1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1581 was composed of one solid (soil) sample designated under SAF No. B02-008 with a Project Designation of: 200 Area Source Characterization 200-CS-1 OU – Waste Management. SDG H1581 (7140) was batched with SDG H1571 (7134).

The sample was received as stated on the Chain-of-Custody document. 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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2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.3 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.4 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.5 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.6 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.7 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.8 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.9 Transuranic Analyses (Am-241 and Cm-242)

No problems were encountered during the course of the analyses.

2.10 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

1/11/02

Date

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1581

SDG 7140
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1581

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B13CR9	200 East and West	SOLID		R111046-01	B02-008	B02-008-03	11/01/01 08:15
Method Blank		SOLID		R111019-03	B02-008		
Lab Control Sample		SOLID		R111019-02	B02-008		
Duplicate (R111046-01)	200 East and West	SOLID		R111046-02	B02-008		11/01/01 08:15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 01/04/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1581

SDG 7140
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1581

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
7134		Method Blank	SOLID						R111019-03	7134-003
		Lab Control Sample	SOLID						R111019-02	7134-002
7140	B02-008-03	B13CR9	SOLID	90.0	1024 g		11/06/01	5	R111046-01	7140-001
		Duplicate (R111046-01)	SOLID	90.0	1024 g		11/06/01	5	R111046-02	7140-002

Lab id TMANC
Protocol Hanford
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1581

SDG 7140
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1581

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
NP	SOLID	Neptunium in Soil	7012-136	5.0	1			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7012-136	5.0	1			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	7012-136	5.0	1			1	1	1/1		
TP	SOLID	Americium 241/Curium in Solids	7012-136	5.0	1			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	7012-136	5.0	1			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	7012-136	10.0	1			1	1	1/1		
Gas Proportional Counting												
93A	SOLID	Gross Alpha in Soil	7012-136	20.0	1			1	1	1/1		
93B	SOLID	Gross Beta in Soil	7012-136	15.0	1			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7012-136	15.0	1			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	7012-136	9.0	1			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Soil	7012-136	10.0	1			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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Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1581

SDG 7140
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1581

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B13CR9			R111046-01	7140-001	93A/93		01/02/02	01/04/02	MCM	Gross Alpha in Soil
200 East and West		SOLID	11/01/01	7140-001	93B/93		01/02/02	01/04/02	MCM	Gross Beta in Soil
B02-008-03	B02-008		11/06/01	7140-001	C		12/11/01	01/04/02	MCM	Carbon 14 in Soil
				7140-001	GAM		12/22/01	01/04/02	MCM	Gamma Scan
				7140-001	NP		12/20/01	01/04/02	MCM	Neptunium in Soil
				7140-001	PU		12/20/01	01/04/02	MCM	Plutonium, Isotopic in Solids
				7140-001	SR		12/08/01	01/04/02	MCM	Total Strontium in Soil
				7140-001	TH		12/13/01	01/04/02	MCM	Thorium, Isotopic in Soil
				7140-001	TP		12/28/01	01/04/02	MCM	Americium 241/Curium in Solids
				7140-001	U		12/13/01	01/04/02	MCM	Uranium, Isotopic in Soil
				7140-001	U_T		12/17/01	01/04/02	MCM	Uranium, Total in Soil
Method Blank			R111019-03	7134-003	93A/93		12/20/01	01/04/02	MCM	Gross Alpha in Soil
		SOLID		7134-003	93B/93		12/20/01	01/04/02	MCM	Gross Beta in Soil
	B02-008			7134-003	C		12/11/01	01/04/02	MCM	Carbon 14 in Soil
				7134-003	GAM		12/14/01	01/04/02	MCM	Gamma Scan
				7134-003	NP		12/20/01	01/04/02	MCM	Neptunium in Soil
				7134-003	PU		12/20/01	01/04/02	MCM	Plutonium, Isotopic in Solids
				7134-003	SR		12/08/01	01/04/02	MCM	Total Strontium in Soil
				7134-003	TH		12/13/01	01/04/02	MCM	Thorium, Isotopic in Soil
				7134-003	TP		12/27/01	01/04/02	MCM	Americium 241/Curium in Solids
				7134-003	U		12/07/01	01/04/02	MCM	Uranium, Isotopic in Soil
				7134-003	U_T		12/17/01	01/04/02	MCM	Uranium, Total in Soil
Lab Control Sample			R111019-02	7134-002	93A/93		12/20/01	01/04/02	MCM	Gross Alpha in Soil
		SOLID		7134-002	93B/93		12/20/01	01/04/02	MCM	Gross Beta in Soil
	B02-008			7134-002	C		12/12/01	01/04/02	MCM	Carbon 14 in Soil
				7134-002	GAM		12/14/01	01/04/02	MCM	Gamma Scan
				7134-002	NP		12/20/01	01/04/02	MCM	Neptunium in Soil
				7134-002	PU		12/20/01	01/04/02	MCM	Plutonium, Isotopic in Solids
				7134-002	SR		12/08/01	01/04/02	MCM	Total Strontium in Soil
				7134-002	TH		12/13/01	01/04/02	MCM	Thorium, Isotopic in Soil
				7134-002	TP		12/27/01	01/04/02	MCM	Americium 241/Curium in Solids
				7134-002	U		12/07/01	01/04/02	MCM	Uranium, Isotopic in Soil
				7134-002	U_T		12/17/01	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 01/04/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1581

SDG 7140
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1581

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Duplicate (R111046-01)			R111046-02	7140-002	93A/93		01/02/02	01/04/02	MCM	Gross Alpha in Soil
200 East and West		SOLID	11/01/01	7140-002	93B/93		01/02/02	01/04/02	MCM	Gross Beta in Soil
	B02-008		11/06/01	7140-002	C		12/12/01	01/04/02	MCM	Carbon 14 in Soil
				7140-002	GAM		12/20/01	01/04/02	MCM	Gamma Scan
				7140-002	NP		12/20/01	01/04/02	MCM	Neptunium in Soil
				7140-002	PU		12/20/01	01/04/02	MCM	Plutonium, Isotopic in Solids
				7140-002	SR		12/08/01	01/04/02	MCM	Total Strontium in Soil
				7140-002	TH		12/13/01	01/04/02	MCM	Thorium, Isotopic in Soil
				7140-002	TP		12/27/01	01/04/02	MCM	Americium 241/Curium in Solids
				7140-002	U		12/13/01	01/04/02	MCM	Uranium, Isotopic in Soil
				7140-002	U_T		12/17/01	01/04/02	MCM	Uranium, Total in Soil

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
93A/93	B02-008	Gross Alpha in Soil	900.0_ALPHABETA_GPC	1			1	1	1	4
93B/93	B02-008	Gross Beta in Soil	900.0_ALPHABETA_GPC	1			1	1	1	4
C	B02-008	Carbon 14 in Soil	C14_COX_LSC	1			1	1	1	4
GAM	B02-008	Gamma Scan	GAMMA_GS	1			1	1	1	4
NP	B02-008	Neptunium in Soil	NP237_LLE_PLATE_AEA	1			1	1	1	4
PU	B02-008	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	1			1	1	1	4
SR	B02-008	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	1			1	1	1	4
TH	B02-008	Thorium, Isotopic in Soil	THISO_IE_PLATE_AEA	1			1	1	1	4
TP	B02-008	Americium 241/Curium in Solids	AMCMISO_IE_PLATE_AEA	1			1	1	1	4
U	B02-008	Uranium, Isotopic in Soil	UISO_PLATE_AEA	1			1	1	1	4
U_T	B02-008	Uranium, Total in Soil	UTOT_KPA	1			1	1	1	4
TOTALS				11			11	11	11	44

Lab id TMANC
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1581

R111019-03 **Method Blank**

METHOD BLANK

SDG	7140	Client/Case no	Hanford	SDG_H1581	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R111019-03	Client sample id	Method Blank		
Dept sample id	7134-003	Material/Matrix		SOLID	
		SAF No	B02-008		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.314	1.6	3.4	10	U	93A
Gross Beta	12587-47-2	0.356	5.3	8.9	15	U	93B
Carbon 14	14762-75-5	2.31	3.0	4.9	50	U	C
Total Strontium	SR-RAD	-0.009	0.11	0.22	1.0	U	SR
Thorium 228	14274-82-9	0.023	0.046	0.18		U	TH
Thorium 230	14269-63-7	-0.068	0.18	0.39	1.0	U	TH
Thorium 232	TH-232	0	0.046	0.17	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0	0.001	0.002	0.10	U	U_T
Uranium 233/234	U-233/234	0.095	0.13	0.24	1.0	U	U
Uranium 235	15117-96-1	0.038	0.077	0.29	1.0	U	U
Uranium 238	U-238	0.032	0.063	0.24	1.0	U	U
Neptunium 237	13994-20-2	-0.003	0.020	0.040	1.0	U	NP
Plutonium 238	13981-16-3	0	0.009	0.035	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.005	0.009	0.035	1.0	U	PU
Curium 242	15510-73-3	0	0.053	0.20		U	TP
Americium 241	14596-10-2	0.053	0.11	0.20	1.0	U	TP
Potassium 40	13966-00-2	U		0.15		U	GAM
Tin 126	SN-126	U		0.019		U	GAM
Sodium 22	13966-32-0	U		0.017		U	GAM
Cobalt 60	10198-40-0	U		0.017	0.050	U	GAM
Antimony 125	14234-35-6	U		0.030		U	GAM
Barium 133	13981-41-4	U		0.013		U	GAM
Cesium 134	13967-70-9	U		0.018		U	GAM
Cesium 137	10045-97-3	U		0.013	0.10	U	GAM
Radium 226	13982-63-3	U		0.027	0.10	U	GAM
Radium 228	15262-20-1	U		0.064	0.20	U	GAM
Europium 152	14683-23-9	U		0.032	0.10	U	GAM
Europium 154	15585-10-1	U		0.052	0.10	U	GAM
Europium 155	14391-16-3	U		0.033	0.10	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	01/04/02

B L A N K , c o n t .

SDG	7140	Client/Case no	Hanford SDG H1581
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R111019-03	Client sample id	Method Blank
Dept sample id	7134-003	Material/Matrix	SOLID
		SAF No	B02-008

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 228	14274-82-9	U		0.021		U	GAM
Thorium 232	TH-232	U		0.064		U	GAM
Uranium 235	15117-96-1	U		0.056		U	GAM
Uranium 238	U-238	U		2.0		U	GAM
Americium 241	14596-10-2	U		0.053		U	GAM

200 Area Source Chara. 200-CS-1 OU

QC-BLANK 40445

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/04/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1581

R111019-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7140

Contact Melissa C. Mannion

Client/Case no Hanford SDG H1581

Case no No. 630

Lab sample id R111019-02

Dept sample id 7134-002

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B02-008

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	213	15	3.8	10		93A	215	8.6	99	68-132	70-130
Gross Beta	237	11	7.4	15		93B	239	9.6	99	76-124	70-130
Carbon 14	9780	200	29	50		C	11300	450	87	85-115	80-120
Total Strontium	22.8	0.56	0.14	1.0		SR	22.9	0.92	100	83-117	80-120
Thorium 230	45.2	2.9	0.41	1.0		TH	44.8	1.8	101	86-114	80-120
Total Uranium (ug/g)	18.9	2.1	0.019	0.10		U_T	18.1	0.72	104	77-123	80-120
Uranium 233/234	18.5	2.1	1.1	1.0		U	19.3	0.77	96	81-119	80-120
Uranium 235	15.9	1.9	0.27	1.0		U	15.7	0.63	101	79-121	80-120
Uranium 238	19.9	2.2	1.0	1.0		U	21.0	0.84	95	82-118	80-120
Neptunium 237	22.3	0.88	0.027	1.0		NP	21.8	0.87	102	89-111	80-120
Plutonium 238	25.7	1.1	0.046	1.0		PU	27.2	1.1	94	89-111	80-120
Plutonium 239/240	28.4	1.1	0.036	1.0		PU	29.0	1.2	98	89-111	80-120
Curium 244	21.8	2.4	0.25	1.0		TP	21.6	0.86	101	81-119	80-120
Americium 241	21.5	2.4	0.25	1.0		TP	21.0	0.84	102	80-120	80-120
Cobalt 60	2.02	0.10	0.049	0.050		GAM	1.83	0.073	110	73-127	80-120
Cesium 137	2.32	0.095	0.065	0.10		GAM	2.13	0.085	109	74-126	80-120

