

ENGINEERING CHANGE NOTICE

Page 1 of 42

1. ECN 169710

Proj.
ECN

2. ECN Category (mark one)				Supplemental <input type="checkbox"/>	Change ECN <input type="checkbox"/>	Supersedure <input type="checkbox"/>	
Cancel/Void <input type="checkbox"/>		Direct Revision <input checked="" type="checkbox"/>		Temporary <input type="checkbox"/>	Discovery <input type="checkbox"/>		
3. Originator's Name, Organization, MSIN, and Telephone No. <u>W 81225</u>					4. Date		
C. D. Kramer, 81225, H4-55, 6-4186					May 11, 1992		
5. Project Title/No./Work Order No.			6. Bldg./Sys./Fac. No.		7. Impact Level		
A11AB			NA		CDK 5/11/92 A 3Q		
8. Document Number Affected (include rev. and sheet no.)			9. Related ECN No(s).		10. Related PO No.		
WHC-SD-EN-AP-039, Rev. 0			NA		NA		
11a. Modification Work		11b. Work Package Doc. No.	11c. Complete Installation Work		11d. Complete Restoration (Temp. ECN only)		
<input type="checkbox"/> Yes (fill out Blk. 11b)		NA	NA		NA		
<input checked="" type="checkbox"/> No (NA Blks. 11b, 11c, 11d)		_____ Cog. Engineer Signature & Date		_____ Cog. Engineer Signature & Date			
12. Description of Change							
The QAPP appendix of WHC-SD-EN-AP-039, Rev. 0, was reviewed as part of the response to RL audit finding 91003-WHC-02. The following changes were made:							
<ul style="list-style-type: none"> o References to QI 7.3, "Source Surveillance and Inspection", were deleted. o Reference to WHC-CM-3-5 was substituted for reference to EII 1.6 in Section 4.1.2 o Clarification that laboratory QA plans shall be used to assure preventative maintenance for samples analyzed by EPA reference methods. 							
Additional corrections to the document were also made at this time. These include:							
<ul style="list-style-type: none"> o A changed page number in the Table of Contents o Correction of the organization title for Office of Sample Management (OSM) o Correction of the precision and accuracy requirement for radiochemical analyses o Updating of references. 							
13a. Justification (mark one)		Criteria Change <input type="checkbox"/>		Environmental <input type="checkbox"/>		Facilitate Const. <input type="checkbox"/>	
Design Error/Omission <input checked="" type="checkbox"/>		Design Improvement <input type="checkbox"/>		As-Found <input type="checkbox"/>		Const. Error/Omission <input type="checkbox"/>	
13b. Justification Details							
These changes correct problems similar to those found in an unrelated audit, and fulfill, in part, a commitment to DOE-RL to review all QAPPs.							
14. Distribution (include name, MSIN, and no. of copies)					RELEASE STAMP		
D. J. Alexander, R3-54, 1 copy/ (copies) T. R. Coleman, H4-16, 1 J. A. Demiter, L5-31, 1 C. D. Kramer, H4-55, 5 R. J. Krebs, H2-58, 1 R. A. Mezmarich, S0-61, 5 R. C. Roos, H4-55, 1 E. J. Wright, T4-01, 5 EDMC \leftarrow H4-22 2 IRA Clearance H4-17 1					OFFICIAL RELEASE 20 BY WHC DATE JUN 18 1992 Sta. 21		

ENGINEERING CHANGE NOTICE

169710

15. Design Verification Required

Yes
 No

16. Cost Impact

ENGINEERING

Additional [NA] \$
Savings [NA] \$

CONSTRUCTION

Additional [NA] \$
Savings [NA] \$

17. Schedule Impact (days)

Improvement [NA]
Delay [NA]

