1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1579 was composed of five solid (soil) samples designated under SAF No. B02-009 with a Project Designation of: 200 Area Source Characterization 200-CS-1 OU – Soil Sampling. SDG H1579 (7138) was batched with SDG H1570 (7133), except for the isotopic uranium analyses.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on January 5, 6, and 17, 2002.

RECEIVED
APR 16 2002
EDMC

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.3 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.4 Total Uranium Analyses

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

2.5 Isotopic Uranium Analyses

BHI requested isotopic uranium analysis on samples B13CR3 and B13CR4 by e-mail on January 9, 2002. No problems were encountered during the course of the analyses.

2.6 Neptiunium-237 Analyses

No problems were encountered during the course of the analyses.

2.7 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.8 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.9 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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

Melissa Mannion

Melissa C. Mannion
Program Manager

1/28/02

Date

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

SDG 7138
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1579

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B13CR3	200 East and West	SOLID		R111044-01	B02-006	B02-006-06	11/01/01 08:40
B13CR4	200 East and West	SOLID		R111044-02	B02-006	B02-006-06	11/01/01 08:40
B13CR5	200 East and West	SOLID		R111044-03	B02-006	B02-006-06	11/01/01 09:10
B13CR6	200 East and West	SOLID		R111044-04	B02-006	B02-006-06	11/01/01 09:30
B13CR7	200 East and West	SOLID		R111044-05	B02-006	B02-006-06	11/01/01 09:45
Method Blank		SOLID		R111018-06	B02-006		
Method Blank		SOLID		R111044-08	B02-006		
Lab Control Sample		SOLID		R111018-05	B02-006		
Lab Control Sample		SOLID		R111044-07	B02-006		
Duplicate (R111044-01)	200 East and West	SOLID		R111044-09	B02-006		11/01/01 08:40
Duplicate (R111044-03)	200 East and West	SOLID		R111044-06	B02-006		11/01/01 09:10

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

SDG 7138
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1579

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7133		Method Blank	SOLID						R111018-06	7133-006
		Lab Control Sample	SOLID						R111018-05	.7133-005
7138	B02-006-06	B13CR3	SOLID	87.4	1156 g		11/06/01	5	R111044-01	7138-001
		B13CR4	SOLID	87.0	1096 g		11/06/01	5	R111044-02	7138-002
		B13CR5	SOLID	93.0	1179 g		11/06/01	5	R111044-03	7138-003
		B13CR6	SOLID	90.6	1301 g		11/06/01	5	R111044-04	7138-004
		B13CR7	SOLID	97.0	1217 g		11/06/01	5	R111044-05	7138-005
		Method Blank	SOLID						R111044-08	7138-008
		Lab Control Sample	SOLID						R111044-07	7138-007
		Duplicate (R111044-01)	SOLID		1156 g		11/06/01	5	R111044-09	7138-009
		Duplicate (R111044-03)	SOLID	93.0	1179 g		11/06/01	5	R111044-06	7138-006

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Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

SDG 7138
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1579

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	7012-132	5.0	5			1	1	1/1		
NP	SOLID	Neptunium in Soil	7012-132	5.0	5			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7012-132	5.0	5			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	7012-132	5.0	5			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	7012-132	5.0	2			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	7012-132	10.0	5			1	1	1/1		
Gas Proportional Counting												
93A	SOLID	Gross Alpha in Soil	7012-132	20.0	5			1	1	1/1		
93B	SOLID	Gross Beta in Soil	7012-132	15.0	5			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7012-132	15.0	5			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	7012-132	9.0	5			1	1	1/1		

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

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

SDG 7138
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1579

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B13CR3			R111044-01	7138-001	93A/93		01/02/02	01/05/02	MCM	Gross Alpha in Soil
200 East and West		SOLID	11/01/01	7138-001	93B/93		01/02/02	01/05/02	MCM	Gross Beta in Soil
B02-006-06	B02-006		11/06/01	7138-001	AM		12/13/01	01/05/02	MCM	Americium 241 in Soil
				7138-001	GAM		12/15/01	01/05/02	MCM	Gamma Scan
				7138-001	NP		12/14/01	01/05/02	MCM	Neptunium in Soil
				7138-001	PU		12/14/01	01/05/02	MCM	Plutonium, Isotopic in Solids
				7138-001	SR		12/03/01	01/05/02	MCM	Total Strontium in Soil
				7138-001	TH		12/13/01	01/08/02	MCM	Thorium, Isotopic in Soil
				7138-001	U		01/14/02	01/17/02	MCM	Uranium, Isotopic in Soil
				7138-001	U_T		12/14/01	01/05/02	MCM	Uranium, Total in Soil
B13CR4			R111044-02	7138-002	93A/93		01/02/02	01/05/02	MCM	Gross Alpha in Soil
200 East and West		SOLID	11/01/01	7138-002	93B/93		01/02/02	01/05/02	MCM	Gross Beta in Soil
B02-006-06	B02-006		11/06/01	7138-002	AM		12/13/01	01/05/02	MCM	Americium 241 in Soil
				7138-002	GAM		12/15/01	01/05/02	MCM	Gamma Scan
				7138-002	NP		12/14/01	01/05/02	MCM	Neptunium in Soil
				7138-002	PU		12/13/01	01/05/02	MCM	Plutonium, Isotopic in Solids
				7138-002	SR		12/03/01	01/05/02	MCM	Total Strontium in Soil
				7138-002	TH		12/13/01	01/08/02	MCM	Thorium, Isotopic in Soil
				7138-002	U		01/14/02	01/17/02	MCM	Uranium, Isotopic in Soil
				7138-002	U_T		12/14/01	01/05/02	MCM	Uranium, Total in Soil
B13CR5			R111044-03	7138-003	93A/93		01/02/02	01/05/02	MCM	Gross Alpha in Soil
200 East and West		SOLID	11/01/01	7138-003	93B/93		01/02/02	01/05/02	MCM	Gross Beta in Soil
B02-006-06	B02-006		11/06/01	7138-003	AM		12/14/01	01/05/02	MCM	Americium 241 in Soil
				7138-003	GAM		12/15/01	01/05/02	MCM	Gamma Scan
				7138-003	NP		12/14/01	01/05/02	MCM	Neptunium in Soil
				7138-003	PU		12/13/01	01/05/02	MCM	Plutonium, Isotopic in Solids
				7138-003	SR		12/03/01	01/05/02	MCM	Total Strontium in Soil
				7138-003	TH		12/13/01	01/08/02	MCM	Thorium, Isotopic in Soil
				7138-003	U_T		12/14/01	01/05/02	MCM	Uranium, Total in Soil

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

SDG 7138
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1579

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B13CR6			R111044-04	7138-004	93A/93		01/02/02	01/05/02	MCM	Gross Alpha in Soil
200 East and West		SOLID	11/01/01	7138-004	93B/93		01/02/02	01/05/02	MCM	Gross Beta in Soil
B02-006-06	B02-006		11/06/01	7138-004	AM		12/13/01	01/05/02	MCM	Americium 241 in Soil
				7138-004	GAM		12/15/01	01/05/02	MCM	Gamma Scan
				7138-004	NP		12/14/01	01/05/02	MCM	Neptunium in Soil
				7138-004	PU		12/13/01	01/05/02	MCM	Plutonium, Isotopic in Solids
				7138-004	SR		12/03/01	01/05/02	MCM	Total Strontium in Soil
				7138-004	TH		12/14/01	01/08/02	MCM	Thorium, Isotopic in Soil
				7138-004	U_T		12/14/01	01/05/02	MCM	Uranium, Total in Soil
B13CR7			R111044-05	7138-005	93A/93		01/04/02	01/08/02	MCM	Gross Alpha in Soil
200 East and West		SOLID	11/01/01	7138-005	93B/93		01/04/02	01/08/02	MCM	Gross Beta in Soil
B02-006-06	B02-006		11/06/01	7138-005	AM		12/13/01	01/05/02	MCM	Americium 241 in Soil
				7138-005	GAM		12/15/01	01/05/02	MCM	Gamma Scan
				7138-005	NP		12/14/01	01/05/02	MCM	Neptunium in Soil
				7138-005	PU		12/13/01	01/05/02	MCM	Plutonium, Isotopic in Solids
				7138-005	SR		12/03/01	01/05/02	MCM	Total Strontium in Soil
				7138-005	TH		12/13/01	01/08/02	MCM	Thorium, Isotopic in Soil
				7138-005	U_T		12/14/01	01/05/02	MCM	Uranium, Total in Soil
Method Blank			R111018-06	7133-006	93A/93		12/20/01	01/04/02	MCM	Gross Alpha in Soil
		SOLID		7133-006	93B/93		12/20/01	01/04/02	MCM	Gross Beta in Soil
	B02-006			7133-006	AM		12/13/01	01/04/02	MCM	Americium 241 in Soil
				7133-006	GAM		12/14/01	01/04/02	MCM	Gamma Scan
				7133-006	NP		12/14/01	01/04/02	MCM	Neptunium in Soil
				7133-006	PU		12/13/01	01/04/02	MCM	Plutonium, Isotopic in Solids
				7133-006	SR		12/03/01	01/04/02	MCM	Total Strontium in Soil
				7133-006	TH		12/12/01	01/04/02	MCM	Thorium, Isotopic in Soil
				7133-006	U_T		12/14/01	01/04/02	MCM	Uranium, Total in Soil
Method Blank			R111044-08	7138-008	U		01/14/02	01/17/02	MCM	Uranium, Isotopic in Soil
		SOLID								
	B02-006									

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

SDG 7138
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1579

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample			R111018-05	7133-005	93A/93		12/20/01	01/04/02	MCM	Gross Alpha in Soil
		SOLID		7133-005	93B/93		12/20/01	01/04/02	MCM	Gross Beta in Soil
	B02-006			7133-005	AM		12/13/01	01/04/02	MCM	Americium 241 in Soil
				7133-005	GAM		12/14/01	01/04/02	MCM	Gamma Scan
				7133-005	NP		12/14/01	01/04/02	MCM	Neptunium in Soil
				7133-005	PU		12/12/01	01/04/02	MCM	Plutonium, Isotopic in Solids
				7133-005	SR		12/03/01	01/04/02	MCM	Total Strontium in Soil
				7133-005	TH		12/12/01	01/04/02	MCM	Thorium, Isotopic in Soil
				7133-005	U_T		12/14/01	01/04/02	MCM	Uranium, Total in Soil
Lab Control Sample			R111044-07	7138-007	U		01/14/02	01/17/02	MCM	Uranium, Isotopic in Soil
		SOLID								
	B02-006									
Duplicate (R111044-01)			R111044-09	7138-009	U		01/14/02	01/17/02	MCM	Uranium, Isotopic in Soil
200 East and West		SOLID	11/01/01							
	B02-006		11/06/01							
Duplicate (R111044-03)			R111044-06	7138-006	93A/93		01/02/02	01/05/02	MCM	Gross Alpha in Soil
200 East and West		SOLID	11/01/01	7138-006	93B/93		01/02/02	01/05/02	MCM	Gross Beta in Soil
	B02-006		11/06/01	7138-006	AM		12/13/01	01/05/02	MCM	Americium 241 in Soil
				7138-006	GAM		12/15/01	01/05/02	MCM	Gamma Scan
				7138-006	NP		12/14/01	01/05/02	MCM	Neptunium in Soil
				7138-006	PU		12/13/01	01/05/02	MCM	Plutonium, Isotopic in Solids
				7138-006	SR		12/03/01	01/05/02	MCM	Total Strontium in Soil
				7138-006	TH		12/13/01	01/08/02	MCM	Thorium, Isotopic in Soil
				7138-006	U_T		12/14/01	01/05/02	MCM	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

SDG 7138
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1579

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
93A/93	B02-006	Gross Alpha in Soil	900.0_ALPHABETA_GPC	5			1	1	1	8
93B/93	B02-006	Gross Beta in Soil	900.0_ALPHABETA_GPC	5			1	1	1	8
AM	B02-006	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	5			1	1	1	8
GAM	B02-006	Gamma Scan	GAMMA_GS	5			1	1	1	8
NP	B02-006	Neptunium in Soil	NP237_LLE_PLATE_AEA	5			1	1	1	8
PU	B02-006	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	5			1	1	1	8
SR	B02-006	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	5			1	1	1	8
TH	B02-006	Thorium, Isotopic in Soil	THISO_IE_PLATE_AEA	5			1	1	1	8
U	B02-006	Uranium, Isotopic in Soil	UISO_PLATE_AEA	2			1	1	1	5
U_T	B02-006	Uranium, Total in Soil	UTOT_KPA	5			1	1	1	8
TOTALS				47			10	10	10	77

Lab id TMANC
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

R111018-06 Method Blank

METHOD BLANK

SDG	7138	Client/Case no	Hanford SDG H1579
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R111018-06	Client sample id	Method Blank
Dept sample id	7133-006	Material/Matrix	SOLID
		SAF No	B02-006

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

200 Area Source Chara. 200-CS-1 OU

QC-BLANK #40323

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

R111044-08 Method Blank

METHOD BLANK

SDG	7138	Client/Case no	Hanford SDG H1579
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R111044-08	Client sample id	Method Blank
Dept sample id	7138-008	Material/Matrix	SOLID
		SAF No	B02-006

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	-0.019	0.039	0.15	1.0	U	U
Uranium 235	15117-96-1	0	0.047	0.18	1.0	U	U
Uranium 238	U-238	0	0.039	0.15	1.0	U	U

200 Area Source Chara. 200-CS-1 OU

QC-BLANK 40847

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

R111018-05

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7138
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1579
Case no No. 630

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

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

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

200 Area Source Chara. 200-CS-1 OU

QC-LCS #40322

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

R111044-07 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7138
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1579
Case no No. 630

Lab sample id R111044-07
Dept sample id 7138-007

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

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Uranium 233/234	21.0	2.3	1.1	1.0		U	19.3	0.77	109	79-121	80-120
Uranium 235	17.9	2.1	0.27	1.0		U	15.7	0.63	114	77-123	80-120
Uranium 238	22.2	2.4	1.1	1.0		U	21.0	0.84	106	80-120	80-120

200 Area Source Chara. 200-CS-1 OU

QC-LCS 40846

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

R111044-09 B13CR3

DUPLICATE

SDG	7138			Client/Case no	Hanford SDG H1579
Contact	Melissa C. Mannion			Case no	No. 630
DUPLICATE		ORIGINAL			
Lab sample id	R111044-09	Lab sample id	R111044-01	Client sample id	B13CR3
Dept sample id	7138-009	Dept sample id	7138-001	Location/Matrix	200 East and West SOLID
		Received	11/06/01	Collected/Weight	11/01/01 08:40 1156 g
		% solids	87.4	Custody/SAF No	B02-006-06 B02-006

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Uranium 233/234	1.77	0.40	0.15	1.0		U	1.79	0.41	0.17		1	49	
Uranium 235	0.071	0.094	0.18	1.0	U	U	0.053	0.054	0.20	U	-		
Uranium 238	1.46	0.36	0.15	1.0		U	1.81	0.41	0.17		21	51	

200 Area Source Chara. 200-CS-1 OU

QC-DUP#1 40848

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

R111044-06 B13CR5

DUPLICATE

SDG	7138			Client/Case no	Hanford SDG H1579
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R111044-06	Lab sample id	R111044-03	Client sample id	B13CR5
Dept sample id	7138-006	Dept sample id	7138-003	Location/Matrix	200 East and West SOLID
		Received	11/06/01	Collected/Weight	11/01/01 09:10 1179 g
% solids	93.0	% solids	93.0	Custody/SAF No	B02-006-06 B02-006

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Gross Alpha	1.98	2.4	3.2	10	U	93A	3.91	2.8	3.1	J	66	193
Gross Beta	16.1	4.3	5.6	15		93B	15.7	5.1	7.5		3	71
Total Strontium	0.329	0.13	0.20	1.0	J	SR	0.386	0.11	0.13	J	16	75
Thorium 228	0.708	0.27	0.30			TH	0.599	0.38	0.41		17	108
Thorium 230	0.879	0.35	0.37	1.0	J	TH	0.446	0.37	0.50	U	65	116
Thorium 232	0.483	0.22	0.17	1.0	J	TH	0.335	0.22	0.28	J	36	115
Total Uranium (ug/g)	0.354	0.040	0.002	0.10	B	U_T	0.306	0.034	0.002	B	15	31
Neptunium 237	0.028	0.033	0.053	1.0	U	NP	0	0.070	0.10	U	-	
Plutonium 238	0.025	0.051	0.19	1.0	U	PU	0.097	0.097	0.18	U	-	
Plutonium 239/240	0	0.051	0.19	1.0	U	PU	0.024	0.048	0.18	U	-	
Americium 241	0	0.022	0.028	1.0	U	AM	0.023	0.032	0.036	U	-	
Potassium 40	11.7	0.97	0.38			GAM	9.62	1.1	0.82		20	38
Cobalt 60	U		0.053	0.050	U	GAM	U		0.058	U	-	
Cesium 137	U		0.046	0.10	U	GAM	U		0.047	U	-	
Radium 226	0.436	0.083	0.082	0.10		GAM	0.509	0.096	0.093		15	51
Radium 228	0.621	0.20	0.21	0.20		GAM	0.606	0.20	0.21		2	76
Europium 152	U		0.11	0.10	U	GAM	U		0.11	U	-	
Europium 154	U		0.20	0.10	U	GAM	U		0.17	U	-	
Europium 155	U		0.077	0.10	U	GAM	U		0.11	U	-	
Thorium 228	0.589	0.052	0.047			GAM	0.604	0.050	0.050		3	37
Thorium 232	0.621	0.20	0.21			GAM	0.606	0.20	0.21		2	76
Uranium 235	U		0.14		U	GAM	U		0.15	U	-	
Uranium 238	U		5.7		U	GAM	U		6.2	U	-	
Americium 241	U		0.055		U	GAM	U		0.15	U	-	

200 Area Source Chara. 200-CS-1 OU

QC-DUP#3 40423

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

R111044-01 B13CR3

DATA SHEET

SDG	7138	Client/Case no	Hanford	SDG H1579	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R111044-01	Client sample id	B13CR3		
Dept sample id	7138-001	Location/Matrix	200 East and West	SOLID	
Received	11/06/01	Collected/Weight	11/01/01 08:40	1156 g	
% solids	87.4	Custody/SAF No	B02-006-06	B02-006	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	8.00	4.2	4.5	10	J	93A
Gross Beta	12587-47-2	15.2	5.0	7.2	15		93B
Total Strontium	SR-RAD	0.004	0.13	0.27	1.0	U	SR
Thorium 228	14274-82-9	0.510	0.44	0.62		U	TH
Thorium 230	14269-63-7	0.362	0.36	0.48	1.0	U	TH
Thorium 232	TH-232	0.326	0.22	0.28	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	3.22	0.37	0.020	0.10		U_T
Uranium 233/234	U-233/234	1.79	0.41	0.17	1.0		U
Uranium 235	15117-96-1	0.053	0.054	0.20	1.0	U	U
Uranium 238	U-238	1.81	0.41	0.17	1.0		U
Neptunium 237	13994-20-2	0.029	0.058	0.087	1.0	U	NP
Plutonium 238	13981-16-3	0.056	0.041	0.039	1.0	J	PU
Plutonium 239/240	PU-239/240	5.07	0.36	0.056	1.0		PU
Americium 241	14596-10-2	0.772	0.27	0.20	1.0	J	AM
Potassium 40	13966-00-2	9.66	0.83	0.35			GAM
Cobalt 60	10198-40-0	U		0.051	0.050	U	GAM
Cesium 137	10045-97-3	4.13	0.13	0.057	0.10		GAM
Radium 226	13982-63-3	0.591	0.11	0.10	0.10		GAM
Radium 228	15262-20-1	0.662	0.20	0.22	0.20		GAM
Europium 152	14683-23-9	U		0.15	0.10	U	GAM
Europium 154	15585-10-1	U		0.17	0.10	U	GAM
Europium 155	14391-16-3	U		0.093	0.10	U	GAM
Thorium 228	14274-82-9	0.868	0.10	0.10			GAM
Thorium 232	TH-232	0.662	0.20	0.22			GAM
Uranium 235	15117-96-1	U		0.17		U	GAM
Uranium 238	U-238	U		5.6		U	GAM
Americium 241	14596-10-2	0.680	0.058	0.075			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	01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

R111044-02 B13CR4

DATA SHEET

SDG	7138	Client/Case no	Hanford	SDG H1579	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R111044-02	Client sample id	B13CR4		
Dept sample id	7138-002	Location/Matrix	200 East and West	SOLID	
Received	11/06/01	Collected/Weight	11/01/01 08:40	1096 g	
% solids	87.0	Custody/SAF No	B02-006-06	B02-006	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	6.19	3.3	3.2	10	J	93A
Gross Beta	12587-47-2	12.9	4.3	6.1	15	J	93B
Total Strontium	SR-RAD	0.053	0.093	0.13	1.0	U	SR
Thorium 228	14274-82-9	0.568	0.44	0.71		U	TH
Thorium 230	14269-63-7	0.304	0.35	0.42	1.0	U	TH
Thorium 232	TH-232	0.477	0.35	0.33	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	5.28	0.61	0.020	0.10		U_T
Uranium 233/234	U-233/234	2.31	0.47	0.17	1.0		U
Uranium 235	15117-96-1	0.027	0.054	0.21	1.0	U	U
Uranium 238	U-238	1.71	0.42	0.17	1.0		U
Neptunium 237	13994-20-2	0	0.069	0.10	1.0	U	NP
Plutonium 238	13981-16-3	0.055	0.055	0.21	1.0	U	PU
Plutonium 239/240	PU-239/240	3.31	0.65	0.21	1.0		PU
Americium 241	14596-10-2	0.539	0.23	0.22	1.0	J	AM
Potassium 40	13966-00-2	11.4	0.75	0.40			GAM
Cobalt 60	10198-40-0	U		0.038	0.050	U	GAM
Cesium 137	10045-97-3	4.94	0.12	0.050	0.10		GAM
Radium 226	13982-63-3	0.608	0.090	0.091	0.10		GAM
Radium 228	15262-20-1	0.878	0.16	0.15	0.20		GAM
Europium 152	14683-23-9	U		0.12	0.10	U	GAM
Europium 154	15585-10-1	U		0.12	0.10	U	GAM
Europium 155	14391-16-3	U		0.14	0.10	U	GAM
Thorium 228	14274-82-9	0.700	0.051	0.058			GAM
Thorium 232	TH-232	0.878	0.16	0.15			GAM
Uranium 235	15117-96-1	U		0.19		U	GAM
Uranium 238	U-238	U		4.7		U	GAM
Americium 241	14596-10-2	U		0.64		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	01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

