>Are procedures in place to ensure that 100 percent of all batch data reports receive a <u>certified characterization program</u> Site Project Manager signature release with an associated review checklist prior to characterization of the associated waste and shipment to the WIPP. This release shall ensure the following:</p> <ul style="list-style-type: none"> <li>• The <u>certified characterization program</u> Site Project Manager or designee shall determine the validity of the drum age criteria (DAC) assignment made at the data generation level based upon an assessment of the data collection and evaluation necessary to make the assignment.</li> <li>• Testing batch QC checks were properly performed. Radiography data are complete and acceptable based on evidence of videotape review of one waste container per day or once per testing batch, whichever is less frequent</li> <li>• Sampling batch QC checks were properly performed, and meet the established QAOs and are within established data <u>usability</u> criteria</li> <li>• Analytical batch QC checks were properly performed and meet the established QAOs and are within established data <u>usability</u> criteria</li> <li>• Online batch QC checks were properly performed and meet the established QAOs and are within established data <u>usability</u> criteria</li> <li>• Proper procedures were followed to ensure representative samples of headspace gas and homogeneous solids and soils/gravel were taken</li> <li>• Data generation level independent technical review, validation, and verification have been performed as evidenced by the completed review checklists and appropriate signature releases.</li> <li>• Batch Data <u>review checklists are complete</u></li> <li>• Batch Data Reports are complete and data properly reported</li> <li>• Verify that data are within established data assessment criteria and meet all applicable QAOs</li> </ul> <p>(Section B3-10(b)(1))</p>					

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		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
37	Are procedures in place to ensure that a repeat of the data review process at the data generation level will be performed on a minimum of one randomly chosen waste container every quarter to determine if the verification and validation is performed according to documented procedures?  (Section B3-10b)					
38	Are procedures in place and checklists are available to prepare a <u>certified characterization program</u> Site Project Manager (SPM) Summary and a Data Validation Summary (the summaries may be in the same document)? The SPM Summary includes a validation checklist for each batch that is of sufficient detail to document all aspects of a batch data report that could affect data quality. The Data Validation Summary must identify each Batch Data Report reviewed, describe how the validation was performed, identify all problems, and identify all acceptable and unacceptable data. Summaries must include release signatures.  (Section B3-10b(2))					
39	Are procedures in place to ensure that non-administrative, WAP-related nonconformances first identified at the <u>certified characterization program</u> site project manager level are reported to the Permittees within <u>seven (7)</u> calendar days of identification, that nonconformance reports are prepared within thirty (30) calendar days, and that corrective action is implemented prior to waste shipment?  (Section B3-13)					
40	Are procedures in place to ensure that nonconformances are appropriately identified, reconciled, corrected, and documented? Are nonconformance reports prepared for nonconformances identified? Are nonconformances identified and tracked, and does the <u>certified characterization program</u> Site Project Manager oversee the nonconformance report process?  (Section B3-13)					

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		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
<b>SAMPLE CONTROL</b>						
41	<p>Are procedures in place to ensure that the <u>certified characterization program</u>'s sample handling and control program includes the following:</p> <ul style="list-style-type: none"> <li>• Field documentation of samples including point of origin, date of sample, container identification, sample type, analysis requested, and chain-of-custody (COC) number?</li> <li>• Proper labeling and/or tagging including proper sample numbering, sample identification, sample date, sampling conditions, and analysis requested?</li> <li>• COC record including name of sample relinquisher, sample receiver, and date and time of sample transfer? and</li> <li>• Proper sample handling and preservation?</li> </ul> <p>(Section B-4a(3))</p>					
42	<p>Are procedures in place to ensure that the <u>certified characterization program</u>'s QAPjP or <u>certified characterization program</u>-specific procedures includes COC forms to control the sample from the point of origin to the final analysis result reporting?</p> <p>(Section B-4a(3))</p>					
<b>DATA TRANSMITTAL</b>						
43	<p>Are procedures in place to ensure that the <u>certified characterization program</u> transmits data by hard copy or electronic copy from the data generation level to the project level? If electronic, <u>is</u> a hard copy available on demand?</p> <p>(Section B-4a(6))</p>					
44	<p>Are procedures in place to ensure that the <u>certified characterization program</u> inputs the data into the WWIS manually or electronically?</p> <p>(Section B-4a(6))</p>					
45	<p>Are procedures in place to ensure that the <u>certified characterization program</u> enters the data into the WWIS in the exact format required by the database?</p> <p>(Section B-4a(6))</p>					

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46	Are procedures in place to ensure that if a container was part of a composite headspace gas sample, the analytical results from the composite sample must be assigned as the container headspace gas data results for every waste container associated with the composite sample in the WWIS?  (Section B3-12b(4))					
47	Are procedures in place to ensure all of the data presented on Table B-8 of the Permit is transmitted to the WWIS?  (Table B-8)					
<b>RECORDS AND RECORD MANAGEMENT</b>						
48	Are procedures in place to ensure that the <u>certified characterization program</u> 's hard copy and/or electronic data reports follow the Permittees format requirements?  (Section B-4a(4))					
49	Are procedures in place to ensure that hard copy or electronic <u>WSPF</u> will include the following: <ul style="list-style-type: none"> <li>• <u>TRU waste</u> site name</li> <li>• <u>TRU waste site</u> EPA ID</li> <li>• Date of <u>certified characterization program</u> audit report approval by NMED (if obtained)</li> <li>• Original generator of waste stream</li> <li>• Whether waste is Contact-Handled or Remote-Handled</li> <li>• Waste Stream WIPP Identification Number</li> <li>• Summary Category Group</li> <li>• Waste stream name</li> <li>• A description of the waste stream</li> <li>• Applicable EPA <u>HWNs</u></li> <li>• Applicable TRUCON <u>content</u> codes</li> <li>• <u>AK Summary Report Title</u></li> </ul>					

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	<ul style="list-style-type: none"> <li>The waste characterization procedures used and the reference and date of the procedure</li> <li>Certification signature of <u>certified characterization program</u> Site Project Manager, name, title, and date signed</li> </ul> (Section B3-12b(1))					
50	Are procedures in place to ensure that hard copy or electronic Characterization Information Summary will include the following: <ul style="list-style-type: none"> <li>Data reconciliation with DQOs</li> <li><u>HSC</u> summary data listing the identification numbers of samples used in the statistical reduction, the maximum, mean, standard deviation, UCL<sub>90</sub>, RTL, and associated EPA <u>HWNs</u> that must be applied to the waste stream.</li> <li>Total metal, VOC, and SVOC analytical results for homogeneous solids and soils/gravel (if applicable).</li> <li>Radiography and <u>VE</u> summary to document that all prohibited items are absent in the waste (if applicable).</li> <li>A complete listing of all container identification numbers used to generate the <u>WSPF</u>, cross-referenced to each Batch Data Report.</li> <li>AK <u>summation</u>, including <u>waste</u> stream name and number, point of generation, waste stream volume (current and projected), generation dates, TRUCON codes, Summary Category Group, Waste Matrix Code(s), other <u>relevant inventory</u> information, waste stream description, areas of operation, generating processes, <u>HWN assignments</u>, radionuclide information, <u>and</u> all references used to generate the AK summary</li> <li>Method for <u>estimating</u> Waste Material Parameter Weights per unit of waste <u>for waste streams with approved Scenario 1 and Scenario 2 AKSD</u>.</li> <li>List of any <u>AKSDs</u> requested for the waste stream.</li> <li>Certification through <u>AK</u> or testing and/or analysis that any waste assigned the <u>HWN</u> of U134 (hydrofluoric acid) no longer exhibits the characteristic of corrosivity. This is verified by ensuring that no liquid is present in U134 waste.</li> </ul> (Section B3-12b(2))					

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		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
51	Are procedures in place to assure that ongoing container characterization results are cross referenced to Batch Data Reports?  (Section B3-12b)					
52	Are procedures in place to ensure that project level reports are compiled into Characterization Information Summaries?  (Section B3-12b)					
53	Are procedures in place to ensure that the <u>certified characterization program</u> uses forms for data reporting that are pre-approved?  (Section B3-12 )					
54	Are procedures in place to ensure that the <u>certified characterization program</u> 's site project manager submits to the <u>WIPP</u> facility a summary of the waste stream information and reconciliation with data quality objectives (DQOs) once a waste stream is characterized?  (Section B-4a(6))					
55	Are procedures in place to ensure that the <u>certified characterization program</u> project office completes a WSPF based on the Batch Data Reports?  (B3-12b)					
56	Are procedures in place to ensure that the <u>certified characterization program</u> Project Manager submits the WSPF to the Permittees for approval along with the accompanying Characterization Information Summary for that waste stream?  (Section B-4a(6))					
57	<u>Reserved</u>					
58	Are procedures in place to ensure that the appropriate documented training and indoctrination is performed for all individuals and that procedures are documented in <u>certified characterization program</u> specific QAPjPs and procedures?  (Section B3-14)					

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59	<u>Are procedures in place to ensure that before performing activities that affect WAP quality, all personnel are required to receive indoctrination into the applicable scope, purpose, and objectives of the WAP and the specific QAOs of the assigned task? Personnel assigned to perform activities for the WAP shall have the education, experience, and training applicable to the functions associated with the work.</u>  (Section B3-14)					
60	<u>Are procedures in place to ensure that personnel involved in WAP activities shall receive continuing training to ensure that job proficiency is maintained? Training includes both education in principles and enhancement of skills.</u>  (Section B3-14)					
61	<u>Are procedures in place to ensure that an evaluation of personnel qualifications include comparing and evaluating the requirements specified in the job/position description and the skills, training, and experience included in the current resume of the person. This evaluation also must be performed for personnel who change positions because of a transfer or promotion as well as personnel assigned to short-term or temporary work assignments that may affect the data quality of the WAP.</u>  (Section B3-14)					
62	<u>Are procedures in place to ensure that waste characterization records will be maintained in the certified characterization program site project files or the WIPP Records Archive facility until the closure of the WIPP facility. This includes testing, sampling, and analytical records along with BDRs, obtained from Permittee approved laboratories. This also includes those records identified as Lifetime Records in Table B-9. Raw data obtained by testing, sampling, and analyzing TRU mixed waste in support of the WAP will be identifiable, legible, and provide documentary evidence of quality.</u>  Lifetime Records include: <ul style="list-style-type: none"> <li>• Field sampling data forms,</li> <li>• Field and laboratory COC forms,</li> <li>• Test facility and laboratory Batch Data Reports,</li> <li>• Sampling plans,</li> <li>• Data reduction, validation, and reporting documentation,</li> <li>• Acceptable knowledge documentation,</li> <li>• WSPF and Characterization Information Summary</li> </ul> (Table B-9)					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist <sup>1</sup>	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
63	<p><u>Are procedures in place identifying the following records as non-permanent records?</u></p> <p>Non-Permanent Records include:</p> <ul style="list-style-type: none"> <li>• Nonconformance documentation,</li> <li>• Assessment documentation,</li> <li>• Gas canister tags,</li> <li>• Methods performance documentation,</li> <li>• PDP documentation,</li> <li>• Sampling equipment certifications,</li> <li>• Calculations and related software documentation,</li> <li>• Training/qualification documentation,</li> <li>• QAPjP documentation (all revisions),</li> <li>• Calibration documentation,</li> <li>• Analytical raw data,</li> <li>• Procurement documentation,</li> <li>• QA procedures (all revisions),</li> <li>• Technical implementing procedures (all revisions), and</li> <li>• Audio/video recording (radiography, visual, etc.).</li> </ul> <p>(Table B-9)</p>					
64	<p>Are procedures in place to ensure that the <u>certified characterization program</u> has raw data that is identifiable and legible, and provides documentary evidence of quality?</p> <p>(Section B-7)</p>					

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	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-1 Waste Analysis Plan (WAP) Checklist <sup>1</sup>	Procedure Documented		Example of Implementation/Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
<b>SHIPMENT</b>						
65	<p>Are procedures in place to ensure that the <u>certified characterization program</u> accurately completes an EPA Hazardous Waste Manifest prior to shipping the waste to WIPP that contains the following information:</p> <ul style="list-style-type: none"> <li>• <u>Item 1, Generator's U.S. EPA ID Number</u></li> <li>• Generator/storage <u>Item 5, Generator's name and mailing address,</u> site contact name and phone number</li> <li>• <u>Item 9b, Listing of each Shipping Package ID number</u></li> <li>• <u>Item 11, Total</u> Quantity of waste</li> <li>• <u>Item 13,</u> List of up to six state and/or federal <u>EPA</u> hazardous waste numbers in each line item</li> <li>• Listing of all container IDS</li> <li>• <u>Item 15,</u> Signature of authorized generator <u>(i.e., TRU waste site)</u> representative</li> </ul> <p>(Section B-5b)</p>					
66	<p>Are procedures in place to ensure that the <u>certified characterization program</u> accurately completes the following container specific information:</p> <ul style="list-style-type: none"> <li>• Waste stream identification number</li> <li>• List of <u>EPA</u> hazardous waste numbers per container</li> <li>• Certification data</li> <li>• Shipping data</li> </ul> <p>(Section B-5b)</p>					

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<sup>1</sup>The WAP requirements should be presented in documents, such as procedures. Each of the questions posed under WAP requirements is meant to ask whether procedures are in place or whether documents are evident which demonstrate that the specific WAP requirement is or can be met.

