1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1570 was composed of four solid (soil) samples designated under SAF No. B02-006 with a Project Designation of: 200 Area Source Characterization 200-CS-1 OU – Soil Sampling.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on January 4, 2002.

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MAR 14 2002
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2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.3 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.4 Isotopic Uranium Analyses

No isotopic uranium analysis was performed for this SDG.

2.5 Total Uranium Analyses

There was activity in the method blank (0.004 μg/g). The activity was below the RDL (0.1μg/g) for total uranium. No other problems were encountered during the course of the analyses.

2.6 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.7 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.8 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.9 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

1/10/02

Date

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

SDG 7133
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1570

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B13CL0	200 East and West	SOLID		R111018-01	B02-006	B02-006-04	10/31/01 08:05
B13CL1	200 East and West	SOLID		R111018-02	B02-006	B02-006-04	10/31/01 08:20
B13CL2	200 East and West	SOLID		R111018-03	B02-006	B02-006-04	10/31/01 08:35
B13CL3	200 East and West	SOLID		R111018-04	B02-006	B02-006-04	10/31/01 08:45
Method Blank		SOLID		R111018-06	B02-006		
Lab Control Sample		SOLID		R111018-05	B02-006		
Duplicate (R111018-03)	200 East and West	SOLID		R111018-07	B02-006		10/31/01 08:35

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 01/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

SDG 7133
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1570

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
7133	B02-006-04	B13CL0	SOLID	93.0	1082 g		11/02/01	2	R111018-01	7133-001
		B13CL1	SOLID	87.8	1143 g		11/02/01	2	R111018-02	7133-002
		B13CL2	SOLID	97.1	1295 g		11/02/01	2	R111018-03	7133-003
		B13CL3	SOLID	97.1	1277 g		11/02/01	2	R111018-04	7133-004
		Method Blank	SOLID						R111018-06	7133-006
		Lab Control Sample	SOLID						R111018-05	7133-005
		Duplicate (R111018-03)	SOLID	97.1	1295 g		11/02/01	2	R111018-07	7133-007

Lab id TMANC
Protocol Hanford
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

SDG 7133
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1570

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	7012-132	5.0	4			1	1	1/1		
NP	SOLID	Neptunium in Soil	7012-132	5.0	4			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7012-132	5.0	4			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	7012-132	5.0	4			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	7012-132	10.0	4			1	1	1/1		
Gas Proportional Counting												
93A	SOLID	Gross Alpha in Soil	7012-132	20.0	4			1	1	1/1		
93B	SOLID	Gross Beta in Soil	7012-132	15.0	4			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7012-132	15.0	4			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	7012-132	9.0	4			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
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

SDG 7133
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1570

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B13CL0			R111018-01	7133-001	93A/93		12/20/01	01/04/02	MCM	Gross Alpha in Soil
200 East and West		SOLID	10/31/01	7133-001	93B/93		12/20/01	01/04/02	MCM	Gross Beta in Soil
B02-006-04	B02-006		11/02/01	7133-001	AM		12/12/01	01/04/02	MCM	Americium 241 in Soil
				7133-001	GAM		12/14/01	01/04/02	MCM	Gamma Scan
				7133-001	NP		12/13/01	01/04/02	MCM	Neptunium in Soil
				7133-001	PU		12/14/01	01/04/02	MCM	Plutonium, Isotopic in Solids
				7133-001	SR		12/03/01	01/04/02	MCM	Total Strontium in Soil
				7133-001	TH		12/11/01	01/04/02	MCM	Thorium, Isotopic in Soil
				7133-001	U_T		12/14/01	01/04/02	MCM	Uranium, Total in Soil
B13CL1			R111018-02	7133-002	93A/93		12/21/01	01/04/02	MCM	Gross Alpha in Soil
200 East and West		SOLID	10/31/01	7133-002	93B/93		12/21/01	01/04/02	MCM	Gross Beta in Soil
B02-006-04	B02-006		11/02/01	7133-002	AM		12/12/01	01/04/02	MCM	Americium 241 in Soil
				7133-002	GAM		12/14/01	01/04/02	MCM	Gamma Scan
				7133-002	NP		12/14/01	01/04/02	MCM	Neptunium in Soil
				7133-002	PU		12/12/01	01/04/02	MCM	Plutonium, Isotopic in Solids
				7133-002	SR		12/03/01	01/04/02	MCM	Total Strontium in Soil
				7133-002	TH		12/19/01	01/04/02	MCM	Thorium, Isotopic in Soil
				7133-002	U_T		12/14/01	01/04/02	MCM	Uranium, Total in Soil
B13CL2			R111018-03	7133-003	93A/93		12/20/01	01/04/02	MCM	Gross Alpha in Soil
200 East and West		SOLID	10/31/01	7133-003	93B/93		12/20/01	01/04/02	MCM	Gross Beta in Soil
B02-006-04	B02-006		11/02/01	7133-003	AM		12/12/01	01/04/02	MCM	Americium 241 in Soil
				7133-003	GAM		12/14/01	01/04/02	MCM	Gamma Scan
				7133-003	NP		12/14/01	01/04/02	MCM	Neptunium in Soil
				7133-003	PU		12/12/01	01/04/02	MCM	Plutonium, Isotopic in Solids
				7133-003	SR		12/03/01	01/04/02	MCM	Total Strontium in Soil
				7133-003	TH		12/20/01	01/04/02	MCM	Thorium, Isotopic in Soil
				7133-003	U_T		12/14/01	01/04/02	MCM	Uranium, Total in Soil
B13CL3			R111018-04	7133-004	93A/93		12/20/01	01/04/02	MCM	Gross Alpha in Soil
200 East and West		SOLID	10/31/01	7133-004	93B/93		12/20/01	01/04/02	MCM	Gross Beta in Soil
B02-006-04	B02-006		11/02/01	7133-004	AM		12/12/01	01/04/02	MCM	Americium 241 in Soil
				7133-004	GAM		12/14/01	01/04/02	MCM	Gamma Scan
				7133-004	NP		12/14/01	01/04/02	MCM	Neptunium in Soil
				7133-004	PU		12/12/01	01/04/02	MCM	Plutonium, Isotopic in Solids
				7133-004	SR		12/03/01	01/04/02	MCM	Total Strontium in Soil
				7133-004	TH		12/12/01	01/04/02	MCM	Thorium, Isotopic in Soil
				7133-004	U_T		12/14/01	01/04/02	MCM	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

SDG 7133
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1570

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Method Blank			R111018-06	7133-006	93A/93		12/20/01	01/04/02	MCM	Gross Alpha in Soil
		SOLID		7133-006	93B/93		12/20/01	01/04/02	MCM	Gross Beta in Soil
	B02-006			7133-006	AM		12/13/01	01/04/02	MCM	Americium 241 in Soil
				7133-006	GAM		12/14/01	01/04/02	MCM	Gamma Scan
				7133-006	NP		12/14/01	01/04/02	MCM	Neptunium in Soil
				7133-006	PU		12/13/01	01/04/02	MCM	Plutonium, Isotopic in Solids
				7133-006	SR		12/03/01	01/04/02	MCM	Total Strontium in Soil
				7133-006	TH		12/12/01	01/04/02	MCM	Thorium, Isotopic in Soil
				7133-006	U_T		12/14/01	01/04/02	MCM	Uranium, Total in Soil
Lab Control Sample			R111018-05	7133-005	93A/93		12/20/01	01/04/02	MCM	Gross Alpha in Soil
		SOLID		7133-005	93B/93		12/20/01	01/04/02	MCM	Gross Beta in Soil
	B02-006			7133-005	AM		12/13/01	01/04/02	MCM	Americium 241 in Soil
				7133-005	GAM		12/14/01	01/04/02	MCM	Gamma Scan
				7133-005	NP		12/14/01	01/04/02	MCM	Neptunium in Soil
				7133-005	PU		12/12/01	01/04/02	MCM	Plutonium, Isotopic in Solids
				7133-005	SR		12/03/01	01/04/02	MCM	Total Strontium in Soil
				7133-005	TH		12/12/01	01/04/02	MCM	Thorium, Isotopic in Soil
				7133-005	U_T		12/14/01	01/04/02	MCM	Uranium, Total in Soil
Duplicate (R111018-03)			R111018-07	7133-007	93A/93		12/20/01	01/04/02	MCM	Gross Alpha in Soil
200 East and West		SOLID	10/31/01	7133-007	93B/93		12/20/01	01/04/02	MCM	Gross Beta in Soil
	B02-006		11/02/01	7133-007	AM		12/13/01	01/04/02	MCM	Americium 241 in Soil
				7133-007	GAM		12/17/01	01/04/02	MCM	Gamma Scan
				7133-007	NP		12/14/01	01/04/02	MCM	Neptunium in Soil
				7133-007	PU		12/13/01	01/04/02	MCM	Plutonium, Isotopic in Solids
				7133-007	SR		12/03/01	01/04/02	MCM	Total Strontium in Soil
				7133-007	TH		12/12/01	01/04/02	MCM	Thorium, Isotopic in Soil
				7133-007	U_T		12/14/01	01/04/02	MCM	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

SDG 7133
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1570

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
93A/93	B02-006	Gross Alpha in Soil	900.0_ALPHABETA_GPC	4			1	1	1	7
93B/93	B02-006	Gross Beta in Soil	900.0_ALPHABETA_GPC	4			1	1	1	7
AM	B02-006	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	4			1	1	1	7
GAM	B02-006	Gamma Scan	GAMMA_GS	4			1	1	1	7
NP	B02-006	Neptunium in Soil	NP237_LLE_PLATE_AEA	4			1	1	1	7
PU	B02-006	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	4			1	1	1	7
SR	B02-006	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	4			1	1	1	7
TH	B02-006	Thorium, Isotopic in Soil	THISO_IE_PLATE_AEA	4			1	1	1	7
U_T	B02-006	Uranium, Total in Soil	UTOT_KPA	4			1	1	1	7
TOTALS				36			9	9	9	63

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

R111018-06 Method Blank

METHOD BLANK

SDG	7133	Client/Case no	Hanford SDG H1570
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R111018-06	Client sample id	Method Blank
Dept sample id	7133-006	Material/Matrix	SOLID
		SAF No	B02-006

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	1.33	1.7	2.4	10	U	93A
Gross Beta	12587-47-2	1.46	3.4	5.5	15	U	93B
Total Strontium	SR-RAD	-0.103	0.11	0.27	1.0	U	SR
Thorium 228	14274-82-9	0	0.034	0.070		U	TH
Thorium 230	14269-63-7	0.108	0.16	0.29	1.0	U	TH
Thorium 232	TH-232	-0.011	0.034	0.070	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0.004	0.001	0.002	0.10	J	U_T
Neptunium 237	13994-20-2	0.035	0.069	0.10	1.0	U	NP
Plutonium 238	13981-16-3	0	0.050	0.19	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.050	0.19	1.0	U	PU
Americium 241	14596-10-2	0.028	0.056	0.21	1.0	U	AM
Potassium 40	13966-00-2	U		0.33		U	GAM
Cobalt 60	10198-40-0	U		0.013	0.050	U	GAM
Cesium 137	10045-97-3	U		0.017	0.10	U	GAM
Radium 226	13982-63-3	U		0.032	0.10	U	GAM
Radium 228	15262-20-1	U		0.072	0.20	U	GAM
Europium 152	14683-23-9	U		0.042	0.10	U	GAM
Europium 154	15585-10-1	U		0.052	0.10	U	GAM
Europium 155	14391-16-3	U		0.047	0.10	U	GAM
Thorium 228	14274-82-9	U		0.020		U	GAM
Thorium 232	TH-232	U		0.072		U	GAM
Uranium 235	15117-96-1	U		0.059		U	GAM
Uranium 238	U-238	U		2.2		U	GAM
Americium 241	14596-10-2	U		0.10		U	GAM

200 Area Source Chara. 200-CS-1 OU

QC-BLANK #40323

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

R111018-05 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7133
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1570
Case no No. 630

Lab sample id R111018-05
Dept sample id 7133-005

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B02-006

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	226	15	3.7	10		93A	215	8.6	105	66-134	70-130
Gross Beta	239	12	7.4	15		93B	239	9.6	100	76-124	70-130
Total Strontium	22.2	0.57	0.16	1.0		SR	22.9	0.92	97	84-116	80-120
Thorium 230	46.6	1.7	0.28	1.0		TH	44.8	1.8	104	89-111	80-120
Total Uranium (ug/g)	19.5	2.3	0.020	0.10		U_T	18.1	0.72	108	75-125	80-120
Neptunium 237	19.9	1.6	0.084	1.0		NP	21.8	0.87	91	86-114	80-120
Plutonium 238	26.9	0.85	0.021	1.0		PU	27.2	1.1	99	89-111	80-120
Plutonium 239/240	29.2	0.91	0.027	1.0		PU	29.0	1.2	101	89-111	80-120
Americium 241	21.9	2.0	0.17	1.0		AM	21.0	0.84	104	83-117	80-120
Cobalt 60	0.259	0.049	0.042	0.050		GAM	0.307	0.012	84	69-131	80-120
Cesium 137	0.319	0.044	0.036	0.10		GAM	0.358	0.014	89	72-128	80-120

200 Area Source Chara. 200-CS-1 OU

QC-LCS #40322

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 01/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

R111018-07

B13CL2

DUPLICATE

SDG	7133			Client/Case no	Hanford SDG H1570
Contact	Melissa C. Mannion			Case no	No. 630
DUPLICATE		ORIGINAL			
Lab sample id	R111018-07	Lab sample id	R111018-03	Client sample id	B13CL2
Dept sample id	7133-007	Dept sample id	7133-003	Location/Matrix	200 East and West SOLID
		Received	11/02/01	Collected/Weight	10/31/01 08:35 1295 g
% solids	97.1	% solids	97.1	Custody/SAF No	B02-006-04 B02-006

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Gross Alpha	4.07	3.0	3.3	10	J	93A	3.47	2.7	3.3	J	16	166	
Gross Beta	15.1	4.7	6.6	15		93B	13.1	4.3	6.1	J	14	75	
Total Strontium	0.324	0.14	0.22	1.0	J	SR	0.272	0.14	0.23	J	17	102	
Thorium 228	0.345	0.11	0.075			TH	0.621	0.16	0.066		57	61	
Thorium 230	0.289	0.17	0.30	1.0	U	TH	0.442	0.20	0.30	J	42	108	
Thorium 232	0.350	0.094	0.051	1.0	J	TH	0.417	0.12	0.065	J	17	61	
Total Uranium (ug/g)	0.365	0.041	0.002	0.10	B	U_T	0.390	0.044	0.002	B	7	31	
Neptunium 237	0.027	0.053	0.080	1.0	U	NP	0.124	0.17	0.12	J	128	354	
Plutonium 238	0	0.053	0.20	1.0	U	PU	-0.003	0.013	0.031	U	-		
Plutonium 239/240	0.026	0.053	0.20	1.0	U	PU	0.029	0.026	0.031	U	-		
Americium 241	0.028	0.056	0.21	1.0	U	AM	0.008	0.026	0.032	U	-		
Potassium 40	11.5	0.66	0.21			GAM	11.2	0.51	0.19		3	34	
Cobalt 60	U		0.024	0.050	U	GAM	U		0.021	U	-		
Cesium 137	U		0.020	0.10	U	GAM	U		0.020	U	-		
Radium 226	0.407	0.050	0.045	0.10		GAM	0.411	0.046	0.043		1	40	
Radium 228	0.625	0.087	0.082	0.20		GAM	0.614	0.11	0.10		2	47	
Europium 152	U		0.047	0.10	U	GAM	U		0.053	U	-		
Europium 154	U		0.076	0.10	U	GAM	U		0.075	U	-		
Europium 155	U		0.077	0.10	U	GAM	U		0.065	U	-		
Thorium 228	0.694	0.043	0.041			GAM	0.494	0.029	0.028		34	35	
Thorium 232	0.625	0.087	0.082			GAM	0.614	0.11	0.10		2	47	
Uranium 235	U		0.079		U	GAM	U		0.091	U	-		
Uranium 238	U		2.7		U	GAM	U		2.8	U	-		
Americium 241	U		0.029		U	GAM	U		0.089	U	-		

200 Area Source Chara. 200-CS-1 OU

QC-DUP#3 40324

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

R111018-01 B13CL0

DATA SHEET

SDG	7133	Client/Case no	Hanford	SDG H1570	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R111018-01	Client sample id	B13CL0		
Dept sample id	7133-001	Location/Matrix	200 East and West	SOLID	
Received	11/02/01	Collected/Weight	10/31/01 08:05	1082 g	
% solids	93.0	Custody/SAF No	B02-006-04	B02-006	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	5.16	3.1	3.1	10	J	93A
Gross Beta	12587-47-2	16.0	4.3	5.9	15		93B
Total Strontium	SR-RAD	0.129	0.12	0.22	1.0	U	SR
Thorium 228	14274-82-9	0.738	0.15	0.15			TH
Thorium 230	14269-63-7	0.688	0.20	0.30	1.0	J	TH
Thorium 232	TH-232	0.706	0.14	0.071	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	0.392	0.045	0.002	0.10	B	U_T
Neptunium 237	13994-20-2	0.026	0.023	0.036	1.0	U	NP
Plutonium 238	13981-16-3	0.004	0.017	0.032	1.0	U	PU
Plutonium 239/240	PU-239/240	0.046	0.034	0.032	1.0	J	PU
Americium 241	14596-10-2	0.038	0.032	0.030	1.0	J	AM
Potassium 40	13966-00-2	12.8	1.0	0.79			GAM
Cobalt 60	10198-40-0	U		0.054	0.050	U	GAM
Cesium 137	10045-97-3	U		0.042	0.10	U	GAM
Radium 226	13982-63-3	0.662	0.11	0.11	0.10		GAM
Radium 228	15262-20-1	0.858	0.29	0.28	0.20		GAM
Europium 152	14683-23-9	U		0.12	0.10	U	GAM
Europium 154	15585-10-1	U		0.18	0.10	U	GAM
Europium 155	14391-16-3	U		0.13	0.10	U	GAM
Thorium 228	14274-82-9	0.764	0.055	0.058			GAM
Thorium 232	TH-232	0.858	0.29	0.28			GAM
Uranium 235	15117-96-1	U		0.17		U	GAM
Uranium 238	U-238	U		6.2		U	GAM
Americium 241	14596-10-2	U		0.17		U	GAM

200 Area Source Chara. 200-CS-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

R111018-02 B13CL1

DATA SHEET

SDG	7133	Client/Case no	Hanford	SDG H1570	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R111018-02	Client sample id	B13CL1		
Dept sample id	7133-002	Location/Matrix	200 East and West	SOLID	
Received	11/02/01	Collected/Weight	10/31/01 08:20	1143 g	
% solids	87.8	Custody/SAF No	B02-006-04	B02-006	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	6.88	3.4	3.5	10	J	93A
Gross Beta	12587-47-2	18.5	6.1	9.0	15		93B
Total Strontium	SR-RAD	0.285	0.15	0.23	1.0	J	SR
Thorium 228	14274-82-9	0.785	0.53	0.80		U	TH
Thorium 230	14269-63-7	0.465	0.52	0.64	1.0	U	TH
Thorium 232	TH-232	0.465	0.41	0.49	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0.479	0.054	0.002	0.10	B	U_T
Neptunium 237	13994-20-2	0.073	0.073	0.11	1.0	U	NP
Plutonium 238	13981-16-3	0.006	0.012	0.024	1.0	U	PU
Plutonium 239/240	PU-239/240	0.124	0.037	0.024	1.0	J	PU
Americium 241	14596-10-2	0.002	0.023	0.029	1.0	U	AM
Potassium 40	13966-00-2	13.0	1.0	0.72			GAM
Cobalt 60	10198-40-0	U		0.055	0.050	U	GAM
Cesium 137	10045-97-3	U		0.046	0.10	U	GAM
Radium 226	13982-63-3	0.735	0.12	0.12	0.10		GAM
Radium 228	15262-20-1	0.834	0.25	0.26	0.20		GAM
Europium 152	14683-23-9	U		0.13	0.10	U	GAM
Europium 154	15585-10-1	U		0.18	0.10	U	GAM
Europium 155	14391-16-3	U		0.14	0.10	U	GAM
Thorium 228	14274-82-9	0.959	0.060	0.060			GAM
Thorium 232	TH-232	0.834	0.25	0.26			GAM
Uranium 235	15117-96-1	U		0.18		U	GAM
Uranium 238	U-238	U		6.9		U	GAM
Americium 241	14596-10-2	U		0.18		U	GAM