R111044-03 **B13CR5**

DATA SHEET

SDG	7138	Client/Case no	Hanford	SDG H1579	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R111044-03	Client sample id	B13CR5		
Dept sample id	7138-003	Location/Matrix	200 East and West	SOLID	
Received	11/06/01	Collected/Weight	11/01/01 09:10	1179 g	
% solids	93.0	Custody/SAF No	B02-006-06	B02-006	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	3.91	2.8	3.1	10	J	93A
Gross Beta	12587-47-2	15.7	5.1	7.5	15		93B
Total Strontium	SR-RAD	0.386	0.11	0.13	1.0	J	SR
Thorium 228	14274-82-9	0.599	0.38	0.41			TH
Thorium 230	14269-63-7	0.446	0.37	0.50	1.0	U	TH
Thorium 232	TH-232	0.335	0.22	0.28	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	0.306	0.034	0.002	0.10	B	U_T
Neptunium 237	13994-20-2	0	0.070	0.10	1.0	U	NP
Plutonium 238	13981-16-3	0.097	0.097	0.18	1.0	U	PU
Plutonium 239/240	PU-239/240	0.024	0.048	0.18	1.0	U	PU
Americium 241	14596-10-2	0.023	0.032	0.036	1.0	U	AM
Potassium 40	13966-00-2	9.62	1.1	0.82			GAM
Cobalt 60	10198-40-0	U		0.058	0.050	U	GAM
Cesium 137	10045-97-3	U		0.047	0.10	U	GAM
Radium 226	13982-63-3	0.509	0.096	0.093	0.10		GAM
Radium 228	15262-20-1	0.606	0.20	0.21	0.20		GAM
Europium 152	14683-23-9	U		0.11	0.10	U	GAM
Europium 154	15585-10-1	U		0.17	0.10	U	GAM
Europium 155	14391-16-3	U		0.11	0.10	U	GAM
Thorium 228	14274-82-9	0.604	0.050	0.050			GAM
Thorium 232	TH-232	0.606	0.20	0.21			GAM
Uranium 235	15117-96-1	U		0.15		U	GAM
Uranium 238	U-238	U		6.2		U	GAM
Americium 241	14596-10-2	U		0.15		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	01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

R111044-04 B13CR6

DATA SHEET

SDG	7138	Client/Case no	Hanford	SDG H1579	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R111044-04	Client sample id	B13CR6		
Dept sample id	7138-004	Location/Matrix	200 East and West	SOLID	
Received	11/06/01	Collected/Weight	11/01/01 09:30	1301 g	
% solids	90.6	Custody/SAF No	B02-006-06	B02-006	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	6.70	3.8	4.2	10	J	93A
Gross Beta	12587-47-2	11.3	5.6	8.6	15	J	93B
Total Strontium	SR-RAD	0.363	0.11	0.13	1.0	J	SR
Thorium 228	14274-82-9	0.691	0.16	0.16			TH
Thorium 230	14269-63-7	0.501	0.20	0.30	1.0	J	TH
Thorium 232	TH-232	0.706	0.14	0.068	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	0.686	0.077	0.002	0.10	B	U_T
Neptunium 237	13994-20-2	0	0.080	0.12	1.0	U	NP
Plutonium 238	13981-16-3	0	0.053	0.20	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.053	0.20	1.0	U	PU
Americium 241	14596-10-2	0.013	0.035	0.049	1.0	U	AM
Potassium 40	13966-00-2	13.3	0.75	0.26			GAM
Cobalt 60	10198-40-0	U		0.025	0.050	U	GAM
Cesium 137	10045-97-3	U		0.026	0.10	U	GAM
Radium 226	13982-63-3	0.506	0.055	0.048	0.10		GAM
Radium 228	15262-20-1	0.704	0.12	0.11	0.20		GAM
Europium 152	14683-23-9	U		0.066	0.10	U	GAM
Europium 154	15585-10-1	U		0.097	0.10	U	GAM
Europium 155	14391-16-3	U		0.060	0.10	U	GAM
Thorium 228	14274-82-9	0.831	0.056	0.054			GAM
Thorium 232	TH-232	0.704	0.12	0.11			GAM
Uranium 235	15117-96-1	U		0.094		U	GAM
Uranium 238	U-238	U		3.4		U	GAM
Americium 241	14596-10-2	U		0.038		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	01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

R111044-05 B13CR7

DATA SHEET

SDG	7138	Client/Case no	Hanford	SDG H1579	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R111044-05	Client sample id	B13CR7		
Dept sample id	7138-005	Location/Matrix	200 East and West	SOLID	
Received	11/06/01	Collected/Weight	11/01/01 09:45	1217 g	
% solids	97.0	Custody/SAF No	B02-006-06	B02-006	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	3.54	2.8	3.2	10	J	93A
Gross Beta	12587-47-2	11.2	4.0	5.6	15	J	93B
Total Strontium	SR-RAD	0.115	0.12	0.21	1.0	U	SR
Thorium 228	14274-82-9	0.322	0.17	0.21			TH
Thorium 230	14269-63-7	0.810	0.34	0.36	1.0	J	TH
Thorium 232	TH-232	0.298	0.17	0.16	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	0.253	0.029	0.002	0.10	B	U_T
Neptunium 237	13994-20-2	0.007	0.028	0.053	1.0	U	NP
Plutonium 238	13981-16-3	0	0.11	0.42	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.11	0.42	1.0	U	PU
Americium 241	14596-10-2	0.040	0.044	0.042	1.0	U	AM
Potassium 40	13966-00-2	10.5	1.1	0.73			GAM
Cobalt 60	10198-40-0	U		0.052	0.050	U	GAM
Cesium 137	10045-97-3	U		0.043	0.10	U	GAM
Radium 226	13982-63-3	0.334	0.087	0.091	0.10		GAM
Radium 228	15262-20-1	0.496	0.24	0.24	0.20		GAM
Europium 152	14683-23-9	U		0.097	0.10	U	GAM
Europium 154	15585-10-1	U		0.18	0.10	U	GAM
Europium 155	14391-16-3	U		0.11	0.10	U	GAM
Thorium 228	14274-82-9	0.518	0.047	0.049			GAM
Thorium 232	TH-232	0.496	0.24	0.24			GAM
Uranium 235	15117-96-1	U		0.15		U	GAM
Uranium 238	U-238	U		6.2		U	GAM
Americium 241	14596-10-2	U		0.14		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	01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

Test AM Matrix SOLID
SDG 7138
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1579

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241
Preparation batch 7012-132					
B13CR3	R111044-01			7138-001	0.772 J
B13CR4	R111044-02			7138-002	0.539 J
B13CR5	R111044-03			7138-003	U
B13CR6	R111044-04			7138-004	U
B13CR7	R111044-05			7138-005	U
BLK (QC ID=40323)	R111018-06			7133-006	U
LCS (QC ID=40322)	R111018-05			7133-005	ok
Duplicate (R111044-03)	R111044-06			7138-006	- U
Nominal values and limits from method 200 Area Source Chara. 200-CS-1 OU				RDLs (pCi/g)	1.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-132 2σ prep error 5.0 % Reference Lab Notebook 7012 pg. 132																
B13CR3	R111044-01			0.20	0.500			80		112			42	12/11/01	12/13	SS-060
B13CR4	R111044-02			0.22	0.500			73		112			42	12/11/01	12/13	SS-062
B13CR5	R111044-03			0.036	0.500			72		982			43	12/11/01	12/14	SS-050
B13CR6	R111044-04			0.049	0.500			74		712			42	12/11/01	12/13	SS-043
B13CR7	R111044-05			0.042	0.500			71		712			42	12/11/01	12/13	SS-044
BLK (QC ID=40323)	R111018-06			0.21	0.500			76		112				12/11/01	12/13	SS-057
LCS (QC ID=40322)	R111018-05			0.17	0.500			102		112				12/11/01	12/13	SS-055
Duplicate (R111044-03) (QC ID=40423)	R111044-06			0.028	0.500			83		702			42	12/11/01	12/13	SS-045
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

Test	AM
Matrix	SOLID
SDG	7138
Contact	Melissa C. Mannion

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	No. 630
Contract	SDG H1579

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

AVERAGES ± 2 SD	MDA	0.12	±	0.18
FOR 8 SAMPLES	YIELD	79	±	20

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

Test NP Matrix SOLID
SDG 7138
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1579

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 7012-132						
B13CR3	R111044-01			7138-001	U	
B13CR4	R111044-02			7138-002	U	
B13CR5	R111044-03			7138-003	U	
B13CR6	R111044-04			7138-004	U	
B13CR7	R111044-05			7138-005	U	
BLK (QC ID=40323)	R111018-06			7133-006	U	
LCS (QC ID=40322)	R111018-05			7133-005	ok	
Duplicate (R111044-03)	R111044-06			7138-006	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
200 Area Source Chara. 200-CS-1 OU						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-132	2σ prep error 5.0 %			Reference Lab Notebook 7012 pg. 132												
B13CR3	R111044-01			0.087	0.500			68		114			43	12/11/01	12/14	SS-065
B13CR4	R111044-02			0.10	0.500			61		115			43	12/11/01	12/14	SS-066
B13CR5	R111044-03			0.10	0.500			64		112			43	12/11/01	12/14	SS-055
B13CR6	R111044-04			0.12	0.500			55		112			43	12/11/01	12/14	SS-056
B13CR7	R111044-05			0.053	0.500			47		711			43	12/11/01	12/14	SS-047
BLK (QC ID=40323)	R111018-06			0.10	0.500			61		114				12/11/01	12/14	SS-063
LCS (QC ID=40322)	R111018-05			0.084	0.500			73		114				12/11/01	12/14	SS-062
Duplicate (R111044-03) (QC ID=40423)	R111044-06			0.053	0.500			57		712			43	12/11/01	12/14	SS-048
Nominal values and limits from method				1.0	0.500			20-105		100			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

Test	NP
Matrix	SOLID
SDG	7138
Contact	Melissa C. Mannion

METHOD SUMMARY, cont.

NEPTUNIUM IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	No. 630
Contract	SDG H1579

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 8 SAMPLES	MDA	0.087	±	0.047
	YIELD	61	±	16

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

Test PU Matrix SOLID
SDG 7138
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1579

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238	Plutonium 239/240
Preparation batch 7012-132						
B13CR3	R111044-01			7138-001	0.056 J	5.07
B13CR4	R111044-02			7138-002	U	3.31
B13CR5	R111044-03			7138-003	U	U
B13CR6	R111044-04			7138-004	U	U
B13CR7	R111044-05			7138-005	U	U
BLK (QC ID=40323)	R111018-06			7133-006	U	U
LCS (QC ID=40322)	R111018-05			7133-005	ok	ok
Duplicate (R111044-03)	R111044-06			7138-006	- U	- U
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0
200 Area Source Chara. 200-CS-1 OU						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-132	2σ prep error 5.0 %			Reference Lab Notebook 7012 pg. 132												
B13CR3	R111044-01			0.056	0.500			46		981			43	12/11/01	12/14	SS-048
B13CR4	R111044-02			0.21	0.500			79		111			42	12/11/01	12/13	SS-063
B13CR5	R111044-03			0.18	0.500			89		111			42	12/11/01	12/13	SS-064
B13CR6	R111044-04			0.20	0.500			77		112			42	12/11/01	12/13	SS-065
B13CR7	R111044-05			0.42	0.500			39		112			42	12/11/01	12/13	SS-066
BLK (QC ID=40323)	R111018-06			0.19	0.500			88		105				12/11/01	12/13	SS-043
LCS (QC ID=40322)	R111018-05			0.027	0.500			77		1120				12/11/01	12/12	SS-066
Duplicate (R111044-03) (QC ID=40423)	R111044-06			0.19	0.500			80		105			42	12/11/01	12/13	SS-045
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

Test	PU
Matrix	SOLID
SDG	7138
Contact	Melissa C. Mannion

METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	No. 630
Contract	SDG H1579

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	MDA	0.18	±	0.24
FOR 8 SAMPLES	YIELD	72	±	38

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

Test TH Matrix SOLID
SDG 7138
Contact Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1579

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 230
Preparation batch 7012-132					
B13CR3	R111044-01			7138-001	U
B13CR4	R111044-02			7138-002	U
B13CR5	R111044-03			7138-003	U
B13CR6	R111044-04			7138-004	0.501 J
B13CR7	R111044-05			7138-005	0.810 J
BLK (QC ID=40323)	R111018-06			7133-006	U
LCS (QC ID=40322)	R111018-05			7133-005	ok
Duplicate (R111044-03)	R111044-06			7138-006	ok J
Nominal values and limits from method				RDLs (pCi/g)	1.0

200 Area Source Chara. 200-CS-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-132	2σ prep error 5.0 %			Reference Lab Notebook 7012 pg. 132												
B13CR3	R111044-01			0.48	0.250			101		171			42	12/08/01	12/13	SS-019
B13CR4	R111044-02			0.42	0.250			84		171			42	12/08/01	12/13	SS-021
B13CR5	R111044-03			0.50	0.250			101		171			42	12/08/01	12/13	SS-022
B13CR6	R111044-04			0.30	0.250			93		982			43	12/08/01	12/14	SS-022
B13CR7	R111044-05			0.36	0.250			104		213			42	12/08/01	12/13	SS-032
BLK (QC ID=40323)	R111018-06			0.29	0.250			66		1146				12/08/01	12/12	SS-045
LCS (QC ID=40322)	R111018-05			0.28	0.250			49		1164				12/08/01	12/12	SS-044
Duplicate (R111044-03) (QC ID=40423)	R111044-06			0.37	0.250			101		214			42	12/08/01	12/13	SS-041
Nominal values and limits from method				1.0	0.250			20-105		150			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

Test TH	Matrix SOLID
SDG 7138	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract No. 630	
Contract SDG H1579	

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	MDA	0.38	±	0.17
FOR 8 SAMPLES	YIELD	87	±	40

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

Test U Matrix SOLID
SDG 7138
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1579

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 7012-132											
B13CR3	R111044-01			7138-001	1.79	U	1.81	99	32	3	3
B13CR4	R111044-02			7138-002	2.31	U	1.71	135	43	2	3
BLK (QC ID=40847)	R111044-08			7138-008	U	U	U				
LCS (QC ID=40846)	R111044-07			7138-007	ok	ok	ok				
Duplicate (R111044-01)	R111044-09			7138-009	ok	- U	ok	121	41	5	7
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 118		3	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-132 2σ prep error 5.0 % Reference Lab Notebook 7012 pg. 132																
B13CR3	R111044-01			0.20	0.500			94		114			74	01/14/02	01/14	SS-032
B13CR4	R111044-02			0.21	0.500			92		114			74	01/14/02	01/14	SS-033
BLK (QC ID=40847)	R111044-08			0.18	0.500			88		135				01/14/02	01/14	SS-047
LCS (QC ID=40846)	R111044-07			1.1	0.500			82		1018				01/14/02	01/14	SS-051
Duplicate (R111044-01) (QC ID=40848)	R111044-09			0.18	0.500			87		136			74	01/14/02	01/14	SS-048
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 5 SAMPLES
MDA 0.37 ± 0.81
YIELD 89 ± 9

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

Test SR Matrix SOLID
SDG 7138
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1579

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 7012-132					
B13CR3	R111044-01			7138-001	U
B13CR4	R111044-02			7138-002	U
B13CR5	R111044-03			7138-003	0.386 J
B13CR6	R111044-04			7138-004	0.363 J
B13CR7	R111044-05			7138-005	U
BLK (QC ID=40323)	R111018-06			7133-006	U
LCS (QC ID=40322)	R111018-05			7133-005	ok
Duplicate (R111044-03)	R111044-06			7138-006	ok J

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

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-132 2σ prep error 10.0 % Reference Lab Notebook 7012 pg. 132																
B13CR3	R111044-01			0.27	1.00			96		100			32	12/03/01	12/03	GRB-232
B13CR4	R111044-02			0.13	1.00			98		400			32	12/03/01	12/03	GRB-217
B13CR5	R111044-03			0.13	1.00			98		400			32	12/03/01	12/03	GRB-218
B13CR6	R111044-04			0.13	1.00			98		400			32	12/03/01	12/03	GRB-219
B13CR7	R111044-05			0.21	1.00			98		100			32	12/03/01	12/03	GRB-218
BLK (QC ID=40323)	R111018-06			0.27	1.00			92		100				12/03/01	12/03	GRB-230
LCS (QC ID=40322)	R111018-05			0.16	1.00			90		200				12/03/01	12/03	GRB-206
Duplicate (R111044-03) (QC ID=40423)	R111044-06			0.20	1.00			98		100			32	12/03/01	12/03	GRB-217
Nominal values and limits from method				1.0	1.00			30-105		100			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

Test SR	Matrix SOLID
SDG 7138	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H1579	

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

AVERAGES ± 2 SD	MDA	0.19	±	0.12
FOR 8 SAMPLES	YIELD	96	±	6

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

Test 93A Matrix SOLID
SDG 7138
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS ALPHA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1579

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha	
Preparation batch 7012-132						
B13CR3	R111044-01	93		7138-001	8.00	J
B13CR4	R111044-02	93		7138-002	6.19	J
B13CR5	R111044-03	93		7138-003	3.91	J
B13CR6	R111044-04	93		7138-004	6.70	J
B13CR7	R111044-05	93		7138-005	3.54	J
BLK (QC ID=40323)	R111018-06	93		7133-006	U	
LCS (QC ID=40322)	R111018-05	93		7133-005	ok	
Duplicate (R111044-03)	R111044-06	93		7138-006	ok	U

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

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-132	2σ prep error 20.0 % Reference Lab Notebook 7012 pg. 132															
B13CR3	R111044-01	93		4.5	0.100			41		100			62	12/07/01	01/02	GRB-110
B13CR4	R111044-02	93		3.2	0.100			40		100			62	12/07/01	01/02	GRB-111
B13CR5	R111044-03	93		3.1	0.100			39		100			62	12/07/01	01/02	GRB-112
B13CR6	R111044-04	93		4.2	0.100			38		100			62	12/07/01	01/02	GRB-105
B13CR7	R111044-05	93		3.2	0.100			36		100			64	12/07/01	01/04	GRB-101
BLK (QC ID=40323)	R111018-06	93		2.4	0.100			21		100				12/07/01	12/20	GRB-101
LCS (QC ID=40322)	R111018-05	93		3.7	0.100			22		100				12/07/01	12/20	GRB-115
Duplicate (R111044-03) (QC ID=40423)	R111044-06	93		3.2	0.100			40		100			62	12/07/01	01/02	GRB-101
Nominal values and limits from method				10	0.100			5-250		100			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

Test 93A	Matrix SOLID
SDG 7138	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

GROSS ALPHA IN SOIL

GAS PROPORTIONAL COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H1579	

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

AVERAGES ± 2 SD	MDA	3.4	±	1.3
FOR 8 SAMPLES	RESIDUE	35	±	16

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

Test 93B Matrix SOLID
SDG 7138
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS BETA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1579

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta	
Preparation batch 7012-132						
B13CR3	R111044-01	93		7138-001	15.2	
B13CR4	R111044-02	93		7138-002	12.9	J
B13CR5	R111044-03	93		7138-003	15.7	
B13CR6	R111044-04	93		7138-004	11.3	J
B13CR7	R111044-05	93		7138-005	11.2	J
BLK (QC ID=40323)	R111018-06	93		7133-006	U	
LCS (QC ID=40322)	R111018-05	93		7133-005	ok	
Duplicate (R111044-03)	R111044-06	93		7138-006	ok	

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

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-132 2σ prep error 15.0 % Reference Lab Notebook 7012 pg. 132																
B13CR3	R111044-01	93		7.2	0.100			41		100			62	12/07/01	01/02	GRB-110
B13CR4	R111044-02	93		6.1	0.100			40		100			62	12/07/01	01/02	GRB-111
B13CR5	R111044-03	93		7.5	0.100			39		100			62	12/07/01	01/02	GRB-112
B13CR6	R111044-04	93		8.6	0.100			38		100			62	12/07/01	01/02	GRB-105
B13CR7	R111044-05	93		5.6	0.100			36		100			64	12/07/01	01/04	GRB-101
BLK (QC ID=40323)	R111018-06	93		5.5	0.100			21		100				12/07/01	12/20	GRB-101
LCS (QC ID=40322)	R111018-05	93		7.4	0.100			22		100				12/07/01	12/20	GRB-115
Duplicate (R111044-03) (QC ID=40423)	R111044-06	93		5.6	0.100			40		100			62	12/07/01	01/02	GRB-101
Nominal values and limits from method				15	0.100			5-250		100			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

Test 938	Matrix SOLID
SDG 7138	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

GROSS BETA IN SOIL

GAS PROPORTIONAL COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H1579	

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

AVERAGES ± 2 SD	MDA	6.7	±	2.3
FOR 8 SAMPLES	RESIDUE	35	±	16

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

Test GAM Matrix SOLID
SDG 7138
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN
GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1579

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 7012-132								
B13CR3	R111044-01			7138-001	U		4.13	
B13CR4	R111044-02			7138-002	U		4.94	
B13CR5	R111044-03			7138-003	U		U	
B13CR6	R111044-04			7138-004	U		U	
B13CR7	R111044-05			7138-005	U		U	
BLK (QC ID=40323)	R111018-06			7133-006	U		U	
LCS (QC ID=40322)	R111018-05			7133-005	ok		ok	
Duplicate (R111044-03)	R111044-06			7138-006	-	U	-	U
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 7012-132	2σ prep error 15.0 % Reference Lab Notebook 7012 pg. 132															
B13CR3	R111044-01			0.42	738					117			44	11/30/01	12/15	02,01,00
B13CR4	R111044-02			0.37	705					123			44	11/30/01	12/15	MB,05,00
B13CR5	R111044-03			0.38	720					122			44	11/30/01	12/15	02,03,00
B13CR6	R111044-04			0.22	888					103			44	11/30/01	12/15	MB,07,00
B13CR7	R111044-05			0.40	819					103			44	11/30/01	12/15	02,03,00
BLK (QC ID=40323)	R111018-06			0.13	737					118				11/30/01	12/14	MB,05,00
LCS (QC ID=40322)	R111018-05			0.042	737					102				11/30/01	12/14	01,01,00
Duplicate (R111044-03) (QC ID=40423)	R111044-06			0.39	720					102			44	11/30/01	12/15	02,01,00
Nominal values and limits from method				0.050	737					100			180			

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

AVERAGES ± 2 SD FOR 8 SAMPLES
MDA 0.29 ± 0.29
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

Test U T Matrix SOLID
SDG 7138
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract No. 630
Contract SDG H1579

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium
Preparation batch 7012-132					
B13CR3	R111044-01			7138-001	3.22
B13CR4	R111044-02			7138-002	5.28
B13CR5	R111044-03			7138-003	0.306
B13CR6	R111044-04			7138-004	0.686
B13CR7	R111044-05			7138-005	0.253
BLK (QC ID=40323)	R111018-06			7133-006	0.004 J
LCS (QC ID=40322)	R111018-05			7133-005	ok
Duplicate (R111044-03)	R111044-06			7138-006	ok
Nominal values and limits from method 200 Area Source Chara. 200-CS-1 OU				RDLs (ug/g)	0.10

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA ug/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-132 2σ prep error 9.0 % Reference Lab Notebook 7012 pg. 132																
B13CR3	R111044-01			0.020	0.100								43	12/14/01	12/14	KPA-001
B13CR4	R111044-02			0.020	0.100								43	12/14/01	12/14	KPA-001
B13CR5	R111044-03			0.002	0.100								43	12/14/01	12/14	KPA-001
B13CR6	R111044-04			0.002	0.100								43	12/14/01	12/14	KPA-001
B13CR7	R111044-05			0.002	0.100								43	12/14/01	12/14	KPA-001
BLK (QC ID=40323)	R111018-06			0.002	0.100									12/14/01	12/14	KPA-001
LCS (QC ID=40322)	R111018-05			0.020	0.100									12/14/01	12/14	KPA-001
Duplicate (R111044-03) (QC ID=40423)	R111044-06			0.002	0.0900								43	12/14/01	12/14	KPA-001
Nominal values and limits from method				0.10	0.100								180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/17/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1579

Test U T Matrix SOLID
SDG 7138
Contact Melissa C. Mannion

METHOD SUMMARY, cont.

