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Department of Energy
Carlsbad Field Office
P. O. Box 3090
Carlsbad, New Mexico 88221

JUL - 5 2011

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JUL 2011

Mr. John Kieling, Acting Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303

Subject: Review of Central Characterization Project – Savannah River Site Profile Form Number, SR-RL-BCLDP.002, Battelle Columbus Laboratories Decommissioning Project Remote Handled Transuranic Debris Waste from the Building JN-1 Hot Cell Laboratory

Dear Mr. Kieling:

The Department of Energy Carlsbad Field Office has approved the Waste Stream Profile Form, SR-RL-BCLDP.002, Battelle Columbus Laboratories Decommissioning Project (BCLDP) Remote Handled Transuranic Debris Waste from the Building JN-1 Hot Cell Laboratory.

Enclosed is a copy of the form as required by Section C-5a of the WIPP Hazardous Waste Facility Permit No. NM4890139088-TSDF.

If you have questions on this matter, please contact J. R. Stroble at (575) 234-7313.

Sincerely,

Roger A Mayer for Ed Ziemianski

Edward Ziemianski
Acting Manager

Enclosure

cc: w/enclosure
T. Hall, NMED *ED
J. Davis, NMED ED

cc: w/o enclosure
J. R. Stroble, CBFO ED
N. Castaneda, CBFO ED
C. Fesmire, CBFO ED
G. Basabilvazo, CBFO ED
S. McCauslin, CBFO ED
CBFO M&RC
*ED denotes electronic distribution

110705

CBFO:NTP:JRS:GS:11-0378:UFC 5900.00

Attachment 2 –CCP Waste Stream Profile Form

(1) Waste Stream Profile Number: SR-RL-BCLDP.002						
(2) Generator site name: Savannah River Site					(4)Technical contact: Irene Quintana	
(3) Generator site EPA ID: SC1890008989					(6) Technical contact phone number: 575-499-4579	
(5) Date of audit report approval by New Mexico Environment Department (NMED): October 25, 2007; March 13, 2009, August 6, 2009, March 16, 2010, September 10, 2010, March 3, 2011						
(7) Title, version number, and date of documents used for WAP Certification: CCP-PO-001, CCP Transuranic Waste Characterization Quality Assurance Project Plan, Revision 20, June 16, 2011 CCP-PO-002, CCP Transuranic Waste Certification Plan, Revision 25, December 29, 2010 CCP-PO-004, CCP/SRS Interface Document, Revision 28, December 29, 2010						
(8) Did your facility generate this waste?	YES		NO	X		
(9) If no, provide the name and EPA ID of the original generator: Battelle Memorial Institute – West Jefferson North Site, OHT400013892						
Waste Stream Information[1]						
(10) WIPP ID: SR-BCLDP.005[5]					(11) Summary Category Group: S5000	
(12) Waste Matrix Code Group: Uncategorized Metal					(13) Waste Stream Name: Battelle Columbus Laboratories Decommissioning Project (BCLDP) Remote Handled Transuranic Debris Waste From the Building JN-1 Hot Cell Laboratory	
(14) Description from the TWBIR: Liner includes, 135 kg. shield, pipe 56.8 kg, dunnage 2.3 kgs						
(15) Defense TRU Waste:	YES	X	NO			
(16) Check One:	CH		RH	X		
(17) Number of SWBs: NA		(18) Number of Drums: NA			(19) Number of Canisters: 1[3]	
(20) Batch Data report numbers supporting this waste stream characterization: See Characterization Information Summary (CIS) Correlation of Container Identification Numbers to Batch Data Report Numbers						
(21) List applicable EPA Hazardous Waste Numbers:[2] D004, D005, D006, D007, D008, D009, D011, D019, F002 and F005						
(22) Applicable TRUCON Content Numbers: SR 322						
(23)**Acceptable Knowledge Information**[1]						
[For the following, enter the supporting documentation used (i.e., references and dates)]						
Required Program Information						
(23A) Map of site: CCP-AK-SRS-500, Revision 6, May 24, 2011, Attachments 1, 2, 3, 4, & 5						
(23B) Facility mission description: CCP-AK-SRS-500, Revision 6, May 24, 2011, Section 4.1.3						
(23C) Description of operations that generate waste: CCP-AK-SRS-500, Revision 6, May 24, 2011, Section 4.2.2						
(23D) Waste identification/categorization schemes: CCP-AK-SRS-500, Revision 6, May 24, 2011, Section 5.4						
(23E) Types and quantities of waste generated: CCP-AK-SRS-500, Revision 6, May 24, 2011, Sections 4.2.1						
(23F) Correlation of waste streams generated from the same building and process, as applicable: SR-RL-BCLDP.001, SR-BCLDP.001.001, SR-BCLDP.001.002, SR-BCLDP.002, SR-BCLPD.003, SR-BCLDP.004.002, SR-BCLDP.004.003						

(24) Waste certification procedures: CCP-TP-530, Revision 10, CCP RH TRU Waste Certification and WWIS/WDS Data Entry, April 25, 2011			
(25)Required Waste Stream Information			
(25A) Area(s) and building(s) from which the waste stream was generated: CCP-AK-SRS-500, Revision 6, May 24, 2011, Section 5.1			
(25B) Waste stream volume and time period of generation: CCP-AK-SRS-500, Revision 6, May 24, 2011, Section 5.2			
(25C) Waste generating process description for each building: CCP-AK-SRS-500, Revision 6, May 24, 2011, Section 5.3			
(25D) Waste Process flow diagrams: CCP-AK-SRS-500, Revision 6, May 24, 2011, Attachments 7 & 8			
(25E) Material inputs or other information identifying chemical/radionuclide content and physical waste form: CCP-AK-SRS-500, Revision 6, May 24, 2011, Sections 5.4			
(25F) Waste Material Parameter Weight Estimates per unit of waste: See Table 3 of the Summation of Aspects of AK Summary Report: SR-RL-BCLDP.002			
(26) Which Defense Activity generated the waste: (check one)[4]			
	Weapons activities including defense inertial confinement fusion	X	Naval Reactors development
	Verification and control technology		Defense research and development
	Defense nuclear waste and material by products management		Defense nuclear material production
	Defense nuclear waste and materials security and safeguards and security investigations		
(27)Supplemental Documentation			
(27A) Process design documents: See S1 AK#s on Attachment 1 to Summation of Aspects of AK Summary Report			
(27B) Standard operating procedures: See S2 AK#s on Attachment 1 to Summation of Aspects of AK Summary Report			
(27C) Safety Analysis Reports: See S3 AK#s on Attachment 1 to Summation of Aspects of AK Summary Report			
(27D) Waste packaging logs: See S4 AK#s on Attachment 1 to Summation of Aspects of AK Summary Report			
(27E) Test plans/research project reports: See S5 AK#s on Attachment 1 to Summation of Aspects of AK Summary Report			
(27F) Site databases: See S6 AK#s on Attachment 1 to Summation of Aspects of AK Summary Report			
(27G) Information from site personnel: See S7 AK#s on Attachment 1 to Summation of Aspects of AK Summary Report			
(27H) Standard industry documents: See S8 AK#s on Attachment 1 to Summation of Aspects of AK Summary Report			
(27I) Previous analytical data: See S9 AK#s on Attachment 1 to Summation of Aspects of AK Summary Report			
(27J) Material safety data sheets: See S10 AK#s on Attachment 1 to Summation of Aspects of AK Summary Report			
(27K) Sampling and analysis data from comparable/surrogate Waste: See S12 AK#s on Attachment 1 to Summation of Aspects of AK Summary Report			
(27L) Laboratory notebooks: See S11 AK#s on Attachment 1 to Summation of Aspects of AK Summary Report			
Confirmation Information[2]			
For the following, when applicable, enter procedure title(s), number(s) and date(s)			
(28)	Radiography: NA		
(29)	Visual Examination: CCP-TP-500, Rev. 11, April 21, 2011		

(30)Comments:
For a list of the waste characterization procedures used and date of the respective procedures see the list of procedures on the attached CIS.

Reviewed by AK Expert:	**YES** [X]		**Date: 6/8/11**
Reviewed by STR (if necessary):	**YES** [X]	**NA** [ ]	**Date: 6/15/11**

Waste Stream Profile Form Certification:

I hereby certify that I have reviewed the information in this Waste Stream Profile Form, and it is complete and accurate to the best of my knowledge. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

(31)	(32) Irene Quintana	(33) 6/26/11
Signature of Site Project Manager	Printed Name	Date

NOTE:
(1) Use back of sheet or continuation sheets, if required.
(2) If, radiography, visual examination were used to confirm EPA Hazardous Waste Numbers, attach signed Characterization Information Summary documenting this determination.
(3) This waste stream consists of 1 55-gallon drum that will be loaded into 1 RH canister.
(4) This waste was also generated by the following defense activity: defense research and development.
(5) Waste stream previously tracked in ATWIR as SR-BCLRH-T004.

CHARACTERIZATION INFORMATION SUMMARY

WSPF # SR-RL-BCLDP.002

Lot 1

TABLE OF CONTENTS

CCP Characterization Information Summary Cover Page

Waste Stream #	SR-RL-BCLDP 002	Lot #	1
AK Expert Review	Kevin Peters	Date	6/27/2011
SPM Review	Irene Quintana	Date	6/29/11

SPM signature certifies that through Acceptable Knowledge testing and/or analysis that the waste identified in this summary is not corrosive, ignitable, reactive, or incompatible with the TSDF

A summary of the Acceptable Knowledge regarding this waste stream containing specific information about the corrosivity, reactivity, and ignitability of the waste stream is included as an attachment to the Waste Stream Profile Form. By reference, that information is included in this lot.