200 Area Source Chara. 200-CS-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

R111018-03 B13CL2

DATA SHEET

SDG	7133	Client/Case no	Hanford	SDG H1570	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R111018-03	Client sample id	B13CL2		
Dept sample id	7133-003	Location/Matrix	200 East and West	SOLID	
Received	11/02/01	Collected/Weight	10/31/01 08:35	1295 g	
% solids	97.1	Custody/SAF No	B02-006-04	B02-006	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	3.47	2.7	3.3	10	J	93A
Gross Beta	12587-47-2	13.1	4.3	6.1	15	J	93B
Total Strontium	SR-RAD	0.272	0.14	0.23	1.0	J	SR
Thorium 228	14274-82-9	0.621	0.16	0.066			TH
Thorium 230	14269-63-7	0.442	0.20	0.30	1.0	J	TH
Thorium 232	TH-232	0.417	0.12	0.065	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	0.390	0.044	0.002	0.10	B	U_T
Neptunium 237	13994-20-2	0.124	0.17	0.12	1.0	J	NP
Plutonium 238	13981-16-3	-0.003	0.013	0.031	1.0	U	PU
Plutonium 239/240	PU-239/240	0.029	0.026	0.031	1.0	U	PU
Americium 241	14596-10-2	0.008	0.026	0.032	1.0	U	AM
Potassium 40	13966-00-2	11.2	0.51	0.19			GAM
Cobalt 60	10198-40-0	U		0.021	0.050	U	GAM
Cesium 137	10045-97-3	U		0.020	0.10	U	GAM
Radium 226	13982-63-3	0.411	0.046	0.043	0.10		GAM
Radium 228	15262-20-1	0.614	0.11	0.10	0.20		GAM
Europium 152	14683-23-9	U		0.053	0.10	U	GAM
Europium 154	15585-10-1	U		0.075	0.10	U	GAM
Europium 155	14391-16-3	U		0.065	0.10	U	GAM
Thorium 228	14274-82-9	0.494	0.029	0.028			GAM
Thorium 232	TH-232	0.614	0.11	0.10			GAM
Uranium 235	15117-96-1	U		0.091		U	GAM
Uranium 238	U-238	U		2.8		U	GAM
Americium 241	14596-10-2	U		0.089		U	GAM

200 Area Source Chara. 200-CS-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

R111018-04 B13CL3

DATA SHEET

SDG	7133	Client/Case no	Hanford	SDG H1570	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R111018-04	Client sample id	B13CL3		
Dept sample id	7133-004	Location/Matrix	200 East and West	SOLID	
Received	11/02/01	Collected/Weight	10/31/01 08:45	1277 g	
% solids	97.1	Custody/SAF No	B02-006-04	B02-006	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	4.04	3.0	3.5	10	J	93A
Gross Beta	12587-47-2	8.95	4.9	7.7	15	J	93B
Total Strontium	SR-RAD	0.197	0.15	0.25	1.0	U	SR
Thorium 228	14274-82-9	-0.140	0.65	1.2		U	TH
Thorium 230	14269-63-7	0.046	0.37	0.51	1.0	U	TH
Thorium 232	TH-232	0.092	0.18	0.44	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0.319	0.036	0.002	0.10	B	U_T
Neptunium 237	13994-20-2	0	0.064	0.096	1.0	U	NP
Plutonium 238	13981-16-3	0.005	0.009	0.018	1.0	U	PU
Plutonium 239/240	PU-239/240	0.026	0.019	0.022	1.0	J	PU
Americium 241	14596-10-2	0.021	0.027	0.020	1.0	J	AM
Potassium 40	13966-00-2	12.1	0.73	0.26			GAM
Cobalt 60	10198-40-0	U		0.025	0.050	U	GAM
Cesium 137	10045-97-3	U		0.022	0.10	U	GAM
Radium 226	13982-63-3	0.415	0.052	0.046	0.10		GAM
Radium 228	15262-20-1	0.577	0.11	0.10	0.20		GAM
Europium 152	14683-23-9	U		0.061	0.10	U	GAM
Europium 154	15585-10-1	U		0.079	0.10	U	GAM
Europium 155	14391-16-3	U		0.055	0.10	U	GAM
Thorium 228	14274-82-9	0.652	0.051	0.049			GAM
Thorium 232	TH-232	0.577	0.11	0.10			GAM
Uranium 235	15117-96-1	U		0.087		U	GAM
Uranium 238	U-238	U		3.2		U	GAM
Americium 241	14596-10-2	U		0.033		U	GAM

200 Area Source Chara. 200-CS-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

Test AM Matrix SOLID
SDG 7133
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1570

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241
Preparation batch 7012-132					
B13CL0	R111018-01			7133-001	0.038 J
B13CL1	R111018-02			7133-002	U
B13CL2	R111018-03			7133-003	U
B13CL3	R111018-04			7133-004	0.021 J
BLK (QC ID=40323)	R111018-06			7133-006	U
LCS (QC ID=40322)	R111018-05			7133-005	ok
Duplicate (R111018-03)	R111018-07			7133-007	- U
Nominal values and limits from method				RDLs (pCi/g)	1.0
200 Area Source Chara. 200-CS-1 OU					

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 7012-132	2σ prep error 5.0 %			Reference Lab Notebook 7012 pg. 132												
B13CL0	R111018-01			0.030	0.500			79		1123			42	12/11/01	12/12	SS-057
B13CL1	R111018-02			0.029	0.500			84		1122			42	12/11/01	12/12	SS-059
B13CL2	R111018-03			0.032	0.500			82		1122			42	12/11/01	12/12	SS-060
B13CL3	R111018-04			0.020	0.500			79		1122			42	12/11/01	12/12	SS-062
BLK (QC ID=40323)	R111018-06			0.21	0.500			76		112				12/11/01	12/13	SS-057
LCS (QC ID=40322)	R111018-05			0.17	0.500			102		112				12/11/01	12/13	SS-055
Duplicate (R111018-03) (QC ID=40324)	R111018-07			0.21	0.500			76		112			43	12/11/01	12/13	SS-058
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

Test	AM
Matrix	SOLID
SDG	7133
Contact	Melissa C. Mannion

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	No. 630
Contract	SDG H1570

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 FOR 7 SAMPLES				
MDA	0.10	±	0.18
YIELD	83	±	18

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

Test NP Matrix SOLID
SDG 7133
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1570

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237
Preparation batch 7012-132					
B13CL0	R111018-01			7133-001	U
B13CL1	R111018-02			7133-002	U
B13CL2	R111018-03			7133-003	0.124 J
B13CL3	R111018-04			7133-004	U
BLK (QC ID=40323)	R111018-06			7133-006	U
LCS (QC ID=40322)	R111018-05			7133-005	ok
Duplicate (R111018-03)	R111018-07			7133-007	ok U
Nominal values and limits from method 200 Area Source Chara. 200-CS-1 OU				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 7012-132 2σ prep error 5.0 % Reference Lab Notebook 7012 pg. 132																
B13CL0	R111018-01			0.036	0.500			59		1123			43	12/11/01	12/13	SS-055
B13CL1	R111018-02			0.11	0.500			60		112			44	12/11/01	12/14	SS-056
B13CL2	R111018-03			0.12	0.500			47		114			44	12/11/01	12/14	SS-059
B13CL3	R111018-04			0.096	0.500			65		114			44	12/11/01	12/14	SS-060
BLK (QC ID=40323)	R111018-06			0.10	0.500			61		114				12/11/01	12/14	SS-063
LCS (QC ID=40322)	R111018-05			0.084	0.500			73		114				12/11/01	12/14	SS-062
Duplicate (R111018-03) (QC ID=40324)	R111018-07			0.080	0.500			79		114			44	12/11/01	12/14	SS-064
Nominal values and limits from method				1.0	0.500			20-105		100			180			

PROCEDURES	REFERENCE	NP237_LLE_PLATE_AEA
	CP-060	Soil Preparation, rev 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-934	Neptunium from Solids and Water by Extraction Chromatography, rev 2

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.089 ± 0.055
YIELD 63 ± 21

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

Test PU Matrix SOLID
SDG 7133
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1570

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238	Plutonium 239/240
Preparation batch 7012-132						
B13CL0	R111018-01			7133-001	U	0.046 J
B13CL1	R111018-02			7133-002	U	0.124 J
B13CL2	R111018-03			7133-003	U	U
B13CL3	R111018-04			7133-004	U	0.026 J
BLK (QC ID=40323)	R111018-06			7133-006	U	U
LCS (QC ID=40322)	R111018-05			7133-005	ok	ok
Duplicate (R111018-03)	R111018-07			7133-007	- U	- U
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0
200 Area Source Chara. 200-CS-1 OU						

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 7012-132	2σ prep error 5.0 %				Reference Lab Notebook 7012 pg. 132											
B13CL0	R111018-01			0.032	0.500			56		981			44	12/11/01	12/14	SS-047
B13CL1	R111018-02			0.024	0.500			70		1119			42	12/11/01	12/12	SS-063
B13CL2	R111018-03			0.031	0.500			66		1120			42	12/11/01	12/12	SS-064
B13CL3	R111018-04			0.022	0.500			88		1120			42	12/11/01	12/12	SS-065
BLK (QC ID=40323)	R111018-06			0.19	0.500			88		105				12/11/01	12/13	SS-043
LCS (QC ID=40322)	R111018-05			0.027	0.500			77		1120				12/11/01	12/12	SS-066
Duplicate (R111018-03) (QC ID=40324)	R111018-07			0.20	0.500			80		105			43	12/11/01	12/13	SS-044
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 7 SAMPLES				
MDA	0.075	±	0.16
YIELD	75	±	24

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

Test TH Matrix SOLID
SDG 7133
Contact Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1570

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 230
Preparation batch 7012-132					
B13CL0	R111018-01			7133-001	0.688 J
B13CL1	R111018-02			7133-002	U
B13CL2	R111018-03			7133-003	0.442 J
B13CL3	R111018-04			7133-004	U
BLK (QC ID=40323)	R111018-06			7133-006	U
LCS (QC ID=40322)	R111018-05			7133-005	ok
Duplicate (R111018-03)	R111018-07			7133-007	ok U

Nominal values and limits from method RDLs (pCi/g) 1.0
200 Area Source Chara. 200-CS-1 OU

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 7012-132	2σ prep error 5.0 %			Reference Lab Notebook 7012 pg. 132												
B13CL0	R111018-01			0.30	0.250			82		1355			41	12/08/01	12/11	SS-022
B13CL1	R111018-02			0.64	0.250			80		1183			49	12/08/01	12/19	SS-051
B13CL2	R111018-03			0.30	0.250			85		637			50	12/08/01	12/20	SS-048
B13CL3	R111018-04			0.51	0.250			96		1164			42	12/08/01	12/12	SS-043
BLK (QC ID=40323)	R111018-06			0.29	0.250			66		1146				12/08/01	12/12	SS-045
LCS (QC ID=40322)	R111018-05			0.28	0.250			49		1164				12/08/01	12/12	SS-044
Duplicate (R111018-03) (QC ID=40324)	R111018-07			0.30	0.250			92		746			42	12/08/01	12/12	SS-047
Nominal values and limits from method				1.0	0.250			20-105		150			180			

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-905	Thorium in Water and Dissolved Solid Sample Using TRU and AG 1x8 Resin, rev 1
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.37 ± 0.28
YIELD 79 ± 32

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

Test SR Matrix SOLID
SDG 7133
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1570

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 7012-132					
B13CL0	R111018-01			7133-001	U
B13CL1	R111018-02			7133-002	0.285 J
B13CL2	R111018-03			7133-003	0.272 J
B13CL3	R111018-04			7133-004	U
BLK (QC ID=40323)	R111018-06			7133-006	U
LCS (QC ID=40322)	R111018-05			7133-005	ok
Duplicate (R111018-03)	R111018-07			7133-007	ok J
Nominal values and limits from method				RDLs (pCi/g)	1.0
200 Area Source Chara. 200-CS-1 OU					

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 7012-132	2σ prep error 10.0 % Reference Lab Notebook 7012 pg. 132															
B13CL0	R111018-01			0.22	1.00			97		100			33	12/03/01	12/03	GRB-205
B13CL1	R111018-02			0.23	1.00			98		100			33	12/03/01	12/03	GRB-206
B13CL2	R111018-03			0.23	1.00			98		100			33	12/03/01	12/03	GRB-207
B13CL3	R111018-04			0.25	1.00			98		100			33	12/03/01	12/03	GRB-208
BLK (QC ID=40323)	R111018-06			0.27	1.00			92		100				12/03/01	12/03	GRB-230
LCS (QC ID=40322)	R111018-05			0.16	1.00			90		200				12/03/01	12/03	GRB-206
Duplicate (R111018-03) (QC ID=40324)	R111018-07			0.22	1.00			95		100			33	12/03/01	12/03	GRB-217
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	MDA 0.23 ± 0.068
FOR 7 SAMPLES	YIELD 95 ± 7

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

Test 93A Matrix SOLID
SDG 7133
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS ALPHA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1570

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha	
Preparation batch 7012-132						
B13CL0	R111018-01	93		7133-001	5.16	J
B13CL1	R111018-02	93		7133-002	6.88	J
B13CL2	R111018-03	93		7133-003	3.47	J
B13CL3	R111018-04	93		7133-004	4.04	J
BLK (QC ID=40323)	R111018-06	93		7133-006	U	
LCS (QC ID=40322)	R111018-05	93		7133-005	ok	
Duplicate (R111018-03)	R111018-07	93		7133-007	ok	J

Nominal values and limits from method RDLs (pCi/g) 10
200 Area Source Chara. 200-CS-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-132	2σ prep error 20.0 % Reference Lab Notebook 7012 pg. 132															
B13CL0	R111018-01	93		3.1	0.100			37		100			50	12/07/01	12/20	GRB-109
B13CL1	R111018-02	93		3.5	0.100			38		100			51	12/07/01	12/21	GRB-114
B13CL2	R111018-03	93		3.3	0.100			40		100			50	12/07/01	12/20	GRB-111
B13CL3	R111018-04	93		3.5	0.100			40		100			50	12/07/01	12/20	GRB-112
BLK (QC ID=40323)	R111018-06	93		2.4	0.100			21		100				12/07/01	12/20	GRB-101
LCS (QC ID=40322)	R111018-05	93		3.7	0.100			22		100				12/07/01	12/20	GRB-115
Duplicate (R111018-03) (QC ID=40324)	R111018-07	93		3.3	0.100			41		100			50	12/07/01	12/20	GRB-102
Nominal values and limits from method				10	0.100			5-250		100			180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	CP-060	Soil Preparation, rev 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-170	Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 3

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 3.3 ± 0.85
RESIDUE 34 ± 17

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

Test 938 Matrix SOLID
SDG 7133
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS BETA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1570

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta	
Preparation batch 7012-132						
B13CL0	R111018-01	93		7133-001	16.0	
B13CL1	R111018-02	93		7133-002	18.5	
B13CL2	R111018-03	93		7133-003	13.1	J
B13CL3	R111018-04	93		7133-004	8.95	J
BLK (QC ID=40323)	R111018-06	93		7133-006	U	
LCS (QC ID=40322)	R111018-05	93		7133-005	ok	
Duplicate (R111018-03)	R111018-07	93		7133-007	ok	

Nominal values and limits from method RDLs (pCi/g) 15
200 Area Source Chara. 200-CS-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-132	2σ prep error 15.0 % Reference Lab Notebook 7012 pg. 132															
B13CL0	R111018-01	93		5.9	0.100			37		100			50	12/07/01	12/20	GRB-109
B13CL1	R111018-02	93		9.0	0.100			38		100			51	12/07/01	12/21	GRB-114
B13CL2	R111018-03	93		6.1	0.100			40		100			50	12/07/01	12/20	GRB-111
B13CL3	R111018-04	93		7.7	0.100			40		100			50	12/07/01	12/20	GRB-112
BLK (QC ID=40323)	R111018-06	93		5.5	0.100			21		100				12/07/01	12/20	GRB-101
LCS (QC ID=40322)	R111018-05	93		7.4	0.100			22		100				12/07/01	12/20	GRB-115
Duplicate (R111018-03) (QC ID=40324)	R111018-07	93		6.6	0.100			41		100			50	12/07/01	12/20	GRB-102
Nominal values and limits from method				15	0.100			5-250		100			180			

PROCEDURES	REFERENCE	
	900.0_ALPHABETA_GPC	
	CP-060	Soil Preparation, rev 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-170	Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 3

AVERAGES ± 2 SD				
FOR 7 SAMPLES	MDA	6.9	±	2.4
	RESIDUE	34	±	17

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

Test GAM Matrix SOLID
SDG 7133
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1570

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 7012-132								
B13CL0	R111018-01			7133-001	U		U	
B13CL1	R111018-02			7133-002	U		U	
B13CL2	R111018-03			7133-003	U		U	
B13CL3	R111018-04			7133-004	U		U	
BLK (QC ID=40323)	R111018-06			7133-006	U		U	
LCS (QC ID=40322)	R111018-05			7133-005	ok		ok	
Duplicate (R111018-03)	R111018-07			7133-007	-	U	-	U
Nominal values and limits from method 200 Area Source Chara. 200-CS-1 OU				RDLs (pCi/g)	0.050		0.10	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT Kev	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-132 2σ prep error 15.0 % Reference Lab Notebook 7012 pg. 132																
B13CL0	R111018-01			0.42	737					127			44	11/30/01	12/14	02,03,00
B13CL1	R111018-02			0.44	778					118			44	11/30/01	12/14	02,03,00
B13CL2	R111018-03			0.17	884					118			44	11/30/01	12/14	02,04,00
B13CL3	R111018-04			0.21	861					117			44	11/30/01	12/14	MB,07,00
BLK (QC ID=40323)	R111018-06			0.13	737					118				11/30/01	12/14	MB,05,00
LCS (QC ID=40322)	R111018-05			0.042	737					102				11/30/01	12/14	01,01,00
Duplicate (R111018-03) (QC ID=40324)	R111018-07			0.19	884					142			47	11/30/01	12/17	MB,07,00
Nominal values and limits from method				0.050	737					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 7 SAMPLES
MDA 0.23 ± 0.30
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

Test U T Matrix SOLID
SDG 7133
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract No. 630
Contract SDG H1570

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium
Preparation batch 7012-132					
B13CL0	R111018-01			7133-001	0.392
B13CL1	R111018-02			7133-002	0.479
B13CL2	R111018-03			7133-003	0.390
B13CL3	R111018-04			7133-004	0.319
BLK (QC ID=40323)	R111018-06			7133-006	0.004 J
LCS (QC ID=40322)	R111018-05			7133-005	ok
Duplicate (R111018-03)	R111018-07			7133-007	ok
Nominal values and limits from method 200 Area Source Chara. 200-CS-1 OU				RDLs (ug/g)	0.10

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA ug/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-132 2σ prep error 9.0 % Reference Lab Notebook 7012 pg. 132																
B13CL0	R111018-01			0.002	0.100								44	12/14/01	12/14	KPA-001
B13CL1	R111018-02			0.002	0.100								44	12/14/01	12/14	KPA-001
B13CL2	R111018-03			0.002	0.100								44	12/14/01	12/14	KPA-001
B13CL3	R111018-04			0.002	0.100								44	12/14/01	12/14	KPA-001
BLK (QC ID=40323)	R111018-06			0.002	0.100									12/14/01	12/14	KPA-001
LCS (QC ID=40322)	R111018-05			0.020	0.100									12/14/01	12/14	KPA-001
Duplicate (R111018-03) (QC ID=40324)	R111018-07			0.002	0.100								44	12/14/01	12/14	KPA-001
Nominal values and limits from method				0.10	0.100								180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1570

Test U T Matrix SOLID
SDG 7133
Contact Melissa C. Mannion

METHOD SUMMARY, cont.

