Eberline Services
W.O. No. R1-05-142-7695

Bechtel Hanford Inc.
SDG H1359

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1359 was composed of three solid (soil) samples designated under SAF No. B01-084 with a Project Designation of: Z-9 Trench Well Deepening and Characterization - Soil.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.2 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.3 Plutonium-241 Analyses

All Isotopic Plutonium results were less than 1 pCi/gram. No Pu-241 analyses were performed.

2.4 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.5 Neptunium-237 Analyses

All Am-241 results were less than 1 pCi/gram. No Np-237 analyses were performed.

2.6 Gamma Spectroscopy Analyses

No 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 Mannion
Melissa C. Mannion
Program Manager

7/6/01
Date

RECEIVED
NOV 06 2001
EDMC

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1359

SDG 7695
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1359

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B120W8	200-Z-9	SOLID		R105142-01	B01-084	B01-084-01	05/21/01 09:20
B120W9	200-Z-9	SOLID		R105142-02	B01-084	B01-084-01	05/21/01 14:25
B120X0	200-Z-9	SOLID		R105142-03	B01-084	B01-084-01	05/21/01 16:10
Method Blank		SOLID		R105142-05	B01-084		
Lab Control Sample		SOLID		R105142-04	B01-084		
Duplicate (R105142-03)	200-Z-9	SOLID		R105142-06	B01-084		05/21/01 16:10

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 07/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1359

SDG 7695
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1359

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7695	B01-084-01	B120W8	SOLID	94.1	1136 g		05/23/01	2	R105142-01	7695-001
		B120W9	SOLID	95.7	985 g		05/23/01	2	R105142-02	7695-002
		B120X0	SOLID	84.8	1059 g		05/23/01	2	R105142-03	7695-003
		Method Blank	SOLID						R105142-05	7695-005
		Lab Control Sample	SOLID						R105142-04	7695-004
		Duplicate (R105142-03)	SOLID	84.8	1059 g		05/23/01	2	R105142-06	7695-006

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 07/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1359

SDG 7695
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1359

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	6981-172	5.0	3			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6981-172	5.0	3			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6981-172	10.0	3			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6981-172	15.0	3			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.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 07/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1359

SDG 7695
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1359

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B120W8			R105142-01	7695-001	AM		05/31/01	07/05/01	MCM	Americium 241 in Soil
200-Z-9		SOLID	05/21/01	7695-001	GAM		06/01/01	07/05/01	MCM	Gamma Scan
B01-084-01	B01-084		05/23/01	7695-001	PU		06/01/01	07/05/01	MCM	Plutonium, Isotopic in Solids
				7695-001	SR		05/29/01	07/06/01	MCM	Total Strontium in Soil
B120W9			R105142-02	7695-002	AM		05/31/01	07/05/01	MCM	Americium 241 in Soil
200-Z-9		SOLID	05/21/01	7695-002	GAM		06/01/01	07/05/01	MCM	Gamma Scan
B01-084-01	B01-084		05/23/01	7695-002	PU		06/05/01	07/05/01	MCM	Plutonium, Isotopic in Solids
				7695-002	SR		05/29/01	07/06/01	MCM	Total Strontium in Soil
B120X0			R105142-03	7695-003	AM		05/31/01	07/05/01	MCM	Americium 241 in Soil
200-Z-9		SOLID	05/21/01	7695-003	GAM		06/01/01	07/05/01	MCM	Gamma Scan
B01-084-01	B01-084		05/23/01	7695-003	PU		06/01/01	07/05/01	MCM	Plutonium, Isotopic in Solids
				7695-003	SR		05/29/01	07/06/01	MCM	Total Strontium in Soil
Method Blank			R105142-05	7695-005	AM		05/31/01	07/05/01	MCM	Americium 241 in Soil
		SOLID		7695-005	GAM		06/02/01	07/05/01	MCM	Gamma Scan
	B01-084			7695-005	PU		06/01/01	07/05/01	MCM	Plutonium, Isotopic in Solids
				7695-005	SR		05/29/01	07/06/01	MCM	Total Strontium in Soil
Lab Control Sample			R105142-04	7695-004	AM		06/05/01	07/05/01	MCM	Americium 241 in Soil
		SOLID		7695-004	GAM		06/02/01	07/05/01	MCM	Gamma Scan
	B01-084			7695-004	PU		06/05/01	07/05/01	MCM	Plutonium, Isotopic in Solids
				7695-004	SR		05/29/01	07/06/01	MCM	Total Strontium in Soil
Duplicate (R105142-03)			R105142-06	7695-006	AM		06/01/01	07/05/01	MCM	Americium 241 in Soil
200-Z-9		SOLID	05/21/01	7695-006	GAM		06/04/01	07/05/01	MCM	Gamma Scan
	B01-084		05/23/01	7695-006	PU		06/01/01	07/05/01	MCM	Plutonium, Isotopic in Solids
				7695-006	SR		05/29/01	07/06/01	MCM	Total Strontium in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 07/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1359

SDG 7695
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1359

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	B01-084	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	3			1	1	1	6
GAM	B01-084	Gamma Scan	GAMMA_GS	3			1	1	1	6
PU	B01-084	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	3			1	1	1	6
SR	B01-084	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	3			1	1	1	6
TOTALS				12			4	4	4	24

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 07/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1359

R105142-05 Method Blank

METHOD BLANK

SDG	7695	Client/Case no	Hanford	SDG H1359	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R105142-05	Client sample id	Method Blank		
Dept sample id	7695-005	Material/Matrix		SOLID	
		SAF No	B01-084		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.018	0.16	0.32	1.0	U	SR
Americium 241	14596-10-2	-0.053	0.11	0.26	1.0	U	AM
Plutonium 238	13981-16-3	0	0.054	0.21	1.0	U	PU
Plutonium 239/240	PU-239/240	0.027	0.054	0.21	1.0	U	PU
Antimony 125	14234-35-6	U		0.025		U	GAM
Potassium 40	13966-00-2	U		0.17		U	GAM
Cobalt 60	10198-40-0	U		0.017	0.050	U	GAM
Barium 133	13981-41-4	U		0.013		U	GAM
Cesium 137	10045-97-3	U		0.014	0.10	U	GAM
Radium 226	13982-63-3	U		0.022	0.10	U	GAM
Radium 228	15262-20-1	U		0.047	0.20	U	GAM
Europium 152	14683-23-9	U		0.027	0.10	U	GAM
Europium 154	15585-10-1	U		0.037	0.10	U	GAM
Europium 155	14391-16-3	U		0.027	0.10	U	GAM
Thorium 228	14274-82-9	U		0.016		U	GAM
Thorium 232	TH-232	U		0.047		U	GAM
Uranium 235	15117-96-1	U		0.045		U	GAM
Uranium 238	U-238	U		1.3		U	GAM
Americium 241	14596-10-2	U		0.041		U	GAM

Z-9 Trench Well Deepening & Chara.

QC-BLANK 38732

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1359

R105142-04 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7695
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1359
Case no No. 630

Lab sample id R105142-04
Dept sample id 7695-004

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B01-084

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
Total Strontium	23.2	0.89	0.26	1.0		SR	22.0	0.88	106	82-118	80-120
Americium 241	39.9	4.5	0.34	1.0		AM	39.2	1.6	102	80-120	80-120
Plutonium 238	22.7	1.8	0.17	1.0		PU	24.8	0.99	92	86-114	80-120
Plutonium 239/240	26.6	2.0	0.17	1.0		PU	26.4	1.1	101	85-115	80-120
Cobalt 60	0.383	0.051	0.025	0.050		GAM	0.390	0.016	98	70-130	80-120
Cesium 137	0.379	0.045	0.039	0.10		GAM	0.398	0.016	95	72-128	80-120

Z-9 Trench Well Deepening & Chara.

QC-LCS 38731

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 07/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1359

R105142-06 B120X0

DUPLICATE

SDG	7695			Client/Case no	Hanford SDG H1359
Contact	Melissa C. Mannion			Case no	No. 630
DUPLICATE		ORIGINAL			
Lab sample id	R105142-06	Lab sample id	R105142-03	Client sample id	B120X0
Dept sample id	7695-006	Dept sample id	7695-003	Location/Matrix	200-Z-9 SOLID
		Received	05/23/01	Collected/Weight	05/21/01 16:10 1059 g
% solids	84.8	% solids	84.8	Custody/SAF No	B01-084-01 B01-084

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 PROT TOT LIMIT
Total Strontium	-0.020	0.13	0.27	1.0	U	SR	0.001	0.13	0.27	U	-	
Americium 241	0.028	0.11	0.21	1.0	U	AM	-0.046	0.046	0.18	U	-	
Plutonium 238	0	0.059	0.23	1.0	U	PU	0	0.067	0.26	U	-	
Plutonium 239/240	-0.030	0.059	0.23	1.0	U	PU	0	0.067	0.26	U	-	
Antimony 125	U		0.11		U	GAM	U		0.084	U	-	
Potassium 40	16.4	1.0	0.47			GAM	18.7	1.1	0.38		13	34
Cobalt 60	U		0.050	0.050	U	GAM	U		0.042	U	-	
Barium 133	U		0.051		U	GAM	U		0.038	U	-	
Cesium 137	U		0.051	0.10	U	GAM	U		0.036	U	-	
Radium 226	0.914	0.098	0.090	0.10		GAM	0.855	0.080	0.077		7	38
Radium 228	1.35	0.22	0.19	0.20		GAM	1.52	0.19	0.16		12	44
Europium 152	U		0.12	0.10	U	GAM	U		0.087	U	-	
Europium 154	U		0.17	0.10	U	GAM	U		0.13	U	-	
Europium 155	U		0.18	0.10	U	GAM	U		0.079	U	-	
Thorium 228	1.20	0.065	0.060			GAM	1.32	0.053	0.045		10	33
Thorium 232	1.35	0.22	0.19			GAM	1.52	0.19	0.16		12	44
Uranium 235	U		0.23		U	GAM	U		0.13	U	-	
Uranium 238	U		6.1		U	GAM	U		4.6	U	-	
Americium 241	U		0.43		U	GAM	U		0.052	U	-	

Z-9 Trench Well Deepening & Chara.

QC-DUP#3 38733

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	07/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1359

R105142-01 **B120W8**

DATA SHEET

SDG	7695	Client/Case no	Hanford	SDG H1359	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R105142-01	Client sample id	B120W8		
Dept sample id	7695-001	Location/Matrix	200-Z-9	SOLID	
Received	05/23/01	Collected/Weight	05/21/01 09:20	1136 g	
% solids	94.1	Custody/SAF No	B01-084-01	B01-084	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.067	0.14	0.27	1.0	U	SR
Americium 241	14596-10-2	-0.069	0.046	0.18	1.0	U	AM
Plutonium 238	13981-16-3	-0.029	0.059	0.23	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.059	0.23	1.0	U	PU
Antimony 125	14234-35-6	U		0.047		U	GAM
Potassium 40	13966-00-2	13.5	0.55	0.20			GAM
Cobalt 60	10198-40-0	U		0.026	0.050	U	GAM
Barium 133	13981-41-4	U		0.024		U	GAM
Cesium 137	10045-97-3	U		0.024	0.10	U	GAM
Radium 226	13982-63-3	0.414	0.049	0.048	0.10		GAM
Radium 228	15262-20-1	0.723	0.11	0.11	0.20		GAM
Europium 152	14683-23-9	U		0.060	0.10	U	GAM
Europium 154	15585-10-1	U		0.082	0.10	U	GAM
Europium 155	14391-16-3	U		0.070	0.10	U	GAM
Thorium 228	14274-82-9	0.620	0.032	0.030			GAM
Thorium 232	TH-232	0.723	0.11	0.11			GAM
Uranium 235	15117-96-1	U		0.097		U	GAM
Uranium 238	U-238	U		3.0		U	GAM
Americium 241	14596-10-2	U		0.098		U	GAM

Z-9 Trench Well Deepening & Chara.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1359

R105142-02 **B120W9**

DATA SHEET

SDG	7695	Client/Case no	Hanford		SDG H1359
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R105142-02	Client sample id	B120W9		
Dept sample id	7695-002	Location/Matrix	200-Z-9		SOLID
Received	05/23/01	Collected/Weight	05/21/01 14:25	985 g	
% solids	95.7	Custody/SAF No	B01-084-01	B01-084	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.083	0.14	0.27	1.0	U	SR
Americium 241	14596-10-2	0.056	0.11	0.21	1.0	U	AM
Plutonium 238	13981-16-3	-0.022	0.044	0.17	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.044	0.17	1.0	U	PU
Antimony 125	14234-35-6	U		0.077		U	GAM
Potassium 40	13966-00-2	15.7	0.84	0.40			GAM
Cobalt 60	10198-40-0	U		0.044	0.050	U	GAM
Barium 133	13981-41-4	U		0.039		U	GAM
Cesium 137	10045-97-3	U		0.040	0.10	U	GAM
Radium 226	13982-63-3	0.731	0.077	0.074	0.10		GAM
Radium 228	15262-20-1	1.15	0.20	0.19	0.20		GAM
Europium 152	14683-23-9	U		0.088	0.10	U	GAM
Europium 154	15585-10-1	U		0.13	0.10	U	GAM
Europium 155	14391-16-3	U		0.14	0.10	U	GAM
Thorium 228	14274-82-9	1.01	0.049	0.043			GAM
Thorium 232	TH-232	1.15	0.20	0.19			GAM
Uranium 235	15117-96-1	U		0.17		U	GAM
Uranium 238	U-238	U		5.1		U	GAM
Americium 241	14596-10-2	U		0.32		U	GAM

