1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1571 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.

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

The Th-228 RPD between sample B13CK9 and its sample duplicate was 77%, greater than the 3σ limit of 61%. No other 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

The U-235 RPD between sample B13CK9 and its sample duplicate was 161%, greater than the 3σ limit of 149%. The difference between sample B13CK9 and its sample duplicate was less than the RDL (1.0 pCi/g) for U-235. No other 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 H1571

SDG 7134
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1571

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B13CK9	200 East and West	SOLID		R111019-01	B02-008	B02-008-02	10/31/01 07:50
Method Blank		SOLID		R111019-03	B02-008		
Lab Control Sample		SOLID		R111019-02	B02-008		
Duplicate (R111019-01)	200 East and West	SOLID		R111019-04	B02-008		10/31/01 07:50

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 H1571

SDG 7134
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1571

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	B02-008-02	B13CK9	SOLID	64.5	859.6 g		11/02/01	2	R111019-01	7134-001
		Method Blank	SOLID						R111019-03	7134-003
		Lab Control Sample	SOLID						R111019-02	7134-002
		Duplicate (R111019-01)	SOLID	64.5	859.6 g		11/02/01	2	R111019-04	7134-004

Lab id TMANC
Protocol Hanford
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1571

SDG 7134
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1571

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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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1571

SDG 7134
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1571

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B13CK9			R111019-01	7134-001	93A/93		12/22/01	01/04/02	MCM	Gross Alpha in Soil
200 East and West		SOLID	10/31/01	7134-001	93B/93		12/22/01	01/04/02	MCM	Gross Beta in Soil
B02-008-02	B02-008		11/02/01	7134-001	C		12/11/01	01/04/02	MCM	Carbon 14 in Soil
				7134-001	GAM		01/03/02	01/04/02	MCM	Gamma Scan
				7134-001	NP		12/20/01	01/04/02	MCM	Neptunium in Soil
				7134-001	PU		12/20/01	01/04/02	MCM	Plutonium, Isotopic in Solids
				7134-001	SR		12/08/01	01/04/02	MCM	Total Strontium in Soil
				7134-001	TH		12/20/01	01/04/02	MCM	Thorium, Isotopic in Soil
				7134-001	TP		12/27/01	01/04/02	MCM	Americium 241/Curium in Solids
				7134-001	U		12/07/01	01/04/02	MCM	Uranium, Isotopic in Soil
				7134-001	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 H1571

SDG 7134
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1571

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Duplicate (R111019-01)			R111019-04	7134-004	93A/93		12/21/01	01/04/02	MCM	Gross Alpha in Soil
200 East and West		SOLID	10/31/01	7134-004	93B/93		12/21/01	01/04/02	MCM	Gross Beta in Soil
	B02-008		11/02/01	7134-004	C		12/11/01	01/04/02	MCM	Carbon 14 in Soil
				7134-004	GAM		01/03/02	01/04/02	MCM	Gamma Scan
				7134-004	NP		12/20/01	01/04/02	MCM	Neptunium in Soil
				7134-004	PU		12/20/01	01/04/02	MCM	Plutonium, Isotopic in Solids
				7134-004	SR		12/08/01	01/04/02	MCM	Total Strontium in Soil
				7134-004	TH		12/13/01	01/04/02	MCM	Thorium, Isotopic in Soil
				7134-004	TP		12/27/01	01/04/02	MCM	Americium 241/Curium in Solids
				7134-004	U		12/12/01	01/04/02	MCM	Uranium, Isotopic in Soil
				7134-004	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 H1571

R111019-03 Method Blank

METHOD BLANK

SDG	7134	Client/Case no	Hanford	SDG H1571	
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	7134	Client/Case no	Hanford SDG H1571
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 H1571

R111019-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7134
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1571
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 H1571

R111019-04

B13CK9

DUPLICATE

SDG	7134			Client/Case no	Hanford — SDG H1571
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R111019-04	Lab sample id	R111019-01	Client sample id	B13CK9
Dept sample id	7134-004	Dept sample id	7134-001	Location/Matrix	200 East and West — SOLID
		Received	11/02/01	Collected/Weight	10/31/01 07:50 — 859.6 g
% solids	64.5	% solids	64.5	Custody/SAF No	B02-008-02 — 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	27.0	6.0	4.1	10		93A	27.9	5.9	3.2		3	63	
Gross Beta	78.8	7.4	7.5	15		93B	78.2	8.0	9.0		1	38	
Carbon 14	1.60	2.8	4.6	50	U	C	0.406	2.6	4.3	U	-		
Total Strontium	0.835	0.17	0.19	1.0	J	SR	0.739	0.18	0.21	J	12	52	
Thorium 228	0.446	0.22	0.17			TH	1.00	0.19	0.073		77	61	
Thorium 230	0.089	0.22	0.38	1.0	U	TH	0.423	0.20	0.31	J	130	175	
Thorium 232	0.776	0.27	0.17	1.0	J	TH	0.560	0.14	0.058	J	32	69	
Total Uranium (ug/g)	0.718	0.080	0.019	0.10		U_T	0.778	0.087	0.019		8	30	
Uranium 233/234	0.891	0.090	0.030	1.0	J	U	1.19	0.41	0.32		29	61	
Uranium 235	0.048	0.025	0.019	1.0	J	U	0.439	0.24	0.31	J	161	149	
Uranium 238	0.879	0.090	0.026	1.0	J	U	0.726	0.33	0.25	J	19	65	
Neptunium 237	0.020	0.024	0.044	1.0	U	NP	0.018	0.028	0.043	U	-		
Plutonium 238	0.273	0.072	0.034	1.0	J	PU	0.303	0.074	0.035	J	10	55	
Plutonium 239/240	24.6	0.99	0.034	1.0		PU	25.8	1.0	0.044		5	14	
Curium 242	0	0.069	0.27		U	TP	0	0.060	0.23	U	-		
Americium 241	1.74	0.45	0.21	1.0		TP	1.90	0.44	0.18		9	53	
Potassium 40	10.6	0.63	0.31			GAM	10.4	1.2	0.76		2	37	
Tin 126	U		0.18		U	GAM	U		0.31	U	-		
Sodium 22	U		0.044		U	GAM	U		0.095	U	-		
Cobalt 60	U		0.047	0.050	U	GAM	U		0.067	U	-		
Antimony 125	2.38	0.40	0.52			GAM	1.67	0.74	0.98		35	70	
Barium 133	U		0.17		U	GAM	U		0.30	U	-		
Cesium 134	U		0.084		U	GAM	U		0.097	U	-		
Cesium 137	104	0.50	0.11	0.10		GAM	98.4	0.80	0.41		6	32	
Radium 226	0.807	0.16	0.19	0.10		GAM	0.788	0.38	0.48		2	84	
Radium 228	0.777	0.14	0.13	0.20		GAM	0.662	0.26	0.28		16	69	
Europium 152	U		0.38	0.10	U	GAM	U		0.79	U	-		
Europium 154	U		0.13	0.10	U	GAM	U		0.27	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

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1571

R111019-04 B13CK9

DUPLICATE, cont.

SDG	7134			Client/Case no	Hanford SDG H1571
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R111019-04	Lab sample id	R111019-01	Client sample id	B13CK9
Dept sample id	7134-004	Dept sample id	7134-001	Location/Matrix	200 East and West SOLID
		Received	11/02/01	Collected/Weight	10/31/01 07:50 859.6 g
% solids	64.5	% solids	64.5	Custody/SAF No	B02-008-02 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		0.28	0.10	U	GAM	U		0.52	U	-	
Thorium 228	0.877	0.19	0.24			GAM	0.386	0.26	0.37		78	84
Thorium 232	0.777	0.14	0.13			GAM	0.662	0.26	0.28		16	69
Uranium 235	U		0.41		U	GAM	U		0.78	U	-	
Uranium 238	U		4.7		U	GAM	U		9.4	U	-	
Americium 241	2.62	0.37	0.50			GAM	2.22	0.49	0.70		17	50

200 Area Source Chara. 200-CS-1 OU

QC-DUP#1 40446

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 H1571

R111019-01 B13CK9

DATA SHEET

SDG	7134	Client/Case no	Hanford	SDG_H1571	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R111019-01	Client sample id	B13CK9		
Dept sample id	7134-001	Location/Matrix	200 East and West	SOLID	
Received	11/02/01	Collected/Weight	10/31/01 07:50	859.6 g	
% solids	64.5	Custody/SAF No	B02-008-02	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	27.9	5.9	3.2	10		93A
Gross Beta	12587-47-2	78.2	8.0	9.0	15		93B
Carbon 14	14762-75-5	0.406	2.6	4.3	50	U	C
Total Strontium	SR-RAD	0.739	0.18	0.21	1.0	J	SR
Thorium 228	14274-82-9	1.00	0.19	0.073			TH
Thorium 230	14269-63-7	0.423	0.20	0.31	1.0	J	TH
Thorium 232	TH-232	0.560	0.14	0.058	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	0.778	0.087	0.019	0.10		U_T
Uranium 233/234	U-233/234	1.19	0.41	0.32	1.0		U
Uranium 235	15117-96-1	0.439	0.24	0.31	1.0	J	U
Uranium 238	U-238	0.726	0.33	0.25	1.0	J	U
Neptunium 237	13994-20-2	0.018	0.028	0.043	1.0	U	NP
Plutonium 238	13981-16-3	0.303	0.074	0.035	1.0	J	PU
Plutonium 239/240	PU-239/240	25.8	1.0	0.044	1.0		PU
Curium 242	15510-73-3	0	0.060	0.23		U	TP
Americium 241	14596-10-2	1.90	0.44	0.18	1.0		TP
Potassium 40	13966-00-2	10.4	1.2	0.76			GAM
Tin 126	SN-126	U		0.31		U	GAM
Sodium 22	13966-32-0	U		0.095		U	GAM
Cobalt 60	10198-40-0	U		0.067	0.050	U	GAM
Antimony 125	14234-35-6	1.67	0.74	0.98			GAM
Barium 133	13981-41-4	U		0.30		U	GAM
Cesium 134	13967-70-9	U		0.097		U	GAM
Cesium 137	10045-97-3	98.4	0.80	0.41	0.10		GAM
Radium 226	13982-63-3	0.788	0.38	0.48	0.10		GAM
Radium 228	15262-20-1	0.662	0.26	0.28	0.20		GAM
Europium 152	14683-23-9	U		0.79	0.10	U	GAM
Europium 154	15585-10-1	U		0.27	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

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1571

R111019-01 B13CK9

DATA SHEET, cont

SDG	7134	Client/Case no	Hanford	SDG H1571	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R111019-01	Client sample id	B13CK9		
Dept sample id	7134-001	Location/Matrix	200 East and West	SOLID	
Received	11/02/01	Collected/Weight	10/31/01 07:50	859.6 g	
% solids	64.5	Custody/SAF No	B02-008-02	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		0.52	0.10	U	GAM
Thorium 228	14274-82-9	0.386	0.26	0.37			GAM
Thorium 232	TH-232	0.662	0.26	0.28			GAM
Uranium 235	15117-96-1	U		0.78		U	GAM
Uranium 238	U-238	U		9.4		U	GAM
Americium 241	14596-10-2	2.22	0.49	0.70			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 H1571

Test NP Matrix SOLID
SDG 7134
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1571