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**Table B6-2 Solids and Soils/Gravel Sampling Checklist**

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### Solids and Soils/Gravel Sampling Checklist

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-2 Solids and Soils/Gravel Sampling Checklist <sup>1</sup>	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
<b>GENERAL SOLIDS SAMPLING REQUIREMENTS</b>						
67	<u>For sampling methods/equipment not otherwise specified in the Waste Analysis Plan (WAP) do certified characterization programs use Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846 or other methods from source documents published by the EPA, American Society for Testing and Materials, U.S. Department of the Interior, National Water Well Association, American Petroleum Institute, or other recognized organizations with appropriate expertise?</u>					
68	<u>Do certified characterization program plans/procedures require that when sampling methods/equipment are not specified in this WAP, a simple reference to standard methods is not sufficient unless a procedure is performed exactly as described in the published method?</u> <u>(Section B1, Introduction)</u>					
69	<u>Do certified characterization program procedures require that one randomly selected container within a container will be chosen if the container contains individual waste containers?</u> <u>(Section B1-2a)</u>					
70	Are procedures documented that adequately ensure that when an <u>AKSD</u> Request has not been approved, sampling and analysis of homogeneous solid and soil/gravel waste streams shall be conducted in accordance with the requirements specified in <u>Renewal Application Appendix B1</u> ? (Section B-3d)					
71	Are procedures in place to ensure that the number of soils/gravel waste containers to be randomly sampled will be determined using the procedure specified in <u>Renewal Application Appendix B2</u> , wherein a statistically selected portion of the waste will be sampled? (Section B-3d)					

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	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-2 Solids and Soils/Gravel Sampling Checklist <sup>1</sup>	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
72	<p>Are procedures in place to ensure that the following sample collection requirements for waste streams are met:</p> <ul style="list-style-type: none"> <li>The number of random samples collected for characterization of homogeneous solid and soil/gravel waste is performed by developing preliminary mean and variance estimates for each <u>RCRA regulated contaminant in the waste</u> to define the number of required random samples; and that the sample selection process is adequately documented.</li> <li>A minimum of 5 waste containers in a waste stream are sampled to establish the preliminary estimate for the number of samples. <u>For waste streams with 5 containers or less, is a representative sample obtained from each container.</u></li> <li>Based on the number of samples required by the preliminary estimate, the subsequent sample means and deviations for each analyte are evaluated against the regulatory threshold for each constituent to determine if additional samples shall be collected.</li> <li>Samples (the number of which is statistically determined) are collected to verify that a TRU mixed waste is below the regulatory <u>limit</u>, where the regulatory <u>limit</u> is the toxicity limit for toxicity characteristics.</li> <li>Samples from preliminary estimates counted as required samples were randomly selected and were collected, analyzed, and validated using representative methods</li> </ul> <p>(Section B2-1a)</p>					
73	<p>Are procedures in place that allow toxicity characteristic contaminants associated with F-numbers for a waste stream to be omitted from sampling requirements?</p> <p>(Section B2-1a)</p>					
<b>SOLIDS SAMPLING PROCEDURES</b>						
74	<p>Do procedures ensure that samples <u>from</u> waste <u>containers</u> are collected using appropriate coring <u>equipment</u> or other EPA approved methods, and that wastes are sampled from a process as it is generated are sampled using EPA approved methods, including scoops and ladles, that are capable of collecting a representative sample?</p> <p>(Section B1-2a)</p>					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-2 Solids and Soils/Gravel Sampling Checklist <sup>1</sup>	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
75	<p>Do <u>certified characterization program-specific</u> procedures, QAPjPs, and/or SOPs indicate that rotational coring tools are available for the collection of cores and non-rotational coring tools available for collection of cores in relatively soft media? The method used shall be appropriate to retrieve the maximum core amount. The coring tools will include the following features:</p> <ul style="list-style-type: none"> <li>• Removable tube liners constructed of rigid materials unlikely to affect the composition and/or concentration of target analytes in the sample core (Teflon<sup>®</sup>) and sufficiently transparent to allow visual examination of the core. The liner outer diameters are between 1-2 inches and the liner wall thickness is no greater than 1/16 inch. The liner shall fit flush with the coring tool inner wall and be of sufficient length to hold a core representative of the waste along the entire depth of the waste.</li> <li>• Sleeves composed of polycarbonate, Teflon<sup>®</sup>, or glass for most samples and brass or stainless steel for non-metal samples</li> <li>• Liner end caps shall fit tightly around the ends of the liner and shall be composed of materials unlikely to affect the composition and/or concentration of analytes in the core (Teflon<sup>®</sup>)</li> <li>• Spring retainers shall be used when the physical properties of the sampling media may cause the sample to fall out of the liner. The retainer shall be composed of inert materials and the inner diameter shall not be less than the inner diameter of the liner</li> <li>• Coring tools may have an air lock mechanism. The air lock shall also close when the core is removed from the waste container</li> <li>• Core extruders shall be used to extrude the liner if the liner does not slide freely</li> <li>• Coring tools shall be of sufficient length to hold the liner and shall be constructed to allow placement of the liner leading edge as close as possible to the coring tool's leading edge</li> </ul>					

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		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
76	<ul style="list-style-type: none"> <li>All surfaces of the coring tool that have the potential to contact the sample core or sample media shall be cleaned prior to use</li> <li>Rotational coring tools shall have a mechanism to minimize inner liner rotation and shall be designed to minimize frictional heat transfer to the sample core</li> <li>The leading edge of the coring tool <del>is</del> may be sharpened and tapered to a diameter equivalent or slightly smaller than the inner diameter of the liner.</li> <li>Non-Rotational coring tools shall be designed to minimize the kerf width (½ the difference between the outer diameter of the tool and the tools inlet inner diameter)</li> <li><u>A core sample shall be collected from a randomly selected container at a randomly selected horizontal location</u></li> <li><u>Coring operation tools shall be designed to minimize alteration of the in-place waste characteristics.</u></li> </ul> (Section B1-2a(1))					
77	Does the <u>certified characterization program</u> adequately document that the liner material and retainers are not likely to contain any analytes of concern? (Section B1-2a(1))					
78	Are procedures in place to ensure that equipment blanks are collected and evaluated to verify that liner material, retainers, or other sampling equipment in contact with the sample do not contain analytes of concern? (Section B1-2b(2))					
<b>SAMPLE COLLECTION</b>						
79	Are procedures in place to ensure that sampling is completed in a timely manner, within 60 minutes of core collection, or that the core shall remain in the capped liner, or the coring tool shall remain in the waste container with the air lock mechanism attached? (Section B1-2a(2))					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-2 Solids and Soils/Gravel Sampling Checklist <sup>1</sup>	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
80	Are procedures in place to ensure that VOC samples are sampled prior to extruding the core from the liner and that the sample locations are documented? These samples may be collected by choosing a single sample from the representative subsection of the core, or three equal length VOC sample locations on the core are selected randomly along the long axis of the core to form a single 15-gram composite sample. Smaller sample sizes may be used if method PRQL requirements are met for all analytes.  (Section B1-2a(2))					
81	Are procedures documented to ensure that a VOC sample is collected using a metal coring cylinder or equivalent equipment as described in SW-846 and that the sample is immediately extruded into a 40 mL VOA vial (or other containers specified in appropriate SW-846 methods)?  (Section B1-2a(2))					
82	Are procedures in place to ensure that SVOC and Metals sample location(s) on the core are selected randomly along the long axis of the core and that the sample locations are documented, or that samples are collected at the same locations as VOC samples? Samples may be collected by splitting or compositing the representative subsection of the core. The representative subsections are chosen by randomly selecting a location along the portion of the core from which the sample was taken?  (Section B1-2a(2))					
83	Are procedures in place to ensure that the SVOC and Metals samples are collected using equipment constructed of materials unlikely to affect the composition or concentrations of the samples?  (Section B1-2a(2))					
84	Are procedures in place to ensure that <u>for</u> waste samples collected by means other than coring, spatial and temporal homogeneity is evaluated to determine if composite or grab samples are appropriate?  (Section B1-2a(2))					

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		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
<b>85</b>	<p>Are procedures in place to ensure sample volumes, preservatives, containers, and holding times meet the following specifications:</p> <p>Minimum sample quantity            VOC 15 grams            SVOC 50 grams            Metals 10 grams</p> <p>(Quantity may be increased or decreased according to the requirements of the analytical laboratory, as long as the QAOs are met.)</p> <p>Preservative            VOC Cool to 4C            SVOC Cool to 4C            Metals Cool to 4C</p> <p>Sample Container            VOC 40 mL VOA glass vial (or other appropriate containers) cap            SVOC glass jar with Teflon lined cap            Metals polyethylene or polypropylene bottle</p> <p>Holding Time from Date of Collection            VOC 14 days prep/40 days analyze            SVOC 14 days prep/40 days analyze            Metals 180 days/ 28 days Hg</p> <p>(Table B1-9)</p>					
<b>QUALITY CONTROL SAMPLE COLLECTION</b>						
<b>86</b>	<p>Are procedures in place to ensure that sampling precision will be determined through the collection of co-located core field duplicate samples for core samples and through the collection of co-located samples for samples collected using alternate methods at the frequency of once per 20 sample batch collected over 14 days or once per week, whichever is more frequent?</p> <p>(Section B1-2b(1))</p>					
<b>87</b>	<p>Are procedures in place to ensure that co-located cores are collected side by side as close as feasible to each other, that the cores are collected and handled in the same manner?</p> <p>(Section B1-2b(1))</p>					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-2 Solids and Soils/Gravel Sampling Checklist <sup>1</sup>	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
88	Are procedures in place to ensure that an additional sampling location is found or new co-located cores are collected if the <b>inspection</b> of the original co-located cores detects inconsistency in the sample color, texture, or waste type?  (Section B1-2b(1))					
89	Are procedures in place to ensure that all surfaces of sampling tools that have the potential to come into contact with the sample, including tube liners, endcaps, spring retainers, extruders, coring tool surfaces, or any other sampling equipment, are either thoroughly decontaminated or disposed of after each sampling event?  (Sections B1-2b(2), B1-2b(3))					
90	Are procedures in place to ensure that equipment blanks are collected from randomly selected fully assembled coring tools or randomly selected liners (if they are cleaned separately) and from randomly selected sampling equipment (e.g. VOC subsampler, spoons, bowls) at a frequency of once per equipment cleaning batch and that the sample is collected prior to first use?  (Section B1-2b(2))					
91	Are procedures in place to ensure that equipment blanks will be collected in the area where sampling equipment coring tools are cleaned, prior to covering the coring tools with protective wrapping and storage?  (Section B1-2b(2))					
92	Are procedures in place to ensure that miscellaneous sampling tool equipment blanks will be collected by pouring deionized or HPLC water over the surface of the equipment and into a clean sample container appropriate for the requested analysis?  (Section B1-2b(2))					
93	Are procedures in place to ensure that equipment blanks are analyzed for VOC, SVOC, and Metals and that the entire equipment batch will be re-cleaned and re-sampled if any analytes are detected at levels greater than 3 times the MDL or PRDL?  (Section B1-2b(2))					