Z-9 Trench Well Deepening & Chara.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1359

R105142-03 **B120X0**

DATA SHEET

SDG	7695	Client/Case no	Hanford		SDG_H1359
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R105142-03	Client sample id	B120X0		
Dept sample id	7695-003	Location/Matrix	200-Z-9		SOLID
Received	05/23/01	Collected/Weight	05/21/01 16:10	1059 g	
% solids	84.8	Custody/SAF No	B01-084-01	B01-084	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.001	0.13	0.27	1.0	U	SR
Americium 241	14596-10-2	-0.046	0.046	0.18	1.0	U	AM
Plutonium 238	13981-16-3	0	0.067	0.26	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.067	0.26	1.0	U	PU
Antimony 125	14234-35-6	U		0.084		U	GAM
Potassium 40	13966-00-2	18.7	1.1	0.38			GAM
Cobalt 60	10198-40-0	U		0.042	0.050	U	GAM
Barium 133	13981-41-4	U		0.038		U	GAM
Cesium 137	10045-97-3	U		0.036	0.10	U	GAM
Radium 226	13982-63-3	0.855	0.080	0.077	0.10		GAM
Radium 228	15262-20-1	1.52	0.19	0.16	0.20		GAM
Europium 152	14683-23-9	U		0.087	0.10	U	GAM
Europium 154	15585-10-1	U		0.13	0.10	U	GAM
Europium 155	14391-16-3	U		0.079	0.10	U	GAM
Thorium 228	14274-82-9	1.32	0.053	0.045			GAM
Thorium 232	TH-232	1.52	0.19	0.16			GAM
Uranium 235	15117-96-1	U		0.13		U	GAM
Uranium 238	U-238	U		4.6		U	GAM
Americium 241	14596-10-2	U		0.052		U	GAM

Z-9 Trench Well Deepening & Chara.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1359

Test AM	Matrix SOLID
SDG 7695	
Contact Melissa C. Mannion	

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract No. 630	
Contract SDG H1359	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 6981-172						
B120W8	R105142-01			7695-001	U	
B120W9	R105142-02			7695-002	U	
B120X0	R105142-03			7695-003	U	
BLK (QC ID=38732)	R105142-05			7695-005	U	
LCS (QC ID=38731)	R105142-04			7695-004	ok	
Duplicate (R105142-03)	R105142-06			7695-006	-	U
Nominal values and limits from method Z-9 Trench Well Deepening & Chara.				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	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6981-172	2σ prep error 5.0 %				Reference Lab Notebook 6981 pg. 172											
B120W8	R105142-01			0.18	0.500			82		125			10	05/31/01	05/31	SS-028
B120W9	R105142-02			0.21	0.500			70		125			10	05/31/01	05/31	SS-029
B120X0	R105142-03			0.18	0.500			78		125			10	05/31/01	05/31	SS-031
BLK (QC ID=38732)	R105142-05			0.26	0.500			68		125				05/31/01	05/31	SS-033
LCS (QC ID=38731)	R105142-04			0.34	0.500			68		823				05/31/01	06/05	SS-051
Duplicate (R105142-03) (QC ID=38733)	R105142-06			0.21	0.500			81		104			11	05/31/01	06/01	SS-028
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	CP-060	Soil Preparation, rev 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-940	Plutonium Separation and Purification, rev 3
	CP-960	Americium-Curium Purification, Large Aliquot, rev 4
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD	MDA 0.23 ± 0.12
FOR 6 SAMPLES	YIELD 74 ± 13

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	07/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1359

Test PU Matrix SOLID
SDG 7695
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1359

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6981-172								
B120W8	R105142-01			7695-001	U		U	
B120W9	R105142-02			7695-002	U		U	
B120X0	R105142-03			7695-003	U		U	
BLK (QC ID=38732)	R105142-05			7695-005	U		U	
LCS (QC ID=38731)	R105142-04			7695-004	ok		ok	
Duplicate (R105142-03)	R105142-06			7695-006	-	U	-	U
Nominal values and limits from method Z-9 Trench Well Deepening & Chara.				RDLs (pCi/g)	1.0		1.0	

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	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6981-172 2σ prep error 5.0 % Reference Lab Notebook 6981 pg. 172																
B120W8	R105142-01			0.23	0.500			74		104			11	06/01/01	06/01	SS-031
B120W9	R105142-02			0.17	0.500			81		132			15	06/01/01	06/05	SS-035
B120X0	R105142-03			0.26	0.500			65		104			11	06/01/01	06/01	SS-033
BLK (QC ID=38732)	R105142-05			0.21	0.500			85		104				06/01/01	06/01	SS-035
LCS (QC ID=38731)	R105142-04			0.17	0.500			81		132				06/01/01	06/05	SS-036
Duplicate (R105142-03) (QC ID=38733)	R105142-06			0.23	0.500			76		104			11	06/01/01	06/01	SS-036
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	CP-060	Soil Preparation, rev 3
	CP-940	Plutonium Separation and Purification, rev 3
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.21 ± 0.072
YIELD 77 ± 14

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 07/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1359

Test SR Matrix SOLID
SDG 7695
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1359

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 6981-172						
B120W8	R105142-01			7695-001	U	
B120W9	R105142-02			7695-002	U	
B120X0	R105142-03			7695-003	U	
BLK (QC ID=38732)	R105142-05			7695-005	U	
LCS (QC ID=38731)	R105142-04			7695-004	ok	
Duplicate (R105142-03)	R105142-06			7695-006	-	U
Nominal values and limits from method Z-9 Trench Well Deepening & Chara.				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	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6981-172 2σ prep error 10.0 % Reference Lab Notebook 6981 pg. 172																
B120W8	R105142-01			0.27	1.00			97		100			8	05/29/01	05/29	GRB-204
B120W9	R105142-02			0.27	1.00			99		100			8	05/29/01	05/29	GRB-231
B120X0	R105142-03			0.27	1.00			95		100			8	05/29/01	05/29	GRB-232
BLK (QC ID=38732)	R105142-05			0.32	1.00			82		101				05/29/01	05/29	GRB-206
LCS (QC ID=38731)	R105142-04			0.26	1.00			88		100				05/29/01	05/29	GRB-232
Duplicate (R105142-03) (QC ID=38733)	R105142-06			0.27	1.00			92		101			8	05/29/01	05/29	GRB-207
Nominal values and limits from method				1.0	1.00			30-105		100			180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	CP-502	Strontium in Solids, rev 4
	CP-519	Strontium Planchet Demounting and Preparation for 90Y Decontamination, rev 3

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.28 ± 0.043
YIELD 92 ± 13

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 07/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1359

Test GAM Matrix SOLID
SDG 7695
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1359

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 6981-172								
B120W8	R105142-01			7695-001	U		U	
B120W9	R105142-02			7695-002	U		U	
B120X0	R105142-03			7695-003	U		U	
BLK (QC ID=38732)	R105142-05			7695-005	U		U	
LCS (QC ID=38731)	R105142-04			7695-004	ok		ok	
Duplicate (R105142-03)	R105142-06			7695-006	-	U	-	U
Nominal values and limits from method Z-9 Trench Well Deepening & Chara.				RDLs (pCi/g)	0.050		0.10	

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	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6981-172 2σ prep error 15.0 % Reference Lab Notebook 6981 pg. 172																
B120W8	R105142-01			0.026	822					124			11	05/24/01	06/01	02,04,00
B120W9	R105142-02			0.044	735					124			11	05/24/01	06/01	MB,05,00
B120X0	R105142-03			0.042	612					124			11	05/24/01	06/01	MB,07,00
BLK (QC ID=38732)	R105142-05			0.017	611					101				05/24/01	06/02	01,04,00
LCS (QC ID=38731)	R105142-04			0.025	611					102				05/24/01	06/02	MB,05,00
Duplicate (R105142-03) (QC ID=38733)	R105142-06			0.050	612					101			14	05/24/01	06/04	MB,05,00
Nominal values and limits from method				0.050	611					100			180			

PROCEDURES	REFERENCE	GAMMA_GS
	CP-060	Soil Preparation, rev 3
	CP-100	Ge(Li) Preparation for Commercial Samples, rev 3

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.034 ± 0.026
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 07/06/01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-084-01	Page 1 of 1
Collector: Fahlberg / Thomas	Company Contact: C W Miller; Telephone No.: 372-9274	Project Coordinator: TRENT, SJ	Price Code: 8N; Data Turnaround: 45 Days
Project Designation: Z-9 Trench Well Deepening and Characterization - Soil	Sampling Location: 200-Z-9 H1359 (7695)	SAF No.: B01-084	Air Quality ☐
Ice Chest No.: ERC 99-045 (1 of 1)	Field Logbook No.: EL 1517-1; COA: R20ZP2DP61	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA EBERline	Offsite Property No.: A010279	Bill of Lading/Air Bill No.: 4235795 4-4539	

POSSIBLE SAMPLE HAZARDS/REMARKS
< 2000 pCi/g per BHI-01509.

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	
Type of Container	aG	aG	aG	aG	aG	
No. of Container(s)	1	1	1	1	1	
Volume	250mL	250mL	250mL	500mL	1000mL	
SAMPLE ANALYSIS	Oil & Grease - 413.1	See item (1) in Special Instructions.	VOA - 8260A (TCL)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 5/21/01. Collector not available to relenquish samples on 5/22/01 for shipment.

Sample No.	Matrix *	Sample Date	Sample Time										
B120W8	SOIL	5/21/01	0920					X					
B120W9	SOIL	5/21/01	1425					X					
B120X0	SOIL	5/21/01	1610					X					

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Fahlberg / R. Fahlberg	Date/Time: 1700 5-21-01	Received By: Stored in Ref 2-13	Date/Time: 5-21-01 1700
Relinquished By: Removed from Ref 2-B 3728	Date/Time: 0830 5-22-01	Received By: R. Thoren	Date/Time: 0830 5-22-01
Relinquished By: R. Thoren	Date/Time: 0830 5-22-01	Received By: FEDEX	Date/Time: 5-22-01
Relinquished By: FED. EXPRESS	Date/Time: 10 AM 5-23-01	Received By: E. Segura / E. SEGURO	Date/Time: 10 AM 5-23-01
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
See SAF Comment Concerning Pu Analysis

~~(1) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (Tributyl phosphate)~~
~~(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-On) (L230); Mercury - 7470 - (GW)~~
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60}; Gamma Spec - Add-on {Antimony-125}; Isotopic *Plutonium; Americium-241; Neptunium-237; Plutonium-241;* Strontium-89,90 – Total Sr

< D

RT 5-22-01

Matrix *
S=Soil
SE=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: BECHTEL HANFORD INC. Date/Time received 5-23-01 10:AM

CoC No. B01-084-01

Container I.D. No. _____ Requested TAT (Days) 45 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. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 3 SAMPLES
7. Number of containers per sample: (1 EACH) (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 E. Segura Date: 5/23/01 Time: 10:AM

Customer Sample No.	cpm	mr/hr	Customer Sample No.	Cpm	mr/hr

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

JUL 2001
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-084 H1359

DATE RECEIVED: 05/23/01 LVL LOT # :0105L837

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B120W8						
% SOLIDS	001	S	01L%S063	05/21/01	05/24/01	05/25/01
% SOLIDS	001 REP	S	01L%S063	05/21/01	05/24/01	05/25/01
OIL & GREASE BY GRAV	001	S	01LOG021	05/21/01	06/19/01	06/21/01
B120W9						
% SOLIDS	002	S	01L%S063	05/21/01	05/24/01	05/25/01
OIL & GREASE BY GRAV	002	S	01LOG021	05/21/01	06/19/01	06/21/01
B120X0						
% SOLIDS	003	S	01L%S063	05/21/01	05/24/01	05/25/01
OIL & GREASE BY GRAV	003	S	01LOG021	05/21/01	06/19/01	06/21/01
OIL AND GREASE BY GR	003 REP	S	01LOG021	05/21/01	06/19/01	06/21/01
OIL AND GREASE BY GR	003 MS	S	01LOG021	05/21/01	06/19/01	06/21/01

LAB QC:

OIL & GREASE BY GRAV	MB1	S	01LOG021	N/A	06/19/01	06/21/01
OIL AND GREASE BY GR	MB1 BS	S	01LOG021	N/A	06/19/01	06/21/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-084 H1359
LVL#: 0105L837

W.O.#: 11343-606-001-9999-00
Date Received: 05-23-01

INORGANIC NARRATIVE

1. This narrative covers the analyses of 3 soil samples.

2. The samples were prepared and analyzed in accordance with the methods checked on the attached glossary.

3. Sample holding times as required by the method and/or contract were met.

4. The cooler temperature was recorded on the chain of custody.

5. The method blank for Oil and Grease was within the method criteria.

6. The Laboratory Control Sample (LCS) for Oil and Grease was within the laboratory control limits.

7. The matrix spike recovery for Oil and Grease was within the 75-125% control limits.

8. The replicate analysis for Oil and Grease was outside the 20% Relative Percent Difference (RPD) control limit that may be attributed to sample inhomogeneity.