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 7012-136						
B13CK9	R111019-01			7134-001	U	
BLK (QC ID=40445)	R111019-03			7134-003	U	
LCS (QC ID=40444)	R111019-02			7134-002	ok	
Duplicate (R111019-01)	R111019-04			7134-004	-	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											
B13CK9	R111019-01			0.043	0.500			68		1054			50	12/19/01	12/20	SS-055
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 (R111019-01) (QC ID=40446)	R111019-04			0.044	0.500			53		1055			50	12/19/01	12/20	SS-060
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	0.038	±	0.016
YIELD	62	±	13

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 H1571

Test PU Matrix SOLID
SDG 7134
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1571

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238	Plutonium 239/240
Preparation batch 7012-136						
B13CK9	R111019-01			7134-001	0.303 J	25.8
BLK (QC ID=40445)	R111019-03			7134-003	U	U
LCS (QC ID=40444)	R111019-02			7134-002	ok	ok
Duplicate (R111019-01)	R111019-04			7134-004	ok J	ok
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										
B13CK9	R111019-01			0.044	0.500			90		607			50	12/20/01	12/20	SS-055
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 (R111019-01) (QC ID=40446)	R111019-04			0.034	0.500			84		607			50	12/20/01	12/20	SS-065
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 ± 0.012
YIELD 84 ± 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 H1571

Test TH Matrix SOLID
SDG 7134
Contact Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1571

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 230
Preparation batch 7012-136					
B13CK9	R111019-01			7134-001	0.423 J
BLK (QC ID=40445)	R111019-03			7134-003	U
LCS (QC ID=40444)	R111019-02			7134-002	ok
Duplicate (R111019-01)	R111019-04			7134-004	ok U
Nominal values and limits from method				RDLs (pCi/g)	1.0
200 Area Source Chara. 200-CS-1 OU					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-136	2σ prep error 5.0 %				Reference Lab Notebook 7012 pg. 136											
B13CK9	R111019-01			0.31	0.250			102		637			50	12/11/01	12/20	SS-049
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 (R111019-01) (QC ID=40446)	R111019-04			0.38	0.250			103		212			43	12/11/01	12/13	SS-049
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 0.37 ± 0.087
YIELD 98 ± 10

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 H1571

Test TP Matrix SOLID
SDG 7134
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241/CURIUM IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1571

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Curium 244	Americium 241
Preparation batch 7012-136						
B13CK9	R111019-01			7134-001		1.90
BLK (QC ID=40445)	R111019-03			7134-003		U
LCS (QC ID=40444)	R111019-02			7134-002	ok	ok
Duplicate (R111019-01)	R111019-04			7134-004		ok
Nominal values and limits from method 200 Area Source Chara. 200-CS-1 OU				RDLs (pCi/g)	1.0	1.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-136 2σ prep error 5.0 % Reference Lab Notebook 7012 pg. 136																
B13CK9	R111019-01			0.23	0.500			95		104			57	12/27/01	12/27	SS-032
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 (R111019-01) (QC ID=40446)	R111019-04			0.27	0.500			78		105			57	12/27/01	12/27	SS-044
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	81	±	22

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 H1571

Test U Matrix SOLID
SDG 7134
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1571

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														
B13CK9	R111019-01			7134-001	1.19		0.439	J	0.726	J	164	93	60	43
BLK (QC ID=40445)	R111019-03			7134-003	U		U		U					
LCS (QC ID=40444)	R111019-02			7134-002	ok		ok		ok					
Duplicate (R111019-01)	R111019-04			7134-004	ok	J	OUT	J	ok	J	101	15	5	3
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 133		33	

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																
B13CK9	R111019-01			0.32	0.500			83		113			37	12/06/01	12/07	SS-019
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 (R111019-01) (QC ID=40446)	R111019-04			0.030	0.500			105		1123			42	12/06/01	12/12	SS-056
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	±	0.92
	YIELD	93	±	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 H1571

Test SR Matrix SOLID
SDG 7134
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1571

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 7012-136						
B13CK9	R111019-01			7134-001	0.739	J
BLK (QC ID=40445)	R111019-03			7134-003	U	
LCS (QC ID=40444)	R111019-02			7134-002	ok	
Duplicate (R111019-01)	R111019-04			7134-004	ok	J
Nominal values and limits from method				RDLs (pCi/g)	1.0	
200 Area Source Chara. 200-CS-1 OU						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-136	2σ prep error 10.0 % Reference Lab Notebook 7012 pg. 136															
B13CK9	R111019-01			0.21	1.00			96		100			38	12/08/01	12/08	GRB-206
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 (R111019-01) (QC ID=40446)	R111019-04			0.19	1.00			99		100			38	12/08/01	12/08	GRB-220
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	0.19	±	0.071
	YIELD	95	±	6

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 H1571

Test 93A Matrix SOLID
SDG 7134
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS ALPHA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1571

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha
Preparation batch 7012-136					
B13CK9	R111019-01	93		7134-001	27.9
BLK (QC ID=40445)	R111019-03	93		7134-003	U
LCS (QC ID=40444)	R111019-02	93		7134-002	ok
Duplicate (R111019-01)	R111019-04	93		7134-004	ok
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																
B13CK9	R111019-01	93		3.2	0.100			32		100			52	12/11/01	12/22	GRB-114
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 (R111019-01) (QC ID=40446)	R111019-04	93		4.1	0.100			32		100			51	12/11/01	12/21	GRB-115
Nominal values and limits from method				10	0.100			5-250		100			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	3.6	±	0.81
	RESIDUE	28	±	10

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 H1571

Test 938 Matrix SOLID
SDG 7134
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS BETA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1571

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta
Preparation batch 7012-136					
B13CK9	R111019-01	93		7134-001	78.2
BLK (QC ID=40445)	R111019-03	93		7134-003	U
LCS (QC ID=40444)	R111019-02	93		7134-002	ok
Duplicate (R111019-01)	R111019-04	93		7134-004	ok
Nominal values and limits from method				RDLs (pCi/g)	15

200 Area Source Chara. 200-CS-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-136 2σ prep error 15.0 % Reference Lab Notebook 7012 pg. 136																
B13CK9	R111019-01	93		9.0	0.100			32		100			52	12/11/01	12/22	GRB-114
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 (R111019-01) (QC ID=40446)	R111019-04	93		7.5	0.100			32		100			51	12/11/01	12/21	GRB-115
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	8.2	±	1.7
	RESIDUE	28	±	10

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 H1571

Test GAM Matrix SOLID
SDG 7134
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1571

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 7012-136						
B13CK9	R111019-01			7134-001	U	98.4
BLK (QC ID=40445)	R111019-03			7134-003	U	U
LCS (QC ID=40444)	R111019-02			7134-002	ok	ok
Duplicate (R111019-01)	R111019-04			7134-004	- 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															
B13CK9	R111019-01			2.4	461					122			64	12/07/01	01/03	02,03,00
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 (R111019-01) (QC ID=40446)	R111019-04			0.95	461					140			64	12/07/01	01/03	02,04,00
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	0.88	±	2.2
	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 H1571

Test U T Matrix SOLID
SDG 7134
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract No. 630
Contract SDG H1571

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium
Preparation batch 7012-136					
B13CK9	R111019-01			7134-001	0.778
BLK (QC ID=40445)	R111019-03			7134-003	U
LCS (QC ID=40444)	R111019-02			7134-002	ok
Duplicate (R111019-01)	R111019-04			7134-004	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												
B13CK9	R111019-01			0.019	0.100								47	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 (R111019-01) (QC ID=40446)	R111019-04			0.019	0.100								47	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 H1571

Test C Matrix SOLID
SDG 7134
Contact Melissa C. Mannion

METHOD SUMMARY

CARBON 14 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1571

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Carbon 14	
Preparation batch 7012-136						
B13CK9	R111019-01			7134-001	U	
BLK (QC ID=40445)	R111019-03			7134-003	U	
LCS (QC ID=40444)	R111019-02			7134-002	ok	
Duplicate (R111019-01)	R111019-04			7134-004	-	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											
B13CK9	R111019-01			4.3	0.224			100		100			41	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 (R111019-01) (QC ID=40446)	R111019-04			4.6	0.214			100		100			41	12/11/01	12/11	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	±	24
	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		B02-008-02	Page 1 of 1
Collector: Bowers DL/Watson DJ	Company Contact: Cearlock, CS	Telephone No.: 372-9638	Project Coordinator: TRENT, SJ	Price Code: 8N
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Waste Mana	Sampling Location: 200 East & West H1571 (7134)		SAF No.: B02-008	Air Quality ☐
Ice Chest No.: ERC 46-030	Field Logbook No.: EL 1551	COA: B20CS1673C	Method of Shipment: Fed Ex	Data Turnaround: 45 Days
Shipped To: TMA/RECRA	Offsite Property No.: A020005		Bill of Lading/Air Bill No.: 4235 7454 - 8578	

POSSIBLE SAMPLE HAZARDS/REMARKS

TIC TO B13CL4

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

RT 10-31-01

RT 10-31-01

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									TIC TO:
B13CK9	SOIL	10-31-01	0750	X	X	X	X	X	RT X 10-31-01	X	X	B13CL4

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Tracy Bowers Bowers	10-31-01/1110	Anf 1B 3728	10-31-01/1110
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Anf 1B 3728	11-1-01 0900	R.J. Thore	11-1-01 0900
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R.J. Thore ERC	11-1-01 0900	T.E. Dell	11-01-0
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
FED EXPRESS	11-02-01	SCA-2 E. Hughes	9:50 11-02-01
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

~~(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~~

RT 10-31-01

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)

From: Melissa Mannion

ThermoRetec
Richmond Laboratory

Analytical Services

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc. Date/Time received 11-02-01 9:20 Am.

CoC No. B02-008-01 AND B02-008-02.

Container I.D. No. ERE-96030 Requested TAT (Days) 15 DAYS P.O. Received Yes [ ] No [✓]

INSPECTION

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

13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by Chris J. Maestas Date: 11-02-01 Time: 9:20 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.

Analytical Report

Client: TNU-HANFORD B02-008 H1568/H1571
LVL#: 0111L256

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

INORGANIC NARRATIVE

1. This narrative covers the analyses of 2 soil samples.

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

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

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

5. The method blanks were within the method criteria.

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

7. The matrix spike recoveries were within the 75-125% control limits with the exception of Sulfide that was below the control limits that may be attributed to sample inhomogeneity.

8. The replicate analyses were within the 20% RPD control limit with the exception of Chloride, Ammonia and Sulfide 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.

for Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

11-19-01
Date

njp\i11-256

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 16 pages.

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

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

Other: Chloride, Fluoride, Nitrate, **Method:** EPA 300.0 (mod.)

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

Hydrazine USAFSAM - Report TR-82-29
Nitrate Nitrite EPA 353.2 (mod.)
Ammonia EPA 350.3 (mod.)