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		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
94	Are procedures and processes in place to ensure that equipment blanks are traceable to a specific equipment cleaning batch and that the equipment cleaning batch is traceable to specific identified sampling equipment? Are sampling equipment or coring tools labeled with unique identification numbers that are referenced in field records? (Section B1-2b(3))					
95	Are procedures in place to ensure that disposable sampling equipment is certified as clean prior to use? (Section B1-2b(2))					
<b>SAMPLE EQUIPMENT TESTING, INSPECTION AND MAINTENANCE</b>						
96	Are procedures in place to ensure that all sampling and coring tools are tested prior to use in accordance with manufacturers specification to ensure that the air-lock mechanism and rotation mechanism are in working order? (Section B1-2c)					
97	Are procedures in place to ensure that malfunctioning sampling and coring tools are repaired or replaced prior to use? (Section B1-2c)					
98	Are procedures in place to ensure that all equipment is cleaned, sealed inside a protective wrapping and stored in a clean area? (Section B1-2c)					
99	Are procedures in place to ensure that an adequate spare part inventory is available? (Section B1-2c)					
100	Are procedures in place to ensure that all equipment maintenance and repair is documented in field records and that field record logbooks are available to document equipment maintenance and repair activities? (Section B1-2c)					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-2 Solids and Soils/Gravel Sampling Checklist <sup>1</sup>	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
<b>101</b>	<p>Are procedures in place to ensure that inspection of equipment and work area cleanliness will encompass the following:</p> <ul style="list-style-type: none"> <li>• Sample collection equipment in the immediate area of sample collection shall be inspected daily for cleanliness and that any visible contamination that has a potential to contaminate a waste sample shall be thoroughly cleaned upon discovery</li> <li>• The waste coring and sampling work areas shall be maintained in clean condition</li> <li>• Expendable equipment shall be visually inspected for cleanliness prior to use and properly discarded after use</li> <li>• Protective wrapping on coring tools and other sampling equipment are visually inspected prior to unwrapping. Coring tools or other equipment with torn protective wrappers or with visible contamination are returned to be cleaned or properly discarded prior to use.</li> <li>• All sampling equipment shall be visually inspected prior to use to determine if protective wrapping is torn or if equipment is contaminated after unwrapping. Equipment with torn wrapping or signs of contamination will be returned for cleaning or properly discarded.</li> <li>• Clean sampling and coring equipment is segregated from all equipment that has not been decontaminated.</li> </ul> <p>(Section B1-2c)</p>					
<b>102</b>	<p>Are procedures documented to ensure that scales used for weighing sub-samples are calibrated as necessary to maintain its operation within manufacturer's specification, that the calibration is documented, that calibration is verified using NIST traceable weights upon each day of use, and that all calibration verification is documented in field records?</p> <p>(Section B1-2d)</p>					

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		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
<b>SAMPLE HANDLING AND CUSTODY</b>						
<b>103</b>	<p>Do formats for field logs and custody records specify documentation of the following information:</p> <ul style="list-style-type: none"> <li>Signature of individual initiating custody control, along with the date and time</li> <li><u>Chain-of-Custody number</u></li> <li>Documentation of sample numbers for each sample under custody. Sample numbers will be referenced to a specific sampling event description that will identify the sampler(s) through signature, date and time of sample collection, type/number of containers for each sample, sample matrix, preservatives (if applicable), requested methods of analysis, place/address of sample collection and the waste container number</li> <li>For off-site shipping, method of shipping transfer, responsible shipping organization or corporation, and associated air bill or lading number.</li> </ul>					
<b>104</b>	<ul style="list-style-type: none"> <li>Signatures of custodians relinquishing and receiving custody of samples including date and time of transfer.</li> <li>Description of final sample container disposition, along with signature of individual removing sample container from custody</li> <li>Comments section</li> <li>Documentation of discrepancies, breakage or tampering</li> </ul> <p>(Section B1-5)</p>					
<b>105</b>	<p>Are procedures in place to ensure that samples and sampling equipment are identified with unique identification numbers?</p> <p>(Section B1-5)</p>					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-2 Solids and Soils/Gravel Sampling Checklist <sup>1</sup>	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
106	<p>Do sample tags or labels contain the following information:</p> <ul style="list-style-type: none"> <li>• Sample <u>identification</u> number</li> <li>• Sampler initials and organization</li> <li>• Ambient temperature and pressure (for gas samples only)</li> <li>• Sample description</li> <li>• Requested analysis</li> <li>• Date and time of collection</li> <li>• QC designation (if applicable)</li> </ul> <p>(Section B1-5)</p>					
107	<p>Are procedures in place to ensure waste containers and samples are sealed with intact custody seals and that one or more of the following custody conditions are met:</p> <ul style="list-style-type: none"> <li>• It is in the possession of an authorized individual</li> <li>• It is in the view of an authorized individual, after being in the possession of that individual</li> <li>• It was in the possession of an authorized individual and access to the sample was controlled by locking or placement of signed custody seals that prevent undetected access</li> <li>• It is in a designated secure area, such as a controlled access location with complete documentation of personnel access or a radiological containment area (hot cell or glove box)</li> </ul> <p>(Section B1-5)</p>					
108	<p>Are procedures in place to ensure that sample custody is maintained until the sample is released by the SPM or is expended?</p> <p>(Section B1-5)</p>					
109	<p>Are procedures in place to ensure that samples in glass jars are wrapped in <u>bubble wrap or another type of protection</u> to prevent breakage and placed in appropriate containers, such as coolers, for shipment?</p> <p>(Section B1-6)</p>					

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		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
110	Are procedures in place to ensure that adequate cold packs are included in the sample shipping container to ensure that all temperature requirements are met? (Section B1-6)					
111	Are procedures in place to ensure that sample COC forms are secured for shipment to the inside of the sealed and locked shipping container lid and that samples and shipping containers are affixed with tamper proof seals? (Section B1-6)					
112	Are procedures in place to ensure that appropriate blank samples are included with each shipment container containing VOC samples? (Section B1-6)					
113	Are procedures in place to ensure that a custody seal or device is securely affixed across the lid and body of each sample and shipment container, and is traceable to the individual who affixed the seal or device? (Section B1-6)					
<b>LABORATORY OPERATIONS</b>						
114	Are procedures in place to ensure that only laboratories that are qualified through participation in the Performance Demonstration Program are eligible to analyze waste samples? (Section B-3a(3))					
115	Are procedures available from all participating laboratories that adequately document that custody is maintained until the sample is released by the <u>certified characterization program Site</u> Project Manager or until the sample is expended? (Section B1-5)					

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		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
<b>VOLATILE AND SEMI-VOLATILE ANALYSIS OF CORE SAMPLES</b>						
<b>116</b>	<p>Are procedures documented to ensure that all VOC and SVOC analyses are evaluated using the following criteria:</p> <ul style="list-style-type: none"> <li>• GC/MS Tunes, Initial Calibrations and Continuing Calibration will be performed and evaluated using criteria in Table B3-5 (VOCs) or Table B3-7 (SVOCs) and SW-846 <a href="#">EPA, 1996</a> methods</li> <li>• Precision is shall be assessed through analyzing of laboratory duplicates or matrix spike duplicates, LCS replicates, and PDP blind-audit samples in comparison to Table B3-4 (VOCs) and Table B3-6 (SVOCs).</li> <li>• Accuracy as %R is shall be assessed through evaluation of LCS, Matrix spikes, PDP blind-audit samples, and surrogate compounds in comparison to criteria in Table B3-4 and Table B3-5 (VOCs) and Table B3-6 and Table B3-7 (SVOCs) or the SW-846 method.</li> <li>• Laboratory completeness shall be expressed as the number of samples analyzed with valid results as a percent of the total number of samples collected.</li> <li>• Comparability is assessed through use of standardized SW-846 methods sample preparation and methods that meet the QAO requirements in Tables B3-4 and B3-5 (VOCs) and Tables B3-6 and B3-7(SVOCs), traceable standards, and by requiring participation in the PDP.</li> <li>• Representativeness is assured through the use of unbiased sample collection.</li> <li>• Results and method detection limits are expressed in Mg/Kg.</li> <li>• All method detection limits and program required quantitation limits shall be less than or equal to the limits listed in Table B3-4 or Table B3-6 and the detection limit study procedures shall be documented in SOPs.</li> </ul> <p>(Section B3-6 and B3-7)</p>					

	WAP Requirement <i>(Insert Site) Audit (Insert Audit #)</i> Table B6-2 Solids and Soils/Gravel Sampling Checklist <sup>1</sup>	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment <i>(e.g., any change in procedure since last audit, etc.)</i>
		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
<b>METALS ANALYSIS OF CORE SAMPLES</b>						
<b>117</b>	<p>Are procedures in place to ensure that all Metals analyses are evaluated using the following criteria:</p> <ul style="list-style-type: none"> <li>Precision shall be assessed by analyzing of laboratory sample duplicates or laboratory matrix spike duplicates, LCS replicates, and PDP blind audit samples in comparison to Table B3-8</li> <li>Accuracy is shall be assessed through analysis of laboratory matrix spikes, PDP blind-audit samples, serial dilutions, interference check samples, and laboratory control samples in comparison to criteria in Tables B3-8 and B3-9</li> <li>Instrument detection limits are expressed in ug/L and results are listed in Mg/Kg.</li> <li>All instrument detection limits and program required detection limits shall be less than the limits listed in Table B3-8 and the detection limit study procedures shall be documented in laboratory SOPs. The Instrument detection limits shall be less than the associated PRDL for each analyte <i>(This requirement is not mandatory if the sample concentrations are greater than 5 times the instrument detection limit (IDL) for a method)</i></li> <li>Instrument detection limits shall be determined semiannually using procedures documented in laboratory SOPs</li> </ul>					
<b>118</b>	<ul style="list-style-type: none"> <li>Laboratory completeness shall be expressed as the number of samples analyzed with valid results as a percent of the total number of samples submitted for analysis.</li> <li>Comparability is assessed through use of standardized SW-846 sample preparation and methods that meet the QAO requirements in Tables B3-8 and B3-9, demonstrating successful participation in <a href="#">written</a> PDP and use of traceable standards.</li> <li>Representativeness is assured through the use of unbiased sample collection and preparation of samples using unbiased methods.</li> <li>Results PRQLs are expressed in Mg/Kg wet weight</li> </ul> <p>(Section B3-8)</p>					

	WAP Requirement (Insert Site) Audit (Insert Audit #) Table B6-2 Solids and Soils/Gravel Sampling Checklist <sup>1</sup>	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
<b>QUALITY ASSURANCE OBJECTIVES</b>						
119	Are procedures in place to ensure that the sample completeness rate is expressed as the number of valid samples collected as a percentage of the total samples collected for each waste stream? The rate must be greater than 90 percent for all compounds in a waste stream. (Section B3-3)					
120	Are procedures in place to ensure that sampling operations are comparable through the use of standardized procedures, sampling equipment, <u>usability criteria</u> , and measurement units? (Section B3-3)					
121	Are procedures in place to ensure that sampling precision shall be determined through the collection of field duplicates at a rate of 1 per sampling batch (up to 20 samples) or 1 per week, whichever is more frequent? (Section B3-3)					
122	Are procedures in place to ensure that the variance measured between co-located core samples is compared to the variance within the waste stream using the F-test? (Section B3-3)					
123	Are procedures in place to ensure that sampling accuracy as a result of equipment blank evaluation is determined through the collection of equipment blanks at a frequency of once per equipment cleaning batch? (Section B3-3)					
124	Are procedures in place to ensure that the representativeness of samples is demonstrated <u>by collecting random samples using an approved method?</u> (Section B3-3)					

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<sup>1</sup>The WAP requirements should be presented in documents, such as procedures. Each of the questions posed under WAP requirements is meant to ask whether procedures are in place or whether documents are evident which demonstrate that the specific WAP requirement is or can be met.