9. Results for solid samples are reported on a dry weight basis.

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

06-25-01
Date

njp\i05-837

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 11 pages.

208 Welsh Pool Road • Exton, PA 19341-1313 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	✓ D2216-80		__ ILMO4.0 (e)
% Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Chromium VI		__ 3060A/7196A	
Corrosivity ___ by coupon ___ by pH		__ 1110(mod) __ 9045C	
Cyanide, Total		__ 9010B	__ ILMO4.0 (e)
Cyanide, Reactive		__ Section 7.3/9014	
Halides, Extractable Organic		__ 9020B	__ EPA 600/4/84-008
Halides, Total		__ 9020B	__ EPA 600/4/84-008
EP Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Oil & Grease		✓ 9071A	
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1
pH, Soil		__ 9045C	
Sulfide, Reactive		__ Section 7.3/9030B	
Sulfide		__ 9030B(mod)	
Specific Gravity	__ D1429-76C/	__ D5057-90	
Sulfur, Total		__ 9056	
Synthetic Preparation Leach		__ 1312	
Paint Filter		__ 9095A	

Other: **Method:**

Other: **Method**

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).

3. Test Methods for Evaluating Solid Waste (USEPA SW-846).

a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).

b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).

c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).

d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).

e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.

f. Code of Federal Regulations.

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/25/01

CLIENT: TNUHANFORD B01-084 H1359 LVL LOT #: 0105L837

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B120W8	% Solids	95.0	%	0.01	1.0
		Oil & Grease Gravimetri	738	MG/KG	140	1.0
-002	B120W9	% Solids	88.7	%	0.01	1.0
		Oil & Grease Gravimetri	209	MG/KG	150	1.0
-003	B120X0	% Solids	82.6	%	0.01	1.0
		Oil & Grease Gravimetri	240	MG/KG	161	1.0

Lionville Lababoratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/25/01

CLIENT: TNUHANFORD B01-084 H1359 LVL LOT #: 0105L837

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LOG021-MB1	Oil & Grease Gravimetri	133	u	MG/KG	133	1.0

Lionville Lababoratory, Inc.

INORGANICS ACCURACY REPORT 06/25/01

CLIENT: TNUHANFORD B01-084 H1359 LVL LOT #: 0105L837

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT		SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-003	B120X0	Oil & Grease Gravimetr	8280	240		8330	96.5	1.0
BLANK10	01LOG021-MB1	Oil & Grease Gravimetr	6650	133	u	6880	96.7	1.0

Lionville Lababoratory, Inc.

INORGANICS PRECISION REPORT 06/25/01

CLIENT: TNUHANFORD B01-084 H1359 LVL LOT #: 0105L837

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B120W8	% Solids	95.0	94.8	0.26	1.0
-003REP	B120X0	Oil & Grease Gravimetri	240	161 u	~~NC~~ 40.4	1.0

Lionville Laboratory Use Only
0105L837

Custody Transfer Record/Lab Work Request

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B01-084
Est. Final Proj. Sampling Date:
Project #: 11343-6006-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Sprc Del: Std TAT: 30 day
Date Rec'd: 5-23-01 Date Due: 6-22-01

		A	B	C	D
Refrigerator #		1	3	3	3
#/Type Container	Liquid				
	Solid	1AG	1AG	1AG	1AG
Volume	Liquid				
	Solid	250	250	500	250
Preservatives		–	–	–	–
ANALYSES REQUESTED →		ORGANIC: VOA	ORGANIC: BNA	INORG: Metal	INORG: CN
		ORGANIC: Pest/PCB	ORGANIC: Herb		

Lionville Laboratory Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OG24H	OG25X	Mrt ①	IOGGR
S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EP/TCLP Leachate, Wi - Wipe, X - Other, F - Fish	001	B120W8			S	5-21-01	0920	✓	✓	✓	✓
	002	1 W9			1	1	1425	✓	✓	✓	✓
	003	1 X0			1	1	1610	✓	✓	✓	✓

Special Instructions: Saf B01-084

Run Matrix QC

DATE/REVISIONS:
Mrt ① 1. Al, Ag, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K,
1 2. Mg, Mn, Na, Ni, Sb, V, Zn, Pb, Hg
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
FedEx	JKeppel	5-23-01	0940

Relinquished by	Received by	Date	Time
COMPOSITE	ORIGINAL		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7954 4528

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # See Below
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 4.8 °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-084-01	Page 1 of 1

Collector: Fahlberg/Thomas	Company Contact: C W Miller	Telephone No.: 372-9274	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: Z-9 Trench Well Deepening and Characterization - Soil	Sampling Location: 200-Z-9	SAF No.: B01-084	
Ice Chest No.: ERC 99-019 (1 of 1)	Field Logbook No.: EL 1517-1	COA: R20ZP2DP61	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A01263		Bill of Lading/Air Bill No.: 4235 7952 1 – 4528

POSSIBLE SAMPLE HAZARDS/REMARKS

<2000 pCi/g per BHI-01509

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1
Volume	250mL	250mL	250mL	500mL	100mL

Filed 5-22

SAMPLE ANALYSIS

Samples stored in Ref.# 2 B at the 3728 Shipping Facility on 5/21/01. Collector not available to relenquish samples on 5/22/01 for shipment.

RT 5-22-01

Sample No.	Matrix *	Sample Date	Sample Time	Oil & Grease - 413.1	See item (1) in Special Instructions.	VOA - 8260A (TCL)	See item (2) in Special Instructions.	See item (3) in Special Instructions.
B120W8	SOIL	5/21/01	0920	X	X	X	X	
B120W9	SOIL	5/21/01	1425	X	X	X	X	
B120X0	SOIL	5/21/01	1610	X	X	X	X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R Fahlberg	5-21-01 1700	Ref 2-B / Stored	5-21-01 1700
Relinquished By: Removed from Ref 2-B 3728	5-22-01 0830	Received By: R Thoren	5-22-01 0830
R Thoren	5-22-01 0830	FED EX	
Relinquished By: FedEx	5-23-01 0940	Received By: Thoppal	5-23-01 0940
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

See SAF Comment Concerning Pu Analysis

(1) Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) {Tributyl phosphate}
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Lead}; Mercury - 7470 - (CV)
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60}; ~~Gamma Spec - Add-on {Antimony-125}; Isotopic Plutonium, Americium-241, Neptunium-237, Plutonium-241, Strontium-89,90 – Total Sr~~

< D

RT 5-22-01

Matrix *: S=Soil; SE=Sediment; SO=Solid; S=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; WI=Wipe; L=Liquid; V=Vegetation; X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

10

Figure 1. Sample Check-in List

Date/Time Received: 5-23-01 / 0940

SDG#: 01051837

Work Order Number: — SAF# B01-084

Shipping Container ID: ~~B01-084~~ ERC 99019 TK 5-23-1 Chain of Custody # B01-084-01

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature _____
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 12
7. Sample holding times exceeded? Yes [ ] No [✓]

8. Samples have:
   - [✓] tape
   - [ ] hazard labels
   - [ ] custody seals
   - [ ] appropriate sample labels

9. Samples are:
   - [✓] in good condition
   - [ ] leaking
   - [ ] broken
   - [ ] have air bubbles

10. Were any anomalies identified in sample receipt? Yes [ ] No [✓]
11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: TKoppel / LVLI Date: 5-23-01

Telephoned to: _____ On _____ By _____

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-084 ~~H1357~~ H1359 7/10/01

DATE RECEIVED: 05/23/01 LVL LOT # :0105L837

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B120W8						
SILVER, TOTAL	001	S	01L0297	05/21/01	05/31/01	06/01/01
SILVER, TOTAL	001 REP	S	01L0297	05/21/01	05/31/01	06/01/01
SILVER, TOTAL	001 MS	S	01L0297	05/21/01	05/31/01	06/01/01
ALUMINUM, TOTAL	001	S	01L0297	05/21/01	05/31/01	06/01/01
ALUMINUM, TOTAL	001 REP	S	01L0297	05/21/01	05/31/01	06/01/01
ALUMINUM, TOTAL	001 MS	S	01L0297	05/21/01	05/31/01	06/01/01
BARIUM, TOTAL	001	S	01L0297	05/21/01	05/31/01	06/01/01
BARIUM, TOTAL	001 REP	S	01L0297	05/21/01	05/31/01	06/01/01
BARIUM, TOTAL	001 MS	S	01L0297	05/21/01	05/31/01	06/01/01
BERYLLIUM, TOTAL	001	S	01L0297	05/21/01	05/31/01	06/01/01
BERYLLIUM, TOTAL	001 REP	S	01L0297	05/21/01	05/31/01	06/01/01
BERYLLIUM, TOTAL	001 MS	S	01L0297	05/21/01	05/31/01	06/01/01
CALCIUM, TOTAL	001	S	01L0297	05/21/01	05/31/01	06/01/01
CALCIUM, TOTAL	001 REP	S	01L0297	05/21/01	05/31/01	06/01/01
CALCIUM, TOTAL	001 MS	S	01L0297	05/21/01	05/31/01	06/01/01
CADMIUM, TOTAL	001	S	01L0297	05/21/01	05/31/01	06/01/01
CADMIUM, TOTAL	001 REP	S	01L0297	05/21/01	05/31/01	06/01/01
CADMIUM, TOTAL	001 MS	S	01L0297	05/21/01	05/31/01	06/01/01
COBALT, TOTAL	001	S	01L0297	05/21/01	05/31/01	06/01/01
COBALT, TOTAL	001 REP	S	01L0297	05/21/01	05/31/01	06/01/01
COBALT, TOTAL	001 MS	S	01L0297	05/21/01	05/31/01	06/01/01
CHROMIUM, TOTAL	001	S	01L0297	05/21/01	05/31/01	06/01/01
CHROMIUM, TOTAL	001 REP	S	01L0297	05/21/01	05/31/01	06/01/01
CHROMIUM, TOTAL	001 MS	S	01L0297	05/21/01	05/31/01	06/01/01
COPPER, TOTAL	001	S	01L0297	05/21/01	05/31/01	06/01/01
COPPER, TOTAL	001 REP	S	01L0297	05/21/01	05/31/01	06/01/01
COPPER, TOTAL	001 MS	S	01L0297	05/21/01	05/31/01	06/01/01
IRON, TOTAL	001	S	01L0297	05/21/01	05/31/01	06/01/01
IRON, TOTAL	001 REP	S	01L0297	05/21/01	05/31/01	06/01/01
IRON, TOTAL	001 MS	S	01L0297	05/21/01	05/31/01	06/01/01
MERCURY, TOTAL	001	S	01C0148	05/21/01	05/23/01	05/24/01
MERCURY, TOTAL	001 REP	S	01C0148	05/21/01	05/23/01	05/24/01
MERCURY, TOTAL	001 MS	S	01C0148	05/21/01	05/23/01	05/24/01
POTASSIUM, TOTAL	001	S	01L0297	05/21/01	05/31/01	06/01/01
POTASSIUM, TOTAL	001 REP	S	01L0297	05/21/01	05/31/01	06/01/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-084 ~~H1357~~ #1359 7/10/01