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/16/01

CLIENT: TNU-HANFORD B02-008 H1568/H1571 LVL LOT #: 0111L256

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B13C81	% Solids	82.3		%	0.01	1.0
		Chloride by IC	6.6		MG/KG	1.5	1.0
		Fluoride by IC	3.0	u	MG/KG	3.0	1.0
		Nitrite by IC	1.52	u	MG/KG	1.52	1.0
		Nitrate by IC	300		MG/KG	15.2	10.0
		Cyanide, Total	0.53	u	MG/KG	0.53	1.0
		Phosphate by IC	1.5	u	MG/KG	1.5	1.0
		Chromium VI	0.49	u	MG/KG	0.49	1.0
		Sulfate by IC	61.7		MG/KG	1.5	1.0
		Hydrazine	1.2	u	MG/KG	1.2	1.0
		Nitrate Nitrite	69.6		MG/KG	2.4	10.0
		Ammonia, as N	11.6		MG/KG	3.7	1.0
		pH	8.3		SOIL PH	0.01	1.0
		Sulfide	46.4	u	MG/KG	46.4	1.0
-002	B13CK9	% Solids	65.0		%	0.01	1.0
		Chloride by IC	226		MG/KG	9.6	5.0
		Fluoride by IC	19.2	u	MG/KG	19.2	5.0
		Nitrite by IC	9.62	u	MG/KG	9.62	5.0
		Nitrate by IC	927		MG/KG	38.5	20.0
		Cyanide, Total	0.72	u	MG/KG	0.72	1.0
		Phosphate by IC	9.6	u	MG/KG	9.6	5.0
		Chromium VI	3.0		MG/KG	0.62	1.0
		Sulfate by IC	2970		MG/KG	192	100
		Hydrazine	1.5	u	MG/KG	1.5	1.0
		Nitrate Nitrite	210		MG/KG	6.3	20.0
		Ammonia, as N	34.3		MG/KG	3.8	1.0
		pH	6.5		SOIL PH	0.01	1.0
		Sulfide	61.2	u	MG/KG	61.2	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/16/01

CLIENT: TNU-HANFORD B02-008 H1568/H1571 LVL LOT #: 0111L256

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LXC074-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	1.25	u	MG/KG	1.25	1.0
		Nitrate by IC	1.25	u	MG/KG	1.25	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK1	01LCA98-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	01LVI086-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	01LHZ004-MB1	Hydrazine	1.0	u	MG/KG	1.0	1.0
BLANK10	01LN3061-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	01LAM050-MB1	Ammonia, as N	2.5	u	MG/KG	2.5	1.0
BLANK10	01LSDA60-MB1	Sulfide	40.0	u	MG/KG	40.0	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/16/01

CLIENT: TNU-HANFORD B02-008 H1568/H1571 LVL LOT #: 0111L256

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B13C81	Chloride by IC	37.1	6.6	30.0	101.6	1.0
		Fluoride by IC	65.1	0.74	61.0	105.5	1.0
		Nitrite by IC	30.2	1.52u	30.0	100.8	1.0
		Nitrate by IC	902	300	608	99.0	20.0
		Phosphate by IC	30.3	1.5 u	30.0	101.0	1.0
		Soluble Chromium VI	4.6	0.49u	4.9	90.2	1.0
		Insoluble Chromium VI	1330	0.49u	1160	115.1	100
		Sulfate by IC	203	61.7	152	92.8	5.0
		Hydrazine	6.3	1.2 u	6.1	103.6	1.0
		Nitrate Nitrite	124	69.6	56.8	95.1	10.0
-002	B13CK9	Cyanide, Total	4.38	0.72u	4.74	92.4	1.0
		Ammonia, as N	196	34.3	184	87.7	1.0
		Sulfide	387	42.9	473	72.7	1.0
BLANK10	01LXC074-MB1	Chloride by IC	23.8	1.2 u	25.0	95.3	1.0
		Fluoride by IC	51.9	2.5 u	50.0	103.9	1.0
		Nitrite by IC	24.2	1.25u	25.0	96.6	1.0
		Nitrate by IC	24.9	1.25u	25.0	99.6	1.0
		Phosphate by IC	26.1	1.2 u	25.0	104.4	1.0
		Sulfate by IC	24.1	1.2 u	25.0	96.3	1.0
BLANK10	01LVI086-MB1	Soluble Chromium VI	4.0	0.40u	4.0	100.9	1.0
		Insoluble Chromium VI	1060	0.40u	1090	96.4	100
BLANK10	01LHZ004-MB1	Hydrazine	5.2	1.0 u	5.0	103.1	1.0
		Hydrazine MSD	5.2	1.0 u	5.0	103.6	1.0
BLANK10	01LN3061-MB1	Nitrate Nitrite	5.2	0.20u	5.0	103.0	1.0
BLANK10	01LAM050-MB1	Ammonia, as N	103	2.5 u	100	102.8	1.0
		Ammonia, as N MSD	103	2.5 u	100	103.2	1.0
BLANK10	01LSDA60-MB1	Sulfide	293	40.0 u	309	94.8	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 11/16/01

CLIENT: TNU-HANFORD B02-008 H1568/H1571 LVL LOT #: 0111L256

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

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

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/16/01

CLIENT: TNU-HANFORD B02-008 H1568/H1571 LVL LOT #: 0111L256

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B13C81	% Solids	82.3	82.6	0.30	1.0
		Chloride by IC	6.6	4.8	32.3	1.0
		Fluoride by IC	3.0 u	3.0 u	NC	1.0
		Nitrite by IC	1.52u	1.52u	NC	1.0
		Nitrate by IC	300	301	0.48	10.0
		Phosphate by IC	1.5 u	1.5 u	NC	1.0
		Chromium VI	0.49u	0.49u	NC	1.0
		Sulfate by IC	61.7	60.5	2.0	1.0
		Hydrazine	1.2 u	1.2 u	NC	1.0
		Nitrate Nitrite	69.6	67.2	3.4	10.0
		pH	8.3	8.4	0.6	1.0
-002REP	B13CK9	Cyanide, Total	0.72u	0.64u	NC	1.0
		Ammonia, as N	34.3	48.6	34.5	1.0
		Sulfide	61.2 u	60.1	~~NC~~ 33.3	1.0

11-9-01

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/16/01

CLIENT: TNU-HANFORD B02-008 H1568/H1571 LVL LOT #: 0111L2S6

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

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

(5) BNA from DIG mum

Lionville Laboratory Use Only

01111256

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

13

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU (HANFORD) SAF B02-008

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 15 day

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

	A	B	C	D	E	F	G
Refrigerator #	1	2	2	2	2	2	2
#/Type Container – Liquid							
#/Type Container – Solid	1AG	1AG	1AG	1AG	1AG	1AG	1AG
Volume – Liquid							
Volume – Solid	120	1000	120	500	100	60	60
Preservatives	—	—	—	—	—	—	—
ANALYSES REQUESTED	ORGANIC: VOA	ORGANIC: BNA	ORGANIC: Pest/PCB	ORGANIC: Herb	INORG: Metal	INORG: CN	INORG: Anions, Alk, Hrs	INORG: pH	INORG: TDS	INORG: NH3N

Lionville Laboratory Use Only

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624X	0625X OPAO	OPCB				MET(1) ICP		INORG(1)	IPH	INH3N
	001	B13C81			S	10/30/01	0830	1	1	1				1		1	1	1
	002	1 K9			L	10/31/01	0730	1	1	1				1		1	1	1

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

Special Instructions:
SAF # B02-008
Run Matrix QC

DATE/REVISIONS:

MET(1) 1. As, Ba, Cd, Cr, Pb, Se, Ag, Al, Be, Bi, B, Ca, Cu,
2. Fe, Mn, Mo, Ni, K, Na, Tl, V, Zn, Hg

INORG(1) 3. IN3N2, ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4
4. ISFD, INH3N, ICNIO

11-5-01 5. Concl 0624X Add 0624H + OGCSC
6.

Relinquished by	Received by	Date	Time
Ed Ep	[signature]	11/2/01	0935

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill [illegible]
2) Ambient or Chilled
3) Received in Good Condition ✓ or N
4) Samples Properly Preserved ✓ or N
5) Received Within Holding Times ✓ or N

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

Discrepancies Between Samples Labels and COC Record? Y or ✓N
NOTES:
4235 7954 8545
4235 7954 8528

1.2

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B02-008-01	Page 1 of 1
Collector: Thomas, G/Watson, D	Company Contact: Cearlock, CS	Telephone No.: 372-9638	Project Coordinator: TRENT, SJ	Price Code: ~~8N~~ 8K RT 11-1-01 / Data Turnaround: ~~45 Days~~ 15 Day RT 11-1-01
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Waste Mana	Sampling Location: 200 East & West		SAF No.: B02-008	Air Quality ☐
Ice Chest No.: See OSPC	Field Logbook No.: EZ-1551	COA: XL2002CHGR	Method of Shipment: Fed Ex	
Shipped To: TMS/RECRA	Offsite Property No.: A/A DSW 10/30/01		Bill of Lading/Air Bill No.: See OSPC A/A DSW 10/30/01	

POSSIBLE SAMPLE HAZARDS/REMARKS

TIE TO B13C84

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

Preservation	None	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	Cool 4C Cool 4C	None		
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions. DSW 10/30/01	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385		
Sample No.	Matrix *	Sample Date	Sample Time								
B13C81	SOIL	10/30/01	0830		X	X	X	X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DSWATSON/GWATSON	10-30-01 1215	REF-1A 3728B06	10-30-01 1215
Bill 1A 3728	11-1-01 0900	RTC Thore	11-1-01 0900
RTC ERC	11-1-01 0900	EDQA	
Fed Ex	11/2/01 0935	V. Hernandez	11/2/01 0935

SPECIAL INSTRUCTIONS

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

(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 10-30-01
(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
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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-008-02	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.: AD20018	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
TIETO B13CL4

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

RT 11-1-01

Preservation	None	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	100mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (I-Propanol, Ethanol)	Hydrazine - D1385		
Sample No. / Matrix * / Sample Date / Sample Time										
B13CK9 / SOIL / 10-31-01 / 0750	X	X	X	X	X	X	X	X	B13CL4	

RT 10-31-01

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Tony Bowers Bowers	10-31-01/1110	Ant 1B 3728	10-31-01/1110
Rick 1B 3728	11-1-01 0900	R.T. Thore	11-1-01 0900
R.T. Thore ERC	11-1-01 0900	FEDEX	
FedEx	11/2/01 0935	V. Kennedy	11/2/01 09:35

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~~
(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: 11/2/01 0935

SDG#: 01116256

Work Order Number: _____ SAF# B002-008-01 11-2-01

Shipping Container ID: _____ Chain of Custody # B002-008-01

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 1.1-2
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: Louisville Laboratory - Incorporated Date: _____

Telephoned to: _____ On _____ By _____

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B02-008
LVL#: 0111L256
SDG/SAF#: H1568/H1571/B02-008

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

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 soil samples.

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

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

4. 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 4 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 17 pages.