200 Area Source Chara. 200-CS-1 OU

QC-LCS 40444

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 01/04/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1581

R111046-02 B13CR9

DUPLICATE

SDG	7140			Client/Case no	Hanford SDG H1581
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R111046-02	Lab sample id	R111046-01	Client sample id	B13CR9
Dept sample id	7140-002	Dept sample id	7140-001	Location/Matrix	200 East and West SOLID
		Received	11/06/01	Collected/Weight	11/01/01 08:15 1024 g
% solids	90.0	% solids	90.0	Custody/SAF No	B02-008-03 B02-008

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	7.11	3.5	3.1	10	J	93A	7.20	3.4	3.1	J	1	111	
Gross Beta	14.9	5.1	7.5	15	J	93B	16.3	4.4	6.1		9	72	
Carbon 14	-0.731	2.4	4.0	50	U	C	-0.164	2.5	4.2	U	-		
Total Strontium	-0.014	0.10	0.22	1.0	U	SR	0.038	0.11	0.21	U	-		
Thorium 228	0.590	0.51	0.80		U	TH	0.641	0.23	0.18		8	137	
Thorium 230	0.625	0.42	0.51	1.0	J	TH	0.524	0.32	0.40	J	18	138	
Thorium 232	0.375	0.25	0.32	1.0	J	TH	0.842	0.28	0.17	J	77	93	
Total Uranium (ug/g)	0.354	0.041	0.019	0.10		U_T	0.321	0.037	0.019		10	31	
Uranium 233/234	0.646	0.24	0.15	1.0	J	U	0.330	0.17	0.16	J	65	91	
Uranium 235	0.047	0.048	0.18	1.0	U	U	0	0.050	0.19	U	-		
Uranium 238	0.607	0.24	0.15	1.0	J	U	0.557	0.21	0.16	J	9	83	
Neptunium 237	0	0.006	0.022	1.0	U	NP	-0.003	0.012	0.028	U	-		
Plutonium 238	0	0.008	0.032	1.0	U	PU	0.004	0.018	0.034	U	-		
Plutonium 239/240	0.004	0.025	0.046	1.0	U	PU	0.004	0.009	0.034	U	-		
Curium 242	0	0.061	0.23		U	TP	0	0.14	0.27	U	-		
Americium 241	-0.024	0.048	0.18	1.0	U	TP	0.056	0.11	0.21	U	-		
Potassium 40	12.2	1.0	0.65			GAM	14.0	0.58	0.25		14	35	
Tin 126	U		0.089		U	GAM	U		0.058	U	-		
Sodium 22	U		0.056		U	GAM	U		0.034	U	-		
Cobalt 60	U		0.043	0.050	U	GAM	U		0.026	U	-		
Antimony 125	U		0.097		U	GAM	U		0.056	U	-		
Barium 133	U		0.048		U	GAM	U		0.030	U	-		
Cesium 134	U		0.060		U	GAM	U		0.039	U	-		
Cesium 137	0.155	0.047	0.055	0.10		GAM	0.219	0.033	0.034		34	56	
Radium 226	0.624	0.074	0.069	0.10		GAM	0.667	0.055	0.047		7	38	
Radium 228	0.988	0.25	0.24	0.20		GAM	0.890	0.14	0.12		10	56	
Europium 152	U		0.11	0.10	U	GAM	U		0.061	U	-		
Europium 154	U		0.16	0.10	U	GAM	U		0.097	U	-		

200 Area Source Chara. 200-CS-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/04/02

DUPLICATE, cont.

SDG	7140			Client/Case no	Hanford SDG H1581
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R111046-02	Lab sample id	R111046-01	Client sample id	B13CR9
Dept sample id	7140-002	Dept sample id	7140-001	Location/Matrix	200 East and West SOLID
		Received	11/06/01	Collected/Weight	11/01/01 08:15 1024 g
% solids	90.0	% solids	90.0	Custody/SAF No	B02-008-03 B02-008

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Europium 155	U		0.13	0.10	U	GAM	U		0.075	U	-	
Thorium 228	0.824	0.053	0.055			GAM	0.780	0.038	0.035		5	34
Thorium 232	0.988	0.25	0.24			GAM	0.890	0.14	0.12		10	56
Uranium 235	U		0.16		U	GAM	U		0.10	U	-	
Uranium 238	U		6.0		U	GAM	U		3.2	U	-	
Americium 241	U		0.16		U	GAM	U		0.090	U	-	

200 Area Source Chara. 200-CS-1 OU

QC-DUP#1 40460

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/04/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1581

R111046-01 B13CR9

DATA SHEET

SDG	7140	Client/Case no	Hanford	SDG H1581	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R111046-01	Client sample id	B13CR9		
Dept sample id	7140-001	Location/Matrix	200 East and West	SOLID	
Received	11/06/01	Collected/Weight	11/01/01 08:15	1024 g	
% solids	90.0	Custody/SAF No	B02-008-03	B02-008	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	7.20	3.4	3.1	10	J	93A
Gross Beta	12587-47-2	16.3	4.4	6.1	15		93B
Carbon 14	14762-75-5	-0.164	2.5	4.2	50	U	C
Total Strontium	SR-RAD	0.038	0.11	0.21	1.0	U	SR
Thorium 228	14274-82-9	0.641	0.23	0.18			TH
Thorium 230	14269-63-7	0.524	0.32	0.40	1.0	J	TH
Thorium 232	TH-232	0.842	0.28	0.17	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	0.321	0.037	0.019	0.10		U_T
Uranium 233/234	U-233/234	0.330	0.17	0.16	1.0	J	U
Uranium 235	15117-96-1	0	0.050	0.19	1.0	U	U
Uranium 238	U-238	0.557	0.21	0.16	1.0	J	U
Neptunium 237	13994-20-2	-0.003	0.012	0.028	1.0	U	NP
Plutonium 238	13981-16-3	0.004	0.018	0.034	1.0	U	PU
Plutonium 239/240	PU-239/240	0.004	0.009	0.034	1.0	U	PU
Curium 242	15510-73-3	0	0.14	0.27		U	TP
Americium 241	14596-10-2	0.056	0.11	0.21	1.0	U	TP
Potassium 40	13966-00-2	14.0	0.58	0.25			GAM
Tin 126	SN-126	U		0.058		U	GAM
Sodium 22	13966-32-0	U		0.034		U	GAM
Cobalt 60	10198-40-0	U		0.026	0.050	U	GAM
Antimony 125	14234-35-6	U		0.056		U	GAM
Barium 133	13981-41-4	U		0.030		U	GAM
Cesium 134	13967-70-9	U		0.039		U	GAM
Cesium 137	10045-97-3	0.219	0.033	0.034	0.10		GAM
Radium 226	13982-63-3	0.667	0.055	0.047	0.10		GAM
Radium 228	15262-20-1	0.890	0.14	0.12	0.20		GAM
Europium 152	14683-23-9	U		0.061	0.10	U	GAM
Europium 154	15585-10-1	U		0.097	0.10	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	01/04/02

DATA SHEET, cont

SDG	7140	Client/Case no	Hanford	SDG H1581	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R111046-01	Client sample id	B13CR9		
Dept sample id	7140-001	Location/Matrix	200 East and West	SOLID	
Received	11/06/01	Collected/Weight	11/01/01 08:15	1024 g	
% solids	90.0	Custody/SAF No	B02-008-03	B02-008	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Europium 155	14391-16-3	U		0.075	0.10	U	GAM
Thorium 228	14274-82-9	0.780	0.038	0.035			GAM
Thorium 232	TH-232	0.890	0.14	0.12			GAM
Uranium 235	15117-96-1	U		0.10		U	GAM
Uranium 238	U-238	U		3.2		U	GAM
Americium 241	14596-10-2	U		0.090		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	01/04/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1581

Test NP Matrix SOLID
SDG 7140
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1581

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 7012-136						
B13CR9	R111046-01			7140-001	U	
BLK (QC ID=40445)	R111019-03			7134-003	U	
LCS (QC ID=40444)	R111019-02			7134-002	ok	
Duplicate (R111046-01)	R111046-02			7140-002	-	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 7012-136	2σ prep error 5.0 %				Reference Lab Notebook 7012 pg. 136											
B13CR9	R111046-01			0.028	0.500			78		1056			49	12/19/01	12/20	SS-064
BLK (QC ID=40445)	R111019-03			0.040	0.500			63		1054				12/19/01	12/20	SS-059
LCS (QC ID=40444)	R111019-02			0.027	0.500			65		1054				12/19/01	12/20	SS-057
Duplicate (R111046-01) (QC ID=40460)	R111046-02			0.022	0.500			79		1056			49	12/19/01	12/20	SS-066
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 4 SAMPLES	MDA	0.029	±	0.015
	YIELD	71	±	17

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/04/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1581

Test PU Matrix SOLID
SDG 7140
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1581

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 7012-136								
B13CR9	R111046-01			7140-001	U		U	
BLK (QC ID=40445)	R111019-03			7134-003	U		U	
LCS (QC ID=40444)	R111019-02			7134-002	ok		ok	
Duplicate (R111046-01)	R111046-02			7140-002	-	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 7012-136	2σ prep error 5.0 %				Reference Lab Notebook 7012 pg. 136											
B13CR9	R111046-01			0.034	0.500			89		607			49	12/20/01	12/20	SS-066
BLK (QC ID=40445)	R111019-03			0.035	0.500			86		607				12/20/01	12/20	SS-064
LCS (QC ID=40444)	R111019-02			0.046	0.500			76		607				12/20/01	12/20	SS-059
Duplicate (R111046-01) (QC ID=40460)	R111046-02			0.046	0.500			84		631			49	12/20/01	12/20	SS-045
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 4 SAMPLES				
	MDA	0.040	±	0.013
	YIELD	84	±	11

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/04/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1581

Test TH Matrix SOLID
SDG 7140
Contact Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1581

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 230
Preparation batch 7012-136					
B13CR9	R111046-01			7140-001	0.524 J
BLK (QC ID=40445)	R111019-03			7134-003	U
LCS (QC ID=40444)	R111019-02			7134-002	ok
Duplicate (R111046-01)	R111046-02			7140-002	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	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 7012-136 2σ prep error 5.0 % Reference Lab Notebook 7012 pg. 136																
B13CR9	R111046-01			0.40	0.250			94		212			42	12/11/01	12/13	SS-050
BLK (QC ID=40445)	R111019-03			0.39	0.250			94		212				12/11/01	12/13	SS-048
LCS (QC ID=40444)	R111019-02			0.41	0.250			94		211				12/11/01	12/13	SS-047
Duplicate (R111046-01) (QC ID=40460)	R111046-02			0.51	0.250			98		919			42	12/11/01	12/13	SS-019
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 4 SAMPLES
MDA 0.43 ± 0.11
YIELD 95 ± 4

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/04/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1581

Test TP Matrix SOLID
SDG 7140
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241/CURIUM IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1581

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Curium 244	Americium 241	
Preparation batch 7012-136							
B13CR9	R111046-01			7140-001		U	
BLK (QC ID=40445)	R111019-03			7134-003		U	
LCS (QC ID=40444)	R111019-02			7134-002	ok	ok	
Duplicate (R111046-01)	R111046-02			7140-002		-	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 7012-136	2σ prep error 5.0 %			Reference Lab Notebook 7012 pg. 136												
B13CR9	R111046-01			0.27	0.500			79		105			57	12/27/01	12/28	SS-047
BLK (QC ID=40445)	R111019-03			0.20	0.500			83		105				12/27/01	12/27	SS-043
LCS (QC ID=40444)	R111019-02			0.25	0.500			69		105				12/27/01	12/27	SS-042
Duplicate (R111046-01) (QC ID=40460)	R111046-02			0.23	0.500			90		105			56	12/27/01	12/27	SS-048
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	CP-002	Q.C. Preparation, rev 3
	CP-003	Tracing, rev 3
	CP-940	Plutonium Separation and Purification, rev 3
	CP-961	Am-Cu Purification, Large Aliquot by Oxalate Precipitation, rev 2
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 4 SAMPLES				
MDA	0.24	±	0.060
YIELD	80	±	18

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/04/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1581

Test U Matrix SOLID
SDG 7140
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1581