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

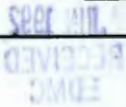
SDD/DD	<input type="checkbox"/>	Seismic/Stress Analysis	<input type="checkbox"/>	Tank Calibration Manual	<input type="checkbox"/>
Functional Design Criteria	<input type="checkbox"/>	Stress/Design Report	<input type="checkbox"/>	Health Physics Procedure	<input type="checkbox"/>
Operating Specification	<input type="checkbox"/>	Interface Control Drawing	<input type="checkbox"/>	Spares Multiple Unit Listing	<input type="checkbox"/>
Criticality Specification	<input type="checkbox"/>	Calibration Procedure	<input type="checkbox"/>	Test Procedures/Specification	<input type="checkbox"/>
Conceptual Design Report	<input type="checkbox"/>	Installation Procedure	<input type="checkbox"/>	Component Index	<input type="checkbox"/>
Equipment Spec.	<input type="checkbox"/>	Maintenance Procedure	<input type="checkbox"/>	ASME Coded Item	<input type="checkbox"/>
Const. Spec.	<input type="checkbox"/>	Engineering Procedure	<input type="checkbox"/>	Human Factor Consideration	<input type="checkbox"/>
Procurement Spec.	<input type="checkbox"/>	Operating Instruction	<input type="checkbox"/>	Computer Software	<input type="checkbox"/>
Vendor Information	<input type="checkbox"/>	Operating Procedure	<input type="checkbox"/>	Electric Circuit Schedule	<input type="checkbox"/>
OM Manual	<input type="checkbox"/>	Operational Safety Requirement	<input type="checkbox"/>	ICRS Procedure	<input type="checkbox"/>
FSAR/SAR	<input type="checkbox"/>	IEFD Drawing	<input type="checkbox"/>	Process Control Manual/Plan	<input type="checkbox"/>
Safety Equipment List	<input type="checkbox"/>	Cell Arrangement Drawing	<input type="checkbox"/>	Process Flow Chart	<input type="checkbox"/>
Radiation Work Permit	<input type="checkbox"/>	Essential Material Specification	<input type="checkbox"/>	Purchase Requisition	<input type="checkbox"/>
Environmental Impact Statement	<input type="checkbox"/>	Fac. Proc. Samp. Schedule	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Report	<input type="checkbox"/>	Inspection Plan	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Permit	<input type="checkbox"/>	Inventory Adjustment Request	<input type="checkbox"/>		<input type="checkbox"/>


19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision
	NA	

20. Approvals

Signature	Date	Signature	Date
OPERATIONS AND ENGINEERING		ARCHITECT-ENGINEER	
Cog./Project Engineer <i>C.D. Kramer</i>	<i>5/11/92</i>	PE	_____
Cog./Project Engr. Mgr. <i>R. Ross</i>	<i>5-22-92</i>	QA	_____
QA <i>[Signature]</i>	<i>5-28-92</i>	Safety	_____
Safety	_____	Design	_____
Security	_____	Other	_____
Proj. Prog./Dept. Mgr.	_____		_____
Def. React. Div.	_____		_____
Chem. Proc. Div.	_____		_____
Def. Wst. Mgmt. Div.	_____	DEPARTMENT OF ENERGY	_____
Adv. React. Dev. Div.	_____		_____
Proj. Dept.	_____		_____
Environ. Div.	_____	ADDITIONAL	_____
IRM Dept.	_____		_____
Facility Rep. (Ops.)	_____		_____
Other	_____		_____



Date Received: 5/29/92		INFORMATION RELEASE REQUEST		Reference: WHC-CM-3-4										
Complete for all Types of Release														
Purpose			ID Number (include revision, volume, etc.)											
<input type="checkbox"/> Speech or Presentation <input type="checkbox"/> Full Paper (Check only one suffix) <input type="checkbox"/> Summary <input type="checkbox"/> Abstract <input type="checkbox"/> Visual Aid <input type="checkbox"/> Speakers Bureau <input type="checkbox"/> Poster Session <input type="checkbox"/> Videotape			<input checked="" type="checkbox"/> Reference <input type="checkbox"/> Technical Report <input type="checkbox"/> Thesis or Dissertation <input type="checkbox"/> Manual <input type="checkbox"/> Brochure/Flier <input type="checkbox"/> Software/Database <input type="checkbox"/> Controlled Document <input type="checkbox"/> Other											
			WHC-SD-EN-AP-039, Rev. 0A List attachments. Date Release Required CDK 5/26/92 6/12/92											
Title Soil Sampling Plan for Retrieval of Transuranic Waste Stored in the 200 West Burial Trenches			Unclassified Category UC-		Impact Level 3 Q									
New or novel (patentable) subject matter? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If "Yes", has disclosure been submitted by WHC or other company? <input type="checkbox"/> No <input type="checkbox"/> Yes Disclosure No(s).			Information received from others in confidence, such as proprietary data, trade secrets, and/or inventions? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (Identify)											
Copyrights? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If "Yes", has written permission been granted? <input type="checkbox"/> No <input type="checkbox"/> Yes (Attach Permission)			Trademarks? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (Identify)											
Complete for Speech or Presentation														
Title of Conference or Meeting NA			Group or Society Sponsoring NA											
Date(s) of Conference or Meeting NA		City/State NA		Will proceedings be published? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Will material be handed out? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No										
Title of Journal NA														
CHECKLIST FOR SIGNATORIES														
Review Required per WHC-CM-3-4		Yes		No										
		<input type="checkbox"/>		<input checked="" type="checkbox"/>										
Classification/Unclassified Controlled Nuclear Information		<input type="checkbox"/>		<input checked="" type="checkbox"/>										
Patent - General Counsel		<input checked="" type="checkbox"/>		<input type="checkbox"/>										
Legal - General Counsel		<input checked="" type="checkbox"/>		<input type="checkbox"/>										
Applied Technology/Export Controlled Information or International Program		<input type="checkbox"/>		<input checked="" type="checkbox"/>										
WHC Program/Project		<input type="checkbox"/>		<input checked="" type="checkbox"/>										
Communications		<input type="checkbox"/>		<input checked="" type="checkbox"/>										
RL Program/Project		<input type="checkbox"/>		<input checked="" type="checkbox"/>										
Publication Services		<input checked="" type="checkbox"/>		<input type="checkbox"/>										
Other Program/Project		<input type="checkbox"/>		<input checked="" type="checkbox"/>										
Reviewer - Signature Indicates Approval <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Name (printed)</th> <th style="width: 30%;">Signature</th> <th style="width: 40%;">Date</th> </tr> </thead> <tbody> <tr> <td>SW BERGLIN</td> <td><i>[Signature]</i></td> <td>6/2/92</td> </tr> <tr> <td>DE Smith</td> <td><i>[Signature]</i></td> <td>6/10/92</td> </tr> </tbody> </table>						Name (printed)	Signature	Date	SW BERGLIN	<i>[Signature]</i>	6/2/92	DE Smith	<i>[Signature]</i>	6/10/92
Name (printed)	Signature	Date												
SW BERGLIN	<i>[Signature]</i>	6/2/92												
DE Smith	<i>[Signature]</i>	6/10/92												
Information conforms to all applicable requirements. The above information is certified to be correct.														
References Available to Intended Audience		Yes <input checked="" type="checkbox"/>		No <input type="checkbox"/>										
Transmit to DOE-HQ/Office of Scientific and Technical Information		<input type="checkbox"/>		<input checked="" type="checkbox"/>										
Author/Requestor (Printed/Signature)		Date		INFORMATION RELEASE ADMINISTRATION APPROVAL STAMP Stamp is required before release. Release is contingent upon resolution of mandatory comments. 										
C. D. Kramer <i>C.D. Kramer</i>		5/11/92												
Intended Audience														
<input type="checkbox"/> Internal <input type="checkbox"/> Sponsor <input checked="" type="checkbox"/> External Responsible Manager (Printed/Signature) Date		R. C. Roos <i>R.C. Roos</i> 5-22-92		Date Cancelled										
				Date Disapproved										

