1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1510 was composed of two solid (soil) samples designated under SAF No. B01-103 with a Project Designation of: 200 Area RCRA Drilling Waste Designation.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on November 26, 2001.

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MAR 26 2002
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2.0 ANALYSIS NOTES

2.1 Isotopic Plutonium 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 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.4 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.5 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

2.6 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.7 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.8 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.9 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.10 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.11 Tritium 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

11/29/01
Date

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1510

SDG 7087
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1510

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B12XJ7	200 East	SOLID		R109124-01	B01-103	B01-103-12	09/19/01 13:50
B12XJ8	200 East	SOLID		R109124-02	B01-103	B01-103-12	09/19/01 14:10
Method Blank		SOLID		R109124-04	B01-103		
Lab Control Sample		SOLID		R109124-03	B01-103		
Duplicate (R109124-02)	200 East	SOLID		R109124-05	B01-103		09/19/01 14:10
Spike (R109124-02)	200 East	SOLID		R109124-06	B01-103		09/19/01 14:10

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 11/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1510

SDG 7087
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1510

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
7087	B01-103-12	B12XJ7	SOLID	95.9	1452 g		09/21/01	2	R109124-01	7087-001
		B12XJ8	SOLID	74.4	1525 g		09/21/01	2	R109124-02	7087-002
		Method Blank	SOLID						R109124-04	7087-004
		Lab Control Sample	SOLID						R109124-03	7087-003
		Duplicate (R109124-02)	SOLID	74.4	1525 g		09/21/01	2	R109124-05	7087-005
		Spike (R109124-02)	SOLID		1525 g		09/21/01	2	R109124-06	7087-006

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 11/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1510

SDG 7087
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1510

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	7008-148	5.0	2			1	1	1/1		
NP	SOLID	Neptunium in Soil	7008-148	5.0	2			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7008-148	5.0	2			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	7008-148	5.0	2			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	7008-148	5.0	2			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	7008-148	10.0	2			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	7008-148	10.0	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7008-148	15.0	2			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Soil	7008-148	10.0	2			1	1	1/1		
H	SOLID	Tritium in Soil	7008-148	10.0	2			1	1	1/1	1/1	X
NI_L	SOLID	Nickel 63 in Soil	7008-148	10.0	2			1	1	1/1		

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

Lab id TMANC
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1510

SDG 7087
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1510

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B12XJ7			R109124-01	7087-001	AM		11/16/01	11/25/01	MCM	Americium 241 in Soil
200 East		SOLID	09/19/01	7087-001	C		10/28/01	11/25/01	MCM	Carbon 14 in Soil
B01-103-12	B01-103		09/21/01	7087-001	GAM		11/08/01	11/25/01	MCM	Gamma Scan
				7087-001	H		11/03/01	11/25/01	MCM	Tritium in Soil
				7087-001	NI_L		10/29/01	11/25/01	MCM	Nickel 63 in Soil
				7087-001	NP		11/06/01	11/25/01	MCM	Neptunium in Soil
				7087-001	PU		11/08/01	11/25/01	MCM	Plutonium, Isotopic in Solids
				7087-001	SR		10/25/01	11/25/01	MCM	Total Strontium in Soil
				7087-001	TC		11/20/01	11/25/01	MCM	Technetium 99 in Soil
				7087-001	TH		11/03/01	11/25/01	MCM	Thorium, Isotopic in Soil
				7087-001	U		11/06/01	11/25/01	MCM	Uranium, Isotopic in Soil
B12XJ8			R109124-02	7087-002	AM		11/16/01	11/25/01	MCM	Americium 241 in Soil
200 East		SOLID	09/19/01	7087-002	C		10/28/01	11/25/01	MCM	Carbon 14 in Soil
B01-103-12	B01-103		09/21/01	7087-002	GAM		11/09/01	11/25/01	MCM	Gamma Scan
				7087-002	H		11/03/01	11/25/01	MCM	Tritium in Soil
				7087-002	NI_L		10/29/01	11/25/01	MCM	Nickel 63 in Soil
				7087-002	NP		11/06/01	11/25/01	MCM	Neptunium in Soil
				7087-002	PU		11/08/01	11/25/01	MCM	Plutonium, Isotopic in Solids
				7087-002	SR		10/25/01	11/25/01	MCM	Total Strontium in Soil
				7087-002	TC		11/20/01	11/25/01	MCM	Technetium 99 in Soil
				7087-002	TH		10/30/01	11/25/01	MCM	Thorium, Isotopic in Soil
				7087-002	U		11/06/01	11/25/01	MCM	Uranium, Isotopic in Soil
Method Blank			R109124-04	7087-004	AM		11/16/01	11/25/01	MCM	Americium 241 in Soil
		SOLID		7087-004	C		10/28/01	11/25/01	MCM	Carbon 14 in Soil
	B01-103			7087-004	GAM		11/08/01	11/25/01	MCM	Gamma Scan
				7087-004	H		11/03/01	11/25/01	MCM	Tritium in Soil
				7087-004	NI_L		10/29/01	11/25/01	MCM	Nickel 63 in Soil
				7087-004	NP		11/06/01	11/25/01	MCM	Neptunium in Soil
				7087-004	PU		11/08/01	11/25/01	MCM	Plutonium, Isotopic in Solids
				7087-004	SR		10/25/01	11/25/01	MCM	Total Strontium in Soil
				7087-004	TC		11/20/01	11/25/01	MCM	Technetium 99 in Soil
				7087-004	TH		10/30/01	11/25/01	MCM	Thorium, Isotopic in Soil
				7087-004	U		11/07/01	11/25/01	MCM	Uranium, Isotopic in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1510

SDG 7087
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1510

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample			R109124-03	7087-003	AM		11/16/01	11/25/01	MCM	Americium 241 in Soil
		SOLID		7087-003	C		10/28/01	11/25/01	MCM	Carbon 14 in Soil
	B01-103			7087-003	GAM		11/08/01	11/25/01	MCM	Gamma Scan
				7087-003	H		11/03/01	11/25/01	MCM	Tritium in Soil
				7087-003	NI_L		10/29/01	11/25/01	MCM	Nickel 63 in Soil
				7087-003	NP		11/06/01	11/25/01	MCM	Neptunium in Soil
				7087-003	PU		11/08/01	11/25/01	MCM	Plutonium, Isotopic in Solids
				7087-003	SR		10/25/01	11/25/01	MCM	Total Strontium in Soil
				7087-003	TC		11/21/01	11/25/01	MCM	Technetium 99 in Soil
				7087-003	TH		10/30/01	11/25/01	MCM	Thorium, Isotopic in Soil
				7087-003	U		11/07/01	11/25/01	MCM	Uranium, Isotopic in Soil
Duplicate (R109124-02)			R109124-05	7087-005	AM		11/16/01	11/25/01	MCM	Americium 241 in Soil
200 East		SOLID	09/19/01	7087-005	C		10/28/01	11/25/01	MCM	Carbon 14 in Soil
	B01-103		09/21/01	7087-005	GAM		11/12/01	11/25/01	MCM	Gamma Scan
				7087-005	H		11/04/01	11/25/01	MCM	Tritium in Soil
				7087-005	NI_L		10/29/01	11/25/01	MCM	Nickel 63 in Soil
				7087-005	NP		11/07/01	11/25/01	MCM	Neptunium in Soil
				7087-005	PU		11/08/01	11/25/01	MCM	Plutonium, Isotopic in Solids
				7087-005	SR		10/25/01	11/25/01	MCM	Total Strontium in Soil
				7087-005	TC		11/20/01	11/25/01	MCM	Technetium 99 in Soil
				7087-005	TH		10/30/01	11/25/01	MCM	Thorium, Isotopic in Soil
				7087-005	U		11/07/01	11/25/01	MCM	Uranium, Isotopic in Soil
Spike (R109124-02)			R109124-06	7087-006	H		11/04/01	11/25/01	MCM	Tritium in Soil
200 East		SOLID	09/19/01							
	B01-103		09/21/01							

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1510

SDG 7087
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1510

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
AM	B01-103	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	2			1	1	1		5
C	B01-103	Carbon 14 in Soil	C14_COX_LSC	2			1	1	1		5
GAM	B01-103	Gamma Scan	GAMMA_GS	2			1	1	1		5
H	B01-103	Tritium in Soil	906.0_H3_LSC	2			1	1	1	1	6
NI_L	B01-103	Nickel 63 in Soil	NI63_LSC	2			1	1	1		5
NP	B01-103	Neptunium in Soil	NP237_LLE_PLATE_AEA	2			1	1	1		5
PU	B01-103	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	2			1	1	1		5
SR	B01-103	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	2			1	1	1		5
TC	B01-103	Technetium 99 in Soil	TC99_TR_SEP_LSC	2			1	1	1		5
TH	B01-103	Thorium, Isotopic in Soil	THISO_IE_PLATE_AEA	2			1	1	1		5
U	B01-103	Uranium, Isotopic in Soil	UISO_PLATE_AEA	2			1	1	1		5
TOTALS				22			11	11	11	1	56

Lab id TMANC
Protocol Hanford
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1510

R109124-04 Method Blank

METHOD BLANK

SDG	7087	Client/Case no	Hanford SDG H1510
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R109124-04	Client sample id	Method Blank
Dept sample id	7087-004	Material/Matrix	SOLID
		SAF No	B01-103

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.080	0.14	0.23	400	U	H
Carbon 14	14762-75-5	0	3.1	5.1	50	U	C
Nickel 63	13981-37-8	0.502	1.1	1.8	30	U	NI_L
Total Strontium	SR-RAD	-0.052	0.11	0.19	1.0	U	SR
Americium 241	14596-10-2	0	0.053	0.20	1.0	U	AM
Technetium 99	14133-76-7	-0.095	0.13	0.50	15	U	TC
Thorium 228	14274-82-9	0.354	0.39	0.64		U	TH
Thorium 230	14269-63-7	0.196	0.31	0.43	1.0	U	TH
Thorium 232	TH-232	-0.078	0.079	0.30	1.0	U	TH
Uranium 233	U-233/234	0.020	0.040	0.15	1.0	U	U
Uranium 235	15117-96-1	0	0.048	0.19	1.0	U	U
Uranium 238	U-238	0	0.040	0.15	1.0	U	U
Neptunium 237	13994-20-2	0.011	0.015	0.11	1.0	U	NP
Plutonium 238	13981-16-3	0	0.049	0.19	1.0	U	PU
Plutonium 239/240	PU-239/240	0.024	0.049	0.19	1.0	U	PU
Potassium 40	13966-00-2	U		0.086		U	GAM
Cobalt 60	10198-40-0	U		0.007	0.050	U	GAM
Cesium 137	10045-97-3	U		0.006	0.10	U	GAM
Radium 226	13982-63-3	U		0.014	0.10	U	GAM
Radium 228	15262-20-1	U		0.024	0.20	U	GAM
Europium 152	14683-23-9	U		0.015	0.10	U	GAM
Europium 154	15585-10-1	U		0.020	0.10	U	GAM
Europium 155	14391-16-3	U		0.014	0.10	U	GAM
Thorium 228	14274-82-9	U		0.009		U	GAM
Thorium 232	TH-232	U		0.024		U	GAM
Uranium 235	15117-96-1	U		0.022		U	GAM
Uranium 238	U-238	U		0.86		U	GAM
Americium 241	14596-10-2	U		0.017		U	GAM

200 Area RCRA Drilling Waste Desig.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/26/01

B L A N K , c o n t .

SDG	7087	Client/Case no	Hanford	SDG H1510	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R109124-04	Client sample id	Method Blank		
Dept sample id	7087-004	Material/Matrix		SOLID	
		SAF No	B01-103		

QC-BLANK 40026

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1510

R109124-03

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7087
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1510
Case no No. 630

Lab sample id R109124-03
Dept sample id 7087-003

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B01-103

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
Tritium	24.6	0.51	0.24	400	J	H	24.6	0.98	100	84-116	80-120
Carbon 14	10900	220	32	50		C	11300	450	96	84-116	80-120
Nickel 63	261	4.7	1.8	30		NI_L	264	11	99	84-116	80-120
Total Strontium	22.9	0.78	0.21	1.0		SR	22.9	0.92	100	83-117	80-120
Americium 241	20.3	2.1	0.22	1.0		AM	21.0	0.84	97	82-118	80-120
Technetium 99	132	4.2	0.38	15		TC	131	5.2	101	83-117	80-120
Thorium 230	48.0	4.4	0.48	1.0		TH	44.8	1.8	107	82-118	80-120
Uranium 233	19.4	1.5	0.68	1.0		U	19.3	0.77	100	85-115	80-120
Uranium 235	14.9	1.3	0.13	1.0		U	15.7	0.63	95	84-116	80-120
Uranium 238	21.1	1.6	0.65	1.0		U	21.0	0.84	100	85-115	80-120
Neptunium 237	22.7	0.97	0.042	1.0		NP	23.8	0.95	95	89-111	80-120
Plutonium 238	27.7	3.1	0.34	1.0		PU	27.2	1.1	102	80-120	80-120
Plutonium 239/240	31.4	3.4	0.27	1.0		PU	29.0	1.2	108	80-120	80-120
Cobalt 60	0.268	0.037	0.028	0.050		GAM	0.295	0.012	91	72-128	80-120
Cesium 137	0.356	0.037	0.032	0.10		GAM	0.341	0.014	104	71-129	80-120

200 Area RCRA Drilling Waste Desig.

QC-LCS 40025

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 11/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1510

R109124-05

B12XJ8

DUPLICATE

SDG	7087			Client/Case no	Hanford — SDG H1510
Contact	Melissa C. Mannion			Case no	No. 630
DUPLICATE		ORIGINAL			
Lab sample id	R109124-05	Lab sample id	R109124-02	Client sample id	B12XJ8
Dept sample id	7087-005	Dept sample id	7087-002	Location/Matrix	200 East — SOLID
		Received	09/21/01	Collected/Weight	09/19/01 14:10 — 1525 g
% solids	74.4	% solids	74.4	Custody/SAF No	B01-103-12 — B01-103

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
Tritium	-0.039	0.060	0.10	400	U	H	-0.035	0.065	0.11	U	-		
Carbon 14	-2.54	2.5	4.2	50	U	C	-0.130	2.4	4.0	U	-		
Nickel 63	-0.444	1.2	2.1	30	U	NI_L	0.426	1.2	2.1	U	-		
Total Strontium	-0.075	0.094	0.17	1.0	U	SR	0.028	0.13	0.26	U	-		
Americium 241	0	0.056	0.22	1.0	U	AM	-0.025	0.049	0.19	U	-		
Technetium 99	-0.152	0.13	0.51	15	U	TC	0.122	0.16	0.50	U	-		
Thorium 228	0.142	0.28	0.54		U	TH	0.246	0.39	0.71	U	-		
Thorium 230	0.283	0.35	0.47	1.0	U	TH	0.196	0.39	0.47	U	-		
Thorium 232	0.390	0.28	0.27	1.0	J	TH	0.392	0.29	0.37	J	1	155	
Uranium 233	0.305	0.15	0.12	1.0	J	U	0.319	0.058	0.027	J	4	78	
Uranium 235	-0.018	0.037	0.14	1.0	U	U	0.032	0.022	0.021	J	200	258	
Uranium 238	0.351	0.15	0.12	1.0	J	U	0.341	0.058	0.021	J	3	71	
Neptunium 237	0	0.061	0.091	1.0	U	NP	0.010	0.013	0.025	U	-		
Plutonium 238	0	0.048	0.18	1.0	U	PU	-0.030	0.061	0.23	U	-		
Plutonium 239/240	0	0.048	0.18	1.0	U	PU	0	0.061	0.23	U	-		
Potassium 40	9.94	0.61	0.27			GAM	9.99	0.65	0.43		1	35	
Cobalt 60	U		0.037	0.050	U	GAM	U		0.033	U	-		
Cesium 137	U		0.027	0.10	U	GAM	U		0.028	U	-		
Radium 226	0.314	0.058	0.057	0.10		GAM	0.358	0.060	0.062		13	49	
Radium 228	0.510	0.16	0.16	0.20		GAM	0.476	0.13	0.15		7	70	
Europium 152	U		0.059	0.10	U	GAM	U		0.067	U	-		
Europium 154	U		0.11	0.10	U	GAM	U		0.11	U	-		
Europium 155	U		0.052	0.10	U	GAM	U		0.075	U	-		
Thorium 228	0.456	0.032	0.031			GAM	0.510	0.032	0.032		11	35	
Thorium 232	0.510	0.16	0.16			GAM	0.476	0.13	0.15		7	70	
Uranium 235	U		0.073		U	GAM	U		0.099	U	-		
Uranium 238	U		3.5		U	GAM	U		4.0	U	-		
Americium 241	U		0.035		U	GAM	U		0.095	U	-		

200 Area RCRA Drilling Waste Desig.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/26/01

DUPLICATE, cont.