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 7012-136											
B13CR9	R111046-01			7140-001	0.330 J	U	0.557 J	59	38	0	9
BLK (QC ID=40445)	R111019-03			7134-003	U	U	U				
LCS (QC ID=40444)	R111019-02			7134-002	ok	ok	ok				
Duplicate (R111046-01)	R111046-02			7140-002	ok J	- U	ok J	106	58	8	8
Nominal values and limits from method				*RDLs (pCi/g)*	*1.0*	*1.0*	*1.0*	*100*		*4*	
200 Area Source Chara. 200-CS-1 OU							Averages	83		4	

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 7012-136 2σ prep error 5.0 % Reference Lab Notebook 7012 pg. 136																
B13CR9	R111046-01			0.19	0.500			103		112			42	12/06/01	12/13	SS-057
BLK (QC ID=40445)	R111019-03			0.29	0.500			90		112				12/06/01	12/07	SS-022
LCS (QC ID=40444)	R111019-02			1.1	0.500			94		112				12/06/01	12/07	SS-021
Duplicate (R111046-01) (QC ID=40460)	R111046-02			0.18	0.500			100		111			42	12/06/01	12/13	SS-059
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	CP-911	Uranium in Water and Dissolved Sample by *Extraction Chromatography*, rev 3
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.44 ± 0.89
YIELD 97 ± 12

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/04/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1581

Test SR Matrix SOLID
SDG 7140
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1581

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 7012-136						
B13CR9	R111046-01			7140-001	U	
BLK (QC ID=40445)	R111019-03			7134-003	U	
LCS (QC ID=40444)	R111019-02			7134-002	ok	
Duplicate (R111046-01)	R111046-02			7140-002	-	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 7012-136	2σ prep error 10.0 % Reference Lab Notebook 7012 pg. 136															
B13CR9	R111046-01			0.21	1.00			99		100			37	12/08/01	12/08	GRB-205
BLK (QC ID=40445)	R111019-03			0.22	1.00			93		100				12/08/01	12/08	GRB-202
LCS (QC ID=40444)	R111019-02			0.14	1.00			93		200				12/08/01	12/08	GRB-202
Duplicate (R111046-01) (QC ID=40460)	R111046-02			0.22	1.00			99		100			37	12/08/01	12/08	GRB-207
Nominal values and limits from method				1.0	1.00			30-105		100			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	0.20	±	0.077
	YIELD	96	±	7

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/04/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1581

Test 93A Matrix SOLID
SDG 7140
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS ALPHA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1581

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha	
Preparation batch 7012-136						
B13CR9	R111046-01	93		7140-001	7.20	J
BLK (QC ID=40445)	R111019-03	93		7134-003	U	
LCS (QC ID=40444)	R111019-02	93		7134-002	ok	
Duplicate (R111046-01)	R111046-02	93		7140-002	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 7012-136 2σ prep error 20.0 % Reference Lab Notebook 7012 pg. 136																
B13CR9	R111046-01	93		3.1	0.100			37		100			62	12/11/01	01/02	GRB-111
BLK (QC ID=40445)	R111019-03	93		3.4	0.100			23		100				12/11/01	12/20	GRB-114
LCS (QC ID=40444)	R111019-02	93		3.8	0.100			24		100				12/11/01	12/20	GRB-115
Duplicate (R111046-01) (QC ID=40460)	R111046-02	93		3.1	0.100			38		100			62	12/11/01	01/02	GRB-112
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	MDA 3.4 ± 0.66
FOR 4 SAMPLES	RESIDUE 30 ± 16

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/04/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1581

Test 93B Matrix SOLID
SDG 7140
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS BETA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1581

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta	
Preparation batch 7012-136						
B13CR9	R111046-01	93		7140-001	16.3	
BLK (QC ID=40445)	R111019-03	93		7134-003	U	
LCS (QC ID=40444)	R111019-02	93		7134-002	ok	
Duplicate (R111046-01)	R111046-02	93		7140-002	ok	J
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 7012-136 2σ prep error 15.0 % Reference Lab Notebook 7012 pg. 136																
B13CR9	R111046-01	93		6.1	0.100			37		100			62	12/11/01	01/02	GRB-111
BLK (QC ID=40445)	R111019-03	93		8.9	0.100			23		100				12/11/01	12/20	GRB-114
LCS (QC ID=40444)	R111019-02	93		7.4	0.100			24		100				12/11/01	12/20	GRB-115
Duplicate (R111046-01) (QC ID=40460)	R111046-02	93		7.5	0.100			38		100			62	12/11/01	01/02	GRB-112
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 4 SAMPLES				
	MDA	7.5	±	2.3
	RESIDUE	30	±	16

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/04/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1581

Test GAM Matrix SOLID
SDG 7140
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1581

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137
Preparation batch 7012-136							
B13CR9	R111046-01			7140-001	U		0.219
BLK (QC ID=40445)	R111019-03			7134-003	U		U
LCS (QC ID=40444)	R111019-02			7134-002	ok		ok
Duplicate (R111046-01)	R111046-02			7140-002	-	U	ok
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.10
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	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-136	2σ prep error 15.0 % Reference Lab Notebook 7012 pg. 136															
B13CR9	R111046-01			0.23	826					111			51	12/07/01	12/22	02,04,00
BLK (QC ID=40445)	R111019-03			0.12	461					128				12/07/01	12/14	01,04,00
LCS (QC ID=40444)	R111019-02			0.049	461					105				12/07/01	12/14	MB,07,00
Duplicate (R111046-01) (QC ID=40460)	R111046-02			0.41	826					130			49	12/07/01	12/20	02,03,00
Nominal values and limits from method				0.050	461					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 4 SAMPLES				
	MDA	0.20	±	0.31
	YIELD		±	

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/04/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1581

Test U T Matrix SOLID
SDG 7140
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract No. 630
Contract SDG H1581

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium
Preparation batch 7012-136					
B13CR9	R111046-01			7140-001	0.321
BLK (QC ID=40445)	R111019-03			7134-003	U
LCS (QC ID=40444)	R111019-02			7134-002	ok
Duplicate (R111046-01)	R111046-02			7140-002	ok
Nominal values and limits from method				RDLs (ug/g)	0.10
200 Area Source Chara. 200-CS-1 OU					

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 7012-136 2σ prep error 9.0 % Reference Lab Notebook 7012 pg. 136																
B13CR9	R111046-01			0.019	0.100								46	12/14/01	12/17	KPA-001
BLK (QC ID=40445)	R111019-03			0.002	0.100									12/14/01	12/17	KPA-001
LCS (QC ID=40444)	R111019-02			0.019	0.100									12/14/01	12/17	KPA-001
Duplicate (R111046-01) (QC ID=40460)	R111046-02			0.019	0.100								46	12/14/01	12/17	KPA-001
Nominal values and limits from method				0.10	0.100								180			

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 FOR 4 SAMPLES
MDA 0.015 ± 0.017
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/04/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1581

Test C Matrix SOLID
SDG 7140
Contact Melissa C. Mannion

METHOD SUMMARY

CARBON 14 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1581

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Carbon 14	
Preparation batch 7012-136						
B13CR9	R111046-01			7140-001	U	
BLK (QC ID=40445)	R111019-03			7134-003	U	
LCS (QC ID=40444)	R111019-02			7134-002	ok	
Duplicate (R111046-01)	R111046-02			7140-002	-	U
Nominal values and limits from method				RDLs (pCi/g)	50	
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 7012-136	2σ prep error 10.0 %				Reference Lab Notebook 7012 pg. 136											
B13CR9	R111046-01			4.2	0.241			100		100			40	12/11/01	12/11	LSC-004
BLK (QC ID=40445)	R111019-03			4.9	0.200			100		100				12/11/01	12/11	LSC-004
LCS (QC ID=40444)	R111019-02			29	0.200			100		3				12/11/01	12/12	LSC-004
Duplicate (R111046-01) (QC ID=40460)	R111046-02			4.0	0.250			100		100			41	12/11/01	12/12	LSC-004
Nominal values and limits from method				50	0.200					50			180			

PROCEDURES	REFERENCE	C14_COX_LSC
	CP-060	Soil Preparation, rev 3
	CP-251	Tritium/Carbon-14 Oxidation, rev 3

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 11 ± 25
YIELD 100 ± 0

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/04/02

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-008-03	Page 1 of 1

Collector: Bowers DL/Watson DJ	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 - Waste Mana	Sampling Location: 200 East & West H1581 (7140)	SAF No.: B02-008	
Ice Chest No.: ERC 00.005	Field Logbook No.: EL1551	COA: B20CS1673C	Method of Shipment: Fed Ex
Shipped To: TMA/RECRA	Offsite Property No.: AD200004	Bill of Lading/Air Bill No.: 4235795 4 – 8526	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.#3A at the 3728 Shipping Facility on 11/1/01. Collector not available to relinquish samples on 11/5/01 for shipment. FT 11-5-01

Preservation	None	None	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		
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions. DELETE DSW 11-1-01	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		TIC TO

Sample No.	Matrix *	Sample Date	Sample Time									
B13CR9	SOIL	11-1-01	0815	X								B13CL5

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DJ Watson/Bowers	11-1-01 1115	REF. 3A 3728 BLDG.	11-1-01 1115
Ref 3A 3728	11-5-01 0900	R.L. Thorne	11-5-01 0900
R.L. Thorne ERC	11-5-01 0900	FED EX	11-05-01
FED EXPRESS	11-06-01 930	SCA-2 E. MATTSTAS	11-06-01 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 compouds 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, Antimony-125, Barium-133, Cesium-134, Curium-242, Radium-226, Radium-228, Sodium-22, Tin-126}; Strontium-89,90 – Total Sr, Carbon-14; Total 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) {Aluminum, Beryllium, Bismuth, Boron, Calcium, Copper, Iron, Manganese, Molybdenum, Nickel, Potassium, Sodium, Thallium, 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

DSW 11-1-01

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)

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc. Date/Time received 11-06-01 9:20

CoC No. B02-008-03

Container I.D. No. ERC-00-005 Requested TAT (Days) 45 P.O. Received Yes [ ] No [✓]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 1 SAMPLE
7. Number of containers per sample: 1 (EACH) (Or see CoC _____)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____
13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by E. S. Maestas Date: 11-06-01 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 _____

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B02-008
LVL #: 0111L278
SDG/SAF #: H1581/B02-008

W.O. #: 11343-606-001-9999-00
Date Received: 11-06-2001

GC/MS VOLATILE

One (1) soil sample was collected on 11-01-2001.

The sample and its associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260B for TCL Volatile target compounds on 11-13-2001.

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

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

2. The analysis holding time was met.

3. Non-target compounds were not detected in the sample.

4. One (1) of fifteen (15) surrogate recoveries was outside EPA QC limits. The analysis of associated matrix spike sample fulfills the reanalysis requirement of sample B13CR9 MSD.

5. All matrix spike recoveries were within EPA QC limits.

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

7. The method blank contained the common laboratory contaminant Methylene Chloride at a level less than 3x the CRQL.

8. Internal standard area criteria were not met for sample B13CR9 MSD. The analysis of associated matrix spike sample fulfills the reanalysis requirement of sample B13CR9 MSD.

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."

J. Michael Taylor
President
Lionville Laboratory Incorporated

12-02-01
Date

som\group\data\voa\tnu-hanford\0111-278.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 9 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.

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.

VLI
LIONVILLE LABORATORY INC.

