



**EBERLINE**  
SERVICES

**0059111**

December 3, 2002

Ms. Joan Kessner  
Bechtel Hanford Inc.  
3350 George Washington Way  
Richland, WA 99352  
MSIN: H0-25

Reference: **P.O. #630**  
**Eberline Services R2-11-052-7385, SDG H1961**

Dear Ms. Kessner:

Enclosed is the data report for six solid samples designated under SAF No. B00-054 received at Eberline Services on November 13, 2002. The samples were analyzed according to the accompanying chain-of-custody documents.

Please call if you have any questions concerning this report.

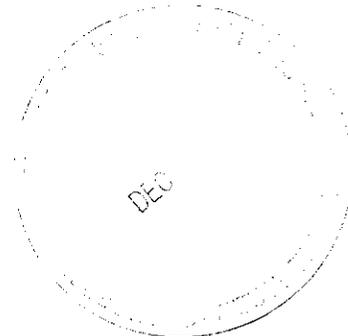
Sincerely,

Melissa C. Mannion  
Program Manager

MCM

Enclosure: Data Package

**RECEIVED**  
APR 28 2003  
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2030 Wright Avenue  
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Richmond, California 94804-0040  
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## 1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1961 was composed of six solid (soil) samples designated under SAF No. B00-054 with a Project Designation of: 100-NR-1 TSD Sites R.A. Sampling – Soil.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on December 2 and 3, 2002.

## 2.0 ANALYSIS NOTES

### 2.1 Gross Alpha and Gross Beta Analyses

The LCS and method blank were not scaled to the nominal aliquot. No problems were encountered during the course of the analyses.

### 2.2 Total Strontium Analyses

The LCS and method blank were not scaled to the nominal aliquot. No problems were encountered during the course of the analyses.

### 2.3 Isotopic Uranium Analyses

The LCS and method blank were not scaled to the nominal aliquot. Sample J008J4 had a yield of 106%. No other problems were encountered during the course of the analyses.

### 2.4 Isotopic Plutonium Analyses

The LCS and method blank were not scaled to the nominal aliquot. No problems were encountered during the course of the analyses.

### 2.5 Americium-241 Analyses

The LCS and method blank were not scaled to the nominal aliquot. No problems were encountered during the course of the analyses.

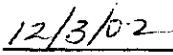
### 2.6 Gamma Spectroscopy Analyses

Sample J008J2 was recounted because the gamma spec. results (Co-60, Cs-137 and Eu-154) did not agree with the gamma spec. results from the associated sample duplicate. The data from the recount is considered a better data match with its duplicate count. The data from the recount of sample J008J2 is reported herein. The sample had an average dead time of approximately 27%. No other problems were encountered during the course of the analyses.

**Case Narrative Certification Statement**

**"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."**

  
\_\_\_\_\_  
**Melissa C. Mannion**  
**Program Manager**

  
\_\_\_\_\_  
**Date**

EBERLINE SERVICES / RICHMOND  
SAMPLE DELIVERY GROUP H1961

SDG 7385  
Contact Melissa C. Mannion

Client Hanford  
Contract No. 630  
Case no SDG H1961

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Melissa Mannion  
Prepared by

Melissa Mannion  
Reviewed by

Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-TOC  
Version 3.06  
Report date 12/03/02

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H1961

SDG 7385  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
Contract No. 630  
Case no SDG\_H1961

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

REPORT GUIDES

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H1961

SDG 7385  
Contact Melissa C. Mannion

GUIDE , c o n t .

Client Hanford  
Contract No. 630  
Case no SDG H1961

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

REPORT GUIDES

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**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H1961

**SAMPLE SUMMARY**

SDG 7385  
Contact Melissa C. Mannion

Client Hanford  
Contract No. 630  
Case no SDG H1961

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
J008J2	116-N-1 Trench-Hot Spots	SOLID		R211052-01	B00-054	B00-054-216	11/05/02 11:00
J008J3	116-N-1 Trench-Hot Spots	SOLID		R211052-02	B00-054	B00-054-216	11/05/02 11:20
J008J4	116-N-1 Trench-Hot Spots	SOLID		R211052-03	B00-054	B00-054-216	11/05/02 13:40
J008J5	116-N-1 Trench-Hot Spots	SOLID		R211052-04	B00-054	B00-054-216	11/05/02 13:50
J008J6	116-N-1 Trench-Hot Spots	SOLID		R211052-05	B00-054	B00-054-216	11/05/02 14:00
J008J7	116-N-1 Trench-Hot Spots	SOLID		R211052-06	B00-054	B00-054-216	11/05/02 14:10
Method Blank		SOLID		R211052-08	B00-054		
Lab Control Sample		SOLID		R211052-07	B00-054		
Duplicate (R211052-01)	116-N-1 Trench-Hot Spots	SOLID		R211052-09	B00-054		11/05/02 11:00
Duplicate (R211052-02)	116-N-1 Trench-Hot Spots	SOLID		R211052-10	B00-054		11/05/02 11:20

SAMPLE SUMMARY

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SUMMARY DATA SECTION

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**EBERLINE SERVICES/RICHMOND**  
**SAMPLE DELIVERY GROUP H1961**

SDG 7385  
 Contact Melissa C. Mannion

**QC SUMMARY**

Client Hanford  
 Contract No. 630  
 Case no SDG H1961

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL SAMPLE ID	DEPARTMENT SAMPLE ID
7385	B00-054-216	J008J2	SOLID	90.0	22.35 g		11/13/02 8	R211052-01	7385-001
		J008J3	SOLID	97.0	19.33 g		11/13/02 8	R211052-02	7385-002
		J008J4	SOLID	97.9	27.33 g		11/13/02 8	R211052-03	7385-003
		J008J5	SOLID	94.7	27.46 g		11/13/02 8	R211052-04	7385-004
		J008J6	SOLID	88.7	26.06 g		11/13/02 8	R211052-05	7385-005
		J008J7	SOLID	94.8	25.16 g		11/13/02 8	R211052-06	7385-006
			Method Blank	SOLID					R211052-08
	Lab Control Sample	SOLID					R211052-07	7385-007	
	Duplicate (R211052-01)	SOLID	90.0	22.35 g		11/13/02 8	R211052-09	7385-009	
	Duplicate (R211052-02)	SOLID	97.0	19.33 g		11/13/02 8	R211052-10	7385-010	

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**EBERLINE SERVICES/RICHMOND**  
**SAMPLE DELIVERY GROUP H1961**

SDG 7385  
 Contact Melissa C. Mannion

**PREP BATCH SUMMARY**

Client Hanford  
 Contract No. 630  
 Case no SDG H1961

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED				QUALI- FIERS	
			BATCH	2 $\sigma$ %	CLIENT	MORE	RE	BLANK		LCS
<b>Alpha Spectroscopy</b>										
AM	SOLID	Americium 241 in Soil	7052-028	5.0	6			1	1	1/1
PU	SOLID	Plutonium, Isotopic in Solids	7052-028	5.0	6			1	1	1/1
U	SOLID	Uranium, Isotopic in Soil	7052-028	5.0	6			1	1	1/1
<b>Beta Counting</b>										
SR	SOLID	Total Strontium in Soil	7052-028	10.0	6			1	1	1/1
<b>Gas Proportional Counting</b>										
93A	SOLID	Gross Alpha in Soil	7052-028	20.0	6			1	1	1/1
93B	SOLID	Gross Beta in Soil	7052-028	15.0	6			1	1	1/1
<b>Gamma Spectroscopy</b>										
GAM	SOLID	Gamma Scan	7052-028	15.0	6			1	1	1/1

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.  
 Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

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SAMPLE DELIVERY GROUP H1961

SDG 7385  
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford  
Contract No. 630  
Case no SDG H1961