SUPPORTING DOCUMENT		1. Total Pages 35
2. Title Soil Sampling Plan for Retrieval of Transuranic Waste Stored in the 200 West Burial Trenches	3. Number WHC-SD-EN-AP-039	4. Rev No. 0-A
5. Key Words Soil, Sampling Plan, Waste Retrieval, Burial, Transuranic Waste- <div style="text-align: center; border: 1px solid black; padding: 5px;"> APPROVED FOR PUBLIC RELEASE </div>	6. Author Name: C. D. Kramer <i>C. D. Kramer</i> 5/11/92 Signature Organization/Charge Code 81225 /A11AB	
7. Abstract <i>6/15/92 N. Soler</i> <p>This plan addresses the sampling of soil and subsoil exposed during pilot TRU waste retrieval activities. It is designed to provide information for later full scale retrieval. Sampling will monitor for radioactive and chemical contamination in soil adjacent to the stored wastes. Transuranic waste is stored in the subject burial trenches.</p>		
8. PURPOSE AND USE OF DOCUMENT - This document was prepared for use within the U.S. Department of Energy and its contractors. It is to be used only to perform, direct, or integrate work under U.S. Department of Energy contracts. This document is not approved for public release until reviewed. PATENT STATUS - This document copy, since it is transmitted in advance of patent clearance, is made available in confidence solely for use in performance of work under contracts with the U.S. Department of Energy. This document is not to be published nor its contents otherwise disseminated or used for purposes other than specified above before patent approval for such release or use has been secured, upon request, from the Patent Counsel, U.S. Department of Energy Field Office, Richland, A. DISCLAIMER - This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, nor any of their contractors, subcontractors or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use or the results of such use of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.	10. RELEASE STAMP <div style="border: 1px solid black; padding: 10px; text-align: center;"> OFFICIAL RELEASE BY WHC 20 DATE JUN 18 1992 <i>Sta. 21</i> </div>	
9. Impact Level <i>CDK 5/11/92</i> A 3 Q		

CONTENTS

1.0	INTRODUCTION	1
2.0	BACKGROUND	1
	2.1 SITE DESCRIPTION	1
	2.2 WASTE DESCRIPTION	6
3.0	SAMPLING STRATEGY	9
4.0	SAMPLING PROCEDURES	11
	4.1 SURFACE CHARACTERIZATION	11
	4.2 SUBSURFACE SOIL SAMPLING	11
	4.3 REFERENCE SAMPLES	12
	4.4 SAMPLE SIZE AND HANDLING	13
5.0	ANALYTICAL PROCEDURES	13
6.0	QUALITY CONTROL PROCEDURES	14
	6.1 QUALITY CONTROL SAMPLES	14
	6.2 SAMPLE DOCUMENTATION PROCEDURES	14
	6.3 EQUIPMENT DECONTAMINATION	15
7.0	REFERENCES	15