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

Report Date: 11/28/01 14:41

RFW Batch Number: 0111L278 Client: TNUHANFORD B02-008 H1581 Work Order: 11343606001 Page: 1a

	Cust ID:	B13CR9	B13CR9	B13CR9	VBLKAM	VBLKAM BS
Sample Information	RFW#:	001	001 MS	001 MSD	01LVJ033-MB1	01LVJ033-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.04	1.11	1.04	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Toluene-d8	77 %	76 %	76 %	77 %	76 %
	Bromofluorobenzene	66 %	66 %	65 * %	70 %	74 %
	1,2-Dichloroethane-d4	128 %	131 %	146 %	126 %	107 %
Chloromethane		12 U	13 U	12 U	10 U	10 U
Bromomethane		12 U	13 U	12 U	10 U	10 U
Vinyl Chloride		12 U	13 U	12 U	10 U	10 U
Chloroethane		12 U	13 U	12 U	10 U	10 U
Methylene Chloride		17 B	18 B	17 B	12	12 B
Acetone		6 J	6 J	12	10 U	10 U
Carbon Disulfide		6 U	6 U	6 U	5 U	5 U
1,1-Dichloroethene		6 U	88 %	93 %	5 U	80 %
1,1-Dichloroethane		6 U	6 U	6 U	5 U	5 U
1,2-Dichloroethene (total)		6 U	6 U	6 U	5 U	5 U
Chloroform		6 U	6 U	6 U	5 U	5 U
1,2-Dichloroethane		6 U	6 U	6 U	5 U	5 U
2-Butanone		12 U	13 U	12 U	10 U	10 U
1,1,1-Trichloroethane		6 U	6 U	6 U	5 U	5 U
Carbon Tetrachloride		6 U	6 U	6 U	5 U	5 U
Bromodichloromethane		6 U	6 U	6 U	5 U	5 U
1,2-Dichloropropane		6 U	6 U	6 U	5 U	5 U
cis-1,3-Dichloropropene		6 U	6 U	6 U	5 U	5 U
Trichloroethene		6 U	114 %	123 %	5 U	104 %
Dibromochloromethane		6 U	6 U	6 U	5 U	5 U
1,1,2-Trichloroethane		6 U	6 U	6 U	5 U	5 U
Benzene		6 U	113 %	123 %	5 U	100 %
Trans-1,3-Dichloropropene		6 U	6 U	6 U	5 U	5 U
Bromoform		6 U	6 U	6 U	5 U	5 U
4-Methyl-2-pentanone		12 U	13 U	12 U	10 U	10 U
2-Hexanone		12 U	13 U	12 U	10 U	10 U
Tetrachloroethene		6 U	6 U	6 U	5 U	5 U
1,1,2,2-Tetrachloroethane		6 U	6 U	6 U	5 U	5 U
Toluene		6 U	115 %	118 %	5 U	105 %

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0111L278** Client: **TNUHANFORD B02-008 H1581** Work Order: 11343606001 Page: 1b

Cust ID:	B13CR9		B13CR9		B13CR9		VBLKAM		VBLKAM BS	
RFW#:	001		001 MS		001 MSD		01LVJ033-MB1		01LVJ033-MB1	
Chlorobenzene	6	U	110	%	117	%	5	U	103	%
Ethylbenzene	6	U	6	U	6	U	5	U	5	U
Styrene	6	U	6	U	6	U	5	U	5	U
Xylene (total)	6	U	6	U	6	U	5	U	5	U

*= Outside of EPA CLP QC limits.

Lionville Laboratory Use Only

01111278

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

B02

Client: TNU-HANFORD B002-008 11-6-01

Est. Final Proj. Sampling Date:

Project #: 11343-606-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30 day

Date Rec'd: 11-6-01 Date Due: 12-6-01

	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)	125	125	125					500		125	125	125			
Preservatives	—	—	—					—		—	—	—			
ANALYSES REQUESTED	ORGANIC							INORG							
	VOA	BNA	Pest/PCB	Herb				Metal	CN	NO3/NO2 SO4 Br/Cl	pH	Alk/Acid Hardness			
Lionville Laboratory Use Only	0624H	OGCSC	0625X OPAS	OACB				2C26 MCT		1A08	IPH	INH3N			

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	B13CR9	✓	✓	S	11/6/01	0815	1	1	1					1		1	1	1			

Special Instructions:

SAF # B02-008

OGCSC: Propanol, Ethanol

DATE/REVISIONS:

MCT 1. As, Ba, Cd, Cr, Pb, Se, Ag, Al, Be, Bi, B, Ca, Cu, Fe

2. Mn, Mo, Ni, K, Na, Tl, V, Zn, Hg

INORG 1 3. IN3N2, ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4,

4. ISFD, INH3N, ICNTO

5.

6.

Relinquished by	Received by	Date	Time
Fed Ex	K. Hung	11/6/01	0950

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

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

NOTES:

Lionville Laboratory Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___ Airbill # See Below

2) Ambient or (Chilled)

3) Received in Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was: 1) Present on Outer Package (Y) or N

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

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

Cooler Temp. 4.3 °C

0111L278

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B02-008-03

Collector: Bowers DL/Watson DJ	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 - Waste Mana	Sampling Location: 200 East & West	SAF No.: B02-008	
Ice Chest No.: See DSPC	Field Logbook No.: EL 1551	COA: B20CS1673C	Method of Shipment: Fed Ex
Shipped To: TMA/LECRA	Offsite Property No.: A020017		Bill of Lading/Air Bill No.: See DSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 3A at the 3728 Shipping Facility on 11/1/01. Collector not available to relinquish samples on 11/5/01 for shipment.

RT 11/5/01

Preservation	None	None	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	1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	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		
B13CR9	SOIL	11-1-01	0815		X	X	X	X	X	X	X	B13CL5	

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DS Watson/Bowers	11-1-01 1115	EEF 3A 3728 BLDG	11-1-01 1115
Ref 3A 3728	11-5-01 0900	RT Trent	11-5-01 0900
RT Trent ERC	11-5-01 0900	Fed Ex	
Fed Ex	11/6/01 0950	[illegible]	11/6/01 0950

Sign/Print Names

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, Antimony-125, Barium-133, Cesium-134, Curium-242, Radium-226, Radium-228, Sodium-22, Tin-126); Strontium-89,90 - Total Sr, Carbon-14; Total Uranium; Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium~~ DSW 11-1-01

(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Aluminum, Beryllium, Bismuth, Boron, Calcium, Copper, Iron, Manganese, Molybdenum, Nickel, Potassium, Sodium, Thallium, 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)

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B02-008
LVL #: 0111L278
SDG/SAF #: H1581/B02-008

W.O. #: 11343-606-001-9999-00
Date Received: 11-06-2001

SEMIVOLATILE

One (1) soil sample was collected on 11-01-2001.

The sample and its associated QC samples were extracted on 11-07-2001, re-extracted on 11-20-2001 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 11-19,29-2001.

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

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The sample was initially extracted within required holding time; however, the sample and the associated QC were inadvertently not spiked with surrogate or matrix compounds. Consequently, sample was re-extracted on 11-20-2001, analyzed on 11-29-2001 and reported. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
3. Non-target compounds were detected in the samples.
4. All re-extracted surrogate recoveries were within EPA QC limits. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
5. One (1) of eleven (11) re-extracted matrix spike recoveries was outside EPA QC limits. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
6. Two (2) of twenty-two (22) re-extracted blank spike recoveries were outside EPA QC limits. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
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

12/6/01
Date

som\gorup\data\bna\tnu-hanford-0111-278.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 6 pages.

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: olms329

Initiator: Slayman Batch: 0111L278, 279 Parameter: BNA
Date: 11-20-01 Samples: all Matrix: soil
Client: Inv Hand BOD Method: SW846/MCAWW/CLP/ Prep Batch: 01LE1340

1. Reason for SDR

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

b. General Discrepancy

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

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

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

no surrogate or spike standards recovered

2. Known or Probable Causes(s)

Probably not added

3. Discussion and Proposed Action Other Description:

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

Re-extract

4. Project Manager Instructions...signature/date: 11/20/01

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

5. Final Action...signature/date: GT 12/6/01 Other Explanation:

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

Samples Re-Extracted in Batch 01LE1399 on 11/20/01

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

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

QA-105-A-0801

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
VONVILLE 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 — Report Date: 11/30/01 15:25

RFW Batch Number: 0111L278 — Client: TNUHANFORD B02-008 H1581 — Work Order: 11343606001 — Page: 1a

	Cust ID:	B13CR9	B13CR9	B13CR9	B13CR9	B13CR9	B13CR9
Sample Information	RFW#:	001	001	001 MS	001 MS	001 MSD	001 MSD
	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 REPREP	ug/Kg	ug/Kg REPREP	ug/Kg	ug/Kg REPREP
Surrogate Recovery	Nitrobenzene-d5	0 * %	76 %	0 * %	104 %	0 * %	100 %
	2-Fluorobiphenyl	0 * %	77 %	0 * %	97 %	0 * %	96 %
	p-Terphenyl-d14	0 * %	107 %	0 * %	116 %	0 * %	104 %
	Phenol-d5	0 * %	72 %	0 * %	97 %	0 * %	92 %
	2-Fluorophenol	0 * %	65 %	0 * %	98 %	0 * %	92 %
	2,4,6-Tribromophenol	0 * %	90 %	0 * %	98 %	0 * %	88 %
		fl	fl	fl	fl	fl	fl
Phenol		380 U	380 U	0 * %	98 * %	0 * %	94 * %
bis(2-Chloroethyl)ether		380 U	380 U	370 U	380 U	370 U	380 U
2-Chlorophenol		380 U	380 U	0 * %	93 %	0 * %	88 %
1,3-Dichlorobenzene		380 U	380 U	370 U	380 U	370 U	380 U
1,4-Dichlorobenzene		380 U	380 U	0 * %	89 %	0 * %	85 %
1,2-Dichlorobenzene		380 U	380 U	370 U	380 U	370 U	380 U
2-Methylphenol		380 U	380 U	370 U	380 U	370 U	380 U
2,2'-oxybis(1-Chloropropane)		380 U	380 U	370 U	380 U	370 U	380 U
4-Methylphenol		380 U	380 U	370 U	380 U	370 U	380 U
N-Nitroso-Di-n-propylamine		380 U	380 U	0 * %	89 %	0 * %	90 %
Hexachloroethane		380 U	380 U	370 U	380 U	370 U	380 U
Nitrobenzene		380 U	380 U	370 U	380 U	370 U	380 U
Isophorone		380 U	380 U	370 U	380 U	370 U	380 U
2-Nitrophenol		380 U	380 U	370 U	380 U	370 U	380 U
2,4-Dimethylphenol		380 U	380 U	370 U	380 U	370 U	380 U
bis(2-Chloroethoxy)methane		380 U	380 U	370 U	380 U	370 U	380 U
2,4-Dichlorophenol		380 U	380 U	370 U	380 U	370 U	380 U
1,2,4-Trichlorobenzene		380 U	380 U	0 * %	93 %	0 * %	92 %
Naphthalene		380 U	380 U	370 U	380 U	370 U	380 U
4-Chloroaniline		380 U	380 U	370 U	380 U	370 U	380 U
Hexachlorobutadiene		380 U	380 U	370 U	380 U	370 U	380 U
4-Chloro-3-methylphenol		380 U	380 U	0 * %	98 %	0 * %	91 %
2-Methylnaphthalene		380 U	380 U	370 U	380 U	370 U	380 U
Hexachlorocyclopentadiene		380 U	380 U	370 U	380 U	370 U	380 U
2,4,6-Trichlorophenol		380 U	380 U	370 U	380 U	370 U	380 U
2,4,5-Trichlorophenol		940 U	940 U	940 U	940 U	930 U	940 U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0111L278 Client: TNUHANFORD B02-008 H1581 Work Order: 11343606001 Page: 1b