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract No. 630
Contract SDG H1579

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

AVERAGES ± 2 SD	MDA	0.009 ± 0.019
FOR 8 SAMPLES	YIELD	±

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/17/02

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-006-06	Page 1 of 1

Collector: Bowers DL/Watson D	Company Contact: Cearlock, CS — Telephone No.: 372-9638	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Soil Samplin	Sampling Location: 200 East & West H1579 (7138)	SAF No.: B02-006	Air Quality ☐
Ice Chest No.: ERC00-005	Field Logbook No.: EL 1551 — COA: B20CS1673C	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA	Offsite Property No.: A020004	Bill of Lading/Air Bill No.: 4235 7954 - 8526	

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	None		
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	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		

DELETE 11-1-01

Sample No.	Matrix*	Sample Date	Sample Time								
B13CR3	SOIL	11-01-01	0840	X							
B13CR4	SOIL	11-01-01	0840	X							
B13CR5	SOIL	11-01-01	0910	X							
B13CR6	SOIL	11-01-01	0930	X							
B13CR7	SOIL	11-01-01	0945	X							

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: CS Watson/ES Smith	11-1-01 1115	REF. 3A 3728 BLDG	11-1-01 1115
Relinquished By/Removed From: Ref 3A 3728	11-5-01 0900	Received By/Stored In: R.L. Thorer	11-5-01 0900
Relinquished By/Removed From: R.L. Thorer ERC	11-5-01 0900	Received By/Stored In: FEDEX	11-05-01
Relinquished By/Removed From: FED. EXPRESS	11-06-01 9:30	Received By/Stored In: 8CA-2 C.L. Hoekes E. MATSUI	11-06-01 9:30
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

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

(1) Gross Alpha; Gross Beta; Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Radium-228}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Neptunium-237; Isotopic Uranium
(2) ~~ICP Metals - 6010A (Superfund) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Superfund Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 (CV); Chromium Hex - 7196~~
(3) ~~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~~

11-1-01

use B13CL5 for T.A. on all samples

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)

"Kessner, Joan H" <JHKessne@mail.bhi-erc.com>

01/09/2002 09:15 AM

To: 'melissa mannion' <mmannion@eberlineservices.com>
cc: "Trent, Stephen J" <SJTrent@mail.bhi-erc.com>
Subject: B02-006: SDG H1579 need some Iso-U

Melissa---
The client has reviewed SDG H1579 and would like to have Iso-U run on samples B13CR3 and B13CR4.
Please let me know what the expected TAT will be.
Thanks,
Joan

ThermoRetec
Richmond Laboratory

Analytical Services

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

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

CoC No. BD2-006-06

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

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 5 SAMPLES
7. Number of containers per sample: 1 EACH (Or see CoC _____)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____
13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by E. L. Maestas Date: 11-06-01 Time: 9:30 Am

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

Form SCP-01.2, 09-25-00
Previous editions of this form may be used.

"50 years of quality nuclear services"

ORIGINAL
Dayes

SDR # B02-050
Revision #: 0
Date Initiated: 01/09/02

SAMPLE DISPOSITION RECORD

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

Laboratory: TMA/RECRA

Task Manager: C. S. Cearlock

Sampling Information:
Number of Samples: 2
ID Numbers: B13CR3, B13CR4
Matrix: Soil
Collection Date: 11/01/01

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

Type: Addition of Analyses

Description: Addition of Toxic Characteristic Leach Procedure For Cadmium, Lead, and Mercury

Disposition:

Description: The Groundwater/Vadose Zone Integration project requested that the listed sample be analyzed for cadmium, lead, and mercury using the Toxic Characteristic Leach Procedure (TCLP). The request was made after the laboratory had received the samples.

Justification: TCLP data for cadmium, lead, and mercury are needed by the project to satisfy waste designation requirements.

Approval Signatures:

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

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

ORIGINAL
Dayes

SDR # B02-048
Revision #: 0
Date Initiated: 01/07/02

SAMPLE DISPOSITION RECORD

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

Laboratory: TMA/RECRA

Task Manager: C. S. Cearlock

Sampling Information:
Number of Samples: 2
ID Numbers: B13CR3, B13CR4
Matrix: Soil
Collection Date: 11/01/01

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

Type: Clarification of Direction

Description: Laboratory to Proceed With Isotopic Uranium Analyses

Disposition:

Description: After reviewing the total uranium results for the listed samples, the Groundwater/Vadose Zone Integration Project has requested that the laboratory proceed with the isotopic uranium analyses for these samples.

Justification: Total uranium results for the listed samples exceeded levels that would require isotopic uranium analyses to be conducted.

Approval Signatures:

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

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

LIONVILLE LABORATORY INC.

4 February 2002

Joan Kessner
Bechtel-Hanford, Inc.
3190 Washington Way
MSIN H9-03
Richland, WA 99352

Subject: Contract No. 630
Analytical Data Package

Dear Ms. Kessner:

Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

LvLI Batch #	0201L842
SDG #	H1579 addon
SAF #	B02-006
Date Relogged	1-11-02
# Samples	1
Matrix	Soil
Volatiles	
Semivolatiles	
Pest/PCB	
DRO/GRO	
GC Scan	
Metals	X
Inorganics	

The electronic data deliverable (EDD) will be emailed shortly. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,
Lionville Laboratory Incorporated

Orlette S. Johnson
Project Manager

r:\group\pm\orlette\tnu-hanford\data\bc_ltr.doc

RECEIVED FEB 2002

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

FEB 2002 RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-006 H1579

DATE RECEIVED: 01/24/02 LVL LOT # :0201L842

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13CR3						
TCLP	001	S	02LTO170	11/01/01	01/29/02	01/30/02
B13CR4						
TCLP	002	S	02LTO170	11/01/01	01/29/02	01/30/02
B13CR3						
CADMIUM, TCLP LEACHA	003	W	02L0044	01/30/02	01/31/02	01/31/02
CADMIUM, TCLP LEACHA	003 REP	W	02L0044	01/30/02	01/31/02	01/31/02
MERCURY, TCLP LEACHA	003	W	02C0037	01/30/02	01/30/02	01/31/02
MERCURY, TCLP LEACHA	003 REP	W	02C0037	01/30/02	01/30/02	01/31/02
MERCURY, TCLP LEACHA	003 MS	W	02C0037	01/30/02	01/30/02	01/31/02
LEAD, TCLP LEACHATE	003	W	02L0044	01/30/02	01/31/02	01/31/02
LEAD, TCLP LEACHATE	003 REP	W	02L0044	01/30/02	01/31/02	01/31/02
B13CR4						
CADMIUM, TCLP LEACHA	004	W	02L0044	01/30/02	01/31/02	01/31/02
CADMIUM, TCLP LEACHA	004 MS	W	02L0044	01/30/02	01/31/02	01/31/02
MERCURY, TCLP LEACHA	004	W	02C0037	01/30/02	01/30/02	01/31/02
LEAD, TCLP LEACHATE	004	W	02L0044	01/30/02	01/31/02	01/31/02
LEAD, TCLP LEACHATE	004 MS	W	02L0044	01/30/02	01/31/02	01/31/02

LAB QC:

CADMIUM LABORATORY	LC1 BS	W	02L0044	N/A	01/31/02	01/31/02
CADMIUM, TCLP LEACHA	MB1	W	02L0044	N/A	01/31/02	01/31/02
CADMIUM, TCLP LEACHA	MB2	W	02L0044	N/A	01/31/02	01/31/02
MERCURY LABORATORY	LC1 BS	W	02C0037	N/A	01/30/02	01/31/02
MERCURY, TOTAL	MB1	W	02C0037	N/A	01/30/02	01/31/02
MERCURY, TCLP LEACHA	MB2	W	02C0037	N/A	01/30/02	01/31/02
LEAD LABORATORY	LC1 BS	W	02L0044	N/A	01/31/02	01/31/02
LEAD, TCLP LEACHATE	MB1	W	02L0044	N/A	01/31/02	01/31/02
LEAD, TCLP LEACHATE	MB2	W	02L0044	N/A	01/31/02	01/31/02

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B02-006
LVL#: 0201L842
SDG/SAF#: H1579/B02-006

W.O.#: 11343-606-001-9999-00
Date Received: 01-24-02

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 TCLP leachate samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. The samples were reported with a six fold dilution due to sample matrix.

   This is a relog of LVL batch# 0112L279-001, 002 per SDR# 02PM005.

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.

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. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

11. The TCLP extract from samples B13CR3 for Mercury and B13CR4 for ICP was selected for the matrix spike (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria.

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 12 pages.

12. 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.

13. 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
Laboratory Manager
Lionville Laboratory Incorporated

02-01-02
Date

gmb/m01-842

LVLI
LIONVILLE LABORATORY INC

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 02PM005

Initiator: C Johnson Batch: 01111279 Parameter: metals
Date: 1/24/02 Samples: -001, -002 Matrix: Soil
Client: TNU Hanford H1579 Method: SW846/MCAWW/CLP/ Prep Batch:

1. Reason for SDR

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

b. General Discrepancy

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

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

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

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

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

Other Description:
TCLP Cd, Pb, Hg
7day TAT

4. Project Manager Instructions...signature/date: Arlene Johnson 1/24/02

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

5. Final Action...signature/date: [illegible] 1-24-02

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

Other Explanation:
Relogged to 02014842

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	2	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rychlak/Layman
__	X QA (file): Alberts	1	✓ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

QA-105-A-0801

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 0201L842

Leaching Procedure: __1310 ✓1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A ✓3010A __3015 __3020A __3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

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

Other:_____ Method:_____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

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

4. Flame AA.

5. Graphite Furnace AA.

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

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/01/02

CLIENT: TNUHANFORD B02-006 H1579 LVL LOT #: 0201L842

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B13CR3	Cadmium, TCLP Leachate	20.0	UG/L	1.8	6.0
		Mercury, TCLP Leachate	0.10 u	UG/L	0.10	1.0
		Lead, TCLP Leachate	159	UG/L	13.2	6.0
-004	B13CR4	Cadmium, TCLP Leachate	14.3	UG/L	1.8	6.0
		Mercury, TCLP Leachate	0.10 u	UG/L	0.10	1.0
		Lead, TCLP Leachate	244	UG/L	13.2	6.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/01/02

CLIENT: TNUHANFORD B02-006 H1579 LVL LOT #: 0201L842

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	02L0044-MB1	Cadmium, TCLP Leachate	0.30 u	UG/L	0.30	1.0
		Lead, TCLP Leachate	2.2 u	UG/L	2.2	1.0
BLANK2	02L0044-MB2	Cadmium, TCLP Leachate	1.8 u	UG/L	1.8	6.0
		Lead, TCLP Leachate	13.2 u	UG/L	13.2	6.0
BLANK1	02C0037-MB1	Mercury, Total	0.10 u	UG/L	0.10	1.0
BLANK2	02C0037-MB2	Mercury, TCLP Leachate	0.10 u	UG/L	0.10	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/01/02

CLIENT: TNUHANFORD B02-006 H1579 LVL LOT #: 0201L842

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-003	B13CR3	Mercury, TCLP Leachate	186	0.10u	200	93.2	50.0
-004	B13CR4	Cadmium, TCLP Leachate	1050	14.3	1000	103.4	6.0
		Lead, TCLP Leachate	5350	244	5000	102.0	6.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/01/02

CLIENT: TNUHANFORD B02-006 H1579 LVL LOT #: 0201L842

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-003REP	B13CR3	Cadmium, TCLP Leachate	20.0	21.2	5.8	6.0
		Mercury, TCLP Leachate	0.10u	0.10u	NC	1.0
		Lead, TCLP Leachate	159	151	5.1	6.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 02/01/02

CLIENT: TNUHANFORD B02-006 H1579 LVL LOT #: 0201L842

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	02L0044-LC1	Cadmium, LCS	242	250	UG/L	96.8
		Lead, LCS	2430	2500	UG/L	97.3
LCS1	02C0037-LC1	Mercury, LCS	5.3	5.0	UG/L	105.8

Lionville Laboratory Use Only
0201L842

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client: TNU-Hanford B02-006
Est. Final Proj. Sampling Date:
Project #: 11343-606-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: gs
QC: SPEC Del: STD TAT: 7 day

Date Rec'd: 1-24-02 Date Due: 1-31-02

Refrigerator #								3								
#/Type Container	Liquid															
	Solid							1AG								
Volume	Liquid															
	Solid							500								
Preservatives								1								
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
		Lionville Laboratory Use Only														
								TCLP	MCDTC MPBTC MHGTC							

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	TCLP	MCDTC MPBTC MHGTC
001	B13CR3			S	11-1-01	1140		
002	B13CR4			S	11-1-01	0840		
003	B13CR3 tclp of 001			L	X			✓
004	B13CR4 tclp of 002			L	X			✓

Special Instructions: SAF # B02-006
Run Matrix QC
Relog of 0111L279-001, 002
for TCLP Cd, Pb, Hg

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

Lionville Laboratory Use Only

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

N/A

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. ____ °C

Relinquished by	Received by	Date	Time
RELOG			

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

LIONVILLE LABORATORY INC.

07 December 2001

Joan Kessner
Bechtel-Hanford, Inc.
3190 Washington Way
MSIN H9-03
Richland, WA 99352

Subject: Contract No. 630
Analytical Data Package

Dear Ms. Kessner:

Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

LvLI Batch #	0111L279
SDG #	H1579
SAF #	B02-006
Date Received	11-6-01
# Samples	5
Matrix	Soil
Volatiles	X
Semivolatiles	X
Pest/PCB	X
DRO/GRO	X
GC Scan	X
Metals	X
Inorganics	X

The electronic data deliverable (EDD) will be emailed shortly. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,
Lionville Laboratory Incorporated

Orlette S. Johnson
Project Manager

DEC 2001
RECEIVED

r:\group\pm\orlette\tnu-hanford\data\bc_ltr.doc

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

DEC 2001
RECEIVED

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-006 H1579

DATE RECEIVED: 11/06/01 LVL LOT # :0111L279

CLIENT ID	LVL #		MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13CR3	001		S	01LVJ033	11/01/01	N/A	11/13/01
B13CR3	001	R1	S	01LVJ033	11/01/01	N/A	11/13/01
B13CR4	002		S	01LVJ033	11/01/01	N/A	11/13/01
B13CR4	002	R1	S	01LVJ033	11/01/01	N/A	11/13/01
B13CR5	003		S	01LVJ033	11/01/01	N/A	11/13/01
B13CR5	003	R1	S	01LVJ033	11/01/01	N/A	11/13/01
B13CR6	004		S	01LVJ033	11/01/01	N/A	11/13/01
B13CR6	004	R1	S	01LVJ033	11/01/01	N/A	11/13/01
B13CR7	005		S	01LVJ033	11/01/01	N/A	11/13/01
B13CR7	005 MS		S	01LVJ033	11/01/01	N/A	11/13/01
B13CR7	005 MSD		S	01LVJ033	11/01/01	N/A	11/13/01

LAB QC:

VBLKAM	MB1		S	01LVJ033	N/A	N/A	11/13/01
VBLKAM	MB1 BS		S	01LVJ033	N/A	N/A	11/13/01

gw 11-27-01

1

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B02-006
LVL #: 0111L279
SDG/SAF #: H1579/B02-006

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

GC/MS VOLATILE

Five (5) soil samples were collected on 11-01-2001.

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

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

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

2. Samples were analyzed within required holding time.

3. A non-target compound was detected in sample B13CR7.

4. Four (4) of thirty-nine (39) surrogate recoveries were outside EPA QC limits. All out of criteria samples B13CR3 and B13CR4 were reanalyzed on 11-13-2001 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 blank contained the common laboratory contaminant Methylene Chloride at a level less than 3x the CRQL.

8. Internal standard area criteria were not met for sample B13CR3. The sample was reanalyzed on 11-13-2001 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

12-03-01
Date

som\group\data\voa\tnu-hanford\0111-279.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 2 3 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.

VLI
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GLOSSARY OF VOA DATA

DATA QUALIFIERS

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

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

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

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

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

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

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

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

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

VLI
LONVILLE LABORATORY INC.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

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

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

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

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

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

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

Lionville Laboratory, Inc.

Volatiles by GC/MS, HSL List

Report Date: 11/29/01 13:05

RFW Batch Number: **0111L279** Client: **TNUHANFORD B02-006 H1579** Work Order: 11343606001 Page: 1a

	Cust ID:	B13CR3		B13CR3		B13CR4		B13CR4		B13CR5		B13CR5	
Sample Information	RFW#:	001		001		002		002		003		003	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.09		1.11		1.04		1.11		1.04		1.06	
	Units:	ug/Kg		ug/Kg REPREP		ug/Kg		ug/Kg REPREP		ug/Kg		ug/Kg REPREP	
Surrogate Recovery	Toluene-d8	91	%	86	%	82	%	79	%	79	%	79	%
	Bromofluorobenzene	55 *	%	56 *	%	62 *	%	62 *	%	69	%	68	%
	1,2-Dichloroethane-d4	146	%	136	%	135	%	143	%	145	%	143	%
			fl		fl		fl		fl		fl		fl
Chloromethane		13	U	13	U	12	U	13	U	11	U	11	U
Bromomethane		13	U	13	U	12	U	13	U	11	U	11	U
Vinyl Chloride		13	U	13	U	12	U	13	U	11	U	11	U
Chloroethane		13	U	13	U	12	U	13	U	11	U	11	U
Methylene Chloride		24	B	25	B	20	B	23	B	11	B	19	B
Acetone		30		7	J	13		21		5	J	5	J
Carbon Disulfide		6	U	6	U	6	U	6	U	6	U	6	U
1,1-Dichloroethene		6	U	6	U	6	U	6	U	6	U	6	U
1,1-Dichloroethane		6	U	6	U	6	U	6	U	6	U	6	U
1,2-Dichloroethene (total)		6	U	6	U	6	U	6	U	6	U	6	U
Chloroform		6	U	6	U	6	U	6	U	6	U	6	U
1,2-Dichloroethane		6	U	6	U	6	U	6	U	6	U	6	U
2-Butanone		13	U	13	U	12	U	13	U	11	U	11	U
1,1,1-Trichloroethane		6	U	6	U	6	U	6	U	6	U	6	U
Carbon Tetrachloride		6	U	6	U	6	U	6	U	6	U	6	U
Bromodichloromethane		6	U	6	U	6	U	6	U	6	U	6	U
1,2-Dichloropropane		6	U	6	U	6	U	6	U	6	U	6	U
cis-1,3-Dichloropropene		6	U	6	U	6	U	6	U	6	U	6	U
Trichloroethene		6	U	6	U	6	U	6	U	6	U	6	U
Dibromochloromethane		6	U	6	U	6	U	6	U	6	U	6	U
1,1,2-Trichloroethane		6	U	6	U	6	U	6	U	6	U	6	U
Benzene		6	U	6	U	6	U	6	U	6	U	6	U
Trans-1,3-Dichloropropene		6	U	6	U	6	U	6	U	6	U	6	U
Bromoform		6	U	6	U	6	U	6	U	6	U	6	U
4-Methyl-2-pentanone		13	U	13	U	12	U	13	U	11	U	11	U
2-Hexanone		13	U	13	U	12	U	13	U	11	U	11	U
Tetrachloroethene		6	U	6	U	6	U	6	U	6	U	6	U
1,1,2,2-Tetrachloroethane		6	U	6	U	6	U	6	U	6	U	6	U
Toluene		6	U	6	U	6	U	6	U	6	U	6	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0111L279 Client: TNUHANFORD B02-006 H1579 Work Order: 11343606001 Page: 1b

Cust ID:	B13CR3	B13CR3	B13CR4	B13CR4	B13CR5	B13CR5
RFW#:	001	001 REPREP	002	002 REPREP	003	003 REPREP
Chlorobenzene	6 U	6 U	6 U	6 U	6 U	6 U
Ethylbenzene	6 U	6 U	6 U	6 U	6 U	6 U
Styrene	6 U	6 U	6 U	6 U	6 U	6 U
Xylene (total)	6 U	6 U	6 U	6 U	6 U	6 U

*= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.