List of procedures used:

Headspace Gas Sampling and Analysis (HSG):

CCP-TP-093	Rev. 14	12/29/10	CCP Sampling of TRU Waste Containers
CCP-TP-108	Rev 7	12/29/10	CCP Headspace Gas Sampling Batch Data Report Preparation
CCP-TP-173	Rev 1	09/30/09	CCP Analysis of Gas Samples for VOCs by 3C/FID
CCP-TP-175	Rev 2	12/29/10	CCP Analysis of Gas Samples for VOCs by 3C/MS

Visual Examination (VE):

CCP-TP-500	Rev 9	06/30/10	CCP Remote-Handled Waste Visual Examination

Project Level Data Validation / DQO Reconciliation:

CCP-TP-001	Rev 19	12/29/10	CCP Project Level Data Validation and Verification
CCP-TP-002	Rev 23	12/29/10	CCP Reconciliation of DQOs and Reporting Characterization Data
CCP-TP-003	Rev 18	12/29/10	CCP Data Analysis for S3000, S4000, and S5000 Characterization
CCP-TP-005	Rev. 21	12/29/2010	CCP Acceptable Knowledge Documentation
CCP-TP-005	Rev 22	04/21/2011	CCP Acceptable Knowledge Documentation
CCP-TP-530	Rev 10	04/25/11	CCP RH TRU Waste Certification and WWIS/WDS Data Entry

WAP Certification:

CCP-PO-001	Rev 19	12/29/10	CCP Transuranic Waste Characterization Quality Assurance Project Plan
CCP-PO-001	Rev 20	06/16/11	CCP Transuranic Waste Characterization Quality Assurance Project Plan
CCP-PO-004	Rev 28	12/29/10	CCP/SRS Interface Document

WAC Certification:

CCP-PO-002	Rev 25	12/29/2010	CCP Transuranic Waste Certification Plan

CCP Correlation of Container Identification Numbers to Batch Data Report Numbers

Waste Stream # SR-RL-BCLDP.002 Lot # 1

Container ID Number	Historical Container ID	NDA BDR or Radiological Characterization BDR (CH only)	RTR BDR	VE BDR	Solids Sampling BDR	Solids Analytical BDR	Load Management/ Overpack Yes	Permit Required Headspace Gas BDR			Transportation BDR
								Sample	Analysis		
BC0148	NA	NA	NA	RHSRSVE100006	NA	NA	NA	SRHSG11002	ECL11004M	ECL11004G	SR10FG3083

Signature of Site Project Manager

Irene Quintana
Printed Name

6/26/2011
Date

CCP Headspace Gas UCL_{90} Evaluation Form

WSPF #: SR-RL-BCLDP.002 Waste Stream Lot Number 1 through 1

ANALYTE	Transform Data Used (No, Data-Log, SQRT, other)	# Samples above MDL (1)	# Samples	Maximum (ppmv)	Mean (ppmv)	SD[d] (ppmv)	UCL_{90}[d] (ppmv)	PRQL (ppmv)	Transformed PRQL (N/A or Value)	UCL_{90} > PRQL Yes	EPA Code
Benzene	No	0	1	0.03	0 03	0 00	N/A	10	N/A		
Bromoform	No	0	1	0 01	0 01	0 00	N/A	10	N/A		
Carbon tetrachloride	No	0	1	0.01	0 01	0 00	N/A	10	N/A		
Chlorobenzene	No	0	1	0 02	0 02	0 00	N/A	10	N/A		
Chloroform	No	0	1	0 02	0 02	0.00	N/A	10	N/A		
Cyclohexane [a]	No	0	1	0.03	0 03	0 00	N/A	10	N/A		
1,1-Dichloroethane	No	0	1	0 02	0 02	0 00	N/A	10	N/A		
1,2-Dichloroethane	No	0	1	0.03	0 03	0 00	N/A	10	N/A		
1,1-Dichloroethylene	No	0	1	0 02	0 02	0 00	N/A	10	N/A		
cis-1,2-Dichloroethylene	No	0	1	0.03	0 03	0 00	N/A	10	N/A		
trans-1,2-Dichloroethylene	No	0	1	0 03	0 03	0 00	N/A	10	N/A		
Ethyl benzene	No	1	1	0 48	0 48	0.00	N/A	10	N/A		
Ethyl ether	No	0	1	0 02	0 02	0 00	N/A	10	N/A		
Methylene chloride	No	0	1	0 03	0 03	0 00	N/A	10	N/A		
1 1,2,2-Tetrachloroethane	No	0	1	0.01	0.01	0 00	N/A	10	N/A		
Tetrachloroethylene	No	0	1	0 02	0 02	0 00	N/A	10	N/A		
Toluene	No	0	1	0 03	0 03	0 00	N/A	10	N/A		
1,1,1-Trichloroethane	No	0	1	0 01	0 01	0 00	N/A	10	N/A		
Trichloroethylene	No	1	1	0 04	0 04	0 00	N/A	10	N/A		
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	No	0	1	0 01	0 01	0.00	N/A	10	N/A		
1,2,4-Trimethylbenzene[a]	No	1	1	0 26	0 26	0 00	N/A	10	N/A		
1,3,5-Trimethylbenzene[a]	No	1	1	0 10	0 10	0 00	N/A	10	N/A		
m-Xylene[b]	No	1	1	4.30	4 30	0 00	N/A	10	N/A		
p-Xylene[b]	No	1	1	4 30	4 30	0 00	N/A	10	N/A		
o-Xylene	No	1	1	2 70	2 70	0 00	N/A	10	N/A		
Acetone	No	1	1	14 00	14 00	0 00	N/A	100	N/A		
Butanol	No	1	1	0 13	0 13	0 00	N/A	100	N/A		
Methanol	No	0	1	260 00	260 00	0 00	N/A	100	N/A	Yes[e]	
Methyl ethyl ketone	No	1	1	1 30	1 30	0 00	N/A	100	N/A		

CCP Headspace Gas UCL_{90} Evaluation Form

WSPF #: SR-RL-BCLDP.002 **Waste Stream Lot Number** 1 through 1

ANALYTE	Transform Data Used (No, Data-Log, SQRT, other)	# Samples above MDL (1)	# Samples	Maximum (ppmv)	Mean (ppmv)	SD[d] (ppmv)	UCL_{90}[d] (ppmv)	PRQL (ppmv)	Transformed PRQL (N/A or Value)	UCL_{90} > PRQL Yes	EPA Code
Methyl isobutyl ketone	No	1	1	0 39	0 39	0.00	N/A	100	N/A		
Chloromethane[c]	No	1	1	0.41	0 41	0.00	N/A	100	N/A		
Carbon Disulfide[c]	No	1	1	0 64	0 64	0.00	N/A	10	N/A		
1,2-Dichloropropane[c]	No	0	1	0 02	0 02	0.00	N/A	10	N/A		
Trichlorofluoromethane[c]	No	0	1	0 03	0 03	0.00	N/A	100	N/A		

[a] These compounds are from the TRAMPAC and or CH TRUCON Appendix B and are flammable VOCs that do not appear in the QAPjP or the WIPP WAP. These are not part of the target analyte list, but samples may be analyzed for these compounds

[b] These xylene isomers cannot be resolved by the analytical methods employed in the program. m-Xylene and p-Xylene will be reported as "Total m-p-Xylene."

[c] Noted analytes are not required but are reported by the Environmental Chemistry Laboratory at Idaho and are included on the UCL90 for completeness

[d] Waste stream consists of one container and as a result, meaningful statistics could not be calculated

[e] F003 constituents including methanol are ignitable in the liquid form The maximum concentration reported for methanol exceeds the PRQL, however, EPA code F003 is not assigned to the waste stream as the container in this waste stream does not contain any liquids

Comments:

(1) For analytes where there were no samples measured above the MDL value, 1/2 of the MDL value was used (Per section C4 of the WAP, 1/2 of the MDL value is used in calculating the mean concentration.)

Signature of Site Project Manager

Irene Quintana
Printed Name

6/26/2011
Date

CCP Headspace Gas Summary Data

Waste Stream Number SR-RL-BCLDP.002 Lot Number (s) 1

Tentatively Identified Compound	Maximum Observed Estimated Concentrations (ppmv)	# Samples Containing TIC	% Detected
None	N/A	N/A	N/A

Data Supports EPA Hazardous Waste Numbers Assigned by AK? Yes ☑ No ☐

If no, describe the basis for assigning the EPA Hazardous Waste Codes:

SPM Signature _____ Date 6/26/2011

CCP RTR/VE Summary of Prohibited Items and AK Confirmation

Waste Stream Number: SR-RL-BCLDP.002 Lot #: 1

Container Number	RTR Prohibited Items [a]	Visual Examination Prohibited Items [a]
See correlation of container ID numbers for list of remaining drum numbers in this Lot.	RTR was not used to certify any containers in this lot.	None of the containers in this Lot had prohibited items identified during Visual Examination technique

a. See Batch Data Reports

Justification for the selection of RTR and/or VE: VE of the video media was selected as the appropriate characterization method for this waste stream because visual examination was performed by BCLDP at the time of packaging and meets all the Data Quality Objectives for NDE for S5000 waste stream SR-RL-BCLDP.002.