CLIENT SAMPLE ID	LAB SAMPLE ID									
LOCATION	MATRIX	COLLECTED		TEST	SUF-	ANALYZED	REVIEWED	BY	METHOD	
CUSTODY	SAF No	RECEIVED	PLANCHET		FIX					
J008J2		R211052-01	7385-001	93A/93		11/27/02	12/02/02	MCM	Gross Alpha in Soil	
116-N-1 Trench-Hot Spots	SOLID	11/05/02	7385-001	93B/93		11/26/02	12/02/02	MCM	Gross Beta in Soil	
B00-054-216	B00-054	11/13/02	7385-001	AM		12/02/02	12/02/02	MCM	Americium 241 in Soil	
			7385-001	GAM		12/03/02	12/03/02	MCM	Gamma Scan	
			7385-001	PU		12/02/02	12/02/02	MCM	Plutonium, Isotopic in Solids	
			7385-001	SR		11/23/02	12/02/02	MCM	Total Strontium in Soil	
			7385-001	U		11/25/02	12/02/02	MCM	Uranium, Isotopic in Soil	
J008J3		R211052-02	7385-002	93A/93		11/27/02	12/02/02	MCM	Gross Alpha in Soil	
116-N-1 Trench-Hot Spots	SOLID	11/05/02	7385-002	93B/93		11/26/02	12/02/02	MCM	Gross Beta in Soil	
B00-054-216	B00-054	11/13/02	7385-002	AM		11/27/02	12/02/02	MCM	Americium 241 in Soil	
			7385-002	GAM		12/02/02	12/02/02	MCM	Gamma Scan	
			7385-002	PU		11/27/02	12/02/02	MCM	Plutonium, Isotopic in Solids	
			7385-002	SR		11/23/02	12/02/02	MCM	Total Strontium in Soil	
			7385-002	U		11/25/02	12/02/02	MCM	Uranium, Isotopic in Soil	
J008J4		R211052-03	7385-003	93A/93		12/02/02	12/02/02	MCM	Gross Alpha in Soil	
116-N-1 Trench-Hot Spots	SOLID	11/05/02	7385-003	93B/93		11/26/02	12/02/02	MCM	Gross Beta in Soil	
B00-054-216	B00-054	11/13/02	7385-003	AM		11/27/02	12/02/02	MCM	Americium 241 in Soil	
			7385-003	GAM		11/21/02	12/02/02	MCM	Gamma Scan	
			7385-003	PU		11/27/02	12/02/02	MCM	Plutonium, Isotopic in Solids	
			7385-003	SR		11/23/02	12/02/02	MCM	Total Strontium in Soil	
			7385-003	U		11/27/02	12/02/02	MCM	Uranium, Isotopic in Soil	
J008J5		R211052-04	7385-004	93A/93		12/02/02	12/02/02	MCM	Gross Alpha in Soil	
116-N-1 Trench-Hot Spots	SOLID	11/05/02	7385-004	93B/93		11/26/02	12/02/02	MCM	Gross Beta in Soil	
B00-054-216	B00-054	11/13/02	7385-004	AM		11/27/02	12/02/02	MCM	Americium 241 in Soil	
			7385-004	GAM		12/02/02	12/02/02	MCM	Gamma Scan	
			7385-004	PU		11/27/02	12/02/02	MCM	Plutonium, Isotopic in Solids	
			7385-004	SR		11/23/02	12/02/02	MCM	Total Strontium in Soil	
			7385-004	U		11/25/02	12/02/02	MCM	Uranium, Isotopic in Soil	
J008J6		R211052-05	7385-005	93A/93		12/02/02	12/02/02	MCM	Gross Alpha in Soil	
116-N-1 Trench-Hot Spots	SOLID	11/05/02	7385-005	93B/93		11/26/02	12/02/02	MCM	Gross Beta in Soil	
B00-054-216	B00-054	11/13/02	7385-005	AM		11/27/02	12/02/02	MCM	Americium 241 in Soil	
			7385-005	GAM		12/02/02	12/02/02	MCM	Gamma Scan	
			7385-005	PU		11/27/02	12/02/02	MCM	Plutonium, Isotopic in Solids	
			7385-005	SR		11/23/02	12/02/02	MCM	Total Strontium in Soil	
			7385-005	U		11/25/02	12/02/02	MCM	Uranium, Isotopic in Soil	

WORK SUMMARY

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**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H1961

**WORK SUMMARY, cont.**

SDG 7385  
Contact Melissa C. Mannion

Client Hanford  
Contract No. 630  
Case no SDG H1961

CLIENT SAMPLE ID	LAB SAMPLE ID									
LOCATION	MATRIX	COLLECTED		TEST	SUF-					
CUSTODY	SAF No	RECEIVED	PLANCHET		FIX	ANALYZED	REVIEWED	BY	METHOD	
J008J7		R211052-06	7385-006	93A/93		12/02/02	12/02/02	MCM	Gross Alpha in Soil	
116-N-1 Trench-Hot Spots	SOLID	11/05/02	7385-006	93B/93		11/26/02	12/02/02	MCM	Gross Beta in Soil	
B00-054-216	B00-054	11/13/02	7385-006	AM		11/27/02	12/02/02	MCM	Americium 241 in Soil	
			7385-006	GAM		12/02/02	12/02/02	MCM	Gamma Scan	
			7385-006	PU		11/27/02	12/02/02	MCM	Plutonium, Isotopic in Solids	
			7385-006	SR		11/23/02	12/02/02	MCM	Total Strontium in Soil	
			7385-006	U		11/25/02	12/02/02	MCM	Uranium, Isotopic in Soil	
Method Blank		R211052-08	7385-008	93A/93		11/27/02	12/02/02	MCM	Gross Alpha in Soil	
	SOLID		7385-008	93B/93		11/27/02	12/02/02	MCM	Gross Beta in Soil	
	B00-054		7385-008	AM		12/02/02	12/02/02	MCM	Americium 241 in Soil	
			7385-008	GAM		12/02/02	12/02/02	MCM	Gamma Scan	
			7385-008	PU		11/27/02	12/02/02	MCM	Plutonium, Isotopic in Solids	
			7385-008	SR		11/23/02	12/02/02	MCM	Total Strontium in Soil	
			7385-008	U		12/02/02	12/02/02	MCM	Uranium, Isotopic in Soil	
Lab Control Sample		R211052-07	7385-007	93A/93		11/27/02	12/02/02	MCM	Gross Alpha in Soil	
	SOLID		7385-007	93B/93		11/27/02	12/02/02	MCM	Gross Beta in Soil	
	B00-054		7385-007	AM		11/27/02	12/02/02	MCM	Americium 241 in Soil	
			7385-007	GAM		11/26/02	12/02/02	MCM	Gamma Scan	
			7385-007	PU		11/27/02	12/02/02	MCM	Plutonium, Isotopic in Solids	
			7385-007	SR		11/23/02	12/02/02	MCM	Total Strontium in Soil	
			7385-007	U		11/26/02	12/02/02	MCM	Uranium, Isotopic in Soil	
Duplicate (R211052-01)		R211052-09	7385-009	AM		11/27/02	12/02/02	MCM	Americium 241 in Soil	
116-N-1 Trench-Hot Spots	SOLID	11/05/02	7385-009	GAM		12/02/02	12/02/02	MCM	Gamma Scan	
B00-054		11/13/02	7385-009	PU		11/27/02	12/02/02	MCM	Plutonium, Isotopic in Solids	
Duplicate (R211052-02)		R211052-10	7385-010	93A/93		12/02/02	12/02/02	MCM	Gross Alpha in Soil	
116-N-1 Trench-Hot Spots	SOLID	11/05/02	7385-010	93B/93		11/27/02	12/02/02	MCM	Gross Beta in Soil	
B00-054		11/13/02	7385-010	SR		11/23/02	12/02/02	MCM	Total Strontium in Soil	
			7385-010	U		11/26/02	12/02/02	MCM	Uranium, Isotopic in Soil	

WORK SUMMARY

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1961

WORK SUMMARY, cont.

SDG 7385  
 Contact Melissa C. Mannion

Client Hanford  
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COUNTS OF TESTS BY SAMPLE TYPE										
TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
93A/93	B00-054	Gross Alpha in Soil	900.0_ALPHABETA_GPC	6			1	1	1	9
93B/93	B00-054	Gross Beta in Soil	900.0_ALPHABETA_GPC	6			1	1	1	9
AM	B00-054	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	6			1	1	1	9
GAM	B00-054	Gamma Scan	GAMMA_GS	6			1	1	1	9
PU	B00-054	Plutonium, Isotopic in Solids	PUIISO_PLATE_AEA	6			1	1	1	9
SR	B00-054	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	6			1	1	1	9
U	B00-054	Uranium, Isotopic in Soil	UIISO_PLATE_AEA	6			1	1	1	9
TOTALS				42			7	7	7	63

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EBERLINE SERVICES / RICHMOND  
SAMPLE DELIVERY GROUP H1961

R211052-08

Method Blank

METHOD BLANK

SDG <u>7385</u>	Client/Case no <u>Hanford</u>	<u>SDG H1961</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R211052-08</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7385-008</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>B00-054</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	0.030	0.15	0.27	10	U	93A
Gross Beta	12587-47-2	-0.083	0.29	0.50	15	U	93B
Total Strontium	SR-RAD	-0.032	0.12	0.26	1.0	U	SR
Uranium 233/234	U-233/234	0	0.026	0.10	1.0	U	U
Uranium 235	15117-96-1	0	0.032	0.12	1.0	U	U
Uranium 238	U-238	0	0.026	0.10	1.0	U	U
Plutonium 238	13981-16-3	0.011	0.043	0.081	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.021	0.081	1.0	U	PU
Americium 241	14596-10-2	0.015	0.058	0.11	1.0	U	AM
Potassium 40	13966-00-2	U		5.0		U	GAM
Cobalt 60	10198-40-0	U		<u>0.56</u>	0.050	U	GAM
Cesium 137	10045-97-3	U		<u>0.62</u>	0.10	U	GAM
Radium 226	13982-63-3	U		0.83		U	GAM
Radium 228	15262-20-1	U		1.9		U	GAM
Europium 152	14683-23-9	U		<u>0.93</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>1.5</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.70</u>	0.10	U	GAM
Thorium 228	14274-82-9	U		0.48		U	GAM
Thorium 232	TH-232	U		1.9		U	GAM
Uranium 235	15117-96-1	U		1.2		U	GAM
Uranium 238	U-238	U		43		U	GAM
Americium 241	14596-10-2	U		0.82		U	GAM