Cust ID:	B13CR9	B13CR9	B13CR9	B13CR9	B13CR9	B13CR9
RFW#:	001	001 REPREP	001 MS	001 MS REPREP	001 MSD	001 MSD REPREP
2-Chloronaphthalene	380 U	380 U	370 U	380 U	370 U	380 U
2-Nitroaniline	940 U	940 U	940 U	940 U	930 U	940 U
Dimethylphthalate	380 U	380 U	370 U	380 U	370 U	380 U
Acenaphthylene	380 U	380 U	370 U	380 U	370 U	380 U
2,6-Dinitrotoluene	380 U	380 U	370 U	380 U	370 U	380 U
3-Nitroaniline	940 U	940 U	940 U	940 U	930 U	940 U
Acenaphthene	380 U	380 U	0 * %	88 %	0 * %	86 %
2,4-Dinitrophenol	940 U	940 U	940 U	940 U	930 U	940 U
4-Nitrophenol	940 U	940 U	0 * %	78 %	0 * %	72 %
Dibenzofuran	380 U	380 U	370 U	380 U	370 U	380 U
2,4-Dinitrotoluene	380 U	380 U	0 * %	87 %	0 * %	85 %
Diethylphthalate	380 U	380 U	370 U	380 U	370 U	380 U
4-Chlorophenyl-phenylether	380 U	380 U	370 U	380 U	370 U	380 U
Fluorene	380 U	380 U	370 U	380 U	370 U	380 U
4-Nitroaniline	940 U	940 U	940 U	940 U	930 U	940 U
4,6-Dinitro-2-methylphenol	940 U	940 U	940 U	940 U	930 U	940 U
N-Nitrosodiphenylamine (1)	380 U	380 U	370 U	380 U	370 U	380 U
4-Bromophenyl-phenylether	380 U	380 U	370 U	380 U	370 U	380 U
Hexachlorobenzene	380 U	380 U	370 U	380 U	370 U	380 U
Pentachlorophenol	940 U	940 U	0 * %	87 %	0 * %	83 %
Phenanthrene	380 U	380 U	370 U	380 U	370 U	380 U
Anthracene	380 U	380 U	370 U	380 U	370 U	380 U
Carbazole	380 U	380 U	370 U	380 U	370 U	380 U
Di-n-Butylphthalate	380 U	380 U	370 U	380 U	370 U	380 U
Fluoranthene	380 U	380 U	370 U	380 U	370 U	380 U
Pyrene	380 U	380 U	0 * %	106 %	0 * %	98 %
Butylbenzylphthalate	380 U	380 U	370 U	380 U	370 U	380 U
3,3'-Dichlorobenzidine	380 U	380 U	370 U	380 U	370 U	380 U
Benzo(a)anthracene	380 U	380 U	370 U	380 U	370 U	380 U
Chrysene	380 U	380 U	370 U	380 U	370 U	380 U
bis(2-Ethylhexyl)phthalate	380 U	47 J	370 U	49 J	370 U	380 U
Di-n-Octyl phthalate	380 U	380 U	370 U	380 U	370 U	380 U
Benzo(b)fluoranthene	380 U	380 U	370 U	380 U	370 U	380 U
Benzo(k)fluoranthene	380 U	380 U	370 U	380 U	370 U	380 U
Benzo(a)pyrene	380 U	380 U	370 U	380 U	370 U	380 U
Indeno(1,2,3-cd)pyrene	380 U	380 U	370 U	380 U	370 U	380 U
Dibenzo(a,h)anthracene	380 U	380 U	370 U	380 U	370 U	380 U
Benzo(g,h,i)perylene	380 U	380 U	370 U	380 U	370 U	380 U
Tributylphosphate	380 U	380 U	370 U	380 U	370 U	380 U

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

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List

Report Date: 11/30/01 15:25

RFW Batch Number: **0111L278** Client: **TNURANFORD B02-008 H1581** Work Order: 11343606001 Page: 2a

	Cust ID:	SBLKJM	SBLKJM BS	SBLKKR	SBLKKR BS
Sample Information	RFW#:	01LE1340-MB1	01LE1340-MB1	01LE1399-MB1	01LE1399-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	0 * %	0 * %	89 %	98 %
	2-Fluorobiphenyl	0 * %	0 * %	93 %	96 %
	p-Terphenyl-d14	0 * %	0 * %	105 %	113 %
	Phenol-d5	0 * %	0 * %	85 %	94 %
	2-Fluorophenol	0 * %	0 * %	85 %	96 %
	2,4,6-Tribromophenol	0 * %	0 * %	89 %	94 %
Phenol		330 U	0 * %	330 U	93 * %
bis(2-Chloroethyl)ether		330 U	330 U	330 U	330 U
2-Chlorophenol		330 U	0 * %	330 U	88 %
1,3-Dichlorobenzene		330 U	330 U	330 U	330 U
1,4-Dichlorobenzene		330 U	0 * %	330 U	84 %
1,2-Dichlorobenzene		330 U	330 U	330 U	330 U
2-Methylphenol		330 U	330 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)		330 U	330 U	330 U	330 U
4-Methylphenol		330 U	330 U	330 U	330 U
N-Nitroso-Di-n-propylamine		330 U	0 * %	330 U	81 %
Hexachloroethane		330 U	330 U	330 U	330 U
Nitrobenzene		330 U	330 U	330 U	330 U
Isophorone		330 U	330 U	330 U	330 U
2-Nitrophenol		330 U	330 U	330 U	330 U
2,4-Dimethylphenol		330 U	330 U	330 U	330 U
bis(2-Chloroethoxy)methane		330 U	330 U	330 U	330 U
2,4-Dichlorophenol		330 U	330 U	330 U	330 U
1,2,4-Trichlorobenzene		330 U	0 * %	330 U	90 %
Naphthalene		330 U	330 U	330 U	330 U
4-Chloroaniline		330 U	330 U	330 U	330 U
Hexachlorobutadiene		330 U	330 U	330 U	330 U
4-Chloro-3-methylphenol		330 U	0 * %	330 U	91 %
2-Methylnaphthalene		330 U	330 U	330 U	330 U
Hexachlorocyclopentadiene		330 U	330 U	330 U	330 U
2,4,6-Trichlorophenol		330 U	330 U	330 U	330 U
2,4,5-Trichlorophenol		830 U	830 U	830 U	830 U

*= Outside of EPA CLP QC limits.

Cust ID:	SBLKJM		SBLKJM BS		SBLKKR		SBLKKR BS	
RFW#:	01LE1340-MB1		01LE1340-MB1		01LE1399-MB1		01LE1399-MB1	
2-Chloronaphthalene	330	U	330	U	330	U	330	U
2-Nitroaniline	830	U	830	U	830	U	830	U
Dimethylphthalate	330	U	330	U	330	U	330	U
Acenaphthylene	330	U	330	U	330	U	330	U
2,6-Dinitrotoluene	330	U	330	U	330	U	330	U
3-Nitroaniline	830	U	830	U	830	U	830	U
Acenaphthene	330	U	0 *	%	330	U	85	%
2,4-Dinitrophenol	830	U	830	U	830	U	830	U
4-Nitrophenol	830	U	0 *	%	830	U	72	%
Dibenzofuran	330	U	330	U	330	U	330	U
2,4-Dinitrotoluene	330	U	0 *	%	330	U	83	%
Diethylphthalate	330	U	330	U	330	U	330	U
4-Chlorophenyl-phenylether	330	U	330	U	330	U	330	U
Fluorene	330	U	330	U	330	U	330	U
4-Nitroaniline	830	U	830	U	830	U	830	U
4,6-Dinitro-2-methylphenol	830	U	830	U	830	U	830	U
N-Nitrosodiphenylamine (1)	330	U	330	U	330	U	330	U
4-Bromophenyl-phenylether	330	U	330	U	330	U	330	U
Hexachlorobenzene	330	U	330	U	330	U	330	U
Pentachlorophenol	830	U	0 *	%	830	U	87	%
Phenanthrene	330	U	330	U	330	U	330	U
Anthracene	330	U	330	U	330	U	330	U
Carbazole	330	U	330	U	330	U	330	U
Di-n-Butylphthalate	330	U	330	U	330	U	330	U
Fluoranthene	330	U	330	U	330	U	330	U
Pyrene	330	U	0 *	%	330	U	102	%
Butylbenzylphthalate	330	U	330	U	330	U	330	U
3,3'-Dichlorobenzidine	330	U	330	U	330	U	330	U
Benzo(a)anthracene	330	U	330	U	330	U	330	U
Chrysene	330	U	330	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	330	U	330	U	330	U	330	U
Di-n-Octyl phthalate	330	U	330	U	330	U	330	U
Benzo(b)fluoranthene	330	U	330	U	330	U	330	U
Benzo(k)fluoranthene	330	U	330	U	330	U	330	U
Benzo(a)pyrene	330	U	330	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	330	U	330	U	330	U	330	U
Dibenzo(a,h)anthracene	330	U	330	U	330	U	330	U
Benzo(g,h,i)perylene	330	U	330	U	330	U	330	U
Tributylphosphate	330	U	330	U	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.

B13CR9

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

Client: TNUHANFORD B02-008 H1581

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L278-001

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

Lab File ID: A111907

Level: (low/med) LOW

Date Received: 11/06/01

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

Date Extracted: 11/07/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/19/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.958	400	JB
2.	UNKNOWN	22.635	200	JB

11

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CR9RE

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

Client: TNUHANFORD B02-008 H1581

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L278-001

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

Lab File ID: A112906

Level: (low/med) LOW

Date Received: 11/06/01

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

Date Extracted: 11/20/01

Concentrated Extract Volume: 500(uL)

Date Analyzed: 11/29/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y

pH: 7.0

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.916	500	JB
2.	UNKNOWN	22.627	200	J
3.	ALKANE	25.246	90	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKJM

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

Client: TNUHANFORD B02-008 H1581

Matrix: (soil/water) SOIL

Lab Sample ID: 01LE1340-MB1

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

Lab File ID: A111905

Level: (low/med) LOW

Date Received: 11/07/01

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

Date Extracted: 11/07/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/19/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.95	500	J
2.	UNKNOWN	22.64	80	J

B

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKKR

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

Client: TNUHANFORD B02-008 H1581

Matrix: (soil/water) SOIL

Lab Sample ID: 01LE1399-MB1

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

Lab File ID: A112904

Level: (low/med) LOW

Date Received: 11/20/01

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

Date Extracted: 11/20/01

Concentrated Extract Volume: 500(uL)

Date Analyzed: 11/29/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y

pH: 7.0

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.920	500	J

Lionville Laboratory Use Only

01111L278

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

B02

Client: TNU-HANFORD ~~B002~~-008 11-11-01

Est. Final Proj. Sampling Date:

Project #: 11343-606-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30 day

Date Rec'd: 11-6-01 Date Due: 12-6-01

		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	100	100			
Preservatives		—	—	—					—		—		—			
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	NO2 NO3 SO4 Anions	PH	Hg Hg Diss			
		Lionville Laboratory Use Only														
		8260H	8270C	8325X	8080	8AC8			ICAP METALS		300.0	IPH	INVZN			

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	B13CR9	✓	✓	S	11/1/01	0815	1	1	1			1			1	1	1				

Special Instructions:

SAF # B02-008

OGCSC: Propanol, Ethanol

DATE/REVISIONS:

MCT ① 1. As, Ba, Cd, Cr, Pb, Se, Ag, Al, Be, Bi, B, Ca, Cu, Fe

2. Mn, Mo, Ni, K, Na, Tl, V, Zn, Hg

INORG ① 3. IN3N2, ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4,

4. ISFD, INH3N, ICNTO

5.

6.

Lionville Laboratory Use Only

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

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

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

Cooler Temp. 4.3 °C

Relinquished by	Received by	Date	Time
Fed Ex	K. Hang	11/6/01	0950

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

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

NOTES:

0111L278

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-008-03	Page 1 of 1

Collector: Bowers DL/Watson DJ	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 - Waste Mana	Sampling Location: 200 East & West	SAF No.: B02-008	Air Quality ☐
Ice Chest No.: See OSPC	Field Logbook No.: EL1551 — COA: B20CS1673C	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA	Offsite Property No.: A020017	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 3A at the 3728 Shipping Facility on 11/1/01. Collector not available to relinquish samples on 11/5/01 for shipment.

RT 11/5/01

SAMPLE ANALYSIS												
			Preservation	None	None	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										
B13CR9	SOIL	11-1-01	0815		X	X	X	X	X	X	X	D13CL5	

DSW 11-1-01

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DS Watson/Bowers	11-1-01 1115	REF. 3A 3728 Bldg.	11-1-01 1115
Relinquished By/Removed From	Date/Time 0900	Received By/Stored In	Date/Time 0900
REF 3A 3728	11-5-01	RK Moore	11-5-01
Relinquished By/Removed From	Date/Time 0900	Received By/Stored In	Date/Time
RK Moore EKC	11-5-01	EKC	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
EKC	11/6/01 0950	[illegible]	11/6/01 0950
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 compouds 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, Antimony-125, Barium-133, Cesium-134, Curium-242, Radium-226, Radium-228, Sodium-22, Tin-126}; Strontium-89,90 -- Total Sr; Carbon-14;~~ Total Uranium; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Neptunium-237; ~~Isotopic Uranium~~ — DSW 11-1-01
(2) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Aluminum, Beryllium, Bismuth, Boron, Calcium, Copper, Iron, Manganese, Molybdenum, Nickel, Potassium, Sodium, Thallium, 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
Ve=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 B02-008
LVL#: 0111L278
SDG/SAF#: H1581/B02-008

W.O.#: 11343-606-001-9999-00
Date Received: 11-06-01

PCB

One (1) soil sample was collected on 11-01-01.