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**Table B6-3 Acceptable Knowledge (AK) Checklist**

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### Acceptable Knowledge (AK) Checklist<sup>1</sup>

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

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	WAP Requirement <sup>2</sup> (Insert Site) Audit (Insert Audit #) Table B6-3 Acceptable Knowledge (AK) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
<b>REQUIRED AND SUPPORTING INFORMATION</b>						
130	<p>Does the <u>certified characterization program</u> document that the following must be included in the <u>AK</u> record:</p> <ul style="list-style-type: none"> <li>• Map of the site with the areas and facilities involved in TRU waste generation, treatment, and storage identified</li> <li>• Facility mission description as related to TRU waste generation and management (e.g., nuclear weapons research may involve metallurgy, radiochemistry, and nuclear physics operations that result in specific waste streams)</li> <li>• Description of the operations that generate TRU waste at the site (e.g., plutonium recovery, weapons design, or weapons fabrication)</li> <li>• Waste identification or categorization schemes used at the facility (e.g., item description codes, content codes)</li> <li>• Types and quantities of TRU mixed waste generated, including historical generation through future projections</li> <li>• Correlation of waste streams generated from the same building and process, as appropriate (e.g., sludge, combustibles, metals, and glass)</li> <li>• Waste certification procedures for r <u>TRU</u> wastes to be sent to the WIPP facility</li> </ul> <p>(Section B4-2a)</p>					
131	<p>Does the <u>certified characterization program</u> document that the following shall be collected for each waste stream:</p> <ol style="list-style-type: none"> <li>A. Area(s) and/or building(s) from which the waste stream was or is generated</li> <li>B. Waste stream volume and time period of generation (e.g., 100 standard waste boxes of waste generated from June 1977 <u>through December 1977</u>)</li> <li>C. Waste generating process described for each building (e.g., batch waste stream generated during decommissioning operations of glove boxes), including processes associated with U134 waste generation, if applicable.</li> </ol>					

	WAP Requirement <sup>2</sup> (Insert Site) Audit (Insert Audit #) Table B6-3 Acceptable Knowledge (AK) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	<p>D. Process flow diagrams (e.g., a diagram illustrating glove boxes from a specific building to a size reduction facility to a container storage area). In the case of research/development, analytical laboratory waste, or <u>other</u> similar processes where process flow diagrams cannot be created, a description of the waste generating processes, rather than a formal process flow diagram, may be included if this modification is justified and the justification is placed in the auditable record</p> <p>E. Material inputs or other information that identifies the chemical content of the waste stream and the physical waste form (e.g., glove box materials and chemical handled during glove box operations, events or processes that may have modified the chemical or physical properties of the waste stream after generation, data obtained through <u>VE</u> of waste that later undergoes radiography; information demonstrating neutralization of U134 [hydrofluoric acid] and waste compatibility).</p> <p>(Section B4-2b)</p>					
132	<p>Do <u>certified characterization program</u> documents/procedures require that the <u>certified characterization program</u> will provide a summary to the Permittees that summarizes all information collected, including basis and rationale for all waste stream designations? Is an example of this summary available for audit review? If discrepant hazardous waste data exist in required information, do <u>certified characterization programs</u> assign all hazardous waste numbers unless the <u>certified characterization programs</u> choose to justify otherwise?</p> <p>(Section B4-2b)</p>					
133	<p>Do <u>certified characterization program</u> procedures indicate that if the required AK information is not available for a particular waste stream, that the waste stream will not be eligible for an <u>AKSD</u>?</p> <p>(Section B4-2)</p>					

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	WAP Requirement <sup>2</sup> (Insert Site) Audit (Insert Audit #) Table B6-3 Acceptable Knowledge (AK) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
134	<p>Have the following procedures been prepared?:</p> <ul style="list-style-type: none"> <li>A. Procedures for identifying and assigning the physical waste form of the waste</li> <li>B. Procedures for delineating waste streams and assigning Waste Matrix Codes</li> <li>C. Procedures for resolving inconsistencies in <b>AK</b> documentation</li> <li>D. Procedures for <b>HSG</b> sampling and analysis, <b>VE</b> and/or radiography, and homogeneous waste sampling and analysis, if applicable</li> <li>E. <b>P</b>rocedures describing process controls used to ensure prohibited items (specified in the WAP) are documented and <b>/or remediated</b></li> <li>F. Procedures to ensure radiography and <b>VE</b> include a list of prohibited items that operators shall verify are not present in each container of waste (e.g. liquids exceeding TSDF-WAC limits, corrosives, ignitables, reactives, and incompatible wastes)</li> <li>G. Procedures to document how changes to Waste Matrix Codes, waste stream assignment, and associated <b>EPA HWNs</b> based on material composition are documented for any waste</li> <li>H. Procedures for assigning EPA <b>HWNs</b> to TRU mixed waste</li> <li>I. Procedures for estimating waste material parameter weights</li> </ul> <p>(Section B4-2b)</p>					
135	<p>Does the <b>certified characterization program</b> provide supporting <b>AK</b> information, as available and as necessary to augment <b>required</b> information?</p> <p>(Section B4-2c)</p>					
136	<p>For waste containers that belong to LANL sealed sources waste streams, and for which <b>HSG</b> sampling and analysis is not required, are there procedures in place to assure the collection of the following <b>supporting</b> AK?:</p> <ul style="list-style-type: none"> <li>A. Documentation that the waste container contents meet the definition of sealed sources per 10 CFR §30.4 and 10 CFR §835.2 (effective January 1, 2004)</li> <li>B. Documentation of the certification of the sealed sources as U.S. Department of Transportation Special Form Class 7 (Radioactive) Material per 49 CFR §173.403 (effective October 1, 2003)</li> </ul>					

	WAP Requirement <sup>2</sup> (Insert Site) Audit (Insert Audit #) Table B6-3 Acceptable Knowledge (AK) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	<p>C. Documentation of contamination survey results that validate the integrity of each sealed source per 10 CFR §34.27 (effective January 1, 2004).</p> <p>D. The AK documentation does not indicate the use of <u>volatile organic compounds (VOCs)</u> or VOC-bearing materials as constituents of the sealed sources.</p> <p>E. The outer casing of each sealed source must be of a non-VOC bearing material, which must be verified at the time of packaging.</p> <p>F. AK documentation that includes but is not limited to, as available and as necessary to determine the hazardous constituents associated with sealed sources, the following: source manufacturer's sales catalogues, original purchase records, source manufacturer's fabrication documents, source manufacturer's drawings, source manufacturer's fuel capture assembly reports, source manufacturer's operational procedures for cleanliness requirements, source manufacturer's shipping documents, source manufacturer's welding records, <u>TRU</u> batch material records, and information from national databases (e.g., <u>Nuclear Material Management and Safeguards System</u>). All of this information may not and need not be available for each source, but sufficient information must be included in the auditable record to derive an adequate understanding of source construction and history to ensure that no VOCs are present in association with the sealed source itself that would render the source hazardous. If AK data indicate that assignment of a <u>HWN</u> related to organic materials is required in association with a source, this specific source will be assigned to a separate waste stream and that waste stream will be subject to <u>HSC</u> sampling unless a separate <u>AKSD</u> is approved for the waste stream.</p> <p>(Section B4-2c)</p>					
137	<p>Does the <u>certified characterization program</u> document that all specific, relevant <u>supporting</u> information used in the <u>AK</u> process will be identified and its use explained (e.g., <u>identification of a toxicity characteristic (TC)</u>)? Is all necessary <u>supporting</u> information assembled and has it been appropriately used?</p> <p>(Section B4-2c)</p>					
138	<p>Does the <u>certified characterization program</u> discrepancy analysis documentation (for <u>AK</u> supporting and required documentation) indicate that if discrepancies are detected, <u>the certified characterization program</u> must include all hazardous waste numbers indicated in the required and supporting information unless the <u>certified characterization program</u> chooses to justify an alternative assignment and document justification in the auditable record?</p> <p>(Section B4-2c)</p>					

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		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
<b>TRAINING</b>						
139	<p>Does the <u>certified characterization program</u> have procedures to ensure that all personnel involved with <u>AK</u> waste characterization have the following training, and is this training documented?</p> <p>A. WIPP WAP in <u>Renewal Application Chapter B</u> and the TSDf-WAC</p> <p>B. State and Federal RCRA regulations associated with solid and hazardous waste characterization</p> <p>C. Discrepancy resolution and reporting</p> <p>D. Site-specific procedures associated with waste characterization using <u>AK</u></p> <p>(Section B4-3a)</p>					
<b>PROCEDURES</b>						
140	<p>Has the <u>certified characterization program</u> developed the following procedures, and are these procedures technically sufficient?</p> <p>A. <u>Certified characterization programs</u> must prepare and implement a written procedure outlining the specific methodology used to assemble <u>AK</u> records, including the origin of the documentation, how it will be used, and any limitations associated with the information (e.g., identify the purpose and scope of a study that included limited sampling and analysis data).</p> <p>B. <u>Certified characterization programs</u> must develop and implement a written procedure to compile the required <u>AK</u> record.</p> <p>C. <u>Certified characterization programs</u> must develop and implement a written procedure that ensures unacceptable wastes (e.g., reactive, ignitable, corrosive) are identified and segregated from TRU mixed waste populations sent to WIPP.</p> <p>D. <u>Certified characterization programs</u> must prepare and implement a written procedure to evaluate <u>AK</u> and resolve discrepancies. If different sources of information indicate different hazardous wastes are present, then <u>certified characterization programs</u> must include all sources of information in its records and assign the <u>applicable HWNs</u>. The assignment of <u>HWNs</u> shall be tracked in the auditable record to all required documentation.</p>					

	WAP Requirement <sup>2</sup> (Insert Site) Audit (Insert Audit #) Table B6-3 Acceptable Knowledge (AK) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	<p>E. <b>Certified characterization programs</b> must prepare and implement a written procedure to identify hazardous wastes and assign the appropriate <b>HWNs</b> to each waste stream. The following are minimum baseline requirements/standards that <b>certified characterization programs</b>-specific procedures must include to ensure comparable and consistent characterization of hazardous waste:</p> <ol style="list-style-type: none"> <li>1. Compile all of the required information in an auditable record.</li> <li>2. Review the compiled information and delineate TRU mixed waste streams. Delineation of waste streams must comply with the WAP definition: a waste stream is defined as waste material generated from a single process or from an activity that is similar in material, physical form, and hazardous <b>constituents</b>.</li> <li>3. Review the compiled information to determine if the waste stream is compliant with the TSDf-WAC</li> <li>4. Review the required information to determine if the waste is listed under 20.4.1.200 NMAC (incorporating 40 CFR § 261), Subpart D. Assign <b>applicable</b> listed <b>HWNs</b>.</li> <li>5. Review the required information to determine if the waste exhibits a hazardous characteristic or may contain hazardous constituents specified in 20.4.1.200 NMAC (incorporating 40 CFR § 261, Subpart C. If a <b>TC</b> contaminant is identified and is not included as a listed waste, assign the <b>TC HWN</b>, unless data <b>(excluding HSG data)</b> are available which demonstrates that the concentration of the constituent in the waste is less than the <b>TC</b> regulatory level. When data are not available, the <b>TC HWN</b> for the identified hazardous constituent must be applied to the mixed waste stream.</li> <li>6. When seeking a Scenario 1 or a Scenario 2 AKSD, review the compiled information to provide an estimate of the material parameter weights for each container to be stored or disposed of at WIPP. For newly generated waste, procedures shall be developed and implemented to characterize hazardous waste using acceptable knowledge prior to packaging.</li> </ol>					

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		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	<p>F. <u>Certified characterization programs</u> shall identify all process controls (implemented to ensure that the waste contains no prohibited items and to control hazardous waste content and/or physical form) that <u>may</u> be applied to <u>TRU</u> waste. Process controls are applied <u>at the time</u> of waste generation/packaging to control waste content, whereas any activities performed <u>after</u> waste generation/packaging to identify prohibited items, hazardous waste content, or physical form are waste characterization activities, not process controls. The AK record must contain specific process control and supporting documentation identifying when these process controls are used to control waste content. See <u>Renewal Application Chapter B</u>, Section B-2 for programmatic requirements related to process controls.</p> <p>(Section B4-3b)</p>					
141	<p>Does the <u>certified characterization programs</u> have implemented procedures which comply with the following criteria to establish <u>AK</u> records:</p> <p>A. Acceptable knowledge information shall be compiled in an auditable record, including a road map for all applicable information.</p> <p>B. The overview of the facility and TRU mixed waste management operations in the context of the facility's mission shall be correlated to specific waste stream information.</p> <p>C. Correlations between waste streams, with regard to time of generation, waste generating processes, and site-specific facilities shall be clearly described. <u>The</u> rate and quantity of waste to be generated shall be defined <u>if applicable</u>.</p> <p>D. A reference list shall be provided that identifies documents, databases, Quality Assurance protocols, and other sources of information that support the <u>AK</u> information.</p> <p>E. Container inventories for TRU mixed waste <u>shall be delineated into waste streams based on required AK information</u>.</p> <p>(Section B4-3c)</p>					
142	<p>If the <u>certified characterization program</u> submitted an AK Sufficiency Determination Request for a specific waste stream, did the <u>certified characterization program</u> provide all of the requisite information including the identification of the applicable scenario for which approval is sought?</p> <p>(Section B-0b)</p>					

	WAP Requirement <sup>2</sup> (Insert Site) Audit (Insert Audit #) Table B6-3 Acceptable Knowledge (AK) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
<b>AUGMENTATION OF ACCEPTABLE KNOWLEDGE</b>						
143	<p>Does the <u>certified characterization program</u> have written procedures for the augmentation of all <u>AK</u> information using sampling and analysis? Sampling and analysis consists of radiography, VE, <u>HSG</u>, and homogeneous waste sampling and analysis. Do <u>certified characterization program</u> procedures indicate that the following sampling and analysis will be conducted based upon the results of the <u>AKSD</u></p> <p>Any scenario denied - 100% RTR or VE and statistical HSG or solids S&amp;A</p> <p>Scenario 1 Granted -No sampling and analysis radiography/<u>VE</u> is required</p> <p>Scenario 2 Granted-Radiography/<u>VE</u> is not required but statistical HSG or solids S&amp;A is required</p> <p>Scenario 3 Granted-100% RTR or VE is required, sampling and analysis is not required</p> <p>(Section B4-1, B-0b)</p>					
144	<p>Does the <u>certified characterization program</u> have procedures for reevaluating <u>AK</u> if the results of the waste characterization indicate that the waste to be <u>received</u> does not match the approved waste stream or if the data from radiography or <u>VE</u> for waste streams without an <u>AKSD</u> exhibit this discrepancy? Does this procedure describe how the waste is reassigned, <u>AK</u> reevaluation, and appropriate <u>HWNs</u> are assigned?</p> <p>(Section B4-3e)</p>					
145	<p>Do <u>certified characterization program</u> procedures indicate that debris waste are assigned TC <u>HWNs</u> based on AK regardless of the quantity or concentration?</p> <p>(B4-3e)</p>					