100-NR-1 TSD Sites R.A. Smpl. - Soil

QC-BLANK 43161

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1961

R211052-07

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7385</u>	Client/Case no <u>Hanford</u>	SDG <u>H1961</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R211052-07</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7385-007</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>B00-054</u>	

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	24.6	1.6	0.33	10		93A	23.8	0.95	103	67-133	70-130
Gross Beta	22.1	1.1	0.78	15		93B	23.4	0.94	94	77-123	70-130
Total Strontium	21.6	0.88	0.25	1.0		SR	21.3	0.85	101	83-117	80-120
Uranium 233/234	9.92	0.95	0.46	1.0		U	9.29	0.37	107	82-118	80-120
Uranium 235	8.58	0.87	0.10	1.0		U	7.55	0.30	114	80-120	80-120
Uranium 238	10.2	0.96	0.44	1.0		U	10.1	0.40	101	83-117	80-120
Plutonium 238	12.2	0.88	0.055	1.0		PU	12.2	0.49	100	86-114	80-120
Plutonium 239/240	13.6	0.97	0.055	1.0		PU	13.2	0.53	103	85-115	80-120
Americium 241	10.2	1.1	0.11	1.0		AM	9.53	0.38	107	80-120	80-120
Cobalt 60	20.0	0.54	<u>0.26</u>	0.050		GAM	20.8	0.83	96	77-123	80-120
Cesium 137	26.9	0.48	<u>0.28</u>	0.10		GAM	26.8	1.1	100	76-124	80-120

100-NR-1 TSD Sites R.A. Smpl. - Soil

QC-LCS 43160

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>12/03/02</u>

**EBERLINE SERVICES/RICHMOND**  
SAMPLE DELIVERY GROUP H1961

R211052-09

J008J2

**DUPLICATE**

SDG <u>7385</u> Contact <u>Melissa C. Mannion</u> DUPLICATE Lab sample id <u>R211052-09</u> Dept sample id <u>7385-009</u> % solids <u>90.0</u>	ORIGINAL Lab sample id <u>R211052-01</u> Dept sample id <u>7385-001</u> Received <u>11/13/02</u> % solids <u>90.0</u>	Client/Case no <u>Hanford</u> SDG <u>H1961</u> Contract No. <u>630</u> Client sample id <u>J008J2</u> Location/Matrix <u>116-N-1 Trench-Hot Spots SOLID</u> Collected/Weight <u>11/05/02 11:00 22.35 g</u> Custody/SAF No <u>B00-054-216</u> <u>B00-054</u>
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ANALYTE	DUPLICATE	2σ ERR	MDA	RDL	QUALI-	ORIGINAL	2σ ERR	MDA	QUALI-	RPD	3σ	PROT
	pCi/g	(COUNT)	pCi/g	pCi/g	FIERS		TEST	pCi/g	pCi/g	FIERS	%	TOT
Plutonium 238	456	100	<u>37</u>	1.0		PU	370	110	<u>49</u>	21	55	
Plutonium 239/240	2760	320	<u>37</u>	1.0		PU	2830	370	<u>49</u>	3	28	
Americium 241	2370	250	<u>32</u>	1.0		AM	2010	240	<u>36</u>	16	26	
Potassium 40	U		450		U	GAM	U		610	U	-	
Cobalt 60	44700	130	<u>78</u>	0.050		GAM	37100	250	<u>200</u>	19	32	
Cesium 137	142000	200	<u>84</u>	0.10		GAM	115000	300	<u>250</u>	21	32	
Radium 226	U		94		U	GAM	U		160	U	-	
Radium 228	U		290		U	GAM	U		450	U	-	
Europium 152	U		<u>140</u>	0.10	U	GAM	U		<u>260</u>	U	-	
Europium 154	638	130	<u>160</u>	0.10		GAM	350	200	<u>270</u>	58	80	
Europium 155	U		<u>100</u>	0.10	U	GAM	U		<u>130</u>	U	-	
Thorium 228	U		56		U	GAM	U		95	U	-	
Thorium 232	U		290		U	GAM	U		450	U	-	
Uranium 235	U		130		U	GAM	U		220	U	-	
Uranium 238	U		8900		U	GAM	U		14000	U	-	
Americium 241	U		1400		U	GAM	U		1300	U	-	

100-NR-1 TSD Sites R.A. Smpl. - Soil

QC-DUP#1 43162

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>12/03/02</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1961

R211052-10

J008J3

DUPLICATE

SDG <u>7385</u>	Client/Case no <u>Hanford</u>	SDG <u>H1961</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>R211052-10</u>	Lab sample id <u>R211052-02</u>	Client sample id <u>J008J3</u>
Dept sample id <u>7385-010</u>	Dept sample id <u>7385-002</u>	Location/Matrix <u>116-N-1 Trench-Hot Spots SOLID</u>
	Received <u>11/13/02</u>	Collected/Weight <u>11/05/02 11:20 19.33 g</u>
% solids <u>97.0</u>	% solids <u>97.0</u>	Custody/SAF No <u>B00-054-216 B00-054</u>

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Gross Alpha	9740	660	<u>170</u>	10		93A	9360	640	<u>130</u>		4	45	
Gross Beta	280000	2500	<u>280</u>	15		93B	286000	2500	<u>270</u>		2	32	
Total Strontium	3130	240	<u>130</u>	1.0		SR	2910	210	<u>110</u>		7	26	
Uranium 233/234	-5.88	12	<u>45</u>	1.0	U	U	0	12	<u>44</u>	U	-	-	
Uranium 235	0	14	<u>54</u>	1.0	U	U	6.98	14	<u>53</u>	U	-	-	
Uranium 238	5.88	12	<u>45</u>	1.0	U	U	5.76	12	<u>44</u>	U	-	-	

100-NR-1 TSD Sites R.A. Smpl. - Soil

QC-DUP#2 43163

Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-DUP  
Version 3.06  
Report date 12/03/02

**EBERLINE SERVICES / RICHMOND**  
**SAMPLE DELIVERY GROUP H1961**

R211052-01

J008J2

**DATA SHEET**

SDG <u>7385</u>	Client/Case no <u>Hanford</u>	<u>SDG_H1961</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R211052-01</u>	Client sample id <u>J008J2</u>	
Dept sample id <u>7385-001</u>	Location/Matrix <u>116-N-1 Trench-Hot Spots SOLID</u>	
Received <u>11/13/02</u>	Collected/Weight <u>11/05/02 11:00 22.35 g</u>	
% solids <u>90.0</u>	Custody/SAF No <u>B00-054-216</u>	<u>B00-054</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Gross Alpha	12587-46-1	5920	420	<u>120</u>	10		93A
Gross Beta	12587-47-2	274000	2000	<u>170</u>	15		93B
Total Strontium	SR-RAD	2860	190	<u>89</u>	1.0		SR
Uranium 233/234	U-233/234	0	7.3	<u>28</u>	1.0	U	U
Uranium 235	15117-96-1	0	8.9	<u>34</u>	1.0	U	U
Uranium 238	U-238	3.66	7.3	<u>28</u>	1.0	U	U
Plutonium 238	13981-16-3	370	110	<u>49</u>	1.0		PU
Plutonium 239/240	PU-239/240	2830	370	<u>49</u>	1.0		PU
Americium 241	14596-10-2	2010	240	<u>36</u>	1.0		AM
Potassium 40	13966-00-2	U		610		U	GAM
Cobalt 60	10198-40-0	37100	250	<u>200</u>	0.050		GAM
Cesium 137	10045-97-3	115000	300	<u>250</u>	0.10		GAM
Radium 226	13982-63-3	U		160		U	GAM
Radium 228	15262-20-1	U		450		U	GAM
Europium 152	14683-23-9	U		<u>260</u>	0.10	U	GAM
Europium 154	15585-10-1	350	200	<u>270</u>	0.10		GAM
Europium 155	14391-16-3	U		<u>130</u>	0.10	U	GAM
Thorium 228	14274-82-9	U		95		U	GAM
Thorium 232	TH-232	U		450		U	GAM
Uranium 235	15117-96-1	U		220		U	GAM
Uranium 238	U-238	U		14000		U	GAM
Americium 241	14596-10-2	U		1300		U	GAM