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B13C81	Aluminum	20,000	100.3
	Calcium	30,000	123.3
	Iron	30,000	107.7
	Manganese	1000	115.2

12. The duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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

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

for Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

11-15-01
Date

gmb/m11-256

LVLI
LIONVILLE LABORATORY INC

METALS METHOD GLOSSARY

following methods are used as reference for the digestion and analysis of samples contained within this
: 01111L256

hing Procedure: __1310 __1311 __1312 __Other:_____

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

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

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
minum	✓6010B		__200.7				__99
timony	__6010B	__7041 [5]	__200.7	__204.2			__99
enic	✓6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
rium	✓6010B		__200.7				__99
yllium	✓6010B		__200.7				__99
muth	✓6010B [1]		__200.7 [1]			__1620	__99
ron	✓6010B		__200.7				__99
dmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
lcium	✓6010B		__200.7				__99
romium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
balt	__6010B		__200.7				__99
pper	✓6010B	__7211 [5]	__200.7	__220.2			__99
on	✓6010B		__200.7				__99
ead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
ithium	__6010B	__7430 [4]	__200.7			__1620	__99
lagnesium	__6010B		__200.7				__99
langanese	✓6010B		__200.7				__99
lercury	✓7470A [3]	__7471A [3]	__245.1 [2]	__245.5 [2]			__99
lolybdenum	✓6010B		__200.7				__99
lickel	✓6010B		__200.7				__99
otassium	✓6010B	__7610 [4]	__200.7	__258.1 [4]			__99
lare Earths	__6010B [1]		__200.7 [1]			__1620	__99
elenium	✓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 11/13/01

CLIENT: TNU-HANFORD B02-008 LVL LOT #: 0111L256

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B13C81	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	10100	MG/KG	1.7	1.0
		Arsenic, Total	12.1	MG/KG	0.39	1.0
		Boron, Total	3.1	MG/KG	0.22	1.0
		Barium, Total	118	MG/KG	0.01	1.0
		Beryllium, Total	0.08	MG/KG	0.01	1.0
		Bismuth, Total	0.39 u	MG/KG	0.39	1.0
		Calcium, Total	24300	MG/KG	1.1	1.0
		Cadmium, Total	0.27	MG/KG	0.04	1.0
		Chromium, Total	11.8	MG/KG	0.07	1.0
		Copper, Total	19.5	MG/KG	0.06	1.0
		Iron, Total	26400	MG/KG	2.1	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	2260	MG/KG	2.4	1.0
		Manganese, Total	454	MG/KG	0.01	1.0
		Molybdenum, Total	0.53	MG/KG	0.13	1.0
		Sodium, Total	550	MG/KG	0.44	1.0
		Nickel, Total	12.5	MG/KG	0.12	1.0
		Lead, Total	11.7	MG/KG	0.23	1.0
		Selenium, Total	0.27 u	MG/KG	0.27	1.0
		Thallium, Total	0.52	MG/KG	0.34	1.0
		Vanadium, Total	52.9	MG/KG	0.06	1.0
		Zinc, Total	54.1	MG/KG	0.04	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/13/01

:LIENT: TNU-HANFORD B02-008 LVL LOT #: 0111L256

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B13CK9	Silver, Total	42.0	MG/KG	0.09	1.0
		Aluminum, Total	8370	MG/KG	2.1	1.0
		Arsenic, Total	5.8	MG/KG	0.47	1.0
		Boron, Total	3.4	MG/KG	0.27	1.0
		Barium, Total	83.0	MG/KG	0.01	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Bismuth, Total	0.47 u	MG/KG	0.47	1.0
		Calcium, Total	9880	MG/KG	1.3	1.0
		Cadmium, Total	28.0	MG/KG	0.04	1.0
		Chromium, Total	36.8	MG/KG	0.09	1.0
		Copper, Total	172	MG/KG	0.07	1.0
		Iron, Total	26800	MG/KG	2.6	1.0
		Mercury, Total	5.2	MG/KG	0.12	5.0
		Potassium, Total	1650	MG/KG	2.9	1.0
		Manganese, Total	216	MG/KG	0.01	1.0
		Molybdenum, Total	3.2	MG/KG	0.16	1.0
		Sodium, Total	873	MG/KG	0.53	1.0
		Nickel, Total	27.6	MG/KG	0.15	1.0
		Lead, Total	75.3	MG/KG	0.28	1.0
		Selenium, Total	0.99	MG/KG	0.33	1.0
		Thallium, Total	0.41 u	MG/KG	0.41	1.0
		Vanadium, Total	41.3	MG/KG	0.07	1.0
		Zinc, Total	224	MG/KG	0.04	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/13/01

CLIENT: TNU-HANFORD B02-008 LVL LOT #: 0111L256

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	0.01	MG/KG	0.01	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	01C0352-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/13/01

CLIENT: TNU-HANFORD B02-008 LVL LOT #: 0111L256

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B13C81	Silver, Total	5.4	0.07u	6.1	88.5	1.0
		Aluminum, Total	11000	10100	243	376.4*	1.0
		Arsenic, Total	227	12.1	243	88.4	1.0
		Boron, Total	107	3.1	122	85.2	1.0
		Barium, Total	330	118	243	87.5	1.0
		Beryllium, Total	5.4	0.08	6.1	87.2	1.0
		Bismuth, Total	557	0.39u	608	91.7	1.0
		Calcium, Total	28800	24300	3040	148.7*	1.0
		Cadmium, Total	5.5	0.27	6.1	85.8	1.0
		Chromium, Total	33.0	11.8	24.3	87.2	1.0
		Copper, Total	48.9	19.5	30.4	96.7	1.0
		Iron, Total	25500	26400	122	-790. *	1.0
		Mercury, Total	0.20	0.02u	0.20	101.0	1.0
		Potassium, Total	5470	2260	3040	105.4	1.0
		Manganese, Total	489	454	60.8	57.4*	1.0
		Molybdenum, Total	106	0.53	122	86.5	1.0
		Sodium, Total	3600	550	3040	100.5	1.0
		Nickel, Total	65.3	12.5	60.8	86.8	1.0
		Lead, Total	63.9	11.7	60.8	85.9	1.0
		Selenium, Total	207	0.27u	243	85.0	1.0
		Thallium, Total	206	0.52	243	84.4	1.0
		Vanadium, Total	104	52.9	60.8	84.4	1.0
		Zinc, Total	106	54.1	60.8	85.0	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/13/01

CLIENT: TNU-HANFORD B02-008 LVL LOT #: 0111L256

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B13C81	Silver, Total	0.07u	0.07u	NC	1.0
		Aluminum, Total	10100	10600	4.2	1.0
		Arsenic, Total	12.1	12.5	3.3	1.0
		Boron, Total	3.1	4.2	30.1	1.0
		Barium, Total	118	122	3.2	1.0
		Beryllium, Total	0.08	0.10	27.1	1.0
		Bismuth, Total	0.39u	0.39u	NC	1.0
		Calcium, Total	24300	24800	2.2	1.0
		Cadmium, Total	0.27	0.26	4.2	1.0
		Chromium, Total	11.8	12.0	1.7	1.0
		Copper, Total	19.5	19.4	0.51	1.0
		Iron, Total	26400	26700	0.83	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Potassium, Total	2260	2350	3.6	1.0
		Manganese, Total	454	460	1.5	1.0
		Molybdenum, Total	0.53	0.49	7.2	1.0
		Sodium, Total	550	598	8.4	1.0
		Nickel, Total	12.5	12.5	0.00	1.0
		Lead, Total	11.7	11.7	0.00	1.0
		Selenium, Total	0.27u	0.27u	NC	1.0
		Thallium, Total	0.52	0.57	9.3	1.0
		Vanadium, Total	52.9	53.1	0.38	1.0
		Zinc, Total	54.1	54.4	0.55	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/13/01

CLIENT: TNU-HANFORD B02-008 LVL LOT #: 0111L256

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	01C0352-LC1	Mercury, LCS	2.7	2.5	MG/KG	109.2

Lionville Laboratory Use Only

01111256

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client TALU HANFORD SAF B02-008

Est. Final Proj. Sampling Date

Project # 11343-606-001-9999-00

Project Contact/Phone #

Lionville Laboratory Project Manager OJ

QC SPEC Del FED TAT 15 day

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

		A	B	C					D		E	F	G			
Refrigerator #		1	2	2					2		2	2	2			
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG					1AG		1AG	1AG	1AG			
Volume	Liquid															
	Solid	120	1000	120					500		1000	60	60			
Preservatives		—	—	—					—		—	—	—			
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	Anions	pH	GRSC			

Lionville Laboratory Use Only

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	0624X	0625X 0240	0623				METO ICP6		INORG①	IPH	IHY2N			
001	B13C81			S	10/30/01	0830	1	1	1				1		1	1	1			
002	1 K9			1	10/31/01	0730	1	1	1				1		1	1	1			

Special Instructions:
SAF # B02-008
Run Matrix QC

DATE/REVISIONS:
METO 1. As, Ba, Cd, Cr, Pb, Se, Ag, Al, Be, Bi, B, Ca, Cu,
2. Fe, Mn, Mo, Ni, K, Na, Tl, V, Zn, Hg
INORG① 3. IN3N2, ICCC, ICFL, ICNO3, ICNO2, ICPO4, ICSO4
4. ISFD, INH3N, ICNIO
11-5-01 5. Cancel 0624X Add 0624H + OGCSC
6.

Lionville Laboratory Use Only

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

Tamper Resistant Seal was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 10 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
4235 7954 8545
1.2

Relinquished by	Received by	Date	Time
Fed Ex	[signature]	11/2/01	0935

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

4235 7954 8523

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: Thomas, G/Watson, D	Company Contact: Cearlock, CS	Telephone No.: 372-9638	Project Coordinator: TRENT, SJ
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Waste Mana	Sampling Location: 200 East & West		SAF No.: B02-008
Ice Chest No.: See COPC	Field Logbook No.: EL-1551	COA: XL2002CHGR	Method of Shipment: Fed Ex
Shipped To: TMS/RECRA	Offsite Property No.: 110018 N/A DSW 10/30/01		Bill of Lading/Air Bill No.: SEE COPC N/A DSW 10/30/01

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

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

TIE TO B13C84

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

SAMPLE ANALYSIS

			Preservation	None	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	Cool 4C Cool 4C	None		
			Type of Container	sG	sG	sG	sG	sG	sG	sG	sG		
			No. of Container(s)	1	1	1	1	1	1	1	1		
			Volume	1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
				See item (1) in Special Instructions. DSW 10/30/01	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385		
Sample No.	Matrix *	Sample Date	Sample Time										
B13C81	SOIL	10/30/01	0830		X	X	X	X	X	X	X		

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DSWATSON/[illegible]	10 30 01 1215	REF-1A 3728 BLDG.	10-30-01 1215
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
REF 1A 3728	11-1-01 0900	R.C. Thorne	11-1-01 0900
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R.C. Thorne ERC	11-1-01 0900	FED EX	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	11/2/01 0935	V. Hurnsty	11/2/01 0935
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

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

(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 10-30-01
(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

SHPEE-011 (10/99)

9

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector Bowers DL/Watson DJ	**Company Contact** Cearlock, CS	**Telephone No.** 372-9638	**Project Coordinator** TRENT, SJ
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.** AD20018		**Bill of Lading/Air Bill No.** SEE OSPC

Price Code 8N **Data Turnaround** 45 Days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS
TIE TO B13CL4

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

RT 11-1-01

SAMPLE ANALYSIS

Preservation	None	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	100mL	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**								
B13CK9	SOIL	10-31-01	0750	X	X	X	X	X	X	X	X	B13CL4

RT 10-31-01

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Tony Bowers Bowers	10-31-01/1110	Ref 1B 3728	10-31-01/1110
Ref 1B 3728	11-1-01 0900	R.P. Thore	11-1-01 0900
R.P. Thore ERC	11-1-01 1100	FEDEX	
FedEx	11/2/01 0935	V. Kennedy	11/2/01 0935

SPECIAL INSTRUCTIONS

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

~~(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, Cesium-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

RT 10-31-01

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)

LIONVILLE LABORATORY INC.