Site Project Manager Signature | Irene Quintana (Printed Name) | 6/26/2011 (Date)

CCP Reconcilliation with Data Quality Objectives

WSF# SR-RL-BCLDP.002 Lot # 1

Sampling Completeness

VE

Number of Valid Samples: 1 Number of Total Samples Analyzed: 1
Percent Complete: 100 (QAO is 100%)

RTR

Number of Valid Samples: NA Number of Total Samples Analyzed: NA
Percent Complete: NA (QAO is 100%)

HSG

Number of Valid Samples: 1 Number of Total Samples collected: 1
Percent Complete: 100 (QAO is ≥90%)

Total VOC

Number of Valid Samples: NA Number of Total Samples collected: NA
Percent Complete: NA (QAO is ≥90%)
Number of Valid Samples: NA Number of Total Samples analyzed: NA
Percent Complete: NA (QAO is ≥90%)

Total SVOC

Number of Valid Samples: NA Number of Total Samples collected NA
Percent Complete: NA (QAO is ≥90%)
Number of Valid Samples: NA Number of Total Samples analyzed: NA
Percent Complete: NA (QAO is ≥90%)

Total Metals

Number of Valid Samples: NA Number of Total Samples collected: NA
Percent Complete: NA (QAO is ≥90%)
Number of Valid Samples: NA Number of Total Samples analyzed: NA
Percent Complete: NA (QAO is ≥90%)

CCP Reconcilliation with Data Quality Objectives

WSF# SR-RL-BCLDP.002 Lot # 1

	Y/N/NA	Reconcilliation Parameter
1	Y	Waste Matrix Code.
2	Y	Waste Material Parameter Weights.
3	Y	The waste matrix code identified is consistent with the type of sampling and analysis used to characterize the waste.
4	Y	The TRU activity reported in the BDRs for each container demonstrates with a 95% probability that the container of waste contains TRU radioactive waste.
5	NA	AK Sufficiency Is there an approved AK sufficiency Determination for this waste stream?
6	Y	Mean concentrations, UCL90 values for the mean concentration, standard deviations, and the number of samples collected for each VOC in the HSG of each container were calculated and compared with the program required quantitation limits, as reported in CCP TP 003, Attachment 3, and additional Environmental Protection Agency (EPA) Hazardous Waste Numbers were assigned as required. Samples were randomly collected (when appropriate).
7a	NA	Mean concentrations, UCL90 values for the mean concentration, standard deviations, and the number of samples collected for solids VOCs were calculated and compared with the program required quantitation limits and regulatory thresholds, as reported in the Characterization Information Summary, CCP-TP-003-Attachment 4, and additional EPA Hazardous Waste Numbers were assigned as required. Samples were randomly collected.
7b	NA	Mean concentrations, UCL90 values for the mean concentration, standard deviations, and the number of samples collected for solids SVOCs were calculated and compared with the program required quantitation limits and regulatory thresholds, as reported in the Characterization Information Summary, CCP TP 003 Attachment 5, and additional EPA Hazardous Waste Numbers were assigned as required. Samples were randomly collected.
7c	NA	Mean concentrations, (UCL90) values for the mean concentration, standard deviations, and the number of samples collected for total metals were calculated and compared with the program required quantitation limits and regulatory thresholds, as reported in the Characterization Information Summary, CCP TP 003 Attachment 6, and additional EPA Hazardous Waste Numbers were assigned as required. Samples were randomly collected.

CCP Reconcilliation with Data Quality Objectives

WSF# SR-RL-BCLDP.002 Lot # 1

8	Y	The data demonstrates whether the waste stream exhibits a toxicity characteristic under Title 40 Code of Federal Regulations (CFR), Part 261, Identification and Listing of Hazardous Waste, Subpart C, Characteristics of Hazardous Waste.
9	Y	Does the waste stream contain listed waste found in 20.4.1.200 NMAC incorporating 40 CFR Part 261, Subpart D, Lists of Hazardous Wastes.
10	Y	Waste stream can be classified as hazardous or nonhazardous at the 90-percent confidence level.
11	Y	Appropriate packaging configuration and Drum Age Criteria (DAC) is applied and documented in the headspace gas sampling documentation, and the drum age met prior to sampling.
12	Y	TICs were appropriately identified and reported in accordance with the requirements of Section C3-1 of the QAPjP.
13	Y	The PRQLs for headspace gas VOCs were met for all analyses as evidenced by the analytical batch data reports.
14		The overall completeness, comparability, and representativeness QAOs were met for each of the analytical and testing procedures as specified in CCP-PO-001 Sections C3-2 through C3-9 prior to submittal of a waste stream profile form for a waste steam or waste stream lot.

	Completeness	Comparability	Representativeness
Radiography	NA	NA	NA
VE	Y	Y	Y
Headspace Gas Analysis	Y	Y	Y
Solids Sampling	NA	NA	NA
Solids VOCs	NA	NA	NA
Solids SVOCs	NA	NA	NA
Solids Metals	NA	NA	NA

Comments: N/A

Signature of Site Project Manager | Irene Quintana (Printed Name) | 6/26/2011 (Date)

SUMMATION OF ASPECTS OF AK SUMMARY REPORT: SR-RL-BCLDP.002

Overview:

Waste Stream SR-RL-BCLDP.002 is Remote Handled (RH) mixed heterogeneous debris waste generated during decontamination and decommissioning (D&D) operations associated with the clean out of the hot cells in the Building JN-1 Hot Cell Laboratory at the Battelle Memorial Institute – West Jefferson North Site and is currently stored at the Savannah River Site (SRS). The waste stream consists of a single drum of waste repackaged in November 2002 consisting of predominantly metal debris generated during research conducted in the Hot Cell Laboratory during the 1981 to 1983 time.

A variety of experiments relating to radiation performance of materials were historically conducted in the Hot Cell Laboratory. The research consisted primarily of reactor fuel studies that evaluated materials such as uranium, thorium, and plutonium alloys and compounds thereof, in pellet, dispersion, and ceramic form. Control rod material studies included rare-earth absorbers such as europium titanate dispersions in stainless steel. Structural and cladding material studies evaluated stainless steel, zirconium (Zircaloy), nickel alloy, refractory metal, and pressure vessel steel. Defense related activities conducted in Building JN-1 Hot Cell Laboratory at the Battelle Memorial Institute included atomic energy defense activities associated with naval reactor development and defense research and development. The RH waste generated during the clean out of the JN-1 Hot Cell Laboratory is contaminated with or was comingled with radiological materials from these defense activities. Waste Stream SR-RL-BCLDP.002 consists of metal debris waste originating from the Sabotage Program experiments associated with simulating terrorist attacks on mock transportation casks.

This Summation of the AK Summary Report includes information to support Waste Stream Profile Form (WSPF) number SR-RL-BCLDP.002 for RH TRU debris. The primary source of information for this Summation is CCP-AK-SRS-500, *Central Characterization Project Acceptable Knowledge Summary Report For: Battelle Columbus Laboratories Decommissioning Project (BCLDP) Remote-Handled Transuranic Debris Waste From the Building JN-1 Hot Cell Laboratory, Waste Streams: SR-RL-BCLDP.001, SR-RL-BCLDP.002*, Rev. 6, May 24, 2011. CCP-AK-SRS-500 includes information obtained from numerous sources, including facility safety basis documentation, historical document archives, generator and storage facility waste records and documents, program/processing documentation, and interviews with knowledgeable personnel.

Waste Stream Identification Summary:

Waste Stream Name:	Battelle Columbus Laboratories Decommissioning Project (BCLDP) Remote Handled Transuranic Debris Waste From the Building JN-1 Hot Cell Laboratory
Waste Stream Number:	SR-RL-BCLDP.002
Site Where TRU Waste Was Generated:	Battelle Memorial Institute – West Jefferson North Site, West Jefferson, Ohio
Facility Where TRU Waste Was Generated:	Building JN-1 Hot Cell Laboratory
Site Where TRU Waste is Currently Stored:	Savannah River Site
Waste Stream Volume - Current:	1 canister[1]
Waste Stream Volume – Projected:	0 canisters

[1] This waste stream consists of 1 55-gallon drum that will be loaded into 1 RH canister.

Dates of Waste Generation:	1981 to 1983
TRUCON Content Numbers:	SR 322
Summary Category Group:	S5000
Waste Matrix Code:	S5110 – Metal Debris
Waste Matrix Code Group:	Uncategorized Metal
Annual Transuranic Waste Inventory Report Identification Number:	SR-BCLDP.005 (previously SR-BCLRH-T004)
RCRA EPA Hazardous Waste Numbers:	D004, D005, D006, D007, D008, D009, D011, D019, F002, and F005

Waste Stream Description and Physical Form:

Waste stream SR-RL-BCLDP.002 consists of a single drum (BC0148) containing predominantly inorganic debris waste materials contaminated during the examinations conducted in JN-1 and, based on the review of the AK documentation, containing the following materials:

- **Cellulosics** consist of the three dunnage rings (~five pounds) around the pipe component inside of the steel drum liner.
- **Metal** items include the steel pipe component and one-inch liner in the pipe. The iron-based waste items include Sabotage program shot blocks, model casks and canisters, and metal debris (sweepings).