100-NR-1 TSD Sites R.A. Smpl. - Soil

**DATA SHEETS**

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**SUMMARY DATA SECTION**

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>12/03/02</u>

**EBERLINE SERVICES / RICHMOND**  
**SAMPLE DELIVERY GROUP H1961**

R211052-02

J008J3

**DATA SHEET**

SDG <u>7385</u>	Client/Case no <u>Hanford</u>	SDG <u>H1961</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R211052-02</u>	Client sample id <u>J008J3</u>	
Dept sample id <u>7385-002</u>	Location/Matrix <u>116-N-1 Trench-Hot Spots SOLID</u>	
Received <u>11/13/02</u>	Collected/Weight <u>11/05/02 11:20 19.33 g</u>	
% solids <u>97.0</u>	Custody/SAF No <u>B00-054-216 B00-054</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	9360	640	<u>130</u>	10		93A
Gross Beta	12587-47-2	286000	2500	<u>270</u>	15		93B
Total Strontium	SR-RAD	2910	210	<u>110</u>	1.0		SR
Uranium 233/234	U-233/234	0	12	<u>44</u>	1.0	U	U
Uranium 235	15117-96-1	6.98	14	<u>53</u>	1.0	U	U
Uranium 238	U-238	5.76	12	<u>44</u>	1.0	U	U
Plutonium 238	13981-16-3	862	140	<u>38</u>	1.0		PU
Plutonium 239/240	PU-239/240	4950	440	<u>38</u>	1.0		PU
Americium 241	14596-10-2	3740	380	<u>45</u>	1.0		AM
Potassium 40	13966-00-2	U		560		U	GAM
Cobalt 60	10198-40-0	44600	220	<u>180</u>	0.050		GAM
Cesium 137	10045-97-3	132000	300	<u>220</u>	0.10		GAM
Radium 226	13982-63-3	U		140		U	GAM
Radium 228	15262-20-1	U		390		U	GAM
Europium 152	14683-23-9	U		<u>220</u>	0.10	U	GAM
Europium 154	15585-10-1	1020	220	<u>260</u>	0.10		GAM
Europium 155	14391-16-3	U		<u>140</u>	0.10	U	GAM
Thorium 228	14274-82-9	U		79		U	GAM
Thorium 232	TH-232	U		390		U	GAM
Uranium 235	15117-96-1	U		180		U	GAM
Uranium 238	U-238	U		12000		U	GAM
Americium 241	14596-10-2	U		1400		U	GAM

100-NR-1 TSD Sites R.A. Smpl. - Soil

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>12/03/02</u>

EBERLINE SERVICES / RICHMOND  
SAMPLE DELIVERY GROUP H1961

R211052-03

J008J4

DATA SHEET

SDG <u>7385</u>	Client/Case no <u>Hanford</u>	<u>SDG_H1961</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R211052-03</u>	Client sample id <u>J008J4</u>	
Dept sample id <u>7385-003</u>	Location/Matrix <u>116-N-1 Trench-Hot Spots SOLID</u>	
Received <u>11/13/02</u>	Collected/Weight <u>11/05/02 13:40 27.33 g</u>	
% solids <u>97.9</u>	Custody/SAF No <u>B00-054-216</u>	<u>B00-054</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	457	98	<u>69</u>	10		93A
Gross Beta	12587-47-2	13900	360	<u>130</u>	15		93B
Total Strontium	SR-RAD	1280	89	<u>48</u>	1.0		SR
Uranium 233/234	U-233/234	-2.46	2.5	<u>9.4</u>	1.0	U	U
Uranium 235	15117-96-1	-1.49	3.0	<u>11</u>	1.0	U	U
Uranium 238	U-238	1.23	2.5	<u>9.4</u>	1.0	U	U
Plutonium 238	13981-16-3	28.0	16	<u>15</u>	1.0		PU
Plutonium 239/240	PU-239/240	212	42	<u>15</u>	1.0		PU
Americium 241	14596-10-2	226	54	<u>20</u>	1.0		AM
Potassium 40	13966-00-2	U		30		U	GAM
Cobalt 60	10198-40-0	13000	10	<u>5.3</u>	0.050		GAM
Cesium 137	10045-97-3	5470	7.0	<u>5.2</u>	0.10		GAM
Radium 226	13982-63-3	U		7.2		U	GAM
Radium 228	15262-20-1	U		27		U	GAM
Europium 152	14683-23-9	U		<u>16</u>	0.10	U	GAM
Europium 154	15585-10-1	210	11	<u>13</u>	0.10		GAM
Europium 155	14391-16-3	32.9	3.3	<u>4.9</u>	0.10		GAM
Thorium 228	14274-82-9	U		3.4		U	GAM
Thorium 232	TH-232	U		27		U	GAM
Uranium 235	15117-96-1	U		7.8		U	GAM
Uranium 238	U-238	U		840		U	GAM
Americium 241	14596-10-2	U		330		U	GAM

100-NR-1 TSD Sites R.A. Smpl. - Soil

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>12/03/02</u>

**EBERLINE SERVICES / RICHMOND**  
**SAMPLE DELIVERY GROUP H1961**

R211052-04

J008J5

**D A T A   S H E E T**

SDG <u>7385</u>	Client/Case no <u>Hanford</u>	SDG <u>H1961</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R211052-04</u>	Client sample id <u>J008J5</u>	
Dept sample id <u>7385-004</u>	Location/Matrix <u>116-N-1 Trench-Hot Spots SOLID</u>	
Received <u>11/13/02</u>	Collected/Weight <u>11/05/02 13:50 27.46 g</u>	
% solids <u>94.7</u>	Custody/SAF No <u>B00-054-216 B00-054</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	1940	190	<u>51</u>	10		93A
Gross Beta	12587-47-2	89400	890	<u>180</u>	15		93B
Total Strontium	SR-RAD	3110	150	<u>53</u>	1.0		SR
Uranium 233/234	U-233/234	-1.63	3.3	<u>12</u>	1.0	U	U
Uranium 235	15117-96-1	0	3.9	<u>15</u>	1.0	U	U
Uranium 238	U-238	1.63	3.3	<u>12</u>	1.0	U	U
Plutonium 238	13981-16-3	140	32	<u>19</u>	1.0		PU
Plutonium 239/240	PU-239/240	933	93	<u>12</u>	1.0		PU
Americium 241	14596-10-2	732	96	<u>19</u>	1.0		AM
Potassium 40	13966-00-2	U		210		U	GAM
Cobalt 60	10198-40-0	17200	120	<u>67</u>	0.050		GAM
Cesium 137	10045-97-3	40500	130	<u>83</u>	0.10		GAM
Radium 226	13982-63-3	U		75		U	GAM
Radium 228	15262-20-1	U		220		U	GAM
Europium 152	14683-23-9	U		<u>120</u>	0.10	U	GAM
Europium 154	15585-10-1	334	96	<u>120</u>	0.10		GAM
Europium 155	14391-16-3	U		<u>84</u>	0.10	U	GAM
Thorium 228	14274-82-9	U		44		U	GAM
Thorium 232	TH-232	U		220		U	GAM
Uranium 235	15117-96-1	U		100		U	GAM
Uranium 238	U-238	U		6700		U	GAM
Americium 241	14596-10-2	U		550		U	GAM

100-NR-1 TSD Sites R.A. Smpl. - Soil

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>12/03/02</u>

**EBERLINE SERVICES / RICHMOND**  
**SAMPLE DELIVERY GROUP H1961**

R211052-05

J008J6

**DATA SHEET**

SDG <u>7385</u>	Client/Case no <u>Hanford</u>	SDG <u>H1961</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R211052-05</u>	Client sample id <u>J008J6</u>	
Dept sample id <u>7385-005</u>	Location/Matrix <u>116-N-1 Trench-Hot Spots</u>	<u>SOLID</u>
Received <u>11/13/02</u>	Collected/Weight <u>11/05/02 14:00</u>	<u>26.06 g</u>
% solids <u>88.7</u>	Custody/SAF No <u>B00-054-216</u>	<u>B00-054</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	4060	350	<u>120</u>	10		93A
Gross Beta	12587-47-2	244000	1900	<u>170</u>	15		93B
Total Strontium	SR-RAD	2420	160	<u>79</u>	1.0		SR
Uranium 233/234	U-233/234	2.70	5.4	<u>21</u>	1.0	U	U
Uranium 235	15117-96-1	-3.27	6.5	<u>25</u>	1.0	U	U
Uranium 238	U-238	5.40	5.4	<u>21</u>	1.0	U	U
Plutonium 238	13981-16-3	306	61	<u>22</u>	1.0		PU
Plutonium 239/240	PU-239/240	2140	200	<u>22</u>	1.0		PU
Americium 241	14596-10-2	1800	210	<u>40</u>	1.0		AM
Potassium 40	13966-00-2	U		370		U	GAM
Cobalt 60	10198-40-0	28100	150	<u>120</u>	0.050		GAM
Cesium 137	10045-97-3	131000	200	<u>180</u>	0.10		GAM
Radium 226	13982-63-3	U		110		U	GAM
Radium 228	15262-20-1	U		280		U	GAM
Europium 152	14683-23-9	U		<u>190</u>	0.10	U	GAM
Europium 154	15585-10-1	884	160	<u>190</u>	0.10		GAM
Europium 155	14391-16-3	U		<u>92</u>	0.10	U	GAM
Thorium 228	14274-82-9	U		68		U	GAM
Thorium 232	TH-232	U		280		U	GAM
Uranium 235	15117-96-1	U		150		U	GAM
Uranium 238	U-238	U		8600		U	GAM
Americium 241	14596-10-2	U		820		U	GAM