Analytical Report

Client: THU HANFORD
LVL#: 0111L256

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

GC SCAN

The set of samples consisted of two (2) soil samples collected on 10-30-01.

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

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

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

2. Surrogates are not currently employed in the methodology.

3. All initial calibrations were within acceptance criteria.

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

5. All blank spike recoveries were within acceptance criteria.

6. All matrix spike recoveries were within acceptance criteria.

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

11/13/01
Date

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The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 9 pages.

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

GLOSSARY OF GC VOLATILES DATA

DATA QUALIFIERS

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

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.

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

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF GC VOLATILES DATA

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

R:/SHARE/GCVOLATILE/GCVOLATILEGLOS.DOC

Lionville Laboratory, Inc.

GC SCAN

Report Date: 11/09/01 14:14

RFW Batch Number: 0111L256 Client: TNU-HANFORD B02-008 Work Order: 11343606001 Page: 1

	Cust ID:	B13C81	B13C81	B13C81	B13CK9	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	01LJMB05-MB1	01LJMB05-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
n-Propyl Alcohol		6.0 U	86 %	85 %	8.0 U	5.0 U	103 %
Ethanol		6.0 U	86 %	83 %	8.0 U	5.0 U	99 %

	Cust ID:	BLK BSD
Sample Information	RFW#:	01LJMB05-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	mg/kg
n-Propyl Alcohol		98 %
Ethanol		94 %

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

(U) BNA from DIG Metals

Lionville Laboratory Use Only

01111256

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TAU HANFORD SAF B02-008

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 15 day

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

		A	B	C					D		E	F	G			
Refrigerator #		1	2	2					2		2	2	2			
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG					1AG		1AG	1AG	1AG			
Volume	Liquid															
	Solid	120	600	120					500		100	60	60			
Preservatives		—	—	—					—		—	—	—			
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	PestV PCB	Herb				Metal	CN	Fe Anions Nitr Hg	PH	TSS			
Lionville Laboratory Use Only		0624X	0625X 0MCO	OACB					MET(1) ICP		INORG(1)	IPH	NH3N			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624X	0625X 0MCO	OACB					MET(1) ICP		INORG(1)	IPH	NH3N			
S - Soil	001	B13C81			S	10/30/01	0830	1	1	1					1		1	1	1			
SE - Sediment	002	1 K9			1	10/30/01	0730	1	1	1					1		1	1	1			
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																						

Special Instructions:

SAF # B02-008

Run Matrix QC

DATE/REVISIONS:

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

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

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

4. ISFD, INH3N, ICNTO

11-5-01 5. Cancel 0624X Add 0624H + OGCSC

6.

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

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Lionville Laboratory Use Only

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

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Samples Properly Preserved Y or N

5) Received Within Holding Times Y or N

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

2) Unbroken on Outer Package Y or N

3) Present on Sample Y or N

4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. 1° °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7954 8545

1.2

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B02-008-01 | Page 1 of 1

Collector: Thomas, G/Watson, D	Company Contact: Cearlock, CS	Telephone No.: 372-9638	Project Coordinator: TRENT, SJ
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Waste Mana	Sampling Location: 200 East & West		SAF No.: B02-008
Chest No.: See COPC	Field Logbook No.: EL-1551	COA: XL2002CHGR	Method of Shipment: Fed Ex
Shipped To: TMS/RECRA	Offsite Property No.: A/A DSW 10/30/01		Bill of Lading/Air Bill No.: SEE COPC A/A DSW 10/30/01

Price Code: 8N 8K RT 11-1-01 | Data Turnaround: ~~45 Days~~ 15 Day RT 11-1-01 | Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

TIC TO B13C84

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

SAMPLE ANALYSIS

Preservation	None	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	Cool 4C Cool 4C	None		
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
	See item (1) in Special Instructions. DSW 10/30/01	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385		
Sample No.	Matrix *	Sample Date	Sample Time									
313C81	SOIL	10/30/01	0830		X	X	X	X	X	X	X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DSWATSON/[illegible]	10 30 01 1215	REF-1A 3728 BLDG.	10-30-01 1215
Relinquished By/Removed From: REF 1A 3728	Date/Time: 11-1-01 0900	Received By/Stored In: R.C. Thorne	Date/Time: 11-1-01 0900
Relinquished By/Removed From: R.C. Thorne ERC	Date/Time: 11-1-01 0900	Received By/Stored In: EDQ	Date/Time
Relinquished By/Removed From: Fed Ex	Date/Time: 11/2/01 0935	Received By/Stored In: V. Hernandez	Date/Time: 11/2/01 0935
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

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

(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 10-30-01
(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
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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-008-02	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.: AD20018	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
TIE TO B13CL4

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

Preservation	None	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	500mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385		
Sample No.	Matrix *	Sample Date	Sample Time								
B13CK9	SOIL	10-31-01	0750	X	X	X	X	X	X	X	X	B13CL4

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

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

~~(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-1261, 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

RT 10-31-01

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)

Figure 1. Sample Check-in List

Date/Time Received: 11/2/01 0935

SDG#: 01116256

Work Order Number: _____ SAF# B002-008-01 11-2-01

Shipping Container ID: _____ Chain of Custody # B002-008-01

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 1.1-2
5. Vermiculite/packing materials is Wet [✓] Dry [ ]
6. Number of samples in shipping container: 14
7. Sample holding times exceeded? Yes [ ] No [✓]

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

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

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

Sample Custodian/Laboratory: Peter Hamm Louisville Laboratory - Newport Date: _____

Telephoned to: _____ On _____ By _____

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B02-008
LVL#: 0111L256
SDG/SAF#: H1568/H1571/B02-008

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

DIESEL RANGE ORGANICS

The set of samples consisted of two (2) soil samples collected on 10-30-01.

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

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

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

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

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

5. All obtainable surrogate recoveries were within acceptance criteria.

6. The blank spike recovery was within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

11/13/01
Date

R:\share\dro\11-256.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.

GLOSSARY OF ODRO DATA

DATA QUALIFIERS

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

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.

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

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF ODRO DATA

P = This flag is used for an ODRO target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".

D = This flag identifies all compounds identified in an analysis at a secondary dilution factor.

C = This flag applies to a compound that has been confirmed by HPLC.

R:/SHARE/HPLC/OLCSCGLOS

Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

Report Date: 11/08/01 13:06

RFW Batch Number: 0111L256 Client: TNU-HANFORD B02-008 Work Order: 11343606001 Page: 1

	Cust ID:	B13C81	B13C81	B13C81	B13CK9	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	01LE1331-MB1	01LE1331-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	4.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
	p-Terphenyl	62 %	76 %	97 %	D %	38 %	52 %
Diesel Range Organics		14.6 U	76 %	94 %	73.6 U	12.0 U	63 %
Motor Oil		14.6 U	NS	NS	760	12.0 U	NS

LX 11-8-01

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

(V) BNA FROM DIG MUMP

Lionville Laboratory Use Only

01111256

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TNU HANFORD SAF B02-008

Est. Final Proj. Sampling Date

Project # 11343-606-001-9999-00

Project Contact/Phone #

Lionville Laboratory Project Manager OJ

QC SPEC Del STD TAT 15 day

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

		A	B	C					D		E	F	G			
Refrigerator #		1	2	2					2		2	2	2			
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG					1AG		1AG	1AG	1AG			
Volume	Liquid															
	Solid	120	600	120					500		100	60	60			
Preservatives		—	—	—					—		—	—	—			
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	Fe Anions NO2 NO3	pH	CBOD	HANRRP		
Lionville Laboratory Use Only		0624X	0625X 0625D	0A03					METO		INORGI	IPH	INHZN			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624X	0625X 0625D	0A03	METO	INORGI	IPH	INHZN
S - Soil	001	B13C81			S	10/30/01	0830	1	1	1	1	1	1	1
SE - Sediment	002	1 K9			1	10/30/01	0730	1	1	1	1	1	1	1
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														

Special Instructions:
SAF # B02-008
Run Matrix QC

DATE/REVISIONS:

METO 1. As, Ba, Cd, Cr, Pb, Se, Ag, Al, Be, Bi, B, Ca, Cu,
2. Fe, Mn, Mo, Ni, K, Na, Tl, V, Zn, Hg
INORG① 3. IN3N2, ICCC, ICFL, ICNO3, ICNO2, ICPO4, ICSO4
4. ISFD, INH3N, ICNTO
11-5-01 5. Cancel 0624X Add 0624H + OGCSC
6.

Lionville Laboratory Use Only

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

Tamper Resistant Seal was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 1° °C
1.2

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

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-008-01	Page 1 of 1
Collector: Thomas, G/Watson, D	Company Contact: Cearlock, CS — Telephone No.: 372-9638	Project Coordinator: TRENT, SJ	Price Code: ~~8N~~ 8K RT 11-1-01 — Data Turnaround: ~~45 Days~~ 15 Day RT 11-1-01
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Waste Mana	Sampling Location: 200 East & West	SAF No.: B02-008	Air Quality ☐
Ice Chest No.: See OSPC	Field Logbook No.: EL-1551 — COA: XL2002CHGR	Method of Shipment: Fed Ex	
Shipped To: TMS/RECRA	Offsite Property No.: 710008/18 N/A DSW 10/30/01	Bill of Lading/Air Bill No.: SEE OSPC N/A DSW 10/30/01	

POSSIBLE SAMPLE HAZARDS/REMARKS

TIE TO B13C84

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

Preservation	None	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	Cool 4C Cool 4C	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions. DSW 10/30/01	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385		
Sample No.	Matrix *	Sample Date	Sample Time								
B13C81	SOIL	10/30/01	0830		X	X	X	X	X	X	X

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: DSWATSON/[illegible]	10 30 01 1215	Received By/Stored In: REF-1A 3728 BLDG. 10-30-01	1215
Relinquished By/Removed From: Bill 1A 3728	11-1-01 0900	Received By/Stored In: R.L. Thorc	11-1-01 0900
Relinquished By/Removed From: R.L. Thorc	11-1-01 0900	Received By/Stored In: ERC	
Relinquished By/Removed From: Fed Ex	11/2/01 0935	Received By/Stored In: V. Hurnanty	11/2/01 0935
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

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

(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 10-30-01
(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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-008-02	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 1371 — COA: B20CS1673C	Method of Shipment: Fed Ex	
Shipped To: TMA/RCRA	Offsite Property No.: AD20018	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
TIE TO B13CL4

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

RT 11-1-01

SAMPLE ANALYSIS												
Preservation				None	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				100mL	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) (i-Propanol, Ethanol)	Hydrazine - D1385		
Sample No.	Matrix *	Sample Date	Sample Time										
B13CK9	SOIL	10-31-01	0750	X	X	X	X	X	X	X	X	B13CL4	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Bowers	10-31-01/1110	Rnf 1B 3728	10-31-01/1110
Rnf 1B 3728	11-1-01 0750	R. Thore	11-1-01 0750
R. Thore ERC	11-1-01 0750	FEDEX	
FedEx	11/2/01 0935	V. Kennedy	11/2/01 0935

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

~~(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~~ RT 10-31-01
(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
SR=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#: 0111L256
SDG/SAF#: H1568/H1571/B02-008

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

PCB

The set of samples consisted of two (2) soil samples collected on 10-30,31-01.