FIGURES

1	Site 1 - Burial Ground 218-W-4C, Trench 4	2
2	Sites 2 and 3 - Burial Ground 218-W-4C, Trench 20	3
3	Site 4 - Burial Ground 218-W-4C, Trench 1	4
4	Site 5 - Burial Ground 218-W-4B, Trench 7	5
5	Typical Hanford Site Transuranic Drum Module Layout	7
6	Typical Post 1973 Transuranic Waste Storage	8
7	Triangular Sampling Grid	10
8	Theoretical Hot Spot	10
9	Box of Sixteen Numbers	12

APPENDIX

QUALITY ASSURANCE PROJECT PLAN	QAPP-1
--	--------

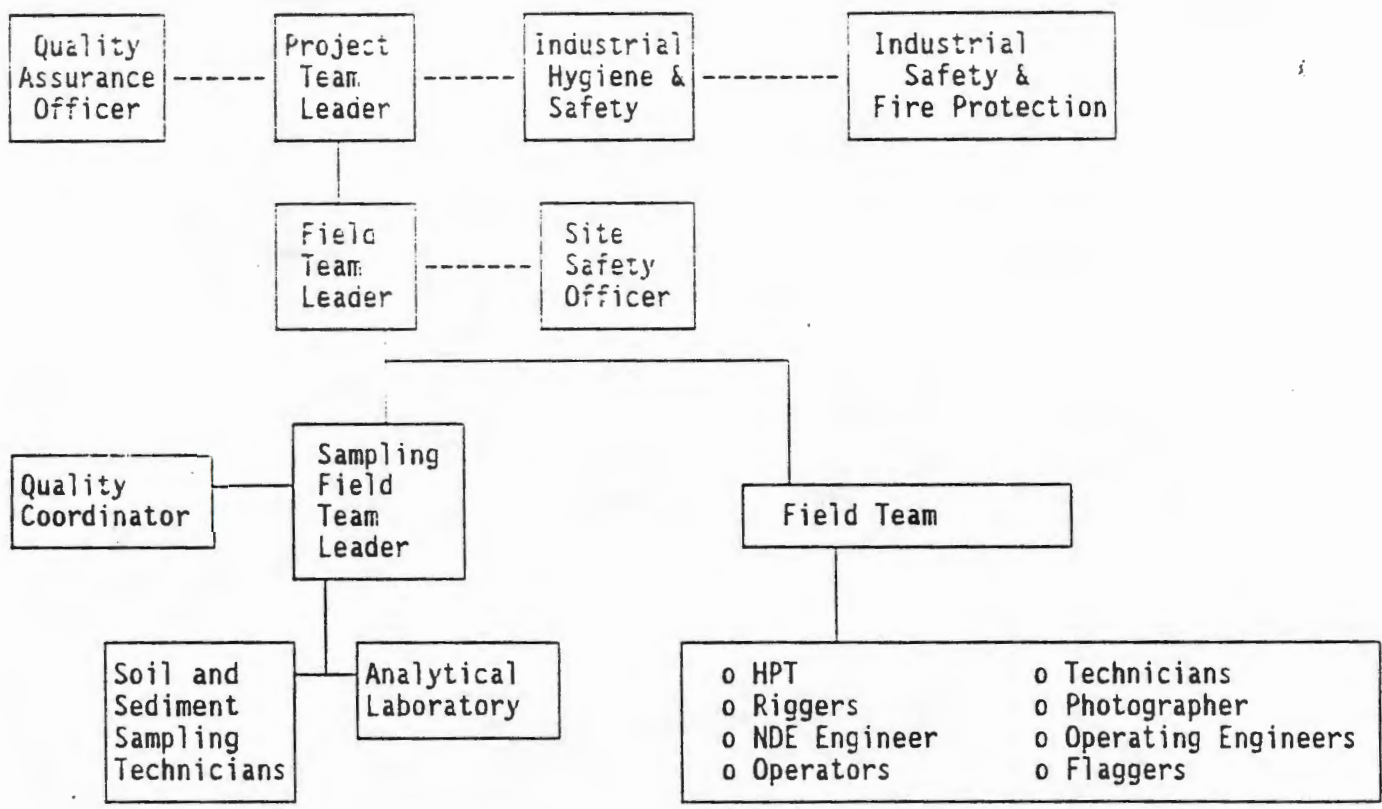


Figure QAPP-1. 200 West Area Transuranic Retrieval Soil Sampling Organizational Chart.