Drum BC0148 contains five pounds (less than one percent) of homogeneous inorganic absorbent materials (Floor Dry) added to the waste as a precautionary absorbent.

The waste material that comprises waste stream SR-RL-BCLDP.002 has common physical form, contains similar hazardous and radiological constituents, and was generated from a single activity (repackaging of Sabotage Program debris) and is therefore a single waste stream.

Point of Generation

Location

Waste stream was SR-RL-BCLDP.002 was generated at Building JN-1 Hot Cell Laboratory at Battelle Memorial Institute – West Jefferson North Site in West Jefferson, Ohio and is currently stored at SRS in Aiken, South Carolina.

Area and/or Building of Generation

Waste stream SR-RL-BCLDP.002 was generated at the Battelle Memorial Institute, West Jefferson North Site Building JN-1 Hot Cell Laboratory.

Generating Process

Description of Waste Generating Process

Waste stream SR-RL-BCLDP.002 was generated by the BCLDP during the D&D of the Building JN-1 Hot Cell Laboratory conducted from 1981 through 1983. Historical operations conducted in Building JN-1

included nondestructive and destructive operations, mechanical testing and metallurgical examinations. The following historical operations contaminated the hot cells and subsequent debris packaged by the BCLDP.

High Energy Cell, Transfer/Storage Pool, and Supporting Areas

The High Energy Cell and Transfer and Storage Pool received, washed (using water and soap), stored, transferred, and examined fuel assemblies. Shipping casks containing fuel assemblies were washed with soaps including Radiacwash (nonhazardous cleaning solution), Spray Nine (non-hazardous germicidal cleaner), and other non-hazardous soaps and detergents. The casks were then lowered into the Transfer and Storage Pool to be opened then transferred to the High Energy Cell.

Once in the High Energy Cell, nondestructive examinations were performed on the assemblies, bundles, and rods. Fuel assemblies were weighed, measured, temperature measured, photographed, and videotaped. Rods were removed, photographed, weighed, measured, and tested. Nondestructive examination included eddy current, profilometry, horizontal and vertical bow, and gamma scan. Fission gases were collected and analyzed. Other activities included studies and characterization of resins, effects of cobalt-60 radiation on instrumentation, and fuel rod compaction. Fuel rods were cut and transferred for destructive testing.

Controlled Access Area

The Controlled Access Area was utilized to transport equipment and specimens to the High Level, Low Level, Mechanical Test, and Alpha-Gamma Cells and the Charpy Room. In addition, the area was used for manipulator arm service, drum compaction, and equipment and specimen decontamination.

The Sabotage Program (1981 to 1983) was conducted in the Controlled Access Area and represents one of the last major projects performed in the Hot Cell Laboratory. The purpose of the program was to determine the effects of a terrorist attack on nuclear fuel and high-level waste shipping casks. The program consisted of two sets of experiments conducted during this time frame. The experiments involved shooting a shaped charge at a small model casks containing mock spent nuclear fuel pins and mock vitrified high-level waste canisters. The solids and gases generated by the collision were collected and analyzed. The apparatus was bolted on top of a small empty pool that was used for storage of small casks prior to 1972

High Level and Low Level Cells

The High Level Cell and the Low Level Cell were used to conduct nondestructive examination, destructive testing, and material preparation (e.g., marking, cutting, grinding). Rod marking, sectioning, defueling, visual examination, and dimensional measuring, in addition to gamma scan, tensile, fission gas, rod void volume, fuel bulk density, autoradiography, and burst testing analyses were conducted in these cells.

Mechanical Test Cell

The Mechanical Test Cell was used to examine spent fuel, irradiated cladding, and structural materials using tensile, creep, vacuum fusion, burst, radial burnup, expanded mandrel, and density testing. In addition to spent fuel, other material studied in the cell included Zircaloy, stainless steel, nickel alloys, refractory material, and pressure vessel steel. Specimens were transferred into the Mechanical Test Cell where burst and tensile testing were performed on fuel cladding. In addition to the destructive mechanical testing, density testing was conducted using elemental mercury.

Alpha-Gamma Cells

The Alpha-Gamma Cells supported metallography testing of fuel rod specimens. Fuel rods and Metmounts (fuel rod specimens) were cut, ground, polished, washed (with alcohol and water), etched with

acid (type of acid unspecified), hardness tested and photographed. Unclad fuel samples were tested for thermal conductivity. X-ray diffraction testing of Metmounts was also performed.

Charpy Room

Shear testing of irradiated nuclear reactor materials was performed in the Charpy Room using a Charpy Impact Machine. Oil (silicon based) and alcohol baths were used to heat and cool specimens. Reconstituting broken specimens was also performed in this area.

BCLDP D&D Process Description

The BCLDP program involved the segregation and packaging of debris and equipment in the hot cells and repackaging of waste packaged by historic operations. Container contents were sorted, inspected and surveyed. Low level waste was segregated and managed separately. Suspect TRU waste was assessed to determine if decontamination was feasible.

Two methods were used to decontaminate waste, equipment, and cell surfaces that could not be decontaminated by simple cleaning (e.g., wiping and vacuuming). A heated, closed-loop, recirculating ultrasonic bath system that used Sonatol (an environmentally safe Freon substitute) and high pressure steam cleaners was used to decontaminate that debris. Debris not successfully decontaminated and filters from the ultrasonic bath were packaged as RH TRU waste. A pressure wash system was also used to decontaminate debris using hot water and Spray Nine or De-Solve-It (non-hazardous petroleum distillate mixture). Water and sediment were treated and stored pending filtration and evaporation. A flocculating agent was added to precipitate solids and sediment. The resulting sludge was collected and packaged as RH TRU waste and is included in a separate waste stream.

Table 1 identifies the RCRA toxicity characteristic and listed constituents that contaminated this waste stream.

Table 1 – Toxicity Characteristic and F-Listed Constituents in Waste Stream SR-RL-BCLDP.002

Chemical	CAS Number	EPA Hazardous Waste Numbers
Arsenic	7440-38-2	D004
Barium	7440-39-3	D005
Benzene	71-43-2	F005
Cadmium	7440-43-9	D006
Carbon tetrachloride	56-23-5	D019
Chromium	7440-47-3	D007
Lead	7439-92-1	D008
Mercury	7439-97-6	D009
Methyl ethyl ketone	78-93-3	F005
Methylene chloride	75-09-2	F002
Silver	7440-22-4	D011
Toluene	108-88-3	F005
1,1,1-trichloroethane	71-55-6	F002
Trichloroethylene	79-01-6	F002

RCRA Determinations - Hazardous Waste Determinations

Historical Waste Management

The debris waste materials originally stored in the hot cells were identified, categorized, and characterized based on the available AK prior to packaging by the BCLDP program. During repackaging of these materials, BCLDP attempted to segregate these materials into hazardous/non-hazardous waste streams. The container in this waste stream was originally assigned a non-hazardous waste stream by the BCLDP and no EPA HWNs were assigned. Although the BCLDP segregation of these waste materials was effective for identifying and physically segregating inherently hazardous waste materials

(lead, light bulbs, mercury, electronic equipment, etc.), it was determined that a non-hazardous waste determination could not be defended, due to the potential of cross-contamination and mixing with RCRA solid wastes during the historical storage of these materials in the same cans, drums, casks, and areas in the hot cells. Additional cross-contamination of these materials would have occurred during BCLDP waste segregation and sorting operations on the tables in the High Energy and Mechanical Test cells.

Ignitability, Corrosivity, Reactivity

Waste generated in this waste stream does not qualify for any of the exclusions outlined in 40 CFR 260 or 261. Visual examination (VE) of the BCLDP video media was used to verify that the waste stream is not a liquid waste and does not contain explosives, non-radioactive pyrophoric materials, compressed gases or reactive waste. Therefore, this waste stream does not exhibit the characteristic for ignitability (D001), corrosivity (D002), or reactivity (D003).

Ignitability

This waste does not exhibit the characteristic of ignitability as defined in 40 CFR 261.21. The waste is not a liquid, an ignitable compressed gas, or an oxidizer, and is not capable of causing fire through friction, absorption of moisture, or spontaneous chemical change.

VE of the BCLDP video media was performed to ensure that the waste does not contain compressed gases (e.g., aerosol cans) or liquids in excess of the TSDF-WAC limits and that liquids were not added to the container during packaging. Therefore the waste does not exhibit the characteristic of ignitability (D001) (References C1001, P505, P511, P514, P516, U513, and U514).

Corrosivity

This waste does not exhibit the characteristic of corrosivity as defined in 40 CFR 261.22. Historically, acids (such as boric, bromic, chromic, hydrochloric, hydrofluoric, and nitric acid) used in the hot cells were neutralized with sodium bicarbonate. Aqueous liquids were absorbed with Floor Dry and/or Radsorb. BCLDP waste management practices required the generator use twice the amount of absorbent required to absorb the volume of waste liquids and to place additional absorbent in the drum liners.

VE of the BCLDP video media was performed to ensure that the waste does not contain liquids in excess of the TSDF-WAC limits and that liquids were not added to the container during packaging. Therefore, this waste does not exhibit the characteristic of corrosivity (D002) (References C1001, P505, P511, P514, P516, U513, and U514).