SDG	7087		Client/Case no	Hanford	SDG H1510
Contact	Melissa C. Mannion		Case no	No. 630	
DUPLICATE		ORIGINAL			
Lab sample id	R109124-05	Lab sample id	R109124-02	Client sample id	B12XJ8
Dept sample id	7087-005	Dept sample id	7087-002	Location/Matrix	200 East SOLID
		Received	09/21/01	Collected/Weight	09/19/01 14:10 1525 g
% solids	74.4	% solids	74.4	Custody/SAF No	B01-103-12 B01-103

QC-DUP#2 40027

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1510

R109124-06 B12XJ8

MATRIX SPIKE

SDG	7087			Client/Case no	Hanford SDG H1510
Contact	Melissa C. Mannion			Case no	No. 630
	MATRIX SPIKE		ORIGINAL		
Lab sample id	R109124-06	Lab sample id	R109124-02	Client sample id	B12XJ8
Dept sample id	7087-006	Dept sample id	7087-002	Location/Matrix	200 East SOLID
		Received	09/21/01	Collected/Weight	09/19/01 14:10 1525 g
		% solids	74.4	Custody/SAF No	B01-103-12 B01-103

ANALYTE	SPIKE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	ORIGINAL pCi/g	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	45.4	0.47	0.11	400	JX	H	49.8	2.0	-0.035	0.065	91	85-115	60-140

200 Area RCRA Drilling Waste Desig.

QC-MS#2 40028

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-MS
Version 3.06
Report date 11/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1510

R109124-01 B12XJ7

DATA SHEET

SDG	7087	Client/Case no	Hanford	SDG H1510
Contact	Melissa C. Mannion	Contract	No. 630	
Lab sample id	R109124-01	Client sample id	B12XJ7	
Dept sample id	7087-001	Location/Matrix	200 East	SOLID
Received	09/21/01	Collected/Weight	09/19/01 13:50	1452 g
% solids	95.9	Custody/SAF No	B01-103-12	B01-103

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0	0.045	0.078	400	UX	H
Carbon 14	14762-75-5	-1.32	3.0	5.0	50	U	C
Nickel 63	13981-37-8	0.578	1.2	2.0	30	U	NI_L
Total Strontium	SR-RAD	0.006	0.11	0.24	1.0	U	SR
Americium 241	14596-10-2	0.028	0.056	0.21	1.0	U	AM
Technetium 99	14133-76-7	-0.097	0.13	0.28	15	U	TC
Thorium 228	14274-82-9	0.795	0.59	0.80		U	TH
Thorium 230	14269-63-7	0.706	0.42	0.46	1.0	J	TH
Thorium 232	TH-232	0.872	0.42	0.32	1.0	J	TH
Uranium 233	U-233/234	0.490	0.069	0.031	1.0	J	U
Uranium 235	15117-96-1	0.050	0.028	0.021	1.0	J	U
Uranium 238	U-238	0.593	0.074	0.025	1.0	J	U
Neptunium 237	13994-20-2	0.041	0.036	0.045	1.0	U	NP
Plutonium 238	13981-16-3	0	0.046	0.18	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.046	0.18	1.0	U	PU
Potassium 40	13966-00-2	12.9	0.67	0.24			GAM
Cobalt 60	10198-40-0	U		0.037	0.050	U	GAM
Cesium 137	10045-97-3	U		0.031	0.10	U	GAM
Radium 226	13982-63-3	0.552	0.069	0.064	0.10		GAM
Radium 228	15262-20-1	0.784	0.15	0.14	0.20		GAM
Europium 152	14683-23-9	U		0.068	0.10	U	GAM
Europium 154	15585-10-1	U		0.12	0.10	U	GAM
Europium 155	14391-16-3	U		0.062	0.10	U	GAM
Thorium 228	14274-82-9	0.730	0.038	0.036			GAM
Thorium 232	TH-232	0.784	0.15	0.14			GAM
Uranium 235	15117-96-1	U		0.098		U	GAM
Uranium 238	U-238	U		4.6		U	GAM
Americium 241	14596-10-2	U		0.041		U	GAM

200 Area RCRA Drilling Waste Desig.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1510

R109124-02 B12XJ8

DATA SHEET

SDG	7087	Client/Case no	Hanford	SDG H1510	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R109124-02	Client sample id	B12XJ8		
Dept sample id	7087-002	Location/Matrix	200 East	SOLID	
Received	09/21/01	Collected/Weight	09/19/01 14:10	1525 g	
% solids	74.4	Custody/SAF No	B01-103-12	B01-103	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.035	0.065	0.11	400	U	H
Carbon 14	14762-75-5	-0.130	2.4	4.0	50	U	C
Nickel 63	13981-37-8	0.426	1.2	2.1	30	U	NI_L
Total Strontium	SR-RAD	0.028	0.13	0.26	1.0	U	SR
Americium 241	14596-10-2	-0.025	0.049	0.19	1.0	U	AM
Technetium 99	14133-76-7	0.122	0.16	0.50	15	U	TC
Thorium 228	14274-82-9	0.246	0.39	0.71		U	TH
Thorium 230	14269-63-7	0.196	0.39	0.47	1.0	U	TH
Thorium 232	TH-232	0.392	0.29	0.37	1.0	J	TH
Uranium 233	U-233/234	0.319	0.058	0.027	1.0	J	U
Uranium 235	15117-96-1	0.032	0.022	0.021	1.0	J	U
Uranium 238	U-238	0.341	0.058	0.021	1.0	J	U
Neptunium 237	13994-20-2	0.010	0.013	0.025	1.0	U	NP
Plutonium 238	13981-16-3	-0.030	0.061	0.23	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.061	0.23	1.0	U	PU
Potassium 40	13966-00-2	9.99	0.65	0.43			GAM
Cobalt 60	10198-40-0	U		0.033	0.050	U	GAM
Cesium 137	10045-97-3	U		0.028	0.10	U	GAM
Radium 226	13982-63-3	0.358	0.060	0.062	0.10		GAM
Radium 228	15262-20-1	0.476	0.13	0.15	0.20		GAM
Europium 152	14683-23-9	U		0.067	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.075	0.10	U	GAM
Thorium 228	14274-82-9	0.510	0.032	0.032			GAM
Thorium 232	TH-232	0.476	0.13	0.15			GAM
Uranium 235	15117-96-1	U		0.099		U	GAM
Uranium 238	U-238	U		4.0		U	GAM
Americium 241	14596-10-2	U		0.095		U	GAM

200 Area RCRA Drilling Waste Desig.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1510

Test AM Matrix SOLID
SDG 7087
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1510

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 7008-148						
B12XJ7	R109124-01			7087-001	U	
B12XJ8	R109124-02			7087-002	U	
BLK (QC ID=40026)	R109124-04			7087-004	U	
LCS (QC ID=40025)	R109124-03			7087-003	ok	
Duplicate (R109124-02)	R109124-05			7087-005	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
200 Area RCRA Drilling Waste Desig.						

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 7008-148	2σ prep error 5.0 %				Reference Lab Notebook 7008 pg. 148											
B12XJ7	R109124-01			0.21	0.500			75		106			58	11/15/01	11/16	SS-045
B12XJ8	R109124-02			0.19	0.500			86		109			58	11/15/01	11/16	SS-047
BLK (QC ID=40026)	R109124-04			0.20	0.500			83		109				11/15/01	11/16	SS-049
LCS (QC ID=40025)	R109124-03			0.22	0.500			73		109				11/15/01	11/16	SS-048
Duplicate (R109124-02) (QC ID=40027)	R109124-05			0.22	0.500			73		110			58	11/15/01	11/16	SS-050
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES				
	MDA	0.21	±	0.026
	YIELD	78	±	12

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1510

Test NP Matrix SOLID
SDG 7087
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1510

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 7008-148						
B12XJ7	R109124-01			7087-001	U	
B12XJ8	R109124-02			7087-002	U	
BLK (QC ID=40026)	R109124-04			7087-004	U	
LCS (QC ID=40025)	R109124-03			7087-003	ok	
Duplicate (R109124-02)	R109124-05			7087-005	-	U
Nominal values and limits from method 200 Area RCRA Drilling Waste Desig.				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 7008-148 *2σ prep error 5.0 %* *Reference Lab Notebook 7008 pg. 148*																
B12XJ7	R109124-01			0.045	0.500			40		1027			48	10/25/01	11/06	SS-063
B12XJ8	R109124-02			0.025	0.500			71		1027			48	10/25/01	11/06	SS-064
BLK (QC ID=40026)	R109124-04			0.11	0.500			63		1027				10/25/01	11/06	SS-066
LCS (QC ID=40025)	R109124-03			0.042	0.500			41		1027				10/25/01	11/06	SS-065
Duplicate (R109124-02) (QC ID=40027)	R109124-05			0.091	0.500			49		155			49	10/25/01	11/07	SS-041
Nominal values and limits from method				1.0	0.500			20-105		100			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES				
	MDA	0.063	±	0.072
	YIELD	53	±	27

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1510

Test PU Matrix SOLID
SDG 7087
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1510

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 7008-148								
B12XJ7	R109124-01			7087-001	U		U	
B12XJ8	R109124-02			7087-002	U		U	
BLK (QC ID=40026)	R109124-04			7087-004	U		U	
LCS (QC ID=40025)	R109124-03			7087-003	ok		ok	
Duplicate (R109124-02)	R109124-05			7087-005	-	U	-	U
Nominal values and limits from method 200 Area RCRA Drilling Waste Desig.				RDLs (pCi/g)	1.0		1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7008-148				2σ prep error 5.0 %				Reference Lab Notebook 7008 pg. 148								
B12XJ7	R109124-01			0.18	0.500			96		111			50	11/07/01	11/08	SS-031
B12XJ8	R109124-02			0.23	0.500			72		111			50	11/07/01	11/08	SS-032
BLK (QC ID=40026)	R109124-04			0.19	0.500			85		111				11/07/01	11/08	SS-042
LCS (QC ID=40025)	R109124-03			0.34	0.500			58		111				11/07/01	11/08	SS-041
Duplicate (R109124-02) (QC ID=40027)	R109124-05			0.18	0.500			85		114			50	11/07/01	11/08	SS-043
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES			
MDA	0.22	±	0.14
YIELD	79	±	29

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1510

Test TH Matrix SOLID
SDG 7087
Contact Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1510

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 7008-148							
B12XJ7	R109124-01			7087-001	U	0.706 J	0.872 J
B12XJ8	R109124-02			7087-002	U	U	0.392 J
BLK (QC ID=40026)	R109124-04			7087-004	U	U	U
LCS (QC ID=40025)	R109124-03			7087-003		ok	
Duplicate (R109124-02)	R109124-05			7087-005	- U	- U	ok J
Nominal values and limits from method 200 Area RCRA Drilling Waste Desig.				RDLs (pCi/g)		1.0	1.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7008-148	2σ prep error 5.0 %					Reference Lab Notebook 7008 pg. 148										
B12XJ7	R109124-01			0.46	0.250			87		1324			45	10/29/01	11/03	SS-053
B12XJ8	R109124-02			0.47	0.250			83		154			41	10/29/01	10/30	SS-021
BLK (QC ID=40026)	R109124-04			0.43	0.250			85		187				10/29/01	10/30	SS-019
LCS (QC ID=40025)	R109124-03			0.48	0.250			77		155				10/29/01	10/30	SS-024
Duplicate (R109124-02) (QC ID=40027)	R109124-05			0.47	0.250			94		188			41	10/29/01	10/30	SS-021
Nominal values and limits from method				1.0	0.250			20-105		150			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.46 ± 0.038
YIELD 85 ± 12

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1510

Test U Matrix SOLID
SDG 7087
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1510

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 7008-148											
B12XJ7	R109124-01			7087-001	0.490 J	0.050 J	0.593 J	83	16	8	5
B12XJ8	R109124-02			7087-002	0.319 J	0.032 J	0.341 J	94	23	9	7
BLK (QC ID=40026)	R109124-04			7087-004	U	U	U				
LCS (QC ID=40025)	R109124-03			7087-003	ok	ok	ok				
Duplicate (R109124-02)	R109124-05			7087-005	ok J	ok U	ok J	87	57	-5	11
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
200 Area RCRA Drilling Waste Desig.								Averages 88		4	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7008-148 2σ prep error 5.0 % Reference Lab Notebook 7008 pg. 148																
B12XJ7	R109124-01			0.031	0.500			102		1026			48	10/27/01	11/06	SS-049
B12XJ8	R109124-02			0.027	0.500			99		1027			48	10/27/01	11/06	SS-050
BLK (QC ID=40026)	R109124-04			0.19	0.500			97		117				10/27/01	11/07	SS-033
LCS (QC ID=40025)	R109124-03			0.68	0.500			113		156				10/27/01	11/07	SS-031
Duplicate (R109124-02) (QC ID=40027)	R109124-05			0.14	0.500			95		156			49	10/27/01	11/07	SS-033
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 0.21 ± 0.54
YIELD 101 ± 14

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1510

Test SR Matrix SOLID
SDG 7087
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1510

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 7008-148						
B12XJ7	R109124-01			7087-001	U	
B12XJ8	R109124-02			7087-002	U	
BLK (QC ID=40026)	R109124-04			7087-004	U	
LCS (QC ID=40025)	R109124-03			7087-003	ok	
Duplicate (R109124-02)	R109124-05			7087-005	-	U
Nominal values and limits from method 200 Area RCRA Drilling Waste Desig.		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 7008-148 2σ prep error 10.0 % Reference Lab Notebook 7008 pg. 148																
B12XJ7	R109124-01			0.24	1.00			97		100			36	10/25/01	10/25	GRB-224
B12XJ8	R109124-02			0.26	1.00			100		100			36	10/25/01	10/25	GRB-229
BLK (QC ID=40026)	R109124-04			0.19	1.00			92		200				10/25/01	10/25	GRB-201
LCS (QC ID=40025)	R109124-03			0.21	1.00			97		100				10/25/01	10/25	GRB-221
Duplicate (R109124-02) (QC ID=40027)	R109124-05			0.17	1.00			96		200			36	10/25/01	10/25	GRB-202
Nominal values and limits from method				1.0	1.00			30-105		100			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES				
	MDA	0.21	±	0.073
	YIELD	96	±	6

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1510

Test TC Matrix SOLID
SDG 7087
Contact Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1510

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 7008-148						
B12XJ7	R109124-01			7087-001	U	
B12XJ8	R109124-02			7087-002	U	
BLK (QC ID=40026)	R109124-04			7087-004	U	
LCS (QC ID=40025)	R109124-03			7087-003	ok	
Duplicate (R109124-02)	R109124-05			7087-005	-	U
Nominal values and limits from method 200 Area RCRA Drilling Waste Desig.				RDLs (pCi/g)	15	

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 7008-148 2σ prep error 10.0 % Reference Lab Notebook 7008 pg. 148																
B12XJ7	R109124-01			0.28	1.00			86		200			62	11/15/01	11/20	GRB-224
B12XJ8	R109124-02			0.50	1.00			88		62			62	11/15/01	11/20	GRB-218
BLK (QC ID=40026)	R109124-04			0.50	1.00			95		62				11/15/01	11/20	GRB-219
LCS (QC ID=40025)	R109124-03			0.38	1.00			92		100				11/15/01	11/21	GRB-205
Duplicate (R109124-02) (QC ID=40027)	R109124-05			0.51	1.00			86		62			62	11/15/01	11/20	GRB-220
Nominal values and limits from method				15	1.00			20-105		50			180			

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
	CP-060	Soil Preparation, rev 3
	CP-021	Preparation of Tc-99m Tracer, rev 1
	CP-002	Q.C. Preparation, rev 3
	CP-003	Tracing, rev 3
	CP-542	Technetium-99 Purification (Soil) by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.43 ± 0.20
YIELD 89 ± 8

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1510

Test GAM Matrix SOLID
SDG 7087
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1510

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 7008-148								
B12XJ7	R109124-01			7087-001	U		U	
B12XJ8	R109124-02			7087-002	U		U	
BLK (QC ID=40026)	R109124-04			7087-004	U		U	
LCS (QC ID=40025)	R109124-03			7087-003	ok		ok	
Duplicate (R109124-02)	R109124-05			7087-005	-	U	-	U
Nominal values and limits from method 200 Area RCRA Drilling Waste Desig.				RDLs (pCi/g)	0.050		0.10	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7008-148 2σ prep error 15.0 % Reference Lab Notebook 7008 pg. 148																
B12XJ7	R109124-01			0.10	843					206			50	10/26/01	11/08	02,01,00
B12XJ8	R109124-02			0.033	775					235			51	10/26/01	11/09	02,03,00
BLK (QC ID=40026)	R109124-04			0.013	775					202				10/26/01	11/08	01,04,00
LCS (QC ID=40025)	R109124-03			0.028	775					206				10/26/01	11/08	01,03,00
Duplicate (R109124-02) (QC ID=40027)	R109124-05			0.037	775					212			54	10/26/01	11/12	02,01,00
Nominal values and limits from method				0.050	775					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 5 SAMPLES
MDA 0.042 ± 0.067
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1510

Test C Matrix SOLID
SDG 7087
Contact Melissa C. Mannion

METHOD SUMMARY

CARBON 14 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1510

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Carbon 14	
Preparation batch 7008-148						
B12XJ7	R109124-01			7087-001	U	
B12XJ8	R109124-02			7087-002	U	
BLK (QC ID=40026)	R109124-04			7087-004	U	
LCS (QC ID=40025)	R109124-03			7087-003	ok	
Duplicate (R109124-02)	R109124-05			7087-005	-	U
Nominal values and limits from method				RDLs (pCi/g)	50	
200 Area RCRA Drilling Waste Desig.						