The sample and its associated QC samples were extracted on 11-09-01, re-extracted on 11-20-01, and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 11-16,27,28-01. 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. The cooler temperature has been recorded on the chain-of-custody.
2. This sample was originally extracted within its required holding time. Due to low surrogate recoveries in the method blank, the sample was re-extracted outside of hold time. Both the original and the re-extracted results have been reported. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
3. The samples and their associated QC samples received a sulfuric acid and a sulfur cleanup.
4. All method blanks were below the reporting limits for all target compounds.
5. Two (2) of twenty (20) surrogate recoveries were outside acceptance criteria. A copy of the SDR has been enclosed.
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

11/28/01
Date

pef\r:\group\data\pest\11L-278.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 9 pages.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 0166506.

Initiator: John Lech. Batch: 0110L278, 279. Parameter: PCB
Date: 11/20/01 Samples: All Matrix: Soil
Client: TNU Method: SW846/MCAWW/CLP/ Prep Batch: 01LE1279.

1. Reason for SDR

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

b. General Discrepancy

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

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

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

method blank surrogates below acceptable limits.

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:

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

4. Project Manager Instructions...signature/date: [signature] 11/30/01

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

5. Final Action...signature/date: _____ Other Explanation:

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

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

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

QA-105-A-0801

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: 11/29/01 08:50

RFW Batch Number: 0111L278 Client: TNUHANFORD B02-008 H1581 Work Order: 11343606001 Page: 1

	Cust ID:	B13CR9	B13CR9	B13CR9	B13CR9	B13CR9	B13CR9
Sample Information	RFW#:	001	001	001 MS	001 MS	001 MSD	001 MSD
	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 REPREP	UG/KG	UG/KG REPREP	UG/KG	UG/KG REPREP
Surrogate:	Tetrachloro-m-xylene	98 %	102 %	88 %	108 %	105 %	105 %
	Decachlorobiphenyl	100 %	101 %	94 %	102 %	106 %	104 %
Aroclor-1016		37 U	38 U	38 U	38 U	37 U	38 U
Aroclor-1221		75 U	75 U	75 U	75 U	74 U	75 U
Aroclor-1232		37 U	38 U	38 U	38 U	37 U	38 U
Aroclor-1242		37 U	38 U	38 U	38 U	37 U	38 U
Aroclor-1248		37 U	38 U	38 U	38 U	37 U	38 U
Aroclor-1254		37 U	38 U	86 %	97 %	92 %	95 %
Aroclor-1260		37 U	38 U	38 U	38 U	37 U	38 U

	Cust ID:	PBLKVK	PBLKVK BS	PBLKYB	PBLKYB BS
Sample Information	RFW#:	01LE1339-MB1	01LE1339-MB1	01LE1398-MB1	01LE1398-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	20 * %	90 %	108 %	110 %
	Decachlorobiphenyl	22 * %	98 %	110 %	114 %
Aroclor-1016		33 U	33 U	33 U	33 U
Aroclor-1221		67 U	67 U	67 U	67 U
Aroclor-1232		33 U	33 U	33 U	33 U
Aroclor-1242		33 U	33 U	33 U	33 U
Aroclor-1248		33 U	33 U	33 U	33 U
Aroclor-1254		33 U	88 %	33 U	101 %
Aroclor-1260		33 U	33 U	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

Lionville Laboratory Use Only

01111L278

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

B02-

Client: TNU-HANFORD B002-008 11-6-01

Est. Final Proj. Sampling Date:

Project #: 11343-606-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30 day

Date Rec'd: 11-6-01 Date Due: 12-6-01

		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	1000	120			
Preservatives		—	—	—					—		—		—			
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	NO2 NO3 SO4 Anions	pH	Hg 8270 Sec			
Lionville Laboratory Use Only		0624H	0625X OGCSC	0PCB					ICP6 MCT6		IANIONS	IPH	IHYZN			

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	B13CR9	✓	✓	S	11/6/01	0815	1	1	1					1		1	1	1		

Special Instructions:

SAF # B02-008

OGCSC: Propanol, Ethanol

DATE/REVISIONS:

MCT6 1. As, Ba, Cd, Cr, Pb, Se, Ag, Al, Be, Bi, B, Ca, Cu, Fe

2. Mn, Mo, Ni, K, Na, Tl, V, Zn, Hg

INORG 1 3. IN3N2, ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4,

4. ISFD, INH3N, ICNTO

5.

6.

Lionville Laboratory Use Only

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

Tamper Resistant Seal was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 4.3 °C

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	11/6/01	0450

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

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

NOTES:

0111L278

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-008-03	Page 1 of 1

Collector: Bowers DL/Watson DJ	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 - Waste Mana	Sampling Location: 200 East & West	SAF No.: B02-008	
Ice Chest No.: See OSPC	Field Logbook No.: EL 1551	COA: B20CS1673C	Method of Shipment: Fed Ex
Shipped To: TMA/RECRA	Offsite Property No.: A020017		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 3A at the 3728 Shipping Facility on 11/1/01. Collector not available to relinquish samples on 11/5/01 for shipment.

RT 11/5/01

Preservation	None	None	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		
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								
B13CR9	SOIL	11-1-01	0815		X	X	X	X	X	X	X	B13CL5

DSW 11-1-01

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DS Watson/Recorder	11-1-01 1115	REF. 3A 3728 BLDG.	11-1-01 1115
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Ref 3A 3728	11-5-01 0900	RT Moore	11/5/01 0900
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
RT Moore	ERC 11-5-01 0900	Fed Ex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	11/6/01 0950	[illegible]	11/6/01 0950
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 compouds 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, Antimony-125, Barium-133, Cesium-134, Curium-242, Radium-226, Radium-228, Sodium-22, Tin-126); Strontium-89,90 -- Total Sr, Carbon-14; Total Uranium, Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium~~ DSW 11-1-01
(2) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Aluminum, Beryllium, Bismuth, Boron, Calcium, Copper, Iron, Manganese, Molybdenum, Nickel, Potassium, Sodium, Thallium, 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)

Figure 1. Sample Check-in List

Date/Time Received: 11/6/01 0950

SDG#: 01116278

Work Order Number: B02-008

SAF# B002-0N 11-6-01

Shipping Container ID: ERC96-002

Chain of Custody # B02-008-03

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 4.3
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: 11/6/01

Telephoned to: _____ On _____ By _____

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B02-008
LVL#: 0111L278
SDG/SAF#: H1581/B02-008

W.O.#: 11343-606-001-9999-00
Date Received: 11-06-01

METALS CASE NARRATIVE

1. This narrative covers the analysis of 1 soil sample.

2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary.

1

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 the final CCV for Nickel. All samples were surrounded by QC in control.

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

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

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

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

10. The matrix spike (MS) recoveries for 3 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 15 pages.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B13CR9	Aluminum	20,000	97.6
	Iron	30,000	106.3
	Manganese	1000	113.8

12. The duplicate analyses for 4 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.

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

11-15-01
Date

gmb/m11-278

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#: 0111L278

,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

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 11/15/01

CLIENT: TNUHANFORD B02-008 H1581' LVL LOT #: 0111L278

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B13CR9	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	9250	MG/KG	1.6	1.0
		Arsenic, Total	7.7	MG/KG	0.36	1.0
		Boron, Total	2.6	MG/KG	0.20	1.0
		Barium, Total	99.0	MG/KG	0.01	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Bismuth, Total	0.36 u	MG/KG	0.36	1.0
		Calcium, Total	9350	MG/KG	0.99	1.0
		Cadmium, Total	0.15	MG/KG	0.03	1.0
		Chromium, Total	11.6	MG/KG	0.07	1.0
		Copper, Total	16.6	MG/KG	0.06	1.0
		Iron, Total	26900	MG/KG	1.9	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	2230	MG/KG	2.2	1.0
		Manganese, Total	396	MG/KG	0.01	1.0
		Molybdenum, Total	0.57	MG/KG	0.12	1.0
		Sodium, Total	427	MG/KG	0.40	1.0
		Nickel, Total	11.3	MG/KG	0.11	1.0
		Lead, Total	7.3	MG/KG	0.21	1.0
		Selenium, Total	0.25 u	MG/KG	0.25	1.0
		Thallium, Total	0.31 u	MG/KG	0.31	1.0
		Vanadium, Total	62.9	MG/KG	0.06	1.0
		Zinc, Total	51.1	MG/KG	0.03	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/15/01

CLIENT: TNUHANFORD B02-008 H1581 LVL LOT #: 0111L278

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0730-MB1	Silver, Total	0.06 u	MG/KG	0.06	1.0
		Aluminum, Total	4.2	MG/KG	1.4	1.0
		Arsenic, Total	0.32 u	MG/KG	0.32	1.0
		Boron, Total	0.52	MG/KG	0.18	1.0
		Barium, Total	0.07	MG/KG	0.01	1.0
		Beryllium, Total	0.04 u	MG/KG	0.04	1.0
		Bismuth, Total	0.32 u	MG/KG	0.32	1.0
		Calcium, Total	2.7	MG/KG	0.89	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.11	MG/KG	0.06	1.0
		Copper, Total	0.12	MG/KG	0.05	1.0
		Iron, Total	1.7 u	MG/KG	1.7	1.0
		Potassium, Total	8.3	MG/KG	1.9	1.0
		Manganese, Total	0.02	MG/KG	0.01	1.0
		Molybdenum, Total	0.11 u	MG/KG	0.11	1.0
		Sodium, Total	7.5	MG/KG	0.36	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
		Thallium, Total	0.28 u	MG/KG	0.28	1.0
		Vanadium, Total	0.05 u	MG/KG	0.05	1.0
		Zinc, Total	0.15	MG/KG	0.03	1.0
BLANK1	01C0359-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/15/01

CLIENT: TNUHANFORD B02-008 H1581 LVL LOT #: 0111L278

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B13CR9	Silver, Total	5.1	0.07u	5.6	91.1	1.0
		Aluminum, Total	10000	9250	223	356.4*	1.0
		Arsenic, Total	213	7.7	223	92.0	1.0
		Boron, Total	105	2.6	112	91.5	1.0
		Barium, Total	293	99.0	223	87.1	1.0
		Beryllium, Total	5.3	0.01u	5.6	94.6	1.0
		Bismuth, Total	526	0.36u	558	94.4	1.0
		Calcium, Total	11900	9350	2790	90.6	1.0
		Cadmium, Total	5.1	0.15	5.6	88.3	1.0
		Chromium, Total	32.7	11.6	22.3	94.6	1.0
		Copper, Total	41.8	16.6	27.9	90.3	1.0
		Iron, Total	27800	26900	112	764.1*	1.0
		Mercury, Total	0.19	0.02u	0.19	102.7	1.0
		Potassium, Total	5010	2230	2790	99.8	1.0
		Manganese, Total	476	396	55.8	143.2*	1.0
		Molybdenum, Total	104	0.57	112	92.9	1.0
		Sodium, Total	3130	427	2790	97.1	1.0
		Nickel, Total	65.3	11.3	55.8	96.8	1.0
		Lead, Total	58.1	7.3	55.8	91.0	1.0
		Selenium, Total	190	0.25u	223	85.4	1.0
		Thallium, Total	190	0.31u	223	85.4	1.0
		Vanadium, Total	115	62.9	55.8	94.1	1.0
		Zinc, Total	104	51.1	55.8	94.8	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/15/01

CLIENT: TNUHANFORD B02-008 H1581 LVL LOT #: 0111L278

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B13CR9	Silver, Total	0.07u	0.07u	NC	1.0
		Aluminum, Total	9250	9260	0.077	1.0
		Arsenic, Total	7.7	6.5	16.9	1.0
		Boron, Total	2.6	2.4	8.0	1.0
		Barium, Total	99.0	92.8	6.5	1.0
		Beryllium, Total	0.01u	0.10	NC 200	1.0
		Bismuth, Total	0.36u	0.36u	NC	1.0
		Calcium, Total	9350	8180	13.3	1.0
		Cadmium, Total	0.15	0.03u	NC 200	1.0
		Chromium, Total	11.6	11.2	3.5	1.0
		Copper, Total	16.6	14.6	12.8	1.0
		Iron, Total	26900	26500	1.5	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Potassium, Total	2230	2220	0.32	1.0
		Manganese, Total	396	392	0.99	1.0
		Molybdenum, Total	0.57	0.45	22.8	1.0
		Sodium, Total	427	415	3.0	1.0
		Nickel, Total	11.3	11.5	1.8	1.0
		Lead, Total	7.3	6.8	7.1	1.0
		Selenium, Total	0.25u	0.25u	NC	1.0
		Thallium, Total	0.31u	0.66	NC 200	1.0
		Vanadium, Total	62.9	61.5	2.3	1.0
		Zinc, Total	51.1	51.9	1.6	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/15/01