	WAP Requirement <sup>2</sup> (Insert Site) Audit (Insert Audit #) Table B6-3 Acceptable Knowledge (AK) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
<b>CRITERIA FOR ASSEMBLING AN ACCEPTABLE KNOWLEDGE RECORD DELINEATING THE WASTE STREAM</b>						
146	<p>If wastes are reassigned to a different waste matrix code based on visual examination or radiography or Permittee confirmation activities, does the <u>certified characterization program</u> have written documentation to ensure that the following steps are followed:</p> <ul style="list-style-type: none"> <li>A. Review existing information based on the container identification number and document all differences in <u>HWN</u> assignments</li> <li>B. If differences exist in the <u>HWNs</u> that were assigned, reassess and document all required <u>AK</u> information (Section B4-3b) associated with the new designation</li> <li>C. Reassess and document all sampling and analytical data associated with the waste</li> <li>D. Verify and document that the reassigned waste matrix code was generated within the specified time period, area and buildings, waste generating process, and that the process material inputs are consistent with the waste material parameters identified during radiography or <u>VE</u></li> <li>E. Record all changes to <u>AK</u> records</li> <li>F. If discrepancies exist in the <u>AK</u> information for the revised <u>Waste Matrix Code</u>, document the segregation of the affected portion of the waste stream, and define the actions necessary to fully characterize the waste</li> </ul> <p>(Section B4-3e)</p>					
147	<p><u>Do certified characterization program procedures ensure that the EPA TC-HWNs associated with S3000 and S4000 waste streams will be assigned based on the results of the totals/TCLP analysis of a representative homogeneous waste sample when waste streams do not have a Scenario 1 or Scenario 3 AKSD approved by the Permittees? As with HSG, if the totals/TCLP results indicate that the concentration of a TC waste is below the regulatory levels, the HWN assigned initially by AK may be changed.</u></p> <p><u>(Section B4-3e)</u></p>					
148	<p>Does the <u>certified characterization program</u> have written methodologies for determining the mean concentration of solvent VOCs detected by either <u>HSG data</u> or homogeneous waste <u>data</u> for each waste stream or waste stream lot, and are all data <u>U</u> flags designated as one half the MDL and <u>J</u> flags, which are less than the PRQL but greater than the MDL)?</p> <p>(Section B4-3e)</p>					

	WAP Requirement <sup>2</sup> (Insert Site) Audit (Insert Audit #) Table B6-3 Acceptable Knowledge (AK) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
149	Does the <a href="#">certified characterization program</a> have written procedures for situations where concentrations of some VOCs are orders of magnitude higher than other target analytes? In these cases, elevated MDLs may be generated, and those constituents with an elevated MDL but “U” designation will not be used in mean calculations.  (Section B4-3e)					
<b>DATA QUALITY REQUIREMENTS</b>						
150	Are acceptable knowledge processes consistently applied among all <a href="#">certified characterization programs</a> , and does each <a href="#">certified characterization program</a> comply with the following data quality requirements for <a href="#">AK</a> documentation:  A. Precision - Precision is the agreement among a set of replicate measurements without assumption of the knowledge of a true value. The qualitative determinations, such as compiling and assessing <a href="#">AK</a> documentation, do not lend themselves to statistical evaluations of precision. However, the <a href="#">AK</a> information will be addressed by the independent review of <a href="#">AK</a> information during internal and external audits.  B. Accuracy - Accuracy is the degree of agreement between an observed sample result and the true value. The percentage of waste containers which require reassignment to a new waste matrix code and/or designation of different hazardous waste numbers based on sampling and analysis data.  C. Completeness - Completeness is an assessment of the number of waste streams or number of samples collected to the number of samples determined to be useable through the data validation process. The <a href="#">AK</a> record must contain 100 percent of the information in <a href="#">Renewal Application Appendix B4 (TRU Mixed Waste Characterization Using Acceptable Knowledge), Section B4-3</a> The usability of the <a href="#">AK</a> information will be assessed for completeness during audits.  D. Comparability - Data are considered comparable when one set of data can be compared to another set of data. Comparability is ensured through <a href="#">certified characterization programs</a> meeting the training requirements and complying with the minimum standards outlined for procedures that are used to implement the <a href="#">AK</a> process. All <a href="#">certified characterization programs</a> must assign <a href="#">HWNs</a> in accordance with <a href="#">Renewal Application Appendix B4, Section B4-3b</a> and provide this information regarding its waste to other <a href="#">certified characterization programs</a> that store or generate a similar waste stream.					

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	WAP Requirement <sup>2</sup> (Insert Site) Audit (Insert Audit #) Table B6-3 Acceptable Knowledge (AK) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	<p>E. Representativeness - Representativeness expresses the degree to which sample data accurately and precisely represent characteristics of a population. Representativeness is a qualitative parameter that will be satisfied by ensuring that the process of obtaining, evaluating, and documenting <b>AK</b> information is performed in accordance with the minimum standards established in <b>Renewal Application Appendix B4. Certified characterization programs</b> also must assess and document the limitations of the <b>AK</b> information used to assign <b>HWNs</b> (e.g., purpose and scope of information, date of publication, type and extent to which waste parameters are addressed).</p> <p>(Section B3-9)</p>					
151	<p>Does the <b>certified characterization program</b> address quality control by tracking its performance with regard to the use of <b>AK</b> by: 1) assessing the frequency of inconsistencies among information, and 2) documenting the results of waste discrepancies identified by the <b>certified characterization programs</b> during waste characterization or the Permittees during waste confirmation using radiography, review of radiography audio/video recordings, or <b>VE</b>, or review of <b>VE</b> records. In addition, the <b>AK</b> process and waste stream documentation must be evaluated through internal assessments by <b>certified characterization programs</b> quality assurance organization(s).</p> <p>(Section B4-3f)</p>					

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<sup>1</sup>NMED expects a traceability analysis to be performed, the results of which should be presented on this checklist under the "Examples of Implementation" column. Further, the traceability analysis process and results should be discussed in the Final Audit Report.

<sup>2</sup>The WAP requirements should be presented in documents, such as procedures. Each of the questions posed under WAP requirements are meant to determine whether procedures are in place or whether documents are evident which demonstrate that the specific WAP requirement is or can be met.

1

**Table B6-4 Headspace Gas Checklist**

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### Headspace Gas Checklist

	WAP Requirement <sup>1</sup> (Insert Site) Audit (Insert Audit #) Table B6-4 Headspace Gas Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
<b>HEADSPACE GAS SAMPLING FREQUENCY</b>						
152	Are procedures in place to ensure that randomly selected retrievably stored and newly generated waste containers will undergo headspace gas sampling and analysis as required to augment AK?  (Section B-3 <b>g</b> )					
153	Are procedures in place to ensure that randomly selected containers will be allowed to equilibrate to sampling room temperature for 72 hours prior to sampling (18° C or higher) and that the drum ages specified in accordance with Section B1-1a(1) are met? All information necessary to determine drum age criteria must be determined, including but not limited to: <ul style="list-style-type: none"> <li>• Scenario Determination</li> <li>• Packaging Configuration</li> <li>• Filter Diffusivity</li> <li>• Liner/Lid Opening Diameter</li> </ul> (Section B1-1a)					
<b>HEADSPACE GAS SAMPLING GENERAL REQUIREMENTS</b>						
154	Are procedures in place to ensure all containers of waste are vented through filters <u>allowing any gases that are generated by radiolytic and microbial processes to escape, thereby preventing over pressurization</u> ?  (Section B-1c)					
155	Are procedures in place to ensure that the following gas sample container and holding time requirements are met: <ul style="list-style-type: none"> <li>• The minimum sample volume for VOC. sample collection is 250 mL. (Note: a single 100 mL sample may be collected if the headspace is limited)</li> <li>• Holding temperatures shall be between 0° C and 40° C</li> </ul> (Table B1- <b>g</b> )					
156	Are procedures in place to ensure that all sampling is performed in an appropriate radiation containment area?  (Section B1-1a)					

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	WAP Requirement <sup>1</sup> (Insert Site) Audit (Insert Audit #) Table B6-4 Headspace Gas Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
157	Are procedures in place to ensure that headspace gases are analyzed for the analytes listed in Table B3-2 of <a href="#">Renewal Application Appendix B3 (Quality Assurance Objectives and Data Validation Techniques for Waste Characterization Sampling and Analytical Methods)</a> ? (Section B1-1a(1))					
158	Are procedures in place to ensure that all headspace gas analyses utilize either SUMMA <sup>®</sup> or equivalent canisters or on-line integrated sampling/analysis systems? (Section B1-1a(1))					
<b>MANIFOLD SAMPLING</b>						
159	Are procedures, processes, and equipment in place to ensure that the following sampling procedures are implemented: <ul style="list-style-type: none"> <li>The sampling equipment is leak checked and cleaned <u>prior to</u> first use and as needed</li> <li>The manifold and sample canisters are evacuated to 0.1<sup>0</sup> mm Hg prior to sample collection</li> <li>Cleaned and evacuated sample canisters are attached to the evacuated manifold before the manifold inlet valve is opened</li> <li>The manifold inlet valve is attached to a changeable filter connected to either a side port needle sampling head capable of forming an airtight seal (for penetrating a filter or rigid poly liner when necessary), a drum punch sampling head capable of forming an airtight seal (capable of punching through the metal lid of a drum while maintaining an airtight seal for sampling through the drum lid), or a sampling head with an airtight fitting for sampling through a pipe overpack container filter vent hole. Refer to Section B1-1a(4) for descriptions of these sampling heads.</li> <li>Field blanks are collected using samples of room air collected in the sampling area in the immediate vicinity of the waste container. (Note: field blanks for SUMMA<sup>®</sup> canisters are collected directly into the canister without the use of the manifold.)</li> <li>Manifold equipped with purge assembly that allows QC samples to be collected through all sampling components that affect compliance with QAOs</li> <li>The manifold internal volume is calculated and documented in a field logbook</li> </ul>					

	WAP Requirement <sup>1</sup> (Insert Site) Audit (Insert Audit #) Table B6-4 Headspace Gas Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
	<ul style="list-style-type: none"> <li>The total volume of headspace gas collected is calculated by adding the canister volume and internal manifold volume and should be less than 10 percent of the available headspace volume when a volume estimate is available</li> </ul> (Section B1-1a(2))					
160	Are procedures, processes, and equipment in place to ensure that the following manifold sample side conditions are met: <ul style="list-style-type: none"> <li>The sampling head forms a leak-tight connection with the <u>headspace</u> sampling manifold</li> <li>A flexible hose allowing movement from the purge assembly to the waste container</li> <li>Pressure sensors that are pneumatically connected to the manifold and must be able to measure absolute pressure from 0.05 mm Hg to 1000 mm Hg with a resolution of that must be 0.01 mm Hg at 0.05 mm of Hg. The pressure sensors shall have an operating range of 15° C to 40° C.</li> <li>Sufficient canister ports shall be available to allow simultaneous collection of headspace gas samples and duplicates for VOC analysis.</li> <li>Ports not occupied with sample canisters require a plug to prevent ambient air from entering the system</li> <li>Ports shall have VCR<sup>®</sup> fittings for connection to the sample canisters to prevent degradation of the fitting on the canister and manifold.</li> <li>Sample canisters are leak-free, stainless steel pressure vessels, with a <u>chromium-nickel oxide</u> SUMMA<sup>®</sup> passivated interior surface or canisters with equivalently inert surfaces, bellows valve, and a pressure/vacuum gauge. All canisters shall have VCR<sup>®</sup> fittings to sampling and analytical equipment</li> <li>The pressure/vacuum gauge must be mounted on each manifold and shall be helium-leak tested to <math>1.5 \times 10^{-7}</math> cc/s, have all stainless steel construction, and be capable of operating at temperatures to 125° C</li> <li>A minimum distance between the needle and the valve that isolates the pump from the manifold in order to minimize the dead volume in the manifold.</li> <li>If real time equipment blanks are not available, the manifold shall be equipped with an OVA capable of detecting all analytes listed in Table B3-2 and is capable of measuring total VOC concentrations below the lowest <u>HSG</u> PRQL</li> </ul> (Section B1-1a(2))					