Reactivity

This waste stream does not meet the definition of reactivity as defined in 40 CFR 261.23. The materials are stable and will not undergo violent chemical change. The materials will not react violently with water, form potentially explosive mixtures with water, or generate toxic gases, vapors, or fumes when mixed with water.

Although sodium and sodium-potassium bonded fuel capsules were disassembled in the hot cells, the sodium and sodium-potassium were reacted with butyl alcohol prior to disposal. Small amounts of a potassium ferricyanate solution were non-routinely used in the 1970s to etch tungsten/rhenium alloy specimens in the alpha-gamma cells. The solution was prepared outside of the cells and unused solution was poured down a process sink. No other potential sources for cyanides or sulfides were identified; therefore, this waste is not capable of detonation or explosive reaction due to the presence of these compounds. Picric acid was identified in the AK; however, no specific source or use for the acid was identified. Additionally, the Sabotage Program used small explosive charges during experiments. These charges were consumed during the experiments and were not disposed of as waste in Building JN-1. However, as a precaution, picric acid and explosives were included on the list of prohibited items for the BCLDP waste packaging personnel to be aware of and identify if encountered during D&D operations

waste packaging. These materials were not encountered during the packaging of the BCLDP waste. Additional review of the BCLDP video and container documentation verified that the container in this waste stream only contained identifiable metal items from the Sabotage program experiments (shot blocks model casks and canisters and metal sweepings) potentially contaminated with RCRA hazardous chemicals from contact with other BCLDP hot cell waste materials, but does not contain sulfide, cyanide or explosive containing materials (References DR1001 and U517).

VE of the BCLDP video media was performed to ensure that the waste does not contain compressed gases (e.g., aerosol cans) or liquids in excess of the TSDF-WAC limits and that liquids were not added to the container during packaging. Therefore, this waste does not exhibit the characteristic of reactivity (D003) (References C001, C011, C014, C1001, P072, P501, P505, P511, P514, P516, U513, and U514).

Toxicity Characteristic

This waste stream exhibits the characteristic of toxicity per 40 CFR 261.24. The toxicity characteristic contaminants fall into two categories; metals and organics. Where a constituent has been identified and there is no quantitative data available to demonstrate that the concentration is below regulatory threshold, the applicable EPA HWN is applied to the waste stream.

Arsenic, barium, cadmium, chromium, lead, mercury, and silver were detected in resin used in the hot cells, and prefilter samples taken during packaging of the pool filter system waste, and may be present in the debris. Debris waste from hot cell operations contains or is contaminated with toxicity characteristic metals. Following are examples of toxicity characteristic metals potentially present in this waste stream. Barium and lead are present in leaded gloves. Arsenic, cadmium, chromium and silver were present in the fuel that was examined in the hot cells. Beads of mercury were found on the floor of the Controlled Access Area. For this reason, EPA HWNs for arsenic (D004), barium (D005), cadmium (D006), chromium (D007), lead (D008), mercury (D009) and silver (D011) have been assigned to waste stream SR-RL-BCLDP.002 (References C518 and DR015).

The AK sources identified the solvent use of organic toxicity characteristic compounds including benzene (D018), carbon tetrachloride (D019), methyl ethyl ketone (D035), and trichloroethylene (D040). F-listed EPA HWNs are assigned to the waste stream for F-listed solvents benzene (F005), methyl ethyl ketone (F005), and trichloroethylene (F002). Therefore HWN D019 for carbon tetrachloride is assigned to waste stream SR-RL-BCLDP.002 (References C518 and DR015).

F-Listed Waste

Waste stream SR-RL-BCLDP.002 was mixed with or derived from F-listed hazardous waste from non-specific sources as listed in 40 CFR 261.31. F002 and F005 listed solvents were used in the Building JN-1 Hot Cells and potentially contaminate the waste.

Although F001-listed solvents were identified in the AK record (i.e., 1,1,1-trichloroethane, carbon tetrachloride, methylene chloride, and trichloroethylene), EPA has provided a regulatory clarification that the F001 listing is only appropriate when the listed solvents are used in a "large-scale" degreasing operation such as cold cleaning or vapor degreasing on an industrial scale. Large-scale degreasing operations were not conducted in JN-1, and therefore, EPA HWN F001 is not assigned to this waste stream.

Waste stream SR-RL-BCLDP.002 is assigned EPA HWN F002 for 1,1,1-trichloroethane, trichloroethylene and methylene chloride, and HWN F005 for benzene, methyl ethyl ketone, and toluene. These chemicals were all used as solvents in the hot cells (References C518 and DR015).

F003 constituents, including acetone, butyl alcohol, ethyl benzene, methanol, and xylene are listed solely because these solvents are ignitable in the liquid form. The waste stream does not exhibit the characteristic of ignitability because it is not liquid; therefore, F003 is not assigned.

The following F-listed constituents contaminate the waste and are applied to waste stream SR-RL-BCLDP.002:

(F002)
1,1,1-trichloroethane, trichloroethylene, methylene chloride

(F005)
Benzene, methyl ethyl ketone, toluene

U, K, and P-Listed Chemicals

Waste stream SR-RL-BCLDP.002 was not mixed with a discarded commercial chemical product, an off-specification commercial chemical product, or a container residue or spill residue thereof (40 CFR 261.33). Based on the AK documentation and verified during the VE of the BCLDP video media, there is no evidence that unused commercial products were disposed of in the container in waste stream SR-RL-BCLDP.002 (Reference U514).

Beryllium and beryllium compounds may contaminate this waste stream. Based on the AK documentation reviewed, the form of beryllium used does not meet the definition of commercial chemical product beryllium powder (40 CFR 261.33). Therefore, the waste stream does not meet the definition of P015 waste. The review of the AK source documentation did not identify the disposal of unused hydrofluoric acid (U134) or disposal of materials contaminated with spills of this acid; therefore the EPA HWN U134 is not assigned to waste stream SR-RL-BCLDP.002 (References C012, C515, P072, P501, P505, P511, P514, P516, and U514).

Waste stream SR-RL-BCLDP.002 does not include any of the manufacturing process wastes from the specific industries or sources listed in 40 CFR 261.32.

Waste Stream SR-RL-BCLDP.002 is not assigned any U-, K-, or P-Listed EPA HWNs.

Headspace Gas/Volatile Organic Compound Information

Headspace gas sampling has been performed on the container in Lot 1 in this waste stream. No UCL_{90} values exceeded respective target analyte Program Required Quantitation Limits. No tentatively identified compounds were identified in this lot. No new EPA hazardous waste numbers were assigned as a consequence of headspace gas sampling and analysis. The specifics of this information are included in the attached Characterization Information Summary report.

Other Waste Streams Generated From the Same Buildings and Processes

To delineate RH waste streams for the waste materials generated during the BCLDP program, the available AK documentation was reviewed for the 135 liners of waste stored at SRS and Hanford generated by the BCLDP program during the packaging of historic waste materials and cleanout of the hot cells in the Battelle Columbus Laboratories Building JN-1 Hot Cell Laboratory. Table 2 lists the eight RH waste streams that are generated from the same building and processes. All of these waste streams are assigned EPA HWNs D004, D005, D006, D007, D008, D009, D011, D019, F002, and F005 (References C1000, C1001, C509, C521, DR017, DR018, and DR1001).

Table 2. BCLDP RH TRU Waste Inventory at SRS and Hanford

Waste Type	CCP Waste Stream
Inorganic and Organic Debris	SR-RL-BCLDP.001
Inorganic Debris	SR-RL-BCLDP.002

Pressure Wash & Laundry Homogeneous Waste	SR-BCLDP.001.001
Pressure Wash & Laundry Composite Filter Debris	SR-BCLDP.001.002
Cemented Slugs	SR-BCLDP.002
Hydraulic Sludge & Debris	SR-BCLDP.003
Transfer & Storage Pool Cartridge Water Filters	SR-BCLDP.004.002
Transfer & Storage Pool Tri-Nuc Vacuum Filters	SR-BCLDP.004.003

Conclusion

The following EPA hazardous waste numbers are assigned to this waste stream: D004, D005, D006, D007, D008, D009, D011, D019, F002, and F005.

Polychlorinated Biphenyls (PCBs)

No sources of PCBs have been identified in this waste stream. PCB waste not authorized under an EPA PCB waste disposal authorization is not in this TRU waste stream.

Based on a review of the container documentation, materials potentially containing PCBs were not specifically identified (capacitors, ballasts, etc.). BCLDP waste management practices required identification, segregation, and special management of suspect PCB containing materials (e.g., ballast, capacitors, and transformers). Hydraulic oils that leaked from the system used for the High Level and Low Level Cell doors was UNOCAL UNAX RX 32 Industrial Oil and does not contain PCBs. The only potential source identified for PCB was in an inventory of what was described as "lightly contaminated" hazardous materials originally stored in the Microprobe room. BCLDP waste management practices would have resulted in the segregation and special management of these materials. No other sources of PCBs were identified in the AK record.

Therefore, waste stream SR-RL-BCLDP.002 is not regulated as a Toxic Substances Control Act (TSCA) waste under 40 CFR 761 (References C001, C006, C007, C506, P009, P025, P078, P079, P080, P505, P511, and U514).