JUL 2001 RECEIVED

DATE RECEIVED: 05/23/01 LVL LOT # :0105L837

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
POTASSIUM, TOTAL	001 MS	S	01L0297	05/21/01	05/31/01	06/01/01
MAGNESIUM, TOTAL	001	S	01L0297	05/21/01	05/31/01	06/01/01
MAGNESIUM, TOTAL	001 REP	S	01L0297	05/21/01	05/31/01	06/01/01
MAGNESIUM, TOTAL	001 MS	S	01L0297	05/21/01	05/31/01	06/01/01
MANGANESE, TOTAL	001	S	01L0297	05/21/01	05/31/01	06/01/01
MANGANESE, TOTAL	001 REP	S	01L0297	05/21/01	05/31/01	06/01/01
MANGANESE, TOTAL	001 MS	S	01L0297	05/21/01	05/31/01	06/01/01
SODIUM, TOTAL	001	S	01L0297	05/21/01	05/31/01	06/01/01
SODIUM, TOTAL	001 REP	S	01L0297	05/21/01	05/31/01	06/01/01
SODIUM, TOTAL	001 MS	S	01L0297	05/21/01	05/31/01	06/01/01
NICKEL, TOTAL	001	S	01L0297	05/21/01	05/31/01	06/01/01
NICKEL, TOTAL	001 REP	S	01L0297	05/21/01	05/31/01	06/01/01
NICKEL, TOTAL	001 MS	S	01L0297	05/21/01	05/31/01	06/01/01
LEAD, TOTAL	001	S	01L0297	05/21/01	05/31/01	06/01/01
LEAD, TOTAL	001 REP	S	01L0297	05/21/01	05/31/01	06/01/01
LEAD, TOTAL	001 MS	S	01L0297	05/21/01	05/31/01	06/01/01
ANTIMONY, TOTAL	001	S	01L0297	05/21/01	05/31/01	06/01/01
ANTIMONY, TOTAL	001 REP	S	01L0297	05/21/01	05/31/01	06/01/01
ANTIMONY, TOTAL	001 MS	S	01L0297	05/21/01	05/31/01	06/01/01
VANADIUM, TOTAL	001	S	01L0297	05/21/01	05/31/01	06/01/01
VANADIUM, TOTAL	001 REP	S	01L0297	05/21/01	05/31/01	06/01/01
VANADIUM, TOTAL	001 MS	S	01L0297	05/21/01	05/31/01	06/01/01
ZINC, TOTAL	001	S	01L0297	05/21/01	05/31/01	06/01/01
ZINC, TOTAL	001 REP	S	01L0297	05/21/01	05/31/01	06/01/01
ZINC, TOTAL	001 MS	S	01L0297	05/21/01	05/31/01	06/01/01
B120W9						
SILVER, TOTAL	002	S	01L0297	05/21/01	05/31/01	06/01/01
ALUMINUM, TOTAL	002	S	01L0297	05/21/01	05/31/01	06/01/01
BARIUM, TOTAL	002	S	01L0297	05/21/01	05/31/01	06/01/01
BERYLLIUM, TOTAL	002	S	01L0297	05/21/01	05/31/01	06/01/01
CALCIUM, TOTAL	002	S	01L0297	05/21/01	05/31/01	06/01/01
CADMIUM, TOTAL	002	S	01L0297	05/21/01	05/31/01	06/01/01
COBALT, TOTAL	002	S	01L0297	05/21/01	05/31/01	06/01/01
CHROMIUM, TOTAL	002	S	01L0297	05/21/01	05/31/01	06/01/01
COPPER, TOTAL	002	S	01L0297	05/21/01	05/31/01	06/01/01
IRON, TOTAL	002	S	01L0297	05/21/01	05/31/01	06/01/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-084 ~~H1357~~ H1359 7/10/01

DATE RECEIVED: 05/23/01 LVL LOT # :0105L837

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	002	S	01C0148	05/21/01	05/23/01	05/24/01
POTASSIUM, TOTAL	002	S	01L0297	05/21/01	05/31/01	06/01/01
MAGNESIUM, TOTAL	002	S	01L0297	05/21/01	05/31/01	06/01/01
MANGANESE, TOTAL	002	S	01L0297	05/21/01	05/31/01	06/01/01
SODIUM, TOTAL	002	S	01L0297	05/21/01	05/31/01	06/01/01
NICKEL, TOTAL	002	S	01L0297	05/21/01	05/31/01	06/01/01
LEAD, TOTAL	002	S	01L0297	05/21/01	05/31/01	06/01/01
ANTIMONY, TOTAL	002	S	01L0297	05/21/01	05/31/01	06/01/01
VANADIUM, TOTAL	002	S	01L0297	05/21/01	05/31/01	06/01/01
ZINC, TOTAL	002	S	01L0297	05/21/01	05/31/01	06/01/01
B120X0						
SILVER, TOTAL	003	S	01L0297	05/21/01	05/31/01	06/01/01
ALUMINUM, TOTAL	003	S	01L0297	05/21/01	05/31/01	06/01/01
BARIUM, TOTAL	003	S	01L0297	05/21/01	05/31/01	06/01/01
BERYLLIUM, TOTAL	003	S	01L0297	05/21/01	05/31/01	06/01/01
CALCIUM, TOTAL	003	S	01L0297	05/21/01	05/31/01	06/01/01
CADMIUM, TOTAL	003	S	01L0297	05/21/01	05/31/01	06/01/01
COBALT, TOTAL	003	S	01L0297	05/21/01	05/31/01	06/01/01
CHROMIUM, TOTAL	003	S	01L0297	05/21/01	05/31/01	06/01/01
COPPER, TOTAL	003	S	01L0297	05/21/01	05/31/01	06/01/01
IRON, TOTAL	003	S	01L0297	05/21/01	05/31/01	06/01/01
MERCURY, TOTAL	003	S	01C0148	05/21/01	05/23/01	05/24/01
POTASSIUM, TOTAL	003	S	01L0297	05/21/01	05/31/01	06/01/01
MAGNESIUM, TOTAL	003	S	01L0297	05/21/01	05/31/01	06/01/01
MANGANESE, TOTAL	003	S	01L0297	05/21/01	05/31/01	06/01/01
SODIUM, TOTAL	003	S	01L0297	05/21/01	05/31/01	06/01/01
NICKEL, TOTAL	003	S	01L0297	05/21/01	05/31/01	06/01/01
LEAD, TOTAL	003	S	01L0297	05/21/01	05/31/01	06/01/01
ANTIMONY, TOTAL	003	S	01L0297	05/21/01	05/31/01	06/01/01
VANADIUM, TOTAL	003	S	01L0297	05/21/01	05/31/01	06/01/01
ZINC, TOTAL	003	S	01L0297	05/21/01	05/31/01	06/01/01

LAB QC:

SILVER LABORATORY	LC1 BS	S	01L0297	N/A	05/31/01	05/31/01
SILVER, TOTAL	MB1	S	01L0297	N/A	05/31/01	05/31/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-084 ~~H1357~~ H1359 7/16/01

DATE RECEIVED: 05/23/01 LVL LOT # :0105L837

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ALUMINUM LABORTORY	LC1 BS	S	01L0297	N/A	05/31/01	05/31/01
ALUMINUM, TOTAL	MB1	S	01L0297	N/A	05/31/01	05/31/01
BARIUM LABORATORY	LC1 BS	S	01L0297	N/A	05/31/01	05/31/01
BARIUM, TOTAL	MB1	S	01L0297	N/A	05/31/01	05/31/01
BERYLLIUM LABORATORY	LC1 BS	S	01L0297	N/A	05/31/01	05/31/01
BERYLLIUM, TOTAL	MB1	S	01L0297	N/A	05/31/01	05/31/01
CALCIUM LABORATORY	LC1 BS	S	01L0297	N/A	05/31/01	05/31/01
CALCIUM, TOTAL	MB1	S	01L0297	N/A	05/31/01	05/31/01
CADMIUM LABORATORY	LC1 BS	S	01L0297	N/A	05/31/01	05/31/01
CADMIUM, TOTAL	MB1	S	01L0297	N/A	05/31/01	05/31/01
COBALT LABORATORY	LC1 BS	S	01L0297	N/A	05/31/01	05/31/01
COBALT, TOTAL	MB1	S	01L0297	N/A	05/31/01	05/31/01
CHROMIUM LABORATORY	LC1 BS	S	01L0297	N/A	05/31/01	05/31/01
CHROMIUM, TOTAL	MB1	S	01L0297	N/A	05/31/01	05/31/01
COPPER LABORATORY	LC1 BS	S	01L0297	N/A	05/31/01	05/31/01
COPPER, TOTAL	MB1	S	01L0297	N/A	05/31/01	05/31/01
IRON LABORATORY	LC1 BS	S	01L0297	N/A	05/31/01	05/31/01
IRON, TOTAL	MB1	S	01L0297	N/A	05/31/01	05/31/01
MERCURY LABORATORY	LC1 BS	S	01C0148	N/A	05/23/01	05/24/01
MERCURY, TOTAL	MB1	S	01C0148	N/A	05/23/01	05/24/01
POTASSIUM LABORATORY	LC1 BS	S	01L0297	N/A	05/31/01	05/31/01
POTASSIUM, TOTAL	MB1	S	01L0297	N/A	05/31/01	05/31/01
MAGNESIUM LABORATORY	LC1 BS	S	01L0297	N/A	05/31/01	05/31/01
MAGNESIUM, TOTAL	MB1	S	01L0297	N/A	05/31/01	05/31/01
MANGANESE LABORATORY	LC1 BS	S	01L0297	N/A	05/31/01	05/31/01
MANGANESE, TOTAL	MB1	S	01L0297	N/A	05/31/01	05/31/01
SODIUM LABORATORY	LC1 BS	S	01L0297	N/A	05/31/01	05/31/01
SODIUM, TOTAL	MB1	S	01L0297	N/A	05/31/01	05/31/01
NICKEL LABORATORY	LC1 BS	S	01L0297	N/A	05/31/01	05/31/01
NICKEL, TOTAL	MB1	S	01L0297	N/A	05/31/01	05/31/01
LEAD LABORATORY	LC1 BS	S	01L0297	N/A	05/31/01	05/31/01
LEAD, TOTAL	MB1	S	01L0297	N/A	05/31/01	05/31/01
ANTIMONY LABORATORY	LC1 BS	S	01L0297	N/A	05/31/01	05/31/01
ANTIMONY, TOTAL	MB1	S	01L0297	N/A	05/31/01	05/31/01
VANADIUM LABORATORY	LC1 BS	S	01L0297	N/A	05/31/01	05/31/01
VANADIUM, TOTAL	MB1	S	01L0297	N/A	05/31/01	05/31/01
ZINC LABORATORY	LC1 BS	S	01L0297	N/A	05/31/01	05/31/01
ZINC, TOTAL	MB1	S	01L0297	N/A	05/31/01	05/31/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-084
LVL#: 0105L837 e H1359
SDG/SAF#: ~~H1357~~/B01-084 7/10/01

W.O.#: 11343-606-001-9999-00
Date Received: 05-23-01

METALS CASE NARRATIVE

1. This narrative covers the analyses of 3 soil samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.

3. All analyses were performed within the required holding times.

4. The cooler temperature has been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.

10. The matrix spike (MS) recoveries for 7 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A serial dilution is performed for Mercury. A PDS was prepared at meaningful concentration levels, due to high concentrations of the following analytes:

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 21 pages.

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B120W8	Aluminum	100,000	103.8
	Copper	1250	110.4
	Iron	100,000	98.9
	Manganese	1250	87.3
	Lead	1250	85.6
	Antimony	1250	89.1
	Zinc	1250	88.8

12. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

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

15. As of January 27, 2001, Recra LabNet Philadelphia became Lionville Laboratory Incorporated. Some forms may still reference Recra LabNet Philadelphia.

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

6/29/01
Date

gmb/m05-837

LVLI
LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 0105L837

Leaching Procedure: __1310 __1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: __3005A __3010A __3015 __3020A ✓3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	✓6010B		__200.7				__99
Antimony	✓6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	__6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010B		__200.7				__99
Beryllium	✓6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	✓6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	✓6010B		__200.7				__99
Copper	✓6010B	__7211 [5]	__200.7	__220.2			__99
Iron	✓6010B		__200.7				__99
Lead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	✓6010B		__200.7				__99
Manganese	✓6010B		__200.7				__99
Mercury	✓7470A [3]	__7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	✓6010B		__200.7				__99
Potassium	✓6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	__6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	__6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	✓6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	__6010B	__7841 [5]	__200.7	__279.2	__200.9		__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	✓6010B		__200.7				__99
Zinc	✓6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

L-WI-033/M-03/01

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LCS = Laboratory Control Sample.
NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).