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract No. 630
Contract SDG H1570

PROCEDURES	REFERENCE	UTOT_KPA
	CP-060	Soil Preparation, rev 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-044	Sample Preparation for Total Uranium by Kinetic Phosphorimetry, rev 3
	CP-928	Total Uranium by Kinetic Phosphorimetry, rev 3

AVERAGES ± 2 SD	MDA	0.005	±	0.014
FOR 7 SAMPLES	YIELD		±	

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/05/02

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-006-04	Page 1 of 1
Collector: Bowers DL/ Watson, D	Company Contact: Cearlock, CS — Telephone No.: 372-9638	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Soil Samplin	Sampling Location: 200 East & West H1570 (7133)	SAF No.: B02-006	Air Quality ☐
Ice Chest No.: ERC 910.030	Field Logbook No.: FL1551 — COA: B20CS1673C	Method of Shipment: Fed Ex SDG # H1570	
Shipped To: TMA/RECRA	Offsite Property No.: A020005	Bill of Lading/Air Bill No.: 4235 7954 8578	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 10/31/01. Collector not available to relinquish samples on 11/1/01 for shipment. RT 11-1-01

RT 10.31.01

SAMPLE ANALYSIS

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385		
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**							
B13CL0	SOIL	10-31-01	0805	X	X	X	X	X	X	X	X	PT 10.31.01
B13CL1	SOIL	10-31-01	0820	X	X	X	X	X	X	X	X	
B13CL2	SOIL	10-31-01	0835	X	X	X	X	X	X	X	X	
B13CL3	SOIL	10-31-01	0845	X	X	X	X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: Bowers	Date/Time: 10-31-01/1110	Received By/Stored In: Ref 1B 3728	Date/Time: 10-31-01/1110
Relinquished By/Removed From: Ref 1B 3728	Date/Time: 11-1-01 0400	Received By/Stored In: R.C. Thorne	Date/Time: 11-1-01 0400
Relinquished By/Removed From: R.C. Thorne ERC	Date/Time: 11-1-01 0400	Received By/Stored In: FEDEX	Date/Time: 11-01-01
Relinquished By/Removed From: FED. EXPRESS	Date/Time: 11-02-01 9:30	Received By/Stored In: B.C.A. E. SEGURO	Date/Time: 11-02-01 9:30
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

** The Laboratory is to report Decane as a TIC if present in detectable quantities

** The laboratory is to report both diesel and kerosene range compounds from WTPH-D analysis.

(1) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-228); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium

~~(2) ICP Metals - 6010A (Superfund) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Superfund Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196~~

~~(3) NO2NO3 - 353.2; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010~~

~~(4) Semi-VOA -- 8270A (Add-On) (Tributyl phosphate); TPH Diesel Range - WTPH-D~~

RT 10.31.01

use DBCL4 as shipping criteria

Matrix *: S=Soil, SS=Sediment, SO=Solid, SL=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)

ThermoRetec
Richmond Laboratory

Analytical Services

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc. Date/Time received 11-02-01 9:30 Am

CoC No. B02-006-01 AND B02-006-04.

Container I.D. No. ERC-96-030 Requested TAT (Days) 15 DAYS 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: 9 SAMPLES
7. Number of containers per sample: (1 TOTAL) (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 Eric D. Maestas Date: 11/02/01 Time: 9:30 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 _____

ORIGINAL
Dayes

SDR # B02-047
Revision #: 0
Date Initiated: 01/07/02

SAMPLE DISPOSITION RECORD

SAF: B02-006
OU: 200-CS-1
Project ID: 200-CS-1
Task ID: 1
Sampling Event: 200 Area Source Characterization 200-CS-1 Operable Unit

Laboratory: TMA/RECRA

Task Manager: C. S. Cearlock

Sampling Information:
Number of Samples: 4
ID Numbers: B13CL0, B13CL1, B13CL2, B13CL3
Matrix: Soil
Collection Date: 10/31/01

Issue Background:
Class: ☐ Project Data Use ☒ General Laboratory Direction ☐ Validation Direction ☐ Sample Management Direction

Type: Cancellation of Analyses

Description: Cancellation of Isotopic Uranium Analyses

Disposition:

Description: After reviewing the total uranium results for the listed samples, the Groundwater/Vadose Zone Integration Project has requested that the isotopic analyses for these samples be cancelled. The laboratory was subsequently instructed to cancel the isotopic uranium analyses.

Justification: Total uranium results for the listed samples did not exceed levels that would require isotopic uranium analyses to be conducted.

Approval Signatures:

S. J. Trent — 1/11/02
Project Coordinator (Print/Sign Name) — Date

C. S. Cearlock — 1/11/02
Task Manager (Print/Sign Name) — Date

LIONVILLE LABORATORY INC.

Analytical Report

Client: THU HANFORD B02-006
LVL#: 0111L257
SDG/SAF#: H1570/H1575/B02-006

W.O.#: 11343-606-001-9999-00
Date Received: 11-02-01

GC SCAN

The set of samples consisted of nine (9) soil samples collected on 10-30,31-01.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on Method 8015B for Gasoline Range Organic (GRO) target compounds Ethanol and n-Propyl Alcohol on 11-05-01.

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 samples were packaged and stored as specified in the method protocol.

2. Surrogates are not currently employed in the methodology.

3. All initial calibrations were within acceptance criteria.

4. All continuing calibrations run prior to analysis were within acceptance criteria.

5. All blank spike recoveries were within acceptance criteria.

6. All matrix spike recoveries were within acceptance criteria.

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

11/13/01
Date

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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 10 pages.

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

GLOSSARY OF GC VOLATILES DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification 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.

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

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking 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 = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF GC VOLATILES DATA

P	=	This flag is used for an GC VOLATILES target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
D	=	This flag identifies all compounds identified in an analysis at a secondary dilution factor.
C	=	This flag applies to a compound that has been confirmed by GC VOLATILES.

R:/SHARE/GCVOLATILE/GCVOLATILEGLOS.DOC

Lionville Laboratory, Inc.

GC SCAN

Report Date: 11/09/01 14:16

RFW Batch Number: 0111L257 Client: TNU-HANFORD B02-006 Work Order: 11343606001 Page: 1

	Cust ID:	B13C77	B13C77	B13C77	B13C78	B13C79	B13C80
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
n-Propyl Alcohol		5.5 U	80 %	83 %	4.8 U	5.5 U	5.0 U
Ethanol		5.5 U	78 %	79 %	4.8 U	5.5 U	5.0 U

	Cust ID:	B13C89	B13CL0	B13CL1	B13CL2	B13CL3	BLK
Sample Information	RFW#:	005	006	007	008	009	01LJMB05-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
n-Propyl Alcohol		5.0 U	6.0 U	5.5 U	5.5 U	4.8 U	5.0 U
Ethanol		5.0 U	6.0 U	5.5 U	5.5 U	4.8 U	5.0 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Lionville Laboratory, Inc.

GC SCAN

Report Date: 11/09/01 14:16

RFW Batch Number: 0111L257 Client: TNU-HANFORD B02-006 Work Order: 11343606001 Page: 2

	Cust ID:	BLK BS	BLK BSD
Sample Information	RFW#:	01LJMB05-MB1	01LJMB05-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	mg/kg	mg/kg

n-Propyl Alcohol	103	%	98	%
Ethanol	99	%	94	%

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

BNA from Airbill WL1

Lionville Laboratory Use Only

01111257

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: INU HANFORD B302 006

Est. Final Proj. Sampling Date:

Project #: 11343-606-2091-9792

Project Contact/Phone #:

Lionville Laboratory Project Manager: JS

QC: SPEC Del: STD TAT: 15 Day

Date Rec'd: 11-2-01 Date Due: 11-17-01

	A	B	C					D		E	F	G			
Refrigerator #	1	2	2					2		2	2	2			
#/Type Container															
Volume															
Preservatives															
ANALYSES REQUESTED →	ORGANIC							INORG							
	VOA TCL	BNA	PBBs/ PCB	Herb				Metal	CN						
Lionville Laboratory Use Only	0GCSC 0624X	0625X 0DRO	OPC13					ICRG MCT①		ZN3A2 IC①	ZPH	INH3N			

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	B12C757			W	10/31/01	0850
002						
003						
004						
005						
006						
007						0720
008						0835
009						0845

Special Instructions:

SAF # B02-006

Run Matrix QC

DATE/REVISIONS:

MCT① 1. As, Ba, Cd, Cr, Pb, Se, Ag, Be, Cu, Ni, V, Zn, Hg

IC① 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, +

3. ISFD, INH3N, ICNTO

11-5-01 4. Cancel 0624X Add 0624H + 0GCSC

5.

6.

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	11/2/01	0835

4235 7954 8556

Relinquished by	Received by	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN	

4235 7954 8510 4235 7954 8534 4235 7954 8567

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # [illegible]

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. 1° °C

1-2

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

NOTES:

4235 7954 8545

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-006-01	Page 1 of 1

Collector: Thomas, G/ Watson, D	Company Contact: Cearlock, CS — Telephone No.: 372-9638	Project Coordinator: TRENT, SJ	Price Code: ~~8N~~ RT 11-1-01 8K — Data Turnaround: ~~45 Days~~ RT 11-1-01 15 Day
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Soil Samplin	Sampling Location: 200 East & West	SAF No.: B02-006	Air Quality ☐
Ice Chest No.: SEE OSPC	Field Logbook No.: EL 1551 — COA: XL2002CHGR	Method of Shipment: Fed Ex	
Shipped To: ~~TMA~~ RECRA	Offsite Property No.: A020018	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

RT 11-1-01

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 10/30/01.
Collector not available to relinquish samples on 11/1/01 for shipment.
RT-

Preservation	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	Cool 4C Cool 4C	None		
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385		
Sample No.	Matrix *	Sample Date	Sample Time								
B13C77	SOIL	10/30/01	0850		X	X	X	X	X	X	X		
B13C78	SOIL	10/30/01	0910		X	X	X	X	X	X	X		
B13C79	SOIL	10/30/01	0945		X	X	X	X	X	X	X	HETO	B13C84
B13C80	SOIL	10/30/01	1000		X	X	X	X	X	X	X		
B13C89	SOIL	10/30/01	0910		X	X	X	X	X	X	X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DSWatson/	10-30-01 1215	REF. 1A 3728 BLDG.	10-30-01 1215
Ref 1A 3728	11-1-01 0900	R Thorer	11-1-01 0900
R Thorer ERC	11-1-01 0900	FEDEX	
FedEx	11/2/01 0935		11-1-01 0935

SPECIAL INSTRUCTIONS

** The Laboratory is to report Decane as a TIC if present in detectable quantities
** The laboratory is to report both diesel and kerosene ranges compounds from WTPH-D analysis.

(1) ~~Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-228); Strontium-89,90 — Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium~~ DSW 10-30-01
(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(3) NO2/NO3 - 353.2; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(4) Semi-VOA – 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-006-04	Page 1 of 1

Collector: Bowers DL/ Watson, D	Company Contact: Cearlock, CS — Telephone No.: 372-9638	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Soil Samplin	Sampling Location: 200 East & West	SAF No.: B02-006	Air Quality ☐
Ice Chest No.: SEE DSPC	Field Logbook No.: EL1771 — COA: B20CS1673C	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA	Offsite Property No.: A020018	Bill of Lading/Air Bill No.: SEE DSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Tie TO B13CL4

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 10/31/01. Collector not available to relinquish samples on 11/1/01 for shipment.

RT 11-1-01

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	None		
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	500mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385		

Sample No.	Matrix *	Sample Date	Sample Time										
B13CL0	SOIL	10-31-01	0805	X	X	X	X	X	X	X	X		
B13CL1	SOIL	10-31-01	0820	X	X	X	X	X	X	X	X		
B13CL2	SOIL	10-31-01	0835	X	X	X	X	X	X	X	X		
B13CL3	SOIL	10-31-01	0845	X	X	X	X	X	X	X	X		

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: Doug Bowers	10-31-01 1110	Received By/Stored In: Ref 1B 3728	10-31-01 1110
Relinquished By/Removed From: Ref 1B 3728	11-1-01 0900	Received By/Stored In: R.T. Thore	11-1-01 0900
Relinquished By/Removed From: R.T. Thore ERC	11-1-01 0900	Received By/Stored In: FedEx	
Relinquished By/Removed From: FedEx	11/2/01 0935	Received By/Stored In: Vicki Hurnong	11-2-01 0935
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

** The Laboratory is to report Decane as a TIC if present in detectable quantities

** The laboratory is to report both diesel and kerosene range compounds from WTPH-D analysis. RT 10-31

~~(1) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-226); Strontium-89,90 - Total; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium~~

(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196

(3) NO2/NO3 - 353.2; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(4) Semi-VOA – 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D

use DB CL4 as shipping criteria

Matrix *: S=Soil; SD=Sediment; SO=Solid; Sl=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)

Figure 1. Sample Check-in List

Date/Time Received: 11/2/01 0935

SDG#: 0111L257

Work Order Number: _____ SAF# B002-006

Shipping Container ID: SEE OSPC Chain of Custody # B002-006-04

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 1, 0.5, 1.2, 0.5, 1.3, 1°
5. Vermiculite/packing materials is Wet [✓] Dry [ ]
6. Number of samples in shipping container: 14
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: [illegible] Date: 11/2/01

Telephoned to: _____ On _____ By _____

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B02-006
LVL#: 0111L257
SDG/SAF#: H1570/H1575/B02-006

W.O.#: 11343-606-001-9999-00
Date Received: 11-02-01

DIESEL RANGE ORGANICS

The set of samples consisted of nine (9) soil samples collected on 10-30,31-01.

The samples and their associated QC samples were prepared on 11-05-01 and analyzed according to Lionville Laboratory OPs based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 11-07,08-01. The analysis met the intent of method WTPH-D.

1. All cooler temperatures have been recorded on the chain-of-custody.

2. All required holding times for extraction and analysis were met.

3. All initial calibrations associated with this data set were within acceptance criteria.

4. All diesel continuing calibration standards analyzed prior to the sample extracts were within acceptance criteria.

5. All surrogate recoveries were within acceptance criteria.

6. The blank spike recovery was within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

8. 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.

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

11/13/01
Date

R:\share\dro\11-257.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 10 pages.

GLOSSARY OF ODRO DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification 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.

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

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking 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 = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF ODRO DATA

P	=	This flag is used for an ODRO target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
D	=	This flag identifies all compounds identified in an analysis at a secondary dilution factor.
C	=	This flag applies to a compound that has been confirmed by HPLC.

R:/SHARE/HPLC/OLCSCGLOS

Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

Report Date: 11/08/01 13:25

RFW Batch Number: 0111L257 Client: TNU-HANFORD B02-006 Work Order: 11343606001 Page: 1

	Cust ID:	B13C77	B13C77	B13C77	B13C78	B13C79	B13C80
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
	p-Terphenyl	86 %	90 %	93 %	85 %	65 %	66 %
Diesel Range Organics		13.8 U	86 %	91 %	12.4 U	12.3 U	12.4 U
Motor Oil		13.8 U	NS	NS	12.4 U	12.3 U	12.4 U

	Cust ID:	B13C89	B13CL0	B13CL1	B13CL2	B13CL3	BLK
Sample Information	RFW#:	005	006	007	008	009	01LE1331-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
	p-Terphenyl	81 %	70 %	79 %	70 %	65 %	38 %
Diesel Range Organics		12.3 U	12.8 U	13.7 U	12.4 U	12.3 U	12.0 U
Motor Oil		12.3 U	12.8 U	13.7 U	12.4 U	12.3 U	12.0 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

JK 11-8-01

Flgu 11/8/01

Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

Report Date: 11/08/01 13:25

RFW Batch Number: 0111L257 Client: TNU-HANFORD B02-006 Work Order: 11343606001 Page: 2

Cust ID: **BLK BS**

Sample Information

RFW#: **01LE1331-MB1**
Matrix: SOIL
D.F.: 1.00
Units: mg/kg

p-Terphenyl	52	%
Diesel Range Organics	63	%
Motor Oil	NS	

CK 11-8-01

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Lionville Laboratory Use Only

01112257

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client INU HANFORD 302-006

Est. Final Proj. Sampling Date

Project # 11343.606.09.9.99.09

Project Contact/Phone #

Lionville Laboratory Project Manager

QC SPEC Del STD TAT 15 day

Date Rec'd 11-2-01 Date Due 11-17-01

	A	B	C					D		E	F	G			
Refrigerator #	1	2	2					2		2	2	2			
#/Type Container															
Volume															
Preservatives															
ANALYSES REQUESTED	ORGANIC							INORG							
	VOA TCL	BNA	PEST/PCB	Herb				Metal	CN						
Lionville Laboratory Use Only	0GCSC 0624X	0625X 0D20	OPC3					ICP6 MET①		IC① ZN3 N2	ZPH	INH3N			

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 - Filter

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected
001	BIRCH					0850
002						0910
003						0840
004						0820
005						0910
006						0800
007						0820
008						0830
009						0840

Special Instructions:

SAF # 302-006

Run Matrix QC

DATE/REVISIONS:

MET① 1. As, Ba, Cd, Cr, Pb, Se, Ag, Be, Cu, Ni, V, Zn, Hg

IC① 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, +

3. ISFD, INH3N, ICNTO

11-5-01 4. Cancel 0624X Add 0624H + 0GCSC

5.

6.

Lionville Laboratory Use Only

Samples were:
1) Shipped ___ or
Hand Delivered ___
Airbill # ___
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. 10 °C

1-2

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	11/2/01	0835

4235 7954 8556

Relinquished	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

4235 7954 8512 4235 7954 8534

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

4235 7954 8545

4235 7954 8567

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-006-01	Page 1 of 1
Collector: Thomas, G/ Watson, D	Company Contact: Cearlock, CS — Telephone No.: 372-9638	Project Coordinator: TRENT, SJ	Price Code: ~~8N~~ 8K RT 11-1-01 — Data Turnaround: ~~45 Days~~ 15 Day RT 11-1-01
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Soil Samplin	Sampling Location: 200 East & West	SAF No.: B02-006	Air Quality ☐
Ice Chest No.: SEE OSPC	Field Logbook No.: EL 1551 — COA: XL2002CHGR	Method of Shipment: Fed Ex	
Shipped To: ~~TMA~~/RECRA	Offsite Property No.: A020018	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 10/30/01. Collector not available to relinquish samples on 11/1/01 for shipment. RT 11-1-01 RT-

SAMPLE ANALYSIS

Preservation	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	Cool 4C Cool 4C	None		
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
	See item (1) in Special Instructions. DSW 10/30/01	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385		
Sample No.	Matrix *	Sample Date	Sample Time							
B13C77	SOIL	10/30/01	0850		X	X	X	X	X	X	X	X		
B13C78	SOIL	10/30/01	0910		X	X	X	X	X	X	X	X		
B13C79	SOIL	10/30/01	0945		X	X	X	X	X	X	X	X	HETO	B3C84
B13C80	SOIL	10/30/01	1000		X	X	X	X	X	X	X			
B13C89	SOIL	10/30/01	0910		X	X	X	X	X	X	X			

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DSWatson/	10-30-01 1215	REF. 1A 3728 BLDG.	10-30-01 1215
RLP 1A 3728	11-1-01 0900	R Thorer	11-1-01 0900
R Thorer ERC	11-1-01 0900	FEDEX	
FedEx	11/2/01 0935		11-1-01 0935

SPECIAL INSTRUCTIONS

** The Laboratory is to report Decane as a TIC if present in detectable quantities
** The laboratory is to report both diesel and kerosene range compounds from WTPH-D analysis.