Volatiles by GC/MS, HSL List

Report Date: 11/29/01 13:05

RFW Batch Number: **0111L279** Client: **TNUHANFORD B02-006 H1579** Work Order: 11343606001 Page: 2a

	Cust ID:	B13CR6		B13CR6		B13CR7		B13CR7		B13CR7		VBLKAM	
Sample Information	RFW#:	004		004		005		005 MS		005 MSD		01LVJ033-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		0.980		1.04		1.02		1.11		1.00	
	Units:	ug/Kg		ug/Kg REPREP		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	78	%	80	%	76	%	77	%	76	%	77	%
	Bromofluorobenzene	71	%	71	%	68	%	71	%	70	%	70	%
	1,2-Dichloroethane-d4	143	%	147	%	142	%	144	%	145	%	126	%
			fl		fl		fl		fl		fl		fl
Chloromethane		11	U	11	U	11	U	11	U	11	U	10	U
Bromomethane		11	U	11	U	11	U	11	U	11	U	10	U
Vinyl Chloride		11	U	11	U	11	U	11	U	11	U	10	U
Chloroethane		11	U	11	U	11	U	11	U	11	U	10	U
Methylene Chloride		10	B	15	B	10	B	15	B	17	B	12	
Acetone		11	U	11	U	6	J	11	U	11	U	10	U
Carbon Disulfide		6	U	6	U	6	U	6	U	6	U	5	U
1,1-Dichloroethene		6	U	6	U	6	U	95	%	93	%	5	U
1,1-Dichloroethane		6	U	6	U	6	U	6	U	6	U	5	U
1,2-Dichloroethene (total)		6	U	6	U	6	U	6	U	6	U	5	U
Chloroform		6	U	6	U	6	U	6	U	6	U	5	U
1,2-Dichloroethane		6	U	6	U	6	U	6	U	6	U	5	U
2-Butanone		11	U	11	U	11	U	11	U	11	U	10	U
1,1,1-Trichloroethane		6	U	6	U	6	U	6	U	6	U	5	U
Carbon Tetrachloride		6	U	6	U	6	U	6	U	6	U	5	U
Bromodichloromethane		6	U	6	U	6	U	6	U	6	U	5	U
1,2-Dichloropropane		6	U	6	U	6	U	6	U	6	U	5	U
cis-1,3-Dichloropropene		6	U	6	U	6	U	6	U	6	U	5	U
Trichloroethene		6	U	6	U	6	U	127	%	127	%	5	U
Dibromochloromethane		6	U	6	U	6	U	6	U	6	U	5	U
1,1,2-Trichloroethane		6	U	6	U	6	U	6	U	6	U	5	U
Benzene		6	U	6	U	6	U	125	%	124	%	5	U
Trans-1,3-Dichloropropene		6	U	6	U	6	U	6	U	6	U	5	U
Bromoform		6	U	6	U	6	U	6	U	6	U	5	U
4-Methyl-2-pentanone		11	U	11	U	11	U	11	U	11	U	10	U
2-Hexanone		11	U	11	U	11	U	11	U	11	U	10	U
Tetrachloroethene		6	U	6	U	6	U	6	U	6	U	5	U
1,1,2,2-Tetrachloroethane		6	U	6	U	6	U	6	U	6	U	5	U
Toluene		6	U	6	U	6	U	131	%	124	%	5	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0111L279** Client: **TNUHANFORD B02-006 H1579** Work Order: 11343606001 Page: 2b

Cust ID:	B13CR6	B13CR6	B13CR7	B13CR7	B13CR7	VBLKAM
RFW#:	004	004 REPREP	005	005 MS	005 MSD	01LVJ033-MB1
Chlorobenzene	6 U	6 U	6 U	123 %	117 %	5 U
Ethylbenzene	6 U	6 U	6 U	6 U	6 U	5 U
Styrene	6 U	6 U	6 U	6 U	6 U	5 U
Xylene (total)	6 U	6 U	6 U	6 U	6 U	5 U

*= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.
Volatiles by GC/MS, HSL List
Report Date: 11/29/01 13:05

RFW Batch Number: **0111L279** Client: **TNUHANFORD B02-006 H1579** Work Order: 11343606001 Page: 3a

Cust ID: **VBLKAM BS**

Sample Information

RFW#: **01LVJ033-MB1**
Matrix: SOIL
D.F.: 1.00
Units: ug/Kg

Surrogate Recovery	Toluene-d8	76	%
	Bromofluorobenzene	74	%
	1,2-Dichloroethane-d4	107	%

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

Chloromethane	10	U
Bromomethane	10	U
Vinyl Chloride	10	U
Chloroethane	10	U
Methylene Chloride	12	B
Acetone	10	U
Carbon Disulfide	5	U
1,1-Dichloroethene	80	%
1,1-Dichloroethane	5	U
1,2-Dichloroethene (total)	5	U
Chloroform	5	U
1,2-Dichloroethane	5	U
2-Butanone	10	U
1,1,1-Trichloroethane	5	U
Carbon Tetrachloride	5	U
Bromodichloromethane	5	U
1,2-Dichloropropane	5	U
cis-1,3-Dichloropropene	5	U
Trichloroethene	104	%
Dibromochloromethane	5	U
1,1,2-Trichloroethane	5	U
Benzene	100	%
Trans-1,3-Dichloropropene	5	U
Bromoform	5	U
4-Methyl-2-pentanone	10	U
2-Hexanone	10	U
Tetrachloroethene	5	U
1,1,2,2-Tetrachloroethane	5	U
Toluene	105	%

*= Outside of EPA CLP QC limits.

Cust ID: **VBLKAM BS**

RFW#: **01LVJ033-MB1**

Chlorobenzene	103	%
Ethylbenzene	5	U
Styrene	5	U
Xylene (total)	5	U

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CR3

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

Client: TNUHANFORD B02-006 H1579

Matrix: SOIL

Lab Sample ID: 0111L279-001

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

Lab File ID: j111310

Level: (low/med) LOW

Date Received: 11/06/01

% Moisture: not dec. 16

Date Analyzed: 11/13/01

Column: (pack/cap) CAP

Dilution Factor: 1.09

Number TICs found: 0

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

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

FORM 1 VOA-TIC 12/88 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CR3RE

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

Client: TNUHANFORD B02-006 H1579

Matrix: SOIL

Lab Sample ID: 0111L279-001

Sample wt/vol: 4.50 (g/mL) G

Lab File ID: j111315

Level: (low/med) LOW

Date Received: 11/06/01

% Moisture: not dec. 16

Date Analyzed: 11/13/01

Column: (pack/cap) CAP

Dilution Factor: 1.11

Number TICs found: 0

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

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

FORM 1 VOA-TIC 12/88 Rev.

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1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CR4

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

Client: TNUHANFORD B02-006 H1579

Matrix: SOIL

Lab Sample ID: 0111L279-002

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

Lab File ID: 1111311

Level: (low/med) LOW

Date Received: 11/06/01

% Moisture: not dec. 15

Date Analyzed: 11/13/01

Column: (pack/cap) CAP

Dilution Factor: 1.04

Number TICs found: 0

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

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

FORM 1 VOA-TIC 12/88 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CR4RE

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

Client: TNUHANFORD B02-006 H1579

Matrix: SOIL

Lab Sample ID: 0111L279-002

Sample wt/vol: 4.50 (g/mL) G

Lab File ID: j111316

Level: (low/med) LOW

Date Received: 11/06/01

% Moisture: not dec. 15

Date Analyzed: 11/13/01

Column: (pack/cap) CAP

Dilution Factor: 1.11

Number TICs found: 0

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

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

FORM 1 VOA-TIC 12/88 Rev.

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1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CR5

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

Client: TNUHANFORD B02-006 H1579

Matrix: SOIL

Lab Sample ID: 0111L279-003

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

Lab File ID: j111312

Level: (low/med) LOW

Date Received: 11/06/01

% Moisture: not dec. 6

Date Analyzed: 11/13/01

Column: (pack/cap) CAP

Dilution Factor: 1.04

Number TICs found: 0

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

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

FORM 1 VOA-TIC 12/88 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CR5RE

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

Client: TNUHANFORD B02-006 H1579

Matrix: SOIL

Lab Sample ID: 0111L279-003

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

Lab File ID: 1111317

Level: (low/med) LOW

Date Received: 11/06/01

% Moisture: not dec. 6

Date Analyzed: 11/13/01

Column: (pack/cap) CAP

Dilution Factor: 1.06

Number TICs found: 0

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

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

FORM 1 VOA-TIC

12/88 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CR6

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

Client: TNUHANFORD B02-006 H1579

Matrix: SOIL

Lab Sample ID: 0111L279-004

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

Lab File ID: j111313

Level: (low/med) LOW

Date Received: 11/06/01

% Moisture: not dec. 8

Date Analyzed: 11/13/01

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.

B13CR6RE

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

Client: TNUHANFORD B02-006 H1579

Matrix: SOIL

Lab Sample ID: 0111L279-004

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

Lab File ID: j111318

Level: (low/med) LOW

Date Received: 11/06/01

% Moisture: not dec. 8

Date Analyzed: 11/13/01

Column: (pack/cap) CAP

Dilution Factor: 0.980

Number TICs found: 0

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

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

FORM 1 VOA-TIC 12/88 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CR7

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

Client: TNUHANFORD B02-006 H1579

Matrix: SOIL

Lab Sample ID: 0111L279-005

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

Lab File ID: j111314

Level: (low/med) LOW

Date Received: 11/06/01

% Moisture: not dec. 3

Date Analyzed: 11/13/01

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.	UNKNOWN	5.595	6	J

FORM 1 VOA-TIC 12/88 Rev.

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1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLKAM

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

Client: TNUHANFORD B02-006 H1579

Matrix: SOIL

Lab Sample ID: 01LVJ033-MB1

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

Lab File ID: j111305

Level: (low/med) LOW

Date Received: 11/13/01

% Moisture: not dec. 0

Date Analyzed: 11/13/01

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

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

FORM 1 VOA-TIC 12/88 Rev.

Lionville Laboratory Use Only

01116279

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

22

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client [illegible]
Est. Final Proj. Sampling Date [illegible]
Project # [illegible]
Project Contact/Phone # [illegible]
Lionville Laboratory Project Manager [illegible]
QC SPLIT Del. [illegible] TAT [illegible]

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

	A	B	C	D	E	F	G
Refrigerator #	1	2	2	2	2	2	2
#/Type Container							
Volume							
Preservatives							
ANALYSES REQUESTED →	ORGANIC: VOA	BNA	Pest/PCB	Herb	INORG: Metal	CN	
Lionville Laboratory Use Only	0624+H OGCSC	0625x ODRO	OPCB		ICP/MS MCT①		INORG① IAPH IHYZN

MATRIX CODES: S - Soil, SE - Sediment, SD - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum, D - Drum, L - Liquid, LT - Tank, Wi - Wipe, X - Other, P - Paint

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected
001						
002						
003						
004						
005						

Special Instructions: SAF # B02-006
Run Matrix QC
OGCSC: Propanol, Ethanol

DATE/REVISIONS:
MET① 1. As, Ba, Cd, Cr, Pb, Se, Ag, Be, Cu, Ni, V, Zn, Hg
INORG① 2. IN3N2, ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4
3. ISFD, INH3N, ICNTO
4.
5.
6.

Lionville Laboratory Use Only

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

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

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

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235795486 60

01111279

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-006-06	Page 1 of 1

Collector: Bowers DL/Watson D	Company Contact: Cearlock, CS	Telephone No.: 372-9638	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Soil Samplin	Sampling Location: 200 East & West	SAF No.: B02-006	
Ice Chest No.: See OSPC	Field Logbook No.: EL 1551	COA: B20CS1673C	Method of Shipment: Fed Ex
Shipped To: TMACRECRA	Offsite Property No.: A020017	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.#3A at the 3728 Shipping Facility on 11 1 01. Collector not available to relinquish samples on 11 5 01 for shipment.
RT 11.5.01

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	None		
Type of Container	sG	D sG	E sG	B sG	C sG	F sG	A sG	G 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) (I-Propanol, Ethanol)	Hydrazine - D1385		

	Sample No.	Matrix *	Sample Date	Sample Time									
1	B13CR3	SOIL	11-1-01	0840		X	X	X	X	X	X	X	
2	B13CR4	SOIL	11-1-01	0840		X	X	X	X	X	X	X	
3	B13CR5	SOIL	11-1-01	0910		X	X	X	X	X	X	X	
4	B13CR6	SOIL	11-1-01	~~0910~~ 0930		X	X	X	X	X	X	X	
5	B13CR7	SOIL	11-1-01	0945		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]	11-1-01 1115	REF 3A 3728 BLDG.	11-1-01 1115
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Ref 3A 3728	11-5-01 0900	RT Moore	11-5-01 0900
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
RT Moore	ERT 11-5-01	[illegible]	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	11/6/01 0950	[illegible]	11/6/01 0950
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

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

(1) ~~Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-226); Strontium-89,90 – Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium~~ DSW 11-1-01
(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(3) NO2/NO3 - 353.2; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(4) Semi-VOA – 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D

Use B13CL5 for T.A. on all samples

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)

DEC 2001
RECEIVED

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-006 H1579

DATE RECEIVED: 11/06/01 LVL LOT # :0111L279

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13CR3	001	S	01LE1340	11/01/01	11/07/01	11/18/01
B13CR3	001 R1	S	01LE1399	11/01/01	11/20/01	11/29/01
B13CR4	002	S	01LE1340	11/01/01	11/07/01	11/17/01
B13CR4	002 R1	S	01LE1399	11/01/01	11/20/01	11/29/01
B13CR5	003	S	01LE1340	11/01/01	11/07/01	11/19/01
B13CR5	003 R1	S	01LE1399	11/01/01	11/20/01	11/29/01
B13CR5	003 MS	S	01LE1340	11/01/01	11/07/01	11/19/01
B13CR5	003 MS R1	S	01LE1399	11/01/01	11/20/01	11/29/01
B13CR5	003 MSD	S	01LE1340	11/01/01	11/07/01	11/19/01
B13CR5	003 MSD R1	S	01LE1399	11/01/01	11/20/01	11/29/01
B13CR6	004	S	01LE1340	11/01/01	11/07/01	11/19/01
B13CR6	004 R1	S	01LE1399	11/01/01	11/20/01	11/29/01
B13CR7	005	S	01LE1340	11/01/01	11/07/01	11/19/01
B13CR7	005 R1	S	01LE1399	11/01/01	11/20/01	11/29/01

LAB QC:

SBLKJM	MB1	S	01LE1340	N/A	11/07/01	11/19/01
SBLKJM	MB1 BS	S	01LE1340	N/A	11/07/01	11/19/01
SBLKKR	MB1	S	01LE1399	N/A	11/20/01	11/29/01
SBLKKR	MB1 BS	S	01LE1399	N/A	11/20/01	11/29/01

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B02-006
LVL #: 0111L279
SDG/SAF #: H1579/B02-006

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

SEMIVOLATILE

Five (5) soil samples were collected on 11-01-2001.

The samples and their associated QC samples were extracted on 11-07-2001, re-extracted on 11-20-2001 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for TCL and Tributylphosphate Semivolatile target compounds on 11-17,18,19,29-2001.

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

1. The cooler temperatures upon receipt have been recorded on the chain-of-custody.
2. Samples were initially extracted within required holding time; however, the samples and the associated QC were inadvertently not spiked with surrogate or matrix compounds. Consequently, all samples were re-extracted on 11-20-2001, analyzed on 11-29-2001 and reported. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
3. Non-target compounds were detected in the samples.
4. One (1) of fifty-four (54) surrogate (re-extracted) recoveries was outside EPA QC limits. However, EPA CLP surrogate recovery criteria were met (i.e., no more than one outlier per fraction {acid and base neutral} and no recoveries less than 10%).
5. Six (6) of twenty-two (22) re-extracted matrix spike recoveries were outside EPA QC limits. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
6. One (1) of eleven (11) re-extracted blank spike recoveries was outside EPA QC limits. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
7. Internal standard area and retention time criteria were met.
8. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

J. Michael Taylor
President
Lionville Laboratory Incorporated

12/6/01
Date

som\gorup\data\bna\tnu-hanford-0111-279.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 2 6 pages.

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: olms 329

Initiator: Slayman Batch: 01111L278, 279 Parameter: BNA
Date: 11-20-01 Samples: all Matrix: soil
Client: INV Hanford 802 Method: SW846/MCAWW/CLP/ Prep Batch: 01LE1340

1. Reason for SDR

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

b. General Discrepancy

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

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

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

no surrogate or spike standards recovered

2. Known or Probable Causes(s)

Probably not added

3. Discussion and Proposed Action Other Description:

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

Re-extract

[signature] 11/20/01 [illegible]

4. Project Manager Instructions...signature/date: _____

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

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

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

Samples Re-extracted in Batch 01LE1399 on 11/20/01 [illegible]

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

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

QA-105-A-0801

GLOSSARY OF BNA DATA

DATA QUALIFIERS

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

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

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

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

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

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

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

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

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

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

VLI
DONVILLE 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: 11/30/01 16:06

RFW Batch Number: 0111L279 Client: TNUHANFORD B02-006 H1579 Work Order: 11343606001 Page: 1a

	Cust ID:	B13CR3	B13CR3	B13CR4	B13CR4	B13CR5	B13CR5
Sample Information	RFW#:	001	001	002	002	003	003
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg REPREP	ug/Kg	ug/Kg REPREP	ug/Kg	ug/Kg REPREP
Surrogate Recovery	Nitrobenzene-d5	0 * %	87 %	0 * %	87 %	0 * %	104 %
	2-Fluorobiphenyl	0 * %	92 %	0 * %	88 %	0 * %	104 %
	p-Terphenyl-d14	0 * %	113 %	0 * %	103 %	0 * %	118 %
	Phenol-d5	0 * %	86 %	0 * %	85 %	0 * %	102 %
	2-Fluorophenol	0 * %	79 %	0 * %	82 %	0 * %	101 %
	2,4,6-Tribromophenol	0 * %	98 %	0 * %	90 %	0 * %	104 %
		fl	fl	fl	fl	fl	fl
Phenol		400 U	400 U	390 U	390 U	350 U	350 U
bis(2-Chloroethyl)ether		400 U	400 U	390 U	390 U	350 U	350 U
2-Chlorophenol		400 U	400 U	390 U	390 U	350 U	350 U
1,3-Dichlorobenzene		400 U	400 U	390 U	390 U	350 U	350 U
1,4-Dichlorobenzene		400 U	400 U	390 U	390 U	350 U	350 U
1,2-Dichlorobenzene		400 U	400 U	390 U	390 U	350 U	350 U
2-Methylphenol		400 U	400 U	390 U	390 U	350 U	350 U
2,2'-oxybis(1-Chloropropane)		400 U	400 U	390 U	390 U	350 U	350 U
4-Methylphenol		400 U	400 U	390 U	390 U	350 U	350 U
N-Nitroso-Di-n-propylamine		400 U	400 U	390 U	390 U	350 U	350 U
Hexachloroethane		400 U	400 U	390 U	390 U	350 U	350 U
Nitrobenzene		400 U	400 U	390 U	390 U	350 U	350 U
Isophorone		400 U	400 U	390 U	390 U	350 U	350 U
2-Nitrophenol		400 U	400 U	390 U	390 U	350 U	350 U
2,4-Dimethylphenol		400 U	400 U	390 U	390 U	350 U	350 U
bis(2-Chloroethoxy)methane		400 U	400 U	390 U	390 U	350 U	350 U
2,4-Dichlorophenol		400 U	400 U	390 U	390 U	350 U	350 U
1,2,4-Trichlorobenzene		400 U	400 U	390 U	390 U	350 U	350 U
Naphthalene		400 U	400 U	390 U	390 U	350 U	350 U
4-Chloroaniline		400 U	400 U	390 U	390 U	350 U	350 U
Hexachlorobutadiene		400 U	400 U	390 U	390 U	350 U	350 U
4-Chloro-3-methylphenol		400 U	400 U	390 U	390 U	350 U	350 U
2-Methylnaphthalene		400 U	400 U	390 U	390 U	350 U	350 U
Hexachlorocyclopentadiene		400 U	400 U	390 U	390 U	350 U	350 U
2,4,6-Trichlorophenol		400 U	400 U	390 U	390 U	350 U	350 U
2,4,5-Trichlorophenol		990 U	990 U	980 U	980 U	880 U	880 U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0111L279 Client: TNUHANFORD B02-006 H1579 Work Order: 11343606001 Page: 1b

Cust ID:	B13CR3		B13CR3		B13CR4		B13CR4		B13CR5		B13CR5	
RFW#:	001		001 REPREP		002		002 REPREP		003		003 REPREP	
2-Chloronaphthalene	400	U	400	U	390	U	390	U	350	U	350	U
2-Nitroaniline	990	U	990	U	980	U	980	U	880	U	880	U
Dimethylphthalate	400	U	400	U	390	U	390	U	350	U	350	U
Acenaphthylene	400	U	400	U	390	U	390	U	350	U	350	U
2,6-Dinitrotoluene	400	U	400	U	390	U	390	U	350	U	350	U
3-Nitroaniline	990	U	990	U	980	U	980	U	880	U	880	U
Acenaphthene	400	U	400	U	390	U	390	U	350	U	350	U
2,4-Dinitrophenol	990	U	990	U	980	U	980	U	880	U	880	U
4-Nitrophenol	990	U	990	U	980	U	980	U	880	U	880	U
Dibenzofuran	400	U	400	U	390	U	390	U	350	U	350	U
2,4-Dinitrotoluene	400	U	400	U	390	U	390	U	350	U	350	U
Diethylphthalate	400	U	400	U	390	U	390	U	350	U	350	U
4-Chlorophenyl-phenylether	400	U	400	U	390	U	390	U	350	U	350	U
Fluorene	400	U	400	U	390	U	390	U	350	U	350	U
4-Nitroaniline	990	U	990	U	980	U	980	U	880	U	880	U
4,6-Dinitro-2-methylphenol	990	U	990	U	980	U	980	U	880	U	880	U
N-Nitrosodiphenylamine (1)	400	U	400	U	390	U	390	U	350	U	350	U
4-Bromophenyl-phenylether	400	U	400	U	390	U	390	U	350	U	350	U
Hexachlorobenzene	400	U	400	U	390	U	390	U	350	U	350	U
Pentachlorophenol	990	U	990	U	980	U	980	U	880	U	880	U
Phenanthrene	400	U	400	U	390	U	390	U	350	U	350	U
Anthracene	400	U	400	U	390	U	390	U	350	U	350	U
Carbazole	400	U	400	U	390	U	390	U	350	U	350	U
Di-n-Butylphthalate	400	U	400	U	390	U	390	U	350	U	350	U
Fluoranthene	400	U	400	U	390	U	390	U	350	U	350	U
Pyrene	400	U	400	U	390	U	390	U	350	U	350	U
Butylbenzylphthalate	400	U	400	U	390	U	390	U	350	U	350	U
3,3'-Dichlorobenzidine	400	U	400	U	390	U	390	U	350	U	350	U
Benzo(a)anthracene	400	U	400	U	390	U	390	U	350	U	350	U
Chrysene	400	U	400	U	390	U	390	U	350	U	350	U
bis(2-Ethylhexyl)phthalate	400	U	400	U	390	U	24	J	350	U	350	U
Di-n-Octyl phthalate	400	U	400	U	390	U	390	U	350	U	350	U
Benzo(b)fluoranthene	400	U	400	U	390	U	390	U	350	U	350	U
Benzo(k)fluoranthene	400	U	400	U	390	U	390	U	350	U	350	U
Benzo(a)pyrene	400	U	400	U	390	U	390	U	350	U	350	U
Indeno(1,2,3-cd)pyrene	400	U	400	U	390	U	390	U	350	U	350	U
Dibenzo(a,h)anthracene	400	U	400	U	390	U	390	U	350	U	350	U
Benzo(g,h,i)perylene	400	U	400	U	390	U	390	U	350	U	350	U
Tributylphosphate	400	U	400	U	390	U	390	U	350	U	350	U

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

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List

Report Date: 11/30/01 16:06

RFW Batch Number: 0111L279 Client: TNUHANFORD B02-006 H1579 Work Order: 11343606001 Page: 2a

	Cust ID:	B13CR5	B13CR5	B13CR5	B13CR5	B13CR6	B13CR6
Sample Information	RFW#:	003 MS	003 MS	003 MSD	003 MSD	004	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
			REPREP		REPREP		REPREP
Surrogate Recovery	Nitrobenzene-d5	0 * %	96 %	0 * %	121 * %	0 * %	95 %
	2-Fluorobiphenyl	0 * %	95 %	0 * %	109 %	0 * %	91 %
	p-Terphenyl-d14	0 * %	124 %	0 * %	130 %	0 * %	116 %
	Phenol-d5	0 * %	98 %	0 * %	113 %	0 * %	93 %
	2-Fluorophenol	0 * %	94 %	0 * %	108 %	0 * %	86 %
	2,4,6-Tribromophenol	0 * %	99 %	0 * %	108 %	0 * %	96 %
		fl	fl	fl	fl	fl	fl
Phenol		0 * %	99 * %	0 * %	112 * %	360 U	360 U
bis(2-Chloroethyl)ether		350 U	350 U	350 U	350 U	360 U	360 U
2-Chlorophenol		0 * %	95 %	0 * %	104 * %	360 U	360 U
1,3-Dichlorobenzene		350 U	350 U	350 U	350 U	360 U	360 U
1,4-Dichlorobenzene		0 * %	90 %	0 * %	100 %	360 U	360 U
1,2-Dichlorobenzene		350 U	350 U	350 U	350 U	360 U	360 U
2-Methylphenol		350 U	350 U	350 U	350 U	360 U	360 U
2,2'-oxybis(1-Chloropropane)		350 U	350 U	350 U	350 U	360 U	360 U
4-Methylphenol		350 U	350 U	350 U	350 U	360 U	360 U
N-Nitroso-Di-n-propylamine		0 * %	106 %	0 * %	121 %	360 U	360 U
Hexachloroethane		350 U	350 U	350 U	350 U	360 U	360 U
Nitrobenzene		350 U	350 U	350 U	350 U	360 U	360 U
Isophorone		350 U	350 U	350 U	350 U	360 U	360 U
2-Nitrophenol		350 U	350 U	350 U	350 U	360 U	360 U
2,4-Dimethylphenol		350 U	350 U	350 U	350 U	360 U	360 U
bis(2-Chloroethoxy)methane		350 U	350 U	350 U	350 U	360 U	360 U
2,4-Dichlorophenol		350 U	350 U	350 U	350 U	360 U	360 U
1,2,4-Trichlorobenzene		0 * %	87 %	0 * %	107 %	360 U	360 U
Naphthalene		350 U	350 U	350 U	350 U	360 U	360 U
4-Chloroaniline		350 U	350 U	350 U	350 U	360 U	360 U
Hexachlorobutadiene		350 U	350 U	350 U	350 U	360 U	360 U
4-Chloro-3-methylphenol		0 * %	99 %	0 * %	117 * %	360 U	360 U
2-Methylnaphthalene		350 U	350 U	350 U	350 U	360 U	360 U
Hexachlorocyclopentadiene		350 U	350 U	350 U	350 U	360 U	360 U
2,4,6-Trichlorophenol		350 U	350 U	350 U	350 U	360 U	360 U
2,4,5-Trichlorophenol		880 U	880 U	880 U	880 U	890 U	900 U

*= Outside of EPA CLP QC limits.