4. Flame AA.

5. Graphite Furnace AA.

RFW 21-21L-033/N-10/96

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/18/01

CLIENT: TNUHANFORD B01-084 ~~H1357~~ H1359 7/10/01 LVL LOT #: 0105L837
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B120W8	Silver, Total	0.51 u	MG/KG	0.51	5.0
		Aluminum, Total	5640	MG/KG	6.4	5.0
		Barium, Total	68.4	MG/KG	0.10	5.0
		Beryllium, Total	0.21	MG/KG	0.10	5.0
		Calcium, Total	7630	MG/KG	4.1	5.0
		Cadmium, Total	0.77	MG/KG	0.15	5.0
		Cobalt, Total	25.9	MG/KG	0.40	5.0
		Chromium, Total	19.2	MG/KG	0.46	5.0
		Copper, Total	2580	MG/KG	0.35	5.0
		Iron, Total	99700	MG/KG	7.9	5.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	1370	MG/KG	17.9	5.0
		Magnesium, Total	3870	MG/KG	4.5	5.0
		Manganese, Total	917	MG/KG	0.05	5.0
		Sodium, Total	124	MG/KG	0.86	5.0
		Nickel, Total	24.3	MG/KG	0.61	5.0
		Lead, Total	401	MG/KG	1.3	5.0
		Antimony, Total	0.96 u	MG/KG	0.96	5.0
		Vanadium, Total	24.2	MG/KG	0.35	5.0
		Zinc, Total	202	MG/KG	0.15	5.0

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/18/01

CLIENT: TNUHANFORD B01-084 H1357 H1359 7/10/01 LVL LOT #: 0105L837
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B120W9	Silver, Total	0.11 u	MG/KG	0.11	1.0
		Aluminum, Total	8470	MG/KG	1.4	1.0
		Barium, Total	94.7	MG/KG	0.02	1.0
		Beryllium, Total	0.36	MG/KG	0.02	1.0
		Calcium, Total	13100	MG/KG	0.91	1.0
		Cadmium, Total	0.20	MG/KG	0.03	1.0
		Cobalt, Total	7.9	MG/KG	0.09	1.0
		Chromium, Total	14.2	MG/KG	0.10	1.0
		Copper, Total	17.1	MG/KG	0.08	1.0
		Iron, Total	17400	MG/KG	1.8	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	2040	MG/KG	4.0	1.0
		Magnesium, Total	6380	MG/KG	0.99	1.0
		Manganese, Total	373	MG/KG	0.01	1.0
		Sodium, Total	170	MG/KG	0.19	1.0
		Nickel, Total	14.0	MG/KG	0.14	1.0
		Lead, Total	8.2	MG/KG	0.29	1.0
		Antimony, Total	0.21 u	MG/KG	0.21	1.0
		Vanadium, Total	30.4	MG/KG	0.08	1.0
		Zinc, Total	43.5	MG/KG	0.03	1.0

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/18/01

CLIENT: TNUHANFORD B01-084 ~~H1357~~ C H1359 7/10/01 LVL LOT #: 0105L837
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B120X0	Silver, Total	0.12 u	MG/KG	0.12	1.0
		Aluminum, Total	10500	MG/KG	1.5	1.0
		Barium, Total	115	MG/KG	0.02	1.0
		Beryllium, Total	0.50	MG/KG	0.02	1.0
		Calcium, Total	14200	MG/KG	0.95	1.0
		Cadmium, Total	0.22	MG/KG	0.04	1.0
		Cobalt, Total	9.0	MG/KG	0.09	1.0
		Chromium, Total	16.0	MG/KG	0.11	1.0
		Copper, Total	21.5	MG/KG	0.08	1.0
		Iron, Total	20500	MG/KG	1.8	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	2410	MG/KG	4.1	1.0
		Magnesium, Total	7700	MG/KG	1.0	1.0
		Manganese, Total	411	MG/KG	0.01	1.0
		Sodium, Total	179	MG/KG	0.20	1.0
		Nickel, Total	15.7	MG/KG	0.14	1.0
		Lead, Total	10.9	MG/KG	0.31	1.0
		Antimony, Total	0.22 u	MG/KG	0.22	1.0
		Vanadium, Total	34.6	MG/KG	0.08	1.0
		Zinc, Total	53.4	MG/KG	0.04	1.0

Lionville Lababoratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/18/01

CLIENT: TNUHANFORD B01-084 H1357 e H1359 7/10/01 LVL LOT #: 0105L837

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0297-MB1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Aluminum, Total	1.3 u	MG/KG	1.3	1.0
		Barium, Total	0.03	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Calcium, Total	1.7	MG/KG	0.81	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Cobalt, Total	0.08 u	MG/KG	0.08	1.0
		Chromium, Total	0.09 u	MG/KG	0.09	1.0
		Copper, Total	0.15	MG/KG	0.07	1.0
		Iron, Total	1.9	MG/KG	1.6	1.0
		Potassium, Total	3.5 u	MG/KG	3.5	1.0
		Magnesium, Total	0.88 u	MG/KG	0.88	1.0
		Manganese, Total	0.02	MG/KG	0.01	1.0
		Sodium, Total	3.7	MG/KG	0.17	1.0
		Nickel, Total	0.12 u	MG/KG	0.12	1.0
		Lead, Total	0.26 u	MG/KG	0.26	1.0
		Antimony, Total	0.19 u	MG/KG	0.19	1.0
		Vanadium, Total	0.07 u	MG/KG	0.07	1.0
		Zinc, Total	0.33	MG/KG	0.03	1.0
BLANK1	01C0148-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Lababoratory, Inc.

INORGANICS ACCURACY REPORT 06/18/01

CLIENT: TNUHANFORD B01-084 H1357 H1359 7/10/01 LVL LOT #: 0105L837

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B120W8	Silver, Total	5.2	0.51u	5.1	102.0	5.0
		Aluminum, Total	6440	5640	202	390.7*	5.0
		Barium, Total	265	68.4	202	97.1	5.0
		Beryllium, Total	5.0	0.21	5.1	94.0	5.0
		Calcium, Total	10400	7630	2530	108.6	5.0
		Cadmium, Total	5.9	0.77	5.1	100.5	5.0
		Cobalt, Total	79.7	25.9	50.6	106.3	5.0
		Chromium, Total	41.9	19.2	20.2	112.4	5.0
		Copper, Total	2900	2580	25.3	1258 *	5.0
		Iron, Total	122000	99700	101	22430 *	5.0
		Mercury, Total	0.17	0.02u	0.17	100	1.0
		Potassium, Total	4060	1370	2530	106.7	5.0
		Magnesium, Total	6620	3870	2530	108.6	5.0
		Manganese, Total	1130	917	50.6	428.5*	5.0
		Sodium, Total	2750	124	2530	103.8	5.0
		Nickel, Total	76.1	24.3	50.6	102.4	5.0
		Lead, Total	532	401	50.6	257.9*	5.0
		Antimony, Total	36.8	0.96u	50.6	72.7	5.0
		Vanadium, Total	74.5	24.2	50.6	99.4	5.0
		Zinc, Total	313	202	50.6	218.4	5.0

Lionville Lababoratory, Inc.

INORGANICS PRECISION REPORT 06/18/01

CLIENT: TNUHANFORD B01-084 H1357 H1359 7/10/01 LVL LOT #: 0105L837
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B120W8	Silver, Total	0.51u	0.51u	NC	5.0
		Aluminum, Total	5640	6110	7.9	5.0
		Barium, Total	68.4	65.0	5.1	5.0
		Beryllium, Total	0.21	0.20	5.0	5.0
		Calcium, Total	7630	7880	3.3	5.0
		Cadmium, Total	0.77	0.89	14.0	5.0
		Cobalt, Total	25.9	27.1	4.5	5.0
		Chromium, Total	19.2	21.4	10.8	5.0
		Copper, Total	2580	2860	10.5	5.0
		Iron, Total	99700	106000	6.1	5.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Potassium, Total	1370	1440	5.5	5.0
		Magnesium, Total	3870	4290	10.1	5.0
		Manganese, Total	917	964	5.1	5.0
		Sodium, Total	124	134	8.4	5.0
		Nickel, Total	24.3	25.8	6.0	5.0
		Lead, Total	401	452	11.8	5.0
		Antimony, Total	0.96u	0.96u	NC	5.0
		Vanadium, Total	24.2	26.8	10.2	5.0
		Zinc, Total	202	270	28.7	5.0

Lionville Lababoratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 06/18/01

CLIENT: TNUHANFORD B01-084 H1357 H1359 7/10/01 LVL LOT #: 0105L837
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0297-LC1	Silver, LCS	48.1	50.0	MG/KG	96.2
		Aluminum, LCS	480	500	MG/KG	96.0
		Barium, LCS	468	500	MG/KG	93.5
		Beryllium, LCS	24.6	25.0	MG/KG	98.4
		Calcium, LCS	2450	2500	MG/KG	98.0
		Cadmium, LCS	24.6	25.0	MG/KG	98.4
		Cobalt, LCS	251	250	MG/KG	100.4
		Chromium, LCS	50.1	50.0	MG/KG	100.2
		Copper, LCS	120	125	MG/KG	95.6
		Iron, LCS	512	500	MG/KG	102.4
		Potassium, LCS	2320	2500	MG/KG	92.9
		Magnesium, LCS	2510	2500	MG/KG	100.3
		Manganese, LCS	76.1	75.0	MG/KG	101.5
		Sodium, LCS	2350	2500	MG/KG	94.1
		Nickel, LCS	192	200	MG/KG	95.8
		Lead, LCS	244	250	MG/KG	97.4
		Antimony, LCS	286	300	MG/KG	95.3
		Vanadium, LCS	257	250	MG/KG	103.0
		Zinc, LCS	96.8	100	MG/KG	96.8
LCS1	01C0148-LC1	Mercury, LCS	2.5	2.5	MG/KG	101.7

Lionville Laboratory Use Only
0105L837

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI Lionville Laboratory Inc.

Client: TNU-Hanford B01-084
Est. Final Proj. Sampling Date:
Project #: 11343-6006-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 5-23-01 Date Due: 6-22-01

		A	B						C		D					
Refrigerator #		1	3						3		3					
#/Type Container	Liquid															
	Solid	1AG	1AG						1AG		1AG					
Volume	Liquid															
	Solid	250	250						500		250					
Preservatives		-	-						-		-					
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
Lionville Laboratory Use Only		0L0244	0L0255X						Met ①		TOGGR					

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected															
S - Soil	001	B120W8			S	5-21-01	0920	✓	✓						✓		✓					
SE - Sediment	002	1 W9			1	1	1425	✓	✓						✓		✓					
SO - Solid	003	1 X0			1	1	1610	✓	✓						✓		✓					
SL - Sludge																						
W - Water																						
O - Oil																						
A - Air																						
DS - Drum Solids																						
DL - Drum Liquids																						
L - EP/TCLP Leachate																						
WI - Wipe																						
X - Other																						
F - Fish																						

Special Instructions: Saf B01-084

Run Matrix QC

DATE/REVISIONS:
Met ① 1. Al, Ag, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K,
1 2. Mg, Mn, Na, Ni, Sb, V, Zn, Pb, Hg
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
FedEx	TKappel	5-23-01	0940

Relinquished by	Received by	Date	Time
COMPOSITE	ORIGINAL		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7954 4528

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered ___
Airbill # ___
See Below
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 4.8 °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-084-01	Page 1 of 1

Collector: Fahlberg/Thomas	Company Contact: C W Miller	Telephone No.: 372-9274	Project Coordinator: TRENT, SJ
Project Designation: Z-9 Trench Well Deepening and Characterization - Soil	Sampling Location: 200-Z-9		SAF No.: B01-084
Ice Chest No.: ERC 99-019 (1 of 1)	Field Logbook No.: EL 1517-1	COA: R20ZP2DP61	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A010263		Bill of Lading/Air Bill No.: 4235 7952 1 - 4528

Price Code: 8N

Data Turnaround: 45 Days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

<2000 pCi/g per BHI-01509

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None
Type of Container	aG	aG	aG	aG	
No. of Container(s)	1	1	1	1	
Volume	250mL	250mL	250mL	500mL	100mL

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Oil & Grease - 413.1	See item (1) in Special Instructions.	VOA - 8260A (TCL)	See item (2) in Special Instructions.	See item (3) in Special Instructions.
B120W8	SOIL	5/21/01	0920	X	X	X	X	
B120W9	SOIL	5/21/01	1425	X	X	X	X	
B120X0	SOIL	5/21/01	1610	X	X	X	X	

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 5/21/01. Collector not available to relenquish samples on 5/21/01 for shipment.

5-22-01

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg/R. Fahlberg	5-21-01 1700	Ref 2-B/Thomas	5-21-01 1700
Remove from Ref 2B 3728	5-22-01 0830	R. Thorent	5-22-01 0830
R. Thorent	5-22-01 0830	FED EX	
FedEx	5-23-01 0940	Thoppil	5-23-01 0940

SPECIAL INSTRUCTIONS

See SAF Comment Concerning Pu Analysis

(1) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Lead); Mercury - 7470 - (CV)
(3) ~~Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec - Add-on (Antimony-125); Isotopic Plutonium, Americium-241, Neptunium-237, Plutonium-241, Strontium-89,90 - Total Sr~~

<D

RT 5-22-01

Matrix *

S=Soil
SE=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

17

Lionville Laboratory

Logbook #: 864C

SAMPLE DIGESTION RECORD

Digestion Batch #: 01L0297
Date/Time Initiated: 5/31/01
Date/Time Completed: 5/31/01
Analyst(s): DN/TB
Matrix: (Soil) Water Other:
Instr. Type: AA (ICP)
Parameters: See Backlog.