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 7008-148	2σ prep error 10.0 % Reference Lab Notebook 7008 pg. 148															
B12XJ7	R109124-01			5.0	0.203			100		100			39	10/26/01	10/28	LSC-004
B12XJ8	R109124-02			4.0	0.250			100		100			39	10/26/01	10/28	LSC-004
BLK (QC ID=40026)	R109124-04			5.1	0.200			100		100				10/26/01	10/28	LSC-004
LCS (QC ID=40025)	R109124-03			32	0.200			100		3				10/26/01	10/28	LSC-004
Duplicate (R109124-02) (QC ID=40027)	R109124-05			4.2	0.236			100		100			39	10/26/01	10/28	LSC-004
Nominal values and limits from method				50	0.200					50			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 10 ± 25
YIELD 100 ± 0

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1510

Test H Matrix SOLID
SDG 7087
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1510

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 7008-148						
B12XJ7	R109124-01			7087-001	U	X
B12XJ8	R109124-02			7087-002	U	
BLK (QC ID=40026)	R109124-04			7087-004	U	
LCS (QC ID=40025)	R109124-03			7087-003	ok	J
Duplicate (R109124-02)	R109124-05			7087-005	-	U
Spike (R109124-02)	R109124-06			7087-006	ok	JX

Nominal values and limits from method RDLs (pCi/g) 400
200 Area RCRA Drilling Waste Desig.

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 7008-148 2σ prep error 10.0 % Reference Lab Notebook 7008 pg. 148																
B12XJ7	R109124-01			0.078	20.9			100		120			45	10/30/01	11/03	LSC-007
B12XJ8	R109124-02			0.11	20.4			71		120			45	10/30/01	11/03	LSC-007
BLK (QC ID=40026)	R109124-04			0.23	20.0			33		120				10/30/01	11/03	LSC-007
LCS (QC ID=40025)	R109124-03			0.24	20.0			33		120				10/30/01	11/03	LSC-007
Duplicate (R109124-02) (QC ID=40027)	R109124-05			0.10	21.8			71		120			46	10/30/01	11/04	LSC-007
Spike (R109124-02) (QC ID=40028)	R109124-06			0.11	22.9			70		100			46	10/30/01	11/04	LSC-007
Nominal values and limits from method				400	20.0					25			180			

PROCEDURES	REFERENCE	906.0_H3_LSC
	CP-060	Soil Preparation, rev 3
	CP-216	Tritium in Solid Samples by Azeotropic Distillation, rev 4

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.14 ± 0.14
YIELD 63 ± 52

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1510

Test NI L Matrix SOLID
SDG 7087
Contact Melissa C. Mannion

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1510

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 7008-148						
B12XJ7	R109124-01			7087-001	U	
B12XJ8	R109124-02			7087-002	U	
BLK (QC ID=40026)	R109124-04			7087-004	U	
LCS (QC ID=40025)	R109124-03			7087-003	ok	
Duplicate (R109124-02)	R109124-05			7087-005	-	U
Nominal values and limits from method 200 Area RCRA Drilling Waste Desig.				RDLs (pCi/g)	30	

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 7008-148	2σ prep error 10.0 % Reference Lab Notebook 7008 pg. 148															
B12XJ7	R109124-01			2.0	0.500			87		100			40	10/28/01	10/29	LSC-005
B12XJ8	R109124-02			2.1	0.500			83		100			40	10/28/01	10/29	LSC-005
BLK (QC ID=40026)	R109124-04			1.8	0.500			94		100				10/28/01	10/29	LSC-005
LCS (QC ID=40025)	R109124-03			1.8	0.500			94		100				10/28/01	10/29	LSC-005
Duplicate (R109124-02) (QC ID=40027)	R109124-05			2.1	0.500			80		100			40	10/28/01	10/29	LSC-005
Nominal values and limits from method				30	0.500			30-105		50			180			

PROCEDURES	REFERENCE	NI63_LSC
	CP-060	Soil Preparation, rev 3
	CP-431	Nickel-63 Purification, rev 4

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 2.0 ± 0.30
YIELD 88 ± 13

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/26/01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-12	Page 1 of 1

Collector: Doug Bowers	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East H1510 (7087)		SAF No.: B01-103
Ice Chest No.: ERC 99-029	Field Logbook No.: EL-1551	COA: JRCRA14114	Method of Shipment: Fed EX SDG H1510
Shipped To: PMA/RECRA	Offsite Property No.: A010394		Bill of Lading/Air Bill No.: 4235 7954 - 7468

Price Code: 8N

Data Turnaround: 45 Days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS: SEE RAD Screens

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 9/19/01. Collector not available to relinquish samples on 9/20/01 for shipment.

RT 9-20-01

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	
Type of Container	P	P	aG	P	aG	aG	aG	aG	P	
No. of Container(s)	1	1	1	1	1	1	1	1	1	
Volume	500mL	500mL	60mL	500mL	120mL	120mL	500mL	250mL	1000mL	
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	See item (3) in Special Instructions.	VOA - 8260A (TCL)	See item (4) in Special Instructions.	See item (5) in Special Instructions.	PCBs - 8082	See item (6) in Special Instructions.	

RT 9-20-01

TIE TO:

Sample No.	Matrix *	Sample Date	Sample Time								
B12XJ7	SOIL	9-19-01	1350			B12XJ9			X		
B12XJ8	SOIL	9-19-01	1410			B12XK0			X		

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: Doug Bowers	9-19-01 1530	Received By/Stored In: R of 2A 3728	9/19/01 1730
Relinquished By/Removed From: R of 2A 3728	9.20.01 0800	Received By/Stored In: R Thoren	9.20.01 0800
Relinquished By/Removed From: R Thoren	9-20-01 0800	Received By/Stored In: Fed Ex	9-20-01
Relinquished By/Removed From: Fed Ex	9-21-01 10:10	Received By/Stored In: JR Corzo	9-21-01 10:10
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

RT 9.20.01

(1) ~~ICP Metals - 6010A (TAL) (Aluminum, Copper, Iron, Magnesium, Manganese, Potassium, Sodium); ICP Metals - 6010A (Add-on) (Bismuth, Molybdenum, Tin)~~

(2) ~~Metals by ICP (TCLP) - 1311/6010 (Barium, Cadmium, Chromium, Lead, Selenium, Silver); Metals by ICP (TCLP) Add-on - 1311/6010 (Antimony, Beryllium, Nickel, Vanadium, Zinc); Mercury (TCLP) 1311/7470~~

(3) ~~IC Anions - 300.0 (Nitrate, Nitrite); Ammonia - 350.2; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030~~

(4) ~~Alcohols, Glycols, & Ketones - 8015M (Add-on) (Kerosene, Normal paraffin hydrocarbons - (petroleum))~~

(5) ~~Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (Tributyl phosphate)~~

(6) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-99; Tritium - H3; Isotopic Uranium

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)

ThermoRetec
Richmond Laboratory

Analytical Services

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Date/Time received 9-21-01 10:00

CoC No. B01-103-12

Container I.D. No. ERC-99-029 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: 2
7. Number of containers per sample: 1 (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 9-21-01
14. Received by [signature] Date: 9-21-01 Time: 10:00

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

DEC 2001
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1510

DATE RECEIVED: 09/21/01 LVL LOT # :0109L896

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12XJ7						
TCLP	001	S	01LTO115	09/19/01	09/26/01	09/26/01
ALUMINUM, TOTAL	001	S	01L0686	09/19/01	10/19/01	10/19/01
ALUMINUM, TOTAL	001 REP	S	01L0686	09/19/01	10/19/01	10/19/01
ALUMINUM, TOTAL	001 MS	S	01L0686	09/19/01	10/19/01	10/19/01
BISMUTH, TOTAL	001	S	01L0686	09/19/01	10/19/01	10/19/01
BISMUTH, TOTAL REP	001 REP	S	01L0686	09/19/01	10/19/01	10/19/01
BISMUTH, TOTAL SPIKE	001 MS	S	01L0686	09/19/01	10/19/01	10/19/01
COPPER, TOTAL	001	S	01L0686	09/19/01	10/19/01	10/19/01
COPPER, TOTAL	001 REP	S	01L0686	09/19/01	10/19/01	10/19/01
COPPER, TOTAL	001 MS	S	01L0686	09/19/01	10/19/01	10/19/01
IRON, TOTAL	001	S	01L0686	09/19/01	10/19/01	10/19/01
IRON, TOTAL	001 REP	S	01L0686	09/19/01	10/19/01	10/19/01
IRON, TOTAL	001 MS	S	01L0686	09/19/01	10/19/01	10/19/01
POTASSIUM, TOTAL	001	S	01L0686	09/19/01	10/19/01	10/19/01
POTASSIUM, TOTAL	001 REP	S	01L0686	09/19/01	10/19/01	10/19/01
POTASSIUM, TOTAL	001 MS	S	01L0686	09/19/01	10/19/01	10/19/01
MAGNESIUM, TOTAL	001	S	01L0686	09/19/01	10/19/01	10/19/01
MAGNESIUM, TOTAL	001 REP	S	01L0686	09/19/01	10/19/01	10/19/01
MAGNESIUM, TOTAL	001 MS	S	01L0686	09/19/01	10/19/01	10/19/01
MANGANESE, TOTAL	001	S	01L0686	09/19/01	10/19/01	10/19/01
MANGANESE, TOTAL	001 REP	S	01L0686	09/19/01	10/19/01	10/19/01
MANGANESE, TOTAL	001 MS	S	01L0686	09/19/01	10/19/01	10/19/01
MOLYBDENUM, TOTAL	001	S	01L0686	09/19/01	10/19/01	10/19/01
MOLYBDENUM, TOTAL	001 REP	S	01L0686	09/19/01	10/19/01	10/19/01
MOLYBDENUM, TOTAL	001 MS	S	01L0686	09/19/01	10/19/01	10/19/01
SODIUM, TOTAL	001	S	01L0686	09/19/01	10/19/01	10/19/01
SODIUM, TOTAL	001 REP	S	01L0686	09/19/01	10/19/01	10/19/01
SODIUM, TOTAL	001 MS	S	01L0686	09/19/01	10/19/01	10/19/01
TIN, TOTAL	001	S	01L0686	09/19/01	10/19/01	10/19/01
TIN, TOTAL	001 REP	S	01L0686	09/19/01	10/19/01	10/19/01
TIN, TOTAL	001 MS	S	01L0686	09/19/01	10/19/01	10/19/01
B12XJ8						
TCLP	002	S	01LTO115	09/19/01	09/26/01	09/26/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1510

DATE RECEIVED: 09/21/01 LVL LOT # :0109L896

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ALUMINUM, TOTAL	002	S	01L0686	09/19/01	10/19/01	10/19/01
BISMUTH, TOTAL	002	S	01L0686	09/19/01	10/19/01	10/19/01
COPPER, TOTAL	002	S	01L0686	09/19/01	10/19/01	10/19/01
IRON, TOTAL	002	S	01L0686	09/19/01	10/19/01	10/19/01
POTASSIUM, TOTAL	002	S	01L0686	09/19/01	10/19/01	10/19/01
MAGNESIUM, TOTAL	002	S	01L0686	09/19/01	10/19/01	10/19/01
MANGANESE, TOTAL	002	S	01L0686	09/19/01	10/19/01	10/19/01
MOLYBDENUM, TOTAL	002	S	01L0686	09/19/01	10/19/01	10/19/01
SODIUM, TOTAL	002	S	01L0686	09/19/01	10/19/01	10/19/01
TIN, TOTAL	002	S	01L0686	09/19/01	10/19/01	10/19/01
B12XJ7						
SILVER, TCLP LEACHAT	003	W	01L0639	09/26/01	10/03/01	10/03/01
SILVER, TCLP LEACHAT	003 MS	W	01L0639	09/26/01	10/03/01	10/03/01
ARSENIC, TCLP LEACHA	003	W	01L0639	09/26/01	10/03/01	10/03/01
ARSENIC, TCLP LEACHA	003 MS	W	01L0639	09/26/01	10/03/01	10/03/01
BARIUM, TCLP LEACHAT	003	W	01L0639	09/26/01	10/03/01	10/03/01
BARIUM, TCLP LEACHAT	003 MS	W	01L0639	09/26/01	10/03/01	10/03/01
BERYLLIUM, TCLP LEAC	003	W	01L0639	09/26/01	10/03/01	10/03/01
BERYLLIUM, TCLP LEAC	003 MS	W	01L0639	09/26/01	10/03/01	10/03/01
CADMIUM, TCLP LEACHA	003	W	01L0639	09/26/01	10/03/01	10/03/01
CADMIUM, TCLP LEACHA	003 MS	W	01L0639	09/26/01	10/03/01	10/03/01
CHROMIUM, TCLP LEACH	003	W	01L0639	09/26/01	10/03/01	10/03/01
CHROMIUM, TCLP LEACH	003 MS	W	01L0639	09/26/01	10/03/01	10/03/01
MERCURY, TCLP LEACHA	003	W	01C0302	09/26/01	10/01/01	10/02/01
MERCURY, TCLP LEACHA	003 REP	W	01C0302	09/26/01	10/01/01	10/02/01
MERCURY, TCLP LEACHA	003 MS	W	01C0302	09/26/01	10/01/01	10/02/01
NICKEL, TCLP LEACHAT	003	W	01L0639	09/26/01	10/03/01	10/03/01
NICKEL, TCLP LEACHAT	003 MS	W	01L0639	09/26/01	10/03/01	10/03/01
LEAD, TCLP LEACHATE	003	W	01L0639	09/26/01	10/03/01	10/03/01
LEAD, TCLP LEACHATE	003 MS	W	01L0639	09/26/01	10/03/01	10/03/01
ANTIMONY, TCLP LEACH	003	W	01L0639	09/26/01	10/03/01	10/03/01
ANTIMONY, TCLP LEACH	003 MS	W	01L0639	09/26/01	10/03/01	10/03/01
SELENIUM, TCLP LEACH	003	W	01L0639	09/26/01	10/03/01	10/03/01
SELENIUM, TCLP LEACH	003 MS	W	01L0639	09/26/01	10/03/01	10/03/01
VANADIUM, TCLP LEACH	003	W	01L0639	09/26/01	10/03/01	10/03/01
VANADIUM, TCLP LEACH	003 MS	W	01L0639	09/26/01	10/03/01	10/03/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1510