CLIENT: TNUHANFORD B02-008 H1S81 LVL LOT #: 0111L278

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0730-LC1	Silver, LCS	44.7	50.0	MG/KG	89.4
		Aluminum, LCS	505	500	MG/KG	101.0
		Arsenic, LCS	956	1000	MG/KG	95.6
		Boron, LCS	494	500	MG/KG	98.8
		Barium, LCS	482	500	MG/KG	96.3
		Beryllium, LCS	24.6	25.0	MG/KG	98.4
		Bismuth, LCS	493	500	MG/KG	98.5
		Calcium, LCS	2450	2500	MG/KG	97.8
		Cadmium, LCS	24.6	25.0	MG/KG	98.4
		Chromium, LCS	49.7	50.0	MG/KG	99.4
		Copper, LCS	125	125	MG/KG	99.8
		Iron, LCS	498	500	MG/KG	99.5
		Potassium, LCS	2650	2500	MG/KG	106.1
		Manganese, LCS	76.9	75.0	MG/KG	102.5
		Molybdenum, LCS	499	500	MG/KG	99.7
		Sodium, LCS	2480	2500	MG/KG	99.0
		Nickel, LCS	199	200	MG/KG	99.6
		Lead, LCS	245	250	MG/KG	97.9
		Selenium, LCS	920	1000	MG/KG	92.0
		Thallium, LCS	969	1000	MG/KG	96.9
		Vanadium, LCS	250	250	MG/KG	99.9
		Zinc, LCS	97.5	100	MG/KG	97.5
LCS1	01C0359-LC1	Mercury, LCS	2.5	2.5	MG/KG	99.6

Lionville Laboratory Use Only

01112278

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

B02

Client: TNU-HANFORD B02-008 11-6-01

Est. Final Proj. Sampling Date:

Project #: 11343-606-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30 day

Date Rec'd: 11-6-01 Date Due: 12-6-01

		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							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	AN02 NO3 SO4 Anions	pH	HYDRAZINE			
		Lionville Laboratory Use Only														
		0624H	0625X OGCSC	0PCB					ZCR4 METO		ZNORG	IPH	ZHYZN			

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	0624H	0625X OGCSC	0PCB	ZCR4 METO	ZNORG	IPH	ZHYZN
001	B13C09	✓	✓	S	11/1/01	0815	1	1	1	1	1	1	1

Special Instructions:

SAF # B02-008

OGCSC = Propanol, Ethanol

DATE/REVISIONS:

MET ① 1. As, Ba, Cd, Cr, Pb, Se, Ag, Al, Be, Bi, B, Ca, Cu, Fe,

2. Mn, Mo, Ni, K, Na, Tl, V, Zn, Hg

INORG ① 3. IN3N2, ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4,

4. ISFD, INH3N, ICNTO

5.

6.

Lionville Laboratory Use Only

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

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

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

Cooler Temp. 4.3 °C

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	11/6/01	0950

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

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

NOTES:

0111L278

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-008-03	Page 1 of 1

Collector: Bowers DL/Watson DJ	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 - Waste Mana	Sampling Location: 200 East & West	SAF No.: B02-008	
Ice Chest No.: See DSPC	Field Logbook No.: EL 1551	COA: B20CS1673C	Method of Shipment: Fed Ex
Shipped To: TMA/RECRA	Offsite Property No.: A020017		Bill of Lading/Air Bill No.: See DSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 3A at the 3728 Shipping Facility on 11/1/01. Collector not available to relinquish samples on 11/5/01 for shipment.

RT 11/5/01

Preservation	None	None	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	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										
B13CR9 / SOIL / 11-1-01 / 0815		X	X	X	X	X	X	X	D17CL5	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DS Watson/RE Bowers	11-1-01 1115	REF. 3A 3728 BLDG.	11-1-01 1115
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Ref 3A 3728	11-6-01 0900	RK Thompson	11-6-01 0900
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
RK Thompson EKC	11-6-01	Fed Ex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	11/6/01 0950	L. Hendy	11/6/01 0950
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, Antimony-125, Barium-133, Cesium-134, Curium-242, Radium-226, Radium-228, Sodium-22, Tin-126}; Strontium-89,90 = Total Sr; Carbon-14; Total Uranium; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Neptunium-237; Isotopic Uranium~~ DSW 11-1-01

(2) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Aluminum, Beryllium, Bismuth, Boron, Calcium, Copper, Iron, Manganese, Molybdenum, Nickel, Potassium, Sodium, Thallium, 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)

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B02-008
LVL#: 0111L278
SDG/SAF#: H1581/B02-008

W.O.#: 11343-606-001-9999-00
Date Received: 11-06-01

DIESEL RANGE ORGANICS

One (1) soil sample was collected on 11-01-01.

The sample and its associated QC samples were prepared on 11-07-01 and analyzed according to Lionville Laboratory OPs based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 11-09,10-01. The analysis met the intent of method WTPH-D.

1. The cooler temperature has 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

11/17/01
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 7 pages.

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

GLOSSARY OF DIESEL RANGE ORGANICS 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 10ug/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 a compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
I	=	Interference.

ABBREVIATIONS

BS	=	Indicates blank spike reagent grade water spiked with the matrix spiking solution. Spike recoveries are reported.
BSD	=	Indicates a blank spike duplicate.
MS	=	Indicates a matrix spike.
MSD	=	Indicates a matrix spike duplicate.
NA	=	Not Applicable.
NS	=	Not spiked.
DF	=	Dilution factor.
NR	=	Not required.
SP	=	Indicates a spiked compound.

Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

Report Date: 11/12/01 07:54

RFW Batch Number: 0111L278 Client: TNUHANFORD B02-008 H1581 Work Order: 11343606001 Page: 1

	Cust ID:	B13CR9	B13CR9	B13CR9	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	01LE1338-MB1	01LE1338-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
	p-Terphenyl	95 %	96 %	101 %	87 %	81 %
Diesel Range Organics		13.5 U	85 %	87 %	12.0 U	74 %
Kerosene		13.5 U	NS	NS	12.0 U	NS

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

01111278

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

B02

Client: TNC-HANFORD B02-008 (11-6-01)

Est. Final Proj. Sampling Date:

Project #: 11343-606-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30 day

Date Rec'd: 11-6-01 Date Due: 12-6-01

	A	B	C	D	E	F	G
Refrigerator #	1	2	2	2	2	2	2
#/Type Container							
Volume							
Preservatives							
ANALYSES REQUESTED (ORGANIC) VOA							
ORGANIC BNA							
ORGANIC Pest/PCB							
ORGANIC Herb							
INORG Metal							
INORG CN							
Lionville Laboratory Use Only	0624H	OGCSC	0625X 0PRO	OACB	ICP6 MET6	ZADRO	ZPH	ZHYZN

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	0624H	OGCSC	0625X 0PRO	OACB	ICP6 MET6	ZADRO	ZPH	ZHYZN
001	B13CR9	✓	✓	S	11/6/01	0815	1	1	1	1	1	1	1	1

Special Instructions:

SAF # B02-008

OGCSC = Propanol, Ethanol

DATE/REVISIONS:

MET6 1. As, Ba, Cd, Cr, Pb, Se, Ag, Al, Be, Bi, B, Ca, Cu, Fe

2. Mn, Mo, Ni, K, Na, Tl, V, Zn, Hg

INORG 1 3. IN3N2, ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4,

4. ISFD, INH3N, ICNTO

5.

6.

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # Bel Tabu

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was: 1) Present on Outer Package (Y) or N

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

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

Cooler Temp. 4.3 °C

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	11/6/01	0950

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL REWRITTEN

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

NOTES:

0111L278

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-008-03	Page 1 of 1 6

Collector: Bowers DL/Watson DJ	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 - Waste Mana	Sampling Location: 200 East & West	SAF No.: B02-008	Air Quality ☐
Ice Chest No.: See OSPC	Field Logbook No.: EL 1551 — COA: B20CS1673C	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA	Offsite Property No.: A020017	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 3A at the 3728 Shipping Facility on 11/1/01. Collector not available to relinquish samples on 11/5/01 for shipment.

RT 11/5/01

Preservation	None	None	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	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							
B13CR9	SOIL	11-1-01	0815		X	X	X	X	X	X	X	B13CL5

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DS Watson/Schwan	11-1-01 1115	REF. 3A 3728 BLDG.	11-1-01 1115
Ref 3A 3728	11-5-01 0900	RT Trent	11-5-01 0900
RT Trent / ERC	11-5-01 0900	FED EX	
Fed Ex	11/6/01 0950	L. Henry	11/6/01 0950
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, Antimony-125, Barium-133, Cesium-134, Curium-244, Radium-226, Radium-228, Sodium-22, Tin-126); Strontium-89,90 - Total Sr, Carbon-14;~~ Total Uranium; Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium — DSW 11-1-01
(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Aluminum, Beryllium, Bismuth, Boron, Calcium, Copper, Iron, Manganese, Molybdenum, Nickel, Potassium, Sodium, Thallium, 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)

Figure 1. Sample Check-in List

Date/Time Received: 11/6/01 0950

SDG#: 01116278

Work Order Number: B02-008

SAF# B002-011-6-01

Shipping Container ID: ERC96-002

Chain of Custody # B02-008-03

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 4.3
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: Neil Hemmings Twinville Laboratory Incorporated Date: 11/6/01

Telephoned to: _____ On _____ By _____

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B02-008 H1581
LVL#: 0111L278

W.O.#: 11343-606-001-9999-00
Date Received: 11-06-01

INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 soil sample.

2. The sample was 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 temperature was 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 for Ammonia was 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 with the exception of Chloride that may be attributed to sample inhomogeneity.

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

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

11-30-01
Date

njp\i11-278

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 14 pages.

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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: Hydrazine **Method:** USAFSAM, Report TR-82-29

Other: Nitrate Nitrite **Method** EPA 353.2 (mod)

Ammonia EPA 350.3 (mod.)

Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate } EPA 300.0 (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 11/19/01

CLIENT: TNUHANFORD B02-008 H1581 LVL LOT #: 0111L278

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B13CR9	% Solids	88.8		%	0.01	1.0
		Chloride by IC	2.8		MG/KG	1.4	1.0
		Fluoride by IC	2.8	u	MG/KG	2.8	1.0
		Nitrite by IC	1.41	u	MG/KG	1.41	1.0
		Nitrate by IC	107		MG/KG	7.04	5.0
		Cyanide, Total	0.50	u	MG/KG	0.50	1.0
		Phosphate by IC	1.4	u	MG/KG	1.4	1.0
		Chromium VI	0.45	u	MG/KG	0.45	1.0
		Sulfate by IC	15.2		MG/KG	1.4	1.0
		Hydrazine	1.1	u	MG/KG	1.1	1.0
		Nitrate Nitrite	30.7		MG/KG	1.1	5.0
		Ammonia, as N	2.7	u	MG/KG	2.7	1.0
		pH	8.1		SOIL PH	0.01	1.0
		Sulfide	45.2	u	MG/KG	45.2	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/19/01

CLIENT: TNUHANFORD B02-008 H1581 LVL LOT #: 0111L278

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LIC075-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	01LC099-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	01LVI087-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	01LHZ005-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	01LAM051-MB1	Ammonia, as N	2.5	u	MG/KG	2.5	1.0
BLANK10	01LSD062-MB1	Sulfide	40.0	u	MG/KG	40.0	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/19/01