(1) ~~Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-On (Americium-241, Radium-228); Strontium-89,90 - Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium~~ DSW 10-30-01
(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(3) NO2/NO3 - 353.2; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(4) Semi-VOA – 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-006-04	Page 1 of 1

Collector: Bowers DL/ Watson, D	Company Contact: Cearlock, CS — Telephone No.: 372-9638	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Soil Samplin	Sampling Location: 200 East & West	SAF No.: B02-006	Air Quality ☐
Ice Chest No.: SEE OSPC	Field Logbook No.: EL1771 — COA: B20CS1673C	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA	Offsite Property No.: A020018	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

TIE TO B13CL4

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 10/31/01. Collector not available to relinquish samples on 11/1/01 for shipment.

RT, 11-1-01

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	None		
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	500mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385		

Sample No.	Matrix *	Sample Date	Sample Time										
B13CL0	SOIL	10-31-01	0805	X	X	X	X	X	X	X	X		
B13CL1	SOIL	10-31-01	0880	X	X	X	X	X	X	X	X		
B13CL2	SOIL	10-31-01	0835	X	X	X	X	X	X	X	X		
B13CL3	SOIL	10-31-01	0845	X	X	X	X	X	X	X	X		

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Doug Bowers Bowers	10-31-01/1110	R.F 1B 3728	10-31-01/1110
Relinquished By/Removed From	R.F 1B 3728	11-1-01 0900	R.L. Thorne	11-1-01 0900
Relinquished By/Removed From	R.L. Thorne ERC	11-1-01 0900	Fedex	
Relinquished By/Removed From	Fedex	11/2/01 0935	Vicki Hernandez	11-2-01 0935
Relinquished By/Removed From			Received By/Stored In	
Relinquished By/Removed From			Received By/Stored In	

SPECIAL INSTRUCTIONS

** The Laboratory is to report Decane as a TIC if present in detectable quantities

** The laboratory is to report both diesel and kerosene range compounds from WTPH-D analysis. RT 10-31

(1) ~~Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-228); Strontium-89,90 - Total; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium~~

(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196

(3) NO2/NO3 - 353.2; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(4) Semi-VOA – 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D

use B13CL4 as shipping criteria

Matrix *

S=Soil
SD=Sediment
SO=Solid
SL=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)

Figure 1. Sample Check-in List

Date/Time Received: 11/2/01 0935

SDG#: 0111L257

Work Order Number: _____ SAF# B002-006

Shipping Container ID: SEE USPC Chain of Custody # B002-006-04

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 1, 0.5, 1.2, 0.5, 1.3, 1°
5. Vermiculite/packing materials is Wet [✓] Dry [ ]
6. Number of samples in shipping container: 14
7. Sample holding times exceeded? Yes [ ] No [✓]

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

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

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

Sample Custodian/Laboratory: [illegible] Date: 11/2/01

Telephoned to: _____ On _____ By _____

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B02-006
LVL #: 0111L257
SDG/SAF #: H1575, H1570/B02-006

W.O. #: 11343-606-001-9999-00
Date Received: 11-02-2001

GC/MS VOLATILE

Nine (9) soil samples were collected on 10-30,31-2001.

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 11-10,12-2001.

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 temperatures upon receipt have been recorded on the chain-of-custody.
2. Samples were 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 blanks contained the common laboratory contaminant Methylene Chloride at levels less than 2x the CRQL.
8. Internal standard area and retention time criteria were met.
9. A spectral search was performed for Decane; however, it was not detected in the samples.
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 data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

for J. Michael Taylor
President
Lionville Laboratory Incorporated

11-21-01
Date

som\group\data\voa\tnu-hanford\0111-257.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 2 5 pages.

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

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.

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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.

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TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan 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 quan modifications:

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

PA - Peak Assignment: quan 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

RFW Batch Number: **0111L257** Client: **TNU-HANFORD B02-006** Work Order: 11343606001 Page: 1a Report Date: 11/21/01 13:36

	Cust ID:	B13C77		B13C78		B13C79		B13C80		B13C89		B13CL0	
Sample Information	RFW#:	001		002		003		004		005		006	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.06		0.909		0.943		1.06		1.09		0.926	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	108	%	116	%	106	%	106	%	104	%	107	%
	Bromofluorobenzene	90	%	94	%	89	%	88	%	91	%	88	%
	1,2-Dichloroethane-d4	98	%	105	%	100	%	102	%	106	%	101	%
			fl		fl		fl		fl		fl		fl
Chloromethane		12	U	9	U	10	U	11	U	11	U	10	U
Bromomethane		12	U	9	U	10	U	11	U	11	U	10	U
Vinyl Chloride		12	U	9	U	10	U	11	U	11	U	10	U
Chloroethane		12	U	9	U	10	U	11	U	11	U	10	U
Methylene Chloride		9	B	6	B	5	B	6	B	6	B	6	B
Acetone		12	U	9	U	10	U	11	U	11	U	10	U
Carbon Disulfide		6	U	5	U	5	U	6	U	6	U	5	U
1,1-Dichloroethene		6	U	5	U	5	U	6	U	6	U	5	U
1,1-Dichloroethane		6	U	5	U	5	U	6	U	6	U	5	U
1,2-Dichloroethene (total)		6	U	5	U	5	U	6	U	6	U	5	U
Chloroform		6	U	5	U	5	U	6	U	6	U	5	U
1,2-Dichloroethane		6	U	5	U	5	U	6	U	6	U	5	U
2-Butanone		12	U	9	U	10	U	11	U	11	U	10	U
1,1,1-Trichloroethane		6	U	5	U	5	U	6	U	6	U	5	U
Carbon Tetrachloride		6	U	5	U	5	U	6	U	6	U	5	U
Bromodichloromethane		6	U	5	U	5	U	6	U	6	U	5	U
1,2-Dichloropropane		6	U	5	U	5	U	6	U	6	U	5	U
cis-1,3-Dichloropropene		6	U	5	U	5	U	6	U	6	U	5	U
Trichloroethene		6	U	5	U	5	U	6	U	6	U	5	U
Dibromochloromethane		6	U	5	U	5	U	6	U	6	U	5	U
1,1,2-Trichloroethane		6	U	5	U	5	U	6	U	6	U	5	U
Benzene		6	U	5	U	5	U	6	U	6	U	5	U
Trans-1,3-Dichloropropene		6	U	5	U	5	U	6	U	6	U	5	U
Bromoform		6	U	5	U	5	U	6	U	6	U	5	U
4-Methyl-2-pentanone		12	U	9	U	10	U	11	U	11	U	10	U
2-Hexanone		12	U	9	U	10	U	11	U	11	U	10	U
Tetrachloroethene		6	U	5	U	5	U	6	U	6	U	5	U
1,1,2,2-Tetrachloroethane		6	U	5	U	5	U	6	U	6	U	5	U
Toluene		6	U	5	U	5	U	6	U	6	U	5	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0111L257** Client: **TNU-HANFORD B02-006** Work Order: 11343606001 Page: 1b

Cust ID:	B13C77	B13C78	B13C79	B13C80	B13C89	B13CL0
RFW#:	001	002	003	004	005	006
Chlorobenzene	6 U	5 U	5 U	6 U	6 U	5 U
Ethylbenzene	6 U	5 U	5 U	6 U	6 U	5 U
Styrene	6 U	5 U	5 U	6 U	6 U	5 U
Xylene (total)	6 U	5 U	5 U	6 U	6 U	5 U

*= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.

Volatiles by GC/MS, HSL List

Report Date: 11/21/01 13:36

RFW Batch Number: **0111L257** Client: **TNU-HANFORD B02-006** Work Order: 11343606001 Page: 2a

	Cust ID:	B13CL0		B13CL0		B13CL1		B13CL2		B13CL3		VBLKYQ	
Sample Information	RFW#:	006 MS		006 MSD		007		008		009		01LVH475-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	0.980		1.00		1.00		0.943		1.02		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	109	%	105	%	107	%	105	%	106	%	106	%
	Bromofluorobenzene	93	%	91	%	92	%	87	%	90	%	92	%
	1,2-Dichloroethane-d4	104	%	104	%	104	%	105	%	105	%	102	%
			fl		fl		fl		fl		fl		fl
Chloromethane		11	U	11	U	11	U	10	U	10	U	10	U
Bromomethane		11	U	11	U	11	U	10	U	10	U	10	U
Vinyl Chloride		11	U	11	U	11	U	10	U	10	U	10	U
Chloroethane		11	U	11	U	11	U	10	U	10	U	10	U
Methylene Chloride		8	B	7	B	9	B	6	B	6	B	7	
Acetone		11	U	11	U	11	U	10	U	10	U	10	U
Carbon Disulfide		6	U	6	U	6	U	5	U	5	U	5	U
1,1-Dichloroethene		91	%	88	%	6	U	5	U	5	U	5	U
1,1-Dichloroethane		6	U	6	U	6	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		6	U	6	U	6	U	5	U	5	U	5	U
Chloroform		6	U	6	U	6	U	5	U	5	U	5	U
1,2-Dichloroethane		6	U	6	U	6	U	5	U	5	U	5	U
2-Butanone		11	U	11	U	11	U	10	U	10	U	10	U
1,1,1-Trichloroethane		6	U	6	U	6	U	5	U	5	U	5	U
Carbon Tetrachloride		6	U	6	U	6	U	5	U	5	U	5	U
Bromodichloromethane		6	U	6	U	6	U	5	U	5	U	5	U
1,2-Dichloropropane		6	U	6	U	6	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		6	U	6	U	6	U	5	U	5	U	5	U
Trichloroethene		106	%	104	%	6	U	5	U	5	U	5	U
Dibromochloromethane		6	U	6	U	6	U	5	U	5	U	5	U
1,1,2-Trichloroethane		6	U	6	U	6	U	5	U	5	U	5	U
Benzene		108	%	106	%	6	U	5	U	5	U	5	U
Trans-1,3-Dichloropropene		6	U	6	U	6	U	5	U	5	U	5	U
Bromoform		6	U	6	U	6	U	5	U	5	U	5	U
4-Methyl-2-pentanone		11	U	11	U	11	U	10	U	10	U	10	U
2-Hexanone		11	U	11	U	11	U	10	U	10	U	10	U
Tetrachloroethene		6	U	6	U	6	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		6	U	6	U	6	U	5	U	5	U	5	U
Toluene		116	%	112	%	6	U	5	U	5	U	5	U

*= Outside of EPA CLP QC limits.

Cust ID:	B13CL0	B13CL0	B13CL1	B13CL2	B13CL3	VBLKYQ
RFW#:	006 MS	006 MSD	007	008	009	01LVH475-MB1
Chlorobenzene	107 %	103 %	6 U	5 U	5 U	5 U
Ethylbenzene	6 U	6 U	6 U	5 U	5 U	5 U
Styrene	6 U	6 U	6 U	5 U	5 U	5 U
Xylene (total)	6 U	6 U	6 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.
Volatiles by GC/MS, HSL List

Report Date: 11/21/01 13:36

RFW Batch Number: **0111L257** Client: **TNU-HANFORD B02-006** Work Order: 11343606001 Page: 3a

	Cust ID:	**VBLKYQ BS**		**VBLKZG**		**VBLKZG BS**	
Sample Information	RFW#:	**01LVH475-MB1**		**01LVH478-MB1**		**01LVH478-MB1**	
	Matrix:	SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	109	%	101	%	103	%
	Bromofluorobenzene	92	%	87	%	91	%
	1,2-Dichloroethane-d4	104	%	100	%	99	%
Chloromethane		10	U	10	U	10	U
Bromomethane		10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U
Chloroethane		10	U	10	U	10	U
Methylene Chloride		9	B	4	J	4	JB
Acetone		10	U	10	U	10	U
Carbon Disulfide		5	U	5	U	5	U
1,1-Dichloroethene		87	%	5	U	86	%
1,1-Dichloroethane		5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	5	U
Chloroform		5	U	5	U	5	U
1,2-Dichloroethane		5	U	5	U	5	U
2-Butanone		10	U	10	U	10	U
1,1,1-Trichloroethane		5	U	5	U	5	U
Carbon Tetrachloride		5	U	5	U	5	U
Bromodichloromethane		5	U	5	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	5	U
Trichloroethene		107	%	5	U	104	%
Dibromochloromethane		5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	5	U	5	U
Benzene		108	%	5	U	107	%
Trans-1,3-Dichloropropene		5	U	5	U	5	U
Bromoform		5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	10	U	10	U
2-Hexanone		10	U	10	U	10	U
Tetrachloroethene		5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U	5	U
Toluene		112	%	5	U	112	%

*= Outside of EPA CLP QC limits.

Cust ID:	**VBLKYQ BS**	**VBLKZG**	**VBLKZG BS**
RFW#:	**01LVH475-MB1**	**01LVH478-MB1**	**01LVH478-MB1**
Chlorobenzene	105 %	5 U	105 %
Ethylbenzene	5 U	5 U	5 U
Styrene	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13C77

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

Client: TNU-HANFORD B02-006

Matrix: SOIL

Lab Sample ID: 0111L257-001

Sample wt/vol: 4.70 (g/mL) G

Lab File ID: h111015

Level: (low/med) LOW

Date Received: 11/02/01

% Moisture: not dec. 13

Date Analyzed: 11/10/01

Column: (pack/cap) CAP

Dilution Factor: 1.06

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	22.247	10	J
2.	SILOXANE	25.523	7	J

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13C78

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

Client: TNU-HANFORD B02-006

Matrix: SOIL

Lab Sample ID: 0111L257-002

Sample wt/vol: 5.50 (g/mL) G

Lab File ID: h111016

Level: (low/med) LOW

Date Received: 11/02/01

% Moisture: not dec. 4

Date Analyzed: 11/10/01

Column: (pack/cap) CAP

Dilution Factor: 0.909

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 12/88 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13C79

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

Client: TNU-HANFORD B02-006

Matrix: SOIL

Lab Sample ID: 0111L257-003

Sample wt/vol: 5.30 (g/mL) G

Lab File ID: h111017

Level: (low/med) LOW

Date Received: 11/02/01

% Moisture: not dec. 3

Date Analyzed: 11/10/01

Column: (pack/cap) CAP

Dilution Factor: 0.943

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 12/88 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13C80

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

Client: TNU-HANFORD B02-006

Matrix: SOIL

Lab Sample ID: 0111L257-004

Sample wt/vol: 4.70 (g/mL) G

Lab File ID: h111018

Level: (low/med) LOW

Date Received: 11/02/01

% Moisture: not dec. 4

Date Analyzed: 11/10/01

Column: (pack/cap) CAP

Dilution Factor: 1.06

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 12/88 Rev.

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1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13C89

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

Client: TNU-HANFORD B02-006

Matrix: SOIL

Lab Sample ID: 0111L257-005

Sample wt/vol: 4.60 (g/mL) G

Lab File ID: h111019

Level: (low/med) LOW

Date Received: 11/02/01

% Moisture: not dec. 4

Date Analyzed: 11/10/01

Column: (pack/cap) CAP

Dilution Factor: 1.09

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 12/88 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CL0

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

Client: TNU-HANFORD B02-006

Matrix: SOIL

Lab Sample ID: 0111L257-006

Sample wt/vol: 5.40 (g/mL) G

Lab File ID: h111209

Level: (low/med) LOW

Date Received: 11/02/01

% Moisture: not dec. 7

Date Analyzed: 11/12/01

Column: (pack/cap) CAP

Dilution Factor: 0.926

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	22.207	30	J

FORM 1 VOA-TIC 12/88 Rev.

17

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CL1

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

Client: TNU-HANFORD B02-006

Matrix: SOIL

Lab Sample ID: 0111L257-007

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: h111210

Level: (low/med) LOW

Date Received: 11/02/01

% Moisture: not dec. 13

Date Analyzed: 11/12/01

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	22.216	20	J

FORM 1 VOA-TIC 12/88 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CL2

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

Client: TNU-HANFORD B02-006

Matrix: SOIL

Lab Sample ID: 0111L257-008

Sample wt/vol: 5.30 (g/mL) G

Lab File ID: h111211

Level: (low/med) LOW

Date Received: 11/02/01

% Moisture: not dec. 3

Date Analyzed: 11/12/01

Column: (pack/cap) CAP

Dilution Factor: 0.943

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 12/88 Rev.

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CL3

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

Client: TNU-HANFORD B02-006

Matrix: SOIL

Lab Sample ID: 0111L257-009

Sample wt/vol: 4.90 (g/mL) G

Lab File ID: h111212

Level: (low/med) LOW

Date Received: 11/02/01

% Moisture: not dec. 3

Date Analyzed: 11/12/01

Column: (pack/cap) CAP

Dilution Factor: 1.02

Number TICs found: 0

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

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

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLKYQ

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

Client: TNU-HANFORD B02-006

Matrix: SOIL

Lab Sample ID: 01LVH475-MB1

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: h111003

Level: (low/med) LOW

Date Received: 11/10/01

% Moisture: not dec. 0

Date Analyzed: 11/10/01

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.				

1E

VOLATILE ORGANICS ANALYSIS SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLKZG

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

Client: TNU-HANFORD B02-006

Matrix: SOIL

Lab Sample ID: 01LVH478-MB1

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: h111205

Level: (low/med) LOW

Date Received: 11/12/01

% Moisture: not dec. 0

Date Analyzed: 11/12/01

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 12/88 Rev.

Lionville Laboratory Use Only

01111257

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: INU Hanford 302-006

Est. Final Proj. Sampling Date:

Project #: 11341-606 09-9799-06

Project Contact/Phone #:

Lionville Laboratory Project Manager: J.S.

QC: SPEC Del: STD TAT: 15 day

Date Rec'd: 11-2-01 Date Due: 11-17-01

	A	B	C					D		E	F	G			
Refrigerator #	1	2	2					2		2	2	2			
#/Type Container															
Volume															
Preservatives															
ANALYSES REQUESTED	ORGANIC							INORG							
	VOA TCL	BNA	Pest/PCB	Herb				Metal	CN						
Lionville Laboratory Use Only	0GCSC 0624X	0625X 0DRO	OPC13					ICRG MET ①		IN3N/2 IC ①	ZPH	IN4N3N			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected
S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - ER/TOX Leachate, WI - Wipe, X - Other, F - Fish	001	B13C77				11/1/01	0850
	002	78					0910
	003	79					0940
	004	80					1000
	005	81					0910
	006	82					0800
	007	83					0820
	008	84					0835
	009	85					0845

Special Instructions: SAF # 302-006

Run Matrix QC

DATE/REVISIONS:

MET ① 1. As, Ba, Cd, Cr, Pb, Se, Ag, Be, Cu, Ni, V, Zn, Hg

IC ① 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, +

3. ISFD, IN4N3N, ICNTO

11-5-01 4. Cancel 0624X Add 0624H + 0GCSC

5.

6.

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	11/2/01	0935

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7954 8545

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # [illegible]

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. 1° °C

1-2

4235 7954 8556 4235 7954 8519 4235 7954 8534 4235 7954 8567

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-006-01	Page 1 of 1

Collector Thomas, G/ Watson, D	Company Contact Cearlock, CS	Telephone No. 372-9638	Project Coordinator TRENT, SJ
Price Code 8N RT 11-1-01 8K	Data Turnaround ~~45 Days~~ RT 11-1-01 15 Day	Air Quality ☐	
Project Designation 200 Area Source Characterization 200-CS-1 OU - Soil Samplin	Sampling Location 200 East & West		SAF No. B02-006
Ice Chest No. SEE OSPC	Field Logbook No. EL 1551	COA XL2002CHGR	Method of Shipment Fed Ex
Shipped To ~~TMA/FECRA~~	Offsite Property No. A020018		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

RT 11-1-01

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 10/30/01.
Collector not available to relinquish samples on 11/1/01 for shipment.
RT-

Preservation	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	Cool 4C Cool 4C	None		
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions. DSW 10-30-01	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385		
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**								
B13C77	SOIL	10/30/01	0850		X	X	X	X	X	X	X		
B13C78	SOIL	10/30/01	0910		X	X	X	X	X	X	X		
B13C79	SOIL	10/30/01	0945		X	X	X	X	X	X	X	TIE TO	B3C84
B13C80	SOIL	10/30/01	1000		X	X	X	X	X	X	X		
B13C89	SOIL	10/30/01	0910		X	X	X	X	X	X	X		

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DSWatson/Ethan	10-30-01 1215	REF. 1A 3728 BLDG.	10-30-01 1215
Ref 1A 3728	11-1-01 0900	R Thorer	11-1-01 0900
R Thorer ERC	11-1-01 0900	FEDEX	
FedEx	11/2/01 0935	Nick Hernandez	11-1-01 0935

SPECIAL INSTRUCTIONS

** The Laboratory is to report Decane as a TIC if present in detectable quantities
** The laboratory is to report both diesel and kerosene range compounds from WTPH-D analysis.