2.1.5 Site Safety Officer

The Site Safety Officer is responsible for all health and safety monitoring in accordance with the site-specific Hazardous Waste Operations Permit including determining potential health and safety hazards from volatile and/or toxic compounds during sample handling and sampling decontamination activities. They also have the responsibility and authority to halt field activities due to unacceptable health and safety hazards.

2.1.6 Office of Sample Management

The Office of Sample Management (OSM) is responsible for coordinating sample shipments to the analytical laboratory, resolution of any chain of custody issues, sample tracking and for validation of all analytical data as discussed in Section 8.0.

2.1.7 Solid Waste Burial Grounds Operation

Solid Waste Burial Grounds Operation (SWO) is responsible for the overall coordination of the TRU drum retrieval/inspection activities.

2.1.8 Solid Waste Technology

Solid Waste Technology is responsible for TRU waste characterization, site selection, data recovery, documentation, and program planning.

2.1.9 Health Physics

Health Physics will provide Health Physics Technicians to support onsite work per the Radiation Work Permit.

2.2 Analytical Laboratories

Soil samples shall be routed to an approved Westinghouse Hanford, participant contractor, or subcontractor laboratory, which shall be responsible for performing the analyses identified in this plan in compliance with work order or contractual requirements and Westinghouse Hanford approved procedures; see Section 7.0. At the Technical Lead's option, services of alternate qualified laboratories may be procured for the performance of split sample analyses for performance audit purposes. If such an option is selected, the QA plan and applicable analytical procedures from the alternate laboratory shall also be approved by Westinghouse Hanford prior to their use in compliance with Section 7.0 requirements.

3.0 OBJECTIVES FOR MEASUREMENTS

The purpose of this sampling activity is to assess the existence of contamination, if any, in the soils surrounding the TRU drums contained in the 200 West Area burial grounds. The analyses assessment will focus on the parameters of interest found in Table QAPP-1. As noted in Section 4.6 of *Data Quality Objectives for Remedial Response Activities: Volume I, Development Process* (EPA 1987a), universal goals for precision, accuracy, representativeness, completeness, and comparability cannot be practically established at the outset of an investigation. Data are available, however, from previously negotiated analytical contracts for Hanford Site investigations, the Data Quality Objectives guidance document (EPA 1987a), and from typical capabilities currently expected for laboratories involved in environmental analysis, that may be used as minimum guidelines for the selection of analytical methods appropriate for this investigation. Table QAPP-1 provides preliminary target values for detection limits, precision, and accuracy that are intended for use in initial procurement negotiations with the analytical laboratory.

Objectives for completeness for this investigation shall require that contractually or procedurally established requirements for precision and accuracy be met for at least 90% of the total number of requested determinations. Failure to meet this criteria shall be documented in data summary reports as described in Section 8.0 and shall be considered in the validation process discussed in Section 8.0. Corrective action measures shall be initiated by the technical lead as appropriate, as noted in Section 13.0. Approved analytical procedures shall require the use of reporting techniques and units consistent with EPA reference methods listed in Table QAPP-1 in order to facilitate the comparability of data sets in terms of precision and accuracy.

Table QAPP-1. Analytes of Interest and Analytical Methods
200 West TRU Drum Retrieval/Inspection
Soil Sampling.

Analyte(s)*	Standard method	Minimum detection limit	Precision** (RPD)	Accuracy**
Asbestos	***	***	***	***
Beryllium	3050/6010	10 µg/kg	± 25%	± 25%
Copper	3050/6010	2 µg/kg	± 25%	± 25%
Lead	3050/7421	1 µg/kg	± 25%	± 25%
Chromium	3050/6010	1 µg/kg	± 25%	± 25%
Mercury	7471	0.2 µg/kg	± 25%	± 25%
Arsenic	3050/7060 or 7061	0.5 µg/kg	± 25%	± 25%
Barium	3050/6010	100 µg/kg	± 25%	± 25%
Cadmium	3050/7131	0.5 µg/kg	± 25%	± 25%
Selenium	3050/7740 or 7741	0.5 µg/kg	± 25%	± 25%
Silver	3050/6010	10 µg/kg	± 25%	± 25%
Water soluble anions (Cl, NO ₃ , NO ₂ , SO ₄)	300	1 µg/kg	± 50%	± 50%
Volatile organics	8240 or 8260	CLP quantitation limits	Generally <45%	Generally <45%
Semivolatile organics	8250 or 8270	CLP quantitation limits	Generally <35%	Generally <35%
PCB specific	8080	n/d	± 25%	± 25%
Ethylene glycol	TBD	TBD	TBD	TBD

*Radiochemical analyses will be performed to lab-specific modifications of procedures in the *Eastern Environmental Radiation Facility Radiochemistry Procedures Manual* (EPA 1984) and *LML Procedures Manual*, 25th Edition (DOE 1982). Precision and accuracy must be reported as applicable per standard analytical procedure requirements. Analytical parameters will include americium-241, plutonium-total, plutonium-238, plutonium-239, isotopic uranium, gamma spectra resolution and total alpha, beta and gamma.