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	WAP Requirement <sup>1</sup> (Insert Site) Audit (Insert Audit #) Table B6-4 Headspace Gas Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
161	<p>Are procedures, processes, and equipment in place to ensure that the following manifold standard side conditions are met:</p> <ul style="list-style-type: none"> <li>A cylinder of compressed zero air, helium, argon, or nitrogen that is hydrocarbon and CO<sub>2</sub> free air (only hydrocarbon and CO<sub>2</sub>-free gases required for FTIRS) and certified by the manufacturer to contain less than one ppm <b>total</b> VOCs. The gas is used to clean the manifold between samples and to provide gas for the collection of equipment and on-line blanks <i>(Note: a zero air or nitrogen generator may be used, provided a sample of air is collected and found to contain less than 1 ppm total VOCs and the air is humidified)</i></li> <li>Cylinders of <b>field-reference standard</b> gas with known concentrations of analytes from Table B3-2 certified by the manufacturer to provide gases for evaluating the accuracy of the headspace gas sampling process</li> <li>All cylinders of reference gases and zero air shall be connected to flow regulating devices</li> <li>A humidifier filled with ASTM Type I or II water, connected, and opened to the standard side of the manifold between the compressed gas cylinders and the purge assembly shall be used, if the Fourier Transform Infrared System (FTIRS) is not used. No humidifier if the FTIRS is used <i>(Note: Compressed gas may include water vapor between 1000 and 10000 ppmv in lieu of a humidifier)</i></li> <li>The humidifier is off-line during system evacuation to prevent manifold flooding</li> <li>A purge assembly that allows the sampling head to be connected to the standard side of the manifold.</li> <li>A flow indicating device or pressure regulator that is connected downstream of the purge assembly to monitor the flow rate or pressure of gases through the purge assembly to ensure that excess flow is available to prevent ambient air from contaminating the QC samples and allow sample of gas from the compress gas cylinders to be collected near ambient pressure.</li> </ul> <p>(Section B1-1a(2))</p>					

	WAP Requirement <sup>1</sup> (Insert Site) Audit (Insert Audit #) Table B6-4 Headspace Gas Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
162	Do procedures ensure that NIST Certified (or equivalent) ambient pressure sensors maintained in the sampling area must have a sufficient measurement range for the expected ambient barometric pressures and a resolution shall be 1.0 mm Hg or less? (Section B1-1a(2))					
163	Do procedures ensure that the NIST traceable (or equivalent) temperature sensor in the sampling location shall have a sufficient measurement range for the ambient temperatures (18 to 50°C)? (Section B1-1a(2))					
<b>DIRECT CANISTER SAMPLING</b>						
164	<p>Are procedures, processes, and equipment in place to ensure that the following operating conditions are in place for direct canister sampling:</p> <ul style="list-style-type: none"> <li>• Canisters are evacuated to 0.1 mm Hg prior to use and attached to a changeable filter connected to the sampling head</li> <li>• Sampling heads are capable of either punching through the metal lid of the drums while maintaining an airtight seal for sampling through the drum lid, penetrating a filter or the septum in the orifice of a self-tapping screw, or maintaining an airtight seal for sampling through a pipe overpack container filter vent hole.</li> <li>• Field duplicates are collected in the same manner and at the same time and using the same type of sampling apparatus as used for <b>HSG</b> sample collection.</li> <li>• Field blanks shall be samples of room air collected in the immediate vicinity of the waste drum sampling area prior to removal of the drum lid.</li> <li>• Equipment blanks and field reference standards shall be collected using a purge assembly equivalent to the standard side of the manifold</li> <li>• Less than 10 percent of the headspace is withdrawn when a headspace estimate is available</li> </ul> <p><i>(Note: The total volume withdrawn is can be determined by adding the canister volume and the internal volume of the sampling head)</i></p> <ul style="list-style-type: none"> <li>• Each sample canister is shall be equipped with a pressure/vacuum gauge capable of indicating leaks and sample collection volumes. The gauge shall be helium leak tested to <math>1.5 \times 10^{-7}</math> cc/s, have all stainless steel construction and be capable of tolerating temperatures to 125° C</li> <li>• Summa canisters or equivalent are used to collect samples</li> </ul> <p>(Section B1-1a(3))</p>					

	WAP Requirement <sup>1</sup> (Insert Site) Audit (Insert Audit #) Table B6-4 Headspace Gas Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
<b>SAMPLING HEADS UNDER DRUM LIDS: SAMPLING THROUGH A CARBON FILTER</b>						
<b>165</b>	<p>Are procedures, process, and equipment adequate to ensure that samples collected through a filter meet the following requirements:</p> <ul style="list-style-type: none"> <li>• The lid of the drum's 90-mil rigid poly liner shall contain a hole for venting to the drum</li> <li>• That non-vented drums are not sampled until an internal nonconformance report is prepared, submitted, and resolved in order to obtain a representative sample</li> <li>• The filter shall be sealed to prevent outside air from entering the drum</li> <li>• The sampling head for collecting drum headspace gas shall consist of a side-port needle, a filter to prevent particle contamination of the sample, and an adapter to connect the side-port needle to the filter</li> <li>• The sampling head is cleaned or replaced after each use</li> <li>• The housing of the filter shall allow insertion of the sampling needle through the filter element or a sampling port with septum that bypasses the filter element into the drum headspace</li> <li>• The side port needle shall be used to reduce the potential for plugging</li> <li>• The purge assembly shall be modified for compatibility with the side port needle.</li> </ul> <p>(Section B1-1a(4)(i))</p>					
<b>SAMPLING HEADS UNDER DRUM LIDS: SAMPLING THROUGH THE DRUM LID</b>						
<b>166</b>	<p>Are procedures in place to establish the criteria for sampling through the drum lid as opposed to sampling through a filter?</p> <p>(Section B1-1a(4)(ii))</p>					
<b>167</b>	<p>If sampling through a pipe overpack container filter vent hole with an airtight device is used, are procedures in place to ensure that a sampling head with an airtight seal for sampling through a pipe overpack container filter vent hole are available?</p> <p>(Section B1-1a(4)(iii))</p>					

	WAP Requirement <sup>1</sup> (Insert Site) Audit (Insert Audit #) Table B6-4 Headspace Gas Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
168	<p>If sampling through a pipe overpack container filter vent hole is used, are the following criteria met::</p> <ul style="list-style-type: none"> <li>• The seal between the pipe overpack container surface and sampling apparatus shall be designed to minimize intrusion of ambient air.</li> <li>• The filter shall be replaced as quickly as is practicable with the airtight sampling apparatus to ensure that a representative sample can be taken.</li> <li>• All components of the sampling system that come into contact with sample gases shall be cleaned according to requirements for direct canister sampling or manifold sampling, whichever is appropriate, prior to sample collection.</li> <li>• Equipment blanks and field reference standards shall be collected through all the components of the sampling system that contact the <b>HSG</b> sample.</li> <li>• During sampling, openings in the pipe overpack container shall be sealed to prevent outside air from entering the container.</li> <li>• A flow-indicating device shall be connected to sampling system and operated according to the direct canister or manifold sampling requirements, as appropriate.</li> </ul> <p>(Section B1-1a(4)(iii))</p>					
169	<p>If sampling through a pipe overpack container filter vent hole is used, are the following criteria met?</p> <ul style="list-style-type: none"> <li>• The <b>certified characterization program</b> has documentation that demonstrates that they have determined through testing the appropriate length of time for exchanging the filter with the sampling device to assure representative samples are collected.</li> </ul> <p>(Section B1-1a(4)(iii))</p>					

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		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
170	<p>Are procedures, process, and equipment adequate to ensure that samples collected through the drum lid by punching meet the following requirements:</p> <ul style="list-style-type: none"> <li>• The lid of the drum's 90-mil rigid poly liner shall contain a hole for venting to the drum. If the DAC for Scenario 1 is met, a sample may be collected from inside the 90-mil rigid poly liner.</li> <li>• If <b>HSG</b> samples are collected from the drum headspace prior to venting the 90-mil rigid poly liner, the sample is not acceptable and a nonconformance report shall be prepared, submitted, and resolved.</li> <li>• The drum lid shall be breached using a punch that forms an airtight seal between the drum lid and the manifold or canister</li> <li>• The seal between the drum lid and the sampling head shall be designed to minimize the intrusion of ambient air</li> <li>• All components of the sampling system that come in contact with sample gases shall be purged with humidified zero air, nitrogen, or helium prior to sample collection</li> <li>• Equipment blanks and field reference standards shall be collected through all components of the punch that contact the <b>HSG</b> sample</li> <li>• Pressure shall be applied to the punch until the drum lid has been breached</li> <li>• Provisions shall be made to relieve excessive drum pressure increases during drum punch operations; potential pressure increases may occur during sealing of the drum punch to the drum lid</li> <li>• The filter is sealed to prevent outside air from entering the drum</li> <li>• A flow indicating device or pressure regulator to verify flow of gases shall be pneumatically connected to the drum punch and operated in the same manner as the flow indicating device</li> <li>• Equipment are used to secure the drum punch sampling system to the drum lid</li> <li>• If the <b>HSG</b> sample is not taken at the time of drum punching, the presence and diameter of the rigid liner vent hole is documented during the punching operation for use in determining an appropriate Scenario 2 DAC.</li> </ul> <p>(Section B1-1a(4)(ii))</p>					

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		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
<b>QUALITY CONTROL SAMPLE COLLECTION</b>						
171	<p>Are procedures in place to ensure that the following QC sample requirements are met:</p> <ul style="list-style-type: none"> <li>• Field QC samples are collected on per sample batch basis for manifold and direct canister sampling. A sampling batch is defined as up to 20 samples collected within 14 days of the first sample</li> <li>• Field samples are collected and analyzed on a per on-line batch basis for on-line sampling/analysis systems. An on-line batch is defined as the number of <b>HSG</b> samples that are collected within a 12 hour period from the same on-line integrated analysis system</li> <li>• For the manifold sampling method, field blanks, equipment blanks, field duplicates, and field reference samples are collected prior to sample collection on a per sampling batch basis or one per day, whichever is more frequent</li> <li>• For the direct canister sampling method field blanks and field duplicates are collected on a per sampling batch basis prior to sample collection; while equipment blanks and field reference samples are collected after equipment purchase, cleaning, and assembly</li> <li>• For the On-line sampling method, field blanks, equipment blanks, field duplicates, and field reference samples are collected on a per on-line batch basis. (Note: The on-line blank replaces the laboratory and equipment blanks, the on-line duplicate replaces the field duplicate and the laboratory duplicate, and the on-line sample control replace the field reference standard and the laboratory control sample.)</li> </ul> <p>(Section B1-1b, B1-1b(1), B1-1b(2), B1-1b(3), B1-1b(4))</p>					

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		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
172	<p>Do procedures adequately assign the <u>certified characterization program</u> Site Project <u>Manager</u> with the responsibility of monitoring field QC results and initiate the nonconformance report process in the event the following acceptance criteria are not met or sample collection frequencies are not met:</p> <ul style="list-style-type: none"> <li>Field and equipment blanks shall be less than 3 times the detection limits specified in Table B3-2 and equipment blank results determined by FTIR shall be less than the PRQL specified in Table B3-2 (Section B1-1b(1) and B1-1b(2))</li> <li>Field reference standards shall have a recovery of between 70 and 130% (Table B1-<del>8</del>)</li> <li>Field Duplicates shall have an RPD of less than or equal to 25</li> </ul> <p>(<del>B1-1b</del>; B1-1b(4); Table B1-<del>8</del>)</p>					
173	<p>Are procedures in place to ensure that field reference standards meet the following criteria:</p> <ul style="list-style-type: none"> <li>Field reference standards shall contain a minimum of 6 analytes listed in Table B3-2 at a range of between 10 and 100 ppmv and at concentrations greater than the MDL</li> <li>Field reference standards shall be traceable to a nationally recognized standard, if available</li> <li>If commercial gases are used, they shall be accompanied by a Certificate of Analysis and all field reference standards are traceable to certificates.</li> <li>Commercial gases are not used past the manufacturer specified shelf life.</li> <li>Field reference samples are submitted blind to the laboratory at a frequency of one per sampling batch. (Note: Field reference standards may be discontinued for direct canister method if QAO accuracy objectives are met)</li> </ul> <p>(Section B1-1b(3))</p>					
174	<p>Are procedures in place to ensure that field duplicate samples are collected sequentially and in accordance with Table B1-<del>7</del>?</p> <p>(Section B1-1b(4))</p>					