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

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

1. All cooler temperatures have been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis have been met.
3. The samples and their associated QC samples received a sulfuric acid and a sulfur cleanup.
4. The method blank was below the reporting limits for all target compounds.
5. All obtainable surrogate recoveries were within acceptance criteria.
6. All blank spike recoveries were within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. Sample B13CK9 required a fifty-fold instrument dilution due to the high concentrations of target analytes. Reporting limits have been adjusted to reflect the necessary dilutions.
9. All initial calibrations associated with this data set were within acceptance criteria.
10. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
11. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

11/14/01
Date

pef\r:\group\data\pest\11L-256.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.

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

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

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.

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

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

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

R:/SHARE/HPLC/PESTICIDE/PCBGLOS

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 11/13/01 12:23

RFW Batch Number: 0111L256 Client: TNU-HANFORD B02-008 Work Order: 11343606001 Page: 1

5

	Cust ID:	B13C81	B13C81	B13C81	B13CK9	PBLKVD	PBLKVD BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	01LE1330-MB1	01LE1330-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	50.0	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	85 %	68 %	62 %	D %	92 %	95 %
	Decachlorobiphenyl	84 %	82 %	92 %	D %	91 %	93 %
Aroclor-1016		40 U	40 U	40 U	2600 U	33 U	33 U
Aroclor-1221		81 U	81 U	81 U	5100 U	67 U	67 U
Aroclor-1232		40 U	40 U	40 U	2600 U	33 U	33 U
Aroclor-1242		40 U	40 U	40 U	2600 U	33 U	33 U
Aroclor-1248		40 U	40 U	40 U	2600 U	33 U	33 U
Aroclor-1254		40 U	89 %	90 %	9400	33 U	89 %
Aroclor-1260		40 U	40 U	40 U	2600 U	33 U	33 U

	Cust ID:	PBLKVD BSD
Sample Information	RFW#:	01LE1330-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	UG/KG
Surrogate:	Tetrachloro-m-xylene	92 %
	Decachlorobiphenyl	90 %
Aroclor-1016		33 U
Aroclor-1221		67 U
Aroclor-1232		33 U
Aroclor-1242		33 U
Aroclor-1248		33 U
Aroclor-1254		81 %
Aroclor-1254		81 %
Aroclor-1260		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

11/13/01

(D) BNA From DIG Metals

Lionville Laboratory Use Only

01111256

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client INU (HANFORD) SAF B02-008

Est. Final Proj. Sampling Date

Project # 11343-606-001-9999-00

Project Contact/Phone #

Lionville Laboratory Project Manager OJ

QC SPEC Del STD TAT 15 day

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

		A	B	C					D		E	F	G			
Refrigerator #		1	2	2					2		2	2	2			
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG					1AG		1AG	1AG	1AG			
Volume	Liquid															
	Solid	120	600	120					500		1000	60	60			
Preservatives		—	—	—					—		—	—	—			
ANALYSES REQUESTED →		ORGANIC							INORG		TO Anions Nitrate Nitrite	pH	CSSD	Hydrazine		
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
		Lionville Laboratory Use Only														
		0624X	0625X OGCS	OACB					METC ICAP		INORG	IPH	IHYZN			

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	0624X	0625X OGCS	OACB					METC ICAP		INORG	IPH	IHYZN			
001	B13C81			S	10/30/01	0830	1	1	1					1		1	1	1			
002	1 K9			1	10/31/01	0730	1	1	1					1		1	1	1			

Special Instructions:
SAF # B02-000
Run Metrix QC

DATE/REVISIONS:
METC 1. As, Ba, Cd, Cr, Pb, Se, Ag, Al, Be, Bi, B, Ca, Co,
2. Fe, Mn, Mo, Ni, K, Na, Tl, V, Zn, Hg
INORG 3. IN3N2, ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4
4. ISFD, INH3N, ICNTO
11-5-01 5. Cancel 0624X Add 0624H + OGCSC
6.

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

Relinquished by	Received by	Date	Time

COMPOSITE WASTE

ORIGINAL REWRITTEN

Lionville Laboratory Use Only

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

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

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

1.2

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B02-008-01 | Page 1 of 1

Collector: Thomas, G/Watson, D	Company Contact: Cearlock, CS	Telephone No.: 372-9638	Project Coordinator: TRENT, SJ
Price Code: ~~8N~~ RT 11-1-01 8K	Data Turnaround: ~~45 Days~~ 15 Day RT 11-1-01	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: XL2002CHGR	Method of Shipment: Fed Ex
Shipped To: TMS/RECRA	Offsite Property No.: P100018 N/A DSW 10/30/01	Bill of Lading/Air Bill No.: SEE OSPC N/A DSW 10/30/01	

POSSIBLE SAMPLE HAZARDS/REMARKS

TIETO B13C84

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

Preservation	None	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	Cool 4C Cool 4C	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions. DZC DSW 10/30/01	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385		
Sample No.	Matrix *	Sample Date	Sample Time							
B13C81	SOIL	10/30/01	0830		X	X	X	X	X	X	X

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DSWATSON/GTHOMAS	10-30-01 1215	REF-1A 3728 BLDG.	10-30-01 1215
Bill 1A 3728	11-1-01 0900	RFC Thorne	11-1-01 0900
RFC ERC	11-1-01 0900	ERC	11-1-01
Fed Ex	11/2/01 0935	V. Hurnsty	11/2/01 0935

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 10-30-01
(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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-008-02	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.: EL 1551	COA: B20CS1673C	Method of Shipment: Fed Ex
Shipped To: TMA/KECRA	Offsite Property No.: AD20018		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS
TIETO B13CL4

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

RT 11-1-01

Preservation	None	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							
B13CK9	SOIL	10-31-01	0750	X	X	X	X	X	X	X	X	B13CL4

RT 10-31-01

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Bowers	10-31-01/1110	Anf 1B 3728	10-31-01/1110
Rick 1B 3728	11-1-01 0900	R. R. Thore	11-1-01 0900
R. R. Thore ERC	11-1-01 0900	FEDEX	
FedEx	11/2/01 0935	V. Kennedy	11/2/01 09:35

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~~
(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

RT 10-31-01

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: 11/2/01 0935

SDG#: 01116256

Work Order Number: _____ SAF# B002-008-01 11-2-01

Shipping Container ID: _____ Chain of Custody # B002-008-01

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 1.1-2
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: Louisville Laboratory - Incorporated Date: _____

Telephoned to: _____ On _____ By _____

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B02-008
LVL #: 0111L256
SDG/SAF #: H1568, H1571/B02-008

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

SEMIVOLATILE

Two (2) soil samples were collected on 10-30,31-2001.

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

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

1. The cooler temperatures upon receipt have been recorded on the chain-of-custody.
2. Samples were extracted and analyzed within required holding time.
3. Non-target compounds were detected in the samples.
4. Sample B13CK9 and its associated matrix spike samples required a 5-fold dilution due to high levels of both target and non-target compounds.
5. All surrogate recoveries were within EPA QC limits.
6. Four (4) of twenty-two (22) blank spike recoveries were outside EPA QC limits.
7. All matrix spike recoveries were within EPA QC limits.
8. Internal standard area and retention time criteria were met.
9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

J. Michael Taylor
President
Lionville Laboratory Incorporated

11/21/01
Date

som\gorup\data\bna\tnu-hanford-0111-256.doc

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

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

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.

VLI
LIONVILLE LABORATORY INC

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.

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: 11/19/01 13:36

RFW Batch Number: 0111L256 — Client: TNU-HANFORD B02-008 — Work Order: 11343606001 — Page: 1a

	Cust ID:	B13C81		B13CK9		B13CK9		B13CK9		SBLKJD		SBLKJD BS	
Sample Information	RFW#:	001		002		002 MS		002 MSD		01LE1329-MB1		01LE1329-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		5.00		5.00		5.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	86	%	85	%	86	%	94	%	93	%	114	%
	2-Fluorobiphenyl	76	%	98	%	99	%	98	%	87	%	99	%
	p-Terphenyl-d14	103	%	115	%	101	%	105	%	123	%	134	%
	Phenol-d5	88	%	73	%	73	%	77	%	90	%	107	%
	2-Fluorophenol	81	%	70	%	69	%	72	%	90	%	97	%
	2,4,6-Tribromophenol	75	%	55	%	52	%	66	%	89	%	112	%
Phenol		400	U	2600	U	71	%	74	%	330	U	92 *	%
bis(2-Chloroethyl)ether		400	U	2600	U	2600	U	2600	U	330	U	330	U
2-Chlorophenol		400	U	2600	U	80	%	86	%	330	U	97	%
1,3-Dichlorobenzene		400	U	2600	U	2600	U	2600	U	330	U	330	U
1,4-Dichlorobenzene		400	U	2600	U	80	%	84	%	330	U	80	%
1,2-Dichlorobenzene		400	U	2600	U	2600	U	2600	U	330	U	330	U
2-Methylphenol		400	U	2600	U	2600	U	2600	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		400	U	2600	U	2600	U	2600	U	330	U	330	U
4-Methylphenol		400	U	2600	U	2600	U	2600	U	330	U	330	U
N-Nitroso-Di-n-propylamine		400	U	2600	U	104	%	112	%	330	U	121	%
Hexachloroethane		400	U	2600	U	2600	U	2600	U	330	U	330	U
Nitrobenzene		400	U	2600	U	2600	U	2600	U	330	U	330	U
Isophorone		400	U	2600	U	2600	U	2600	U	330	U	330	U
2-Nitrophenol		400	U	2600	U	2600	U	2600	U	330	U	330	U
2,4-Dimethylphenol		400	U	2600	U	2600	U	2600	U	330	U	330	U
bis(2-Chloroethoxy)methane		400	U	2600	U	2600	U	2600	U	330	U	330	U
2,4-Dichlorophenol		400	U	2600	U	2600	U	2600	U	330	U	330	U
1,2,4-Trichlorobenzene		400	U	2600	U	75	%	81	%	330	U	79	%
Naphthalene		400	U	2600	U	2600	U	2600	U	330	U	330	U
4-Chloroaniline		400	U	2600	U	2600	U	2600	U	330	U	330	U
Hexachlorobutadiene		400	U	2600	U	2600	U	2600	U	330	U	330	U
4-Chloro-3-methylphenol		400	U	2600	U	81	%	86	%	330	U	104 *	%
2-Methylnaphthalene		400	U	2600	U	2600	U	2600	U	330	U	330	U
Hexachlorocyclopentadiene		400	U	2600	U	2600	U	2600	U	330	U	330	U
2,4,6-Trichlorophenol		400	U	2600	U	2600	U	2600	U	330	U	330	U
2,4,5-Trichlorophenol		1000	U	6400	U	6400	U	6400	U	830	U	830	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0111L256 Client: TNU-HANFORD B02-008 Work Order: 11343606001 Page: 1b