Prohibited Items

The absence of prohibited items was determined and documented through acceptable knowledge and characterization activities. VE of the BCLDP video media was performed on the container to verify the absence of prohibited items. The following items have been determined as not present in the waste:

- Liquid waste
- Non-radioactive pyrophoric materials
- Hazardous waste not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous waste)
- Waste incompatible with backfill, seal and panel closure materials, container and packaging materials, or other wastes
- Explosives or compressed gases
- Waste with PCBs not authorized under an EPA PCB waste disposal authorization
- Waste exhibiting the characteristics of ignitability, corrosivity, or reactivity
- Waste that has ever been managed as high-level waste and waste from tanks specified in Table C-8 of the WIPP HWFP, unless specifically approved through a Class 3 permit modification.

The container of waste is certified and shipped only after VE of the BCLDP video media did not identify any prohibited items in the waste container.

Justification for the Selection of VE of the BCLDP Video Media

The container in Lot 1 of this waste stream was characterized using visual examination (VE) of the BCLDP video media. VE of the video media was the appropriate method for characterizing this waste stream because visual examination was performed by BCLDP at the time of packaging and meets all the Data Quality Objectives for Nondestructive Examination (NDE) of waste stream SR-RL-BCLDP.002.

Method for Determining Waste Material Parameter Weights per Unit of Waste

The waste material parameters (WMP) weights for waste stream SR-RL-BCLDP.002 were estimated by reviewing the inventory record for the liner in drum BC0148. Waste items were categorized into the following WMPs: iron based metals/alloys, cellulosics, and inorganic matrix. These calculations conclude that the relative waste weight percentages for organic waste materials (cellulose dunnage rings) and inorganic waste materials (metal debris, pipe component, metal liner, Floor Dry) for drum BC0148 is 0.8 percent and 99.2 percent, respectively (Reference C1001).

The weight percent for each WMP is presented in Table 3.

Table 3. Waste Stream SR-RL-BCLDP.002 Waste Material Parameter Estimates

Waste Material Parameter	Weight Percent
Iron-based Metals/Alloys	98.4 %
Aluminum-based Metals/Alloys	0 %
Other Metals	0 %
Other Inorganic Materials	0 %
Cellulosics	0.8 %
Rubber	0 %
Plastic (waste materials)	0 %
Organic Matrix	0 %
Inorganic Matrix	0.8 %
Soils/Gravel	0 %
Total Organic Waste Avg.	**0.8 %**
Total Inorganic Waste Avg.	**99.2 %**

List of AK Sufficiency Determinations

No AK Sufficiency Determinations were requested for this waste stream.

Transportation

This waste stream and its chemical constituents have been reviewed for consistency with the listed TRUCON codes and they are consistent.

Beryllium

Beryllium, if present, is a minor contaminant, and is below one weight percent in the single waste container that is waste stream SR-RL-BCLDP.002.

Radionuclide Information

The container in this waste stream has a surface dose rate exceeding 200 mrem/h, but less than 1000 rem/h, and contains more than 100 nanocuries per gram (nCi/g) of waste of alpha-emitting TRU isotopes

with half lives greater than 20 years. The waste is contaminated primarily with irradiated fuel and special nuclear material.

The 10 WIPP tracked radionuclides are presented in Table 4 in addition to other radionuclides that, in aggregate, constitute 95% of the total radiological hazard.

Table 4. Summary of SR-RL-BCLDP.002 Radionuclides

WIPP Tracked Radionuclides	Additional Reported Radionuclides
Am-241	Ba-137m
Pu-238	Cm-244
Pu-239	Cm-245
Pu-240	Pu-241
Pu-242	U-235
U-233	Y-90
U-234	
U-238	
Cs-137	
Sr-90	

Payload management will not be utilized for this waste stream.

Attachment 1

AK SOURCE DOCUMENTS, ADDITIONAL DOCUMENTATION

Source Document Tracking Number	AK's	Title	Document Number	Revision	Date
C001	S7	Interview Record: Eugene Sands, Master Research Technician; Larry Stickel, Master Technician; Harley Toy, Manager of Regulatory Compliance and Tech. Services; Max Berchtold, JN-1 Lab Technician; George Kirsch, Health Physicist	NA	NA	05/01/1998
C002	S5	Packet of letters concerning Destruction/Immobilization of Toxic Substances by Intense Gamma Irradiation	NA	NA	11/8/1982, 12/13/1982 12/15/19821/2 7/1983
C004	S7	Interview Record: Harley Toy, Manager of Regulatory Compliance and Tech. Services; George Kirsch, Health Physicist, Historical Operations in JN-1.	NA	NA	7/12/1998
C005	S7	Interview Record: Scott Kitts, Manager Special Waste Projects, Hanford N-Reactor Process Tube in JN-1	NA	NA	7/16/1998
C006	S7, S10	Interview Record: Max Berchtold, JN-1 Lab Technician, Historical Operations in JN-1 and Hydraulic Oil Composition (including MSDS)	NA	NA	7/15/1998
C007	S7	Interview Record: Scott Kitts, Manager Special Waste Projects, Separation of Hot Cell Waste from Wastes from Supporting Areas	NA	NA	7/22/1998
C009	S5	Miscellaneous Battelle Memorial Institute correspondence	NA	NA	2/1956 to 10/1968
C011	NA	D&D Fax to Kevin Peters, re: JN-1 Chemical Use Lists	NA	NA	7/24/1998
C012	S7	Interview record of George Kirsch, re: Acid used to dissolve burn-out fuel and when was alpha/gamma Cell 10 added	NA	NA	7/24/1998
C013	S9, S12	Interoffice Correspondence to A. A. Church, re: Status of TCLP Analysis on Leaded Gloves and Lead Glovebox Windows	168-WG-91	NA	3/13/1991
C014	S7	Interview record of George Kirsch and Eugene Sands, re: Use of Potassium Cyanide, pool water evaporation, and nerve agent research	NA	NA	10/22/1998
C019	S7	Interview Record of Scott Kitts, re: TRU Waste Inventory and Drum Repackaging Operations	NA	NA	4/27/1999
C023	S7	Interview Record of Scott Kitts, re: TRU Waste Inventory Repackaging Operations	NA	NA	9/9/1999
C026	S9	Letter to James Eide, re: Preparation of Hanford Burial Records for Assayed B25 Waste Boxes	NA	NA	4/30/1999
C027	S9	Letter to Craig Jensen, re: TRU Waste Field Sorting Process Surveillance	NA	NA	7/19/1999
C028	S7	Interview Record of Peter Erickson, re: Operation of the BCLDP TRU Laundry Decontamination System	NA	NA	4/10/2000
C029	S7	Letter to Kevin J. Peters, re: White Powder in Berry Can	NA	NA	12/17/1999
C044	S4	Letter to BCLDP Project Records, re: Camera Failure in the HEC TRU Waste Packaging Area and Power Outages	NA	NA	5/5/2000
C045	S7, S10	Interview Record of Peter Erickson, re: Description of Pressure Wash Operations and Repackaging of Pressure Wash Filters	NA	NA	4/26/2001
C049	S10	Miscellaneous Correspondence to Dave Garber	NA	NA	1/2000 to 3/2000

Source Document Tracking Number	AK #	Title	Document Number	Revision	Date
C051	S9, S12	Letter to AK Record, re: TCLP Analysis of Incandescent, Fluorescent, and Mercury Vapor Light Bulbs	NA	NA	7/6/2001
C056	S9, S12	Letter to AK Record, re: RCRA Hazardous Constituents in Paint and Paint Related Products	NA	NA	12/7/2001
C506	S7	Interview with Dave Garber; BCLDP Waste Management; Waste Compaction, PCB Ballasts, Sealed Bags, and Sources.	N/A	N/A	4/11/07
C508	S7	Interview with Dave Garber re: BCLDP Waste Management Regarding Inorganic and Organic Debris	NA	NA	06/05/2007
C509	NA	Waste Stream Delineation for Waste Stream SR-RL-CLDP.001	NA	NA	7/18/2007
C510	S9	Evaluation of the Representativeness of Swipe Samples for Waste Stream SR-RL-BCLDP.001	NA	NA	08/02/2007; 01/31/2008
C511	S9	Memo to file: Justification for Parameter Ranges Used for SRS/BCLDP RH TRU Radiological Characterization	NA	NA	08/02/2007
C512	S8	Intra-Laboratory Memo to C. E. Crouthamel, CMT, and M. J. Steindler, CMT re: LWR Hot-Cell Capability at ANL-E: The D-200 M-Wing Situation	NA	NA	05/03/1985
C515	S3	Procurement, Inspection, and Issuance of Packaging for Hazardous Materials Shipments	WA-OP-006	6	Not dated
C518	NA	Attachment 6 of CBFO's response to NMED's NOD, Regarding the AK Sufficiency Request for Waste Stream SR-RL-BCLDP.001	NA	NA	12/15/2008
C520	S9	ORIGEN 2.2 Input Files for BWRs and PWRs	NA	NA	01/28/2008
C521	NA	Evaluation of 20 BCLDP Debris Drums Stored at Hanford to be Added to Waste Stream SR-RL-BCLDP.001	NA	NA	6/22/2009
C706	S10	Letter to Mike Brown, US DOE CAO re: Trip Report for Battelle Columbus Laboratory Decommissioning Project	98.09.039.md	NA	02/19/1998
C804	S6	Retention of Certain Sources and Waste Management of Other Sources and Items Associated with RSS Source Inventory	1784-04-08	NA	11/10/2003
C1000	NA	Presentation - Battelle Columbus Waste Drum (BC0148)	NA	NA	9/24/2008
C1001	NA	Waste Material Parameter Weight Evaluation for Waste Stream SR-RL-BCLDP.002	NA	NA	7/5/2010
DR002	S7	Interview Record for Discrepancy Report of George Kirsch, re: Date of the Beginning of Operations of the HEC and Pool	NA	NA	7/28/1998
DR005	S9	Letter to AK Record, re: Discrepancy Report Relating to Lead Detected in Sample of Pool Water	NA	NA	5/12/1999
DR006	S9	Letter to AK Record, re: Discrepancy Report Relating to RCRA Metals Detected in Samples Pool Resins and Filters	NA	NA	6/29/1999
DR009	S4	Letter to AK Record, re: Discrepancy Report Regarding Generation of Four Debris Waste Streams, 5190-01, 5190-02, 5390-01, and 5390-02	NA	NA	5/25/2001
DR015	NA	RCRA Hazardous Waste Number Assignment Discrepancy Report (SRBCLDP.001)	NA	NA	11/29/2007