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<b>SAMPLE EQUIPMENT TESTING, INSPECTION AND MAINTENANCE</b>						
<b>175</b>	<p>Are procedures in place to ensure that sample containers are cleaned in accordance with the following specifications:</p> <ul style="list-style-type: none"> <li>• All sampling components that contact sample gases are constructed of inert materials such as stainless steel or Teflon®</li> <li>• The sampling manifold and canisters are properly cleaned and leak checked prior to each HSG sampling event in accordance to or equivalent with TO-14A or TO-15 methodology</li> <li>• SUMMA® canisters or equivalent are cleaned on an equipment cleaning batch basis. An equipment cleaning batch is defined as the number of canisters that can be cleaned together at one time using the same cleaning method</li> <li>• The cleaning system consists of an optional oven and a vacuum manifold which uses a dry vacuum pump or a cryogenic trap backed by an oil sealed pump</li> <li>• Prior to cleaning a 24 hour leak check shall be performed (+/- 2 psig) on all canisters</li> <li>• Canisters that shall be checked for leaks, repaired, and reprocessed</li> <li>• One canister per equipment cleaning batch is filled with humid zero air or humid high purity nitrogen and analyzed for VOCs</li> <li>• A batch is considered clean if VOC concentrations are less than 3 times the MDLs specified in Table B3-2</li> <li>• Certified leak-free canisters are evacuated to 0.1 mm Hg or less for storage</li> <li>• Canister cleaning certification documentation is available at the cleaning facility.</li> </ul> <p>(Section B1-1c, B1-1c(1))</p>					
<b>176</b>	<p>Are procedures in place to ensure that manifold pressure sensors and ambient air temperature sensors are certified prior to initial use and annually using NIST traceable standards? In addition OVA's if used shall be calibrated daily using known calibration gases and the balance of the OVA calibration is consistent with the manifold purge gas?</p> <p>(Section B1-1d)</p>					

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	WAP Requirement <sup>1</sup> (Insert Site) Audit (Insert Audit #) Table B6-4 Headspace Gas Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
177	<p>Are procedures in place to ensure that sampling equipment are cleaned and leak checked using the following specifications:</p> <ul style="list-style-type: none"> <li>• Surfaces of all sampling equipment that will come in contact with sample gases are thoroughly inspected and cleaned prior to assembly</li> <li>• Manifolds and sampling heads shall be purged with humidified zero air, nitrogen, or helium and leak checked after assembly</li> <li>• The cleaning shall be repeated if routine system cleaning is inadequate</li> <li>• Manifolds and sampling heads which are reused shall be cleaned and leak checked according to procedures in the EPA's Compendium Method TO-14A or TO-15 after sample collection, field duplicate collection, field blank collection, and after the additional cleaning require for field reference samples. All manifold ports shall be capped or closed with valves (sample canisters may be attached as well)</li> <li>• Manifolds are cleaned by heating the sample side of the manifold to 150 °C and periodically evacuated and flushed with humidified zero air, nitrogen, or helium</li> <li>• Manifolds not in use are demonstrated as clean before storage with a positive pressure of humidified zero air, nitrogen, or helium gas in the sampling and standard sides</li> <li>• Sampling is suspended when the analysis of an equipment blank indicated the if VOC limits have been exceeded or if a leak test fails</li> <li>• Sampling systems are cleaned after field reference standard collection by installing a gas tight connector in place of the sampling head, between the flexible hose and purge assembly. This allows the sample and standard side to be flushed with humidified zero air, nitrogen, or helium in conjunction with heated pneumatic lines</li> <li>• Needles, airtight fitting or seal, adapters, and filters are cleaned in accordance with the EPA Method TO-14A or TO-15 procedures. Sample heads shall be discarded or cleaned according to EPA Method TO-15. In addition, the needle, the airtight fitting and seal, and the filter should be purged with zero air, nitrogen, or helium and capped for storage</li> </ul> <p>(Section B1-1c(2) , Section B1-1c(3), Section B1-1c(4), and Section B1-c(5))</p>					

	WAP Requirement <sup>1</sup> (Insert Site) Audit (Insert Audit #) Table B6-4 Headspace Gas Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
<b>SAMPLE HANDLING AND CUSTODY</b>						
<b>178</b>	<p>Do formats for field logs and custody records specify documentation of the following information:</p> <ul style="list-style-type: none"> <li>• Name of sampling facility</li> <li>• Waste container identification number</li> <li>• Sample identification number of each sample referenced to waste container</li> <li>• <u>Chain-of-custody number</u></li> <li>• Sample matrix</li> <li>• Time and date of sample collection</li> <li>• Type/number and size of sample container(s)</li> <li>• Method of sample preservation</li> <li>• Requested analyses</li> <li>• Sampler(s) name through signature</li> <li>• Signatures of custodians relinquishing and receiving custody of samples including date and time of transfer until time of final disposition</li> <li>• Analytical laboratory</li> <li>• f-site shipping information (date, time, shipper, mode, air bill or lading number)</li> </ul> <p>(Section B1-5)</p>					
<b>179</b>	<p>Are procedures are in place to ensure that samples and sampling equipment are identified with unique identification numbers?</p> <p>(Section B1-5)</p>					

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		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
180	Do sample tags or labels contain the following information: <ul style="list-style-type: none"> <li>• Sample Description</li> <li>• Ambient temperature and pressure</li> <li>• Sample identification number</li> <li>• Analyses requested</li> <li>• Date/Time of collection</li> <li>• QC Designation (if applicable)</li> <li>• Sampler's initials and organization</li> </ul> (Section B1-5)					
181	All sampling equipment, canisters, and samples are identified with unique identification numbers that are traceable to equipment cleaning batches? (Section B1-5)					
182	Are procedures in place to ensure samples are sealed with intact custody seals and that one or more of the following custody conditions are met: <ul style="list-style-type: none"> <li>• It is in the possession of an authorized individual</li> <li>• It is in the view of an authorized individual, after being in the possession of that individual</li> <li>• It was in the possession of an authorized individual and access to the sample was controlled by locking or placement of signed custody seals that prevent undetected access</li> <li>• It is in a designated secure area, such as a controlled access location with complete documentation of personnel access or a radiological containment area (hot cell or glove box)</li> </ul> (Section B1-5)					
183	Are procedures in place to ensure that discrepant sample information, indications of damage, or indications of tampering are documented? (Section B1-5)					
184	Are procedures in place to ensure that sample custody is maintained until the sample is released by the <u>certified characterization program</u> Site <u>P</u> roject <u>M</u> anager or expended? (Section B1-5)					

	WAP Requirement <sup>1</sup> (Insert Site) Audit (Insert Audit #) Table B6-4 Headspace Gas Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
185	Are procedures in place to ensure that SUMMA <sup>®</sup> canisters are packaged to prevent damage to the pressure gauge or associated connections by packaging in metal boxes with separate compartments or cardboard boxes with foam inserts? (Section B1-6)					
186	Are procedures in place to ensure that samples are packaged to prevent damage to the sample container and maintain preservation temperature? (Section B1-6)					
187	Are procedures in place to ensure that adequate cold packs are included in the DOT approved sample shipping container to ensure that all temperature requirements are met? (Section B1-6)					
188	Are procedures in place to ensure that sample COC forms are secured for shipment to the inside of the sealed or locked shipping container lid and that samples and shipping containers are affixed with tamper proof seals or devices? (Section B1-6)					
189	Are procedures in place to ensure that an appropriate blank sample is included with each shipment container to detect any VOC cross-contamination? (Section B1-6)					
<b>LABORATORY OPERATIONS</b>						
190	Are procedures in place to ensure that all VOC analyses are evaluated using the following criteria: <ul style="list-style-type: none"> <li>• Precision is assessed by analyzing of laboratory duplicates, Laboratory Control Sample (LCS), and PDP blind-audit samples in comparison to Table B3-2</li> <li>• Accuracy is as %R shall be assessed by analyzing LCS samples and PDP blind audit samples in comparison to criteria in Table B3-2</li> <li>• MDL's are expressed in nanograms for VOCs and must be less than or equal to those listed in Table 3-2</li> <li>• Laboratory completeness shall be expressed as the number of samples analyzed with valid results as a percent of the total number of samples submitted for analysis. A composited sample is treated as one sample for the purposes of completeness, because only one sample is run through the analytical instrument</li> </ul>					

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	WAP Requirement <sup>1</sup> (Insert Site) Audit (Insert Audit #) Table B6-4 Headspace Gas Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
	<ul style="list-style-type: none"> <li>Comparability shall be achieved through the use of standardized methods, traceable standards by requiring successful participation in the PDP program</li> <li>Representativeness will be achieved by collecting sufficient numbers of samples using clean sampling equipment that does not introduce sample bias.</li> <li>All method detection limits and program required detection limits shall be less than the Program Required Detection Limits listed in Table B3-2 and the detection limit study procedures shall be documented in laboratory SOPs. In addition, the laboratory shall demonstrate that they are capable of meeting the Program Required Detection Limits by analyzing at least one calibration standard below the PRQL</li> </ul> (Section B3-5)					
191	Are procedures in place to ensure that only laboratories that are qualified through participation in <u>a written</u> Performance Demonstration Program are eligible to analyze waste samples? (Section B-3e)					
<b>QUALITY ASSURANCE OBJECTIVES</b>						
192	Are procedures in place to ensure that the precision of the <u>HSG</u> sampling and analysis must be assessed by the sequential collection of field duplicates for manifold sampling operations or simultaneous collection of field duplicates for direct canister sampling operations for VOCs? (Section B3-2)					
193	Are procedures in place to ensure that corrective action will be taken if the duplicate RPD exceeds 25% for any analyte found greater than the PRQL in both samples? (Section B3-2)					
194	Are procedures in place to ensure that the accuracy of headspace gas sampling is assessed through the collection of field reference standards and at a frequency of one field <u>reference</u> standard for every 20 containers sampled or per sampling batch and through the collection of equipment blanks at the frequency of one for every equipment cleaning batch ? (Section B3-2)					

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		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
195	Are procedures in place to ensure that corrective actions are taken if the field reference standard is less than 70% recovery or greater than 130% and that if the blank concentration for any blank exceeds 3 times the MDL listings in Table B3-2? (Section B3-2)					
196	Are procedures in place to ensure that sampling completeness shall be expressed as the number of valid samples collected as a percent of the total number of samples collected for each waste stream, where a valid sample is defined as a sample collected in accordance with approved sampling methods and the drum was properly prepared for sampling? (Section B3-2)					
197	Are procedures in place to ensure that the minimum sampling completeness percentage for any waste stream is 90 percent? (Section B3-2)					
198	Are procedures in place to ensure that sample comparability is assured through the use and application of uniform procedures and equipment and application of data usability criteria, and that corrective action is taken if the uniform procedures, equipment, <u>or operations</u> are not used without approved and justified deviations? (Section B3-2)					
199	Are procedures in place to ensure that sample representativeness is maintained? (Section B3-2)					

<sup>1</sup>The WAP requirements should be presented in documents, such as procedures. Each of the questions posed under WAP requirements is meant to ask whether procedures are in place or whether documents are evident which demonstrate that the specific WAP requirement is or can be met.