Cust ID:	B13C81		B13CK9		B13CK9		B13CK9		SBLKJD		SBLKJD BS	
RFW#:	001		002		002 MS		002 MSD		01LE1329-MB1		01LE1329-MB1	
2-Chloronaphthalene	400	U	2600	U	2600	U	2600	U	330	U	330	U
2-Nitroaniline	1000	U	6400	U	6400	U	6400	U	830	U	830	U
Dimethylphthalate	400	U	2600	U	2600	U	2600	U	330	U	330	U
Acenaphthylene	400	U	2600	U	2600	U	2600	U	330	U	330	U
2,6-Dinitrotoluene	400	U	2600	U	2600	U	2600	U	330	U	330	U
3-Nitroaniline	1000	U	6400	U	6400	U	6400	U	830	U	830	U
Acenaphthene	400	U	2600	U	98	%	100	%	330	U	94	%
2,4-Dinitrophenol	1000	U	6400	U	6400	U	6400	U	830	U	830	U
4-Nitrophenol	1000	U	6400	U	92	%	85	%	830	U	105	%
Dibenzofuran	400	U	2600	U	2600	U	2600	U	330	U	330	U
2,4-Dinitrotoluene	400	U	2600	U	83	%	89	%	330	U	105 *	%
Diethylphthalate	400	U	2600	U	2600	U	2600	U	330	U	330	U
4-Chlorophenyl-phenylether	400	U	2600	U	2600	U	2600	U	330	U	330	U
Fluorene	400	U	2600	U	2600	U	2600	U	330	U	330	U
4-Nitroaniline	1000	U	6400	U	6400	U	6400	U	830	U	830	U
4,6-Dinitro-2-methylphenol	1000	U	6400	U	6400	U	6400	U	830	U	830	U
N-Nitrosodiphenylamine (1)	400	U	2600	U	2600	U	2600	U	330	U	330	U
4-Bromophenyl-phenylether	400	U	2600	U	2600	U	2600	U	330	U	330	U
Hexachlorobenzene	400	U	2600	U	2600	U	2600	U	330	U	330	U
Pentachlorophenol	1000	U	6400	U	41	%	45	%	830	U	101	%
Phenanthrene	150	J	370	J	250	J	290	J	330	U	330	U
Anthracene	400	U	2600	U	2600	U	2600	U	330	U	330	U
Carbazole	400	U	2600	U	2600	U	2600	U	330	U	330	U
Di-n-Butylphthalate	220	J	2700		2600		4800		330	U	20	J
Fluoranthene	120	J	370	J	290	J	380	J	330	U	330	U
Pyrene	99	J	350	J	92	%	105	%	330	U	114	%
Butylbenzylphthalate	400	U	290	J	830	J	420	J	330	U	330	U
3,3'-Dichlorobenzidine	400	U	2600	U	2600	U	2600	U	330	U	330	U
Benzo(a)anthracene	34	J	180	J	240	J	330	J	330	U	330	U
Chrysene	40	J	210	J	280	J	330	J	330	U	330	U
bis(2-Ethylhexyl)phthalate	400	U	6200		4800		8100		330	U	20	J
Di-n-Octyl phthalate	400	U	2600	U	2600	U	2600	U	330	U	330	U
Benzo(b)fluoranthene	37	J	240	J	310	J	350	J	330	U	330	U
Benzo(k)fluoranthene	400	U	2600	U	2600	U	2600	U	330	U	330	U
Benzo(a)pyrene	22	J	160	J	230	J	300	J	330	U	330	U
Indeno(1,2,3-cd)pyrene	400	U	2600	U	2600	U	2600	U	330	U	330	U
Dibenzo(a,h)anthracene	400	U	2600	U	2600	U	2600	U	330	U	330	U
Benzo(g,h,i)perylene	400	U	2600	U	2600	U	2600	U	330	U	330	U
Tributylphosphate	400	U	310	J	580	J	660	J	330	U	330	U

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

Cust ID: **SBLKJD BSD**

Sample Information	RFW#:	01LE1329-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	ug/Kg

Surrogate Recovery	Nitrobenzene-d5	95	%
	2-Fluorobiphenyl	86	%
	p-Terphenyl-d14	113	%
	Phenol-d5	90	%
	2-Fluorophenol	85	%
	2,4,6-Tribromophenol	87	%

Phenol	87	%
bis(2-Chloroethyl)ether	330	U
2-Chlorophenol	90	%
1,3-Dichlorobenzene	330	U
1,4-Dichlorobenzene	75	%
1,2-Dichlorobenzene	330	U
2-Methylphenol	330	U
2,2'-oxybis(1-Chloropropane)	330	U
4-Methylphenol	330	U
N-Nitroso-Di-n-propylamine	101	%
Hexachloroethane	330	U
Nitrobenzene	330	U
Isophorone	330	U
2-Nitrophenol	330	U
2,4-Dimethylphenol	330	U
bis(2-Chloroethoxy)methane	330	U
2,4-Dichlorophenol	330	U
1,2,4-Trichlorobenzene	75	%
Naphthalene	330	U
4-Chloroaniline	330	U
Hexachlorobutadiene	330	U
4-Chloro-3-methylphenol	96	%
2-Methylnaphthalene	330	U
Hexachlorocyclopentadiene	330	U
2,4,6-Trichlorophenol	330	U
2,4,5-Trichlorophenol	830	U

*= Outside of EPA CLP QC limits.

Cust ID: **SBLKJD BSD**

RFW#: **01LE1329-MB1**

2-Chloronaphthalene	330	U
2-Nitroaniline	830	U
Dimethylphthalate	330	U
Acenaphthylene	330	U
2,6-Dinitrotoluene	330	U
3-Nitroaniline	830	U
Acenaphthene	87	%
2,4-Dinitrophenol	830	U
4-Nitrophenol	96	%
Dibenzofuran	330	U
2,4-Dinitrotoluene	98 *	%
Diethylphthalate	330	U
4-Chlorophenyl-phenylether	330	U
Fluorene	330	U
4-Nitroaniline	830	U
4,6-Dinitro-2-methylphenol	830	U
N-Nitrosodiphenylamine (1)	330	U
4-Bromophenyl-phenylether	330	U
Hexachlorobenzene	330	U
Pentachlorophenol	92	%
Phenanthrene	330	U
Anthracene	330	U
Carbazole	330	U
Di-n-Butylphthalate	330	U
Fluoranthene	330	U
Pyrene	111	%
Butylbenzylphthalate	330	U
3,3'-Dichlorobenzidine	330	U
Benzo(a)anthracene	330	U
Chrysene	330	U
bis(2-Ethylhexyl)phthalate	330	U
Di-n-Octyl phthalate	330	U
Benzo(b)fluoranthene	330	U
Benzo(k)fluoranthene	330	U
Benzo(a)pyrene	330	U
Indeno(1,2,3-cd)pyrene	330	U
Dibenzo(a,h)anthracene	330	U
Benzo(g,h,i)perylene	330	U
Tributylphosphate	330	U

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13C81

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

Client: TNU-HANFORD B02-008

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L256-001

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

Lab File ID: A111607

Level: (low/med) LOW

Date Received: 11/02/01

% Moisture: 18 decanted: (Y/N)

Date Extracted: 11/05/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/16/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	6.079	300	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CK9

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

Client: TNU-HANFORD B02-008

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L256-002

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

Lab File ID: A111608

Level: (low/med) LOW

Date Received: 11/02/01

% Moisture: 35 decanted: (Y/N)__

Date Extracted: 11/05/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/16/01

Injection Volume: 2.0(uL)

Dilution Factor: 5.00

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

Number TICs found: 8

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	HEXACHLOROBIPHENYL	22.322	800	J
2.	PENTACHLOROBIPHENYL	21.043	900	J
3.	PENTACHLOROBIPHENYL	20.762	1000	J
4.	ALKANE	23.565	9000	J
5.	UNKNOWN	23.734	9000	J
6.	ALKANE	23.883	8000	J
7.	ALKANE	24.269	20000	J
8.	DIOCTYLDIPHENYLAMINE	26.491	5000	J

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1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKJD

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

Client: TNU-HANFORD B02-008

Matrix: (soil/water) SOIL

Lab Sample ID: 01LE1329-MB1

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

Lab File ID: A111604

Level: (low/med) LOW

Date Received: 11/05/01

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

Date Extracted: 11/05/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/16/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

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

Number TICs found: 2

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

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

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(U) BNA From DIG MIXI

Lionville Laboratory Use Only

01111256

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

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FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: INW HANFORD SAF B02-008

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 15 day

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

		A	B	C					D		E	F	G			
Refrigerator #		1	2	2					2		2	2	2			
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG					1AG		1AG	1AG	1AG			
Volume	Liquid															
	Solid	120	1000	120					500		1000	60	60			
Preservatives		—	—	—					—		—	—	—			
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	Fe Phenol Alk Nitr	PH	DISP	HAZARDS		
		Lionville Laboratory Use Only														
		0624X	0625X 0D&O	OPCB					MCTO ICP/MS		INORG ①	IPH	IHYZN			

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	0624X	0625X 0D&O	OPCB					MCTO ICP/MS		INORG ①	IPH	IHYZN			
001	B13C81			S	10/30/01	0830	1	1	1					1		1	1	1			
002	1 K9			L	10/30/01	0730	1	1	1					1		1	1	1			

Special Instructions:
SAF # B02-008
Run Matrix QC

DATE/REVISIONS:

MCTO 1. As, Ba, Cd, Cr, Pb, Se, Ag, Al, Be, Bi, B, Ca, Co,
2. Fe, Mn, Mo, Ni, K, Na, Tl, V, Zn, Hg
INORG ① 3. IN3N2, ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4
4. ISFD, INH3N, ICNIO
11-5-01 5. Concul 0624X Add 0624H + OGCSC
6.

Lionville Laboratory Use Only

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

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

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

1.2

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

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

4235 7954 8502

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B02-008-01 | Page 1 of 1

Collector: Thomas, G/Watson, D	Company Contact: Cearlock, CS	Telephone No.: 372-9638	Project Coordinator: TRENT, SJ
Price Code: ~~8N~~ 8K FT 11-1-01	Data Turnaround: ~~45 Days~~ 15 Day FT 11-1-01	Air Quality ☐	
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Waste Mana	Sampling Location: 200 East & West	SAF No.: B02-008	
Chest No.: See COPC	Field Logbook No.: EL-1551	COA: XL2002CHGR	Method of Shipment: Fed Ex
Shipped To: TMS/RECRA	Offsite Property No.: H[illegible] N/A DSW 10/30/01	Bill of Lading/Air Bill No.: See COPC N/A DSW 10/30/01	

POSSIBLE SAMPLE HAZARDS/REMARKS

TIC TO B13C84

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

SAMPLE ANALYSIS

Preservation	None	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	Cool 4C Cool 4C	None		
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
	See item (1) in Special Instructions. DSW 10/30/01	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385		
Sample No.	Matrix *	Sample Date	Sample Time									
B13C81	SOIL	10/30/01	0830		X	X	X	X	X	X	X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DSWATSON/[illegible]	10 30 01 1215	REF-1A 3728BLDG.	10-30-01 1215
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Bldg 1A 3728	11-1-01 0900	R.C. Thorc	11-1-01 0900
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R.C. Thorc	ERC 11-1-01	EDQA	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	11/2/01 0935	V. Hennessy	11/2/01 0935
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

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

(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 10-30-01
(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)

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B02-008-02

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.: AD20018		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS
TIE TO B13CL4

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

RT 11-1-01

Preservation	None	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	100mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385		

Sample No.	Matrix *	Sample Date	Sample Time										
B13CK9	SOIL	10-31-01	0750	X	X	X	X	X	X	X	X	B13CL4	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Tony Bowers Bowers	10-31-01/1410	Ant 1B 3728	10-31-01/1110
Rick 1B 3728	11-1-01 0900	R.T. Thore	11-1-01 0900
R.T. Thore ERC	11-1-01 0900	ED9 X	
Fed Ex	11/2/01 0935	V. Kennedy	11/2/01 0935

SPECIAL INSTRUCTIONS

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

~~(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~~ RT 10-31-01

(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 #: 0111L256
SDG/SAF #: H1568, H1571/B02-008

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

GC/MS VOLATILE

Two (2) water samples were collected on 10-30,31-2001.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 11-10,12-2001.