(1) ~~Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-226); Strontium-89,90 - Total Sr; Total Uranium (Uranium);~~ Isotopic Plutonium; Isotopic Thorium ~~(Thorium-232); Americium-241; Neptunium-237, Isotopic Uranium~~ DSW 10-30-01
(2) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(3) NO2/NO3 - 353.2; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(4) Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D

Matrix *
P=Soil
SD=Sediment
SO=Solid
SL=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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-006-04	Page 1 of 1

Collector: Bowers DL/ Watson, D	Company Contact: Cearlock, CS	Telephone No.: 372-9638	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Soil Samplin	Sampling Location: 200 East & West	SAF No.: B02-006	
Ice Chest No.: SEE OSPC	Field Logbook No.: FL1771	COA: B20CS1673C	Method of Shipment: Fed Ex
Shipped To: TMA/RECRA	Offsite Property No.: A020018	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

TIE TO B13CL4

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 10/31/01.
Collector not available to relinquish samples on 11/1/01 for shipment.

RT 11-1-01

SAMPLE ANALYSIS

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	None		
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	500mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385		

Sample No.	Matrix *	Sample Date	Sample Time										
B13CL0	SOIL	10-31-01	0805	X	X	X	X	X	X	X	X		
B13CL1	SOIL	10-31-01	0820	X	X	X	X	X	X	X	X		
B13CL2	SOIL	10-31-01	0835	X	X	X	X	X	X	X	X		
B13CL3	SOIL	10-31-01	0845	X	X	X	X	X	X	X	X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Bowers	10-31-01/1110	Ref 1B 3728	10-31-01/1110
Ref 1B 3728	11-1-01 0900	R T Thorne	11-1-01 0900
R T Thorne ERC	11-1-01 0900	Fed Ex	
Fed Ex	11/2/01 0935	Vicki Hernandez	11-2-01 0935

SPECIAL INSTRUCTIONS

** The Laboratory is to report Decane as a TIC if present in detectable quantities
** The laboratory is to report both diesel and kerosene range compounds from WTPH-D analysis. RT 10-31

~~(1) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-226); Strontium-89,90 - Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium~~
(2) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(3) NO2/NO3 - 353.2; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(4) Semi-VOA – 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D

use B13CL4 as shipping criteria

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=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)

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B02-006
LVL #: 0111L257
SDG/SAF #: H1575, H1570/B02-006

W.O. #: 11343-606-001-9999-00
Date Received: 11-02-2001

SEMIVOLATILE

Nine (9) soil samples were collected on 10-30,31-2001.

The samples and their associated QC samples were extracted on 11-05-2001 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for TCL and Tributylphosphate Semivolatile target compounds on 11-16,17-2001.

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 temperatures upon receipt have been recorded on the chain-of-custody.
2. Samples were extracted and analyzed within required holding time.
3. Non-target compounds were detected in the samples.
4. All surrogate recoveries were within EPA QC limits.
5. One (1) of twenty-two (22) matrix spike recoveries was outside EPA QC limits.
6. Four (4) of twenty-two (22) blank spike recoveries were outside EPA QC limits.
7. Internal standard area and retention time criteria were met.
8. 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

11/21/01
Date

som\gorup\data\bna\tnu-hanford-0111-257.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 2 4 pages.

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

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.

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.

VLI
JONVILLE 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.

Semivolatiles by GC/MS, Special List

RFW Batch Number: **0111L257** Client: **TNU-HANFORD B02-006** Work Order: 11343606001 Report Date: 11/20/01 15:17 Page: 1a

	Cust ID:	B13C77		B13C77		B13C77		B13C78		B13C79		B13C80	
Sample Information	RFW#:	001		001 MS		001 MSD		002		003		004	
	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	Nitrobenzene-d5	75	%	84	%	77	%	77	%	87	%	96	%
	2-Fluorobiphenyl	72	%	77	%	71	%	75	%	78	%	84	%
	p-Terphenyl-d14	107	%	114	%	109	%	109	%	111	%	112	%
	Phenol-d5	65	%	81	%	74	%	74	%	84	%	83	%
	2-Fluorophenol	58	%	78	%	68	%	72	%	79	%	79	%
	2,4,6-Tribromophenol	71	%	87	%	73	%	65	%	74	%	72	%
			fl		fl		fl		fl		fl		fl
Phenol		380	U	81	%	73	%	350	U	340	U	350	U
bis(2-Chloroethyl)ether		380	U	380	U	380	U	350	U	340	U	350	U
2-Chlorophenol		380	U	86	%	76	%	350	U	340	U	350	U
1,3-Dichlorobenzene		380	U	380	U	380	U	350	U	340	U	350	U
1,4-Dichlorobenzene		380	U	72	%	67	%	350	U	340	U	350	U
1,2-Dichlorobenzene		380	U	380	U	380	U	350	U	340	U	350	U
2-Methylphenol		380	U	380	U	380	U	350	U	340	U	350	U
2,2'-oxybis(1-Chloropropane)		380	U	380	U	380	U	350	U	340	U	350	U
4-Methylphenol		380	U	380	U	380	U	350	U	340	U	350	U
N-Nitroso-Di-n-propylamine		380	U	101	%	88	%	350	U	340	U	350	U
Hexachloroethane		380	U	380	U	380	U	350	U	340	U	350	U
Nitrobenzene		380	U	380	U	380	U	350	U	340	U	350	U
Isophorone		380	U	380	U	380	U	350	U	340	U	350	U
2-Nitrophenol		380	U	380	U	380	U	350	U	340	U	350	U
2,4-Dimethylphenol		380	U	380	U	380	U	350	U	340	U	350	U
bis(2-Chloroethoxy)methane		380	U	380	U	380	U	350	U	340	U	350	U
2,4-Dichlorophenol		380	U	380	U	380	U	350	U	340	U	350	U
1,2,4-Trichlorobenzene		380	U	67	%	63	%	350	U	340	U	350	U
Naphthalene		380	U	380	U	380	U	350	U	340	U	350	U
4-Chloroaniline		380	U	380	U	380	U	350	U	340	U	350	U
Hexachlorobutadiene		380	U	380	U	380	U	350	U	340	U	350	U
4-Chloro-3-methylphenol		380	U	90	%	82	%	350	U	340	U	350	U
2-Methylnaphthalene		380	U	380	U	380	U	350	U	340	U	350	U
Hexachlorocyclopentadiene		380	U	380	U	380	U	350	U	340	U	350	U
2,4,6-Trichlorophenol		380	U	380	U	380	U	350	U	340	U	350	U
2,4,5-Trichlorophenol		960	U	950	U	950	U	860	U	860	U	870	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0111L257 Client: TNU-HANFORD B02-006 Work Order: 11343606001 Page: 1b

Cust ID:	B13C77		B13C77		B13C77		B13C78		B13C79		B13C80	
RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	380	U	380	U	380	U	350	U	340	U	350	U
2-Nitroaniline	960	U	950	U	950	U	860	U	860	U	870	U
Dimethylphthalate	380	U	380	U	380	U	350	U	340	U	350	U
Acenaphthylene	380	U	380	U	380	U	350	U	340	U	350	U
2,6-Dinitrotoluene	380	U	380	U	380	U	350	U	340	U	350	U
3-Nitroaniline	960	U	950	U	950	U	860	U	860	U	870	U
Acenaphthene	380	U	78	%	74	%	350	U	340	U	350	U
2,4-Dinitrophenol	960	U	950	U	950	U	860	U	860	U	870	U
4-Nitrophenol	960	U	86	%	72	%	860	U	860	U	870	U
Dibenzofuran	380	U	380	U	380	U	350	U	340	U	350	U
2,4-Dinitrotoluene	380	U	94 *	%	85	%	350	U	340	U	350	U
Diethylphthalate	380	U	380	U	380	U	350	U	340	U	350	U
4-Chlorophenyl-phenylether	380	U	380	U	380	U	350	U	340	U	350	U
Fluorene	380	U	380	U	380	U	350	U	340	U	350	U
4-Nitroaniline	960	U	950	U	950	U	860	U	860	U	870	U
4,6-Dinitro-2-methylphenol	960	U	950	U	950	U	860	U	860	U	870	U
N-Nitrosodiphenylamine (1)	380	U	380	U	380	U	350	U	340	U	350	U
4-Bromophenyl-phenylether	380	U	380	U	380	U	350	U	340	U	350	U
Hexachlorobenzene	380	U	380	U	380	U	350	U	340	U	350	U
Pentachlorophenol	960	U	76	%	68	%	860	U	860	U	870	U
Phenanthrene	380	U	380	U	380	U	350	U	340	U	350	U
Anthracene	380	U	380	U	380	U	350	U	340	U	350	U
Carbazole	380	U	380	U	380	U	350	U	340	U	350	U
Di-n-Butylphthalate	380	U	380	U	25	J	350	U	340	U	350	U
Fluoranthene	380	U	380	U	380	U	350	U	340	U	350	U
Pyrene	380	U	99	%	105	%	350	U	340	U	350	U
Butylbenzylphthalate	380	U	380	U	380	U	350	U	340	U	350	U
3,3'-Dichlorobenzidine	380	U	380	U	380	U	350	U	340	U	350	U
Benzo(a)anthracene	380	U	380	U	380	U	350	U	340	U	350	U
Chrysene	380	U	380	U	380	U	350	U	340	U	350	U
bis(2-Ethylhexyl)phthalate	380	U	380	U	56	J	350	U	340	U	350	U
Di-n-Octyl phthalate	380	U	380	U	380	U	350	U	340	U	350	U
Benzo(b)fluoranthene	380	U	380	U	380	U	350	U	340	U	350	U
Benzo(k)fluoranthene	380	U	380	U	380	U	350	U	340	U	350	U
Benzo(a)pyrene	380	U	380	U	380	U	350	U	340	U	350	U
Indeno(1,2,3-cd)pyrene	380	U	380	U	380	U	350	U	340	U	350	U
Dibenzo(a,h)anthracene	380	U	380	U	380	U	350	U	340	U	350	U
Benzo(g,h,i)perylene	380	U	380	U	380	U	350	U	340	U	350	U
Tributylphosphate	380	U	380	U	380	U	350	U	340	U	350	U

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

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List

RFW Batch Number: 0111L257 Client: TNU-HANFORD B02-006 Work Order: 11343606001 Report Date: 11/20/01 15:17 Page: 2a

	Cust ID:	B13C89		B13CL0		B13CL1		B13CL2		B13CL3		SBLKJD	
Sample Information	RFW#:	005		006		007		008		009		01LE1329-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	Nitrobenzene-d5	80	%	84	%	77	%	76	%	73	%	93	%
	2-Fluorobiphenyl	77	%	77	%	73	%	78	%	73	%	87	%
	p-Terphenyl-d14	103	%	108	%	95	%	100	%	91	%	123	%
	Phenol-d5	78	%	79	%	76	%	76	%	71	%	90	%
	2-Fluorophenol	75	%	76	%	77	%	78	%	68	%	90	%
	2,4,6-Tribromophenol	68	%	71	%	72	%	82	%	75	%	89	%
			fl		fl		fl		fl		fl		fl
Phenol		340	U	360	U	380	U	340	U	340	U	330	U
bis(2-Chloroethyl)ether		340	U	360	U	380	U	340	U	340	U	330	U
2-Chlorophenol		340	U	360	U	380	U	340	U	340	U	330	U
1,3-Dichlorobenzene		340	U	360	U	380	U	340	U	340	U	330	U
1,4-Dichlorobenzene		340	U	360	U	380	U	340	U	340	U	330	U
1,2-Dichlorobenzene		340	U	360	U	380	U	340	U	340	U	330	U
2-Methylphenol		340	U	360	U	380	U	340	U	340	U	330	U
2,2'-oxybis(1-Chloropropane)		340	U	360	U	380	U	340	U	340	U	330	U
4-Methylphenol		340	U	360	U	380	U	340	U	340	U	330	U
N-Nitroso-Di-n-propylamine		340	U	360	U	380	U	340	U	340	U	330	U
Hexachloroethane		340	U	360	U	380	U	340	U	340	U	330	U
Nitrobenzene		340	U	360	U	380	U	340	U	340	U	330	U
Isophorone		340	U	360	U	380	U	340	U	340	U	330	U
2-Nitrophenol		340	U	360	U	380	U	340	U	340	U	330	U
2,4-Dimethylphenol		340	U	360	U	380	U	340	U	340	U	330	U
bis(2-Chloroethoxy)methane		340	U	360	U	380	U	340	U	340	U	330	U
2,4-Dichlorophenol		340	U	360	U	380	U	340	U	340	U	330	U
1,2,4-Trichlorobenzene		340	U	360	U	380	U	340	U	340	U	330	U
Naphthalene		340	U	360	U	380	U	340	U	340	U	330	U
4-Chloroaniline		340	U	360	U	380	U	340	U	340	U	330	U
Hexachlorobutadiene		340	U	360	U	380	U	340	U	340	U	330	U
4-Chloro-3-methylphenol		340	U	360	U	380	U	340	U	340	U	330	U
2-Methylnaphthalene		340	U	360	U	380	U	340	U	340	U	330	U
Hexachlorocyclopentadiene		340	U	360	U	380	U	340	U	340	U	330	U
2,4,6-Trichlorophenol		340	U	360	U	380	U	340	U	340	U	330	U
2,4,5-Trichlorophenol		860	U	890	U	950	U	850	U	860	U	830	U

*= Outside of EPA CLP QC limits.

Cust ID:	B13C89		B13CL0		B13CL1		B13CL2		B13CL3		SBLKJD	
RFW#:	005		006		007		008		009		01LE1329-MB1	
2-Chloronaphthalene	340	U	360	U	380	U	340	U	340	U	330	U
2-Nitroaniline	860	U	890	U	950	U	850	U	860	U	830	U
Dimethylphthalate	340	U	360	U	380	U	340	U	340	U	330	U
Acenaphthylene	340	U	360	U	380	U	340	U	340	U	330	U
2,6-Dinitrotoluene	340	U	360	U	380	U	340	U	340	U	330	U
3-Nitroaniline	860	U	890	U	950	U	850	U	860	U	830	U
Acenaphthene	340	U	360	U	380	U	340	U	340	U	330	U
2,4-Dinitrophenol	860	U	890	U	950	U	850	U	860	U	830	U
4-Nitrophenol	860	U	890	U	950	U	850	U	860	U	830	U
Dibenzofuran	340	U	360	U	380	U	340	U	340	U	330	U
2,4-Dinitrotoluene	340	U	360	U	380	U	340	U	340	U	330	U
Diethylphthalate	340	U	360	U	380	U	340	U	340	U	330	U
4-Chlorophenyl-phenylether	340	U	360	U	380	U	340	U	340	U	330	U
Fluorene	340	U	360	U	380	U	340	U	340	U	330	U
4-Nitroaniline	860	U	890	U	950	U	850	U	860	U	830	U
4,6-Dinitro-2-methylphenol	860	U	890	U	950	U	850	U	860	U	830	U
N-Nitrosodiphenylamine (1)	340	U	360	U	380	U	340	U	340	U	330	U
4-Bromophenyl-phenylether	340	U	360	U	380	U	340	U	340	U	330	U
Hexachlorobenzene	340	U	360	U	380	U	340	U	340	U	330	U
Pentachlorophenol	860	U	890	U	950	U	850	U	860	U	830	U
Phenanthrene	340	U	360	U	380	U	340	U	340	U	330	U
Anthracene	340	U	360	U	380	U	340	U	340	U	330	U
Carbazole	340	U	360	U	380	U	340	U	340	U	330	U
Di-n-Butylphthalate	340	U	360	U	380	U	340	U	25	J	330	U
Fluoranthene	340	U	360	U	380	U	340	U	340	U	330	U
Pyrene	340	U	360	U	380	U	340	U	340	U	330	U
Butylbenzylphthalate	340	U	360	U	380	U	340	U	340	U	330	U
3,3'-Dichlorobenzidine	340	U	360	U	380	U	340	U	340	U	330	U
Benzo(a)anthracene	340	U	360	U	380	U	340	U	340	U	330	U
Chrysene	340	U	360	U	380	U	340	U	340	U	330	U
bis(2-Ethylhexyl)phthalate	340	U	360	U	380	U	340	U	27	J	330	U
Di-n-Octyl phthalate	340	U	360	U	380	U	340	U	340	U	330	U
Benzo(b)fluoranthene	340	U	360	U	380	U	340	U	340	U	330	U
Benzo(k)fluoranthene	340	U	360	U	380	U	340	U	340	U	330	U
Benzo(a)pyrene	340	U	360	U	380	U	340	U	340	U	330	U
Indeno(1,2,3-cd)pyrene	340	U	360	U	380	U	340	U	340	U	330	U
Dibenzo(a,h)anthracene	340	U	360	U	380	U	340	U	340	U	330	U
Benzo(g,h,i)perylene	340	U	360	U	380	U	340	U	340	U	330	U
Tributylphosphate	340	U	360	U	380	U	340	U	340	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: 11/20/01 15:17

RFW Batch Number: **0111L257** — Client: **TNU-HANFORD B02-006** — Work Order: 11343606001 — Page: 3a

	Cust ID:	**SBLKJD BS**		**SBLKJD BSD**	
Sample Information	RFW#:	**01LE1329-MB1**		**01LE1329-MB1**	
	Matrix:	SOIL		SOIL	
	D.F.:	1.00		1.00	
	Units:	ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	114	%	95	%
	2-Fluorobiphenyl	99	%	86	%
	p-Terphenyl-d14	134	%	113	%
	Phenol-d5	107	%	90	%
	2-Fluorophenol	97	%	85	%
	2,4,6-Tribromophenol	112	%	87	%
Phenol		92 *	%	87	%
bis(2-Chloroethyl)ether		330	U	330	U
2-Chlorophenol		97	%	90	%
1,3-Dichlorobenzene		330	U	330	U
1,4-Dichlorobenzene		80	%	75	%
1,2-Dichlorobenzene		330	U	330	U
2-Methylphenol		330	U	330	U
2,2'-oxybis(1-Chloropropane)		330	U	330	U
4-Methylphenol		330	U	330	U
N-Nitroso-Di-n-propylamine		121	%	101	%
Hexachloroethane		330	U	330	U
Nitrobenzene		330	U	330	U
Isophorone		330	U	330	U
2-Nitrophenol		330	U	330	U
2,4-Dimethylphenol		330	U	330	U
bis(2-Chloroethoxy)methane		330	U	330	U
2,4-Dichlorophenol		330	U	330	U
1,2,4-Trichlorobenzene		79	%	75	%
Naphthalene		330	U	330	U
4-Chloroaniline		330	U	330	U
Hexachlorobutadiene		330	U	330	U
4-Chloro-3-methylphenol		104 *	%	96	%
2-Methylnaphthalene		330	U	330	U
Hexachlorocyclopentadiene		330	U	330	U
2,4,6-Trichlorophenol		330	U	330	U
2,4,5-Trichlorophenol		830	U	830	U

*= Outside of EPA CLP QC limits.