CLIENT: TNUHANFORD B02-008 H1581 LVL LOT #: 0111L278

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B13CR9	Chloride by IC	29.7	2.8	28.2	95.6	1.0
		Fluoride by IC	59.8	0.69	56.3	105.0	1.0
		Nitrite by IC	27.9	1.41u	28.2	99.0	1.0
		Nitrate by IC	261	107	141	109.9	5.0
		Cyanide, Total	5.18	0.50u	5.48	94.7	1.0
		Phosphate by IC	29.0	1.4 u	28.2	103.0	1.0
		Soluble Chromium VI	5.1	0.45u	4.5	107.5	1.0
		Insoluble Chromium VI	1600	0.45u	1450	110.0	100
		Sulfate by IC	44.7	15.2	28.2	104.8	1.0
		Hydrazine	5.8	1.1 u	5.6	102.3	1.0
		Nitrate Nitrite	97.6	30.7	57.2	117.0	10.0
		Ammonia, as N	119	2.7 u	116	102.5	1.0
		Sulfide	753	18.1	840	87.5	1.0
BLANK10	01LIC075-MB1	Chloride by IC	24.7	1.2 u	25.0	98.8	1.0
		Fluoride by IC	53.1	2.5 u	50.0	106.1	1.0
		Nitrite by IC	25.5	1.25u	25.0	102.0	1.0
		Nitrate by IC	24.9	1.25u	25.0	99.8	1.0
		Phosphate by IC	26.1	1.2 u	25.0	104.4	1.0
		Sulfate by IC	24.3	1.2 u	25.0	97.1	1.0
BLANK10	01LVI087-MB1	Soluble Chromium VI	4.0	0.40u	4.0	100.5	1.0
		Insoluble Chromium VI	1190	0.40u	1220	97.4	100
BLANK10	01LHZ005-MB1	Hydrazine	5.1	1.0 u	5.0	101.4	1.0
BLANK10	01LN3061-MB1	Nitrate Nitrite	5.2	0.20u	5.0	103.0	1.0
BLANK10	01LAM051-MB1	Ammonia, as N	92.0	2.5 u	100	92.0	1.0
		Ammonia, as N MSD	100	2.5 u	100	100.5	1.0
BLANK10	01LSD062-MB1	Sulfide	573	40.0 u	617	92.9	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 11/19/01

CLIENT: TNUHANFORD B02-008 H1581 LVL LOT #: 0111L278

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	01LAM051-MB1	Ammonia, as N	92.0	100.5	8.8

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/19/01

CLIENT: TNUHANFORD B02-008 H1581 LVL LOT #: 0111L278

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B13CR9	% Solids	88.8	88.1	0.79	1.0
		Chloride by IC	2.8	2.0	34.3	1.0
		Fluoride by IC	2.8 u	2.8 u	NC	1.0
		Nitrite by IC	1.41u	1.41u	NC	1.0
		Nitrate by IC	107	108	1.3	5.0
		Cyanide, Total	0.50u	0.53u	NC	1.0
		Phosphate by IC	1.4 u	1.4 u	NC	1.0
		Chromium VI	0.45u	0.45u	NC	1.0
		Sulfate by IC	15.2	15.6	2.3	1.0
		Hydrazine	1.1 u	1.1 u	NC	1.0
		Nitrate Nitrite	30.7	33.2	8.0	5.0
		Ammonia, as N	2.7 u	2.9 u	NC	1.0
		pH	8.1	8.1	0.2	1.0
		Sulfide	45.2 u	51.4 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/19/01

CLIENT: TNUHANFORD B02-008 H1581 LVL LOT #: 0111L278

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	01LC099-LCS1	Cyanide, Total LCS	1.85	2.0	MG/KG	92.6
LCSS2	01LC099-LCS2	Cyanide, Total LCS	10.0	10.0	MG/KG	100.4

Lionville Laboratory Use Only

01112278

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

B02

Client TNU-HANFORD B802-008 11-11-01

Est. Final Proj. Sampling Date

Project # 11343-606-001-9999-00

Project Contact/Phone #

Lionville Laboratory Project Manager OJ

QC SPEC Del STD TAT 30 day

Date Rec'd 11-6-01 Date Due 12-6-01

	A	B	C					D		E	F	G			
Refrigerator #	1	2	2					2		2	2	2			
#/Type Container (Liquid)															
#/Type Container (Solid)	1AG	1AG	1AG					1AG		1AG	1AG	1AG			
Volume (Liquid)															
Volume (Solid)	120	100	120					500		100	120				
Preservatives	—	—	—					—		—					
ANALYSES REQUESTED	ORGANIC: VOA	ORGANIC: BNA	ORGANIC: Pest/PCB	ORGANIC: Herb				INORG: Metal	INORG: CN	[illegible]	pH	[illegible]			
Lionville Laboratory Use Only	0624H OGCSC	0625X OPRO	OPCB					ICRB MCTO		IANIONS	IPH	IHYZN			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H OGCSC	0625X OPRO	OPCB					ICRB MCTO		IANIONS	IPH	IHYZN			
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	B13CR9	✓	✓	S	11/1/01	0815	1	1	1					1		1	1	1			

Special Instructions:

SAF # B02-008

OGCSC: Propanol, Ethanol

DATE/REVISIONS:

MCTO 1. As, Ba, Cd, Cr, Pb, Se, Ag, Al, Be, Bi, B, Ca, Cu, Fe

2. Mn, Mo, Ni, K, Na, Tl, V, Zn, Hg

INORG 3. IN3N2, ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4,

4. ISFD, INH3N, ICNTO

5.

6.

Lionville Laboratory Use Only

Samples were: 1) Shipped / or Hand Delivered ___ Airbill # Bei Tabn

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was: 1) Present on Outer Package (Y) or N

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

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

Cooler Temp. 4.3 °C

Relinquished by	Received by	Date	Time
Fed Ex	K. Hang	11/6/01	0450

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

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

NOTES:

[illegible] 2054 8660

01116278

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-008-03	Page 1 of 1

Collector: Bowers DL/Watson DJ	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 - Waste Mana	Sampling Location: 200 East & West	SAF No.: B02-008	
Ice Chest No.: See OSPC	Field Logbook No.: EL 1551	COA: B20CS1673C	Method of Shipment: Fed Ex
Shipped To: TMA/RECRA	Offsite Property No.: A020017		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 3A at the 3728 Shipping Facility on 11/1/01. Collector not available to relinquish samples on 11/5/01 for shipment.
RT 11501

Preservation	None	None	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		
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								
B13CR9	SOIL	11-1-01	0815		X	X	X	X	X	X	X	B13CL5

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DJ Watson/[illegible]	11-1-01 1115	REF. 3A 3728 BLDG.	11-1-01 1115
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Ref 3A 3728	11-5-01 0900	[illegible]	11-5-01 0900
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible] ERC	11-5-01 0900	FED EX	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
FED EX	11/6/01 0950	[illegible]	11/6/01 0950
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, Antimony-125, Barium-133, Cesium-134, Curium-242, Radium-226, Radium-228, Sodium-22, Tin-126); Strontium-89,90 -- Total Sr, Carbon-14; Total Uranium; Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium~~ DJW 11-1-01
(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Aluminum, Beryllium, Bismuth, Boron, Calcium, Copper, Iron, Manganese, Molybdenum, Nickel, Potassium, Sodium, Thallium, 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
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=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: 11/6/01 0950

SDG#: 01116278

Work Order Number: B02-008

SAF# B002-0M 11-6-01

Shipping Container ID: ERC96-002

Chain of Custody # B02-008-03

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 4.3
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: Teresville Laboratory Incorporated Date: 11/6/01

Telephoned to: _____ On _____ By _____

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU HANFORD B02-008
LVL#: 0111L278
SDG/SAF#: H1581/B02-008

W.O.#: 11343-606-001-9999-00
Date Received: 11-06-01

GC SCAN

One (1) soil sample was collected on 11-01-01.

The sample and its associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on Method 8015 for target compounds Ethanol and n-Propyl Alcohol on 11-12-01.

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 cooler temperatures upon receipt have been recorded on the chain-of-custody.
2. The sample was packaged and stored as specified in the method protocol.
3. Surrogates are not currently employed in the methodology.
4. All initial calibrations were within acceptance criteria.
5. All continuing calibrations run prior to analysis were within acceptance criteria.
6. All blank spike recoveries were within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

11/19/01
Date

r:\share\gcpest\narr temp\thu278gcsc.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 8 pages.

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

GLOSSARY OF VOA DATA

DATA QUALIFIERS

U	=	Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
J	=	Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
B	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
D	=	Identifies all compounds identified in an analysis at a secondary dilution factor.
I	=	Interference.
NQ	=	Result qualitatively confirmed but not able to quantify.
N	=	Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
X	=	This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
Y	=	Additional qualifiers used as required are explained in the case narrative.

mmz\10-94\gloss.voa

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.

mmz\10-94\gloss.voa

Lionville Laboratory, Inc.

GC SCAN

Report Date: 11/13/01 08:32

RFW Batch Number: **0111L278** Client: **TNUHANFORD B02-008 H1581** Work Order: 11343606001 Page: 1

5

	Cust ID:	B13CR9		B13CR9		B13CR9		BLK		BLK BS		BLK BSD	
Sample Information	RFW#:	001		001 MS		001 MSD		01LJLB12-MB1		01LJLB12-MB1		01LJLB12-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	
==========		==========	fl	==========	fl	==========	fl	==========	fl	==========	fl	==========	fl
n-Propyl Alcohol		6.0	U	72	%	63	%	5.0	U	94	%	98	%
Ethanol		6.0	U	74	%	69	%	5.0	U	97	%	96	%

Jhc 11/15/01

LK 11-15-01

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
01111278

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

B02

Client: TNL-HANFORD ~~B002-008~~ 11-11-01

Est. Final Proj. Sampling Date:

Project #: 11343-606-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30 day

Date Rec'd: 11-6-01 Date Due: 12-6-01

	A	B	C					D		E	F	G			
Refrigerator #	1	2	2					2		2	2	2			
#/Type Container															
Volume															
Preservatives															
ANALYSES REQUESTED	ORGANIC							INORG							
	VOA	BNA	Pest/PCB	Herb				Metal	CN						
Lionville Laboratory Use Only	8260/624H	OGCSC	8270/625 X OPCB					7470/6010 METO		7470/6010	IPH	THYZN			

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	8260/624H	OGCSC	8270/625 X OPCB					METO		7470/6010	IPH	THYZN			
001	B13CR9	✓	✓	S	11/6/01	0815	1	1	1					1		1	1	1			

Special Instructions:

SAF # B02-008

OGCSC: Propanol, Ethanol

DATE/REVISIONS:

METO 1. As, Ba, Cd, Cr, Pb, Se, Ag, Al, Be, Bi, B, Ca, Cu, Fe

2. Mn, Mo, Ni, K, Na, Tl, V, Zn, Hg

INORG 1 3. IN3N2, ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4,

4. ISFD, INH3N, ICNTO

5.

6.

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	11/6/01	0950

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

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

NOTES:

Lionville Laboratory Use Only

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

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

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

Cooler Temp. 4.3 °C

01116278

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-008-03	Page 1 of 1

Collector: Bowers DL/Watson DJ	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 - Waste Mana	Sampling Location: 200 East & West	SAF No.: B02-008	Air Quality ☐
Ice Chest No.: See DSPL	Field Logbook No.: EL 1551 — COA: B20CS1673C	Method of Shipment: Fed Ex	
Shipped To: TMA/TECRA	Offsite Property No.: A020817	Bill of Lading/Air Bill No.: See DSPL	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 3A at the 3728 Shipping Facility on 11/1/01. Collector not available to relinquish samples on 11/5/01 for shipment.

RT 11501

Preservation	None	None	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		
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										
B13CR9 / SOIL / 11-1-01 / 0815		X	X	X	X	X	X	X	B17CL5	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DS Watson	11-1-01 1115	REF. 3A 3728 BLDG.	11-1-01 1115
Ref 3A 3728	11-5-01 0900	RT Thore	11-5-01 0900
RT Thore	RC 11-5-01 0900	T Edick	
Fed Ex	11/6/01 0950	T. Hendy	11/6/01 0950
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, Antimony-125, Barium-133, Cesium-134, Curium-242, Radium-226, Radium-228, Sodium-22, Tin-126}; Strontium-89,90 – Total Sr, Carbon-14; Total Uranium; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Neptunium-237; Isotopic Uranium — DSW 11-1-01
(2) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Aluminum, Beryllium, Bismuth, Boron, Calcium, Copper, Iron, Manganese, Molybdenum, Nickel, Potassium, Sodium, Thallium, 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)

Figure 1. Sample Check-in List

Date/Time Received: 11/6/01 0950

SDG#: 01116278

Work Order Number: B02-008

SAF# ~~B002-0~~ 11-6-01

Shipping Container ID: ERC96-002

Chain of Custody # B02-008-03

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 4.3
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: Neil Henry Teledyne Laboratory Incorporated Date: 11/6/01

Telephoned to: _____ On _____ By _____