(Digested) / Undigested (circle one)
Balance #: B20
Balance Cal Verif: ✓ NA
Hot Plate Temp: 90°

Method: SW (circle) 3005A, 3010A, 3015, 3020A, 7060A (As/Se), 7760A (Ag), (3050B), 3051
DW 200.7 (1994), 200.9, 3113B
MCAWW 200.7 (1982), 200 (AA), 206.2 (As/Se)
SM 3030C (NC)
CLP ILMO3.0, ILMO4.0
Other

TNU

COC Batch #	Spike Vol(s) (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <	Type: To/So/TC	Texture	Color/Appearance	Artifact	Turb
0105L837-001		1.04	100	NA	ToT	Fine	brown	NA	NA
-001R		1.04							
-001S	1.0	1.04							
-002		1.00							
-003		1.03							
0105L864-001		1.05					gray		
-001R		1.05							
-001S	1.0	1.05							
-002		1.00							
-003		1.05							
-004		1.04							
-005		1.01							
0105L865-001		1.00					brown		
-001R		1.00							
-001S	1.0	1.00							
-002		1.05							
-003		1.03					gray		
-004		1.03							
0105L866-010		1.01					brown	rock	
-010R		1.01							
-010S	1.0	1.01							
-011		1.05							
-012		1.03							

Spiking IDs:
MS #: 8100-02-01
-02
-03
6072-44-12
LCS #: 6072-37-05
-10
-11
-12

Reagent IDs:
HNO_3 V02023
HCL 2612T4L008
H_2O_2 T08G17
1:1 HNO_3 8095-40-05
1:1 HCL

File ID#: IZ029101
LIMS Transfer: (Y) N Updated
Data Review By/Date: PMP, 06/01/01
OP/Rev. #: 21-15L-3050.1

- Continued on page 062 -

Lionville Laboratory Logbook #: 864L

SAMPLE DIGESTION RECORD

Digestion Batch #: 01L0297
Date/Time Initiated: 5/31/01
Date/Time Completed: 5/31/01
Analyst(s): DN/TB
Matrix: Soil Water Other:
Instr. Type: AA ICP
Parameters: Se- Blank

Digested / Undigested (circle one)
Balance #: TB20
Balance Cal Verif: OS NA
Hot Plate Temp: 90°

Method: SW (circle)
3005A
3010A
3015
3020A
7060A (As/Se)
7760A (Ag)
3050B
3051
CLP ILMO3.0
ILMO4.0

DW 200.7 (1994)
200.9
3113B
MCAWW 200.7 (1982)
200 (AA)
206.2 (As/Se)
SM 3030C (NC)
Other

TNU

COC Batch #	Spike Vol(s) (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/So/TC	Texture	Color/Appearance	Artifact	Turb
01051866-013		1.05	100	NA	TOT	fine	brown	rock	NA
01051867-021		1.00	↑	↓	↓	course	gray	NA	↓
-022		1.05				fine	brown	↓	
01L0297-MB1		1.0				NA	clear		
-LC1	1.0	1.0	↓	↓	↓	↓	↓	↓	↓

DN 5/31/01

Spiking IDs:
MS #: 8100-02-01
-02
-03
6072-44-12
LCS #: 6072-37-05
-10
-11
-12

Reagent IDs:
HNO_3 V02023
HCL 2C12T46008
H_2O_2 T08617
1:1 HNO_3 8095-40-05
1:1 HCL

File ID#: TC029701
LIMS Transfer: (Y) N updated
Data Review By/Date: RMP, 06/01/01
OP/Rev. #: 21-1SL-3050.1

19

Lionville Laboratory

MERCURY PREPARATION

Logbook # 8654

Analyst: [illegible]
Date 5/23/01
Start Time/Temp: 2040 / 95°C
End Time/Temp: 2110 / 97°C

Instrument ID HG1.1/HG1.2
Balance #: B29 /NA
Pipette Calibration (Daily) (Y) ___

Prep Batch: 01C-0148
Worksheet: HG052411/HG052412
OP No. L-ME-7470A, Rev. 00

pH < 2 for Liquids? __ Yes N/A No (If no: designate affected samples in Comments column, and initiate an SDR)

NOTE: The Inital/Final Volume for water samples = 33mL, unless otherwise noted.
The Final volume for soil samples = 50mL, unless otherwise noted.

LvLI Batch #	Container Number	Spike Volume (mL)	Spike Conc. (µg/L)	Initial Wt. or Volume (g or mL)	Final Sample Volume (mL)	Comments, % Solids, etc.
Blank	49			10ml	50ml	
0.2 µg/L	61	0.100				
1.0 µg/L	157	0.500				
2.0 µg/L	K4	1.000				
5.0 µg/L	AB	2.500				
10.0 µg/L	84	5.000				
ICV	116	0.126	2.5			
CCV	7	0.250	5.0			
ICB/CCB	63					% solids
MB1	10			0.30gm		PBS148 100.00
LCS	3	*	*	0.16gm		LCSS148
01052822-001 D	41			0.30gm		RAM 97.40
001R	90			0.31gm		
001S	108	0.500	1.0	0.30gm		
01052821-001 A	K5			0.32gm		50.11
002	C			0.30gm		68.75
01052823-001	A5			0.32gm		79.81
01052820-001	A31			0.31gm		85.38
001R	94			0.32gm		
001S	132	0.500	1.0	0.31gm		
01052837-001 C	YM			0.31gm		95.01
001R	38			0.30gm		

Standard:	ID	Prep Date/Time
ICAL/MS	EM-E032305231	5/23/01 1700
ICV/CCV/LCS	US-U385R05231	

Reviewed By/Date: [illegible] 5/30/01

see book # 4527 for std traceability information

* Soil LCS = ERA Metals in soil; True Value = 2.48 mg/Kg
Catalogue # 540, Lot # 245

Water Matrix Spiking Solution Concentration= 0.1µg/ml
Water LCS Spiking Concentration: 1.0µg/ml

L-WI-18/H-03/01

Page # 005 B

A

20

Lionville Laboratory

MERCURY PREPARATION

Logbook # 8654

Analyst: [illegible]
Date 5/23/07
Start Time/Temp: See pg 0053
End Time/Temp:

Instrument ID HG1.1/HG1.2
Balance #: B29 /NA
Pipette Calibration (Daily) (Y) ___

Prep Batch: 01C0148
Worksheet: M0052411 / M0052412
OP No. L-ME-7470A, Rev. 00

pH < 2 for Liquids? __ Yes N/A No (If no: designate affected samples in Comments column, and initiate an SDR)

NOTE: The Inital/Final Volume for water samples = 33mL, unless otherwise noted.
The Final volume for soil samples = 50mL, unless otherwise noted.

LvLI Batch #	Container Number	Spike Volume (mL)	Spike Conc. (µg/L)	Initial Wt. or Volume (g or mL)	Final Sample Volume (mL)	Comments, % Solids, etc.
01052837-001S c	97	0.500	1.0	0.31gm	50ml	95.01
002	95			0.30gm		88.68
003	1411			0.31gm		82.62

[illegible] 5/23/07

Standard:	ID	Prep Date/Time
ICAL/MS		
ICV/CCV/LCS	See page 0053	

Reviewed By/Date: [illegible] 5/31/07

see book # 4527 for std traceability information

Soil LCS = ERA Metals in soil; True Value = 2.48 mg/Kg
Catalogue # 540, Lot # 245

Water Matrix Spiking Solution Concentration= 0.1µg/ml
Water LCS Spiking Concentration: 1.0µg/ml

L-WI-18/H-03/01

Page #. 006 B

A

JUL 2001
RECEIVED

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-084 ~~H1357~~ H1359 7/10/01

DATE RECEIVED: 05/23/01 LVL LOT # :0105L837

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B120W8	001	S	01LE0604	05/21/01	05/25/01	05/30/01
B120W8	001 MS	S	01LE0604	05/21/01	05/25/01	05/31/01
B120W8	001 MSD	S	01LE0604	05/21/01	05/25/01	05/31/01
B120W9	002	S	01LE0604	05/21/01	05/25/01	05/31/01
B120X0	003	S	01LE0604	05/21/01	05/25/01	05/31/01

LAB QC:

SBLKXI	MB1	S	01LE0604	N/A	05/25/01	05/31/01
SBLKXI	MB1 BS	S	01LE0604	N/A	05/25/01	05/31/01

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-084
RFW #: 0105L837 H1359 7/10/01
SDG/SAF #: H1357/B01-084

W.O. #: 11343-606-001-9999-00
Date Received: 05-23-2001

SEMIVOLATILE

Three (3) soil samples were collected on 05-21-2001.

The samples and their associated QC samples were extracted on 05-25-2001 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for Priority Pollutant Semivolatile target compounds on 05-30,31-2001.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.

2. The samples were extracted and analyzed within required holding times.

3. Non-target compounds were detected in the samples.

4. The sample B120W8 and its associated matrix spike samples required a 5-fold dilution due to high levels of both target and non-target compounds.

5. All surrogate recoveries were within EPA QC limits.

6. One (1) of twenty-two (22) matrix spike recoveries was outside EPA QC limits.

7. All blank spike recoveries were within EPA QC limits.

8. Internal standard area and retention time criteria were met.

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

10. As of January 27, 2001, Recra LabNet Philadelphia became Lionville Laboratory Incorporated. Some Forms may still reference Recra LabNet Philadelphia.

J. Michael Taylor
President
Lionville Laboratory Incorporated

6/25/01
Date

som\gorup\data\bna\tnu-hanford\0105-837.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 5 pages.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory Sample Discrepancy Report (SDR) SDR #: 01MS202

Initiator: Slayman Batch: 01052637 Parameter: BNA
Date: 5-31-01 Samples: 601 Matrix: Soil
Client: TNU Hamburg Method: SW846/MCAWW/CLP/ Prep Batch: 01LE0604

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

Recovery of pyrene in MS is low

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Other Description:
Narrate – all other QC is acceptable. Sample at run at DF5, blkd sample had 5 value of pyrene – low recovery seems to indicate non-homogenous pyrene level in sample.

4. Project Manager Instructions...signature/date: [signature] 6/1/01

✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: CST 6/14/01

Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
X Included in Case Narrative
X Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rychlak/Layman
__	X QA (file): Alberts	__	__ Log-in: Keppel
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

L-WI-006/E-01/01

GLOSSARY OF BNA DATA

DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

D = Identifies all compounds identified in an analysis at a secondary dilution factor.

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

A = Indicates that a TIC is a suspected aldol-condensation product.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

mmz\10-94\gloss.bna

GLOSSARY OF BNA DATA

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.

mmz\10-94\gloss.bna

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List — Report Date: 06/04/01 15:17

RFW Batch Number: 0105L837 — Client: TNUHANFORD B01-084 H1357 — Work Order: 11343606001 — Page: 1a

H1359 7/10/01

	Cust ID:	B120W8		B120W8		B120W8		B120W9		B120X0		SBLKXI	
Sample Information	RFW#:	001		001 MS		001 MSD		002		003		01LE0604-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	5.00		5.00		5.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	66	%	51	%	58	%	55	%	70	%	57	%
	2-Fluorobiphenyl	73	%	55	%	68	%	57	%	70	%	57	%
	p-Terphenyl-d14	73	%	62	%	76	%	82	%	92	%	84	%
	Phenol-d5	58	%	46	%	52	%	49	%	61	%	50	%
	2-Fluorophenol	57	%	42	%	48	%	46	%	59	%	48	%
	2,4,6-Tribromophenol	64	%	49	%	59	%	52	%	59	%	53	%
		fl		fl		fl		fl		fl		fl	
Phenol		1700	U	48	%	56	%	360	U	390	U	330	U
bis(2-Chloroethyl)ether		1700	U	1700	U	1700	U	360	U	390	U	330	U
2-Chlorophenol		1700	U	48	%	55	%	360	U	390	U	330	U
1,3-Dichlorobenzene		1700	U	1700	U	1700	U	360	U	390	U	330	U
1,4-Dichlorobenzene		1700	U	51	%	57	%	360	U	390	U	330	U
1,2-Dichlorobenzene		1700	U	1700	U	1700	U	360	U	390	U	330	U
2-Methylphenol		1700	U	1700	U	1700	U	360	U	390	U	330	U
2,2'-oxybis(1-Chloropropane)		1700	U	1700	U	1700	U	360	U	390	U	330	U
4-Methylphenol		1700	U	1700	U	1700	U	360	U	390	U	330	U
N-Nitroso-Di-n-propylamine		1700	U	64	%	74	%	360	U	390	U	330	U
Hexachloroethane		1700	U	1700	U	1700	U	360	U	390	U	330	U
Nitrobenzene		1700	U	1700	U	1700	U	360	U	390	U	330	U
Isophorone		1700	U	1700	U	1700	U	360	U	390	U	330	U
2-Nitrophenol		1700	U	1700	U	1700	U	360	U	390	U	330	U
2,4-Dimethylphenol		1700	U	1700	U	1700	U	360	U	390	U	330	U
bis(2-Chloroethoxy)methane		1700	U	1700	U	1700	U	360	U	390	U	330	U
2,4-Dichlorophenol		1700	U	1700	U	1700	U	360	U	390	U	330	U
1,2,4-Trichlorobenzene		1700	U	53	%	61	%	360	U	390	U	330	U
Naphthalene		390	J	190	J	340	J	360	U	390	U	330	U
4-Chloroaniline		1700	U	1700	U	1700	U	360	U	390	U	330	U
Hexachlorobutadiene		1700	U	1700	U	1700	U	360	U	390	U	330	U
4-Chloro-3-methylphenol		1700	U	41	%	53	%	360	U	390	U	330	U
2-Methylnaphthalene		250	J	90	J	200	J	360	U	390	U	330	U
Hexachlorocyclopentadiene		1700	U	1700	U	1700	U	360	U	390	U	330	U
2,4,6-Trichlorophenol		1700	U	1700	U	1700	U	360	U	390	U	330	U
2,4,5-Trichlorophenol		4400	U	4400	U	4300	U	900	U	990	U	830	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0105L837 Client: TNUHANFORD B01-084 H1357 Work Order: 11343606001 Page: 1b