Cust ID:	B13CR5		B13CR5		B13CR5		B13CR5		B13CR6		B13CR6	
RFW#:	003 MS		003 MS REP	REP	003 MSD		003 MSD REP	REP	004		004 REP	REP
2-Chloronaphthalene	350	U	350	U	350	U	350	U	360	U	360	U
2-Nitroaniline	880	U	880	U	880	U	880	U	890	U	900	U
Dimethylphthalate	350	U	350	U	350	U	350	U	360	U	360	U
Acenaphthylene	350	U	350	U	350	U	350	U	360	U	360	U
2,6-Dinitrotoluene	350	U	350	U	350	U	350	U	360	U	360	U
3-Nitroaniline	880	U	880	U	880	U	880	U	890	U	900	U
Acenaphthene	0 *	%	88	%	0 *	%	103	%	360	U	360	U
2,4-Dinitrophenol	880	U	880	U	880	U	880	U	890	U	900	U
4-Nitrophenol	0 *	%	82	%	0 *	%	90	%	890	U	900	U
Dibenzofuran	350	U	350	U	350	U	350	U	360	U	360	U
2,4-Dinitrotoluene	0 *	%	93 *	%	0 *	%	101 *	%	360	U	360	U
Diethylphthalate	350	U	350	U	350	U	350	U	360	U	360	U
4-Chlorophenyl-phenylether	350	U	350	U	350	U	350	U	360	U	360	U
Fluorene	350	U	350	U	350	U	350	U	360	U	360	U
4-Nitroaniline	880	U	880	U	880	U	880	U	890	U	900	U
4,6-Dinitro-2-methylphenol	880	U	880	U	880	U	880	U	890	U	900	U
N-Nitrosodiphenylamine (1)	350	U	350	U	350	U	350	U	360	U	360	U
4-Bromophenyl-phenylether	350	U	350	U	350	U	350	U	360	U	360	U
Hexachlorobenzene	350	U	350	U	350	U	350	U	360	U	360	U
Pentachlorophenol	0 *	%	95	%	0 *	%	102	%	890	U	900	U
Phenanthrene	350	U	350	U	350	U	350	U	360	U	360	U
Anthracene	350	U	350	U	350	U	350	U	360	U	360	U
Carbazole	350	U	350	U	350	U	350	U	360	U	360	U
Di-n-Butylphthalate	350	U	350	U	350	U	350	U	360	U	360	U
Fluoranthene	350	U	350	U	350	U	350	U	360	U	360	U
Pyrene	0 *	%	116	%	0 *	%	124	%	360	U	360	U
Butylbenzylphthalate	350	U	350	U	350	U	350	U	360	U	360	U
3,3'-Dichlorobenzidine	350	U	350	U	350	U	350	U	360	U	360	U
Benzo(a)anthracene	350	U	350	U	350	U	350	U	360	U	360	U
Chrysene	350	U	350	U	350	U	350	U	360	U	360	U
bis(2-Ethylhexyl)phthalate	350	U	38	J	350	U	350	U	360	U	360	U
Di-n-Octyl phthalate	350	U	350	U	350	U	350	U	360	U	360	U
Benzo(b)fluoranthene	350	U	350	U	350	U	350	U	360	U	360	U
Benzo(k)fluoranthene	350	U	350	U	350	U	350	U	360	U	360	U
Benzo(a)pyrene	350	U	350	U	350	U	350	U	360	U	360	U
Indeno(1,2,3-cd)pyrene	350	U	350	U	350	U	350	U	360	U	360	U
Dibenzo(a,h)anthracene	350	U	350	U	350	U	350	U	360	U	360	U
Benzo(g,h,i)perylene	350	U	350	U	350	U	350	U	360	U	360	U
Tributylphosphate	350	U	350	U	350	U	350	U	360	U	360	U

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

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List — Report Date: 11/30/01 16:06

RFW Batch Number: 0111L279 — Client: TNUHANFORD B02-006 H1579 — Work Order: 11343606001 — Page: 3a

	Cust ID:	B13CR7	B13CR7	SBLKJM	SBLKJM BS	SBLKKR	SBLKKR BS
Sample Information	RFW#:	005	005	01LE1340-MB1	01LE1340-MB1	01LE1399-MB1	01LE1399-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg REPREP	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	0 * %	109 %	0 * %	0 * %	89 %	98 %
	2-Fluorobiphenyl	0 * %	106 %	0 * %	0 * %	93 %	96 %
	p-Terphenyl-d14	0 * %	123 %	0 * %	0 * %	105 %	113 %
	Phenol-d5	0 * %	106 %	0 * %	0 * %	85 %	94 %
	2-Fluorophenol	0 * %	98 %	0 * %	0 * %	85 %	96 %
	2,4,6-Tribromophenol	0 * %	100 %	0 * %	0 * %	89 %	94 %
		fl	fl	fl	fl	fl	fl
Phenol		340 U	340 U	330 U	0 * %	330 U	93 * %
bis(2-Chloroethyl)ether		340 U	340 U	330 U	330 U	330 U	330 U
2-Chlorophenol		340 U	340 U	330 U	0 * %	330 U	88 %
1,3-Dichlorobenzene		340 U	340 U	330 U	330 U	330 U	330 U
1,4-Dichlorobenzene		340 U	340 U	330 U	0 * %	330 U	84 %
1,2-Dichlorobenzene		340 U	340 U	330 U	330 U	330 U	330 U
2-Methylphenol		340 U	340 U	330 U	330 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)		340 U	340 U	330 U	330 U	330 U	330 U
4-Methylphenol		340 U	340 U	330 U	330 U	330 U	330 U
N-Nitroso-Di-n-propylamine		340 U	340 U	330 U	0 * %	330 U	81 %
Hexachloroethane		340 U	340 U	330 U	330 U	330 U	330 U
Nitrobenzene		340 U	340 U	330 U	330 U	330 U	330 U
Isophorone		340 U	340 U	330 U	330 U	330 U	330 U
2-Nitrophenol		340 U	340 U	330 U	330 U	330 U	330 U
2,4-Dimethylphenol		340 U	340 U	330 U	330 U	330 U	330 U
bis(2-Chloroethoxy)methane		340 U	340 U	330 U	330 U	330 U	330 U
2,4-Dichlorophenol		340 U	340 U	330 U	330 U	330 U	330 U
1,2,4-Trichlorobenzene		340 U	340 U	330 U	0 * %	330 U	90 %
Naphthalene		340 U	340 U	330 U	330 U	330 U	330 U
4-Chloroaniline		340 U	340 U	330 U	330 U	330 U	330 U
Hexachlorobutadiene		340 U	340 U	330 U	330 U	330 U	330 U
4-Chloro-3-methylphenol		340 U	340 U	330 U	0 * %	330 U	91 %
2-Methylnaphthalene		340 U	340 U	330 U	330 U	330 U	330 U
Hexachlorocyclopentadiene		340 U	340 U	330 U	330 U	330 U	330 U
2,4,6-Trichlorophenol		340 U	340 U	330 U	330 U	330 U	330 U
2,4,5-Trichlorophenol		850 U	860 U	830 U	830 U	830 U	830 U

*= Outside of EPA CLP QC limits.

Cust ID:	B13CR7		B13CR7		SBLKJM		SBLKJM BS		SBLKKR		SBLKKR BS	
RFW#:	005		005 REPREP		01LE1340-MB1		01LE1340-MB1		01LE1399-MB1		01LE1399-MB1	
2-Chloronaphthalene	340	U	340	U	330	U	330	U	330	U	330	U
2-Nitroaniline	850	U	860	U	830	U	830	U	830	U	830	U
Dimethylphthalate	340	U	340	U	330	U	330	U	330	U	330	U
Acenaphthylene	340	U	340	U	330	U	330	U	330	U	330	U
2,6-Dinitrotoluene	340	U	340	U	330	U	330	U	330	U	330	U
3-Nitroaniline	850	U	860	U	830	U	830	U	830	U	830	U
Acenaphthene	340	U	340	U	330	U	0 *	%	330	U	85	%
2,4-Dinitrophenol	850	U	860	U	830	U	830	U	830	U	830	U
4-Nitrophenol	850	U	860	U	830	U	0 *	%	830	U	72	%
Dibenzofuran	340	U	340	U	330	U	330	U	330	U	330	U
2,4-Dinitrotoluene	340	U	340	U	330	U	0 *	%	330	U	83	%
Diethylphthalate	340	U	340	U	330	U	330	U	330	U	330	U
4-Chlorophenyl-phenylether	340	U	340	U	330	U	330	U	330	U	330	U
Fluorene	340	U	340	U	330	U	330	U	330	U	330	U
4-Nitroaniline	850	U	860	U	830	U	830	U	830	U	830	U
4,6-Dinitro-2-methylphenol	850	U	860	U	830	U	830	U	830	U	830	U
N-Nitrosodiphenylamine (1)	340	U	340	U	330	U	330	U	330	U	330	U
4-Bromophenyl-phenylether	340	U	340	U	330	U	330	U	330	U	330	U
Hexachlorobenzene	340	U	340	U	330	U	330	U	330	U	330	U
Pentachlorophenol	850	U	860	U	830	U	0 *	%	830	U	87	%
Phenanthrene	340	U	340	U	330	U	330	U	330	U	330	U
Anthracene	340	U	340	U	330	U	330	U	330	U	330	U
Carbazole	340	U	340	U	330	U	330	U	330	U	330	U
Di-n-Butylphthalate	340	U	340	U	330	U	330	U	330	U	330	U
Fluoranthene	340	U	340	U	330	U	330	U	330	U	330	U
Pyrene	340	U	340	U	330	U	0 *	%	330	U	102	%
Butylbenzylphthalate	340	U	340	U	330	U	330	U	330	U	330	U
3,3'-Dichlorobenzidine	340	U	340	U	330	U	330	U	330	U	330	U
Benzo(a)anthracene	340	U	340	U	330	U	330	U	330	U	330	U
Chrysene	340	U	340	U	330	U	330	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	340	U	340	U	330	U	330	U	330	U	330	U
Di-n-Octyl phthalate	340	U	340	U	330	U	330	U	330	U	330	U
Benzo(b)fluoranthene	340	U	340	U	330	U	330	U	330	U	330	U
Benzo(k)fluoranthene	340	U	340	U	330	U	330	U	330	U	330	U
Benzo(a)pyrene	340	U	340	U	330	U	330	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	340	U	340	U	330	U	330	U	330	U	330	U
Dibenzo(a,h)anthracene	340	U	340	U	330	U	330	U	330	U	330	U
Benzo(g,h,i)perylene	340	U	340	U	330	U	330	U	330	U	330	U
Tributylphosphate	340	U	340	U	330	U	330	U	330	U	330	U

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CR3

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

Client: TNUHANFORD B02-006 H1579

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L279-001

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

Lab File ID: A111718

Level: (low/med) LOW

Date Received: 11/06/01

% Moisture: 16 decanted: (Y/N)

Date Extracted: 11/07/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/18/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.944	300	JB
2.	UNKNOWN	22.339	100	J
3.	UNKNOWN	22.636	100	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CR3RE

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

Client: TNUHANFORD B02-006 H1579

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L279-001

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

Lab File ID: A112909

Level: (low/med) LOW

Date Received: 11/06/01

% Moisture: 16 decanted: (Y/N)__

Date Extracted: 11/20/01

Concentrated Extract Volume: 500(uL)

Date Analyzed: 11/29/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y

pH: 7.0

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.924	600	JB
2.	UNKNOWN	20.530	200	J
3.	UNKNOWN	22.324	200	J
4.	UNKNOWN	22.635	200	J
5.	UNKNOWN	22.701	90	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CR4

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

Client: TNUHANFORD B02-006 H1579

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L279-002

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

Lab File ID: A111717

Level: (low/med) LOW

Date Received: 11/06/01

% Moisture: 15 decanted: (Y/N)__

Date Extracted: 11/07/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/17/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.936	400	JB
2.	UNKNOWN	22.633	80	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CR4RE

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

Client: TNUHANFORD B02-006 H1579

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L279-002

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

Lab File ID: A112910

Level: (low/med) LOW

Date Received: 11/06/01

% Moisture: 15 decanted: (Y/N)__

Date Extracted: 11/20/01

Concentrated Extract Volume: 500(uL)

Date Analyzed: 11/29/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y

pH: 7.0

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.925	500	JB
2.	UNKNOWN	21.554	400	J
3.	UNKNOWN	21.581	700	J
4.	UNKNOWN	22.329	200	J
5.	UNKNOWN	22.633	200	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CR5

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

Client: TNUHANFORD B02-006 H1579

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L279-003

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

Lab File ID: A111910

Level: (low/med) LOW

Date Received: 11/06/01

% Moisture: 6 decanted: (Y/N)

Date Extracted: 11/07/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/19/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.953	400	JB

17

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CR5RE

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

Client: TNUHANFORD B02-006 H1579

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L279-003

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

Lab File ID: A112911

Level: (low/med) LOW

Date Received: 11/06/01

% Moisture: 6 decanted: (Y/N)__

Date Extracted: 11/20/01

Concentrated Extract Volume: 500(uL)

Date Analyzed: 11/29/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y

pH: 7.0

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.924	700	JB
2.	UNKNOWN	21.565	400	J
3.	UNKNOWN	21.585	400	J
4.	UNKNOWN	22.634	100	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CR6

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

Client: TNUHANFORD B02-006 H1579

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L279-004

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

Lab File ID: A111913

Level: (low/med) LOW

Date Received: 11/06/01

% Moisture: 8 decanted: (Y/N)__

Date Extracted: 11/07/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/19/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.957	400	JB
2.	UNKNOWN	22.643	100	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CR6RE

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

Client: TNUHANFORD B02-006 H1579

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L279-004

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

Lab File ID: A112914

Level: (low/med) LOW

Date Received: 11/06/01

% Moisture: 8 decanted: (Y/N)__

Date Extracted: 11/20/01

Concentrated Extract Volume: 500(uL)

Date Analyzed: 11/29/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y

pH: 7.0

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.927	600	JB
2.	UNKNOWN	22.635	90	J

21

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CR7

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

Client: TNUHANFORD B02-006 H1579

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L279-005

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

Lab File ID: A111914

Level: (low/med) LOW

Date Received: 11/06/01

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

Date Extracted: 11/07/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/19/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.963	500	JB
2.	UNKNOWN	22.643	90	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13CR7RE

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

Client: TNUHANFORD B02-006 H1579

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L279-005

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

Lab File ID: A112915

Level: (low/med) LOW

Date Received: 11/06/01

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

Date Extracted: 11/20/01

Concentrated Extract Volume: 500(uL)

Date Analyzed: 11/29/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y

pH: 7.0

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.927	700	JB
2.	UNKNOWN	22.633	100	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKJM

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

Client: TNUHANFORD B02-006 H1579

Matrix: (soil/water) SOIL

Lab Sample ID: 01LE1340-MB1

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

Lab File ID: A111905

Level: (low/med) LOW

Date Received: 11/07/01

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

Date Extracted: 11/07/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/19/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 2

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

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

2

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKKR

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

Client: TNUHANFORD B02-006 H1579

Matrix: (soil/water) SOIL

Lab Sample ID: 01LE1399-MB1

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

Lab File ID: A112904

Level: (low/med) LOW

Date Received: 11/20/01

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

Date Extracted: 11/20/01

Concentrated Extract Volume: 500(uL)

Date Analyzed: 11/29/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y

pH: 7.0

Number TICs found: 1

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

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

2

Lionville Laboratory Use Only

01116279

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: INU HANFORD SAF B02-006

Est. Final Proj. Sampling Date:

Project #: 11343-606-001-9999-08

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPLC Del: STD TAT: 30 day

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

		A	B	C					D		E	F	G			
Refrigerator #		1	2	2					2		2	2	2			
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG					1AG							
Volume	Liquid															
	Solid	250	1000	125					500		1000	125	125			
Preservatives		—	—	—					—		—					
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	Wet Chem Hexavalent Chromium					

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	8270 H OGCSC	8275 X ODRO	OPCB					ICP6 METO		INORG O	IPH	INHZN			
001	B13CR3			S	11-01	0840	1	1	1					1		1	1	1			
002	4						1	1	1					1		1	1	1			
003	5					0910	1	1	1					1		1	1	1			
004	6					0930	1	1	1					1		1	1	1			
005	7					0945	1	1	1					1		1	1	1			

Special Instructions: SAF # B02-006

Run Matrix QC

OGCSC = Propanol, Ethanol

DATE/REVISIONS:

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

INORG O 2. IN3N2, ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4,

3. ISFD, INH3N, ICNTO

4.

5.

6.

Lionville Laboratory Use Only

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

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Samples Properly Preserved Y or N

5) Received Within Holding Times Y or N

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

2) Unbroken on Outer Package Y or N

3) Present on Sample Y or N

4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. 4-3 °C 3°

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

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7954 8660

4235 7954 8681 2° 4235 7954 8670 3-2 3-2

Lionville Laboratory, Inc.
PCB ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-006 H1579

DEC 2001
RECEIVED

DATE RECEIVED: 11/06/01 LVL LOT # :01111279

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13CR3	001	S	01LE1339	11/01/01	11/09/01	11/16/01
B13CR3	001 R1	S	01LE1398	11/01/01	11/20/01	11/27/01
B13CR4	002	S	01LE1339	11/01/01	11/09/01	11/16/01
B13CR4	002 R1	S	01LE1398	11/01/01	11/20/01	11/27/01
B13CR4	002 MS	S	01LE1339	11/01/01	11/09/01	11/16/01
B13CR4	002 MS R1	S	01LE1398	11/01/01	11/20/01	11/27/01
B13CR4	002 MSD	S	01LE1339	11/01/01	11/09/01	11/17/01
B13CR4	002 MSD R1	S	01LE1398	11/01/01	11/20/01	11/27/01
B13CR5	003	S	01LE1339	11/01/01	11/09/01	11/17/01
B13CR5	003 R1	S	01LE1398	11/01/01	11/20/01	11/27/01
B13CR6	004	S	01LE1339	11/01/01	11/09/01	11/17/01
B13CR6	004 R1	S	01LE1398	11/01/01	11/20/01	11/27/01
B13CR7	005	S	01LE1339	11/01/01	11/09/01	11/17/01
B13CR7	005 R1	S	01LE1398	11/01/01	11/20/01	11/27/01

LAB QC:

PBLKVK	MB1	S	01LE1339	N/A	11/09/01	11/16/01
PBLKVK	MB1 BS	S	01LE1339	N/A	11/09/01	11/16/01
PBLKYB	MB1	S	01LE1398	N/A	11/20/01	11/28/01
PBLKYB	MB1 BS	S	01LE1398	N/A	11/20/01	11/28/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU HANFORD B02-006
LVL#: 0111L279
SDG/SAF#: H1579/B02-006

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

PCB

The set of samples consisted of five (5) soil samples collected on 11-01-01.

The samples and their associated QC samples were extracted on 11-09-01, re-extracted on 11-20-01, and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 11-16,17,27,28-01. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

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

1. All cooler temperatures have been recorded on the chain-of-custodies.
2. These samples were originally extracted within its required holding time. Due to low surrogate recoveries in the method blank, the samples were re-extracted outside of hold time. Both the original and the re-extracted results have been reported. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
3. The samples and their associated QC samples received a sulfuric acid and a sulfur cleanup.
4. All method blanks were below the reporting limits for all target compounds.
5. Two (2) of thirty-six (36) surrogate recoveries were outside acceptance criteria. A copy of the SDR has been enclosed.
6. All blank spike recoveries were within acceptance criteria.
7. One (1) of four (4) matrix spike recoveries was outside acceptance criteria. A copy of the SDR has been enclosed.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

11/30/01
Date

pef\r:\group\data\pest\11L-279.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 11 pages.

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 0166506.

Initiator: John Lech. Batch: 0110L278, 279. Parameter: PCB
Date: 11/20/01 Samples: All Matrix: Soil
Client: TNV Method: SW846/MCAWW/CLP/ Prep Batch: 01LE1335.

1. Reason for SDR

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

b. General Discrepancy

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

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

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

method blank surrogates below acceptable limits.

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:

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

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

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

5. Final Action...signature/date: 11/29/01 Other Explanation:

Reextracted [01LE1335]-mat

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

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

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 016051T

Initiator: Johnbach. Batch: 01LL275 Parameter: OPCB
Date: 11/28/01 Samples: MS Matrix: Soil
Client: TNU Method: SW846/MCAWW/CLP/ Prep Batch: 01LE1375.

1. Reason for SDR

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

b. General Discrepancy

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

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

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

matrix spike below Acceptable Levels.

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

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

Other Description:

Neat.
1. MSD ok.
2. Re extracts ok.