DATE RECEIVED: 09/21/01 LVL LOT # :0109L896

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ZINC, TCLP LEACHATE	003	W	01L0639	09/26/01	10/03/01	10/03/01
ZINC, TCLP LEACHATE	003 MS	W	01L0639	09/26/01	10/03/01	10/03/01
B12XJ8						
SILVER, TCLP LEACHAT	004	W	01L0639	09/26/01	10/03/01	10/03/01
SILVER, TCLP LEACHAT	004 REP	W	01L0639	09/26/01	10/03/01	10/03/01
ARSENIC, TCLP LEACHA	004	W	01L0639	09/26/01	10/03/01	10/03/01
ARSENIC, TCLP LEACHA	004 REP	W	01L0639	09/26/01	10/03/01	10/03/01
BARIUM, TCLP LEACHAT	004	W	01L0639	09/26/01	10/03/01	10/03/01
BARIUM, TCLP LEACHAT	004 REP	W	01L0639	09/26/01	10/03/01	10/03/01
BERYLLIUM, TCLP LEAC	004	W	01L0639	09/26/01	10/03/01	10/03/01
BERYLLIUM, TCLP LEAC	004 REP	W	01L0639	09/26/01	10/03/01	10/03/01
CADMIUM, TCLP LEACHA	004	W	01L0639	09/26/01	10/03/01	10/03/01
CADMIUM, TCLP LEACHA	004 REP	W	01L0639	09/26/01	10/03/01	10/03/01
CHROMIUM, TCLP LEACH	004	W	01L0639	09/26/01	10/03/01	10/03/01
CHROMIUM, TCLP LEACH	004 REP	W	01L0639	09/26/01	10/03/01	10/03/01
MERCURY, TCLP LEACHA	004	W	01C0302	09/26/01	10/01/01	10/02/01
NICKEL, TCLP LEACHAT	004	W	01L0639	09/26/01	10/03/01	10/03/01
NICKEL, TCLP LEACHAT	004 REP	W	01L0639	09/26/01	10/03/01	10/03/01
LEAD, TCLP LEACHATE	004	W	01L0639	09/26/01	10/03/01	10/03/01
LEAD, TCLP LEACHATE	004 REP	W	01L0639	09/26/01	10/03/01	10/03/01
ANTIMONY, TCLP LEACH	004	W	01L0639	09/26/01	10/03/01	10/03/01
ANTIMONY, TCLP LEACH	004 REP	W	01L0639	09/26/01	10/03/01	10/03/01
SELENIUM, TCLP LEACH	004	W	01L0639	09/26/01	10/03/01	10/03/01
SELENIUM, TCLP LEACH	004 REP	W	01L0639	09/26/01	10/03/01	10/03/01
VANADIUM, TCLP LEACH	004	W	01L0639	09/26/01	10/03/01	10/03/01
VANADIUM, TCLP LEACH	004 REP	W	01L0639	09/26/01	10/03/01	10/03/01
ZINC, TCLP LEACHATE	004	W	01L0639	09/26/01	10/03/01	10/03/01
ZINC, TCLP LEACHATE	004 REP	W	01L0639	09/26/01	10/03/01	10/03/01

LAB QC:

ALUMINUM LABORTORY	LC1 BS	S	01L0686	N/A	10/19/01	10/19/01
ALUMINUM, TOTAL	MB1	S	01L0686	N/A	10/19/01	10/19/01
BISMUTH, LCS	LC1 BS	S	01L0686	N/A	10/19/01	10/19/01
BISMUTH, TOTAL	MB1	S	01L0686	N/A	10/19/01	10/19/01
COPPER LABORATORY	LC1 BS	S	01L0686	N/A	10/19/01	10/19/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1510

DATE RECEIVED: 09/21/01 LVL LOT # :0109L896

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
COPPER, TOTAL	MB1	S	01L0686	N/A	10/19/01	10/19/01
IRON LABORATORY	LC1 BS	S	01L0686	N/A	10/19/01	10/19/01
IRON, TOTAL	MB1	S	01L0686	N/A	10/19/01	10/19/01
POTASSIUM LABORATORY	LC1 BS	S	01L0686	N/A	10/19/01	10/19/01
POTASSIUM, TOTAL	MB1	S	01L0686	N/A	10/19/01	10/19/01
MAGNESIUM LABORATORY	LC1 BS	S	01L0686	N/A	10/19/01	10/19/01
MAGNESIUM, TOTAL	MB1	S	01L0686	N/A	10/19/01	10/19/01
MANGANESE LABORATORY	LC1 BS	S	01L0686	N/A	10/19/01	10/19/01
MANGANESE, TOTAL	MB1	S	01L0686	N/A	10/19/01	10/19/01
MOLYBDENUM LABORATOR	LC1 BS	S	01L0686	N/A	10/19/01	10/19/01
MOLYBDENUM, TOTAL	MB1	S	01L0686	N/A	10/19/01	10/19/01
SODIUM LABORATORY	LC1 BS	S	01L0686	N/A	10/19/01	10/19/01
SODIUM, TOTAL	MB1	S	01L0686	N/A	10/19/01	10/19/01
TIN LABORATORY	LC1 BS	S	01L0686	N/A	10/19/01	10/19/01
TIN, TOTAL	MB1	S	01L0686	N/A	10/19/01	10/19/01
SILVER LABORATORY	LC1 BS	W	01L0639	N/A	10/03/01	10/03/01
SILVER, TCLP LEACHAT	MB1	W	01L0639	N/A	10/03/01	10/03/01
ARSENIC LABORATORY	LC1 BS	W	01L0639	N/A	10/03/01	10/03/01
ARSENIC, TCLP LEACHA	MB1	W	01L0639	N/A	10/03/01	10/03/01
BARIUM LABORATORY	LC1 BS	W	01L0639	N/A	10/03/01	10/03/01
BARIUM, TCLP LEACHAT	MB1	W	01L0639	N/A	10/03/01	10/03/01
BERYLLIUM LABORATORY	LC1 BS	W	01L0639	N/A	10/03/01	10/03/01
BERYLLIUM, TCLP LEAC	MB1	W	01L0639	N/A	10/03/01	10/03/01
CADMIUM LABORATORY	LC1 BS	W	01L0639	N/A	10/03/01	10/03/01
CADMIUM, TCLP LEACHA	MB1	W	01L0639	N/A	10/03/01	10/03/01
CHROMIUM LABORATORY	LC1 BS	W	01L0639	N/A	10/03/01	10/03/01
CHROMIUM, TCLP LEACH	MB1	W	01L0639	N/A	10/03/01	10/03/01
MERCURY LABORATORY	LC1 BS	W	01C0302	N/A	10/01/01	10/02/01
MERCURY, TOTAL	MB1	W	01C0302	N/A	10/01/01	10/02/01
MERCURY, TCLP LEACHA	MB2	W	01C0302	N/A	10/01/01	10/02/01
NICKEL LABORATORY	LC1 BS	W	01L0639	N/A	10/03/01	10/03/01
NICKEL, TCLP LEACHAT	MB1	W	01L0639	N/A	10/03/01	10/03/01
LEAD LABORATORY	LC1 BS	W	01L0639	N/A	10/03/01	10/03/01
LEAD, TCLP LEACHATE	MB1	W	01L0639	N/A	10/03/01	10/03/01
ANTIMONY LABORATORY	LC1 BS	W	01L0639	N/A	10/03/01	10/03/01
ANTIMONY, TCLP LEACH	MB1	W	01L0639	N/A	10/03/01	10/03/01
SELENIUM LABORATORY	LC1 BS	W	01L0639	N/A	10/03/01	10/03/01
SELENIUM, TCLP LEACH	MB1	W	01L0639	N/A	10/03/01	10/03/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1510

DATE RECEIVED: 09/21/01 LVL LOT # :0109L896

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
VANADIUM LABORATORY	LC1 BS	W	01L0639	N/A	10/03/01	10/03/01
VANADIUM, TCLP LEACH	MB1	W	01L0639	N/A	10/03/01	10/03/01
ZINC LABORATORY	LC1 BS	W	01L0639	N/A	10/03/01	10/03/01
ZINC, TCLP LEACHATE	MB1	W	01L0639	N/A	10/03/01	10/03/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-103
LVL#: 0109L896
SDG/SAF#: H1510/B01-103

W.O.#: 11343-606-001-9999-00
Date Received: 09-21-01

****Revision****

METALS CASE NARRATIVE

This report has been revised to include the addition of Arsenic.

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

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

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

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

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

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

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

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

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

10. The matrix spike (MS) recoveries for 2 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 18 pages.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B12XJ7	Aluminum	25,000	93.2
	Iron	25,000	72.4

12. The duplicate analyses for 3 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. The TCLP extract from sample B12XJ7 was selected for the matrix spike (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria.

14. 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.

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

11-28-01
Date

gmb/m09-896r

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 01PM096

Initiator: D Johnson Batch: 0109 ~~L910~~ 896 dg 11/20/01 Parameter: Metals
Date: 11/16/01 Samples: all Matrix: Sol
Client: TNu Hanford H1510 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 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)

add Arsenic, Tcr to batch

4. Project Manager Instructions...signature/date: [signature] 11/16/01

__ 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: [signature] 11/20/01 Other Explanation:

✓ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative mps 11/28/01
✓ 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	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: ~~Keppel~~ Malnic
__	__ 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#: 01091896

Leaching Procedure: __1310 ✓1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A ✓3010A __3015 __3020A ✓3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

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

Other: Method: _____

L-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 11/28/01

CLIENT: TNUHANFORD B01-103 H1510 LVL LOT #: 0109L896

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12XJ7	Aluminum, Total	8100	MG/KG	4.2	1.0
		Bismuth, Total	5.8	MG/KG	4.4	1.0
		Copper, Total	11.7	MG/KG	0.75	1.0
		Iron, Total	25100	MG/KG	0.70	1.0
		Potassium, Total	1280	MG/KG	64.7	1.0
		Magnesium, Total	5640	MG/KG	4.5	1.0
		Manganese, Total	397	MG/KG	0.26	1.0
		Molybdenum, Total	0.94 u	MG/KG	0.94	1.0
		Sodium, Total	383	MG/KG	13.5	1.0
		Tin, Total	4.6	MG/KG	1.3	1.0
-002	B12XJ8	Aluminum, Total	7280	MG/KG	5.6	1.0
		Bismuth, Total	5.8 u	MG/KG	5.8	1.0
		Copper, Total	13.6	MG/KG	0.99	1.0
		Iron, Total	19900	MG/KG	0.93	1.0
		Potassium, Total	880	MG/KG	86.1	1.0
		Magnesium, Total	3560	MG/KG	5.9	1.0
		Manganese, Total	497	MG/KG	0.35	1.0
		Molybdenum, Total	5.1	MG/KG	1.3	1.0
		Sodium, Total	664	MG/KG	18.0	1.0
		Tin, Total	4.3	MG/KG	1.7	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1510 LVL LOT #: 0109L896

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B12XJ7	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Arsenic, TCLP Leachate	52.1	u	UG/L	52.1	1.0
		Barium, TCLP Leachate	537		UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.40	u	UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Nickel, TCLP Leachate	11.3	u	UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7	u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	9.7		UG/L	2.8	1.0
-004	B12XJ8	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Arsenic, TCLP Leachate	52.1	u	UG/L	52.1	1.0
		Barium, TCLP Leachate	729		UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.79		UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	94.6		UG/L	4.8	1.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Nickel, TCLP Leachate	39.9		UG/L	11.3	1.0
		Lead, TCLP Leachate	33.8		UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	21.0		UG/L	2.8	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/28/01

CLIENT: TNUHANFORD B01-103 H1510 LVL LOT #: 0109L896

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0686-MB1	Aluminum, Total	4.5	u	MG/KG	4.5	1.0
		Bismuth, Total	4.7	u	MG/KG	4.7	1.0
		Copper, Total	0.80	u	MG/KG	0.80	1.0
		Iron, Total	2.7		MG/KG	0.75	1.0
		Potassium, Total	69.3	u	MG/KG	69.3	1.0
		Magnesium, Total	4.8	u	MG/KG	4.8	1.0
		Manganese, Total	0.28	u	MG/KG	0.28	1.0
		Molybdenum, Total	1.0	u	MG/KG	1.0	1.0
		Sodium, Total	14.5	u	MG/KG	14.5	1.0
		Tin, Total	1.4	u	MG/KG	1.4	1.0
BLANK1	01L0639-MB1	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Arsenic, TCLP Leachate	52.1	u	UG/L	52.1	1.0
		Barium, TCLP Leachate	5.5	u	UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.40	u	UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Nickel, TCLP Leachate	11.3	u	UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7	u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	5.7		UG/L	2.8	1.0
BLANK1	01C0302-MB1	Mercury, Total	0.10	u	UG/L	0.10	1.0
BLANK2	01C0302-MB2	Mercury, TCLP Leachate	0.21		UG/L	0.10	1.0

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INORGANICS ACCURACY REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1510 LVL LOT #: 0109L896

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12XJ7	Aluminum, Total	8790	8100	187	369.1*	1.0
		Bismuth, Total	453	5.8	467	95.8	1.0
		Copper, Total	35.6	11.7	23.4	102.1	1.0
		Iron, Total	25000	25100	93.4	-76. *	1.0
		Potassium, Total	3520	1280	2340	95.9	1.0
		Magnesium, Total	7960	5640	2340	99.4	1.0
		Manganese, Total	441	397	46.7	94.0*	1.0
		Molybdenum, Total	87.7	0.94u	93.4	93.9	1.0
		Sodium, Total	2610	383	2340	95.2	1.0
		Tin, Total	96.3	4.6	93.4	98.2	1.0
-003	B12XJ7	Silver, TCLP Leachate	3270	9.6 u	5000	65.4	1.0
		Arsenic, TCLP Leachate	4490	52.1 u	5000	89.9	1.0
		Barium, TCLP Leachate	95400	537	100000	94.8	1.0
		Beryllium, TCLP Leacha	828	0.40u	1000	82.8	1.0
		Cadmium, TCLP Leachate	876	6.3 u	1000	87.6	1.0
		Chromium, TCLP Leachat	4360	4.8 u	5000	87.2	1.0
		Mercury, TCLP Leachate	178	0.10u	200	89.1	50.0
		Nickel, TCLP Leachate	886	11.3 u	1000	88.6	1.0
		Lead, TCLP Leachate	4550	22.7 u	5000	91.0	1.0
		Antimony, TCLP Leachat	941	45.4 u	1000	94.1	1.0
		Selenium, TCLP Leachat	947	62.1 u	1000	94.7	1.0
		Vanadium, TCLP Leachat	864	8.9 u	1000	86.4	1.0
		Zinc, TCLP Leachate	896	9.7	1000	88.7	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1510 LVL LOT #: 0109L896

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12XJ7	Aluminum, Total	8100	8390	3.5	1.0
		Bismuth, Total	5.8	4.4 u	NC ZCD	1.0
		Copper, Total	11.7	13.1	11.3	1.0
		Iron, Total	25100	25900	3.2	1.0
		Potassium, Total	1280	1310	1.8	1.0
		Magnesium, Total	5640	5870	4.0	1.0
		Manganese, Total	397	421	5.8	1.0
		Molybdenum, Total	0.94u	0.94u	NC	1.0
		Sodium, Total	383	391	2.0	1.0
		Tin, Total	4.6	3.7	21.7	1.0
-003REP	B12XJ7	Mercury, TCLP Leachate	0.10u	0.10u	NC	1.0

mp 11/28/01

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1510 LVL LOT #: 0109L896

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-004REP	B12XJ8	Silver, TCLP Leachate	9.6 u	9.6 u	NC	1.0
		Arsenic, TCLP Leachate	52.1 u	52.1 u	NC	1.0
		Barium, TCLP Leachate	729	737	1.1	1.0
		Beryllium TCLP Leachate	0.79	0.79	0.00	1.0
		Cadmium, TCLP Leachate	6.3 u	6.3 u	NC	1.0
		Chromium, TCLP Leachate	94.6	91.0	3.9	1.0
		Nickel, Leachate	39.9	44.5	10.9	1.0
		Lead, TCLP Leachate	33.8	22.7 u	NC	1.0
		Antimony, Leachate	45.4 u	45.4 u	NC	1.0
		Selenium, TCLP Leachate	62.1 u	62.1 u	NC	1.0
		Vanadium, TCLP Leachate	8.9 u	8.9 u	NC	1.0
		Zinc, Leachate	21.0	22.6	7.3	1.0