Cust ID:	SBLKJD BS		SBLKJD BSD	
RFW#:	01LE1329-MB1		01LE1329-MB1	
2-Chloronaphthalene	330	U	330	U
2-Nitroaniline	830	U	830	U
Dimethylphthalate	330	U	330	U
Acenaphthylene	330	U	330	U
2,6-Dinitrotoluene	330	U	330	U
3-Nitroaniline	830	U	830	U
Acenaphthene	94	%	87	%
2,4-Dinitrophenol	830	U	830	U
4-Nitrophenol	105	%	96	%
Dibenzofuran	330	U	330	U
2,4-Dinitrotoluene	105 *	%	98 *	%
Diethylphthalate	330	U	330	U
4-Chlorophenyl-phenylether	330	U	330	U
Fluorene	330	U	330	U
4-Nitroaniline	830	U	830	U
4,6-Dinitro-2-methylphenol	830	U	830	U
N-Nitrosodiphenylamine (1)	330	U	330	U
4-Bromophenyl-phenylether	330	U	330	U
Hexachlorobenzene	330	U	330	U
Pentachlorophenol	101	%	92	%
Phenanthrene	330	U	330	U
Anthracene	330	U	330	U
Carbazole	330	U	330	U
Di-n-Butylphthalate	20	J	330	U
Fluoranthene	330	U	330	U
Pyrene	114	%	111	%
Butylbenzylphthalate	330	U	330	U
3,3'-Dichlorobenzidine	330	U	330	U
Benzo(a)anthracene	330	U	330	U
Chrysene	330	U	330	U
bis(2-Ethylhexyl)phthalate	20	J	330	U
Di-n-Octyl phthalate	330	U	330	U
Benzo(b)fluoranthene	330	U	330	U
Benzo(k)fluoranthene	330	U	330	U
Benzo(a)pyrene	330	U	330	U
Indeno(1,2,3-cd)pyrene	330	U	330	U
Dibenzo(a,h)anthracene	330	U	330	U
Benzo(g,h,i)perylene	330	U	330	U
Tributylphosphate	330	U	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.

B13C77

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

Client: TNU-HANFORD B02-006

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L257-001

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

Lab File ID: A111611

Level: (low/med) LOW

Date Received: 11/02/01

% Moisture: 13 decanted: (Y/N)__

Date Extracted: 11/05/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/16/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

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

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	6.075	300	JB
2.	UNKNOWN	22.732	80	JB

12

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13C78

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

Client: TNU-HANFORD B02-006

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L257-002

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: A111614

Level: (low/med) LOW

Date Received: 11/02/01

% Moisture: 4 decanted: (Y/N)__

Date Extracted: 11/05/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/16/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	6.080	400	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13C79

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

Client: TNU-HANFORD B02-006

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L257-003

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

Lab File ID: A111615

Level: (low/med) LOW

Date Received: 11/02/01

% Moisture: 3 decanted: (Y/N)__

Date Extracted: 11/05/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/16/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	6.08	300	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13C80

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

Client: TNU-HANFORD B02-006

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L257-004

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

Lab File ID: A111616

Level: (low/med) LOW

Date Received: 11/02/01

% Moisture: 4 decanted: (Y/N)__

Date Extracted: 11/05/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/16/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	6.079	500	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13C89

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

Client: TNU-HANFORD B02-006

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L257-005

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: A111617

Level: (low/med) LOW

Date Received: 11/02/01

% Moisture: 4 decanted: (Y/N)

Date Extracted: 11/05/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/16/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	6.080	400	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CL0

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

Client: TNU-HANFORD B02-006

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L257-006

Sample wt/vol: 30.4 (g/mL) G

Lab File ID: A111618

Level: (low/med) LOW

Date Received: 11/02/01

% Moisture: 8 decanted: (Y/N)

Date Extracted: 11/05/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/16/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH:

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	6.079	200	JB

17

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CL1

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

Client: TNU-HANFORD B02-006

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L257-007

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

Lab File ID: A111709

Level: (low/med) LOW

Date Received: 11/02/01

% Moisture: 13 decanted: (Y/N)__

Date Extracted: 11/05/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/17/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.936	200	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CL2

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

Client: TNU-HANFORD B02-006

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L257-008

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

Lab File ID: A111710

Level: (low/med) LOW

Date Received: 11/02/01

% Moisture: 3 decanted: (Y/N)

Date Extracted: 11/05/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/17/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.937	300	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CL3

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

Client: TNU-HANFORD B02-006

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L257-009

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

Lab File ID: A111711

Level: (low/med) LOW

Date Received: 11/02/01

% Moisture: 3 decanted: (Y/N)

Date Extracted: 11/05/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/17/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.944	200	JB
2.	UNKNOWN	22.638	90	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKJD

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

Client: TNU-HANFORD B02-006

Matrix: (soil/water) SOIL

Lab Sample ID: 01LE1329-MB1

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

Lab File ID: A111604

Level: (low/med) LOW

Date Received: 11/05/01

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

Date Extracted: 11/05/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/16/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

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

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	6.082	300	J
2.	UNKNOWN	22.736	70	J

(✓) BNA from Metals WET

Lionville Laboratory Use Only

01112257

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU HANFORD 1302-006

Est. Final Proj. Sampling Date:

Project #: 11343-606-001-99992001

Project Contact/Phone #:

Lionville Laboratory Project Manager: JS

QC: SPEC Del: STD TAT: 15 day

Date Rec'd: 11-2-01 Date Due: 11-17-01

	A	B	C	D	E	F	G
Refrigerator #	1	2	2	2	2	2	2
#/Type Container							
Volume							
Preservatives							
ANALYSES REQUESTED	ORGANIC				INORG		
	VOA TCL	BNA	PESTI PCB	Herb	Metal	CN	

Lionville Laboratory Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0GCSC 0624X	0625X 0D20	OPC3	ICP8 METT	IC ① ZN3 #2	ZPH	INH3N
S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - Leachate, WI - Wipe, X - Other, F - Fish	001	0138C 737				1-2-01	0850							
	002	738					0910							
	003	9					0945							
	004	40					1000							
	005	39					0910							
	006	2					0805							
	007						0820							
	008						0835							
	009	3					0845							

Special Instructions:

SAF # 302-006

Run Matrix QC

DATE/REVISIONS:

METT ① 1. As, Ba, Cd, Cr, Pb, Se, Ag, Be, Cu, Ni, V, Zn, Hg

IC ① 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, +

3. ISFD, INH3N, ICNTO

11-5-01 4. Cancel 0624X Add 0624H + 0GCSC

5.

6.

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	11/2/01	0935

COMPOSITE WASTE

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

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

NOTES:

4235 7954 8545

Lionville Laboratory Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___

Airbill # [illegible]

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. 1° °C

1-2

4235 7954 8556 4235 7954 8534 4235 7954 8567

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B02-006-01	Page 1 of 1
Collector Thomas, G/ Watson, D	Company Contact Cearlock, CS	Telephone No. 372-9638	Project Coordinator TRENT, SJ	Price Code ~~8N~~ RT 11-1-01 8K Data Turnaround ~~45 Days~~ RT 11-1-01 15 Day
Project Designation 200 Area Source Characterization 200-CS-1 OU - Soil Samplin	Sampling Location 200 East & West		SAF No. B02-006	Air Quality ☐
Ice Chest No. SEE OSPC	Field Logbook No. EL 1551	COA XL2002CHGR	Method of Shipment Fed Ex	
Shipped To ~~TMA~~/RECRA	Offsite Property No. A020018		Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

RT 11-1-01

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 10/30/01. Collector not available to relinquish samples on 11/1/01 for shipment.

RT-

Preservation	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	Cool 4C Cool 4C	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions. DSW 10-30-01	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385		
Sample No.	Matrix *	Sample Date	Sample Time								
B13C77	SOIL	10/30/01	0850		X	X	X	X	X	X	X		
B13C78	SOIL	10/30/01	0910		X	X	X	X	X	X	X		
B13C79	SOIL	10/30/01	0945		X	X	X	X	X	X	X	HETO	3BC84
B13C80	SOIL	10/30/01	1000		X	X	X	X	X	X	X		
B13C89	SOIL	10/30/01	0910		X	X	X	X	X	X	X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DSWatson/Ewat	10-30-01 1215	REF. 1A 3728 BLDG.	10-30-01 1215
Ref 1A 3728	11-1-01 0900	R Thorer	11-1-01 0900
R Thorer	11-1-01 0900	FEDEX	
FedEx	11/2/01 0935		11-1-01 0935

SPECIAL INSTRUCTIONS

** The Laboratory is to report Decane as a TIC if present in detectable quantities
** The Laboratory is to report both diesel and kerosene range compounds from WTPH-D analysis.

(1) ~~Gross Alpha; Gross Beta; Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-On (Americium-241, Radium-226); Strontium-89,90 Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237, Isotopic Uranium~~ DSW 10-30-01
(2) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(3) NO2/NO3 - 353.2; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(4) Semi-VOA – 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wp=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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-006-04	Page 1 of 1

Collector: Bowers DL/ Watson, D	Company Contact: Cearlock, CS	Telephone No.: 372-9638	Project Coordinator: TRENT, SJ
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Soil Samplin	Sampling Location: 200 East & West		SAF No.: B02-006
Ice Chest No.: SEE OSPC	Field Logbook No.: EL1771	COA: B20CS1673C	Method of Shipment: Fed Ex
Shipped To: TMA/RECRA	Offsite Property No.: A020018		Bill of Lading/Air Bill No.: SEE OSPC

Price Code: 8N

Air Quality ☐

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

TIE TO B13CL4

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 10/31/01. Collector not available to relinquish samples on 11/1/01 for shipment.

RT, 11-1-01

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	100mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385		
Sample No.	Matrix *	Sample Date	Sample Time							
B13CL0	SOIL	10-31-01	0805	X	X	X	X	X	X	X	X	
B13CL1	SOIL	10-31-01	0820	X	X	X	X	X	X	X	X	
B13CL2	SOIL	10-31-01	0835	X	X	X	X	X	X	X	X	
B13CL3	SOIL	10-31-01	0845	X	X	X	X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From: Doug	Doug Bowers	10-31-01 1110	Ref 1B 3728	10-31-01 1110
Relinquished By/Removed From: Ref 1B 3728		11-1-01 0900	R.C. Thorne	11-1-01 0900
Relinquished By/Removed From: R.C. Thorne	ERC	11-1-01 0900	Fed Ex	
Relinquished By/Removed From: Fed Ex		11/2/01 0935	Vicki Hernandez	11-2-01 0935
Relinquished By/Removed From		Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From		Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

** The Laboratory is to report Decane as a TIC if present in detectable quantities

** The laboratory is to report both diesel and kerosene range compounds from WTPH-D analysis. RT 10-31

(1) ~~Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-228); Strontium-89,90 - Total-Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium~~

(2) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196

(3) NO2/NO3 - 353.2; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(4) Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D

use DB CL4 as shipping criteria

Matrix *

S=Soil
SD=Sediment
SO=Solid
SL=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)

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU HANFORD B02-006
LVL#: 0111L257
SDG/SAF#: H1570/H1575/B02-006

W.O.#: 11343-606-001-9999-00
Date Received: 11-02-01

PCB

The set of samples consisted of nine (9) soil samples collected on 10-30,31-01.

The samples and their associated QC samples were extracted on 11-05-01 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 11-09,10,12-01. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

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

1. All cooler temperatures have been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis have been met.
3. The samples and their associated QC samples received a sulfuric acid and a sulfur cleanup.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. All blank spike recoveries were within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
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 data 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

11/14/01
Date

pef\r:\group\data\pest\11L-257.pcb

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 10 pages.

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

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification 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.

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

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking 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 = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

P	=	This flag is used for an PESTICIDE/PCB target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
D	=	This flag identifies all compounds identified in an analysis at a secondary dilution factor.
C	=	This flag applies to a compound that has been confirmed by GC/MS.

R:/SHARE/HPLC/PESTICIDE/PCBGLOS

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 11/13/01 12:25

RFW Batch Number: 0111L257 Client: TNU-HANFORD B02-006 Work Order: 11343606001 Page: 1

	Cust ID:	B13C77	B13C77	B13C77	B13C78	B13C79	B13C80
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	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:	Tetrachloro-m-xylene	90 %	62 %	65 %	95 %	78 %	85 %
	Decachlorobiphenyl	94 %	99 %	94 %	101 %	84 %	89 %
Aroclor-1016		38 U	38 U	38 U	34 U	34 U	35 U
Aroclor-1221		76 U	76 U	76 U	69 U	69 U	69 U
Aroclor-1232		38 U	38 U	38 U	34 U	34 U	35 U
Aroclor-1242		38 U	38 U	38 U	34 U	34 U	35 U
Aroclor-1248		38 U	38 U	38 U	34 U	34 U	35 U
Aroclor-1254		38 U	88 %	91 %	34 U	34 U	35 U
Aroclor-1260		38 U	38 U	38 U	34 U	34 U	35 U

	Cust ID:	B13C89	B13CL0	B13CL1	B13CL2	B13CL3	PBLKVD
Sample Information	RFW#:	005	006	007	008	009	01LE1330-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:	Tetrachloro-m-xylene	92 %	90 %	92 %	90 %	75 %	92 %
	Decachlorobiphenyl	98 %	92 %	99 %	102 %	84 %	91 %
Aroclor-1016		34 U	36 U	38 U	34 U	34 U	33 U
Aroclor-1221		68 U	72 U	76 U	68 U	68 U	67 U
Aroclor-1232		34 U	36 U	38 U	34 U	34 U	33 U
Aroclor-1242		34 U	36 U	38 U	34 U	34 U	33 U
Aroclor-1248		34 U	36 U	38 U	34 U	34 U	33 U
Aroclor-1254		34 U	36 U	38 U	34 U	34 U	33 U
Aroclor-1260		34 U	36 U	38 U	34 U	34 U	33 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

	Cust ID:	PBLKVD BS	PBLKVD BSD
Sample Information	RFW#:	01LE1330-MB1	01LE1330-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	UG/KG	UG/KG

Surrogate:	Tetrachloro-m-xylene	95	%	92	%
	Decachlorobiphenyl	93	%	90	%
Aroclor-1016		33	U	33	U
Aroclor-1221		67	U	67	U
Aroclor-1232		33	U	33	U
Aroclor-1242		33	U	33	U
Aroclor-1248		33	U	33	U
Aroclor-1254		89	%	81	%
Aroclor-1260		33	U	33	U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Flgn 11/13/01

(U) DNA From Metals WET

Lionville Laboratory Use Only
01111257

Custody Transfer Record/Lab Work Request

Page 1 of 1

VLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: INU Hartford 302-006
Est. Final Prel. Sampling Date:
Project #:
Project Contact/Phone #:
Lionville Laboratory Project Manager:
QC: SPEC Del: STD TAT: 15 day

Date Rec'd: 11-2-01 Date Due: 11-17-01

	A	B	C					D		E	F	G			
Refrigerator #	1	2	2					2		2	2	2			
#/Type Container															
Volume															
Preservatives															
ANALYSES REQUESTED	ORGANIC							INORG							
	VOA TCL	BNA	Pest/ PCB	Herb				Metal	CN						
Lionville Laboratory Use Only	OGCSC 0624X	0625X ODEO	OPCB					ICRB MET (1)		ZN3 #2 IC (1)	ZPH	INH3N			

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - Liquid
V - Vial
WI - Wipe
TP - Tape
F - Foil

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected
001	[illegible]					
002	[illegible]					
003	[illegible]					
004	[illegible]					
005	[illegible]					
006	[illegible]					
007	[illegible]					
008	[illegible]					
009	[illegible]					

Special Instructions: SAF # 302-006
Run Matrix QC

DATE/REVISIONS:

MET (1)	1.	As, Ba, Cd, Cr, Pb, Se, Ag, Be, Cu, Ni, V, Zn, Hg
IC (1)	2.	ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, +
	3.	ISFD, INH3N, ICNTO
11-5-01	4.	Concel 0624X Add 0624H + OGCSC
	5.	
	6.	

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # [illegible]
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. 1° °C
1-2

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	11/2/01	0935

COMPOSITE WASTE

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES: 4035795485 45

4235 7954 8556 4235 7954 8534 4235 7954 8567

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-006-01	Page 1 of 1

Collector Thomas, G/ Watson, D	Company Contact Cearlock, CS	Telephone No. 372-9638	Project Coordinator TRENT, SJ
Project Designation 200 Area Source Characterization 200-CS-1 OU - Soil Samplin	Sampling Location 200 East & West		SAF No. B02-006
Ice Chest No. SEE OSPC	Field Logbook No. EL 1551	COA XL2002CHGR	Method of Shipment Fed Ex
Shipped To ~~TMA/RECRA~~	Offsite Property No. A020018		Bill of Lading/Air Bill No. SEE OSPC

Price Code ~~8N~~ 8K RT 11-1-01 Data Turnaround ~~45 Days~~ 15 Day RT 11-1-01

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 10/30/01. Collector not available to relinquish samples on 11/1/01 for shipment. RT 11-1-01 RT-

SAMPLE ANALYSIS

Preservation			None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	Cool 4C Cool 4C	None		
Type of Container			sG	sG	sG	sG	sG	sG	sG	sG		
No. of Container(s)			1	1	1	1	1	1	1	1		
Volume			1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
			See item (1) in Special Instructions. DSW 10/30/01	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385		
Sample No.	Matrix *	Sample Date	Sample Time									
B13C77	SOIL	10/30/01	0850		X	X	X	X	X	X		
B13C78	SOIL	10/30/01	0910		X	X	X	X	X	X		
B13C79	SOIL	10/30/01	0945		X	X	X	X	X	X	HETO	B13C84
B13C80	SOIL	10/30/01	1000		X	X	X	X	X	X		
B13C89	SOIL	10/30/01	0910		X	X	X	X	X	X		

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DSWatson/EWA	10-30-01 1215	REF. 1A 3728 BLDG.	10-30-01 1215
RJP 1A 3728	11-1-01 0900	R Thorn	11-1-01 0900
RJP ERC	11-1-01 0900	FEDEX	
FedEx	11/2/01 0935		11-1-01 0935

SPECIAL INSTRUCTIONS

** The Laboratory is to report Decane as a TIC if present in detectable quantities
** The laboratory is to report both diesel and kerosene range compounds from WTPH-D analysis.

(1) ~~Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-228); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium~~ DSW 10-30-01
(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(3) NO2/NO3 - 353.2; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(4) Semi-VOA -- 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-006-04	Page 1 of 1

Collector: Bowers DL/ Watson, D	Company Contact: Cearlock, CS — Telephone No.: 372-9638	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Soil Samplin	Sampling Location: 200 East & West	SAF No.: B02-006	Air Quality ☐
Ice Chest No.: SEE OSPC	Field Logbook No.: FL1551 — COA: B20CS1673C	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA	Offsite Property No.: A020018	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Tie TO B13CL4

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 10/31/01. Collector not available to relinquish samples on 11/1/01 for shipment.

RT 11-1-01

SAMPLE ANALYSIS

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	500mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385		

Sample No.	Matrix *	Sample Date	Sample Time										
B13CL0	SOIL	10-31-01	0805	X	X	X	X	X	X	X	X		
B13CL1	SOIL	10-31-01	0820	X	X	X	X	X	X	X	X		
B13CL2	SOIL	10-31-01	0835	X	X	X	X	X	X	X	X		
B13CL3	SOIL	10-31-01	0845	X	X	X	X	X	X	X	X		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: Doug Bowers Bowers	Date/Time: 10-31-01/1110	Received By/Stored In: Ref 1B 3728	Date/Time: 10-31-01/1110
Relinquished By/Removed From: Ref 1B 3728	Date/Time: 0900 11-1-01	Received By/Stored In: R L Thorer	Date/Time: 0900 11-1-01
Relinquished By/Removed From: R L Thorer ERC	Date/Time: 0900 11-1-01	Received By/Stored In: FedEx	Date/Time:
Relinquished By/Removed From: FedEx	Date/Time: 11/2/01 0935	Received By/Stored In: Nita Hernandez	Date/Time: 11-2-01 0935
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS

** The Laboratory is to report Decane as a TIC if present in detectable quantities

** The laboratory is to report both diesel and kerosene range compounds from WTPH-D analysis. RT 10.31

~~(1) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-228); Strontium-89,90 - Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium~~

(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196

(3) NO2/NO3 - 353.2; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(4) Semi-VOA – 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D

use DB CL4 as shipping criteria

Matrix *

S=Soil
SD=Sediment
SO=Solid
SL=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)

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Figure 1. Sample Check-in List

Date/Time Received: 11/2/01 0935

SDG#: 0111L257

Work Order Number: _____ SAF# B002-006

Shipping Container ID: SEE OSPC Chain of Custody # B002-006-04

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 1, 0.5, 1.2, 0.5, 1.3, 1°
5. Vermiculite/packing materials is Wet [✓] Dry [ ]
6. Number of samples in shipping container: 14
7. Sample holding times exceeded? Yes [ ] No [✓]

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

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

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

Sample Custodian/Laboratory: [signature] Louisville Laboratory Incorporated Date: 11/2/01

Telephoned to: _____ On _____ By _____

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B02-006
LVL#: 0111L257
SDG/SAF#: H1570/H1575/B02-006

W.O.#: 11343-606-001-9999-00
Date Received: 11-02-01

METALS CASE NARRATIVE

1. This narrative covers the analyses of 9 soil samples.

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

   All samples were rerun for Beryllium in file PS1108C. The Titanium results were high in file TA1106D. Beryllium is an IEC for Titanium on the Trace ICP. Therefore Beryllium was rerun on the Poly ICP.