4. Project Manager Instructions...signature/date: [signature] 11/29/01

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

5. Final Action...signature/date: JL 11/29/01

Other Explanation:

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

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

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

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

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

R:/SHARE/HPLC/PESTICIDE/PCBGLOS

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 11/29/01 08:53

RFW Batch Number: 0111L279 Client: TNUHANFORD B02-006 H1579 Work Order: 11343606001 Page: 1

	Cust ID:	B13CR3		B13CR3		B13CR4		B13CR4		B13CR4		B13CR4	
Sample Information	RFW#:	001		001		002		002		002 MS		002 MS	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG REPREP		UG/KG		UG/KG REPREP		UG/KG		UG/KG REPREP	
Surrogate:	Tetrachloro-m-xylene	98	%	110	%	100	%	110	%	75	%	115	%
	Decachlorobiphenyl	100	%	106	%	101	%	106	%	80	%	114	%
			fl		fl		fl		fl		fl		fl
Aroclor-1016		39	U	40	U	39	U	39	U	39	U	39	U
Aroclor-1221		78	U	79	U	78	U	79	U	79	U	79	U
Aroclor-1232		39	U	40	U	39	U	39	U	39	U	39	U
Aroclor-1242		39	U	40	U	39	U	39	U	39	U	39	U
Aroclor-1248		39	U	40	U	39	U	39	U	39	U	39	U
Aroclor-1254		39	U	40	U	39	U	39	U	16 *	%	120	%
Aroclor-1260		39	U	40	U	39	U	39	U	39	U	39	U

	Cust ID:	B13CR4		B13CR4		B13CR5		B13CR5		B13CR6		B13CR6	
Sample Information	RFW#:	002 MSD		002 MSD		003		003		004		004	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG REPREP		UG/KG		UG/KG REPREP		UG/KG		UG/KG REPREP	
Surrogate:	Tetrachloro-m-xylene	88	%	112	%	100	%	108	%	100	%	105	%
	Decachlorobiphenyl	93	%	108	%	86	%	110	%	97	%	103	%
			fl		fl		fl		fl		fl		fl
Aroclor-1016		39	U	39	U	35	U	35	U	36	U	36	U
Aroclor-1221		78	U	79	U	70	U	71	U	72	U	72	U
Aroclor-1232		39	U	39	U	35	U	35	U	36	U	36	U
Aroclor-1242		39	U	39	U	35	U	35	U	36	U	36	U
Aroclor-1248		39	U	39	U	35	U	35	U	36	U	36	U
Aroclor-1254		97	%	114	%	35	U	35	U	36	U	36	U
Aroclor-1260		39	U	39	U	35	U	35	U	36	U	36	U

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

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 11/29/01 08:53

RFW Batch Number: 0111L279 Client: TNUHANFORD B02-006 H1579 Work Order: 11343606001 Page: 2

	Cust ID:	B13CR7	B13CR7	PBLKVK	PBLKVK BS	PBLKYB	PBLKYB BS
Sample Information	RFW#:	005	005	01LE1339-MB1	01LE1339-MB1	01LE1398-MB1	01LE1398-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
			REPREP				
Surrogate: Tetrachloro-m-xylene		95 %	108 %	20 * %	90 %	108 %	110 %
Decachlorobiphenyl		80 %	105 %	22 * %	98 %	110 %	114 %
Aroclor-1016		34 U	34 U	33 U	33 U	33 U	33 U
Aroclor-1221		69 U	69 U	67 U	67 U	67 U	67 U
Aroclor-1232		34 U	34 U	33 U	33 U	33 U	33 U
Aroclor-1242		34 U	34 U	33 U	33 U	33 U	33 U
Aroclor-1248		34 U	34 U	33 U	33 U	33 U	33 U
Aroclor-1254		34 U	34 U	33 U	88 %	33 U	101 %
Aroclor-1260		34 U	34 U	33 U	33 U	33 U	33 U

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

Lionville Laboratory Use Only

01116279

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TVA HANFORD SAF#B02-006

Est. Final Proj. Sampling Date

Project # 11345-696-001-9992-09

Project Contact/Phone #

Lionville Laboratory Project Manager 03

QC SALC Del 5D TAT 30 day

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

	A	B	C	D	E	F	G
Refrigerator #	1	2	2	2	2	2	2
#/Type Container (Liquid / Soil)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Volume (Liquid / Soil)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Preservatives	—	—	—	—	—	—	—
ANALYSES REQUESTED	ORGANIC: VOA	ORGANIC: BNA	ORGANIC: Pest/PCB	ORGANIC: Herb	INORG: Metal	INORG: CN	[illegible]
Lionville Laboratory Use Only	0624H OGCSC	0625X ODRO	OPCB		ICPMS METO		INORG1	IFPH	INHIN

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H OGCSC	0625X ODRO	OPCB					ICPMS METO		INORG1	IFPH	INHIN
001	R13CR3				11/6/01	0940	1	1	1					1		1	1	1
002	[illegible]				[illegible]	[illegible]	1	1	1					1		1	1	1
003	[illegible]				[illegible]	[illegible]	1	1	1					1		1	1	1
004	[illegible]				[illegible]	0930	1	1	1					1		1	1	1
005	[illegible]				[illegible]	0915	1	1	1					1		1	1	1

Special Instructions: SAF # B02-006

Run Matrix QC

OGCSC: Propanol, Ethanol

DATE/REVISIONS:

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

INORG1 2. IN3N2, ICCL, ICFL, ICNO2, ICNO3, ICPO4, ICSO4,

3. ISFD, INHIN, ICNTO

4.

5.

6.

Lionville Laboratory Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___

Airbill # [illegible]

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Samples Properly Preserved Y or N

5) Received Within Holding Times Y or N

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

2) Unbroken on Outer Package Y or N

3) Present on Sample Y or N

4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. 4-3 °C 3°

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

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7954 8660

01112279

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-006-06	Page 1 of 1

Collector: Bowers DL/Watson D	Company Contact: Cearlock, CS — Telephone No.: 372-9638	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days — Air Quality ☐
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Soil Samplin	Sampling Location: 200 East & West	SAF No.: B02-006	
Ice Chest No.: See OSPC	Field Logbook No.: EL 1551 — COA: B20CS1673C	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA	Offsite Property No.: A020017	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	None		
Type of Container	sG	D sG	E sG	B sG	C sG	F sG	A sG	G 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									
1	B13CR3	SOIL	11-1-01	0840		X	X	X	X	X	X	X	
2	B13CR4	SOIL	11-1-01	0840		X	X	X	X	X	X	X	
3	B13CR5	SOIL	11-1-01	0910		X	X	X	X	X	X	X	
4	B13CR6	SOIL	11-1-01	~~0940~~ 0930		X	X	X	X	X	X	X	
5	B13CR7	SOIL	11-1-01	0945		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]	11-1-01 1115	REF 3A 3728 BLDG.	11-1-01 1115
Ref 3A 3728	11-5-01 0900	RTHOMPSON	11-5-01 0900
RTHOMPSON	ERC 11-5-01 0900	[illegible]	
[illegible]	11/6/01 0950	[illegible]	11/6/01 0950
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

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

(1) ~~Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-228); Strontium-89,90 – Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232), Americium-241; Neptunium-237; Isotopic Uranium~~ DSW 11-1-01
(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(3) NO2/NO3 - 353.2; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(4) Semi-VOA – 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D

Use B13CL5 for T.A. on all samples

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: 11/6/01 0950

SDG#: 01116279

Work Order Number: _____ SAF# B02-006

Shipping Container ID: SMC437 ERC96-066 ERC96-002 Chain of Custody # B02-006-06

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 3°, 3.2, 4.3
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 14 EA COOLER
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: Huntsville Laboratory Group Date: 11/6/01

Telephoned to: _____ On _____ By _____

DEC 2001
RECEIVED

Lionville Laboratory, Inc.
GCSC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-006 H1579

DATE RECEIVED: 11/06/01 LVL LOT # :0111L279

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13CR3	001	S	01LJLB12	11/01/01	11/12/01	11/12/01
B13CR3	001 MS	S	01LJLB12	11/01/01	11/12/01	11/12/01
B13CR3	001 MSD	S	01LJLB12	11/01/01	11/12/01	11/12/01
B13CR4	002	S	01LJLB12	11/01/01	11/12/01	11/12/01
B13CR5	003	S	01LJLB12	11/01/01	11/12/01	11/12/01
B13CR6	004	S	01LJLB12	11/01/01	11/12/01	11/12/01
B13CR7	005	S	01LJLB12	11/01/01	11/12/01	11/12/01
LAB QC:						
BLK	MB1	S	01LJLB12	N/A	11/12/01	11/12/01
BLK	MB1 BS	S	01LJLB12	N/A	11/12/01	11/12/01
BLK	MB1 BSD	S	01LJLB12	N/A	11/12/01	11/12/01

LK 11-15-01
Flgee 11/15/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU HANFORD B02-006
LVL#: 0111L279
SDG/SAF#: H1579/B02-006

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

GC SCAN

The set of samples consisted of five (5) soil samples collected on 11-01-01.

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

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

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

11/18/01
Date

r:\share\gcpest\narr temp\thu279gcsc.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 8 pages.

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

GLOSSARY OF VOA DATA

DATA QUALIFIERS

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

mmz\10-94\gloss.voa

GLOSSARY OF VOA DATA

ABBREVIATIONS

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

Lionville Laboratory, Inc.

GC SCAN

Report Date: 11/13/01 08:32

RFW Batch Number: 0111L279 Client: TNUHANFORD B02-006 H1579 Work Order: 11343606001 Page: 1

	Cust ID:	B13CR3	B13CR3	B13CR3	B13CR4	B13CR5	B13CR6
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
==========fl		==========fl	==========fl	==========fl	==========fl	==========fl	==========fl
n-Propyl Alcohol		6.0 U	71 %	66 %	5.5 U	5.0 U	5.5 U
Ethanol		6.0 U	74 %	71 %	5.5 U	5.0 U	5.5 U

	Cust ID:	B13CR7	BLK	BLK BS	BLK BSD
Sample Information	RFW#:	005	01LJLB12-MB1	01LJLB12-MB1	01LJLB12-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg
==========fl		==========fl	==========fl	==========fl	==========fl
n-Propyl Alcohol		5.5 U	5.0 U	94 %	98 %
Ethanol		5.5 U	5.0 U	97 %	96 %

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

UC 11-15-01

11/15/01

Lionville Laboratory Use Only

01116279

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client [redacted]

Est. Final Rpt. Sample Date [redacted]

Project # [redacted]

Project Reference [redacted]

Lionville Laboratory Project Manager [redacted]

QC SAF Date [redacted] TAT [redacted]

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

	A	B	C					D		E	F	G			
Refrigerator #	1	2	2					2		2	2	2			
#/Type Container	[redacted]														
Volume	[redacted]														
Preservatives	[redacted]														
ANALYSES REQUESTED →	ORGANIC							INORG							
	VOA	BNA	Pest/PCB	Herb				Metal	CN						
Lionville Laboratory Use Only	0624H 0625C	0625X 0DRO	OPCB					ICAN METO		INORGO	EPH	INHZN			

MATRIX CODES: S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solid, DL - Drum Liquid, T - Tank, P - Pile, SP - Spill, X - Other

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected
001	[redacted]					
002	[redacted]					
003	[redacted]					
004	[redacted]					
005	[redacted]					

Special Instructions:

SAF # B02-006

Run Matrix QC

OGCSC: Propanol, Ethanol

DATE/REVISIONS:

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

INORGO 2. IN3N2, ICCL, ICFL, ICAN03, ICAN02, ICP04, ICSO4,

3. ISFD, INH3N, ICNTO

4.

5.

6.

Relinquished by	Received by	Date	Time
Ed Eq	[signature]	11/6/01	0950

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7954 8660

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. 4-3 °C 3°

0111279

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-006-06	Page 1 of 1

Collector: Bowers DL/Watson D	Company Contact: Cearlock, CS — Telephone No.: 372-9638	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Soil Samplin	Sampling Location: 200 East & West	SAF No.: B02-006	Air Quality ☐
Ice Chest No.: See OSPC	Field Logbook No.: EL 1551 — COA: B20CS1673C	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA	Offsite Property No.: A020017	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	A Cool 4C	None		
Type of Container	sG	D sG	E sG	B sG	C sG	F sG	sG	G 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. 11-1-01	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										
1	B13CR3	SOIL	11-1-01	0840		X	X	X	X	X	X	X		
2	B13CR4	SOIL	11-1-01	0840		X	X	X	X	X	X	X		
3	B13CR5	SOIL	11-1-01	0910		X	X	X	X	X	X	X		
4	B13CR6	SOIL	11-1-01	~~0910~~ 0930		X	X	X	X	X	X	X		
5	B13CR7	SOIL	11-1-01	0945		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
DS Watson/[illegible]	11-1-01 1115	REF 3A 3728 BLDG.	11-1-01 1115
Ref 3A 3728	11-5-01 0900	RT [illegible]	11-5-01 0900
RT [illegible] ERC	11-5-01 0900	[illegible]	
[illegible]	11/6/01 0950	[illegible]	11/6/01 0950

SPECIAL INSTRUCTIONS

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

(1) ~~Gross Alpha, Gross Beta, Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-226); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium~~ DSW 11-1-01
(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(3) NO2/NO3 - 353.2; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(4) Semi-VOA -- 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D

Use B13CL5 for T.A. on all samples

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: 11/6/01 0950

SDG#: 01116279

Work Order Number: _____ SAF# B02-006

Shipping Container ID: SMC437 ERC96-066 ERC96-002 Chain of Custody # B02-006-06

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 3°, 3.2, 4.3
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 14 EA Cooler
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: Kelly Vernon Lionville Laboratory Inc. Date: 11/6/01

Telephoned to: _____ On _____ By _____

Lionville Laboratory, Inc.
DRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-006 H1579

RFW LOT # :0111L279

CLIENT ID	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
B13CR3	001	S	01LE1338	11/01/01	11/06/01	11/07/01	11/09/01
B13CR3	001 MS	S	01LE1338	11/01/01	11/06/01	11/07/01	11/09/01
B13CR3	001 MSD	S	01LE1338	11/01/01	11/06/01	11/07/01	11/09/01
B13CR4	002	S	01LE1338	11/01/01	11/06/01	11/07/01	11/10/01
B13CR5	003	S	01LE1338	11/01/01	11/06/01	11/07/01	11/10/01
B13CR6	004	S	01LE1338	11/01/01	11/06/01	11/07/01	11/10/01
B13CR7	005	S	01LE1338	11/01/01	11/06/01	11/07/01	11/10/01
LAB QC:							
BLK	MB1	S	01LE1338	N/A	N/A	11/07/01	11/10/01
BLK	MB1 BS	S	01LE1338	N/A	N/A	11/07/01	11/10/01

UC 11-12-01

Hgm 11/12/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B02-006
LVL#: 0111L279
SDG/SAF#: H1579/B02-006

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

DIESEL RANGE ORGANICS

The set of samples consisted of five (5) soil sample collected on 11-01-01.

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

1. All cooler temperatures have been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis were met.
3. All initial calibrations associated with this data set were within acceptance criteria.
4. All diesel continuing calibration standards analyzed prior to the sample extracts were within acceptance criteria.
5. All surrogate recoveries were within acceptance criteria.
6. The blank spike recovery was within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

11/12/01
Date

R:\share\dro\11-257.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 7 pages.

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

GLOSSARY OF DIESEL RANGE ORGANICS DATA

DATA QUALIFIERS

U	=	Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g. 10U).
J	=	Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
B	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
E	=	Indicates a compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
I	=	Interference.

ABBREVIATIONS

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

Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

Report Date: 11/12/01 07:55

RFW Batch Number: 0111L279 Client: TNUHANFORD B02-006 H1579 Work Order: 11343606001 Page: 1

	Cust ID:	B13CR3	B13CR3	B13CR3	B13CR4	B13CR5	B13CR6
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
p-Terphenyl		103 %	76 %	93 %	98 %	96 %	78 %
Diesel Range Organics		14.2 U	65 %	75 %	14.0 U	12.6 U	12.9 U
Kerosene		14.2 U	NS	NS	14.0 U	12.6 U	12.9 U

	Cust ID:	B13CR7	BLK	BLK BS
Sample Information	RFW#:	005	01LE1338-MB1	01LE1338-MB1
	Matrix:	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00
	Units:	mg/Kg	mg/Kg	mg/Kg
p-Terphenyl		71 %	87 %	81 %
Diesel Range Organics		12.4 U	12.0 U	74 %
Kerosene		12.4 U	12.0 U	NS

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

11/12/01

CK 11/12/01

Lionville Laboratory Use Only

01116279

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

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

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

Lionville Laboratory Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H OGCSC	0625X ODRO	OPCB					ICPMS METO		INORG(1)	IPH	INHIN
001																		
002																		
003																		
004																		
005																		

Special Instructions: SAF # B02-006

Run Matrix QC

OGCSC: Propanol, Ethanol

DATE/REVISIONS:

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

INORG(1) 2. IN3N2, ICCL, ICFL, ICND3, ICND2, ICP04, ICS04,

3. ISFD, INHIN, ICNTO

4.

5.

6.

Relinquished by	Received by	Date	Time
Ed Eq	[illegible]	11/6/01	0950

Relinquished by	Received by	Date	Time

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. 4-3 °C 3°

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

NOTES:

4235795486 60

01111279

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-006-06	Page 1 of 1

Collector: Bowers DL/Watson D	Company Contact: Cearlock, CS	Telephone No.: 372-9638	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Soil Samplin	Sampling Location: 200 East & West	SAF No.: B02-006	
Ice Chest No.: See OSPC	Field Logbook No.: EL 1551	COA: B20CS1673C	Method of Shipment: Fed Ex
Shipped To: TMA/RECRA	Offsite Property No.: A020017	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	A Cool 4C	None		
Type of Container	sG	D sG	E sG	B sG	C sG	F sG	sG	G 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. 11-1-01	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										
1	B13CR3	SOIL	11-1-01	0840		X	X	X	X	X	X	X		
2	B13CR4	SOIL	11-1-01	0840		X	X	X	X	X	X	X		
3	B13CR5	SOIL	11-1-01	0910		X	X	X	X	X	X	X		
4	B13CR6	SOIL	11-1-01	~~0910~~ 0930		X	X	X	X	X	X	X		
5	B13CR7	SOIL	11-1-01	0945		X	X	X	X	X	X	X		

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	DS WATSON	11-1-01 1115	REF. 3A 3728 BLDG.	11-1-01 1115
Relinquished By/Removed From	Ref. 3A 3728	11-5-01 0900	R. L. RIVERA	11-5-01 0900
Relinquished By/Removed From	R.L. Rivera	11-5-01 0900		
Relinquished By/Removed From	EDEO	11/6/01 0950	Received By/Stored In: Field Hand	11/6/01 0950
Relinquished By/Removed From			Received By/Stored In	
Relinquished By/Removed From			Received By/Stored In	

SPECIAL INSTRUCTIONS

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

(1) ~~Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-228); Strontium-89,90 – Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium~~ DSW 11-1-01
(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(3) NO2/NO3 - 353.2; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(4) Semi-VOA – 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D

Use B13CL5 for T.A. on all samples

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: 11/6/01 0950

SDG#: 01116279

Work Order Number: _____ SAF# B02-006

Shipping Container ID: SMC437 ERC96-066 ERC96-002 Chain of Custody # B02-006-06

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 3°, 3.2, 4.3
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 14 EA cooler
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: Kelly Hernandez Teledyne Laboratory Inc. Date: 11/6/01

Telephoned to: _____ On _____ By _____

DEC 2001
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-006 H1579

DATE RECEIVED: 11/06/01 LVL LOT # :0111L279

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13CR3						
SILVER, TOTAL	001	S	01L0730	11/01/01	11/08/01	11/08/01
SILVER, TOTAL	001 REP	S	01L0730	11/01/01	11/08/01	11/08/01
SILVER, TOTAL	001 MS	S	01L0730	11/01/01	11/08/01	11/08/01
ARSENIC, TOTAL	001	S	01L0730	11/01/01	11/08/01	11/08/01
ARSENIC, TOTAL	001 REP	S	01L0730	11/01/01	11/08/01	11/08/01
ARSENIC, TOTAL	001 MS	S	01L0730	11/01/01	11/08/01	11/08/01
BARIUM, TOTAL	001	S	01L0730	11/01/01	11/08/01	11/08/01
BARIUM, TOTAL	001 REP	S	01L0730	11/01/01	11/08/01	11/08/01
BARIUM, TOTAL	001 MS	S	01L0730	11/01/01	11/08/01	11/08/01
BERYLLIUM, TOTAL	001	S	01L0730	11/01/01	11/08/01	11/10/01
BERYLLIUM, TOTAL	001 REP	S	01L0730	11/01/01	11/08/01	11/10/01
BERYLLIUM, TOTAL	001 MS	S	01L0730	11/01/01	11/08/01	11/10/01
CADMIUM, TOTAL	001	S	01L0730	11/01/01	11/08/01	11/08/01
CADMIUM, TOTAL	001 REP	S	01L0730	11/01/01	11/08/01	11/08/01
CADMIUM, TOTAL	001 MS	S	01L0730	11/01/01	11/08/01	11/08/01
CHROMIUM, TOTAL	001	S	01L0730	11/01/01	11/08/01	11/08/01
CHROMIUM, TOTAL	001 REP	S	01L0730	11/01/01	11/08/01	11/08/01
CHROMIUM, TOTAL	001 MS	S	01L0730	11/01/01	11/08/01	11/08/01
COPPER, TOTAL	001	S	01L0730	11/01/01	11/08/01	11/08/01
COPPER, TOTAL	001 REP	S	01L0730	11/01/01	11/08/01	11/08/01
COPPER, TOTAL	001 MS	S	01L0730	11/01/01	11/08/01	11/08/01
MERCURY, TOTAL	001	S	01C0359	11/01/01	11/13/01	11/14/01
MERCURY, TOTAL	001 REP	S	01C0359	11/01/01	11/13/01	11/14/01
MERCURY, TOTAL	001 MS	S	01C0359	11/01/01	11/13/01	11/14/01
NICKEL, TOTAL	001	S	01L0730	11/01/01	11/08/01	11/08/01
NICKEL, TOTAL	001 REP	S	01L0730	11/01/01	11/08/01	11/08/01
NICKEL, TOTAL	001 MS	S	01L0730	11/01/01	11/08/01	11/08/01
LEAD, TOTAL	001	S	01L0730	11/01/01	11/08/01	11/08/01
LEAD, TOTAL	001 REP	S	01L0730	11/01/01	11/08/01	11/08/01
LEAD, TOTAL	001 MS	S	01L0730	11/01/01	11/08/01	11/08/01
SELENIUM, TOTAL	001	S	01L0730	11/01/01	11/08/01	11/08/01
SELENIUM, TOTAL	001 REP	S	01L0730	11/01/01	11/08/01	11/08/01
SELENIUM, TOTAL	001 MS	S	01L0730	11/01/01	11/08/01	11/08/01
VANADIUM, TOTAL	001	S	01L0730	11/01/01	11/08/01	11/08/01
VANADIUM, TOTAL	001 REP	S	01L0730	11/01/01	11/08/01	11/08/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-006 H1579