#1359 7/10/01

Cust ID:	B120W8		B120W8		B120W8		B120W9		B120X0		SBLKXI	
RFW#:	001		001 MS		001 MSD		002		003		01LE0604-MB1	
2-Chloronaphthalene	1700	U	1700	U	1700	U	360	U	390	U	330	U
2-Nitroaniline	4400	U	4400	U	4300	U	900	U	990	U	830	U
Dimethylphthalate	1700	U	1700	U	1700	U	360	U	390	U	330	U
Acenaphthylene	340	J	1700	U	240	J	360	U	390	U	330	U
2,6-Dinitrotoluene	1700	U	1700	U	1700	U	360	U	390	U	330	U
3-Nitroaniline	4400	U	4400	U	4300	U	900	U	990	U	830	U
Acenaphthene	170	J	49	%	66	%	360	U	390	U	330	U
2,4-Dinitrophenol	4400	U	4400	U	4300	U	900	U	990	U	830	U
4-Nitrophenol	4400	U	42	%	54	%	900	U	990	U	830	U
Dibenzofuran	1700	U	1700	U	1700	U	360	U	390	U	330	U
2,4-Dinitrotoluene	1700	U	50	%	65	%	360	U	390	U	330	U
Diethylphthalate	1700	U	1700	U	1700	U	360	U	390	U	330	U
4-Chlorophenyl-phenylether	1700	U	1700	U	1700	U	360	U	390	U	330	U
Fluorene	290	J	1700	U	220	J	360	U	390	U	330	U
4-Nitroaniline	4400	U	4400	U	4300	U	900	U	990	U	830	U
4,6-Dinitro-2-methylphenol	4400	U	4400	U	4300	U	900	U	990	U	830	U
N-Nitrosodiphenylamine (1)	1700	U	1700	U	1700	U	360	U	390	U	330	U
4-Bromophenyl-phenylether	1700	U	1700	U	1700	U	360	U	390	U	330	U
Hexachlorobenzene	1700	U	1700	U	1700	U	360	U	390	U	330	U
Pentachlorophenol	4400	U	52	%	53	%	900	U	990	U	830	U
Phenanthrene	1200	J	420	J	1100	J	360	U	390	U	330	U
Anthracene	88	J	1700	U	98	J	360	U	390	U	330	U
Carbazole	1700	U	1700	U	1700	U	360	U	390	U	330	U
Di-n-Butylphthalate	1700	U	1700	U	1700	U	360	U	390	U	330	U
Fluoranthene	350	J	160	J	380	J	360	U	390	U	330	U
Pyrene	960	J	23 *	%	74	%	360	U	390	U	330	U
Butylbenzylphthalate	1700	U	1700	U	1700	U	360	U	390	U	330	U
3,3'-Dichlorobenzidine	1700	U	1700	U	1700	U	360	U	390	U	330	U
Benzo(a)anthracene	150	J	1700	U	140	J	360	U	390	U	330	U
Chrysene	270	J	130	J	260	J	360	U	390	U	330	U
bis(2-Ethylhexyl)phthalate	3200		680	J	2100		500		390	U	330	U
Di-n-Octyl phthalate	1700	U	1700	U	1700	U	360	U	390	U	330	U
Benzo(b)fluoranthene	130	J	1700	U	110	J	360	U	390	U	330	U
Benzo(k)fluoranthene	1700	U	1700	U	1700	U	360	U	390	U	330	U
Benzo(a)pyrene	110	J	1700	U	110	J	360	U	390	U	330	U
Indeno(1,2,3-cd)pyrene	110	J	1700	U	96	J	360	U	390	U	330	U
Dibenzo(a,h)anthracene	1700	U	1700	U	1700	U	360	U	390	U	330	U
Benzo(g,h,i)perylene	310	J	120	J	240	J	360	U	390	U	330	U
Tributylphosphate	1700	U	1700	U	1700	U	360	U	390	U	330	U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List

Report Date: 06/04/01 15:17

RFW Batch Number: **0105L837** Client: **TNUHANFORD B01-084 H1357** Work Order: 11343606001 Page: 2a

H1359 7/10/01

Cust ID: **SBLKXI BS**

Sample Information		
RFW#:	**01LE0604-MB1**	
Matrix:	SOIL	
D.F.:	1.00	
Units:	ug/Kg	

Surrogate Recovery		
Nitrobenzene-d5	68	%
2-Fluorobiphenyl	73	%
p-Terphenyl-d14	98	%
Phenol-d5	59	%
2-Fluorophenol	57	%
2,4,6-Tribromophenol	60	%

==========fl==========fl==========fl==========fl==========fl==========fl==========fl

Phenol	61	%
bis(2-Chloroethyl)ether	330	U
2-Chlorophenol	60	%
1,3-Dichlorobenzene	330	U
1,4-Dichlorobenzene	61	%
1,2-Dichlorobenzene	330	U
2-Methylphenol	330	U
2,2'-oxybis(1-Chloropropane)	330	U
4-Methylphenol	330	U
N-Nitroso-Di-n-propylamine	74	%
Hexachloroethane	330	U
Nitrobenzene	330	U
Isophorone	330	U
2-Nitrophenol	330	U
2,4-Dimethylphenol	330	U
bis(2-Chloroethoxy)methane	330	U
2,4-Dichlorophenol	330	U
1,2,4-Trichlorobenzene	68	%
Naphthalene	330	U
4-Chloroaniline	330	U
Hexachlorobutadiene	330	U
4-Chloro-3-methylphenol	60	%
2-Methylnaphthalene	330	U
Hexachlorocyclopentadiene	330	U
2,4,6-Trichlorophenol	330	U
2,4,5-Trichlorophenol	830	U

*= Outside of EPA CLP QC limits.

Cust ID: SBLKXI BS

H1359 7/10/01

RFW#: 01LE0604-MB1

2-Chloronaphthalene	330	U
2-Nitroaniline	830	U
Dimethylphthalate	330	U
Acenaphthylene	330	U
2,6-Dinitrotoluene	330	U
3-Nitroaniline	830	U
Acenaphthene	70	%
2,4-Dinitrophenol	830	U
4-Nitrophenol	50	%
Dibenzofuran	330	U
2,4-Dinitrotoluene	63	%
Diethylphthalate	330	U
4-Chlorophenyl-phenylether	330	U
Fluorene	330	U
4-Nitroaniline	830	U
4,6-Dinitro-2-methylphenol	830	U
N-Nitrosodiphenylamine (1)	330	U
4-Bromophenyl-phenylether	330	U
Hexachlorobenzene	330	U
Pentachlorophenol	68	%
Phenanthrene	330	U
Anthracene	330	U
Carbazole	330	U
Di-n-Butylphthalate	330	U
Fluoranthene	330	U
Pyrene	94	%
Butylbenzylphthalate	330	U
3,3'-Dichlorobenzidine	330	U
Benzo(a)anthracene	330	U
Chrysene	330	U
bis(2-Ethylhexyl)phthalate	330	U
Di-n-Octyl phthalate	330	U
Benzo(b)fluoranthene	330	U
Benzo(k)fluoranthene	330	U
Benzo(a)pyrene	330	U
Indeno(1,2,3-cd)pyrene	330	U
Dibenzo(a,h)anthracene	330	U
Benzo(g,h,i)perylene	330	U
Tributylphosphate	330	U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B120W8

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B01-084 ~~H1357~~ H1359 7/10/01

Matrix: (soil/water) SOIL

Lab Sample ID: 0105L837-001

Sample wt/vol: 30.2 (g/mL) G

Lab File ID: D053015

Level: (low/med) LOW

Date Received: 05/23/01

% Moisture: 5 decanted: (Y/N)__

Date Extracted: 05/25/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 05/30/01

Injection Volume: 2.0(uL)

Dilution Factor: 5.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 8

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 95-16-9	BENZOTHIAZOLE	12.325	700	JN
2.	PHENYLNAPHTHALENE	20.843	400	J
3.	METHYL-1,1'-BIPHENYL	15.889	400	J
4.	BIPHENYL	14.507	2000	J
5.	UNKNOWN	21.434	1000	J
6.	ALKANE	25.293	800	J
7.	UNKNOWN	29.603	1000	J
8.	UNKNOWN	33.662	1000	J

10

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B120W9

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B01-084 ~~H1357~~ H1359 7/10/01

Matrix: (soil/water) SOIL

Lab Sample ID: 0105L837-002

Sample wt/vol: 31.3 (g/mL) G

Lab File ID: D053107

Level: (low/med) LOW

Date Received: 05/23/01

% Moisture: 11 decanted: (Y/N)__

Date Extracted: 05/25/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 05/31/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	6.791	200	JB

11

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B120X0

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B01-084 H1359 H1359 7/10/01

Matrix: (soil/water) SOIL

Lab Sample ID: 0105L837-003

Sample wt/vol: 30.7 (g/mL) G

Lab File ID: D053108

Level: (low/med) LOW

Date Received: 05/23/01

% Moisture: 17 decanted: (Y/N)

Date Extracted: 05/25/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 05/31/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	6.789	300	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKXI

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B01-084 H1357 H7359 7/10/01

Matrix: (soil/water) SOIL

Lab Sample ID: 01LE0604-MB1

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: D053105

Level: (low/med) LOW

Date Received: 05/25/01

% Moisture: _____ decanted: (Y/N)__

Date Extracted: 05/25/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 05/31/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	6.782	200	J

Lionville Laboratory Use Only
0105L837

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client: TRU-Hanford B01-084
Est. Final Proj. Sampling Date:
Project #: 113473-6006-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 5-23-01 Date Due: 6-22-01

		A	B						C		D					
Refrigerator #		1	3						3		3					
#/Type Container	Liquid															
	Solid	1AG	1AG						1AG		1AG					
Volume	Liquid															
	Solid	250	250						500		250					
Preservatives		-	-						-		-					
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
		Lionville Laboratory Use Only														
		0602HH	0602SX						Mrt①		IOGGR					

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0602HH	0602SX						Mrt①		IOGGR					
001	B120W8			S	5-21-01	0920	✓	✓						✓		✓					
002	1 W9			1	1	1425	✓	✓						✓		✓					
003	1 X0			1	1	1610	✓	✓						✓		✓					

Special Instructions: Saf B01-084

Run Matrix QC

DATE/REVISIONS:

Mrt① 1. Al, Ag, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K,
1 2. Mg, Mn, Na, Ni, Sb, V, Zn, Pb, Hg
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
FedEx	TBoppel	5-23-01	0940

Relinquished by	Received by	Date	Time
COMPOSITE	ORIGINAL		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7954 4528

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered ___
Airbill # ___
See Below
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 4.8 °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-084-01	Page 1 of 1

Collector: Fahlberg/Thomas	Company Contact: C W Miller	Telephone No.: 372-9274	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: Z-9 Trench Well Deepening and Characterization - Soil	Sampling Location: 200- Z- 9	SAF No.: B01-084	
Ice Chest No.: ERC 99-019 (1 of 1)	Field Logbook No.: EL 1517-1	COA: R20ZP2DP61	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: AQ0263	Bill of Lading/Air Bill No.: 4235745241-4528	

POSSIBLE SAMPLE HAZARDS/REMARKS
<2000 pCi/g per BHI-01509

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	
Type of Container	aG	aG	aG	aG	aG	
No. of Container(s)	1	1	1	1	1	
Volume	250mL	250mL	250mL	500mL	1000mL	

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Oil & Grease - 413.1	See item (1) in Special Instructions.	VOA - 8260A (TCL)	See item (2) in Special Instructions.	See item (3) in Special Instructions.
B120W8	SOIL	5/21/01	0920	X	X	X	X	
B120W9	SOIL	5/21/01	1425	X	X	X	X	
B120X0	SOIL	5/21/01	1610	X	X	X	X	

Samples stored in Ref.#2B at the 3728 Shipping Facility on 5/21/01. Collector not available to relenquish samples on 5/22/01 for shipment. RT 5-22-01

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	5-21-01 1700	Thomas / Ref 2-B	5-21-01 1700
R. Mouldwon / Ref 2-B 3728	5-22-01 0830	R. Thoren	5-22-01 0830
R. Thoren	5-22-01 0850	FED EX	
FedEx	5-23-01 0940	Thoppil	5-23-01 0940