Source Document Tracking Number	AK #	Title	Document Number	Revision	Date
DR017	NA	BCLDP RH Waste Stream Delineation – Low-Level, CH, and High Level Waste Containers	NA	NA	2/12/2008
DR018	NA	Radiological Characterization of Waste from Laundry and Pressure Wash Operations	NA	NA	2/13/2008
DR1001	NA	Container BC0148 Discrepancy Resolutions	NA	NA	8/18/2010
M814	S1	Project package 33064-001 for the Welding of RH-TRU Waste Canister BC-0003	33064-001	NA	Various
M815	S1	Project Package 33064-001 for the Welding of RH-TRU Waste Container BC-0002	33064-001	NA	9/23/2003
M816	S2	Completing and Tracking Sampling Documentation for Decontamination and Decommissioning Operations Waste Management Operations Procedure	WA-OP-040	0 and 1	07/09/199811/ 12/2002
M821	S2	Sampling Sediment or Sludge Waste Materials Utilizing a Ponar Dredge Procedure for Decontamination and Decommissioning Operations Waste Management Operations	WA-OP-039	0 and 1	07/09/199811/ 12/2002
M822	S2	Sampling Solid and Sludge Waste materials from Small Access Areas Utilizing a Drain Scoops/Scoopula Procedure for Decontamination and Decommissioning Operations Waste Management Operations	WA-OP-037	0 and 1	07/09/199811/ 12/2002
M825	S2	TRU-100 WIPP Indoctrination for the BCLDP TRU WCP Training Packet	11312-05-01	NA	6/15/2000
P001	S2	Alpha Gamma Cells JN-1A	NA	NA	8/1/1994
P002	S9	Fuel Storage Pool, Pump Room and Washdown Room JN-1B. Decontamination and Decommissioning Operations	NA	NA	7/1/1995
P003	S9	High Energy Cell, Mezzanine, and Top of HEC JN-1B. Decontamination and Decommissioning Operations	NA	NA	12/1/1994
P004	S9	Waste Storage Shed JN-1A. Decontamination and Decommissioning Operations	NA	NA	6/1/1995
P009	NA	Chemistry Laboratory, Counting Room and Microprobe Room	NA	NA	12/01/1994
P010	S9	Evaporator Room JN-1A	NA	NA	11/1/1994
P012	S9	Controlled Access Area JN-1A	NA	NA	9/1/1994
P014	S9	Mechanical Test Cell JN-1A	NA	NA	7/1/1994
P016	S9	Subcells of the High Level and Low Level Cells in JN-1A	NA	NA	11/1/1994
P017	S9	Low Level Cell JN-1A	NA	NA	8/1/1994
P019	S9	Charpy Room JN-1A	NA	NA	6/1/1994
P020	S2	Curie Content Determination and Package Classification of Low-Level Waste at Battelle's Hot Cell	various	NA	6/11/1986
P023	S8	Course 7: Metals for Nuclear Power. Lesson Ten: Structural Materials	NA	NA	1958

Supporting Document Tracking Number	AK?	Title	Document Number	Revision	Date
P024	S2	Procedures Manual for Battelle's Radioisotope, Gamma, and Hot-Cell Laboratories	BMI-PM-662	3	11/24/1965
P025	S10	Miscellaneous Material Safety Data Sheets (MSDS)	NA	NA	various
P032	S2, S3	Procedures Manual for Battelle's Radioisotope, Gamma, and hot-Cell Laboratories	BMI-PM-662	NA	2/20/1962
P034	S3	Finding of No Significant Impact and Environmental Assessment, Battelle Columbus Laboratories Decommissioning Project	NA	NA	6/1/1990
P039	S2, S8, S10	SCS-300 Operating Manual	NA	NA	1998
P040	S2	Waste Characterization, Classification and Shipping Support Technical Basis Document for Battelle Columbus Laboratories Decommissioning Project (BCLDP) West Jefferson North Facility	DD-98-04	0	5/1/1998
P050	S2	Waste Management and Transportation Operating Procedure, Operation of the TRU Level Mop Head Decontamination Unit	TC-OP-01.6	0	2/25/2000
P071	S5	Interim Report on Shipping Cask Sabotage Source Term Investigation to U.S. Nuclear Regulatory Commission	NA	NA	11/6/1979
P072	S5	Final Report on Shipping Cask Sabotage Source Term Investigation to U. S. Nuclear Regulatory Commission	NA	NA	9/1/1982
P077	S2	Waste Management Operating Procedure: Operation and Maintenance of the Alkota Pressure Washer	WA-OP-061	3	3/6/2001
P078	S2	Work Instruction: Operation of CAA Pressure Wash System	WI-976	2	11/30/2000
P079	S2	Work Instruction: Material Removal from the High level Cell (HCL)	WI-1021	0	2/2/2001
P080	S2	Work Instruction: Low Level Cell Gross Decontamination and Support Functions	WI-1026	1	2/26/2001
P300	S2, S8	Transuranic (TRU) Waste Certification Quality Assurance Plan for the Battelle Columbus Laboratories Decommissioning Project Transuranic Waste Certification Program	P300	0	11/17/1998
P301	S2	Transuranic (TRU) Waste Certification Program: Training Plan for the Battelle Columbus Laboratories Decommissioning Project (BCLDP) TRU WCP	P301	3	2/21/2003
P328	S2	Transuranic (TRU) Waste Certification Program Waste Management and Transportation Operating Procedure Segregation and Packaging of TRU Waste	TC-OP-01.4	0	04/12/1999
P341	S2	Decontamination and Decommissioning Operations (DDO) Quality Department Administrative Procedure (QD-AP) Corrective Action	P341	3	8/6/2002
P346	S2 S3	Environmental Oversight Walkdowns	1657-04.01	NA	12/31/1996
P501	NA	Building JN-1 Hot Cell Laboratory, Acceptable Knowledge Document	TCP-98-03	2	8/13/2001
P505	S2, S4	Segregation and Packaging of TRU Waste	TC-OP-01.4	2	8/15/2001
P506	S2, S4	TRU Waste Certification Program - Packaging Video Documentation	P506	2	9/12/2001
P508	S2	Transuranic (TRU) Waste Certification Program Certification Quality Assurance Plan for the Battelle Columbus Laboratories Decommissioning Project Transuranic Waste Certification Program	TCP-98-01.1	0, 2, 3	11/17/1998; 4/2000; 2/13/2002

Source Document Tracking Number	Attch.	Title	Document Number	Revision	Date
P511	NA	Technical Basis Document, Acceptable Knowledge Process Description, Repackaging of Building JN-1 Clean-Up Waste Containers	TCP-98-03.1.2	2	7/2001
P514	NA	Identification, Segregation, Separation, and Documentation of Low Level and Radioactive Mixed Waste	WA-OP-020	7	None
P515	S3	Procurement, Inspection, and Issuance of Packaging for Hazardous Materials Shipments	WA-OP-006	6	None
P516	NA	Radioactive Waste and Radioactive Mixed Waste Absorption	WA-OP-029	3	None
P517	S2, S8	Decontamination and Decommissioning Operation Waste Management Operations Procedure - Sampling of Waste Materials for Chemical and/or Radiological Characterization	WA-OP-033	3	3/1998
P701	S2	Transuranic Waste Certification Plan for Newly generated Contact-Handled Wastes to be Shipped to the Waste Isolation Pilot Plant	BCLDP-89-2	0	10/15/1989
P702	S2	Waste Management Program Quality Assurance Plan Decontamination and Decommissioning Waste Management Document	WA-QAP-1.0	0	10/31/1989
P704	S5	Characterization of Remote-Handled Transuranic Waste for the Waste Isolation Pilot Plant - Final Report	NA	NA	2002
P706	S2	Work Instruction: set Up and Packaging of Transuranic Waste in the High Energy Cell (HEC), JN-1, HEC, JN-3 Pool	WI-958	2	04/18/2000
P708	S2	Transuranic Waste Certification Plan for Newly generated Contact-Handled Wastes to be Shipped to the Waste Isolation Pilot Plant	BCLDP-89-2	2	12/20/1990
P710	S11	Work Instruction for Operation of the SCS-300 System	WI 935; RWP: 98-JN-1-024	NA	10/09/1998
P711	S2	Work Instruction for JN-1 Pool Setup for TRU-Waste Storage in the JN-1 High Bay	WI-924; 99-JN-0-050	NA	10/27/1999
P713	S6	Attachment 7, MicroShield results for the JN Standard Radionuclide Mix plus Additional ORGEN2.1 Radionuclides for liners	NA	NA	3/27/2002
P715	S6	Attachment 8, MicroShield results for the JN Standard Radionuclide Mix plus Additional ORIGEN2.1 Radionuclides for drums	NA	NA	3/27/2002
P716	S6	Review of ORIGEN2.1 input used in Battelle RH-TRU waste characterization study	NA	NA	8/13/2001
P717	S6	Printout File Liner-05	1132-T11-02-06	NA	3/22/2002
P719	S6	Attachment 5, MicroShield results for liners	NA	NA	10/10/2002
P720	S6, S9	Attachment 9, Excel regression analysis output for liners and drums, Minitab regression analysis output for drums and liner, and a comparison of Excel and Minitab regression analysis	NA	NA	10/10/2002
P721	S6	Attachment 6, MicroShield results for drums	NA	NA	10/10/2002
P727	S5, S9	CCP Calculation Cover Sheet Project: SRS RH TRU Radiological Characterization	SRS-RH-01	0, 1, 2	06/26/200709/24/200711/6/2007