DATE RECEIVED: 11/06/01 LVL LOT # :0111L279

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
VANADIUM, TOTAL	001 MS	S	01L0730	11/01/01	11/08/01	11/08/01
ZINC, TOTAL	001	S	01L0730	11/01/01	11/08/01	11/08/01
ZINC, TOTAL	001 REP	S	01L0730	11/01/01	11/08/01	11/08/01
ZINC, TOTAL	001 MS	S	01L0730	11/01/01	11/08/01	11/08/01
B13CR4						
SILVER, TOTAL	002	S	01L0730	11/01/01	11/08/01	11/08/01
ARSENIC, TOTAL	002	S	01L0730	11/01/01	11/08/01	11/08/01
BARIUM, TOTAL	002	S	01L0730	11/01/01	11/08/01	11/08/01
BERYLLIUM, TOTAL	002	S	01L0730	11/01/01	11/08/01	11/10/01
CADMIUM, TOTAL	002	S	01L0730	11/01/01	11/08/01	11/08/01
CHROMIUM, TOTAL	002	S	01L0730	11/01/01	11/08/01	11/08/01
COPPER, TOTAL	002	S	01L0730	11/01/01	11/08/01	11/08/01
MERCURY, TOTAL	002	S	01C0359	11/01/01	11/13/01	11/14/01
NICKEL, TOTAL	002	S	01L0730	11/01/01	11/08/01	11/08/01
LEAD, TOTAL	002	S	01L0730	11/01/01	11/08/01	11/08/01
SELENIUM, TOTAL	002	S	01L0730	11/01/01	11/08/01	11/08/01
VANADIUM, TOTAL	002	S	01L0730	11/01/01	11/08/01	11/08/01
ZINC, TOTAL	002	S	01L0730	11/01/01	11/08/01	11/08/01
B13CR5						
SILVER, TOTAL	003	S	01L0730	11/01/01	11/08/01	11/08/01
ARSENIC, TOTAL	003	S	01L0730	11/01/01	11/08/01	11/08/01
BARIUM, TOTAL	003	S	01L0730	11/01/01	11/08/01	11/08/01
BERYLLIUM, TOTAL	003	S	01L0730	11/01/01	11/08/01	11/10/01
CADMIUM, TOTAL	003	S	01L0730	11/01/01	11/08/01	11/08/01
CHROMIUM, TOTAL	003	S	01L0730	11/01/01	11/08/01	11/08/01
COPPER, TOTAL	003	S	01L0730	11/01/01	11/08/01	11/08/01
MERCURY, TOTAL	003	S	01C0359	11/01/01	11/13/01	11/13/01
NICKEL, TOTAL	003	S	01L0730	11/01/01	11/08/01	11/08/01
LEAD, TOTAL	003	S	01L0730	11/01/01	11/08/01	11/08/01
SELENIUM, TOTAL	003	S	01L0730	11/01/01	11/08/01	11/08/01
VANADIUM, TOTAL	003	S	01L0730	11/01/01	11/08/01	11/08/01
ZINC, TOTAL	003	S	01L0730	11/01/01	11/08/01	11/08/01
B13CR6						
SILVER, TOTAL	004	S	01L0730	11/01/01	11/08/01	11/08/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-006 H1579

DATE RECEIVED: 11/06/01 LVL LOT # :0111L279

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TOTAL	004	S	01L0730	11/01/01	11/08/01	11/08/01
BARIUM, TOTAL	004	S	01L0730	11/01/01	11/08/01	11/08/01
BERYLLIUM, TOTAL	004	S	01L0730	11/01/01	11/08/01	11/10/01
CADMIUM, TOTAL	004	S	01L0730	11/01/01	11/08/01	11/08/01
CHROMIUM, TOTAL	004	S	01L0730	11/01/01	11/08/01	11/08/01
COPPER, TOTAL	004	S	01L0730	11/01/01	11/08/01	11/08/01
MERCURY, TOTAL	004	S	01C0359	11/01/01	11/13/01	11/13/01
NICKEL, TOTAL	004	S	01L0730	11/01/01	11/08/01	11/08/01
LEAD, TOTAL	004	S	01L0730	11/01/01	11/08/01	11/08/01
SELENIUM, TOTAL	004	S	01L0730	11/01/01	11/08/01	11/08/01
VANADIUM, TOTAL	004	S	01L0730	11/01/01	11/08/01	11/08/01
ZINC, TOTAL	004	S	01L0730	11/01/01	11/08/01	11/08/01
B13CR7						
SILVER, TOTAL	005	S	01L0730	11/01/01	11/08/01	11/08/01
ARSENIC, TOTAL	005	S	01L0730	11/01/01	11/08/01	11/08/01
BARIUM, TOTAL	005	S	01L0730	11/01/01	11/08/01	11/08/01
BERYLLIUM, TOTAL	005	S	01L0730	11/01/01	11/08/01	11/10/01
CADMIUM, TOTAL	005	S	01L0730	11/01/01	11/08/01	11/08/01
CHROMIUM, TOTAL	005	S	01L0730	11/01/01	11/08/01	11/08/01
COPPER, TOTAL	005	S	01L0730	11/01/01	11/08/01	11/08/01
MERCURY, TOTAL	005	S	01C0359	11/01/01	11/13/01	11/13/01
NICKEL, TOTAL	005	S	01L0730	11/01/01	11/08/01	11/08/01
LEAD, TOTAL	005	S	01L0730	11/01/01	11/08/01	11/08/01
SELENIUM, TOTAL	005	S	01L0730	11/01/01	11/08/01	11/08/01
VANADIUM, TOTAL	005	S	01L0730	11/01/01	11/08/01	11/08/01
ZINC, TOTAL	005	S	01L0730	11/01/01	11/08/01	11/08/01

LAB QC:

SILVER LABORATORY	LC1 BS	S	01L0730	N/A	11/08/01	11/08/01
SILVER, TOTAL	MB1	S	01L0730	N/A	11/08/01	11/08/01
ARSENIC LABORATORY	LC1 BS	S	01L0730	N/A	11/08/01	11/08/01
ARSENIC, TOTAL	MB1	S	01L0730	N/A	11/08/01	11/08/01
BARIUM LABORATORY	LC1 BS	S	01L0730	N/A	11/08/01	11/08/01
BARIUM, TOTAL	MB1	S	01L0730	N/A	11/08/01	11/08/01
BERYLLIUM LABORATORY	LC1 BS	S	01L0730	N/A	11/08/01	11/08/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-006 H1579

DATE RECEIVED: 11/06/01 LVL LOT # :0111L279

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BERYLLIUM, TOTAL	MB1	S	01L0730	N/A	11/08/01	11/08/01
CADMIUM LABORATORY	LC1 BS	S	01L0730	N/A	11/08/01	11/08/01
CADMIUM, TOTAL	MB1	S	01L0730	N/A	11/08/01	11/08/01
CHROMIUM LABORATORY	LC1 BS	S	01L0730	N/A	11/08/01	11/08/01
CHROMIUM, TOTAL	MB1	S	01L0730	N/A	11/08/01	11/08/01
COPPER LABORATORY	LC1 BS	S	01L0730	N/A	11/08/01	11/08/01
COPPER, TOTAL	MB1	S	01L0730	N/A	11/08/01	11/08/01
MERCURY LABORATORY	LC1 BS	S	01C0359	N/A	11/13/01	11/13/01
MERCURY, TOTAL	MB1	S	01C0359	N/A	11/13/01	11/13/01
NICKEL LABORATORY	LC1 BS	S	01L0730	N/A	11/08/01	11/08/01
NICKEL, TOTAL	MB1	S	01L0730	N/A	11/08/01	11/08/01
LEAD LABORATORY	LC1 BS	S	01L0730	N/A	11/08/01	11/08/01
LEAD, TOTAL	MB1	S	01L0730	N/A	11/08/01	11/08/01
SELENIUM LABORATORY	LC1 BS	S	01L0730	N/A	11/08/01	11/08/01
SELENIUM, TOTAL	MB1	S	01L0730	N/A	11/08/01	11/08/01
VANADIUM LABORATORY	LC1 BS	S	01L0730	N/A	11/08/01	11/08/01
VANADIUM, TOTAL	MB1	S	01L0730	N/A	11/08/01	11/08/01
ZINC LABORATORY	LC1 BS	S	01L0730	N/A	11/08/01	11/08/01
ZINC, TOTAL	MB1	S	01L0730	N/A	11/08/01	11/08/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B02-006
LVL#: 0111L279
SDG/SAF#: H1579/B02-006

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

METALS CASE NARRATIVE

1. This narrative covers the analyses of 5 soil samples.

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

   All samples were rerun for Beryllium in file PS1110A. The Titanium results were high in file TA1108C. Beryllium is an IEC for Titanium on the Trace ICP. Therefore Beryllium was rerun on the Poly ICP.

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

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

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits with the exception of 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) recovery for 1 analyte was outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 17 pages.

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11. The duplicate analyses for 6 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

12. 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.

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

11-15-01
Date

gmb/m11-279

LVLI
LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 0111L279

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

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

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B		__200.7				__99
Antimony	__6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	✓6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010B		__200.7				__99
Beryllium	✓6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	✓6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	✓6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	✓6010B		__200.7				__99
Copper	✓6010B	__7211 [5]	__200.7	__220.2			__99
Iron	✓6010B		__200.7				__99
Lead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	__6010B		__200.7				__99
Manganese	✓6010B		__200.7				__99
Mercury	✓7470A [2]	✓7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	✓6010B		__200.7				__99
Nickel	✓6010B		__200.7				__99
Potassium	__6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	✓6010B [1]		__200.7 [1]			__1620	__99
Selenium	✓6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	✓6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	__6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	__6010B	__7841 [5]	__200.7	__279.2 __200.9			__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	✓6010B [1]		__200.7 [1]			__1620	__99
Vanadium	✓6010B		__200.7				__99
Zinc	✓6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other: Method: _____

L-W1-033/M-03/01

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

Q QUALIFIERS

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

M = Duplicate injection precision not met.

N = Spiked sample recovery not within control limits.

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

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

* = Duplicate analysis not within control limits.

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.
2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
4. Flame AA.
5. Graphite Furnace AA.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/15/01

CLIENT: TNUHANFORD B02-006 H1579 LVL LOT #: 0111L279

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B13CR3	Silver, Total	6.2	MG/KG	0.07	1.0
		Arsenic, Total	3.8	MG/KG	0.37	1.0
		Barium, Total	61.4	MG/KG	0.01	1.0
		Beryllium, Total	0.38	MG/KG	0.05	1.0
		Cadmium, Total	2.3	MG/KG	0.03	1.0
		Chromium, Total	12.0	MG/KG	0.07	1.0
		Copper, Total	29.9	MG/KG	0.06	1.0
		Mercury, Total	2.2	MG/KG	0.06	3.0
		Nickel, Total	7.4	MG/KG	0.12	1.0
		Lead, Total	334	MG/KG	0.22	1.0
		Selenium, Total	0.55	MG/KG	0.26	1.0
		Vanadium, Total	90.7	MG/KG	0.06	1.0
		Zinc, Total	67.3	MG/KG	0.03	1.0
-002	B13CR4	Silver, Total	6.8	MG/KG	0.06	1.0
		Arsenic, Total	5.4	MG/KG	0.35	1.0
		Barium, Total	52.0	MG/KG	0.01	1.0
		Beryllium, Total	0.48	MG/KG	0.04	1.0
		Cadmium, Total	1.2	MG/KG	0.03	1.0
		Chromium, Total	11.3	MG/KG	0.06	1.0
		Copper, Total	30.9	MG/KG	0.05	1.0
		Mercury, Total	4.3	MG/KG	0.09	5.0
		Nickel, Total	8.0	MG/KG	0.11	1.0
		Lead, Total	390	MG/KG	0.21	1.0
		Selenium, Total	0.24 u	MG/KG	0.24	1.0
		Vanadium, Total	104	MG/KG	0.05	1.0
		Zinc, Total	66.1	MG/KG	0.03	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/15/01

CLIENT: TNUHANFORD B02-006 H1579 LVL LOT #: 0111L279

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B13CR5	Silver, Total	0.06 u	MG/KG	0.06	1.0
		Arsenic, Total	2.4	MG/KG	0.33	1.0
		Barium, Total	79.3	MG/KG	0.01	1.0
		Beryllium, Total	0.51	MG/KG	0.04	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	8.5	MG/KG	0.06	1.0
		Copper, Total	12.3	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	10.2	MG/KG	0.10	1.0
		Lead, Total	3.2	MG/KG	0.19	1.0
		Selenium, Total	0.22 u	MG/KG	0.22	1.0
		Vanadium, Total	70.1	MG/KG	0.05	1.0
		Zinc, Total	43.3	MG/KG	0.03	1.0
-004	B13CR6	Silver, Total	0.06 u	MG/KG	0.06	1.0
		Arsenic, Total	2.4	MG/KG	0.33	1.0
		Barium, Total	71.7	MG/KG	0.01	1.0
		Beryllium, Total	0.41	MG/KG	0.04	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	9.7	MG/KG	0.06	1.0
		Copper, Total	11.9	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	9.6	MG/KG	0.10	1.0
		Lead, Total	3.6	MG/KG	0.20	1.0
		Selenium, Total	0.23 u	MG/KG	0.23	1.0
		Vanadium, Total	48.7	MG/KG	0.05	1.0
		Zinc, Total	40.0	MG/KG	0.03	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/15/01

CLIENT: TNUHANFORD B02-006 H1579 LVL LOT #: 0111L279

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B13CR7	Silver, Total	0.06 u	MG/KG	0.06	1.0
		Arsenic, Total	2.2	MG/KG	0.32	1.0
		Barium, Total	59.9	MG/KG	0.01	1.0
		Beryllium, Total	0.29	MG/KG	0.04	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	8.9	MG/KG	0.06	1.0
		Copper, Total	10.5	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	8.4	MG/KG	0.10	1.0
		Lead, Total	3.1	MG/KG	0.19	1.0
		Selenium, Total	0.22 u	MG/KG	0.22	1.0
		Vanadium, Total	36.8	MG/KG	0.05	1.0
		Zinc, Total	35.7	MG/KG	0.03	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/15/01

CLIENT: TNUHANFORD B02-006 H1579 LVL LOT #: 0111L279

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
		Arsenic, Total	0.32 u	MG/KG	0.32	1.0
		Barium, Total	0.07	MG/KG	0.01	1.0
		Beryllium, Total	0.04 u	MG/KG	0.04	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.11	MG/KG	0.06	1.0
		Copper, Total	0.12	MG/KG	0.05	1.0
		Nickel, Total	0.10 u	MG/KG	0.10	1.0
		Lead, Total	0.19 u	MG/KG	0.19	1.0
		Selenium, Total	0.22 u	MG/KG	0.22	1.0
		Vanadium, Total	0.05 u	MG/KG	0.05	1.0
		Zinc, Total	0.15	MG/KG	0.03	1.0
BLANK1	01C0359-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/15/01

CLIENT: TNUHANFORD B02-006 H1579 LVL LOT #: 0111L279

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B13CR3	Silver, Total	11.3	6.2	5.8	87.9	1.0
		Arsenic, Total	221	3.8	232	93.3	1.0
		Barium, Total	260	61.4	232	85.4	1.0
		Beryllium, Total	5.5	0.38	5.8	88.3	1.0
		Cadmium, Total	8.0	2.3	5.8	98.3	1.0
		Chromium, Total	34.5	12.0	23.2	97.0	1.0
		Copper, Total	60.2	29.9	29.0	104.5	1.0
		Mercury, Total	2.2	2.2	0.18	1.1*	3.0
		Nickel, Total	65.0	7.4	58.1	99.1	1.0
		Lead, Total	401	334	58.1	115.5*	1.0
		Selenium, Total	200	0.55	232	85.8	1.0
		Vanadium, Total	160	90.7	58.1	118.4	1.0
		Zinc, Total	132	67.3	58.1	112.0	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/15/01

CLIENT: TNUHANFORD B02-006 H1579 LVL LOT #: 0111L279

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B13CR3	Silver, Total	6.2	6.2	0.00	1.0
		Arsenic, Total	3.8	6.0	44.9	1.0
		Barium, Total	61.4	60.3	1.8	1.0
		Beryllium, Total	0.38	0.51	30.5	1.0
		Cadmium, Total	2.3	2.4	4.3	1.0
		Chromium, Total	12.0	14.0	15.4	1.0
		Copper, Total	29.9	33.2	10.5	1.0
		Mercury, Total	2.2	4.6	69.2	5.0
		Nickel, Total	7.4	10.0	29.9	1.0
		Lead, Total	334	488	37.6	1.0
		Selenium, Total	0.55	0.33	48.0	1.0
		Vanadium, Total	90.7	109	18.7	1.0
		Zinc, Total	67.3	79.1	16.1	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/15/01

CLIENT: TNUHANFORD B02-006 H1579 LVL LOT #: 0111L279

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
		Arsenic, LCS	956	1000	MG/KG	95.6
		Barium, LCS	482	500	MG/KG	96.3
		Beryllium, LCS	24.6	25.0	MG/KG	98.4
		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
		Nickel, LCS	199	200	MG/KG	99.6
		Lead, LCS	245	250	MG/KG	97.9
		Selenium, LCS	920	1000	MG/KG	92.0
		Vanadium, LCS	250	250	MG/KG	99.9
		Zinc, LCS	97.5	100	MG/KG	97.5
LCS1	01C0359-LC1	Mercury, LCS	2.5	2.5	MG/KG	99.6

Lionville Laboratory Use Only

01116279

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI Lionville Laboratory Inc.

Client:
Est. Fin:
Project:
Project #:
Lionville Contact:
QC:

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

	A	B	C					D		E	F	G			
Refrigerator #	1	2	2					2		2	2	2			
#/Type Container (Solid)	1AG	1AG	1AG					1AG		1AG	1AG	1AG			
Volume (Solid)	120	1000	120					500		1000	100	120			
Preservatives															
ANALYSES REQUESTED	ORGANIC							INORG							
	VOA	BNA	Pest/PCB	Herb				Metal	CN						

Lionville Laboratory Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624+H 0GCSC	0625x 0DRO	0PCB				ICP/MET		INORG	EPH	INHYDN			
001																				
002																				
003																				
004																				
005																				

MATRIX CODES: S - Soil, SE - Sediment, SO - Solid, W - Water, O - Other

Special Instructions: SAF # B02-006

Run Matrix QC

OGCSC: Propanol, Ethanol

DATE/REVISIONS:

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

INORG① 2. IN3N2, ICCL, ICFL, ICAN3, ICAN2, ICAN4, ICSO4,

3. ISFD, INHIN, ICNTO

4.

5.

6.

Lionville Laboratory Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___

Airbill # Del Bat

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

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

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

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

Cooler Temp. 4-3 °C 3°

Relinquished by	Received by	Date	Time
Ed Ep	[illegible]	11/6/01	0950

Relinquished by	Received by	Date	Time

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

NOTES: 4235 7954 8660

01111279

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-006-06	Page 1 of 1

Collector: Bowers DL/Watson D	Company Contact: Cearlock, CS	Telephone No.: 372-9638	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area Source Characterization 200-CS-1 OU - Soil Samplin	Sampling Location: 200 East & West	SAF No.: B02-006	
Ice Chest No.: See OSPC	Field Logbook No.: EL 1551	COA: B20CS1673C	Method of Shipment: Fed Ex
Shipped To: TMA/RECRA	Offsite Property No.: A020017	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

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

SAMPLE ANALYSIS

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

	Sample No.	Matrix *	Sample Date	Sample Time										
1	B13CR3	SOIL	11-1-01	0840		X	X	X	X	X	X	X		
2	B13CR4	SOIL	11-1-01	0840		X	X	X	X	X	X	X		
3	B13CR5	SOIL	11-1-01	0910		X	X	X	X	X	X	X		
4	B13CR6	SOIL	11-1-01	~~0910~~ 0920		X	X	X	X	X	X	X		
5	B13CR7	SOIL	11-1-01	0945		X	X	X	X	X	X	X		

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DS WATSON	11-1-01 1115	REF 3A 3728 BLDG.	11-1-01 1115
Ref 3A 3728	11-5-01 0900	RT	11-5-01 0900
RT	11-5-01 0900	EDG	
EDG	11/6/01 0950		11/6/01 0950

SPECIAL INSTRUCTIONS

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

(1) ~~Gross Alpha; Gross Beta; Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Radium-226}; Strontium-89,90 = Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium~~ DSW 11-1-01
(2) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(3) NO2/NO3 - 353.2; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(4) Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D

USE B13CL5 for T.A. on all samples

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)

DEC 2001
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-006 H1579

DATE RECEIVED: 11/06/01 LVL LOT # :0111L279

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13CR3						
% SOLIDS	001	S	01L%S153	11/01/01	11/07/01	11/08/01
% SOLIDS	001 REP	S	01L%S153	11/01/01	11/07/01	11/08/01
CHLORIDE BY IC	001	S	01LIC075	11/01/01	11/12/01	11/12/01
FLUORIDE BY IC	001	S	01LIC075	11/01/01	11/12/01	11/12/01
NITRITE BY IC	001	S	01LIC075	11/01/01	11/12/01	11/12/01
NITRATE BY IC	001	S	01LIC075	11/01/01	11/12/01	11/12/01
TOTAL CYANIDE	001	S	01LC099	11/01/01	11/13/01	11/13/01
PHOSPHATE BY IC	001	S	01LIC075	11/01/01	11/12/01	11/12/01
CHROMIUM VI	001	S	01LVI087	11/01/01	11/13/01	11/13/01
SULFATE BY IC	001	S	01LIC075	11/01/01	11/12/01	11/12/01
HYDRAZINE	001	S	01LHZ005	11/01/01	11/08/01	11/08/01
HYDRAZINE	001 REP	S	01LHZ005	11/01/01	11/08/01	11/08/01
HYDRAZINE	001 MS	S	01LHZ005	11/01/01	11/08/01	11/08/01
NITRATE NITRITE	001	S	01LN3061	11/01/01	11/15/01	11/15/01
AMMONIA	001	S	01LAMA52	11/01/01	11/15/01	11/15/01
PH	001	S	01LPH077	11/01/01	11/08/01	11/08/01
PH	001 REP	S	01LPH077	11/01/01	11/08/01	11/08/01
SULFIDE	001	S	01LSD062	11/01/01	11/08/01	11/08/01
B13CR4						
% SOLIDS	002	S	01L%S153	11/01/01	11/07/01	11/08/01
CHLORIDE BY IC	002	S	01LIC075	11/01/01	11/12/01	11/12/01
FLUORIDE BY IC	002	S	01LIC075	11/01/01	11/12/01	11/12/01
NITRITE BY IC	002	S	01LIC075	11/01/01	11/12/01	11/12/01
NITRATE BY IC	002	S	01LIC075	11/01/01	11/12/01	11/12/01
TOTAL CYANIDE	002	S	01LC099	11/01/01	11/13/01	11/13/01
PHOSPHATE BY IC	002	S	01LIC075	11/01/01	11/12/01	11/12/01
CHROMIUM VI	002	S	01LVI087	11/01/01	11/13/01	11/13/01
SULFATE BY IC	002	S	01LIC075	11/01/01	11/12/01	11/12/01
HYDRAZINE	002	S	01LHZ005	11/01/01	11/08/01	11/08/01
NITRATE NITRITE	002	S	01LN3061	11/01/01	11/15/01	11/15/01
AMMONIA	002	S	01LAMA52	11/01/01	11/15/01	11/15/01
PH	002	S	01LPH077	11/01/01	11/08/01	11/08/01
SULFIDE	002	S	01LSD062	11/01/01	11/08/01	11/08/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-006 H1579