100-NR-1 TSD Sites R.A. Smpl. - Soil

Lab id <u>EBRINE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>12/03/02</u>

**EBERLINE SERVICES / RICHMOND**  
**SAMPLE DELIVERY GROUP H1961**

R211052-06

J008J7

**DATA SHEET**

SDG <u>7385</u>	Client/Case no <u>Hanford</u>	SDG <u>H1961</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R211052-06</u>	Client sample id <u>J008J7</u>	
Dept sample id <u>7385-006</u>	Location/Matrix <u>116-N-1 Trench-Hot Spots SOLID</u>	
Received <u>11/13/02</u>	Collected/Weight <u>11/05/02 14:10 25.16 g</u>	
% solids <u>94.8</u>	Custody/SAF No <u>B00-054-216 B00-054</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	13000	770	<u>150</u>	10		93A
Gross Beta	12587-47-2	272000	2500	<u>270</u>	15		93B
Total Strontium	SR-RAD	3000	230	<u>130</u>	1.0		SR
Uranium 233/234	U-233/234	4.33	8.7	<u>33</u>	1.0	U	U
Uranium 235	15117-96-1	-5.24	10	<u>40</u>	1.0	U	U
Uranium 238	U-238	8.66	8.7	<u>33</u>	1.0	U	U
Plutonium 238	13981-16-3	1240	160	<u>30</u>	1.0		PU
Plutonium 239/240	PU-239/240	8100	580	<u>30</u>	1.0		PU
Americium 241	14596-10-2	5550	510	<u>46</u>	1.0		AM
Potassium 40	13966-00-2	U		890		U	GAM
Cobalt 60	10198-40-0	67400	380	<u>310</u>	0.050		GAM
Cesium 137	10045-97-3	54800	270	<u>240</u>	0.10		GAM
Radium 226	13982-63-3	U		180		U	GAM
Radium 228	15262-20-1	U		630		U	GAM
Europium 152	14683-23-9	U		<u>250</u>	0.10	U	GAM
Europium 154	15585-10-1	419	250	<u>350</u>	0.10		GAM
Europium 155	14391-16-3	U		<u>130</u>	0.10	U	GAM
Thorium 228	14274-82-9	U		94		U	GAM
Thorium 232	TH-232	U		630		U	GAM
Uranium 235	15117-96-1	U		210		U	GAM
Uranium 238	U-238	U		19000		U	GAM
Americium 241	14596-10-2	U		1400		U	GAM

100-NR-1 TSD Sites R.A. Smpl. - Soil

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>12/03/02</u>

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H1961

**METHOD SUMMARY**

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Test AM Matrix SOLID  
 SDG 7385  
 Contact Melissa C. Mannion

Client Hanford  
 Contract No. 630  
 Contract SDG H1961

**RESULTS**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241
Preparation batch 7052-028					
J008J2	R211052-01	7385-001			2010
J008J3	R211052-02	7385-002			3740
J008J4	R211052-03	7385-003			226
J008J5	R211052-04	7385-004			732
J008J6	R211052-05	7385-005			1800
J008J7	R211052-06	7385-006			5550
BLK (QC ID=43161)	R211052-08	7385-008			U
LCS (QC ID=43160)	R211052-07	7385-007			ok
Duplicate (R211052-01)	R211052-09	7385-009			ok

Nominal values and limits from method RDLs (pCi/g) 1.0  
 100-NR-1 TSD Sites R.A. Smpl. - Soil

**METHOD PERFORMANCE**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
Preparation batch 7052-028 2σ prep error 5.0 % Reference Lab Notebook 7052 pg. 028															
J008J2	R211052-01	<u>36</u>		<u>0.0030</u>				94		107			27	11/27/02	12/02 SS-043
J008J3	R211052-02	<u>45</u>		<u>0.0020</u>				101		130			22	11/27/02	11/27 SS-011
J008J4	R211052-03	<u>20</u>		<u>0.0050</u>				90		130			22	11/27/02	11/27 SS-015
J008J5	R211052-04	<u>19</u>		<u>0.0050</u>				92		131			22	11/27/02	11/27 SS-033
J008J6	R211052-05	<u>40</u>		<u>0.0030</u>				88		132			22	11/27/02	11/27 SS-041
J008J7	R211052-06	<u>46</u>		<u>0.0020</u>				98		132			22	11/27/02	11/27 SS-042
BLK (QC ID=43161)	R211052-08	0.11		1.00				83		124				11/27/02	12/02 SS-015
LCS (QC ID=43160)	R211052-07	0.11		1.00				74		132				11/27/02	11/27 SS-043
Duplicate (R211052-01) (QC ID=43162)	R211052-09	<u>32</u>		<u>0.0030</u>				89		132			22	11/27/02	11/27 SS-047

Nominal values and limits from method 1.0 1.00 20-105 100 100 180

**METHOD SUMMARIES**

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**SUMMARY DATA SECTION**

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Lab id EBRLNE  
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 Report date 12/03/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1961

Test AM Matrix SOLID  
SDG 7385  
Contact Melissa C. Mannion

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL  
ALPHA SPECTROSCOPY

Client Hanford  
Contract No. 630  
Contract SDG H1961

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	CP-060	Soil Preparation, rev 4
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 5
	CP-963	Americium and Curium in Water and Dissolved Samples by Extraction Chromatography, rev 3
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA <u>26</u> ± <u>35</u>
FOR 9 SAMPLES	YIELD <u>90</u> ± <u>16</u>

Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
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Report date 12/03/02

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H1961

Test PU Matrix SOLID  
 SDG 7385  
 Contact Melissa C. Mannion

**METHOD SUMMARY**  
 PLUTONIUM, ISOTOPIC IN SOLIDS  
 ALPHA SPECTROSCOPY

Client Hanford  
 Contract No. 630  
 Contract SDG H1961

**RESULTS**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Plutonium 238	Plutonium 239/240
Preparation batch 7052-028						
J008J2	R211052-01	7385-001			370	2830
J008J3	R211052-02	7385-002			862	4950
J008J4	R211052-03	7385-003			28.0	212
J008J5	R211052-04	7385-004			140	933
J008J6	R211052-05	7385-005			306	2140
J008J7	R211052-06	7385-006			1240	8100
BLK (QC ID=43161)	R211052-08	7385-008			U	U
LCS (QC ID=43160)	R211052-07	7385-007			ok	ok
Duplicate (R211052-01)	R211052-09	7385-009			ok	ok

Nominal values and limits from method RDLs (pCi/g) 1.0 1.0  
 100-NR-1 TSD Sites R.A. Smpl. - Soil

**METHOD PERFORMANCE**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 7052-028 2σ prep error 5.0 % Reference Lab Notebook 7052 pg. 028																
J008J2	R211052-01			49	0.0030			65	123				27	11/27/02	12/02	SS-011
J008J3	R211052-02			38	0.0020			67	232				22	11/27/02	11/27	SS-011
J008J4	R211052-03			15	0.0050			64	233				22	11/27/02	11/27	SS-033
J008J5	R211052-04			19	0.0050			81	233				22	11/27/02	11/27	SS-041
J008J6	R211052-05			22	0.0030			76	233				22	11/27/02	11/27	SS-042
J008J7	R211052-06			30	0.0020			79	232				22	11/27/02	11/27	SS-043
BLK (QC ID=43161)	R211052-08			0.081	1.00			59	233					11/27/02	11/27	SS-047
LCS (QC ID=43160)	R211052-07			0.055	1.00			83	233					11/27/02	11/27	SS-044
Duplicate (R211052-01)	R211052-09			37	0.0030			42	233				22	11/27/02	11/27	SS-048
	(QC ID=43162)															

Nominal values and limits from method 1.0 1.00 20-105 100 100 180

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-CMS  
 Version 3.06  
 Report date 12/03/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1961

Test PU Matrix SOLID

SDG 7385

Contact Melissa C. Mannion

METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford

Contract No. 630

Contract SDG H1961

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	CP-060	Soil Preparation, rev 4
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 5
	CP-941	Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA	23	±	34
FOR 9 SAMPLES	YIELD	68	±	26