11/28/01

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1510 LVL LOT #: 0109L896

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0686-LC1	Aluminum, LCS	486	500	MG/KG	97.2
		Bismuth, LCS	467	500	MG/KG	93.3
		Copper, LCS	119	125	MG/KG	95.0
		Iron, LCS	489	500	MG/KG	97.9
		Potassium, LCS	2370	2500	MG/KG	94.9
		Magnesium, LCS	2400	2500	MG/KG	96.0
		Manganese, LCS	73.7	75.0	MG/KG	98.3
		Molybdenum, LCS	487	500	MG/KG	97.3
		Sodium, LCS	2360	2500	MG/KG	94.2
		Tin, LCS	473	500	MG/KG	94.7
LCS1	01L0639-LC1	Silver, LCS	451	500	UG/L	90.1
		Arsenic, LCS	9770	10000	UG/L	97.7
		Barium, LCS	5030	5000	UG/L	100.5
		Beryllium, LCS	246	250	UG/L	98.2
		Cadmium, LCS	243	250	UG/L	97.2
		Chromium, LCS	500	500	UG/L	99.9
		Nickel, LCS	2030	2000	UG/L	101.7
		Lead, LCS	2480	2500	UG/L	99.4
		Antimony, LCS	2950	3000	UG/L	98.3
		Selenium, LCS	9730	10000	UG/L	97.3
		Vanadium, LCS	2430	2500	UG/L	97.1
		Zinc, LCS	978	1000	UG/L	97.8
LCS1	01C0302-LC1	Mercury, LCS	5.1	5.0	UG/L	102.0

(8) VOA BNA PCBs Lyn... NO... metals
From Nicki DGA

Lionville Laboratory Use Only
01091896

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client: TNU-Hanford B01-103

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30

Date Rec'd: 9.21.01 Date Due: 10-21-01

		A	B	C				D	E		F	G	H			
Refrigerator #																
#/Type Container	Liquid															
	Solid	1Aq	1Aq	1Aq				1Aq	1Aq P DS (2W01)		1P	1Aq	1P			
Volume	Liquid															
	Solid	120	500	250				120	500		500	60	500			
Preservatives		—	—	—				—	—		—	—	—			
ANALYSES REQUESTED →		ORGANIC: Tot VOA	BNA (5)	Pest PCB	Herb			(4) Alcohols Glycols Ketones	INORG: Metal (1)	CN	Metals (2)	Hex Chrome	IC (5) Anions			
		Lionville Laboratory Use Only														
		0624H	0625X	0PCB				0DRO 0GRO	ME1	ME2	TCLP Met (2)	ZCAG	INORG (1)			

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625X	0PCB				0DRO 0GRO	ME1	ME2	TCLP Met (2)	ZCAG	INORG (1)			
001	B12XJ7			S	9/19/01	1350	X	X	X				X	X		X	X	X			
002	B12XJ8			⊥	⊥	1410	X	X	X				X	X		X	X	X			
003	tclp of 001			L	*										X						
004	tclp of 002			L	⊥										*						

Special Instructions:

DATE/REVISIONS:

ME1	1.	Al, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
Inorg 1	2.	ICNO3 ICNO2, INH3N, ICNTO, IPH, ISFD
ME2	3.	Ba, Cd, Cr, Pb, Se, Ag, Al Sb, Be, Ni, V, Zn,
9-24-01	4.	Hg Add tclp for ME2
*	5.	see lab chron
11-26-01	6.	Add As to tclp Met (2)

Relinquished by	Received by	Date	Time
Jeri Fox	D. Smith	9/21/01	09:10

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

4235 7954 7446

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # ___
Dec Velos
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

ORIGINAL
Rayes

SDR # B02-029
Revision #: 0
Date Initiated: 11/28/01

SAMPLE DISPOSITION RECORD

SAF: B01-103
OU: N/A
Project ID: 200 Area GW
Task ID: 1
Sampling Event: 200 Area Groundwater Well Drilling Waste Designation

Laboratory: TMA/RECRA

Task Manager: R. L. Jackson

Sampling Information:
Number of Samples: 6
ID Numbers: B12D78, B12FY3, B12MB8, B12ML0, B12V26, B12XJ8
Matrix: Soil
Collection Date: 07/17/01 – 09/19/01

Issue Background:

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

Type: Other

Description: Reissue Final Data Package Reports

Disposition:

Description: The final data packages for the listed samples identify the compound '3 + 4 Methylphenol' only as '4-Methylphenol'. The laboratory was requested to reissue the final data package reports for the listed samples with the '3 + 4 Methylphenol' composite compound name in place of '4-Methylphenol'.

Justification: Because 3-MethylPhenol and 4-Methylphenol are indistinguishable using method 8270, the final data package report needs to identify this composite compound as '3 + 4 Methylphenol'.

Approval Signatures:

S. J. Trent — 12/5/01
Project Coordinator (Print/Sign Name) — Date

R. L. Jackson Ronald L. Jackson — 12/10/01
Task Manager (Print/Sign Name) Ronald L. Jackson — Date

NOV 2001
RECEIVED

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1510

DATE RECEIVED: 09/21/01 LVL LOT # :0109L896

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12XJ7	001	S	01LE1149	09/19/01	09/27/01	10/02/01
B12XJ7	001 MS	S	01LE1149	09/19/01	09/27/01	10/02/01
B12XJ7	001 MSD	S	01LE1149	09/19/01	09/27/01	10/02/01
B12XJ8	002	S	01LE1149	09/19/01	09/27/01	10/02/01
LAB QC:						
SBLKGN	MB1	S	01LE1149	N/A	09/27/01	10/02/01
SBLKGN	MB1 BS	S	01LE1149	N/A	09/27/01	10/02/01

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-103
LVL #: 0109L896
SDG/SAF #: H1510/B01-103

W.O. #: 11343-606-001-9999-00
Date Received: 09-21-2001

SEMIVOLATILE

Two (2) soil samples were collected on 09-19-2001.

The samples and their associated QC samples were extracted on 09-27-2001 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 10-02-2001.

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

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

J. Michael Taylor
President
Lionville Laboratory Incorporated

10/22/01
Date

som\gorup\data\bna\tnu-hanford-0109-896.doc

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

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

GLOSSARY OF BNA DATA

DATA QUALIFIERS

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

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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.

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TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

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

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

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

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

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

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

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List

RFW Batch Number: 0109L896 Client: TNUHANFORD B01-103 B1510 Work Order: 11343606001 Report Date: 12/12/01 07:35 Page: 1a

	Cust ID:	B12XJ7		B12XJ7		B12XJ7		B12XJ8		SBLKGN		SBLKGN BS	
Sample Information	RFW#:	001		001 MS		001 MSD		002		01LR1149-MB1		01LR1149-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	93	%	86	%	81	%	80	%	80	%	86	%
	2-Fluorobiphenyl	90	%	92	%	87	%	80	%	83	%	84	%
	p-Terphenyl-d14	109	%	110	%	111	%	102	%	107	%	110	%
	Phenol-d5	83	%	83	%	78	%	79	%	77	%	80	%
	2-Fluorophenol	85	%	82	%	79	%	78	%	80	%	86	%
	2,4,6-Tribromophenol	71	%	78	%	81	%	71	%	74	%	75	%
Phenol		350	U	78	%	71	%	460	U	330	U	74	%
bis(2-Chloroethyl)ether		350	U	350	U	350	U	460	U	330	U	330	U
2-Chlorophenol		350	U	82	%	75	%	460	U	330	U	79	%
1,3-Dichlorobenzene		350	U	350	U	350	U	460	U	330	U	330	U
1,4-Dichlorobenzene		350	U	73	%	70	%	460	U	330	U	73	%
1,2-Dichlorobenzene		350	U	350	U	350	U	460	U	330	U	330	U
2-Methylphenol		350	U	350	U	350	U	460	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		350	U	350	U	350	U	460	U	330	U	330	U
3- and/or 4-Methylphenol		350	U	350	U	350	U	460	U	330	U	330	U
N-Nitroso-Di-n-propylamine		350	U	96	%	81	%	460	U	330	U	70	%
Hexachloroethane		350	U	350	U	350	U	460	U	330	U	330	U
Nitrobenzene		350	U	350	U	350	U	460	U	330	U	330	U
Isophorone		350	U	350	U	350	U	460	U	330	U	330	U
2-Nitrophenol		350	U	350	U	350	U	460	U	330	U	330	U
2,4-Dimethylphenol		350	U	350	U	350	U	460	U	330	U	330	U
bis(2-Chloroethoxy)methane		350	U	350	U	350	U	460	U	330	U	330	U
2,4-Dichlorophenol		350	U	350	U	350	U	460	U	330	U	330	U
1,2,4-Trichlorobenzene		350	U	74	%	70	%	460	U	330	U	76	%
Naphthalene		350	U	350	U	350	U	460	U	330	U	330	U
4-Chloroaniline		350	U	350	U	350	U	460	U	330	U	330	U
Hexachlorobutadiene		350	U	350	U	350	U	460	U	330	U	330	U
4-Chloro-3-methylphenol		350	U	83	%	77	%	460	U	330	U	72	%
2-Methylnaphthalene		350	U	350	U	350	U	460	U	330	U	330	U
Hexachlorocyclopentadiene		350	U	350	U	350	U	460	U	330	U	330	U
2,4,6-Trichlorophenol		350	U	350	U	350	U	460	U	330	U	330	U
2,4,5-Trichlorophenol		860	U	860	U	860	U	1200	U	830	U	830	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0109L896 Client: TNUHANFORD B01-103 H1510 Work Order: 11343606001 Page: 1b

Cust ID:	B12XJ7		B12XJ7		B12XJ7		B12XJ8		SBLKGN		SBLKGN BS	
RFW#:	001		001 MS		001 MSD		002		01LE1149-MB1		01LE1149-MB1	
2-Chloronaphthalene	350	U	350	U	350	U	460	U	330	U	330	U
2-Nitroaniline	860	U	860	U	860	U	1200	U	830	U	830	U
Dimethylphthalate	350	U	350	U	350	U	460	U	330	U	330	U
Acenaphthylene	350	U	350	U	350	U	460	U	330	U	330	U
2,6-Dinitrotoluene	350	U	350	U	350	U	460	U	330	U	330	U
3-Nitroaniline	860	U	860	U	860	U	1200	U	830	U	830	U
Acenaphthene	350	U	91	%	85	%	460	U	330	U	82	%
2,4-Dinitrophenol	860	U	860	U	860	U	1200	U	830	U	830	U
4-Nitrophenol	860	U	74	%	83	%	1200	U	830	U	87	%
Dibenzofuran	350	U	350	U	350	U	460	U	330	U	330	U
2,4-Dinitrotoluene	350	U	82	%	83	%	460	U	330	U	82	%
Diethylphthalate	350	U	350	U	350	U	460	U	330	U	330	U
4-Chlorophenyl-phenylether	350	U	350	U	350	U	460	U	330	U	330	U
Fluorene	350	U	350	U	350	U	460	U	330	U	330	U
4-Nitroaniline	860	U	860	U	860	U	1200	U	830	U	830	U
4,6-Dinitro-2-methylphenol	860	U	860	U	860	U	1200	U	830	U	830	U
N-Nitrosodiphenylamine (1)	350	U	350	U	350	U	460	U	330	U	330	U
4-Bromophenyl-phenylether	350	U	350	U	350	U	460	U	330	U	330	U
Hexachlorobenzene	350	U	350	U	350	U	460	U	330	U	330	U
Pentachlorophenol	860	U	95	%	91	%	1200	U	830	U	92	%
Phenanthrene	350	U	350	U	350	U	460	U	330	U	330	U
Anthracene	350	U	350	U	350	U	460	U	330	U	330	U
Carbazole	350	U	350	U	350	U	460	U	330	U	330	U
Di-n-Butylphthalate	350	U	350	U	350	U	460	U	330	U	330	U
Fluoranthene	350	U	350	U	350	U	460	U	330	U	330	U
Pyrene	350	U	105	%	100	%	460	U	330	U	100	%
Butylbenzylphthalate	350	U	350	U	350	U	460	U	330	U	330	U
3,3'-Dichlorobenzidine	350	U	350	U	350	U	460	U	330	U	330	U
Benzo(a)anthracene	350	U	350	U	350	U	460	U	330	U	330	U
Chrysene	350	U	350	U	350	U	460	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	350	U	350	U	350	U	460	U	330	U	330	U
Di-n-Octyl phthalate	350	U	350	U	350	U	460	U	330	U	330	U
Benzo(b)fluoranthene	350	U	350	U	350	U	460	U	330	U	330	U
Benzo(k)fluoranthene	350	U	350	U	350	U	460	U	330	U	330	U
Benzo(a)pyrene	350	U	350	U	350	U	460	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	350	U	350	U	350	U	460	U	330	U	330	U
Dibenzo(a,h)anthracene	350	U	350	U	350	U	460	U	330	U	330	U
Benzo(g,h,i)perylene	350	U	350	U	350	U	460	U	330	U	330	U
Tributylphosphate	350	U	350	U	350	U	460	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.

B12XJ7

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

Client: TNUHANFORD B01-103 H1510

Matrix: (soil/water) SOIL

Lab Sample ID: 0109L896-001

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

Lab File ID: D100214

Level: (low/med) LOW

Date Received: 09/21/01

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

Date Extracted: 09/27/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 10/02/01

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	5.429	600	JB
2.	UNKNOWN	6.307	90	JB
3.	UNKNOWN	33.971	100	J

8

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B12XJ8

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

Client: TNUHANFORD B01-103 H1510

Matrix: (soil/water) SOIL

Lab Sample ID: 0109L896-002

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

Lab File ID: D100217

Level: (low/med) LOW

Date Received: 09/21/01

% Moisture: 28 decanted: (Y/N)__

Date Extracted: 09/27/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 10/02/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

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	5.421	700	JB
2.	UNKNOWN	6.299	200	JB
3.	UNKNOWN	6.872	100	JB
4.	UNKNOWN	23.029	100	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKGN

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

Client: TNUHANFORD B01-103 H1510

Matrix: (soil/water) SOIL

Lab Sample ID: 01LE1149-MB1

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

Lab File ID: D100212

Level: (low/med) LOW

Date Received: 09/27/01

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

Date Extracted: 09/27/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 10/02/01

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	5.430	600	J
2.	UNKNOWN	6.307	100	J
3.	UNKNOWN	6.872	80	J

(8) VOA PLACED LAB, NOT METALS BNA From Nicki DIG

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01091896

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

lient TNU-Hanford B01-103
st. Final Proj. Sampling Date
roject # 11343-606-001-9999-00
roject Contact/Phone #
ionville Laboratory Project Manager OJ
QC SPEC Del STD TAT 30
Date Rec'd 9.21.01 Date Due 10-21-01

		A	B	C				D	E		F	G	H				
Refrigerator #																	
#/Type Container	Liquid																
	Solid	1Aq	1Aq	1Aq				1Aq	1AgP		1P	1Aq	1P				
Volume	Liquid								DS 12/01								
	Solid	120	500	250				120	500		500	60	500				
Preservatives		—	—	—				—	—		—	—	—				
ANALYSES REQUESTED →		ORGANIC							INORG								
		Tot VOA	BNA (5)	Pest/PCB	Herb			(4) Alcohols Glycols Ketones	Metal (1)	CN	Metals (3)	Hex Chrome	IC (5) Anions				
		Lionville Laboratory Use Only															
		0624H	0625X	0PCB				ODRO OGRO	ME 1	ME 2	STCLP ME 2	ICAL	INORG (1)				
001 B12XJ7				S	9/19/01	1350		X	X	X		X	X	X			
002 B12XJ8				L	L	1410		X	X	X		X	X	X			
003 tclp of 001				L	*						X						
004 tclp of 002				L	L						X						

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

Special Instructions:

DATE/REVISIONS:

ME1	1.	Al, Ca, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
Inorg 1	2.	ICNO3 ICNO2, IN43 N, IC NTO, IPH, ISFD
ME2	3.	Ba, Cd, Cr, Pb, Se, Ag, As Sb, Be, Ni, V, Zn,
9-24-01	4.	Hg Add tclp for ME2
*	5.	see lab chron
	6.	

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	9/21/01	09:10

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL REWRITTEN

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

4235 7954 7446

Lionville Laboratory Use Only

Samples were: ✓
1) Shipped ✓ or
Hand Delivered
Airbill #
Dec Helos
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

NOV 2001
RECEIVED

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1510

DATE RECEIVED: 09/21/01 LVL LOT # :0109L896

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12XJ7	001	S	01LVH417	09/19/01	N/A	10/03/01
B12XJ8	002	S	01LVH417	09/19/01	N/A	10/03/01
B12XJ8	002 MS	S	01LVH417	09/19/01	N/A	10/03/01
B12XJ8	002 MSD	S	01LVH417	09/19/01	N/A	10/03/01
LAB QC:						
VBLKRK	MB1	S	01LVH417	N/A	N/A	10/03/01
VBLKRK	MB1 BS	S	01LVH417	N/A	N/A	10/03/01

10-17-01

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-103
LVL #: 0109L896
SDG/SAF #: H1510/B01-103

W.O. #: 11343-606-001-9999-00
Date Received: 09-21-2001

GC/MS VOLATILE

Two (2) soil samples were collected on 09-19-2001.