**Minimum requirements for precision and accuracy will be method-specific, and shall be negotiated and established in the procedure review/approval process. Target values are indicated above; precision is expressed in terms of relative percent difference (RPD) and accuracy as percent recovery. (Each is dependent upon the level of analyte measured.) Nonachievement of arbitrary target values shall not invalidate the analysis.

***Analysis will be conducted using a National Voluntary Laboratory Accreditation Program approved method.

4.0 SAMPLING PROCEDURES

4.1 PROCEDURE APPROVALS AND CONTROL

4.1.1 Westinghouse Hanford Procedures

Westinghouse Hanford procedures that will be used to support the sampling plan have been selected from the Environmental Engineering, Technology and Permitting Quality Assurance Program Plan. Selected procedures include EIIs from the *Environmental Investigations and Site Characterization Manual* (WHC 1988a), and quality requirements (QR's) and Quality Instructions (QI's), from the *Quality Assurance Manual* (WHC 1988b).

Procedure approval, revision, and distribution control requirements applicable to EIIs are addressed in EII 1.2, Preparation and Revision of Environmental Investigation Instructions; requirements applicable to QIs and QRs are addressed in QR 5.0, Instructions, Procedures, and Drawings; QI 5.1, Preparation of Quality Assurance Documents; QR 6.0, Document Control; and QI 6.1, Quality Assurance Document Control (WHC 1988b). Other procedures applicable to the preparation, review, approval, and revision of OSM and other Hanford analytical laboratories organization procedures shall be as defined in the various procedures and manuals identified in the QA program plan for RCRA activities under criteria 5.0 and 6.0. All procedures are available for regulatory review.

4.1.2 Participant Contractor/Subcontractor Procedures

As specified in Section 2.2, participant contractor and/or subcontractor laboratories may be procured. All such procurement shall be subject to the applicable requirements of QR 4.0, Procurement Document Control; QI 4.1, Procurement Document Control; QI 4.2, External Services Control; QR 7.0, Control of Purchased Items and Services; QI 7.1, Procurement Planning and Control; and/or QI 7.2, Supplier Evaluation (WHC 1988b).

All analytical laboratory plans and procedures shall be reviewed and approved prior to use by qualified personnel from the OSM, Westinghouse Hanford analytical laboratories organizations, or other qualified personnel, as directed by the technical lead. All participant contractor or subcontractor procedures, plans and/or manuals shall be retained as project quality records in compliance with WHC-CM-3-5 Section 5.0 (WHC 1990b); QR 17.0, Quality Assurance Records; and QI 17.1, Quality Assurance Records Control (WHC 1988b). In addition to the submittal of analytical procedures, analytical laboratories shall be required to submit the current version of their internal QA Program plans.

4.2 SAMPLING AND INVESTIGATIVE PROCEDURES

All soil sampling activities shall be performed in accordance with EII 5.2, Soil and Sediment Sampling (WHC 1988a). All sampling equipment decontamination shall be in compliance with EII 5.5, Decontamination of Equipment for RCRA/CERCLA Sampling (WHC 1988a).

4.3 PROCEDURE ADDITIONS AND CHANGES

Additional EIIs or EII updates that may be required as a consequence of this activity shall be developed in compliance with EII 1.2, Preparation and Revision of Environmental Investigation Instructions (WHC 1988a). Should deviations from established EIIs be required to accommodate unforeseen field situations, they may be authorized by the field team leader in accordance with the requirements of EII 1.4, Deviation for Environmental Investigation Instructions (WHC 1988a). Documentation, review, and disposition of instruction change authorization forms are defined within EII 1.4. Other types of document change requests shall be completed as required by the Westinghouse Hanford procedures governing their preparation and revision.

5.0 SAMPLE CUSTODY

All soil samples obtained during the course of this investigation shall be controlled as required by EII 5.1, Chain of Custody, (WHC 1988a) from the point of origin to the analytical laboratory. Laboratory chain of custody procedures shall be reviewed and approved as required by Westinghouse Hanford procurement control procedures as noted in Section 4.1, and shall ensure the maintenance of sample integrity and identification throughout the analytical process. Results of analyses shall be traceable to original samples through the unique code or identifier assigned to the sample in the field. All results of analysis shall be controlled as permanent project quality records as required by QR 17.0, Quality Assurance Records (WHC 1988b) and EII 1.6, Records Management (WHC 1988a).