METHOD SUMMARIES

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Lab id EBRLE

Protocol Hanford

Version Ver 1.0

Form DVD-CMS

Version 3.06

Report date 12/03/02

**EBERLINE SERVICES/RICHMOND**  
SAMPLE DELIVERY GROUP H1961

Test U Matrix SOLID  
SDG 7385  
Contact Melissa C. Mannion

Client Hanford  
Contract No. 630  
Contract SDG H1961

**METHOD SUMMARY**  
URANIUM, ISOTOPIC IN SOIL  
ALPHA SPECTROSCOPY

**RESULTS**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX	PLANCHET	1: Uranium			2: Uranium			3: Uranium			RESULT RATIOS (%)				
				233/234			235			238			1+3	2σ	2-3	2σ	
Preparation batch 7052-028																	
J008J2	R211052-01		7385-001	U			U			3.66	U						
J008J3	R211052-02		7385-002	U			6.98	U		5.76	U						
J008J4	R211052-03		7385-003	U			U			1.23	U						
J008J5	R211052-04		7385-004	U			U			1.63	U						
J008J6	R211052-05		7385-005	2.70	U		U			5.40	U						
J008J7	R211052-06		7385-006	4.33	U		U			8.66	U						
BLK (QC ID=43161)	R211052-08		7385-008	U			U			U							
LCS (QC ID=43160)	R211052-07		7385-007	ok			ok			ok							
Duplicate (R211052-02)	R211052-10		7385-010	-	U		-	U		-	U						
Nominal values and limits from method				RDLs (pCi/g)		1.0	1.0	1.0	100	4	Averages						
100-NR-1 TSD Sites R.A. Smpl. - Soil																	

**METHOD PERFORMANCE**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL-						
													PREPARED	YZED	DETECTOR				
Preparation batch 7052-028														2σ prep error 5.0 %			Reference Lab Notebook 7052 pg. 028		
J008J2	R211052-01		<u>34</u>	<u>0.0030</u>			97	132	20	11/25/02	11/25	SS-056							
J008J3	R211052-02		<u>53</u>	<u>0.0020</u>			99	132	20	11/25/02	11/25	SS-058							
J008J4	R211052-03		<u>11</u>	<u>0.0050</u>			<u>106</u>	231	22	11/25/02	11/27	SS-009							
J008J5	R211052-04		<u>15</u>	<u>0.0050</u>			102	182	20	11/25/02	11/25	SS-064							
J008J6	R211052-05		<u>25</u>	<u>0.0030</u>			101	182	20	11/25/02	11/25	SS-065							
J008J7	R211052-06		<u>40</u>	<u>0.0020</u>			99	182	20	11/25/02	11/25	SS-066							
BLK (QC ID=43161)	R211052-08		0.12	1.00			98	124		11/25/02	12/02	SS-013							
LCS (QC ID=43160)	R211052-07		0.46	1.00			103	128		11/25/02	11/26	SS-003							
Duplicate (R211052-02)	R211052-10		<u>54</u>	<u>0.0020</u>			105	121	21	11/25/02	11/26	SS-009							
(QC ID=43163)																			
Nominal values and limits from method			1.0	1.00			20-105	100	100	180									

METHOD SUMMARIES

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Lab id EBRLNE  
Protocol Hanford  
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1961

METHOD SUMMARY, cont.

URANIUM, ISOTOPIC IN SOIL  
ALPHA SPECTROSCOPY

Test U Matrix SOLID  
SDG 7385  
Contact Melissa C. Mannion

Client Hanford  
Contract No. 630  
Contract SDG H1961

PROCEDURES	REFERENCE	UIISO_PLATE_AEA
	CP-060	Soil Preparation, rev 4
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 5
	CP-911	Uranium in Water and Dissolved Sample by Extraction Chromatography, rev 4
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA	<u>26</u>	±	<u>41</u>
FOR 9 SAMPLES	YIELD	<u>101</u>	±	<u>6</u>

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-CMS  
Version 3.06  
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**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H1961

**METHOD SUMMARY**

TOTAL STRONTIUM IN SOIL  
BETA COUNTING

Test SR Matrix SOLID  
SDG 7385  
Contact Melissa C. Mannion

Client Hanford  
Contract No. 630  
Contract SDG H1961

**RESULTS**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 7052-028					
J008J2	R211052-01			7385-001	2860
J008J3	R211052-02			7385-002	2910
J008J4	R211052-03			7385-003	1280
J008J5	R211052-04			7385-004	3110
J008J6	R211052-05			7385-005	2420
J008J7	R211052-06			7385-006	3000
BLK (QC ID=43161)	R211052-08			7385-008	U
LCS (QC ID=43160)	R211052-07			7385-007	ok
Duplicate (R211052-02)	R211052-10			7385-010	ok
Nominal values and limits from method					
100-NR-1 TSD Sites R.A. Smpl. - Soil				RDLs (pCi/g)	1.0

**METHOD PERFORMANCE**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
Preparation batch 7052-028     2σ prep error 10.0 %     Reference Lab Notebook 7052 pg. 028															
J008J2	R211052-01			<u>89</u>	<u>0.0030</u>			78	100				18	11/23/02	11/23 GRB-217
J008J3	R211052-02			<u>110</u>	<u>0.0020</u>			88	100				18	11/23/02	11/23 GRB-207
J008J4	R211052-03			<u>48</u>	<u>0.0050</u>			87	100				18	11/23/02	11/23 GRB-208
J008J5	R211052-04			<u>53</u>	<u>0.0050</u>			82	<u>87</u>				18	11/23/02	11/23 GRB-204
J008J6	R211052-05			<u>79</u>	<u>0.0030</u>			84	100				18	11/23/02	11/23 GRB-207
J008J7	R211052-06			<u>130</u>	<u>0.0020</u>			81	100				18	11/23/02	11/23 GRB-208
BLK (QC ID=43161)	R211052-08			0.26	1.00			78	100					11/23/02	11/23 GRB-222
LCS (QC ID=43160)	R211052-07			0.25	1.00			81	<u>87</u>					11/23/02	11/23 GRB-203
Duplicate (R211052-02)	R211052-10			<u>130</u>	<u>0.0020</u>			85	100				18	11/23/02	11/23 GRB-203
(QC ID=43163)															
Nominal values and limits from method															
				1.0	1.00			30-105	100			180			

Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-CMS  
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EBERLINE SERVICES/RICHMOND  
SAMPLE DELIVERY GROUP H1961

METHOD SUMMARY, cont.  
TOTAL STRONTIUM IN SOIL  
BETA COUNTING

Test SR Matrix SOLID  
SDG 7385  
Contact Melissa C. Mannion

Client Hanford  
Contract No. 630  
Contract SDG H1961

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	CP-060	Soil Preparation, rev 4
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 5
	CP-502	Strontium in Solids, rev 6

AVERAGES ± 2 SD	MDA	<u>71</u>	±	<u>99</u>
FOR 9 SAMPLES	YIELD	<u>83</u>	±	<u>7</u>

Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-CMS  
Version 3.06  
Report date 12/03/02

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H1961

**METHOD SUMMARY**

GROSS ALPHA IN SOIL

GAS PROPORTIONAL COUNTING

Test <u>93A</u> Matrix <u>SOLID</u>
SDG <u>7385</u>
Contact <u>Melissa C. Mannion</u>

Client <u>Hanford</u>
Contract <u>No. 630</u>
Contract <u>SDG H1961</u>

**RESULTS**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha
Preparation batch 7052-028					
J008J2	R211052-01	93		7385-001	5920
J008J3	R211052-02	93		7385-002	9360
J008J4	R211052-03	93		7385-003	457
J008J5	R211052-04	93		7385-004	1940
J008J6	R211052-05	93		7385-005	4060
J008J7	R211052-06	93		7385-006	13000
BLK (QC ID=43161)	R211052-08	93		7385-008	U
LCS (QC ID=43160)	R211052-07	93		7385-007	ok
Duplicate (R211052-02)	R211052-10	93		7385-010	ok

Nominal values and limits from method RDLs (pCi/g) 10  
 100-NR-1 TSD Sites R.A. Smpl. - Soil

**METHOD PERFORMANCE**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7052-028 2σ prep error 20.0 % Reference Lab Notebook 7052 pg. 028																
J008J2	R211052-01	93		<u>120</u>	<u>0.0030</u>			8	100				22	11/25/02	11/27	GRB-115
J008J3	R211052-02	93		<u>130</u>	<u>0.0020</u>			6	100				22	11/25/02	11/27	GRB-116
J008J4	R211052-03	93		<u>69</u>	<u>0.0050</u>			10	100				27	11/25/02	12/02	GRB-115
J008J5	R211052-04	93		<u>51</u>	<u>0.0050</u>			12	100				27	11/25/02	12/02	GRB-116
J008J6	R211052-05	93		<u>120</u>	<u>0.0030</u>			8	100				27	11/25/02	12/02	GRB-113
J008J7	R211052-06	93		<u>150</u>	<u>0.0020</u>			7	100				27	11/25/02	12/02	GRB-114
BLK (QC ID=43161)	R211052-08	93		0.27	1.00			22	100				11/25/02	11/27	GRB-101	
LCS (QC ID=43160)	R211052-07	93		0.33	1.00			21	100				11/25/02	11/27	GRB-114	
Duplicate (R211052-02) (QC ID=43163)	R211052-10	93		<u>170</u>	<u>0.0020</u>			7	100				27	11/25/02	12/02	GRB-115

Nominal values and limits from method 10 1.00 5-250 100 180

METHOD SUMMARIES

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-CMS</u>
Version <u>3.06</u>
Report date <u>12/03/02</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1961

METHOD SUMMARY, cont.