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 10-03-2001.

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

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

2. Samples were analyzed within required holding time.

3. A non-target compound was detected in sample B12XJ7.

4. All surrogate recoveries were within EPA QC limits.

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

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

7. The method blank contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than 3x the CRQL.

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

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

J. Michael Taylor
President
Lionville Laboratory Incorporated

10/03/01
Date

som\group\data\voa\tnu-hanford\0109-896.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 2 pages.

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

GLOSSARY OF VOA DATA

ABBREVIATIONS

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

GLOSSARY OF VOA DATA

DATA QUALIFIERS

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

VLI
LIONVILLE LABORATORY INC.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

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

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

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

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

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

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

Lionville Laboratory, Inc.
Volatiles by GC/MS, HSL List
Report Date: 10/16/01 14:06

RFW Batch Number: **0109L896** Client: **TNUHANFORD B01-103 H1510** Work Order: 11343606001 Page: 1a

	Cust ID:	B12XJ7		B12XJ8		B12XJ8		B12XJ8		VBLKRK		VBLKRK BS	
Sample Information	RFW#:	001		002		002 MS		002 MSD		01LVH417-MB1		01LVH417-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.04		1.09		0.962		1.02		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	100	%	98	%	102	%	98	%	103	%	100	%
	Bromofluorobenzene	86	%	86	%	90	%	86	%	87	%	90	%
	1,2-Dichloroethane-d4	80	%	82	%	84	%	80	%	81	%	83	%
			fl		fl		fl		fl		fl		fl
Chloromethane		11	U	15	U	13	U	14	U	10	U	10	U
Bromomethane		11	U	15	U	13	U	14	U	10	U	10	U
Vinyl Chloride		11	U	15	U	13	U	14	U	10	U	10	U
Chloroethane		11	U	15	U	13	U	14	U	10	U	10	U
Methylene Chloride		13	B	18	B	16	B	21	B	7		6	B
Acetone		13	B	23	B	15	B	29	B	10		6	JB
Carbon Disulfide		6	U	8	U	6	U	7	U	5	U	5	U
1,1-Dichloroethene		6	U	8	U	88	%	91	%	5	U	86	%
1,1-Dichloroethane		6	U	8	U	6	U	7	U	5	U	5	U
1,2-Dichloroethene (total)		6	U	8	U	6	U	7	U	5	U	5	U
Chloroform		6	U	8	U	6	U	7	U	5	U	5	U
1,2-Dichloroethane		6	U	8	U	6	U	7	U	5	U	5	U
2-Butanone		11	U	15	U	13	U	14	U	10	U	10	U
1,1,1-Trichloroethane		6	U	8	U	6	U	7	U	5	U	5	U
Carbon Tetrachloride		6	U	8	U	6	U	7	U	5	U	5	U
Bromodichloromethane		6	U	8	U	6	U	7	U	5	U	5	U
1,2-Dichloropropane		6	U	8	U	6	U	7	U	5	U	5	U
cis-1,3-Dichloropropene		6	U	8	U	6	U	7	U	5	U	5	U
Trichloroethene		6	U	8	U	88	%	89	%	5	U	86	%
Dibromochloromethane		6	U	8	U	6	U	7	U	5	U	5	U
1,1,2-Trichloroethane		6	U	8	U	6	U	7	U	5	U	5	U
Benzene		6	U	8	U	88	%	91	%	5	U	89	%
Trans-1,3-Dichloropropene		6	U	8	U	6	U	7	U	5	U	5	U
Bromoform		6	U	8	U	6	U	7	U	5	U	5	U
4-Methyl-2-pentanone		11	U	15	U	13	U	14	U	10	U	10	U
2-Hexanone		11	U	15	U	13	U	14	U	10	U	10	U
Tetrachloroethene		6	U	8	U	6	U	7	U	5	U	5	U
1,1,2,2-Tetrachloroethane		6	U	8	U	6	U	7	U	5	U	5	U
Toluene		6	U	8	U	96	%	97	%	5	U	94	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0109L896 Client: TNUHANFORD B01-103 H1510 Work Order: 11343606001 Page: 1b

Cust ID:	B12XJ7	B12XJ8	B12XJ8	B12XJ8	VBLKRK	VBLKRK BS
RFW#:	001	002	002 MS	002 MSD	01LVH417-MB1	01LVH417-MB1
Chlorobenzene	6 U	8 U	91 %	91 %	5 U	93 %
Ethylbenzene	6 U	8 U	6 U	7 U	5 U	5 U
Styrene	6 U	8 U	6 U	7 U	5 U	5 U
Xylene (total)	6 U	8 U	6 U	7 U	5 U	5 U

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B12XJ7

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

Client: TNUHANFORD B01-103 H1510

Matrix: SOIL

Lab Sample ID: 0109L896-001

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

Lab File ID: h100321

Level: (low/med) LOW

Date Received: 09/21/01

% Moisture: not dec. 4

Date Analyzed: 10/03/01

Column: (pack/cap) CAP

Dilution Factor: 1.04

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	22.186	30	J

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B12XJ8

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

Client: TNUHANFORD B01-103 H1510

Matrix: SOIL

Lab Sample ID: 0109L896-002

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

Lab File ID: h100313

Level: (low/med) LOW

Date Received: 09/21/01

% Moisture: not dec. 28

Date Analyzed: 10/03/01

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.

9

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLKRK

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

Client: TNUHANFORD B01-103 H1510

Matrix: SOIL

Lab Sample ID: 01LVH417-MB1

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

Lab File ID: h100306

Level: (low/med) LOW

Date Received: 10/03/01

% Moisture: not dec. 0

Date Analyzed: 10/03/01

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.				

(8) BNA Pick up From Nicki DIG

Lionville Laboratory Use Only

01091896

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client: TNU-Hanford B01-103

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30

Date Rec'd: 9.21.01 Date Due: 10-21-01

		A	B	C				D	E		F	G	H			
Refrigerator #																
#/Type Container	Liquid															
	Solid	1Aq	1Aq	1Aq				1Aq	1AqP		1P	1Aq	1P			
Volume	Liquid															
	Solid	120	500	250				120	500		500	60	500			
Preservatives		—	—	—				—	—		—	—	—			
ANALYSES REQUESTED →		ORGANIC: TCL VOA	BNA (5)	Pest/PCB	Herb			(4) Alcohols Glycols Ketones	INORG: Metal (1)	CN	Metals (2)	Hex Chrome	IC-(5) Anions			

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	0624H	0625X	OPCB				ODRO OGRO	ME1	ME2	ETCLP Hg	ZCR6	INORG (1)
001	B12XJ7			S	9/19/01	1350	X	X	X				X	X		X	X	X
002	B12XJ8			L	↓	1410	X	X	X				X	X		X	X	X
003	tclp of 001			L	↓										X			
004	tclp of 002			L	↓										X			

Special Instructions:

DATE/REVISIONS:

1. ME1 Al, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
2. Inorg 1 ICNO3 ICNO2, IN43N, ICNTO, IPH, ISFD
3. ME2 Ba, Cd, Cr, Pb, Se, Ag, Al, Sb, Be, Ni, V, Zn,
4. 9-24-01 Hg Add tclp for ME2
5. * see lab chron
6.

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	9/21/01	09:10

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

NOTES:

4235 7954 7446

Lionville Laboratory Use Only

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-12	Page 1 of 1

Collector: Doug Bowers	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	
Ice Chest No.: ERC-99-039	Field Logbook No.: EL-1551	COA: JRCRA14114	Method of Shipment: Fed EX
Shipped To: TMA RCRA	Offsite Property No.: A010360	Bill of Lading/Air Bill No.: 42357954 - 74446	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.#2A at the 3728 Shipping Facility on 9/19/01.
Collector not available to relinquish samples on 9/20/01 for shipment.
RT 9-20-01

SAMPLE ANALYSIS

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None
Type of Container	P	P	aG	P	aG	aG	aG	aG	P
No. of Container(s)	1	1	1	1	1	1	1	1	1
Volume	500mL	500mL	60mL	500mL	120mL	120mL	500mL	250mL	1000mL
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	See item (3) in Special Instructions.	VOA - 8260A (TCL)	See item (4) in Special Instructions.	See item (5) in Special Instructions.	PCBs - 8082	See item (6) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									Tie To:
B12XJ7	SOIL	9-19-01	1350	X	X	X	X	X	X	X	X	B12XJ9
B12XJ8	SOIL	9-19-01	1410	X	X	X	X	X	X	X	X	B12XK0

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From: Doug	Doug Bowers	9-19-01/1530	Ref 2A 3728	9-19-01/1530
Relinquished By/Removed From: Ref 2A 3728		9-20-01 0800	R. Thorem	9-20-01 0800
Relinquished By/Removed From: R. Thorem		9-20-01 0800	FED EX	
Relinquished By/Removed From: Fed Ex		9-21-01 09:10	D. Smith	9-21-01 09:10
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

(1) ICP Metals - 6010A (TAL) {Aluminum, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(2) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
(3) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(4) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(5) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
~~(6) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium, Isotopic Thorium (Thorium-232); Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-99; Tritium - H3; Isotopic Uranium~~

RT 9-20-01

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

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

BHI-EE-011 (10/99)

ERC 99-039

NOV 2001
RECEIVED

Lionville Laboratory, Inc.
DRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1510

DATE RECEIVED: 09/21/01 LVL LOT # :0109L896

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12XJ7	001	S	01LE1186	09/19/01	10/03/01	10/06/01
B12XJ7	001 MS	S	01LE1186	09/19/01	10/03/01	10/06/01
B12XJ7	001 MSD	S	01LE1186	09/19/01	10/03/01	10/06/01
B12XJ8	002	S	01LE1186	09/19/01	10/03/01	10/06/01
LAB QC:						
BLK	MB1	S	01LE1186	N/A	10/03/01	10/05/01
BLK	MB1 BS	S	01LE1186	N/A	10/03/01	10/06/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: THU-HANFORD B01-103
LVL#: 0109L896
SDG/SAF#: H1510/B01-103

W.O #: 11343-606-001-9999-00
Date Received: 09-21-01

DIESEL RANGE ORGANICS

The set of samples consisted of two (2) soil samples collected on 09-19-01.

The samples and their associated QC samples were extracted on 10-03-01 and analyzed according to Lionville Laboratory OPs based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 10-05,06-01. The analysis met the intent of method WTPH-D.

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

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

3. All surrogate recoveries were within acceptance criteria.

4. The blank spike was within acceptance criteria.

5. All matrix spikes were within acceptance criteria.

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

7. All continuing calibration checks analyzed prior to samples 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

11/15/01
Date

R:\SHARE\GCPEST\narr temp\mu896dro.doc

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

GLOSSARY OF 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 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 DIESEL RANGE ORGANICS DATA

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.

Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

Report Date: 10/09/01 08:45

RFW Batch Number: 0109L896 Client: TNUHANFORD B01-103 H1510 Work Order: 11343606001 Page: 1

	Cust ID:	B12XJ7	B12XJ7	B12XJ7	B12XJ8	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	01LE1186-MB1	01LE1186-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
	p-Terphenyl	84 %	98 %	106 %	99 %	71 %	83 %
Diesel Range Organics		12.4 U	83 %	82 %	16.7 U	12.0 U	81 %
Kerosene		12.4 U	12.4 U	12.4 U	16.7 U	12.0 U	12.0 U

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

BNA from Nichol DIH

Lionville Laboratory Use Only: 0109L896

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B01-103

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30

Date Rec'd: 9-21-01 Date Due: 10-21-01

		A	B	C				D	E		F	G	H			
Refrigerator #																
#Type Container	Liquid															
	Solid	1Aq	1Aq	1Aq				1Aq	1AqP		1P	1Aq	1P			
Volume	Liquid								pH<2/01							
	Solid	120	500	250				120	500		500	60	500			
Preservatives		—	—	—				—	—		—	—	—			
ANALYSES REQUESTED		ORGANIC: TCL VOA	BNA (5)	Pest/PCB	Herb			(4) Alcohols Glycols Ketones	INORG: Metal (1)	CN	Metals (2)	Hex Chrome	IC (3) Anions			
		Lionville Laboratory Use Only														
		062XH	625X	0PCB				ODRO OGRO	ME1	ME2	STCLP Hg	ZCA6	INRG (1)			
Lab ID	Client ID/Description	Matrix	Date Collected	Time Collected												
001	B12XJ7	S	9/19/01	1350	X	X	X				X	X		X	X	X
002	B12XJ8	L	L	1410	X	X	X				X	X		X	X	X
003	tclp of 001	L	X										X			
004	tclp of F002	L	L										X			

Matrix QC Chosen (✓): MS / MSD

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

Special Instructions:

DATE/REVISIONS:

ME1	1.	Al, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
Inorg 1	2.	ICNO3 ICNO2, IN43N, ICNTO, IPH, ISED
ME2	3.	Ba, Cd, Cr, Pb, Se, Ag, As, Sb, Be, Ni, V, Zn
9-24-01	4.	Hg Add tclp for ME2
*	5.	see lab chron
	6.	

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	9/21/01	09:10

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

NOTES:

4235 7954 7446

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___

Airbill # ___

Dec Velocity

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-12	Page 1 of 1

Collector: Doug Powers	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	
Ice Chest No.: ERC-99-039	Field Logbook No.: EL-1551	COA: JRCRA14114	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A010360	Bill of Lading/Air Bill No.: 4235 7954 - 7446	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.#2A at the 3728 Shipping Facility on 9/19/01. Collector not available to relinquish samples on 9/20/01 for shipment.

RT 9-20-01

SAMPLE ANALYSIS

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	
Type of Container	P	P	aG	P	aG	aG	aG	aG	P	
No. of Container(s)	1	1	1	1	1	1	1	1	1	
Volume	500mL	500mL	60mL	500mL	120mL	120mL	500mL	250mL	1000mL	
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	See item (3) in Special Instructions.	VOA - 8260A (TCL)	See item (4) in Special Instructions.	See item (5) in Special Instructions.	PCBs - 8082	See item (6) in Special Instructions.	

Sample No.	Matrix *	Sample Date	Sample Time										
B12XJ7	SOIL	9-19-01	1350	X	X	X	X	X	X	X	X	B12XJ9	
B12XJ8	SOIL	9-19-01	1410	X	X	X	X	X	X	X	X	B12XK0	

Tie To:

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: Doug Powers Doug Powers	9-19-01/1520	Received By/Stored In: Ref 2A 3728	9-19-01/1530
Relinquished By/Removed From: Ref 2A 3728	9-20-01 0800	Received By/Stored In: D. R. Thorne	9-20-01 0800
Relinquished By/Removed From: D. R. Thorne	9-20-01 0800	Received By/Stored In: FED EX	
Relinquished By/Removed From: Fed Ex	9-21-01 09:10	Received By/Stored In: D. Smith	9-21-01 09:10
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Aluminum, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(2) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
(3) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(4) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(5) Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) {Tributyl phosphate}
~~(6) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 – Total Sr; Technetium-99; Tritium - H3; Isotopic Uranium~~

RT 9-20-01

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

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

BHI-EE-011 (10/99)

ERC99-039
4235 7954 7446 /4.3°

Figure 1. Sample Check-in List

Date/Time Received: 9.21.01 / 09:10

SDG#: 01091896

Work Order Number: _____ SAF# B01-103

Shipping Container ID: ERC 99-039 Chain of Custody # B01-103-12

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 4.3°C
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 16
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: _____ Date: _____

Telephoned to: _____ On _____ By _____

8

NOV 2001
RECEIVED

Lionville Laboratory, Inc.
PCB ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1510

DATE RECEIVED: 09/21/01 LVL LOT # :0109L896

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12XJ7	001	S	01LE1143	09/19/01	09/26/01	10/12/01
B12XJ8	002	S	01LE1143	09/19/01	09/26/01	10/12/01
B12XJ8	002 MS	S	01LE1143	09/19/01	09/26/01	10/12/01
B12XJ8	002 MSD	S	01LE1143	09/19/01	09/26/01	10/12/01

LAB QC:

PBLKRG	MB1	S	01LE1143	N/A	09/26/01	10/12/01
PBLKRG	MB1 BS	S	01LE1143	N/A	09/26/01	10/12/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU HANFORD B01-103
LVL#: 0109L896
SDG/SAF#: H1510/B01-103

W.O.#: 11343-606-001-9999-00
Date Received: 09-21-01

PCB

The set of samples consisted of two (2) soil samples collected on 09-19-01.