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

4. All cooler temperatures have been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits with the exception of ending CCVs for Cadmium, Lead, and Nickel in file TA1106D. Samples B13CL1, 2, and 3 were rerun for these analytes in file TA1107C.

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) recovery for 1 analyte was outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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 22 pages.

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 level for the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B13C77	Aluminum	20,000	103.9

12. The duplicate analyses for 2 analytes were 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.

for

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

11-15-01
Date

gmb/m11-257

LVLI
LIONVILLE LABORATORY INC

METALS METHOD GLOSSARY

he following methods are used as reference for the digestion and analysis of samples contained within this ot#: 01116257

eaching Procedure: __1310 __1311 __1312 __Other:_____

LP 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: _____

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.

B = Indicates that the parameter was between the Instrument Detection Limit (IDL) and the Contract Required Detection Limit (CRDL)

Q QUALIFIERS

E = The reported value is estimated because of the presence of interference.

M = Duplicate injection precision not met.

N = Spiked sample recovery not within control limits.

S = The reported value was determined by the Method of Standard Additions (MSA).

W = Post Digestion spike for Furnace AA analysis is out of control limits (85 -115 %), while sample absorbance is less than 50% of spike absorbance.

* = Duplicate analysis not within control limits.

+ = Correlation coefficient for the MSA is less than 0.995.

ABBREVIATIONS

PB = Method or Preparation Blank.
S = Matrix Spike.
T = Matrix Spike Duplicate.
R or D = Sample Replicate

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.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/14/01

CLIENT: TNU-HANFORD B02-006 LVL LOT #: 0111L257

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B13C77	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	12.2	MG/KG	0.36	1.0
		Barium, Total	98.5	MG/KG	0.01	1.0
		Beryllium, Total	0.51	MG/KG	0.04	1.0
		Cadmium, Total	0.30	MG/KG	0.03	1.0
		Chromium, Total	9.6	MG/KG	0.07	1.0
		Copper, Total	18.1	MG/KG	0.06	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	11.8	MG/KG	0.11	1.0
		Lead, Total	11.1	MG/KG	0.21	1.0
		Selenium, Total	0.28	MG/KG	0.25	1.0
		Vanadium, Total	78.0	MG/KG	0.06	1.0
		Zinc, Total	58.1	MG/KG	0.03	1.0
-002	B13C78	Silver, Total	0.06 u	MG/KG	0.06	1.0
		Arsenic, Total	3.1	MG/KG	0.32	1.0
		Barium, Total	69.2	MG/KG	0.01	1.0
		Beryllium, Total	0.44	MG/KG	0.04	1.0
		Cadmium, Total	0.16	MG/KG	0.03	1.0
		Chromium, Total	4.0	MG/KG	0.06	1.0
		Copper, Total	15.7	MG/KG	0.05	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	6.7	MG/KG	0.10	1.0
		Lead, Total	2.3	MG/KG	0.19	1.0
		Selenium, Total	0.22 u	MG/KG	0.22	1.0
		Vanadium, Total	85.5	MG/KG	0.05	1.0
		Zinc, Total	55.2	MG/KG	0.03	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/14/01

CLIENT: TNU-HANFORD B02-006

LVL LOT #: 0111L257

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B13C79	Silver, Total	0.05 u	MG/KG	0.05	1.0
		Arsenic, Total	2.2	MG/KG	0.26	1.0
		Barium, Total	59.9	MG/KG	0.008	1.0
		Beryllium, Total	0.40	MG/KG	0.03	1.0
		Cadmium, Total	0.15	MG/KG	0.02	1.0
		Chromium, Total	4.3	MG/KG	0.05	1.0
		Copper, Total	13.5	MG/KG	0.04	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	6.1	MG/KG	0.08	1.0
		Lead, Total	2.3	MG/KG	0.15	1.0
		Selenium, Total	0.18 u	MG/KG	0.18	1.0
		Vanadium, Total	77.1	MG/KG	0.04	1.0
		Zinc, Total	47.7	MG/KG	0.02	1.0
-004	B13C80	Silver, Total	0.05 u	MG/KG	0.05	1.0
		Arsenic, Total	3.4	MG/KG	0.25	1.0
		Barium, Total	59.9	MG/KG	0.008	1.0
		Beryllium, Total	0.34	MG/KG	0.03	1.0
		Cadmium, Total	0.1	MG/KG	0.02	1.0
		Chromium, Total	3.5	MG/KG	0.05	1.0
		Copper, Total	12.6	MG/KG	0.04	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	5.3	MG/KG	0.08	1.0
		Lead, Total	1.7	MG/KG	0.15	1.0
		Selenium, Total	0.17 u	MG/KG	0.17	1.0
		Vanadium, Total	65.8	MG/KG	0.04	1.0
		Zinc, Total	42.3	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/14/01

CLIENT: TNU-HANFORD B02-006 LVL LOT #: 0111L257

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B13C89	Silver, Total	0.06 u	MG/KG	0.06	1.0
		Arsenic, Total	2.5	MG/KG	0.33	1.0
		Barium, Total	64.7	MG/KG	0.01	1.0
		Beryllium, Total	0.32	MG/KG	0.04	1.0
		Cadmium, Total	0.12	MG/KG	0.03	1.0
		Chromium, Total	3.0	MG/KG	0.06	1.0
		Copper, Total	12.2	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	5.6	MG/KG	0.10	1.0
		Lead, Total	2.5	MG/KG	0.19	1.0
		Selenium, Total	0.28	MG/KG	0.22	1.0
		Vanadium, Total	58.8	MG/KG	0.05	1.0
		Zinc, Total	39.8	MG/KG	0.03	1.0
-006	B13CL0	Silver, Total	0.06 u	MG/KG	0.06	1.0
		Arsenic, Total	8.7	MG/KG	0.34	1.0
		Barium, Total	87.5	MG/KG	0.01	1.0
		Beryllium, Total	0.50	MG/KG	0.04	1.0
		Cadmium, Total	0.13	MG/KG	0.03	1.0
		Chromium, Total	7.8	MG/KG	0.06	1.0
		Copper, Total	16.3	MG/KG	0.05	1.0
		Mercury, Total	0.15	MG/KG	0.02	1.0
		Nickel, Total	9.5	MG/KG	0.10	1.0
		Lead, Total	6.8	MG/KG	0.20	1.0
		Selenium, Total	0.23 u	MG/KG	0.23	1.0
		Vanadium, Total	64.9	MG/KG	0.05	1.0
		Zinc, Total	53.8	MG/KG	0.03	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/14/01

CLIENT: TNU-HANFORD B02-006 LVL LOT #: 0111L257

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	B13CL1	Silver, Total	0.06 u	MG/KG	0.06	1.0
		Arsenic, Total	9.2	MG/KG	0.33	1.0
		Barium, Total	110	MG/KG	0.01	1.0
		Beryllium, Total	0.55	MG/KG	0.04	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	10.0	MG/KG	0.06	1.0
		Copper, Total	19.4	MG/KG	0.05	1.0
		Mercury, Total	0.10	MG/KG	0.02	1.0
		Nickel, Total	12.1	MG/KG	0.10	1.0
		Lead, Total	9.5	MG/KG	0.19	1.0
		Selenium, Total	0.49	MG/KG	0.22	1.0
		Vanadium, Total	70.0	MG/KG	0.05	1.0
		Zinc, Total	59.4	MG/KG	0.03	1.0
-008	B13CL2	Silver, Total	0.06 u	MG/KG	0.06	1.0
		Arsenic, Total	2.4	MG/KG	0.33	1.0
		Barium, Total	61.5	MG/KG	0.01	1.0
		Beryllium, Total	0.34	MG/KG	0.04	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	7.9	MG/KG	0.06	1.0
		Copper, Total	12.4	MG/KG	0.05	1.0
		Mercury, Total	0.04	MG/KG	0.02	1.0
		Nickel, Total	16.5	MG/KG	0.10	1.0
		Lead, Total	2.4	MG/KG	0.20	1.0
		Selenium, Total	0.23	MG/KG	0.23	1.0
		Vanadium, Total	62.9	MG/KG	0.05	1.0
		Zinc, Total	41.7	MG/KG	0.03	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/14/01

CLIENT: TNU-HANFORD B02-006 LVL LOT #: 0111L257

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	B13CL3	Silver, Total	0.06 u	MG/KG	0.06	1.0
		Arsenic, Total	2.2	MG/KG	0.30	1.0
		Barium, Total	58.8	MG/KG	0.01	1.0
		Beryllium, Total	0.35	MG/KG	0.04	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	4.8	MG/KG	0.06	1.0
		Copper, Total	12.1	MG/KG	0.05	1.0
		Mercury, Total	0.09	MG/KG	0.02	1.0
		Nickel, Total	7.3	MG/KG	0.1	1.0
		Lead, Total	2.4	MG/KG	0.18	1.0
		Selenium, Total	0.35	MG/KG	0.21	1.0
		Vanadium, Total	52.6	MG/KG	0.05	1.0
		Zinc, Total	37.9	MG/KG	0.03	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/14/01

CLIENT: TNU-HANFORD B02-006 LVL LOT #: 0111L257

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0721-MB1	Silver, Total	0.06 u	MG/KG	0.06	1.0
		Arsenic, Total	0.32 u	MG/KG	0.32	1.0
		Barium, Total	0.05	MG/KG	0.01	1.0
		Beryllium, Total	0.04 u	MG/KG	0.04	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.06	MG/KG	0.06	1.0
		Copper, Total	0.11	MG/KG	0.05	1.0
		Nickel, Total	0.10 u	MG/KG	0.10	1.0
		Lead, Total	0.19 u	MG/KG	0.19	1.0
		Selenium, Total	0.22 u	MG/KG	0.22	1.0
		Vanadium, Total	0.05 u	MG/KG	0.05	1.0
		Zinc, Total	0.16	MG/KG	0.03	1.0
BLANK1	01C0352-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/14/01

CLIENT: TNU-HANFORD B02-006

LVL LOT #: 0111L257

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B13C77	Silver, Total	5.2	0.07u	5.6	92.9	1.0
		Arsenic, Total	217	12.2	225	91.3	1.0
		Barium, Total	307	98.5	225	92.9	1.0
		Beryllium, Total	5.5	0.51	5.6	89.1	1.0
		Cadmium, Total	5.3	0.30	5.6	89.3	1.0
		Chromium, Total	31.9	9.6	22.5	99.1	1.0
		Copper, Total	46.3	18.1	28.1	100.4	1.0
		Mercury, Total	0.17	0.02u	0.17	97.7	1.0
		Nickel, Total	63.4	11.8	56.2	91.8	1.0
		Lead, Total	61.6	11.1	56.2	89.9	1.0
		Selenium, Total	196	0.28	225	87.0	1.0
		Vanadium, Total	131	78.0	56.2	93.8	1.0
		Zinc, Total	110	58.1	56.2	92.5	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/14/01

CLIENT: TNU-HANFORD B02-006 LVL LOT #: 0111L257

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B13C77	Silver, Total	0.07u	0.07u	NC	1.0
		Arsenic, Total	12.2	13.6	10.9	1.0
		Barium, Total	98.5	103	4.6	1.0
		Beryllium, Total	0.51	0.53	2.8	1.0
		Cadmium, Total	0.30	0.31	1.5	1.0
		Chromium, Total	9.6	11.5	18.0	1.0
		Copper, Total	18.1	18.6	2.7	1.0
		Mercury, Total	0.02u	0.02	NC	1.0
		Nickel, Total	11.8	11.5	2.6	1.0
		Lead, Total	11.1	10.6	4.6	1.0
		Selenium, Total	0.28	0.25u	NC	1.0
		Vanadium, Total	78.0	77.2	1.0	1.0
		Zinc, Total	58.1	59.0	1.5	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/14/01

CLIENT: TNU-HANFORD B02-006 LVL LOT #: 0111L257

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0721-LC1	Silver, LCS	44.6	50.0	MG/KG	89.2
		Arsenic, LCS	1010	1000	MG/KG	100.7
		Barium, LCS	500	500	MG/KG	100
		Beryllium, LCS	25.6	25.0	MG/KG	102.2
		Cadmium, LCS	25.8	25.0	MG/KG	103.2
		Chromium, LCS	51.7	50.0	MG/KG	103.4
		Copper, LCS	129	125	MG/KG	103.0
		Nickel, LCS	209	200	MG/KG	104.6
		Lead, LCS	256	250	MG/KG	102.6
		Selenium, LCS	991	1000	MG/KG	99.1
		Vanadium, LCS	257	250	MG/KG	102.8
		Zinc, LCS	103	100	MG/KG	103.2
LCS1	01C0352-LC1	Mercury, LCS	2.7	2.5	MG/KG	109.2

Lionville Laboratory Use Only

01111L257

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: INA HANFORD 1302-006
Est. Final Proj. Sampling Date:
Project #: 11-2937-608-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: JS
QC: SPEC Del: STD TAT: 15 day

Date Rec'd: 11-2-01 Date Due: 11-17-01

		A	B	C					D		E	F	G			
Refrigerator #		1	2	2					2		2	2	2			
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG					1AG		1AG	1AG	1AG			
Volume	Liquid															
	Solid	120	1000	120					500		1000	60	120			
Preservatives		—	—	—					—		—	—	—			
ANALYSES REQUESTED	ORGANIC: VOA TCL	BNA	Pest/PCB	Herb					INORG: Metal	CN	IC Anions NO2 NO3	pH	TCLP 1312	HNO3		
Lionville Laboratory Use Only		OGCSC 0624X	0625X OD20	OPC13					ICP6 MET①		ZNO3 NO2 IC①	ZPH	IHNH3N			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected
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	B13C77			S	10/30/01	0850
	002	78					0910
	003	79					0940
	004	80					1000
	005	89					0910
	006	B13C90					0805
	007	1					0820
	008	2					0835
	009	3					0845

Special Instructions: SAF # B02-006
Run Matrix QC

DATE/REVISIONS:

MET①	1.	As, Ba, Cd, Cr, Pb, Se, Ag, Be, Cu, Ni, V, Zn, Hg
IC①	2.	ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, +
	3.	ISFD, INH3N, ICNTO
11-5-01	4.	Cancel 0624X Add 0624H + OGCSC
	5.	
	6.	

Lionville Laboratory Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___
Airbill # Courier
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. 10 °C 1-2

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	11/2/01	0835

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
4235 7954 8545

4235 7954 8556 4235 7954 8534 4235 7954 8567

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-006-01	Page 1 of 1

Collector: Thomas, G/ Watson, D	Company Contact: Cearlock, CS	Telephone No.: 372-9638	Project Coordinator: TRENT, SJ
Price Code: ~~8N~~ RT 11-1-01 8K	Data Turnaround: ~~45 Days~~ RT 11-1-01 15 Day	Air Quality ☐	
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Soil Samplin	Sampling Location: 200 East & West	SAF No.: B02-006	
Ice Chest No.: SEE OSPC	Field Logbook No.: EL 1551	COA: XL2002CHGR	Method of Shipment: Fed Ex
Shipped To: ~~TMA/RECRA~~	Offsite Property No.: A020018	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

RT 11-1-01

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 10/30/01.
Collector not available to relinquish samples on 11/1/01 for shipment.
RT-

SAMPLE ANALYSIS

Preservation	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	Cool 4C Cool 4C	None		
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385		

Sample No.	Matrix *	Sample Date	Sample Time										
B13C77	SOIL	10/30/01	0850		X	X	X	X	X	X	X		
B13C78	SOIL	10/30/01	0910		X	X	X	X	X	X	X		
B13C79	SOIL	10/30/01	0945		X	X	X	X	X	X	X	HEPO	B13C84
B13C80	SOIL	10/30/01	1000		X	X	X	X	X	X	X		
B13C89	SOIL	10/30/01	0910		X	X	X	X	X	X	X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DSWATSON/	10-30-01 1215	REF. 1A 3728 BLDG.	10-30-01 1215
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Ref 1A 3728	11-1-01 0900	R Thorer	11-1-01 0900
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R Thorer ERC	11-1-01 0900	FEDEX	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
FedEx	11/2/01 0935	[illegible]	11-1-01 0935
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

** The Laboratory is to report Decane as a TIC if present in detectable quantities
** The laboratory is to report both diesel and kerosene range compounds from WTPH-D analysis.

(1) ~~Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-228); Strontium-89,90 — Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium~~ DSW 10-30-01
(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(3) NO2/NO3 - 353.2; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(4) Semi-VOA – 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D

Matrix *
S=Soil
SB=Sediment
SO=Solid
SL=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

HNI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-006-04	Page 1 of 1

Collector: Bowers DL/ Watson, D	Company Contact: Cearlock, CS — Telephone No.: 372-9638	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Soil Samplin	Sampling Location: 200 East & West	SAF No.: B02-006	Air Quality ☐
Ice Chest No.: SEE DSPC	Field Logbook No.: EL1571 — COA: B20CS1673C	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA	Offsite Property No.: A020018	Bill of Lading/Air Bill No.: SEE DSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

TIE TO B13CL4

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 10/31/01. Collector not available to relinquish samples on 11/1/01 for shipment.

RT, 11-1-01

SAMPLE ANALYSIS

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385		

Sample No.	Matrix *	Sample Date	Sample Time										
B13CL0	SOIL	10-31-01	0805	X	X	X	X	X	X	X	X		
B13CL1	SOIL	10-31-01	0820	X	X	X	X	X	X	X	X		
B13CL2	SOIL	10-31-01	0835	X	X	X	X	X	X	X	X		
B13CL3	SOIL	10-31-01	0845	X	X	X	X	X	X	X	X		

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From: Bowers	Bowers	10-31-01/1110	Ref 1B 3728	10-31-01/1110
Relinquished By/Removed From: Ref 1B 3728		11-1-01 0900	Received By/Stored In: R.C. Thorne	11-1-01 0900
Relinquished By/Removed From: R.C. Thorne	RC Thorne	11-1-01 0900	Received By/Stored In: FedEx	
Relinquished By/Removed From: FedEx		11/2/01 0935	Received By/Stored In: Vicki Hernandez	11-2-01 0935
Relinquished By/Removed From		Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From		Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

** The Laboratory is to report Decane as a TIC if present in detectable quantities

** The laboratory is to report both diesel and kerosene range compounds from WTPH-D analysis. RT 10-31

~~(1) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-228); Strontium-89,90 - Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium~~

(2) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196

(3) NO2/NO3 - 353.2; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(4) Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D

use B13CL4 as shipping criteria

Matrix *

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

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

BHI-SE-011 (10/99)

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B02-008 H1570/H1575
LVL#: 0111L257

W.O.#: 11343-606-001-9999-00
Date Received: 11-02-01

INORGANIC NARRATIVE

1. This narrative covers the analyses of 9 soil samples.

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

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

4. The cooler temperatures were recorded on the chain of custody.

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS were within the 20% Relative Percent Difference (RPD) control limit.