GROSS ALPHA IN SOIL  
GAS PROPORTIONAL COUNTING

Test 93A Matrix SOLID  
SDG 7385  
Contact Melissa C. Mannion

Client Hanford  
Contract No. 630  
Contract SDG H1961

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	CP-060	Soil Preparation, rev 4
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 5
	CP-125	Gross Alpha and Beta in Dissolved Solids, rev 3

AVERAGES ± 2 SD	MDA	<u>90</u>	±	<u>130</u>
FOR 9 SAMPLES	RESIDUE	<u>11</u>	±	<u>12</u>

Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-CMS  
Version 3.06  
Report date 12/03/02

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H1961

**METHOD SUMMARY**

GROSS BETA IN SOIL

GAS PROPORTIONAL COUNTING

Test 93B Matrix SOLID  
 SDG 7385  
 Contact Melissa C. Mannion

Client Hanford  
 Contract No. 630  
 Contract SDG H1961

**RESULTS**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Gross Beta
Preparation batch 7052-028					
J008J2	R211052-01	93		7385-001	274000
J008J3	R211052-02	93		7385-002	286000
J008J4	R211052-03	93		7385-003	13900
J008J5	R211052-04	93		7385-004	89400
J008J6	R211052-05	93		7385-005	244000
J008J7	R211052-06	93		7385-006	272000
BLK (QC ID=43161)	R211052-08	93		7385-008	U
LCS (QC ID=43160)	R211052-07	93		7385-007	ok
Duplicate (R211052-02)	R211052-10	93		7385-010	ok

Nominal values and limits from method RDLs (pCi/g) 15  
 100-NR-1 TSD Sites R.A. Smpl. - Soil

**METHOD PERFORMANCE**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
Preparation batch 7052-028 2σ prep error 15.0 % Reference Lab Notebook 7052 pg. 028															
J008J2	R211052-01	93		<u>170</u>	<u>0.0030</u>			8	100				21	11/25/02	11/26 GRB-101
J008J3	R211052-02	93		<u>270</u>	<u>0.0020</u>			6	100				21	11/25/02	11/26 GRB-102
J008J4	R211052-03	93		<u>130</u>	<u>0.0050</u>			10	100				21	11/25/02	11/26 GRB-105
J008J5	R211052-04	93		<u>180</u>	<u>0.0050</u>			12	100				21	11/25/02	11/26 GRB-106
J008J6	R211052-05	93		<u>170</u>	<u>0.0030</u>			8	100				21	11/25/02	11/26 GRB-101
J008J7	R211052-06	93		<u>270</u>	<u>0.0020</u>			7	100				21	11/25/02	11/26 GRB-102
BLK (QC ID=43161)	R211052-08	93		0.50	1.00			22	100				11/25/02	11/27	GRB-101
LCS (QC ID=43160)	R211052-07	93		0.78	1.00			21	100				11/25/02	11/27	GRB-114
Duplicate (R211052-02) (QC ID=43163)	R211052-10	93		<u>280</u>	<u>0.0020</u>			7	100				22	11/25/02	11/27 GRB-102

Nominal values and limits from method 15 1.00 5-250 100 180

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 Protocol Hanford  
 Version Ver 1.0  
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1961

Test 93B Matrix SOLID  
SDG 7385  
Contact Melissa C. Mannion

METHOD SUMMARY, cont.

GROSS BETA IN SOIL

GAS PROPORTIONAL COUNTING

Client Hanford  
Contract No. 630  
Contract SDG H1961

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	CP-060	Soil Preparation, rev 4
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 5
	CP-125	Gross Alpha and Beta in Dissolved Solids, rev 3

AVERAGES ± 2 SD	MDA <u>160</u> ± <u>210</u>
FOR 9 SAMPLES	RESIDUE <u>11</u> ± <u>12</u>

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Version <u>Ver 1.0</u>
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Version <u>3.06</u>
Report date <u>12/03/02</u>

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H1961

Test GAM Matrix SOLID  
 SDG 7385  
 Contact Melissa C. Mannion

Client Hanford  
 Contract No. 630  
 Contract SDG H1961

**METHOD SUMMARY**

GAMMA SCAN  
 GAMMA SPECTROSCOPY

**RESULTS**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 7052-028						
J008J2	R211052-01	7385-001		37100	115000	
J008J3	R211052-02	7385-002		44600	132000	
J008J4	R211052-03	7385-003		13000	5470	
J008J5	R211052-04	7385-004		17200	40500	
J008J6	R211052-05	7385-005		28100	131000	
J008J7	R211052-06	7385-006		67400	54800	
BLK (QC ID=43161)	R211052-08	7385-008		U	U	
LCS (QC ID=43160)	R211052-07	7385-007		ok	ok	
Duplicate (R211052-01)	R211052-09	7385-009		ok	ok	
Nominal values and limits from method						
100-NR-1 TSD Sites R.A. Smpl. - Soil				RDLs (pCi/g)	0.050	0.10

**METHOD PERFORMANCE**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
Preparation batch 7052-028      2σ prep error 15.0 %      Reference Lab Notebook 7052 pg. 028															
J008J2	R211052-01	7385-001		<u>870</u>	10.5					<u>23</u>			28	11/19/02	12/03 SP,03,00
J008J3	R211052-02	7385-002		<u>730</u>	10.6					<u>41</u>			27	11/19/02	12/02 SP,03,00
J008J4	R211052-03	7385-003		<u>36</u>	12.3					915			16	11/19/02	11/21 SP,04,00
J008J5	R211052-04	7385-004		<u>410</u>	8.77					<u>41</u>			27	11/19/02	12/02 SP,03,00
J008J6	R211052-05	7385-005		<u>600</u>	10.7					<u>46</u>			27	11/19/02	12/02 SP,03,00
J008J7	R211052-06	7385-006		<u>980</u>	11.0					<u>22</u>			27	11/19/02	12/02 SP,03,00
BLK (QC ID=43161)	R211052-08	7385-008		<u>3.5</u>	8.77					110				11/19/02	12/02 SP,04,00
LCS (QC ID=43160)	R211052-07	7385-007		<u>0.26</u>	8.77					1044				11/19/02	11/26 SP,04,00
Duplicate (R211052-01)	R211052-09	7385-009		<u>490</u>	10.5					<u>40</u>			27	11/19/02	12/02 SP,04,00
(QC ID=43162)															
Nominal values and limits from method															
				0.050	8.77					100	180				

METHOD SUMMARIES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1961

METHOD SUMMARY, cont.

GAMMA SCAN  
GAMMA SPECTROSCOPY

Test GAM Matrix SOLID  
SDG 7385  
Contact Melissa C. Mannion

Client Hanford  
Contract No. 630  
Contract SDG H1961

PROCEDURES	REFERENCE	GAMMA_GS
	CP-060	Soil Preparation, rev 4
	CP-100	Ge(Li) Preparation for Commercial Samples, rev 5

AVERAGES $\pm$ 2 SD	MDA <u>460</u>	$\pm$ <u>750</u>
FOR 9 SAMPLES	YIELD _____	$\pm$ _____

METHOD SUMMARIES

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H1961

SDG 7385  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
Contract No. 630  
Case no SDG H1961

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- \* LAB SAMPLE ID is the lab's primary identification for a sample.
- \* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- \* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- \* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

- \* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

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SAMPLE DELIVERY GROUP H1961

SDG 7385  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
Contract No. 630  
Case no SDG\_H1961

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- \* The preparation batches are shown in the same order as the Method Summary Reports are printed.
- \* Only analyses of planchets relevant to the SDG are included.
- \* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- \* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified. Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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SDG 7385  
Contact Melissa C. Mannion

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Client Hanford  
Contract No. 630  
Case no SDG H1961

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- \* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- \* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- \* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- \* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- \* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- \* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

- \* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- \* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

- \* ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- \* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- \* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

- U The RESULT is less than the MDA (Minimum Detectable Activity).

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DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
- B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.  
  
 Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.
- For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.
- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
- H Similar to 'L' except the recovery was high.
- P The RESULT is 'preliminary'.
- X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
- 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

- \* An MDA is underlined if it is bigger than its RDL.

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DATA SHEET

- \* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- \* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- \* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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Contact Melissa C. Mannion

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LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- \* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- \* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- \* REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- \* The first, computed limits for the recovery reflect:
  1. The error of RESULT, including that introduced by rounding the result prior to printing.  
  
If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
  2. The error of ADDED.
  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- \* The second limits are protocol defined upper and lower QC limits for the recovery.
- \* The recovery is underlined if it is outside either of these ranges.

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SUMMARY DATA SECTION

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 Case no SDG H1961

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

- \* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- \* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTS divided by their average expressed as a percent.

If both RESULTS are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

- \* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTS prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTS. If labeled CNT, it does not.

This value reported for this limit is at most 999.

- \* The second limit for the RPD is the larger of:
  1. A fixed percentage specified in the protocol.