The samples and their associated QC samples were extracted on 09-26-01 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 10-12-01. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

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

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

2. All required holding times for extraction and analysis have been met.

3. The samples and their associated QC samples received a sulfuric acid and a sulfur cleanup.

4. The method blank was below the reporting limits for all target compounds.

5. All surrogate recoveries were within acceptance criteria.

6. The blank spike recovery was within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

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

9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

10/22/01
Date

pef\r:\group\data\pest\09L-896.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 8 pages.

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

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

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

R:/SHARE/HPLC/PESTICIDE/PCBGLOS

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 10/17/01 19:27

RFW Batch Number: 0109L896 Client: TNUHANFORD B01-103 H1510 Work Order: 11343606001 Page: 1

	Cust ID:	B12XJ7	B12XJ8	B12XJ8	B12XJ8	PBLKRG	PBLKRG BS
Sample Information	RFW#:	001	002	002 MS	002 MSD	01LE1143-MB1	01LE1143-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	98 %	100 %	105 %	98 %	80 %	85 %
	Decachlorobiphenyl	104 %	100 %	105 %	101 %	76 %	60 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		33 U	33 U	33 U	33 U	33 U	33 U
Aroclor-1221		67 U	67 U	67 U	67 U	67 U	67 U
Aroclor-1232		33 U	33 U	33 U	33 U	33 U	33 U
Aroclor-1242		33 U	33 U	33 U	33 U	33 U	33 U
Aroclor-1248		33 U	33 U	33 U	33 U	33 U	33 U
Aroclor-1254		33 U	33 U	96 %	93 %	33 U	91 %
Aroclor-1260		33 U	33 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

(D) BNA From Nicki DIG

Lionville Laboratory Use Only

01091896

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B01-103

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30

Date Rec'd: 9-21-01 Date Due: 10-21-01

		A	B	C				D	E		F	G	H				
Refrigerator #																	
#/Type Container	Liquid																
	Solid	1Aq	1Aq	1Aq				1Aq	1Aq P		1P	1Aq	1P				
Volume	Liquid																
	Solid	120	500	250				120	500		500	60	500				
Preservatives		—	—	—				—	—		—	—	—				
ANALYSES REQUESTED		ORGANIC: TCL VOA	ORGANIC: BNA (5)	ORGANIC: Pest/PCB	ORGANIC: Herb			(4) Alcohols Glycols Ketones	INORG: Metal (1)	INORG: CN	Metals (3)	Hex Chrome	IC (5) Anions				
Lionville Laboratory Use Only		0624H	0625X	0PCB				ODRO OGRO	ME1	ME2	STCLP TAFT	ICAL	INMET (1)				

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625X	0PCB				ODRO OGRO	ME1	ME2	STCLP TAFT	ICAL	INMET (1)				
001	B12XJ7			S	9/19/01	1350	X	X	X				X	X		X	X	X				
002	B12XJ8			L	⊥	1410	X	X	X				X	X		X	X	X				
003	tclp of 001			L	*										X							
004	tclp of 002			L	⊥										X							

Special Instructions:

DATE/REVISIONS:

ME1	1.	Al, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
Inorg 1	2.	ICNO3 ICNO2, INH3N, ICNTO, IPH, ISFD
ME2	3.	Ba, Cd, Cr, Pb, Se, Ag, Al Sb, Be, Ni, V, Zn,
9-24-01	4.	Hg Add tclp for ME2
*	5.	see lab chron
	6.	

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	9/21/01	09:10

Relinquished by	Received by	Date	Time

COMPOSITE WASTE

ORIGINAL REWRITTEN

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

NOTES:

4235 7954 7446

Lionville Laboratory Use Only

Samples were: ✓
1) Shipped ✓ or
Hand Delivered ___
Airbill # ___
Dec Ice Pack
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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-12	Page 1 of 1

Collector: Doug Bowers	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	
Ice Chest No.: ERC-99-039	Field Logbook No.: EL-1551	COA: JRCRA14114	Method of Shipment: Fed EX
Shipped To: TMA RECRA	Offsite Property No.: A010360	Bill of Lading/Air Bill No.: 42357954 - 74446	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 9/19/01. Collector not available to relinquish samples on 9/20/01 for shipment.

RT 9-20-01

SAMPLE ANALYSIS

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None
Type of Container	P	P	aG	P	aG	aG	aG	aG	P
No. of Container(s)	1	1	1	1	1	1	1	1	1
Volume	500mL	500mL	60mL	500mL	120mL	120mL	500mL	250mL	1000mL
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	See item (3) in Special Instructions.	VOA - 8260A (TCL)	See item (4) in Special Instructions.	See item (5) in Special Instructions.	PCBs - 8082	See item (6) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									
B12XJ7	SOIL	9-19-01	1350	X	X	X	X	X	X	X	X	B12XJ9
B12XJ8	SOIL	9-19-01	1410	X	X	X	X	X	X	X	X	B12XK0

TIE TO:

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: Doug Bowers	Date/Time: 9-19-01/1520	Received By/Stored In: Ref 2A 3728	Date/Time: 9-19-01/1530
Relinquished By/Removed From: Ref 2A 3728	Date/Time: 0800 9-20-01	Received By/Stored In: R. Thorson	Date/Time: 0800 9-20-01
Relinquished By/Removed From: R. Thorson	Date/Time: 0800 9-20-01	Received By/Stored In: FED EX	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 9-21-01 /09:10	Received By/Stored In: D. Smith	Date/Time: 9-21-01 /09:10
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

(1) ICP Metals - 6010A (TAL) {Aluminum, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(2) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
(3) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(4) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(5) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
~~(6) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium, Isotopic Thorium {Thorium-232}, Americium-241, Carbon-14, Neptunium-237, Nickel-63, Strontium-89,90 -- Total Sr, Technetium-99, Tritium - H3, Isotopic Uranium~~

RT 9-20-01

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

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

BHI-EE-011 (10/99)

ERC 99-039

Figure 1. Sample Check-in List

Date/Time Received: 9.21.01 / 09:10

SDG#: 01096896

Work Order Number: _____ SAF# B01-103

Shipping Container ID: ERC 99-039 Chain of Custody # B01-103-12

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 4.3°C
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 16
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: _____ Date: _____

Telephoned to: _____ On _____ By _____

NOV 2001
RECEIVED

Lionville Laboratory, Inc.
GRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1510

DATE RECEIVED: 09/21/01 LVL LOT # :0109L896

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12XJ7	001	S	01LVJ927	09/19/01	N/A	09/27/01
B12XJ7	001 MS	S	01LVJ927	09/19/01	N/A	09/27/01
B12XJ7	001 MSD	S	01LVJ927	09/19/01	N/A	09/27/01
B12XJ8	002	S	01LVJ928	09/19/01	N/A	09/28/01
B12XJ8	002 MS	S	01LVJ928	09/19/01	N/A	09/28/01
B12XJ8	002 MSD	S	01LVJ928	09/19/01	N/A	09/28/01

LAB QC:

TBLKAB	MB1	S	01LVJ927	N/A	N/A	09/27/01
TBLKAB	MB1 BS	S	01LVJ927	N/A	N/A	09/27/01
TBLKAB	MB1 BSD	S	01LVJ927	N/A	N/A	09/27/01
TBLKAC	MB1	S	01LVJ928	N/A	N/A	09/28/01
TBLKAC	MB1 BS	S	01LVJ928	N/A	N/A	09/28/01
TBLKAC	MB1 BSD	S	01LVJ928	N/A	N/A	09/28/01

LIONVILLE LABORATORY INC.

Analytical Report

Client : TNU-HANFORD B01-103
LVL# : 0109L896
SDG/SAF#: H1510/B01-103

W.O #: 11343-606-001-9999-00
Date Received: 09-21-01

GASOLINE RANGE ORGANICS

The set of samples consisted of two (2) soil samples collected on 09-19-01

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on Method 8015B for Gasoline Range Organic (GRO) target compounds on 09-27,28-01.

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

2. All required holding times for analysis have been met.

3. One (1) of twelve (12) surrogate recoveries was outside acceptance criteria. A copy of Sample Discrepancy Report (SDR) is enclosed.

4. All blank spike recoveries were within acceptance criteria.

5. One (1) of four (4) matrix spikes recoveries was outside acceptance criteria. A copy of SDR is enclosed.

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

7. All continuing calibration standards analyzed prior to the samples 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

10/2/01
Date

r:\share\gcpest\narr temp\tnu896gro.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.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 016C 408

Initiator: John Lauch. Batch: 0109L851. Parameter: 06RD
Date: 10/2/01 Samples: #2 MS. Matrix: Soil
Client: TNV. Method: SW846/MCAWW/CLP/ Prep Batch: 01LUJ928

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. surrogate recovery + spike recovery below limits.

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:

matrix spike DUP, Blank spike and Blank spike DUP in control.

4. Project Manager Instructions...signature/date: 10/2/01

__ 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: 10/2/01

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: _____

3

L-WI-006/E-01/01

10/3/01

GLOSSARY OF GASOLINE 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 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.

BA 10/5/10.

GLOSSARY OF GASOLINE RANGE ORGANICS DATA

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/GCVOLATILE/GCVOLATILEGLOS.DOC

Lionville Laboratory, Inc.

GAS RANGE ORGANICS

Report Date: 10/02/01 12:54

RFW Batch Number: 0109L896 Client: **TNUHANFORD B01-103 H1510** Work Order: 11343606001 Page: 1

	Cust ID:	B12XJ7	B12XJ7	B12XJ7	B12XJ8	B12XJ8	B12XJ8
Sample Information	RFW#:	001	001 MS	001 MSD	002	002 MS	002 MSD
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Fluorobenzene		57 %	63 %	57 %	81 %	15 * %	90 %
Gasoline Range Organics (GRO)		39 U	91 %	69 %	56 U	30 * %	84 %

	Cust ID:	TBLKAB	TBLKAB BS	TBLKAB BSD	TBLKAC	TBLKAC BS	TBLKAC BSD
Sample Information	RFW#:	01LVJ927-MB1	01LVJ927-MB1	01LVJ927-MB1	01LVJ928-MB1	01LVJ928-MB1	01LVJ928-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
Fluorobenzene		77 %	84 %	83 %	76 %	74 %	78 %
Gasoline Range Organics (GRO)		40 U	92 %	88 %	40 U	78 %	82 %

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

(8) BNA From Nicki DIG

Lionville Laboratory Use Only

0109L896

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B01-103

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30

Date Rec'd: 9.21.01 Date Due: 10-21-01

		A	B	C				D	E		F	G	H			
Refrigerator #																
#/Type Container	Liquid															
	Solid	1Ag	1Ag	1Ag				1Ag	1Ag P DS 12/01		1P	1Ag	1P			
Volume	Liquid															
	Solid	120	500	250				120	500		500	60	500			
Preservatives		—	—	—				—	—		—	—	—			
ANALYSES REQUESTED →		ORGANIC: TCL VOA	BNA (5)	Pest/PCB	Herb			(9) Alcohols Glycols Ketones	INORG: Metal (1)	CN	Metals (2)	Hex Chrome	IC (5) Anions			
Lionville Laboratory Use Only		0624H	0625X	0PCB				0DRO 0GRO	ME1	ME2	ETCLP Hg	ZCAL	INREG (1)			

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625X	0PCB				0DRO 0GRO	ME1	ME2	ETCLP Hg	ZCAL	INREG (1)			
001	B12XJ7			S	9/19/01	1350	X	X	X				X	X		X	X	X			
002	B12XJ8			⊥	⊥	1410	X	X	X				X	X		X	X	X			
003	tclp of 001			L	*										X						
004	tclp of 002			⊥	⊥										X						

Special Instructions:

DATE/REVISIONS:

ME1	1.	Al, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
Inorg 1	2.	ICNO3 ICNO2, INH3N, ICNTO, IPH, ISFD
ME2	3.	Ba, Cd, Cr, Pb, Se, Ag, As, Sb, Be, Ni, V, Zn,
9-24-01	4.	Hg Add tclp for ME2
*	5.	see lab chron
	6.	

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	9/21/01	09:10

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

NOTES:

4235 7954 7446

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # ___
Dec'd Velocity
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'd (Y) or N

Cooler Temp. 4.3 °C

NOV 2001 RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1510

DATE RECEIVED: 09/21/01 LVL LOT # :0109L896

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12XJ7						
TCLP	001	S	01LTO115	09/19/01	09/26/01	09/26/01
ALUMINUM, TOTAL	001	S	01L0686	09/19/01	10/19/01	10/19/01
ALUMINUM, TOTAL	001 REP	S	01L0686	09/19/01	10/19/01	10/19/01
ALUMINUM, TOTAL	001 MS	S	01L0686	09/19/01	10/19/01	10/19/01
BISMUTH, TOTAL	001	S	01L0686	09/19/01	10/19/01	10/19/01
BISMUTH, TOTAL REP	001 REP	S	01L0686	09/19/01	10/19/01	10/19/01
BISMUTH, TOTAL SPIKE	001 MS	S	01L0686	09/19/01	10/19/01	10/19/01
COPPER, TOTAL	001	S	01L0686	09/19/01	10/19/01	10/19/01
COPPER, TOTAL	001 REP	S	01L0686	09/19/01	10/19/01	10/19/01
COPPER, TOTAL	001 MS	S	01L0686	09/19/01	10/19/01	10/19/01
IRON, TOTAL	001	S	01L0686	09/19/01	10/19/01	10/19/01
IRON, TOTAL	001 REP	S	01L0686	09/19/01	10/19/01	10/19/01
IRON, TOTAL	001 MS	S	01L0686	09/19/01	10/19/01	10/19/01
POTASSIUM, TOTAL	001	S	01L0686	09/19/01	10/19/01	10/19/01
POTASSIUM, TOTAL	001 REP	S	01L0686	09/19/01	10/19/01	10/19/01
POTASSIUM, TOTAL	001 MS	S	01L0686	09/19/01	10/19/01	10/19/01
MAGNESIUM, TOTAL	001	S	01L0686	09/19/01	10/19/01	10/19/01
MAGNESIUM, TOTAL	001 REP	S	01L0686	09/19/01	10/19/01	10/19/01
MAGNESIUM, TOTAL	001 MS	S	01L0686	09/19/01	10/19/01	10/19/01
MANGANESE, TOTAL	001	S	01L0686	09/19/01	10/19/01	10/19/01
MANGANESE, TOTAL	001 REP	S	01L0686	09/19/01	10/19/01	10/19/01
MANGANESE, TOTAL	001 MS	S	01L0686	09/19/01	10/19/01	10/19/01
MOLYBDENUM, TOTAL	001	S	01L0686	09/19/01	10/19/01	10/19/01
MOLYBDENUM, TOTAL	001 REP	S	01L0686	09/19/01	10/19/01	10/19/01
MOLYBDENUM, TOTAL	001 MS	S	01L0686	09/19/01	10/19/01	10/19/01
SODIUM, TOTAL	001	S	01L0686	09/19/01	10/19/01	10/19/01
SODIUM, TOTAL	001 REP	S	01L0686	09/19/01	10/19/01	10/19/01
SODIUM, TOTAL	001 MS	S	01L0686	09/19/01	10/19/01	10/19/01
TIN, TOTAL	001	S	01L0686	09/19/01	10/19/01	10/19/01
TIN, TOTAL	001 REP	S	01L0686	09/19/01	10/19/01	10/19/01
TIN, TOTAL	001 MS	S	01L0686	09/19/01	10/19/01	10/19/01
B12XJ8						
TCLP	002	S	01LTO115	09/19/01	09/26/01	09/26/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1510