6.0 CALIBRATION PROCEDURES

Calibration of all Westinghouse Hanford measuring and test equipment, whether in existing inventory or purchased for this activity, shall be controlled as required by QR 12.0, Control of Measuring and Test Equipment; QI 12.2, Measuring and Test Equipment Calibration by User (WHC 1988b); and/or EII 3.1, User Calibration of Health and Safety Measuring and Test Equipment (WHC 1988a). Routine operational checks for Westinghouse Hanford field equipment shall be as defined within applicable EIIs or procedures; similar information shall be provided in Westinghouse Hanford-approved participant contractor or subcontractor procedures.

Calibration of Westinghouse Hanford, participant contractor, or subcontractor analytical equipment shall be as defined by applicable standard analytical methods, subject to Westinghouse Hanford review and approval.

7.0 ANALYTICAL PROCEDURES

Analytical methods or procedures based on the reference methods are identified in Table QAPP-1 and Section 3.0 shall be selected or developed and approved prior to use in compliance with appropriate Westinghouse Hanford procedure and/or procurement control requirements as noted in Section 4.1.

8.0 DATA REDUCTION, VALIDATION, AND REPORTING

8.1 DATA REDUCTION AND DATA PACKAGE PREPARATION

All analytical laboratories shall be responsible for preparing a report summarizing the results of analysis and for preparing a detailed data package that includes all information necessary to perform data validation to the extent indicated by the minimum requirements of Section 8.2. Data summary report format and data package content shall be defined in procurement documentation subject to Westinghouse Hanford review and approval as noted in Section 4.1. As a minimum, laboratory data packages shall include the following:

- Sample receipt and tracking documentation, including identification of the organization and individuals performing the analysis, the names and signatures of the responsible analysts, sample holding time requirements, references to applicable chain of custody procedures and the dates of sample receipt, extraction, and analysis
- Instrument calibration documentation, including equipment type and model, with continuing calibration data for the time period in which the analysis was performed
- Quality control data, as appropriate for the methods used, including matrix spike/matrix spike duplicate data, recovery percentages, precision data, laboratory blank data, and identification of any nonconformance that may have affected the laboratory's measurement system during the time period in which the analysis was performed
- The analytical results or data deliverables, including reduced data, reduction formulas or algorithms, and identification of data outliers or deficiencies.

Other supporting information, such as initial calibration data, reconstructed ion chromatographs, spectrograms, traffic reports, and raw data, need not be included in the submittal of individual data packages unless specifically requested by the technical lead or the OSM. All sample data,

however, shall be retained by the analytical laboratory and made available for systems or program audit purposes upon request by Westinghouse Hanford or DOE-RL representatives; see Section 10.0. Such data shall be retained by the analytical laboratory through the duration of their contractual statement of work, at which point it shall be turned over to Westinghouse Hanford for archiving.

The completed data package shall be reviewed and approved by the analytical laboratory's QA manager prior to submittal to OSM for validation as discussed in Section 8.2. The requirements of this section shall be included in procurement documentation or work orders, as appropriate, in compliance with the standard Westinghouse Hanford procurement control procedures referenced in Section 4.1.

8.2 VALIDATION

Validation of the completed data package shall be performed by qualified Westinghouse Hanford OSM personnel. Validation requirements shall be defined within approved OSM data validation procedures (WHC 1990c), but as a minimum shall require the over-checks as defined within this section.

For organic analyses, validation reports shall be prepared documenting over-checks of the following areas as recommended in *Laboratory Data Validation Functional Guidelines for Evaluating Organic Analyses* (EPA 1988b):

- Data summary narrative
- Sample holding times
- Gas chromatograph/mass spectrometer tuning and mass calibration requirements
- Continuing calibration requirements
- Method blank sample requirements
- Surrogate recovery requirements
- Matrix spike/matrix spike duplicate requirements
- Internal standards performance requirements
- Target compound identification requirements
- Target compound quantitation requirements and reported detection limits
- Any tentatively identified compounds, library search, assessment, and quantitation requirements
- Overall data assessment requirements.

Other requirements specific to laboratory analytical equipment calibration are included in Section 6.0. The minimum requirements of this section shall be invoked in procurement documents or work orders in compliance with standard Westinghouse Hanford procedures as noted in Section 4.1.