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

1. The cooler temperatures upon receipt have been recorded on the chain-of-custody.

2. Samples were analyzed within required holding time.

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

4. Two (2) of twenty-seven (27) surrogate recoveries were outside EPA QC limits. The out of criteria sample B13CK9 was reanalyzed on 11-12-2001 and reported.

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

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

7. The method blanks contained the common laboratory contaminant Methylene Chloride at levels less than 2x the CRQL.

8. Internal standard area criteria were not met for sample B13CK9. The out of criteria sample B13CK9 was reanalyzed on 11-12-2001 and reported.

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

11/21/01
Date

som\group\data\voa\tnu-hanford\0111-256.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 7 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
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TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

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

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

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

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

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

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

VLI
VIONVILLE LABORATORY INC

Lionville Laboratory, Inc.
Volatiles by GC/MS, HSL List
Report Date: 11/21/01 14:01

RFW Batch Number: **0111L256** Client: **TNU-HANFORD B02-008** Work Order: 11343606001 Page: 1a

	Cust ID:	B13C81		B13C81		B13C81		B13CK9		B13CK9		VBLKYQ	
Sample Information	RFW#:	001		001 MS		001 MSD		002		002		01LVH475-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	0.980		1.02		0.962		1.00		1.04		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg REPREP		ug/Kg	
Surrogate Recovery	Toluene-d8	105	%	98	%	98	%	145 *	%	152 *	%	106	%
	Bromofluorobenzene	83	%	84	%	81	%	66	%	69	%	92	%
	1,2-Dichloroethane-d4	88	%	77	%	80	%	116	%	135	%	102	%
			fl		fl		fl		fl		fl		fl
Chloromethane		12	U	12	U	12	U	15	U	16	U	10	U
Bromomethane		12	U	12	U	12	U	15	U	16	U	10	U
Vinyl Chloride		12	U	12	U	12	U	15	U	16	U	10	U
Chloroethane		12	U	12	U	12	U	15	U	16	U	10	U
Methylene Chloride		12	B	12	B	12	B	65	B	78	B	7	
Acetone		12	U	12	U	12	U	15	U	16	U	10	U
Carbon Disulfide		6	U	6	U	6	U	8	U	8	U	5	U
1,1-Dichloroethene		6	U	76	%	78	%	8	U	8	U	5	U
1,1-Dichloroethane		6	U	6	U	6	U	8	U	8	U	5	U
1,2-Dichloroethene (total)		6	U	6	U	6	U	8	U	8	U	5	U
Chloroform		6	U	6	U	6	U	8	U	8	U	5	U
1,2-Dichloroethane		6	U	6	U	6	U	12		13		5	U
2-Butanone		12	U	12	U	12	U	15	U	16	U	10	U
1,1,1-Trichloroethane		6	U	6	U	6	U	8	U	8	U	5	U
Carbon Tetrachloride		6	U	6	U	6	U	8	U	8	U	5	U
Bromodichloromethane		6	U	6	U	6	U	8	U	8	U	5	U
1,2-Dichloropropane		6	U	6	U	6	U	8	U	8	U	5	U
cis-1,3-Dichloropropene		6	U	6	U	6	U	8	U	8	U	5	U
Trichloroethene		6	U	102	%	105	%	8	U	8	U	5	U
Dibromochloromethane		6	U	6	U	6	U	8	U	8	U	5	U
1,1,2-Trichloroethane		6	U	6	U	6	U	8	U	8	U	5	U
Benzene		6	U	92	%	96	%	8	U	8	U	5	U
Trans-1,3-Dichloropropene		6	U	6	U	6	U	8	U	8	U	5	U
Bromoform		6	U	6	U	6	U	8	U	8	U	5	U
4-Methyl-2-pentanone		12	U	12	U	12	U	15	U	16	U	10	U
2-Hexanone		12	U	12	U	12	U	15	U	16	U	10	U
Tetrachloroethene		6	U	6	U	6	U	7	J	6	J	5	U
1,1,2,2-Tetrachloroethane		6	U	6	U	6	U	8	U	8	U	5	U
Toluene		6	U	100	%	102	%	8	U	8	U	5	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0111L256 Client: TNU-HANFORD B02-008 Work Order: 11343606001 Page: 1b

Cust ID:	B13C81	B13C81	B13C81	B13CK9	B13CK9	VBLKYQ
RFW#:	001	001 MS	001 MSD	002	002 REPREP	01LVH475-MB1
Chlorobenzene	6 U	98 %	101 %	8 U	8 U	5 U
Ethylbenzene	6 U	6 U	6 U	8 U	8 U	5 U
Styrene	6 U	6 U	6 U	8 U	8 U	5 U
Xylene (total)	6 U	6 U	6 U	8 U	8 U	5 U

*= Outside of EPA CLP QC limits.

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

RFW Batch Number: **0111L256** Client: **TNU-HANFORD B02-008** Work Order: 11343606001 Page: 2a

Report Date: 11/21/01 14:01

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

*= Outside of EPA CLP QC limits.

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

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13C81

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

Client: TNU-HANFORD B02-008

Matrix: SOIL

Lab Sample ID: 0111L256-001

Sample wt/vol: 5.10 (g/mL) G

Lab File ID: h111014

Level: (low/med) LOW

Date Received: 11/02/01

% Moisture: not dec. 18

Date Analyzed: 11/10/01

Column: (pack/cap) CAP

Dilution Factor: 0.980

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	22.235	10	J

FORM 1 VOA-TIC 12/88 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CK9

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

Client: TNU-HANFORD B02-008

Matrix: SOIL

Lab Sample ID: 0111L256-002

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

Lab File ID: h111013

Level: (low/med) LOW

Date Received: 11/02/01

% Moisture: not dec. 35

Date Analyzed: 11/10/01

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	22.237	30	J

11

1E

VOLATILE ORGANICS ANALYSIS SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CK9RE

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

Client: TNU-HANFORD B02-008

Matrix: SOIL

Lab Sample ID: 0111L256-002

Sample wt/vol: 4.80 (g/mL) G

Lab File ID: h111208

Level: (low/med) LOW

Date Received: 11/02/01

% Moisture: not dec. 35

Date Analyzed: 11/12/01

Column: (pack/cap) CAP

Dilution Factor: 1.04

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	22.206	40	J

12

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLKYQ

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

Client: TNU-HANFORD B02-008

Matrix: SOIL

Lab Sample ID: 01LVH475-MB1

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

Lab File ID: h111003

Level: (low/med) LOW

Date Received: 11/10/01

% Moisture: not dec. 0

Date Analyzed: 11/10/01

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

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

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLKZG

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

Client: TNU-HANFORD B02-008

Matrix: SOIL

Lab Sample ID: 01LVH478-MB1

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

Lab File ID: h111205

Level: (low/med) LOW

Date Received: 11/12/01

% Moisture: not dec. 0

Date Analyzed: 11/12/01

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

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

FORM 1 VOA-TIC 12/88 Rev.

(2) BNA From DIG MIXT

Lionville Laboratory Use Only

01111256

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client INU HANFORD SAF B02-008

Est. Final Proj. Sampling Date

Project # 11343-606-001-9999-00

Project Contact/Phone #

Lionville Laboratory Project Manager OJ

QC SPEC Del STD TAT 15 day

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

		A	B	C					D		E	F	G			
Refrigerator #		1	2	2					2		2	2	2			
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG					1AG		1AG	1AG	1AG			
Volume	Liquid															
	Solid	120	1000	120					500		1000	60	60			
Preservatives		—	—	—					—		—	—	—			
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	TO Anions Nitr Nitr	pH	Diss Hydrid			
		Lionville Laboratory Use Only														
		0624X	0625X 0BNA	OPCB					METAL		INORG	IPH	INH3N			

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624X	0625X 0BNA	OPCB					METAL		INORG	IPH	INH3N			
001	B13C81			S	10/30/01	0830	1	1	1					1		1	1	1			
002	1 K9			1	10/30/01	0750	1	1	1					1		1	1	1			

Special Instructions:
SAF # B02-008
Run Matrix QC

DATE/REVISIONS:
METAL 1. As, Ba, Cd, Cr, Pb, Se, Ag, Al, Be, Bi, B, Ca, Co,
2. Fe, Mn, Mo, Ni, K, Na, Tl, V, Zn, Hg
INORG (1) 3. IN3N2, ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4
4. ISFD, INH3N, ICNTO
11-5-01 5. Concl 0624X Add 0624H + OGCSC
6.

Lionville Laboratory Use Only

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

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

Relinquished by	Received by	Date	Time
Ed Ep	[signature]	11/2/01	0935

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

1.2

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-008-01	Page 1 of 1

Collector: Thomas, G/Watson, D	Company Contact: Cearlock, CS	Telephone No.: 372-9638	Project Coordinator: TRENT, SJ
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Waste Mana	Sampling Location: 200 East & West		SAF No.: B02-008
Ice Chest No.: See OSPC	Field Logbook No.: EL-1551	COA: XL2002CHGR	Method of Shipment: Fed Ex
Shipped To: TMA/RECRA	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: See OSPC N/A

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

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

TIE TO B13C84

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

Preservation	None	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	Cool 4C Cool 4C	None		
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions. DOZ 10/30/01 DSW 10/30/01	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (I-Propanol, Ethanol)	Hydrazine - D1385		
Sample No.	Matrix *	Sample Date	Sample Time								
B13C81	SOIL	10/30/01	0830		X	X	X	X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DSWatson/DSWatson	10 30 01 1215	REF-1A 3728	10-30-01 1215
Bill 1A 3728	11-1-01 0900	R.C. Thorc	11-1-01 0900
R.C. Thorc ERC	11-1-01 0900	ERC	11-1-01
Fed Ex	11/2/01 0935	U. Hurmuty	11/2/01 0935

SPECIAL INSTRUCTIONS

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

(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, Cerium-134~~, Curium-242, Radium-226, Radium-228, Sodium-22, Tin-126}; ~~Strontium-89,90; Total Sr; Gerber-14~~; ~~Total Uranium; Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium~~ DSW 10-30-01
(2) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Aluminum, Beryllium, Bismuth, Boron, Calcium, Copper, Iron, Manganese, Molybdenum, Nickel, Potassium, Sodium, Thallium, Vanadium, Zinc}; Mercury - 747) - (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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-008-02	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 1371 — COA: B20CS1673C	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA	Offsite Property No.: AD20018	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
TIETO B13CL4

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

RT 11-1-01

SAMPLE ANALYSIS

Preservation	None	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	100mL	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										
B13CK9	SOIL	10-31-01	0750	X	X	X	X	X	X	X	X	B13CL4	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Tracy Bowers Bowers	10-31-01/1110	Ant 1B 3728	10-31-01/1110
Ant 1B 3728	11-1-01 0900	R.T. Thore	11-1-01 0900
R.T. Thore ERC	11-1-01 0900	FEDEX	
FedEx	11/2/01 0935	V. Neely	11/2/01 0935

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

~~(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

FT 10-31-01

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)