Source Document Tracking Number	Area	Title	Document Number	Revision	Date
P728	S5, S9	CCP Calculation Cover Sheet Project: SRS RH TRU Radiological Characterization	SRS-RH-02	0, 1	06/26/2007, 11/05/2007
P729	S5, S9	Swipe Sample Data Analysis Calc Package	SRS-RH-03	0	05/16/2007
P730	S5, S9	Calc Package for MCNP5 Uncertainty Analysis	SRS-RH-04	0	05/16/2007
P731	S5, S9	Calc Package for Dose-to-Curie (DTC) Spreadsheet	SRS-RH-05	0	05/16/2007
P732	S5, S9	Calc Package for Uncertainty Analysis	SRS-RH-06	0	05/16/2007
P733	S5, S9	Calc Package for LWR Measurements Comparison to ORIGEN	SRS-RH-07	0	05/16/2007
P736	S5, S9	Calculation Package: SRS RH TRU Radiological Characterization - Sample Data Decay Correction	SRS-RH-10	0, 1	06/26/200709/ 18/2007 11/09/2007
P738	S5, S9	Calc Package for Swipe Radionuclide Information Input Check	SRS-RH-12	0	05/25/2007
P739	S9	Calc Package for Fission Product Contribution to Total Dose Rate	SRS-RH-13	0	0614/2007
P740	S9	Calc Package for ORIGEN2.2 Data Extraction	SRS-RH-14	0	05/29/2007
P743	S2	Operation and Maintenance of the Elite Pressure Washer Procedure for Waste Management	WA-OP-063	0	02/01/2002
P744	S2	HP-AP-36.0 Review to Retire various BCLDP WA Procedures	NA	NA	4/22/2004
P745	S2	Assessment of Procedures and Plans: WA-OP-030 Packaging, Marking and Labeling Radioactive and Radioactive Mixed Waste	164WM-06-04	NA	3/08/2006
P746	S2	Assessment of Procedures and Plans: WA-OP-006: Procurement, Inspection, and Issuance of Packaging for hazardous Material Shipments	164 WM-06-01	NA	3/08/2006
P747	S2	Assessment of Procedures/Plans: WA-OP-022 Radioactive Mixed Waste Accumulation and Storage	164WM-06-03	NA	3/08/2006
P748	S2	Radioactive Waste and Radioactive Mixed Waste Absorption Procedure for Waste Management	WA-OP-029	2 and 3	02/20/1999; 06/29/2001
P749	S2	Waste Management Operating Procedures: Identification, Segregation, Separation and Documentation of Low Level and Radioactive Mixed Waste	WA-OP-020	8	10/04/2001
P751	S2	Radiation and Contamination Survey Techniques	HP-OP-019	2	Undated
P753	S2 S9	Decontamination and Decommissioning Operations Radioanalytical Laboratory Test Procedure: Gamma Spectrometric Analysis of Laboratory Samples Using Canberra Procount Software	RL-TP-030	4	Draft
P756	S5 S9	Calculation Package - Hydraulic Sludge Data Analysis	SRS-RH-30	0	2/13/2008
U005	S11	DOE Contract Log	NA	NA	1975-1987
U009	S4	Miscellaneous JN-1 Waste Inventory Data	NA	NA	1988-1997
U010	S11	Hot Cell Receipts and Shipments Logbook	NA	NA	3/21/1960 – 5/14/1973
U011	S11	Battelle Memorial Institute Laboratory Record Book of BMI Reports, No. 13561	No. 13561	NA	6/1957 – 12/1960
U012	S11	Battelle Memorial Institute Laboratory Record Book of BMI Reports, No. 18423	No. 18423	NA	7/1959 – 6/1968

Source Reference Number	AK #	Title	Document Number	Revision	Date
U013	S11	Battelle Memorial Institute Laboratory Record Book of BMI Reports, No. 13117	No. 13117	NA	12/1960 – 8/1965
U014	S6	ENG-92 Contract Projects Database 2 Printout	NA	NA	Query date 10/17/1986
U016	S7	Nuclear Materials Questionnaires	NA	NA	1985
U021	S9, S12	TCLP metals data for leaded glass	NA	NA	7/1/1998
U022	S4	Waste Package Loading Record	NA	NA	10/1997 to 3/1999
U025	S9	Actinide Screen Data for Radionuclides Contained in Strippable Paint from JN-1 Charpy Cell	NA	NA	7/17/2000
U026	S9	69 Sample Basis of DD-98-04 Technical Basis Document	NA	NA	5/25/2001
U027	S9	Cask Smear Sample Data for Isotopic Confirmation	NA	NA	8/20/2001
U028	S8	Certification Documentation for RH-72B Canisters SN# LA-024 and LA-030	NA	NA	Various
U501	S2, S8	Transuranic (TRU) Waste Certification Program Verifications of Calculations Performed by Application of Systems Software	TC-AP-07.1	O-A and1	7/2001 10/10/2001
U502	S8, S12	Example of Proposed WIPP Acceptable Knowledge Characterization for RH-TRU Waste Battelle Columbus Laboratories	NA	NA	9/21/2001
U507	S8	Case Study: RH-TRU Waste Transportation From Battelle Columbus Laboratories	NA	0	2002
U510	S9	Waste Profile Sheets (6)	NA	1	2/11/2004
U511	S9	Waste Profile Sheets	NA	NA	4/16/2002
U513	S9	Miscellaneous Inventory Spreadsheets	NA	NA	Various
U514	S4, S9	BCLDP RH Waste Container Documentation	NA	NA	Various
U517	S4, S9	BCLDP Container Packaging Video Loading Recordings	NA	NA	Various
U703	S2	U.S. DOE CAO Audit Report of the Battelle Columbus Laboratories Decommissioning Project Columbus, Ohio on TRU Waste Characterization Activities Related to Acceptable Knowledge on May 6-7, 1999	A-99-15	NA	06/04/1999
U723	S4	Videotape Log (HEC Packaging Area)	NA	NA	07/30/2001
U725	S4	Background Information Package Disposition of Battelle Columbus Laboratory West Jefferson Facility Transuranic (TRU) Waste	WM-TRUDAT 22445	NA	June 1999
U734	S5, S9	Review of Spreadsheet WJ_samp.xls "69 Swipes from Battelle"	NA	NA	8/07/2001
U821	S11	Radiation Ludlum/Instrument Efficiency Account Book	1784-042	NA	12/21/1992
U822	S11	Radiation Ludlum/Instrument Efficiency Account Book	1784-04-24	NA	9/09/1992

Source Document Number	AK #	Title	Document Number	Revision	Date
U823	S11	Instrument Efficiency Account Book	NA	NA	2/11/1992
U824	S11	Account Book detailing Rad Canberra 2404 System #1 and Maintenance Log Book	1784-04-19	NA	1/16/1996
U825	S11	Account Book for Rad Ludlum 2929 GI-92993 and PR-085748 Instrument Efficiency	1784-04-22	NA	2/11/1992
U826	S11	Account Book for Rad Ludlum 2929 s/n GI-93790 and PR-1000062 Instrument Efficiency	1784-04-21	NA	7/22/1993
U827	S8	RAL Balance Calibration Documentation 1991 - 2004	17832-06-11	NA	9/20/2006
U828	S11	Account Book: Rad Canberra 2404 System #1 / Maintenance Log Book	1784-04-20	NA	10/11/1995
U829	S7	Nonconformance Report on Torque Wrench	NCR 06-01	NA	12/02/2005
U834	S4	Spreadsheet with Container Information	NA	NA	Unknown

Alphanumeric Designations

C Correspondence
DR Discrepancy Resolution
M Miscellaneous (e.g. unpublished data)
P Procedures
U Unpublished Documents

AK Numbers

S1 Process Design Documents
S2 Standard Operating Procedure
S3 Safety Analysis Reports
S4 Waste Packaging Logs
S5 Test plans/research project reports
S6 Site databases
S7 Information from site personnel
S8 Standard industry documents
S9 Previous analytical data
S10 Material safety data sheets
S11 Laboratory Notebooks
S12 Comparable or surrogate sampling and analysis data
NA Not applicable