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**Table B6-5 Radiography Checklist**

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### Radiography Checklist

	WAP Requirement <sup>1</sup> (Insert Site) Audit (Insert Audit #) Table B6-5 Radiography Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
<b>QUALITY ASSURANCE OBJECTIVES</b>						
<b>200</b>	<p>Are process procedures in place to meet the following Quality Assurance Objectives?</p> <p><u>Precision</u></p> <ul style="list-style-type: none"> <li>Does the <u>certified characterization program</u> describe in its QAPjP and SOP(s) activities to reconcile any discrepancies between two radiography operators with regard to identification of the waste matrix code, liquids in excess of TSDf-WAC limits, and compressed gases through independent replicate scans and independent observations? And additionally, activities to verify the precision of radiography prior to use by tuning precisely enough to demonstrate compliance with QAOs through viewing an image test pattern?</li> </ul> <p><u>Accuracy</u></p> <ul style="list-style-type: none"> <li>Was accuracy obtained by using a target to tune the image for maximum sharpness and by requiring operators to successfully identify 100 percent of the required items in a training container during their initial qualification and subsequent requalification</li> </ul> <p><u>Completeness</u></p> <ul style="list-style-type: none"> <li>Was an audio/videotape (or equivalent media) of the radiography examination and a radiography data form validated according to the requirements in Section B3-10?</li> <li>Was an audio/videotape (or equivalent media) of the radiography examination and a radiography data form obtained for 100% of the waste containers subject to radiography?</li> </ul> <p><u>Comparability</u></p> <ul style="list-style-type: none"> <li>Is comparability ensured through the use of standardized radiography procedures and operator training and qualifications</li> </ul> <p>(Section B3-4a)</p>					

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	WAP Requirement <sup>1</sup> (Insert Site) Audit (Insert Audit #) Table B6-5 Radiography Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
<b>CHARACTERIZATION AND SYSTEM REQUIREMENTS</b>						
201	Does the <u>certified characterization program</u> have procedures to ensure that radiography is used to identify and verify waste container contents and verify the waste's physical form? Does the <u>certified characterization program</u> have procedures to identify prohibited materials?  (Section B-3b; B1-3)					
202	Do procedures or other supporting documentation ensure that <u>certified characterization programs perform radiography or VE of 100 percent of TRU mixed waste containers in waste streams except for those waste streams for which the Permittees approve a Scenario 1 or Scenario 2 AKSD Request?</u>  (Section B-3b)					
203	Do procedures ensure that containers whose contents prevent full examination are examined by visual examination rather than by radiography unless the <u>certified characterization program</u> certifies that <u>VE</u> would provide no additional relevant information for that container based on the AK information for the waste stream?  (Section B1-3)					
204	Do procedures or other supporting documentation ensure that the physical form determined by radiography is compared with the waste stream descriptions? If discrepancies are noted, will a new waste stream be identified?  (Section B-3b)					
205	Are there procedures to ensure the data is obtained from an audio/video recorded scan provided by trained radiography operators?  (Section B1-3)					
206	Were all activities required to achieve the radiography objective described in <u>certified characterization program</u> Quality Assurance Project Plans (QAPjPs) and Standard Operating Procedures (SOPs)?  (Section B3-4)					

	WAP Requirement <sup>1</sup> (Insert Site) Audit (Insert Audit #) Table B6-5 Radiography Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
<b>207</b>	Did the radiography system consist of the following equipment or equivalent: <ul style="list-style-type: none"> <li>• an X-ray producing device?</li> <li>• an imaging system?</li> <li>• an enclosure for radiation protection?</li> <li>• a waste container handling system?</li> <li>• an audio/video recording system or equivalent?</li> <li>• an operator control and data acquisition station?</li> </ul> (Section B1-3)					
<b>208</b>	Did the X-ray producing device have controls which allow the operator to vary voltage, thereby controlling image quality? Was it possible to vary the voltage, typically between 150-400 kV, to provide an optimum degree of penetration through the waste? Was high-density material examined with the X-ray device set on the maximum voltage? Was low-density material examined at lower voltage settings to improve contrast and image definition? (Section B1-3)					
<b>209</b>	Do procedures or other documentation ensure that an audio/videotape or equivalent is made of the waste container scan and maintained as a non-permanent record? (Section B1-3)					
<b>DATA COMPILATION</b>						
<b>210</b>	Are there procedures to ensure that a radiography data form is used to document the waste matrix code, ensure the waste container contains no ignitable, corrosive or reactive waste by documenting the absence of liquids in excess of TSDF-WAC limits or compressed gases, and verify that the physical form of the waste is consistent with the waste stream description documented on the WSPF? (Section B1-3)					
<b>211</b>	If radiography indicates that the waste does not match the waste stream description, do procedures ensure that the appropriate corrective action was taken? (Section B-3 <sup>2</sup> )					

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	WAP Requirement <sup>1</sup> (Insert Site) Audit (Insert Audit #) Table B6-5 Radiography Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
212	If a discrepancy is noted, do procedures ensure that the proper waste stream assignment is determined, the correct EPA hazardous waste numbers are assigned, and the resolution documented?  (Section B-3 <b>b</b> )					
<b>TRAINING</b>						
213	Do certified characterization program procedures ensure that only trained personnel are allowed to operate radiography equipment?  (Section B1-3)					
214	Do certified characterization program procedures ensure that training requirements for radiography operators are based upon existing industry standard training requirements?  (Section B1-3)					
215	Does the documented training program provide radiography operators with both formal and on-the-job training (OJT)?  (Section B1-3)					
216	Does the documented training program ensure that the radiography operators are instructed in the specific waste generating practices and typical packaging configurations and associated waste material parameters expected to be found in each waste stream at the TRU waste site?  (Section B1-3)					
217	Does the documented training program ensure that the OJT and apprenticeship are conducted by an experienced, qualified radiography operator prior to qualification of the candidate?  (Section B1-3)					
218	Is the documented training program TRU waste site specific?  (Section B1-3)					
219	Does the documented training program ensure that a training drum with various container sizes is scanned by each operator on a biannual basis? Is the videotape reviewed by a supervisor to ensure that operator's interpretations remain consistent and accurate?  (Section B1-3)					

	WAP Requirement <sup>1</sup> (Insert Site) Audit (Insert Audit #) Table B6-5 Radiography Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
220	Do <u>certified characterization program</u> procedures ensure that the <u>certified characterization program</u> prepares Testing Batch Data Reports or equivalent which includes all data pertaining to radiography for up to 20 waste containers without regard to waste matrix?  (Section B3-10)					
<b>QUALITY ASSURANCE</b>						
221	Does the documented training program ensure that the imaging system characteristics are verified on a routine basis?  (Section B1-3)					
222	Do procedures ensure that independent replicate scans and replicate observations of the video output of the radiography process are performed under uniform conditions and procedures? Are independent replicate scans performed on one waste container per day or per testing batch of 20 samples, which ever is less frequent? Are independent observations of one scan (not the replicate scan) performed once per day or per testing batch, which ever is less frequent, by a qualified radiography operator (other than the individual who performed the first examination)?  (Section B1-3)					
223	Do procedures ensure that oversight functions include periodic audio/videotape reviews of accepted waste containers, are performed by qualified radiography personnel (other than the operator who dispositioned the waste container)?  (Section B1-3)					
224	Is the <u>certified characterization program Site Project Manager</u> responsible for monitoring the quality of the radiography data and calling for corrective action, when necessary?  (Section B1-3)					
<b>DATA VALIDATION, REVIEW, VERIFICATION AND REPORTING</b>						
225	Do procedures ensure that all applicable data generation review verification and validation activities specified in B3-10 are followed, including all signatory releases?  (Section B3-10)					

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	WAP Requirement <sup>1</sup> (Insert Site) Audit (Insert Audit #) Table B6-5 Radiography Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
226	Do procedures ensure that radiography tapes have been reviewed at a frequency of one waste container per day or once per testing batch, whichever is less frequent, to ensure data are correct and completed?  (Section B1-3)					
227	Do procedures ensure that all applicable project-level signatory releases and DQOs (Section B3-11) as specified in the WAP are performed?  (Section B3-10b)					
228	At the data generation level, do procedures ensure that all electronic and video data stored appropriately to ensure that waste container, sample, and associated QC data are readily retrievable? Are radiography <u>recordings</u> reviewed, at a frequency of one waste container per day or once per testing batch, whichever is less frequent, against the data reported on the radiography form?  (Section B3-10a, B3-10a(1))					
229	At the project level, do procedures require the <u>certified characterization program</u> Site Project Manager to certify that the radiography data are complete and acceptable based on the videotape review of at least one waste container per testing batch or daily, whichever is less frequent?  (Section B3-10b(1))					

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**Table B6-6 Visual Examination (VE) Checklist**

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### Visual Examination (VE) Checklist

	WAP Requirement <sup>1</sup> (Insert Site) Audit (Insert Audit #) Table B6-6 Visual Examination (VE) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
<b>TRAINING</b>						
230	Is there documentation which shows that a standardized training program for visual examination personnel has been developed? Is it specific to the <u>TRU waste</u> site and include the various waste configurations generated/stored at the site?  (Section B1-4)					
231	Is there documentation which shows that the visual <u>examination operators</u> receive training on the specific waste generating processes, typical packaging configurations, and waste material parameters expected to be found in each waste matrix code at the <u>TRU waste</u> site?  (Section B1-4)					
232	<p><u>For those certified characterization programs performing VE of S3000/S4000 waste, does the training include specific instructions for performing VE of homogeneous solids and soils/gravel.</u></p> <ul style="list-style-type: none"> <li>• <u>Are the VE operators instructed to use light sources such as standard flashlights, gooseneck lights or other light emitting devices to enhance their ability to identify prohibited items when observing between the waste container and inner liner(s).</u></li> <li>• <u>Are the VE operators instructed to clearly state the actions being performed (e.g., "I am using a gooseneck light to view between the rigid liner and the drum wall to determine the presence or absence of free-standing liquid.") while performing VE on a loaded payload container when the contents are not removed.</u></li> <li>• <u>Does the training also recommend the use of examination aids such as telescoping mirrors when the aid will enhance the operator's ability to perform a more thorough examination.</u></li> </ul> <p><u>Are the top of flexible liners such as drum liner bags twisted or folded or otherwise held in toward the center of the waste container to facilitate examination between inner liner(s) and the waste container wall.</u></p>					
233	Are the visual examination personnel requalified once every two years?  (Section B1-4)					

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	WAP Requirement <sup>1</sup> (Insert Site) Audit (Insert Audit #) Table B6-6 Visual Examination (VE) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
<b>VISUAL EXAMINATION EXPERT REQUIREMENTS</b>						
234	Does documentation ensure that the <u>certified characterization program</u> has designated a visual examination expert <u>(VEE)</u> ? Is the <u>VEE</u> familiar with the waste generating processes that have taken place at the <u>TRU waste</u> site? Is the <u>VEE</u> familiar with all of the types of waste being characterized at that site? (Section B1-4)					
235	Does documentation ensure that the <u>VEE</u> shall be responsible for the overall direction and implementation of the <u>VE by the certified characterization program at the TRU waste site</u> ? Does the site's QAPjP specify the selection, qualification, and training requirements of the <u>VEE</u> ? ( B1-4)					
<b>VISUAL EXAMINATION PROCEDURES</b>						
236	Do procedures indicate that all <u>VE</u> activities are recorded on audio/videotape or alternatively, by using a second operator to provide additional verification by reviewing the contents of the waste container to ensure correct reporting? (Section B1-4)					
237	<u>When VE is performed with a second operator, does each operator performing the VE observe for themselves the waste being placed in the container or the condition within the examined container when the waste is not removed.</u> <u>(Section B1-4)</u>					

	WAP Requirement <sup>1</sup> (Insert Site) Audit (Insert Audit #) Table B6-6 Visual Examination (VE) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
238	<p><u>Does VE recorded on video/audio media meet the following minimum requirements?:</u></p> <ul style="list-style-type: none"> <li>• <u>The video/audio media records the waste packaging event for the container such that waste items placed into the container are recorded in sufficient detail and shall contain an inventory of waste items in sufficient detail that another trained VE expert can identify the associated waste material parameters.</u></li> <li>• <u>The video/audio media captures the waste container identification number.</u></li> <li>• <u>The personnel loading the waste container are identified on the video/audio media or on packaging records traceable to the loading of the waste container.</u></li> </ul> <p><u>Is the date of loading of the waste container recorded on the video/audio media or on packaging records (e.g., packaging logs, packaging forms) traceable to the loading of the waste container?</u></p> <p><u>(Section B1-4)</u></p>					
239	<p><u>Does VE performed using two personnel meet the following minimum requirements?:</u></p> <ul style="list-style-type: none"> <li>• <u>At least two personnel approved the data forms or packaging records attesting to the contents of the waste container.</u></li> <li>• <u>The data forms or packaging records contain an inventory of waste items in sufficient detail that another trained VE operator can identify the associated waste material parameters.</u></li> </ul> <p><u>Is the waste container identification number recorded on the data forms or packaging records?</u></p> <p><u>(Section B1-4)</u></p>					

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	WAP Requirement <sup>1</sup> (Insert Site) Audit (Insert Audit #) Table B6-6 Visual Examination (VE) Checklist	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
240	<p>Are process procedures in place to meet the following Quality Assurance Objectives?:</p> <p><u>Precision</u></p> <ul style="list-style-type: none"> <li>Precision is maintained by reconciling any discrepancies between the operator and the independent technical reviewer with regard to identification of waste matrix code, liquids in excess of TSDF-WAC limits, and compressed gases.</li> </ul> <p><u>Accuracy</u></p> <ul style="list-style-type: none"> <li>Accuracy is maintained by requiring operators to pass a comprehensive examination and demonstrate satisfactory performance in the presence of the VE expert during their initial qualification and subsequent requalification.</li> </ul> <p><u>Completeness</u></p> <ul style="list-style-type: none"> <li>A validated VE data form will be obtained for 100 percent of the waste containers subject to VE.</li> </ul> <p><u>Comparability</u></p> <ul style="list-style-type: none"> <li>The comparability of VE data from different operators shall be enhanced by using standardized VE procedures and operator qualifications.</li> </ul> <p>(Section B3-4b)</p>					

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<sup>1</sup>The WAP requirements should be presented in documents, such as procedures. Each of the questions posed under WAP requirements is meant to ask whether procedures are in place or whether documents are evident which demonstrate that the specific WAP requirement is or can be met.