SPECIAL INSTRUCTIONS
See SAF Comment Concerning Pu Analysis

(1) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Lead}; Mercury - 7470 - (CV)
(3) Gamma Spectroscopy (Cesium-137, Cobalt-60); ~~Gamma Spec - Add-on (Antimony-125), Isotopic Plutonium, Americium-241, Neptunium-237, Plutonium-241, Strontium-89,90 -- Total Sr~~

<D

RT 5-22-01

Matrix *
S=Soil
SD=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

JUL 2001
RECEIVED

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-084 H1359

DATE RECEIVED: 05/23/01 LVL LOT # :0105L837

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B120W8	001	S	01LVH202	05/21/01	N/A	05/30/01
B120W8	001 MS	S	01LVH202	05/21/01	N/A	05/30/01
B120W8	001 MSD	S	01LVH202	05/21/01	N/A	05/30/01
B120W9	002	S	01LVH202	05/21/01	N/A	05/30/01
B120X0	003	S	01LVH202	05/21/01	N/A	05/30/01

LAB QC:

VBLKZX	MB1	S	01LVH202	N/A	N/A	05/30/01
VBLKZX	MB1 BS	S	01LVH202	N/A	N/A	05/30/01

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-084
RFW #: 0105L837
SDG/SAF #: H1359/B01-084

W.O. #: 11343-606-001-9999-00
Date Received: 05-23-2001

GC/MS VOLATILE

Three (3) soil samples were collected on 05-21-2001.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 05-30-2001.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The sample was analyzed within required holding time.
3. Non-target compounds were detected in the samples.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blank contained the common laboratory contaminant Methylene Chloride and the target compound Benzene at levels less than the CRQL.
8. Internal standard area and retention time criteria were met.
9. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

J. Michael Taylor
President
Lionville Laboratory Incorporated

7/4/01
Date

som\group\data\voa\tnu-hanford\0105-837.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 5 pages.

208 Welsh Pool Road • Exton, PA 19341-1313 • (610) 280-3000 • Fax (610) 280-3041

GLOSSARY OF VOA DATA

DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

D = Identifies all compounds identified in an analysis at a secondary dilution factor.

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

N = *Indicates presumptive evidence of a compound. This flag is only used for tentatively identified* compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY OF VOA DATA

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.

VLI
LIONVILLE LABORATORY INC

TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quantitation modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quantitation modifications:

MP - Missed Peak: manually added peak not found by automatic quantitation program.

PA - Peak Assignment: quantitation report was changed to reflect correct peak assignment.

RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.

SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.

CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.

PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

Lionville Laboratory, Inc.

Volatiles by GC/MS, HSL List

Report Date: 06/29/01 11:04

RFW Batch Number: **0105L837** Client: **TNUHANFORD B01-084 H1359** Work Order: 11343606001 Page: 1a

	Cust ID:	B120W8		B120W8		B120W8		B120W9		B120X0		VBLKZX	
Sample Information	RFW#:	001		001 MS		001 MSD		002		003		01LVH202-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	110	%	107	%	114	%	99	%	99	%	99	%
	Bromofluorobenzene	92	%	88	%	94	%	101	%	103	%	105	%
	1,2-Dichloroethane-d4	100	%	98	%	100	%	92	%	91	%	91	%
			fl		fl		fl		fl		fl		fl
Chloromethane		11	U	11	U	11	U	11	U	12	U	10	U
Bromomethane		11	U	11	U	11	U	11	U	12	U	10	U
Vinyl Chloride		11	U	11	U	11	U	11	U	12	U	10	U
Chloroethane		11	U	11	U	11	U	11	U	12	U	10	U
Methylene Chloride		18	B	11	B	14	B	16	B	18	B	4	J
Acetone		11	U	11	U	11	U	11	U	12	U	10	U
Carbon Disulfide		6	U	6	U	6	U	6	U	6	U	5	U
1,1-Dichloroethene		6	U	86	%	89	%	6	U	6	U	5	U
1,1-Dichloroethane		6	U	6	U	6	U	6	U	6	U	5	U
1,2-Dichloroethene (total)		6	U	6	U	6	U	6	U	6	U	5	U
Chloroform		6	U	6	U	6	U	6	U	2	J	5	U
1,2-Dichloroethane		6	U	6	U	6	U	6	U	6	U	5	U
2-Butanone		12		13		10	J	11	U	12	U	10	U
1,1,1-Trichloroethane		6	U	6	U	6	U	6	U	6	U	5	U
Carbon Tetrachloride		5		5	J	4	J	6	U	6	U	5	U
Bromodichloromethane		6	U	6	U	6	U	6	U	6	U	5	U
1,2-Dichloropropane		6	U	6	U	6	U	6	U	6	U	5	U
cis-1,3-Dichloropropene		6	U	6	U	6	U	6	U	6	U	5	U
Trichloroethene		6	U	72	%	75	%	6	U	6	U	5	U
Dibromochloromethane		6	U	6	U	6	U	6	U	6	U	5	U
1,1,2-Trichloroethane		6	U	6	U	6	U	6	U	6	U	5	U
Benzene		6	U	105	%	111	%	6	U	6	U	1	J
Trans-1,3-Dichloropropene		6	U	6	U	6	U	6	U	6	U	5	U
Bromoform		6	U	6	U	6	U	6	U	6	U	5	U
4-Methyl-2-pentanone		11	U	11	U	11	U	11	U	12	U	10	U
2-Hexanone		11	U	11	U	11	U	11	U	12	U	10	U
Tetrachloroethene		2	J	2	J	2	J	6	U	6	U	5	U
1,1,2,2-Tetrachloroethane		6	U	6	U	6	U	6	U	6	U	5	U
Toluene		1	J	114	%	120	%	6	U	6	U	5	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0105L837** Client: **TNUHANFORD B01-084 H1359** Work Order: 11343606001 Page: 1b

Cust ID:	B120W8	B120W8	B120W8	B120W9	B120X0	VBLKZX
RFW#:	001	001 MS	001 MSD	002	003	01LVH202-MB1
Chlorobenzene	6 U	97 %	101 %	6 U	6 U	5 U
Ethylbenzene	6 U	6 U	6 U	6 U	6 U	5 U
Styrene	1 J	2 J	1 J	6 U	6 U	5 U
Xylene (total)	6 U	6 U	6 U	6 U	6 U	5 U

*= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.
Volatiles by GC/MS, HSL List
Report Date: 06/29/01 11:04

RFW Batch Number: **0105L837** Client: **TNUHANFORD B01-084 H1359** Work Order: 11343606001 Page: 2a

Cust ID: **VBLKZX BS**

Sample Information

RFW#: **01LVH202-MB1**
Matrix: SOIL
D.F.: 1.00
Units: ug/Kg

Surrogate Recovery	Toluene-d8	100	%
	Bromofluorobenzene	107	%
	1,2-Dichloroethane-d4	95	%

Chloromethane	10	U
Bromomethane	10	U
Vinyl Chloride	10	U
Chloroethane	10	U
Methylene Chloride	9	B
Acetone	10	U
Carbon Disulfide	5	U
1,1-Dichloroethene	78	%
1,1-Dichloroethane	5	U
1,2-Dichloroethene (total)	5	U
Chloroform	5	U
1,2-Dichloroethane	5	U
2-Butanone	10	U
1,1,1-Trichloroethane	5	U
Carbon Tetrachloride	5	U
Bromodichloromethane	5	U
1,2-Dichloropropane	5	U
cis-1,3-Dichloropropene	5	U
Trichloroethene	78	%
Dibromochloromethane	5	U
1,1,2-Trichloroethane	5	U
Benzene	92	%
Trans-1,3-Dichloropropene	5	U
Bromoform	5	U
4-Methyl-2-pentanone	10	U
2-Hexanone	10	U
Tetrachloroethene	5	U
1,1,2,2-Tetrachloroethane	5	U
Toluene	100	%

*= Outside of EPA CLP QC limits.

Cust ID: **VBLKZX BS**

RFW#: **01LVH202-MB1**

Chlorobenzene	93	%
Ethylbenzene	5	U
Styrene	5	U
Xylene (total)	5	U

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B120W8

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: ____ SAS No.: ____ SDG No.: ____

Matrix: (soil/water) SOIL Lab Sample ID: 0105L837-001

Sample wt/vol: 5.00 (g/mL) G Lab File ID: h053011

Level: (low/med) LOW Date Received: 05/23/01

% Moisture: not dec. 5 Date Analyzed: 05/30/01

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	24.532	20	J

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B120W9

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 0105L837-002

Sample wt/vol: 5.00 (g/mL) G Lab File ID: h053012

Level: (low/med) LOW Date Received: 05/23/01

% Moisture: not dec. 11 Date Analyzed: 05/30/01

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	22.256	7	J

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B120X0

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 0105L837-003

Sample wt/vol: 5.00 (g/mL) G Lab File ID: h053013

Level: (low/med) LOW Date Received: 05/23/01

% Moisture: not dec. 17 Date Analyzed: 05/30/01

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	22.255	40	J
2.	SILOXANE	25.532	10	J

1E

VOLATILE ORGANICS ANALYSIS SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKZX

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 01LVH202-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: h053005

Level: (low/med) LOW Date Received: 05/30/01

% Moisture: not dec. 0 Date Analyzed: 05/30/01

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

FORM 1 VOA-TIC 1/87 Rev.

Lionville Laboratory Use Only
0105L837

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

14

Client: TNU-Hanford B01-084
Est. Final Proj. Sampling Date:
Project #: 11343-CeOCe-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 5-23-01 Date Due: 6-22-01

		A	B						C		D					
Refrigerator #		1	3						3		3					
#/Type Container	Liquid															
	Solid	1AG	1AG						1AG		1AG					
Volume	Liquid															
	Solid	250	250						500		250					
Preservatives		–	–						–		–					
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
		↓ Lionville Laboratory Use Only ↓														
		0L244	0L25X						Mrt①		IOGGR					

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
Wi - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected																
001	B12OW8			S	5-21-01	0920	✓	✓						✓		✓						
002	1 W9			1	1	1425	✓	✓						✓		✓						
003	1 X0			1	1	1610	✓	✓						✓		✓						

Special Instructions: Saf B01-084

Run Matrix QC

DATE/REVISIONS:
1. Mrt① Al, Ag, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K,
2. 1 Mg, Mn, Na, Ni, Sb, V, Zn, Pb, Hg
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
FedEx	TKoppel	5-23-01	0940

Relinquished by	Received by	Date	Time
COMPOSITE	ORIGINAL		

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered ___
Airbill # See Below
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 4.8 °C

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:

4235 7954 4528

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-084-01	Page 1 of 1

Collector: Fahlberg / Thomas	Company Contact: C W Miller	Telephone No.: 372-9274	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: Z-9 Trench Well Deepening and Characterization - Soil	Sampling Location: 200- Z- 9		SAF No.: B01-084
Ice Chest No.: ERC 99-019 (1 of 1)	Field Logbook No.: EL 1517-1	COA: R20ZP2DP61	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A010263		Bill of Lading/Air Bill No.: 4235745521 - 4528

POSSIBLE SAMPLE HAZARDS/REMARKS
<2000 pCi/g per BHI-01509

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	
Type of Container	aG	aG	aG	aG	aG	
No. of Container(s)	1	1	1	1	1	
Volume	250mL	250mL	250mL	500mL	100mL	

SAMPLE ANALYSIS

Samples stored in Ref.#2 B at the 3728 Shipping Facility on 5/21/01. Collector not available to relenquish samples on 5/22/01 for shipment.

RT 5-22-01

Sample No.	Matrix *	Sample Date	Sample Time	Oil & Grease - 413.1	See item (1) in Special Instructions.	VOA - 8260A (TCL)	See item (2) in Special Instructions.	See item (3) in Special Instructions.					
B120W8	SOIL	5/21/01	0920	X	X	X	X						
B120W9	SOIL	5/21/01	1425	X	X	X	X						
B120X0	SOIL	5/21/01	1610	X	X	X	X						

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	1700 5-21-01	Ref 2-B / Stone D	1700 5-21-01
Ref 2-B 3728 / Remote Drop	0830 5-22-01	RT / R Thorell	0830 5-22-01
RT / R. Thorell	0830 5-22-01	FED EX	
FedEx	5-23-01 0940	Thrppl	5-23-01 0940

SPECIAL INSTRUCTIONS
See SAF Comment Concerning Pu Analysis

(1) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) [Tributyl phosphate]
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Lead); Mercury - 7470 - (CV)
(3) Gamma Spectroscopy (Cesium-137, Cobalt-60); ~~Gamma Spec - Add-on (Antimony-125); Isotopic Plutonium, Americium-241, Neptunium-237, Plutonium-241, Strontium-89,90 -- Total Sr~~

<D

RT 5-22-01

Matrix *
S=Soil
SE=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)