10.0 PERFORMANCE AND SYSTEM AUDITS

As noted in Section 5.12, audits in environmental investigations are considered to be systematic checks that verify the quality of operation of one or more elements of the total measurement system. In the sense intended by *Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans* (EPA 1983), audits may be of two types: (1) performance audits, in which quantitative data are independently obtained for comparison with data routinely obtained by the measurement system or (2) system audits, involving a qualitative onsite evaluation of laboratories (or other organizational elements of the measurement system) for compliance with established quality assurance program and procedure requirements. For this investigation, performance audit requirements shall be met by the analysis of a minimum of one blind or one split sample for each analytical method identified in Table QAPP-1. Blind samples shall not be identified as such to the primary laboratory, and may be made from traceable standards or from routine samples spiked with a known concentration of a known compound. Split samples shall be analyzed by an independent laboratory in compliance with approved methods based on the same reference standards as are invoked for the primary laboratory. All analytical procedures shall be approved by Westinghouse Hanford prior to use as described in Section 4.1 of this QAPP. System audit requirements shall be implemented through the use of procedure QI 10.4, Surveillance (WHIC 1988b). Systems audits will be scheduled if so requested by the Technical Lead, if a consequence of corrective action requirements (see Section 10.0), or may be performed upon request by the QA Coordinator or DOE-RL. Any discrepancies observed during the evaluation of performance audit results or during system audit surveillance activities that cannot be immediately corrected to the satisfaction of the investigator shall be documented on a surveillance report and resolved in compliance with procedure QI 10.4, Surveillance (WHIC 1988b). Program audits shall be conducted in compliance with QR 18.0, Audits; QI 18.1, Audit Programming and Scheduling; and QI 18.2, Planning, Performing, Reporting, and Follow-up of Quality Audits by auditors qualified in compliance with QI 2.5, Qualification of Quality Assurance Program Audit Personnel (WHIC 1988b).

11.0 PREVENTIVE MAINTENANCE

All measurement and testing equipment used in the field and laboratory that directly affects the quality of the analytical data shall be subject to preventive maintenance measures that ensure minimization of measurement system downtime. Field equipment maintenance instructions shall be as defined by the approved procedures governing their use. Laboratories shall be responsible for performing or managing the maintenance of their analytical equipment; maintenance requirements, spare parts lists, and instructions shall be

included in individual methods or in laboratory QA plans, subject to Westinghouse Hanford review and approval. When samples are analyzed using EPA reference methods, the requirements for preventive maintenance of laboratory analytical equipment as defined by the reference method and laboratory QA plan shall apply.

12.0 DATA ASSESSMENT PROCEDURES

Analytical data shall first be compiled and summarized by the laboratory and validated in compliance with approved OSM procedures meeting all minimum requirements of Section 8.0. The validated data will then be submitted to SWO.

13.0 CORRECTIVE ACTION

Corrective action requests required as a result of surveillance reports, nonconformance reports, or audit activity shall be documented and dispositioned as required by QR 16.0, Corrective Action Reporting (WHC 1988b). Primary responsibilities for corrective action resolution are assigned to the technical lead and the QA coordinator. Other measurement systems, procedures, or plan corrections that may be required by governing procedures or shall be referred to the technical lead for resolution. Copies of all surveillance, nonconformance, audit, and corrective action documentation shall be routed to the project QA records upon completion of the sampling and analyses activity.

14.0 REFERENCES

- DOE, 1982, *EML Procedures Manual*, 25th Edition, U.S. Department of Energy, Washington, D.C.
- EPA, 1983, *Interim Guidelines and Specifications for Preparation of Quality Assurance Project Plans*, QAMS-005/80, U.S. Environmental Protection Agency/Office of Exploratory Research, Washington, D.C.
- EPA, 1984, *Eastern Environmental Radiation Facility Radiochemistry Procedures Manual*, U.S. Environmental Protection Agency, Washington, D.C.
- EPA, 1986a, *Test Methods for Evaluating Solid Wastes*, SW-846, Third Edition, U.S. Environmental Protection Agency/Office of Solid Waste and Emergency Response, Washington, Washington, D.C.
- EPA, 1987a, *Data Quality Objectives for Remedial Response Activities: Development Process*, EPA/540/6-87/003, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, U.S. Environmental Protection Agency, Washington, D.C.

- EPA, 1988a, *Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses*, Hazardous Site Evaluation Division, U.S. Environmental Protection Agency, Washington, D.C.
- EPA, 1988b, *Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses*, Hazardous Site Evaluation Division, U.S. Environmental Protection Agency, Washington, D.C.
- EPA, 1989, *Hazardous Waste Management System; Testing and Monitoring Activities (Proposed Rule)*; Federal Register, Vol. 54, No. 13, pp 3212-3228.
- WHC, 1988a, *Environmental Investigations and Site Characterization Manual*, WHC-CM-7-7, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1988b, *Quality Assurance Manual*, WHC-CM-4-2, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1990a, *Environmental Engineering, Technology, and Permitting Function Quality Assurance Program Plan*, WHC-EP-0383, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1990b, *Westinghouse Hanford Company Document Control and Records Management Manual*, WHC-CM-3-5, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1990c, *Westinghouse Hanford Company Sample Management and Administration Manual*, WHC-CM-5-3, Westinghouse Hanford Company, Richland, Washington.