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Contact Melissa C. Mannion

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Case no SDG H1961

DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

- \* The RPD is underlined if it is greater than either limit.
- \* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

- \* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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SDG 7385  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
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MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

- \* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- \* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- \* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

- \* The first, computed limits for the recovery reflect:

1. The errors of the two RESULTS, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

2. The error of ADDED.

3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

- \* The second limits are protocol defined upper and lower QC limits

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SAMPLE DELIVERY GROUP H1961

SDG 7385  
Contact Melissa C. Mannion

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MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

- \* The recovery is underlined (out of spec) if it is outside either of these ranges.

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SAMPLE DELIVERY GROUP H1961

SDG 7385  
Contact Melissa C. Mannion

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METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

- \* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

- \* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

- \* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- \* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- \* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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SDG 7385  
Contact Melissa C. Mannion

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METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

- \* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
- \* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

MDAs are underlined if greater than the printed RDL.

- \* Aliquots are underlined if less than the nominal value specified for the method.
- \* Preparation factors are underlined if greater than the nominal value specified for the method.
- \* Dilution factors are underlined if greater than the nominal value specified for the method.
- \* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
- \* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
- \* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

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METHOD SUMMARY

- \* Count times are underlined if less than the nominal value specified for the method.
- \* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- \* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- \* Days Held are underlined if greater than the holding time specified in the protocol.
- \* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1+3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

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SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 12/03/02

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H1961

SDG 7385  
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford  
Contract No. 630  
Case no SDG H1961

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 12/03/02

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B00-054-216	Page 1 of 2	
Collector RB Kerkow	Company Contact RB Kerkow	Telephone No. 509-372-2187	Project Coordinator TRENT, SJ	Price Code <b>BK</b>	Data Turnaround			
Project Designation 100-NR-1 TSD Sites R. A. Sampling - Soil	Sampling Location 116-N-1 Trench	"HOT SPOTS" H1961(7385)	SAF No. B00-054	Air Quality <input type="checkbox"/>	15 DAYS			
Ice Chest No. <b>ERC02 402</b> <del>ERC-01014</del> (ERC 99-026) 11/11/02	Field Logbook No. EL-1524-2	COA R1301N2600	Method of Shipment <b>FED EX</b>					
Shipped To TMA/RECRARK 11-502	Offsite Property No. RSR 106993	Bill of Lading/Air Bill No. <b>N/A</b>						
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive		Preservation None						
Special Handling and/or Storage None		Type of Container <del>Marinelli</del> GLASS VIAL	11/5/02					
		No. of Container(s) 1						
		Volume <del>500mL</del> 20mL	11/5/02					
SAMPLE ANALYSIS		See item (1) in Special Instructions.						
						TRENT'S	APPROX. DOSE RATE	
Sample No.	Matrix *	Sample Date	Sample Time					
J008J2	SOIL	11-5-02	1100	X		J00555	0.9 mR/hr	HS-01
J008J3	SOIL	11-5-02	1120	X		J00556	1.0 mR/hr	HS-02
J008J4	SOIL	11-5-02	1340	X		J00557	0.3 mR/hr	HS-03
J008J5	SOIL	11-5-02	1350	X		J00558	0.5 mR/hr	HS-04
J008J6	SOIL	11-5-02	1400	X		J008H8	0.8 mR/hr	HS-05
CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From RB KERKOW/RBK	Date/Time 11-6-02	Received By/Stored In David St. John	Date/Time 11/4/02	Lab COA: R1301N2F00				S=Soil
Relinquished By/Removed From REF IA 11/20/02	Date/Time 0900	Received By/Stored In SJOALE	Date/Time 11/20/02	(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Isotopic Plutonium; Americium-241; Strontium-89,90 -- Total Sr; Nickel-63; Tritium-H3; Isotopic Uranium; Gross Alpha; Gross Beta				SE=Settlement
Relinquished By/Removed From SJOALE	Date/Time 11/20/02	Received By/Stored In FED EX	Date/Time	ARK 11-5-02				SS=Sludge
Relinquished By/Removed From FED EX	Date/Time 11/13/02	Received By/Stored In Jude	Date/Time 11/13/02	DELETE: Nickel 63, TRITIUM H3 RPK 11-5-02				W=Water
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	Personnel not available to relinquish samples from the 3728 Ref# IA on 11/21/02				O=Oil
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					A=Air
LABORATORY SECTION	Received By	Title		Date/Time				DS=Drum Solids
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By		Date/Time				DL=Drum Liquids

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B00-054-216		Page 2 of 2			
Collector RB Kerkow		Company Contact RB Kerkow		Telephone No. 509-372-2187		Project Coordinator TRENT, SJ		Price Code <b>BK</b> Data Turnaround			
Project Designation 100-NR-1 TSD Sites R. A. Sampling - Soil		Sampling Location 116-N-1 Trench		"HOT SPOTS" H1961(7385)		SAF No. B00-054		Air Quality <input type="checkbox"/> 15 DAYS			
Ice Chest No. <b>ERC 02402</b> (11/20/02) <del>ERC 01-014 (ERC 01-026)</del>		Field Logbook No. EL-1524-2		COA R1301N2600		Method of Shipment <b>FED EX</b>					
Shipped To TMA/REBA <b>11-5-02</b>		Offsite Property No. <b>RSR 106993</b>		Bill of Lading/Air Bill No. <b>N/A</b>							
POSSIBLE SAMPLE HAZARDS/REMARKS <i>Potentially Radioactive</i>			Preservation	None							
Special Handling and/or Storage <i>None</i>			Type of Container	<del>MATERIAL</del> <b>GLASS VIAL</b> <i>PK 11/5/02</i>							
			No. of Container(s)	1							
			Volume	<del>500ML</del> <b>20ML</b> <i>PK 11/5/02</i>							
SAMPLE ANALYSIS				See item (1) in Special Instructions.						<u>TIED:</u>	<u>APPROX. DOSE RATE</u>
Sample No.	Matrix *	Sample Date	Sample Time								
J008J7	SOIL	11-5-02	1410	X				J008H9	1.5 mR/hr	HS-06	
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		Lab COA: R1301N2F00 (1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Isotopic Plutonium; Americium-241; Strontium-89,90 -- Total Sr, Nickel-63, Tritium-3, Isotopic Uranium; Gross Alpha; Gross Beta <i>PK 11-5-02</i> <u>DELETE: NICKEL 63, TRITIUM H3</u> <i>PK 11-5-02</i> Personnel not available to relinquish samples from the 3728 Ref # <i>1A</i> on 11/12/02			
<b>RB KERKOW/RB Kerkow</b>		11-6-02		<b>David S. Jones</b>		11/6/02					
<b>REF 1A</b>		11/20/02 0900		<b>SIGALE</b>		11/20/02 0900					
<b>SIGALE</b>		11/20/02 0900		<b>FED EX</b>							
<b>Fred Sp</b>		11/13/02 10:00		<b>Fred Sp</b>		11/13/02 10:00					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		Matrix *			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		S=Soil SE=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T= Tissue WI=Wipe L=Liquid V=Vegetative X=Other			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
LABORATORY SECTION		Received By		Title		Date/Time					
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time					

Richmond, CA Laboratory

SAMPLE RECEIPT CHECKLIST

**SAMPLE RECEIPT**

Client: Bechtel Hanford Inc Date/Time received 11/13/02 10:00 AM

CoC No. 800-054-216

Container I.D. No. ERC02 402 Requested TAT (Days) 15 P.O. Received Yes [ ] No [ ]

**INSPECTION**

1. Custody seals on shipping container intact? Yes [  ] No [ ] N/A [ ]

2. Custody seals on shipping container dated & signed? Yes [  ] No [ ] N/A [ ]

3. Custody seals on sample containers intact? Yes [  ] No [ ] N/A [ ]

4. Custody seals on sample containers dated & signed? Yes [  ] No [ ] N/A [ ]

5. Packing material is: Wet [ ] Dry [  ]

6. Number of samples in shipping container: 6

7. Number of containers per sample: 1 (Or see CoC \_\_\_\_\_)

8. Paperwork agrees with samples? Yes [  ] No [ ]

9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [  ]

10. Samples are: In good condition [  ] Leaking [ ] Broken Container [ ] Missing [ ]

11. Describe any anomalies: \_\_\_\_\_

13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date \_\_\_\_\_

14. Received by [Signature] Date: 11/13/02 Time: 10:00 AM

Customer Sample No.	cpm	mr/hr	wipe	Customer Sample No.	cpm	mr/hr	wipe
<u>00832</u>	<u>15000</u>	<u>0.198</u>	_____	_____	_____	_____	_____
<u>00833</u>	<u>15000</u>	<u>0.197</u>	_____	_____	_____	_____	_____
<u>00834</u>	<u>3000</u>	<u>0.019</u>	_____	_____	_____	_____	_____
<u>00835</u>	<u>5000</u>	<u>0.047</u>	_____	_____	_____	_____	_____
<u>00836</u>	<u>13000</u>	<u>0.161</u>	_____	_____	_____	_____	_____
<u>00837</u>	<u>30000</u>	<u>0.41</u>	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Alpha meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Survey Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_