7. The matrix spike recoveries were within the 75-125% control limits.

8. The replicate analyses were within the 20% RPD control limit.

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.

for Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

11-19-01
Date

njp\i11-257

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 22 pages.

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/9014	__ 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: Chloride, Fluoride, Nitrate, } **Method:** EPA 300.0 (mod.)

Other: Nitrite, Phosphate, Sulfate } **Method**

Hydrazine — USAFSAM, Report TR-82-29

Nitrate-Nitrite — EPA 353.2(mod.)

Ammonia — EPA 350.3(mod.)

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 Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/16/01

CLIENT: TNU-HANFORD B02-006 H1570/H1575 LVL LOT #: 0111L257

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B13C77	% Solids	87.2		%	0.01	1.0
		Chloride by IC	4.3		MG/KG	1.4	1.0
		Fluoride by IC	2.9	u	MG/KG	2.9	1.0
		Nitrite by IC	1.43	u	MG/KG	1.43	1.0
		Nitrate by IC	156		MG/KG	7.17	5.0
		Cyanide, Total	0.46	u	MG/KG	0.46	1.0
		Phosphate by IC	1.4	u	MG/KG	1.4	1.0
		Chromium VI	0.46	u	MG/KG	0.46	1.0
		Sulfate by IC	31.1		MG/KG	1.4	1.0
		Hydrazine	1.1	u	MG/KG	1.1	1.0
		Nitrate Nitrite	39.0		MG/KG	1.1	5.0
		Ammonia, as N	3.3	u	MG/KG	3.3	1.0
		pH	8.4		SOIL PH	0.01	1.0
		Sulfide	40.5	u	MG/KG	40.5	1.0
-002	B13C78	% Solids	96.2		%	0.01	1.0
		Chloride by IC	2.2		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.30	u	MG/KG	1.30	1.0
		Nitrate by IC	22.4		MG/KG	1.30	1.0
		Cyanide, Total	0.35	u	MG/KG	0.35	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	6.4		MG/KG	1.3	1.0
		Hydrazine	1.0	u	MG/KG	1.0	1.0
		Nitrate Nitrite	5.1		MG/KG	0.20	1.0
		Ammonia, as N	3.3	u	MG/KG	3.3	1.0
		pH	9.1		SOIL PH	0.01	1.0
		Sulfide	29.7	u	MG/KG	29.7	1.0
-003	B13C79	% Solids	96.8		%	0.01	1.0
		Chloride by IC	2.5		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.29	u	MG/KG	1.29	1.0
		Nitrate by IC	23.5		MG/KG	1.29	1.0
		Cyanide, Total	0.40	u	MG/KG	0.40	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.41	u	MG/KG	0.41	1.0
		Sulfate by IC	8.3		MG/KG	1.3	1.0
		Hydrazine	1.0	u	MG/KG	1.0	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/16/01

CLIENT: TNU-HANFORD B02-006 H1570/H1575 LVL LOT #: 0111L257

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B13C79	Nitrate Nitrite	6.0		MG/KG	0.21	1.0
		Ammonia, as N	3.2	u	MG/KG	3.2	1.0
		pH	9.0		SOIL PH	0.01	1.0
		Sulfide	29.6	u	MG/KG	29.6	1.0
-004	B13C80	% Solids	95.6		%	0.01	1.0
		Chloride by IC	3.0		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.31	u	MG/KG	1.31	1.0
		Nitrate by IC	33.8		MG/KG	1.31	1.0
		Cyanide, Total	0.46	u	MG/KG	0.46	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	6.9		MG/KG	1.3	1.0
		Hydrazine	1.0	u	MG/KG	1.0	1.0
		Nitrate Nitrite	7.9		MG/KG	0.19	1.0
		Ammonia, as N	3.1	u	MG/KG	3.1	1.0
		pH	9.0		SOIL PH	0.01	1.0
		Sulfide	38.1	u	MG/KG	38.1	1.0
-005	B13C89	% Solids	96.5		%	0.01	1.0
		Chloride by IC	2.5		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.30	u	MG/KG	1.30	1.0
		Nitrate by IC	23.3		MG/KG	1.30	1.0
		Cyanide, Total	0.44	u	MG/KG	0.44	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	6.5		MG/KG	1.3	1.0
		Hydrazine	1.0	u	MG/KG	1.0	1.0
		Nitrate Nitrite	5.9		MG/KG	0.21	1.0
		Ammonia, as N	3.3	u	MG/KG	3.3	1.0
		pH	9.0		SOIL PH	0.01	1.0
		Sulfide	41.3	u	MG/KG	41.3	1.0
-006	B13CL0	% Solids	92.6		%	0.01	1.0
		Chloride by IC	2.8		MG/KG	1.3	1.0
		Fluoride by IC	2.7	u	MG/KG	2.7	1.0
		Nitrite by IC	1.35	u	MG/KG	1.35	1.0
		Nitrate by IC	36.0		MG/KG	1.35	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/16/01

CLIENT: TNU-HANFORD B02-006 H1570/H1575 LVL LOT #: 0111L257

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	B13CL0	Cyanide, Total	0.48	u	MG/KG	0.48	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.43	u	MG/KG	0.43	1.0
		Sulfate by IC	35.2		MG/KG	1.3	1.0
		Hydrazine	1.1	u	MG/KG	1.1	1.0
		Nitrate Nitrite	7.6		MG/KG	0.21	1.0
		Ammonia, as N	3.2	u	MG/KG	3.2	1.0
		pH	7.9		SOIL PH	0.01	1.0
		Sulfide	43.0	u	MG/KG	43.0	1.0
-007	B13CL1	% Solids	87.4		%	0.01	1.0
		Chloride by IC	2.2		MG/KG	1.4	1.0
		Fluoride by IC	2.9	u	MG/KG	2.9	1.0
		Nitrite by IC	1.43	u	MG/KG	1.43	1.0
		Nitrate by IC	26.6		MG/KG	1.43	1.0
		Cyanide, Total	0.54	u	MG/KG	0.54	1.0
		Phosphate by IC	1.4	u	MG/KG	1.4	1.0
		Chromium VI	0.46	u	MG/KG	0.46	1.0
		Sulfate by IC	14.6		MG/KG	1.4	1.0
		Hydrazine	1.1	u	MG/KG	1.1	1.0
		Nitrate Nitrite	6.2		MG/KG	0.24	1.0
		Ammonia, as N	3.3	u	MG/KG	3.3	1.0
		pH	8.4		SOIL PH	0.01	1.0
		Sulfide	39.9	u	MG/KG	39.9	1.0
-008	B13CL2	% Solids	97.1		%	0.01	1.0
		Chloride by IC	2.4		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.29	u	MG/KG	1.29	1.0
		Nitrate by IC	9.94		MG/KG	1.29	1.0
		Cyanide, Total	0.41	u	MG/KG	0.41	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.56		MG/KG	0.41	1.0
		Sulfate by IC	7.8		MG/KG	1.3	1.0
		Hydrazine	1.0	u	MG/KG	1.0	1.0
		Nitrate Nitrite	2.9		MG/KG	0.19	1.0
		Ammonia, as N	2.2	u	MG/KG	2.2	1.0
		pH	8.9		SOIL PH	0.01	1.0
		Sulfide	35.2	u	MG/KG	35.2	1.0
-009	B13CL3	% Solids	97.3		%	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/16/01

CLIENT: TNU-HANFORD B02-006 H1570/H1575 LVL LOT #: 0111L257

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	B13CL3	Chloride by IC	3.1		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.28	u	MG/KG	1.28	1.0
		Nitrate by IC	9.52		MG/KG	1.28	1.0
		Cyanide, Total	0.41	u	MG/KG	0.41	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.41	u	MG/KG	0.41	1.0
		Sulfate by IC	6.1		MG/KG	1.3	1.0
		Hydrazine	1.0	u	MG/KG	1.0	1.0
		Nitrate Nitrite	2.7		MG/KG	0.20	1.0
		Ammonia, as N	2.4	u	MG/KG	2.4	1.0
		pH	9.0		SOIL PH	0.01	1.0
		Sulfide	40.7	u	MG/KG	40.7	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/16/01

CLIENT: TNU-HANFORD B02-006 H1570/H1575 LVL LOT #: 0111L257

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LXC074-MB1	Chloride by IC	1.2 u	MG/KG	1.2	1.0
		Fluoride by IC	2.5 u	MG/KG	2.5	1.0
		Nitrite by IC	1.25 u	MG/KG	1.25	1.0
		Nitrate by IC	1.25 u	MG/KG	1.25	1.0
		Phosphate by IC	1.2 u	MG/KG	1.2	1.0
		Sulfate by IC	1.2 u	MG/KG	1.2	1.0
BLANK1	01LCA98-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0
BLANK10	01LVI086-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0
BLANK10	01LHZ004-MB1	Hydrazine	1.0 u	MG/KG	1.0	1.0
BLANK10	01LN3061-MB1	Nitrate Nitrite	0.20 u	MG/KG	0.20	1.0
BLANK10	01LAM050-MB1	Ammonia, as N	2.5 u	MG/KG	2.5	1.0
BLANK10	01LSD061-MB1	Sulfide	40.0 u	MG/KG	40.0	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/16/01

CLIENT: TNU-HANFORD B02-006 H1570/H1575 LVL LOT #: 0111L257

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B13C77	Chloride by IC	32.8	4.3	29.0	98.3	1.0
		Fluoride by IC	61.0	0.40	57.0	106.3	1.0
		Nitrite by IC	27.6	1.43u	29.0	95.1	1.0
		Nitrate by IC	430	156	287	95.6	10.0
		Phosphate by IC	28.8	1.4 u	29.0	99.3	1.0
		Sulfate by IC	298	31.1	287	93.1	10.0
		Hydrazine	5.9	1.1 u	5.7	102.6	1.0
-002	B13C78	Soluble Chromium VI	4.4	0.42u	4.2	101.5	1.0
		Insoluble Chromium VI	1250	0.42u	1220	102.5	100
-008	B13CL2	Nitrate Nitrite	8.0	2.9	5.1	99.7	1.0
-009	B13CL3	Cyanide, Total	4.54	0.41u	5.10	88.9	1.0
		Ammonia, as N	205	2.4 u	200	102.5	1.0
		Sulfide	246	20.4	271	83.5	1.0
BLANK10	01LXC074-MB1	Chloride by IC	23.8	1.2 u	25.0	95.3	1.0
		Fluoride by IC	51.9	2.5 u	50.0	103.9	1.0
		Nitrite by IC	24.2	1.25u	25.0	96.6	1.0
		Nitrate by IC	24.9	1.25u	25.0	99.6	1.0
		Phosphate by IC	26.1	1.2 u	25.0	104.4	1.0
		Sulfate by IC	24.1	1.2 u	25.0	96.3	1.0
BLANK10	01LVI086-MB1	Soluble Chromium VI	4.0	0.40u	4.0	100.9	1.0
		Insoluble Chromium VI	1060	0.40u	1090	96.4	100
BLANK10	01LHZ004-MB1	Hydrazine	5.2	1.0 u	5.0	103.1	1.0
		Hydrazine MSD	5.2	1.0 u	5.0	103.6	1.0
BLANK10	01LN3061-MB1	Nitrate Nitrite	5.2	0.20u	5.0	103.0	1.0
BLANK10	01LAM050-MB1	Ammonia, as N	103	2.5 u	100	102.8	1.0
		Ammonia, as N MSD	103	2.5 u	100	103.2	1.0
BLANK10	01LSD061-MB1	Sulfide	260	40.0 u	282	92.4	1.0
		Sulfide MSD	289	40.0 u	282	102.4	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 11/16/01

CLIENT: TNU-HANFORD B02-006 H1570/H1575 LVL LOT #: 0111L257

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	01LHZ004-MB1	Hydrazine	103.1	103.6	0.46
BLANK10	01LAM050-MB1	Ammonia, as N	102.8	103.2	0.49
BLANK10	01LSD061-MB1	Sulfide	92.4	102.4	10.2

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/16/01

CLIENT: TNU-HANFORD B02-006 H1570/H1575 LVL LOT #: 0111L257

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B13C77	% Solids	87.2	87.5	0.33	1.0
		Chloride by IC	4.3	3.8	11.7	1.0
		Fluoride by IC	2.9 u	2.9 u	NC	1.0
		Nitrite by IC	1.43u	1.43u	NC	1.0
		Nitrate by IC	156	151	3.2	5.0
		Phosphate by IC	1.4 u	1.4 u	NC	1.0
		Sulfate by IC	31.1	30.6	1.7	1.0
		Hydrazine	1.1 u	1.1 u	NC	1.0
		pH	8.4	8.4	0.4	1.0
-002REP	B13C78	Chromium VI	0.42u	0.42u	NC	1.0
-008REP	B13CL2	Nitrate Nitrite	2.9	3.0	3.2	1.0
-009REP	B13CL3	Cyanide, Total	0.41u	0.50u	NC	1.0
		Ammonia, as N	2.4 u	3.1 u	NC	1.0
		Sulfide	40.7 u	35.8 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/16/01

CLIENT: TNU-HANFORD B02-006 H1570/H1575 LVL LOT #: 0111L257

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	01LCA98-LCS1	Cyanide, Total LCS	1.78	2.0	MG/KG	89.2
LCSS2	01LCA98-LCS2	Cyanide, Total LCS	9.76	10.0	MG/KG	97.6

(✓) BNA From Metals WET

Lionville Laboratory Use Only
01111257

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

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FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TNU HAWOR 302-006
Est. Final Pay Sampling Date
Project
Project Contact/Phone
Lionville Laboratory Project Manager
QC SPEC Del 5+) TAT 15 days

Date Rec'd 11-2-01 Date Due 11-17-01

	A	B	C					D		E	F	G			
Refrigerator #	1	2	2					2		2	2	2			
#/Type Container															
Volume															
Preservatives															
ANALYSES REQUESTED →	ORGANIC							INORG							
	VOA TCL	BNA	Pest/ PCB	Herb				Metal	CN						
Lionville Laboratory Use Only	0GCSC 0624X	0625X 0DRO	OPCB					ICRG MET ✓		ZN3N2 IC ✓	ZPH	INH3N			

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0GCSC 0624X	0625X 0DRO	OPCB	ICRG MET ✓	ZN3N2 IC ✓	ZPH	INH3N
001	B13CTT			S	10/30/01	0850	1	1	1	1	1	1	1
002						0910							
003						0945							
004						1000							
005						0815							
006						0820							
007						0825							
008						0830							
009						0845							

Special instructions: SAF # 302-006
Run Matrix QC

DATE/REVISIONS:

MET ✓	1.	As, Ba, Cd, Cr, Pb, Se, Ag, Be, Cu, Ni, V, Zn, Hg
IC ✓	2.	ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, +
	3.	ISFD, INH3N, ICNTO
11-5-01	4.	Concl 0624X Add 0624H + OGCSC
	5.	
	6.	

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # Gatelow
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. 1° °C 1-2°C

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	11/2/01	0935

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES: 4235 7954 8545

4235 7954 8556 1.2° 4235 7954 8512 1.0° 4235 7954 8534 0.5° 4235 7954 8567 0.5°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-006-01	Page 1 of 1
Collector: Thomas, G/ Watson, D	Company Contact: Cearlock, CS — Telephone No.: 372-9638	Project Coordinator: TRENT, SJ	Price Code: ~~8N~~ 8K RT 11-1-01 — Data Turnaround: ~~45 Days~~ RT 11-1-01 15 Day
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Soil Samplin	Sampling Location: 200 East & West	SAF No.: B02-006	Air Quality ☐
Ice Chest No.: SEE OSPC	Field Logbook No.: EL 1551 — COA: XL2002CHGR	Method of Shipment: Fed Ex	
Shipped To: ~~TMA~~ RECRA	Offsite Property No.: A020018	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 10/30/01. Collector not available to relinquish samples on 11/1/01 for shipment. RT 11-1-01 RT-

SAMPLE ANALYSIS

Preservation	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	Cool 4C Cool 4C	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385		
Sample No. / Matrix* / Sample Date / Sample Time										
B13C77 / SOIL / 10/30/01 / 0850		X	X	X	X	X	X	X		
B13C78 / SOIL / 10/30/01 / 0910		X	X	X	X	X	X	X		
B13C79 / SOIL / 10/30/01 / 0945		X	X	X	X	X	X	X	HEPO	3BC84
B13C80 / SOIL / 10/30/01 / 1000		X	X	X	X	X	X	X		
B13C89 / SOIL / 10/30/01 / 0910		X	X	X	X	X	X	X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DSWatson/ETW	10-30-01 1215	REF. 1A 3728 BLDG.	10-30-01 1215
Bud 1A 3728	11-1-01 0900	R Thorn	11-1-01 0900
R Thorn ERC	11-1-01 0900	FEDEX	
Fed Ex	11/2/01 0935	[illegible]	11-1-01 0935

SPECIAL INSTRUCTIONS

** The Laboratory is to report Decane as a TIC if present in detectable quantities
** The laboratory is to report both diesel and kerosene range compounds from WTPH-D analysis.

(1) ~~Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-On (Americium-241, Radium-228); Strontium-89,90 — Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium~~ DSW 10-30-01
(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(3) NO2/NO3 - 353.2; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(4) Semi-VOA – 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D

Matrix*
S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WP=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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-006-04	Page 1 of 1

Collector: Bowers DL/ Watson, D	Company Contact: Cearlock, CS — Telephone No.: 372-9638	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Soil Samplin	Sampling Location: 200 East & West	SAF No.: B02-006	Air Quality ☐
Ice Chest No.: SEE OSPC	Field Logbook No.: EL1771 — COA: B20CS1673C	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA	Offsite Property No.: A020018	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Tie TO B13CL4

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 10/31/01.
Collector not available to relinquish samples on 11/1/01 for shipment.

RT 11-1-01

SAMPLE ANALYSIS

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385		

Sample No.	Matrix *	Sample Date	Sample Time										
B13CL0	SOIL	10-31-01	0805	X	X	X	X	X	X	X	X		
B13CL1	SOIL	10-31-01	0820	X	X	X	X	X	X	X	X		
B13CL2	SOIL	10-31-01	0835	X	X	X	X	X	X	X	X		
B13CL3	SOIL	10-31-01	0845	X	X	X	X	X	X	X	X		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: Doug Bowers Bowers	Date/Time: 10-31-01/1110	Received By/Stored In: Ref 1B 3728	Date/Time: 10-31-01/1110
Relinquished By/Removed From: Ref 1B 3728	Date/Time: 0400 11-1-01	Received By/Stored In: R L Thore	Date/Time: 0400 11-1-01
Relinquished By/Removed From: R L Thore ERC	Date/Time: 0400 11-1-01	Received By/Stored In: FedEx	Date/Time:
Relinquished By/Removed From: FedEx	Date/Time: 11/2/01 0935	Received By/Stored In: Vista Hernandez	Date/Time: 11-2-01 0935
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

** The Laboratory is to report Decane as a TIC if present in detectable quantities
** *The laboratory is to report both diesel and kerosene range compounds from WTPH-D analysis.* RT 10-31

~~(1) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-228); Strontium-89,90 - Total; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium~~
(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(3) NO2/NO3 - 353.2; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(4) Semi-VOA -- 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D

use B13CL4 as shipping criteria

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=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)

Figure 1. Sample Check-in List

Date/Time Received: 11/2/01 0935

SDG#: 0111L257

Work Order Number: _____ SAF# B002-006

Shipping Container ID: SEE OSPC Chain of Custody # B002-006-04

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 1, 0.5, 1.2, 0.5, 1.3, 1°
5. Vermiculite/packing materials is Wet [✓] Dry [ ]
6. Number of samples in shipping container: 14
7. Sample holding times exceeded? Yes [ ] No [✓]

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

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

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

Sample Custodian/Laboratory: Pace Inc Louisville Laboratory Incorporated Date: 11/2/01

Telephoned to: _____ On _____ By _____