DATE RECEIVED: 11/06/01 LVL LOT # :0111L279

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13CR5						
% SOLIDS	003	S	01L%S153	11/01/01	11/07/01	11/08/01
CHLORIDE BY IC	003	S	01LIC075	11/01/01	11/12/01	11/12/01
CHLORIDE BY IC	003 REP	S	01LIC075	11/01/01	11/12/01	11/12/01
CHLORIDE BY IC	003 MS	S	01LIC075	11/01/01	11/12/01	11/12/01
FLUORIDE BY IC	003	S	01LIC075	11/01/01	11/12/01	11/12/01
FLUORIDE BY IC	003 REP	S	01LIC075	11/01/01	11/12/01	11/12/01
FLUORIDE BY IC	003 MS	S	01LIC075	11/01/01	11/12/01	11/12/01
NITRITE BY IC	003	S	01LIC075	11/01/01	11/12/01	11/12/01
NITRITE BY IC	003 REP	S	01LIC075	11/01/01	11/12/01	11/12/01
NITRITE BY IC	003 MS	S	01LIC075	11/01/01	11/12/01	11/12/01
NITRATE BY IC	003	S	01LIC075	11/01/01	11/12/01	11/12/01
NITRATE BY IC	003 REP	S	01LIC075	11/01/01	11/12/01	11/12/01
NITRATE BY IC	003 MS	S	01LIC075	11/01/01	11/12/01	11/12/01
TOTAL CYANIDE	003	S	01LC099	11/01/01	11/13/01	11/13/01
PHOSPHATE BY IC	003	S	01LIC075	11/01/01	11/12/01	11/12/01
PHOSPHATE BY IC	003 REP	S	01LIC075	11/01/01	11/12/01	11/12/01
PHOSPHATE BY IC	003 MS	S	01LIC075	11/01/01	11/12/01	11/12/01
CHROMIUM VI	003	S	01LVI087	11/01/01	11/13/01	11/13/01
SULFATE BY IC	003	S	01LIC075	11/01/01	11/12/01	11/12/01
SULFATE BY IC	003 REP	S	01LIC075	11/01/01	11/12/01	11/12/01
SULFATE BY IC	003 MS	S	01LIC075	11/01/01	11/12/01	11/12/01
HYDRAZINE	003	S	01LHZ005	11/01/01	11/08/01	11/08/01
NITRATE NITRITE	003	S	01LN3061	11/01/01	11/15/01	11/15/01
AMMONIA	003	S	01LAMA52	11/01/01	11/15/01	11/15/01
PH	003	S	01LPH077	11/01/01	11/08/01	11/08/01
SULFIDE	003	S	01LSD062	11/01/01	11/08/01	11/08/01
B13CR6						
% SOLIDS	004	S	01L%S153	11/01/01	11/07/01	11/08/01
CHLORIDE BY IC	004	S	01LIC075	11/01/01	11/12/01	11/12/01
FLUORIDE BY IC	004	S	01LIC075	11/01/01	11/12/01	11/12/01
NITRITE BY IC	004	S	01LIC075	11/01/01	11/12/01	11/12/01
NITRATE BY IC	004	S	01LIC075	11/01/01	11/12/01	11/12/01
TOTAL CYANIDE	004	S	01LC099	11/01/01	11/13/01	11/13/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-006 H1579

DATE RECEIVED: 11/06/01 LVL LOT # :0111L279

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PHOSPHATE BY IC	004	S	01LIC075	11/01/01	11/12/01	11/12/01
CHROMIUM VI	004	S	01LVI087	11/01/01	11/13/01	11/13/01
SULFATE BY IC	004	S	01LIC075	11/01/01	11/12/01	11/12/01
HYDRAZINE	004	S	01LHZ005	11/01/01	11/08/01	11/08/01
NITRATE NITRITE	004	S	01LN3061	11/01/01	11/15/01	11/15/01
AMMONIA	004	S	01LAMA52	11/01/01	11/15/01	11/15/01
PH	004	S	01LPH077	11/01/01	11/08/01	11/08/01
SULFIDE	004	S	01LSD062	11/01/01	11/08/01	11/08/01
B13CR7						
% SOLIDS	005	S	01L%S153	11/01/01	11/07/01	11/08/01
CHLORIDE BY IC	005	S	01LIC075	11/01/01	11/12/01	11/12/01
FLUORIDE BY IC	005	S	01LIC075	11/01/01	11/12/01	11/12/01
NITRITE BY IC	005	S	01LIC075	11/01/01	11/12/01	11/12/01
NITRATE BY IC	005	S	01LIC075	11/01/01	11/12/01	11/12/01
TOTAL CYANIDE	005	S	01LC099	11/01/01	11/13/01	11/13/01
TOTAL CYANIDE	005 REP	S	01LC099	11/01/01	11/13/01	11/13/01
TOTAL CYANIDE	005 MS	S	01LC099	11/01/01	11/13/01	11/13/01
PHOSPHATE BY IC	005	S	01LIC075	11/01/01	11/12/01	11/12/01
CHROMIUM VI	005	S	01LVI087	11/01/01	11/13/01	11/13/01
CHROMIUM VI	005 REP	S	01LVI087	11/01/01	11/13/01	11/13/01
CHROMIUM VI	005 MS	S	01LVI087	11/01/01	11/13/01	11/13/01
CHROMIUM VI	005 MS	S	01LVI087	11/01/01	11/13/01	11/13/01
SULFATE BY IC	005	S	01LIC075	11/01/01	11/12/01	11/12/01
HYDRAZINE	005	S	01LHZ005	11/01/01	11/08/01	11/08/01
NITRATE NITRITE	005	S	01LN3061	11/01/01	11/15/01	11/15/01
NITRATE NITRITE	005 REP	S	01LN3061	11/01/01	11/15/01	11/15/01
NITRATE NITRITE	005 MS	S	01LN3061	11/01/01	11/15/01	11/15/01
AMMONIA	005	S	01LAMA52	11/01/01	11/15/01	11/15/01
AMMONIA	005 REP	S	01LAMA52	11/01/01	11/15/01	11/15/01
AMMONIA	005 MS	S	01LAMA52	11/01/01	11/15/01	11/15/01
PH	005	S	01LPH077	11/01/01	11/08/01	11/08/01
SULFIDE	005	S	01LSD063	11/01/01	11/09/01	11/09/01
SULFIDE	005 REP	S	01LSD063	11/01/01	11/09/01	11/09/01
SULFIDE	005 MS	S	01LSD063	11/01/01	11/09/01	11/09/01

LAB QC:

CHLORIDE BY IC	MB1	S	01LIC075	N/A	11/12/01	11/12/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-006 H1579

DATE RECEIVED: 11/06/01 LVL LOT # :0111L279

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	MB1 BS	S	01LIC075	N/A	11/12/01	11/12/01
FLUORIDE BY IC	MB1	S	01LIC075	N/A	11/12/01	11/12/01
FLUORIDE BY IC	MB1 BS	S	01LIC075	N/A	11/12/01	11/12/01
NITRITE BY IC	MB1	S	01LIC075	N/A	11/12/01	11/12/01
NITRITE BY IC	MB1 BS	S	01LIC075	N/A	11/12/01	11/12/01
NITRATE BY IC	MB1	S	01LIC075	N/A	11/12/01	11/12/01
NITRATE BY IC	MB1 BS	S	01LIC075	N/A	11/12/01	11/12/01
TOTAL CYANIDE	LCS L	S	01LC099	N/A	11/13/01	11/13/01
TOTAL CYANIDE	LCS L	S	01LC099	N/A	11/13/01	11/13/01
TOTAL CYANIDE	MB1	S	01LC099	N/A	11/13/01	11/13/01
PHOSPHATE BY IC	MB1	S	01LIC075	N/A	11/12/01	11/12/01
PHOSPHATE BY IC	MB1 BS	S	01LIC075	N/A	11/12/01	11/12/01
CHROMIUM VI	MB1	S	01LVI087	N/A	11/13/01	11/13/01
CHROMIUM VI	MB1 BS	S	01LVI087	N/A	11/13/01	11/13/01
CHROMIUM VI	MB1 BS	S	01LVI087	N/A	11/13/01	11/13/01
SULFATE BY IC	MB1	S	01LIC075	N/A	11/12/01	11/12/01
SULFATE BY IC	MB1 BS	S	01LIC075	N/A	11/12/01	11/12/01
HYDRAZINE	MB1	S	01LHZ005	N/A	11/08/01	11/08/01
HYDRAZINE	MB1 BS	S	01LHZ005	N/A	11/08/01	11/08/01
NITRATE NITRITE	MB1	S	01LN3061	N/A	11/15/01	11/15/01
NITRATE NITRITE	MB1 BS	S	01LN3061	N/A	11/15/01	11/15/01
AMMONIA	MB1	S	01LAMA52	N/A	11/15/01	11/15/01
AMMONIA	MB1 BS	S	01LAMA52	N/A	11/15/01	11/15/01
AMMONIA	MB1 BSD	S	01LAMA52	N/A	11/15/01	11/15/01
SULFIDE	MB1	S	01LSD062	N/A	11/08/01	11/08/01
SULFIDE	MB1 BS	S	01LSD062	N/A	11/08/01	11/08/01
SULFIDE	MB1	S	01LSD063	N/A	11/09/01	11/09/01
SULFIDE	MB1 BS	S	01LSD063	N/A	11/09/01	11/09/01
SULFIDE	MB1 BSD	S	01LSD063	N/A	11/09/01	11/09/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B02-006 H1579
LVL#: 0111L279

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

INORGANIC NARRATIVE

1. This narrative covers the analyses of 5 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 with the exception of Sulfide sample B13CR7.

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 may be attributed to sample inhomogeneity.

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

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

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

11-30-01
Date

njp\i11-279

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 17 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: Hydrazine **Method:** USAF SAM - Report TR-82-29

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

Ammonia EPA 350.3 (mod.)

Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate } EPA 300.0 (mod)

L-WI-034/B-01/01

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/19/01

CLIENT: TNUHANFORD B02-006 H1579 LVL LOT #: 0111L279

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B13CR3	% Solids	84.4		%	0.01	1.0
		Chloride by IC	5.4		MG/KG	1.5	1.0
		Fluoride by IC	3.0	u	MG/KG	3.0	1.0
		Nitrite by IC	1.48	u	MG/KG	1.48	1.0
		Nitrate by IC	238		MG/KG	14.8	10.0
		Cyanide, Total	0.57	u	MG/KG	0.57	1.0
		Phosphate by IC	1.5	u	MG/KG	1.5	1.0
		Chromium VI	4.6		MG/KG	0.47	1.0
		Sulfate by IC	240		MG/KG	14.8	10.0
		Hydrazine	1.2	u	MG/KG	1.2	1.0
		Nitrate Nitrite	40.6		MG/KG	2.2	10.0
		Ammonia, as N	3.4	u	MG/KG	3.4	1.0
		pH	6.5		SOIL PH	0.01	1.0
		Sulfide	50.1	u	MG/KG	50.1	1.0
-002	B13CR4	% Solids	84.8		%	0.01	1.0
		Chloride by IC	5.4		MG/KG	1.5	1.0
		Fluoride by IC	2.9	u	MG/KG	2.9	1.0
		Nitrite by IC	1.47	u	MG/KG	1.47	1.0
		Nitrate by IC	181		MG/KG	14.7	10.0
		Cyanide, Total	0.54	u	MG/KG	0.54	1.0
		Phosphate by IC	1.5	u	MG/KG	1.5	1.0
		Chromium VI	8.8		MG/KG	0.47	1.0
		Sulfate by IC	260		MG/KG	14.7	10.0
		Hydrazine	1.2	u	MG/KG	1.2	1.0
		Nitrate Nitrite	42.3		MG/KG	1.1	5.0
		Ammonia, as N	3.1	u	MG/KG	3.1	1.0
		pH	6.6		SOIL PH	0.01	1.0
		Sulfide	48.6	u	MG/KG	48.6	1.0
-003	B13CR5	% Solids	94.3		%	0.01	1.0
		Chloride by IC	3.7		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.32	u	MG/KG	1.32	1.0
		Nitrate by IC	62.2		MG/KG	6.63	5.0
		Cyanide, Total	0.48	u	MG/KG	0.48	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	1.1		MG/KG	0.42	1.0
		Sulfate by IC	26.6		MG/KG	1.3	1.0
		Hydrazine	1.1	u	MG/KG	1.1	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/19/01

CLIENT: TNUHANFORD B02-006 H1579 LVL LOT #: 0111L279

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B13CR5	Nitrate Nitrite	13.9		MG/KG	0.97	5.0
		Ammonia, as N	2.7	u	MG/KG	2.7	1.0
		pH	8.4		SOIL PH	0.01	1.0
		Sulfide	50.1	u	MG/KG	50.1	1.0
-004	B13CR6	% Solids	92.1		%	0.01	1.0
		Chloride by IC	4.9		MG/KG	1.4	1.0
		Fluoride by IC	2.7	u	MG/KG	2.7	1.0
		Nitrite by IC	1.36	u	MG/KG	1.36	1.0
		Nitrate by IC	64.5		MG/KG	2.71	2.0
		Cyanide, Total	0.44	u	MG/KG	0.44	1.0
		Phosphate by IC	1.4	u	MG/KG	1.4	1.0
		Chromium VI	0.90		MG/KG	0.43	1.0
		Sulfate by IC	7.5		MG/KG	1.4	1.0
		Hydrazine	1.1	u	MG/KG	1.1	1.0
		Nitrate Nitrite	11.1		MG/KG	0.47	2.0
		Ammonia, as N	2.7	u	MG/KG	2.7	1.0
		pH	8.3		SOIL PH	0.01	1.0
		Sulfide	51.8	u	MG/KG	51.8	1.0
-005	B13CR7	% Solids	97.0		%	0.01	1.0
		Chloride by IC	2.0		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.29	u	MG/KG	1.29	1.0
		Nitrate by IC	1.29	u	MG/KG	1.29	1.0
		Cyanide, Total	0.34	u	MG/KG	0.34	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.52		MG/KG	0.41	1.0
		Sulfate by IC	1.3	u	MG/KG	1.3	1.0
		Hydrazine	1.0	u	MG/KG	1.0	1.0
		Nitrate Nitrite	0.19	u	MG/KG	0.19	1.0
		Ammonia, as N	2.5	u	MG/KG	2.5	1.0
		pH	8.9		SOIL PH	0.01	1.0
		Sulfide	38.6	u	MG/KG	38.6	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/19/01

CLIENT: TNUHANFORD B02-006 H1579 LVL LOT #: 0111L279

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LIC075-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	1.25	u	MG/KG	1.25	1.0
		Nitrate by IC	1.25	u	MG/KG	1.25	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK1	01LC099-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	01LVI087-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	01LHZ005-MB1	Hydrazine	1.0	u	MG/KG	1.0	1.0
BLANK10	01LN3061-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	01LAMA52-MB1	Ammonia, as N	2.5	u	MG/KG	2.5	1.0
BLANK10	01LSD062-MB1	Sulfide	40.0	u	MG/KG	40.0	1.0
BLANK10	01LSD063-MB1	Sulfide	40.0	u	MG/KG	40.0	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/19/01

CLIENT: TNUHANFORD B02-006 H1579 LVL LOT #: 0111L279

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B13CR3	Hydrazine	6.2	1.2 u	5.9	104.3	1.0
-003	B13CR5	Chloride by IC	28.2	3.7	26.5	92.5	1.0
		Fluoride by IC	55.5	0.0	53.0	104.6	1.0
		Nitrite by IC	25.6	1.32u	26.5	96.7	1.0
		Nitrate by IC	196	62.2	133	101.0	5.0
		Phosphate by IC	26.4	1.3 u	26.5	99.5	1.0
		Sulfate by IC	159	26.6	133	100	5.0
-005	B13CR7	Cyanide, Total	4.60	0.34u	4.94	92.9	1.0
		Soluble Chromium VI	5.4	0.52	4.1	118.4	1.0
		Insoluble Chromium VI	1350	0.52	1200	113.0	100
		Nitrate Nitrite	5.2	0.19u	5.2	101.6	1.0
		Ammonia, as N	92.4	2.5 u	103	90.0	1.0
		Sulfide	427	11.6	561	74.0	1.0
BLANK10	01LIC075-MB1	Chloride by IC	24.7	1.2 u	25.0	98.8	1.0
		Fluoride by IC	53.1	2.5 u	50.0	106.1	1.0
		Nitrite by IC	25.5	1.25u	25.0	102.0	1.0
		Nitrate by IC	24.9	1.25u	25.0	99.8	1.0
		Phosphate by IC	26.1	1.2 u	25.0	104.4	1.0
		Sulfate by IC	24.3	1.2 u	25.0	97.1	1.0
BLANK10	01LVI087-MB1	Soluble Chromium VI	4.0	0.40u	4.0	100.5	1.0
		Insoluble Chromium VI	1190	0.40u	1220	97.4	100
BLANK10	01LHZ005-MB1	Hydrazine	5.1	1.0 u	5.0	101.4	1.0
BLANK10	01LN3061-MB1	Nitrate Nitrite	5.2	0.20u	5.0	103.0	1.0
BLANK10	01LAMA52-MB1	Ammonia, as N	86.2	2.5 u	100	86.2	1.0
		Ammonia, as N MSD	87.8	2.5 u	100	87.8	1.0
BLANK10	01LSD062-MB1	Sulfide	573	40.0 u	617	92.9	1.0
BLANK10	01LSD063-MB1	Sulfide	513	40.0 u	542	94.6	1.0
		Sulfide MSD	517	40.0 u	542	95.3	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 11/19/01

CLIENT: TNUHANFORD B02-006 H1579 LVL LOT #: 0111L279

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	01LAMA52-MB1	Ammonia, as N	86.2	87.8	1.7
BLANK10	01LSD063-MB1	Sulfide	94.6	95.3	0.78

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/19/01

CLIENT: TNUHANFORD B02-006 H1579 LVL LOT #: 0111L279

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B13CR3	% Solids	84.4	83.4	1.1	1.0
		Hydrazine	1.2 u	1.2 u	NC	1.0
		pH	6.5	6.6	0.3	1.0
-003REP	B13CR5	Chloride by IC	3.7	3.6	1.3	1.0
		Fluoride by IC	2.6 u	2.6 u	NC	1.0
		Nitrite by IC	1.32u	1.32u	NC	1.0
		Nitrate by IC	62.2	53.7	14.8	5.0
		Phosphate by IC	1.3 u	1.3 u	NC	1.0
		Sulfate by IC	26.6	23.9	10.6	1.0
-005REP	B13CR7	Cyanide, Total	0.34u	0.48u	NC	1.0
		Chromium VI	0.52	0.56	6.1	1.0
		Nitrate Nitrite	0.19u	0.21u	NC	1.0
		Ammonia, as N	2.5 u	2.6 u	NC	1.0
		Sulfide	38.6 u	36.1 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/19/01

CLIENT: TNUHANFORD B02-006 H1579 LVL LOT #: 0111L279

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

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

Lionville Laboratory Use Only

01116279

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVL

Client: [redacted]
Est. Final: [redacted]
Project: [redacted]
Project Contact/Phone #: [redacted]
Lionville Laboratory Project Manager: [redacted]
QC: SRC [redacted] Del [redacted] TA [redacted]

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

	A	B	C					D		E	F	G			
Refrigerator #	1	2	2					2		2	2	2			
#/Type Container	[redacted]														
Volume	[redacted]														
Preservatives	[redacted]														
ANALYSES REQUESTED →	ORGANIC							INORG							
	VOA	BNA	Pest/PCB	Herb				Metal	CN						
	Lionville Laboratory Use Only														
	0624H OGCSC	0625X ODRO	OPCB					ICAES METO		INORG	ZPH	ZHYZN			

MATRIX CODES: S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solid, DL - Drum Liquid, WP - Wipe, FL - Fish, WI - Wipe, X - Other, F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected
001	[redacted]			[redacted]		
002	[redacted]			[redacted]		
003	[redacted]			[redacted]		
004	[redacted]			[redacted]		
005	[redacted]			[redacted]		

Special Instructions: SAF # B02-006
Run Matrix QC
OGCSC: Propanol, Ethanol

DATE/REVISIONS:
METO 1. As, Ba, Cd, Cr, Pb, Se, Ag, Be, Cu, Ni, V, Zn, Hg
INORG 2. IN3N2, ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4,
3. ISFD, INH3N, ICNTO
4.
5.
6.

Relinquished by	Received by	Date	Time
Ed Eq	[signature]	11/6/01	0950

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7954 8660

Lionville Laboratory Use Only

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

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

0111219

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-006-06	Page 1 of 1

Collector Bowers DL/Watson D	**Company Contact** Cearlock, CS	**Telephone No.** 372-9638	**Project Coordinator** TRENT, SJ
Price Code 8N	**Data Turnaround** 45 Days	**Air Quality** ☐	
Project Designation 200 Area Source Characterization 200-CS-1 OU - Soil Samplin	**Sampling Location** 200 East & West		**SAF No.** B02-006
Ice Chest No. See OSPC	**Field Logbook No.** EL 1551	**COA** B20CS1673C	**Method of Shipment** Fed Ex
Shipped To TMA/RECRA	**Offsite Property No.** A020017		**Bill of Lading/Air Bill No.** See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.#3A at the 3728 Shipping Facility on 11 1 01. Collector not available to relinquish samples on 11 5 01 for shipment.
RT 11.5.01

SAMPLE ANALYSIS

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

	Sample No.	Matrix *	Sample Date	Sample Time										
1	B13CR3	SOIL	11-1-01	0840		X	X	X	X	X	X	X		
2	B13CR4	SOIL	11-1-01	0840		X	X	X	X	X	X	X		
3	B13CR5	SOIL	11-1-01	0910		X	X	X	X	X	X	X		
4	B13CR6	SOIL	11-1-01	~~0915~~ 0930		X	X	X	X	X	X	X		
5	B13CR7	SOIL	11-1-01	0945		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
DS WATSON	11-1-01 1115	REF 3A 3728 BLDG.	11-1-01 1115
Ref 3A 3728	11-5-01 0900	RTMoore	11-5-01 0900
RTMoore	11-5-01 0900	FEDEX	
FEDEX	11/6/01 0950	Patt Henry	11/6/01 0950

SPECIAL INSTRUCTIONS

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

(1) ~~Gross Alpha; Gross Beta; Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Radium-226}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Neptunium-237; Isotopic Uranium~~ DSW 11-1-01
(2) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(3) NO2/NO3 - 353.2; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(4) Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D

Use B13CL5 for T.A. on all samples

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: 11/6/01 0950

SDG#: 01116279

Work Order Number: _____ SAF# B02-006

Shipping Container ID: SMC437 ERC96-066 ERC96-002 Chain of Custody # B02-006-06

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 3°, 3.2, 4.3
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 14 EA COOLER
7. Sample holding times exceeded? Yes [ ] No [✓]

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

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

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

Sample Custodian/Laboratory: Neil Hernandez Louisville Laboratory Group Date: 11/6/01

Telephoned to: _____ On _____ By _____

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