DATE RECEIVED: 09/21/01 LVL LOT # :0109L896

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ALUMINUM, TOTAL	002	S	01L0686	09/19/01	10/19/01	10/19/01
BISMUTH, TOTAL	002	S	01L0686	09/19/01	10/19/01	10/19/01
COPPER, TOTAL	002	S	01L0686	09/19/01	10/19/01	10/19/01
IRON, TOTAL	002	S	01L0686	09/19/01	10/19/01	10/19/01
POTASSIUM, TOTAL	002	S	01L0686	09/19/01	10/19/01	10/19/01
MAGNESIUM, TOTAL	002	S	01L0686	09/19/01	10/19/01	10/19/01
MANGANESE, TOTAL	002	S	01L0686	09/19/01	10/19/01	10/19/01
MOLYBDENUM, TOTAL	002	S	01L0686	09/19/01	10/19/01	10/19/01
SODIUM, TOTAL	002	S	01L0686	09/19/01	10/19/01	10/19/01
TIN, TOTAL	002	S	01L0686	09/19/01	10/19/01	10/19/01
B12XJ7						
SILVER, TCLP LEACHAT	003	W	01L0639	09/26/01	10/03/01	10/03/01
SILVER, TCLP LEACHAT	003 MS	W	01L0639	09/26/01	10/03/01	10/03/01
BARIUM, TCLP LEACHAT	003	W	01L0639	09/26/01	10/03/01	10/03/01
BARIUM, TCLP LEACHAT	003 MS	W	01L0639	09/26/01	10/03/01	10/03/01
BERYLLIUM, TCLP LEAC	003	W	01L0639	09/26/01	10/03/01	10/03/01
BERYLLIUM, TCLP LEAC	003 MS	W	01L0639	09/26/01	10/03/01	10/03/01
CADMIUM, TCLP LEACHA	003	W	01L0639	09/26/01	10/03/01	10/03/01
CADMIUM, TCLP LEACHA	003 MS	W	01L0639	09/26/01	10/03/01	10/03/01
CHROMIUM, TCLP LEACH	003	W	01L0639	09/26/01	10/03/01	10/03/01
CHROMIUM, TCLP LEACH	003 MS	W	01L0639	09/26/01	10/03/01	10/03/01
MERCURY, TCLP LEACHA	003	W	01C0302	09/26/01	10/01/01	10/02/01
MERCURY, TCLP LEACHA	003 REP	W	01C0302	09/26/01	10/01/01	10/02/01
MERCURY, TCLP LEACHA	003 MS	W	01C0302	09/26/01	10/01/01	10/02/01
NICKEL, TCLP LEACHAT	003	W	01L0639	09/26/01	10/03/01	10/03/01
NICKEL, TCLP LEACHAT	003 MS	W	01L0639	09/26/01	10/03/01	10/03/01
LEAD, TCLP LEACHATE	003	W	01L0639	09/26/01	10/03/01	10/03/01
LEAD, TCLP LEACHATE	003 MS	W	01L0639	09/26/01	10/03/01	10/03/01
ANTIMONY, TCLP LEACH	003	W	01L0639	09/26/01	10/03/01	10/03/01
ANTIMONY, TCLP LEACH	003 MS	W	01L0639	09/26/01	10/03/01	10/03/01
SELENIUM, TCLP LEACH	003	W	01L0639	09/26/01	10/03/01	10/03/01
SELENIUM, TCLP LEACH	003 MS	W	01L0639	09/26/01	10/03/01	10/03/01
VANADIUM, TCLP LEACH	003	W	01L0639	09/26/01	10/03/01	10/03/01
VANADIUM, TCLP LEACH	003 MS	W	01L0639	09/26/01	10/03/01	10/03/01
ZINC, TCLP LEACHATE	003	W	01L0639	09/26/01	10/03/01	10/03/01
ZINC, TCLP LEACHATE	003 MS	W	01L0639	09/26/01	10/03/01	10/03/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1510

DATE RECEIVED: 09/21/01 LVL LOT # :0109L896

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12XJ8						
SILVER, TCLP LEACHAT	004	W	01L0639	09/26/01	10/03/01	10/03/01
SILVER, TCLP LEACHAT	004 REP	W	01L0639	09/26/01	10/03/01	10/03/01
BARIUM, TCLP LEACHAT	004	W	01L0639	09/26/01	10/03/01	10/03/01
BARIUM, TCLP LEACHAT	004 REP	W	01L0639	09/26/01	10/03/01	10/03/01
BERYLLIUM, TCLP LEAC	004	W	01L0639	09/26/01	10/03/01	10/03/01
BERYLLIUM, TCLP LEAC	004 REP	W	01L0639	09/26/01	10/03/01	10/03/01
CADMIUM, TCLP LEACHA	004	W	01L0639	09/26/01	10/03/01	10/03/01
CADMIUM, TCLP LEACHA	004 REP	W	01L0639	09/26/01	10/03/01	10/03/01
CHROMIUM, TCLP LEACH	004	W	01L0639	09/26/01	10/03/01	10/03/01
CHROMIUM, TCLP LEACH	004 REP	W	01L0639	09/26/01	10/03/01	10/03/01
MERCURY, TCLP LEACHA	004	W	01C0302	09/26/01	10/01/01	10/02/01
NICKEL, TCLP LEACHAT	004	W	01L0639	09/26/01	10/03/01	10/03/01
NICKEL, TCLP LEACHAT	004 REP	W	01L0639	09/26/01	10/03/01	10/03/01
LEAD, TCLP LEACHATE	004	W	01L0639	09/26/01	10/03/01	10/03/01
LEAD, TCLP LEACHATE	004 REP	W	01L0639	09/26/01	10/03/01	10/03/01
ANTIMONY, TCLP LEACH	004	W	01L0639	09/26/01	10/03/01	10/03/01
ANTIMONY, TCLP LEACH	004 REP	W	01L0639	09/26/01	10/03/01	10/03/01
SELENIUM, TCLP LEACH	004	W	01L0639	09/26/01	10/03/01	10/03/01
SELENIUM, TCLP LEACH	004 REP	W	01L0639	09/26/01	10/03/01	10/03/01
VANADIUM, TCLP LEACH	004	W	01L0639	09/26/01	10/03/01	10/03/01
VANADIUM, TCLP LEACH	004 REP	W	01L0639	09/26/01	10/03/01	10/03/01
ZINC, TCLP LEACHATE	004	W	01L0639	09/26/01	10/03/01	10/03/01
ZINC, TCLP LEACHATE	004 REP	W	01L0639	09/26/01	10/03/01	10/03/01

LAB QC:

ALUMINUM LABORTORY	LC1 BS	S	01L0686	N/A	10/19/01	10/19/01
ALUMINUM, TOTAL	MB1	S	01L0686	N/A	10/19/01	10/19/01
BISMUTH, LCS	LC1 BS	S	01L0686	N/A	10/19/01	10/19/01
BISMUTH, TOTAL	MB1	S	01L0686	N/A	10/19/01	10/19/01
COPPER LABORATORY	LC1 BS	S	01L0686	N/A	10/19/01	10/19/01
COPPER, TOTAL	MB1	S	01L0686	N/A	10/19/01	10/19/01
IRON LABORATORY	LC1 BS	S	01L0686	N/A	10/19/01	10/19/01
IRON, TOTAL	MB1	S	01L0686	N/A	10/19/01	10/19/01
POTASSIUM LABORATORY	LC1 BS	S	01L0686	N/A	10/19/01	10/19/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1510

DATE RECEIVED: 09/21/01 LVL LOT # :0109L896

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
POTASSIUM, TOTAL	MB1	S	01L0686	N/A	10/19/01	10/19/01
MAGNESIUM LABORATORY	LC1 BS	S	01L0686	N/A	10/19/01	10/19/01
MAGNESIUM, TOTAL	MB1	S	01L0686	N/A	10/19/01	10/19/01
MANGANESE LABORATORY	LC1 BS	S	01L0686	N/A	10/19/01	10/19/01
MANGANESE, TOTAL	MB1	S	01L0686	N/A	10/19/01	10/19/01
MOLYBDENUM LABORATOR	LC1 BS	S	01L0686	N/A	10/19/01	10/19/01
MOLYBDENUM, TOTAL	MB1	S	01L0686	N/A	10/19/01	10/19/01
SODIUM LABORATORY	LC1 BS	S	01L0686	N/A	10/19/01	10/19/01
SODIUM, TOTAL	MB1	S	01L0686	N/A	10/19/01	10/19/01
TIN LABORATORY	LC1 BS	S	01L0686	N/A	10/19/01	10/19/01
TIN, TOTAL	MB1	S	01L0686	N/A	10/19/01	10/19/01
SILVER LABORATORY	LC1 BS	W	01L0639	N/A	10/03/01	10/03/01
SILVER, TCLP LEACHAT	MB1	W	01L0639	N/A	10/03/01	10/03/01
BARIUM LABORATORY	LC1 BS	W	01L0639	N/A	10/03/01	10/03/01
BARIUM, TCLP LEACHAT	MB1	W	01L0639	N/A	10/03/01	10/03/01
BERYLLIUM LABORATORY	LC1 BS	W	01L0639	N/A	10/03/01	10/03/01
BERYLLIUM, TCLP LEAC	MB1	W	01L0639	N/A	10/03/01	10/03/01
CADMIUM LABORATORY	LC1 BS	W	01L0639	N/A	10/03/01	10/03/01
CADMIUM, TCLP LEACHA	MB1	W	01L0639	N/A	10/03/01	10/03/01
CHROMIUM LABORATORY	LC1 BS	W	01L0639	N/A	10/03/01	10/03/01
CHROMIUM, TCLP LEACH	MB1	W	01L0639	N/A	10/03/01	10/03/01
MERCURY LABORATORY	LC1 BS	W	01C0302	N/A	10/01/01	10/02/01
MERCURY, TOTAL	MB1	W	01C0302	N/A	10/01/01	10/02/01
MERCURY, TCLP LEACHA	MB2	W	01C0302	N/A	10/01/01	10/02/01
NICKEL LABORATORY	LC1 BS	W	01L0639	N/A	10/03/01	10/03/01
NICKEL, TCLP LEACHAT	MB1	W	01L0639	N/A	10/03/01	10/03/01
LEAD LABORATORY	LC1 BS	W	01L0639	N/A	10/03/01	10/03/01
LEAD, TCLP LEACHATE	MB1	W	01L0639	N/A	10/03/01	10/03/01
ANTIMONY LABORATORY	LC1 BS	W	01L0639	N/A	10/03/01	10/03/01
ANTIMONY, TCLP LEACH	MB1	W	01L0639	N/A	10/03/01	10/03/01
SELENIUM LABORATORY	LC1 BS	W	01L0639	N/A	10/03/01	10/03/01
SELENIUM, TCLP LEACH	MB1	W	01L0639	N/A	10/03/01	10/03/01
VANADIUM LABORATORY	LC1 BS	W	01L0639	N/A	10/03/01	10/03/01
VANADIUM, TCLP LEACH	MB1	W	01L0639	N/A	10/03/01	10/03/01
ZINC LABORATORY	LC1 BS	W	01L0639	N/A	10/03/01	10/03/01
ZINC, TCLP LEACHATE	MB1	W	01L0639	N/A	10/03/01	10/03/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-103
LVL#: 0109L896
SDG/SAF#: H1510/B01-103

W.O.#: 11343-606-001-9999-00
Date Received: 09-21-01

METALS CASE NARRATIVE

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

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

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

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

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

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

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

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

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

10. The matrix spike (MS) recoveries for 2 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B12XJ7	Aluminum	25,000	93.2
	Iron	25,000	72.4

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.

12. The duplicate analyses for 3 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. The TCLP extract from sample B12XJ7 was selected for the matrix spike (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria.

14. 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.

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

for

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

10-23-01
Date

gmb/m09-896

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#: 01091896

Leaching Procedure: __1310 ✓1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A ✓3010A __3015 __3020A ✓3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

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

Other:_____ Method:_____

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 10/23/01

CLIENT: TNUHANFORD B01-103 H1510 LVL LOT #: 0109L896

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12XJ7	Aluminum, Total	8100	MG/KG	4.2	1.0
		Bismuth, Total	5.8	MG/KG	4.4	1.0
		Copper, Total	11.7	MG/KG	0.75	1.0
		Iron, Total	25100	MG/KG	0.70	1.0
		Potassium, Total	1260	MG/KG	64.7	1.0
		Magnesium, Total	5640	MG/KG	4.5	1.0
		Manganese, Total	397	MG/KG	0.26	1.0
		Molybdenum, Total	0.94 u	MG/KG	0.94	1.0
		Sodium, Total	383	MG/KG	13.5	1.0
		Tin, Total	4.6	MG/KG	1.3	1.0
-002	B12XJ8	Aluminum, Total	7280	MG/KG	5.6	1.0
		Bismuth, Total	5.8 u	MG/KG	5.8	1.0
		Copper, Total	13.6	MG/KG	0.99	1.0
		Iron, Total	19900	MG/KG	0.93	1.0
		Potassium, Total	880	MG/KG	86.1	1.0
		Magnesium, Total	3560	MG/KG	5.9	1.0
		Manganese, Total	497	MG/KG	0.35	1.0
		Molybdenum, Total	5.1	MG/KG	1.3	1.0
		Sodium, Total	664	MG/KG	18.0	1.0
		Tin, Total	4.3	MG/KG	1.7	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 10/23/01

CLIENT: TNUHANFORD B01-103 H1510 LVL LOT #: 0109L896

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B12XJ7	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Barium, TCLP Leachate	537		UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.40	u	UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Nickel, TCLP Leachate	11.3	u	UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7	u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	9.7		UG/L	2.8	1.0
-004	B12XJ8	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Barium, TCLP Leachate	729		UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.79		UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	94.6		UG/L	4.8	1.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Nickel, TCLP Leachate	39.9		UG/L	11.3	1.0
		Lead, TCLP Leachate	33.8		UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	21.0		UG/L	2.8	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/23/01

CLIENT: TNUHANFORD B01-103 H1510 LVL LOT #: 0109L896

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0686-MB1	Aluminum, Total	4.5	u	MG/KG	4.5	1.0
		Bismuth, Total	4.7	u	MG/KG	4.7	1.0
		Copper, Total	0.80	u	MG/KG	0.80	1.0
		Iron, Total	2.7		MG/KG	0.75	1.0
		Potassium, Total	69.3	u	MG/KG	69.3	1.0
		Magnesium, Total	4.8	u	MG/KG	4.8	1.0
		Manganese, Total	0.28	u	MG/KG	0.28	1.0
		Molybdenum, Total	1.0	u	MG/KG	1.0	1.0
		Sodium, Total	14.5	u	MG/KG	14.5	1.0
		Tin, Total	1.4	u	MG/KG	1.4	1.0
BLANK1	01L0639-MB1	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Barium, TCLP Leachate	5.5	u	UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.40	u	UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Nickel, TCLP Leachate	11.3	u	UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7	u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	5.7		UG/L	2.8	1.0
BLANK1	01C0302-MB1	Mercury, Total	0.10	u	UG/L	0.10	1.0
BLANK2	01C0302-MB2	Mercury, TCLP Leachate	0.21		UG/L	0.10	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 10/23/01

CLIENT: TNUHANFORD B01-103 H1510 LVL LOT #: 0109L896

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12XJ7	Aluminum, Total	8790	8100	187	369.1*	1.0
		Bismuth, Total	453	5.8	467	95.8	1.0
		Copper, Total	35.6	11.7	23.4	102.1	1.0
		Iron, Total	25000	25100	93.4	-76. *	1.0
		Potassium, Total	3520	1280	2340	95.9	1.0
		Magnesium, Total	7960	5640	2340	99.4	1.0
		Manganese, Total	441	397	46.7	94.0*	1.0
		Molybdenum, Total	87.7	0.94u	93.4	93.9	1.0
		Sodium, Total	2610	383	2340	95.2	1.0
		Tin, Total	96.3	4.6	93.4	98.2	1.0
-003	B12XJ7	Silver, TCLP Leachate	3270	9.6 u	5000	65.4	1.0
		Barium, TCLP Leachate	95400	537	100000	94.8	1.0
		Beryllium, TCLP Leacha	828	0.40u	1000	82.8	1.0
		Cadmium, TCLP Leachate	876	6.3 u	1000	87.6	1.0
		Chromium, TCLP Leachat	4360	4.8 u	5000	87.2	1.0
		Mercury, TCLP Leachate	178	0.10u	200	89.1	50.0
		Nickel, TCLP Leachate	886	11.3 u	1000	88.6	1.0
		Lead, TCLP Leachate	4550	22.7 u	5000	91.0	1.0
		Antimony, TCLP Leachat	941	45.4 u	1000	94.1	1.0
		Selenium, TCLP Leachat	947	62.1 u	1000	94.7	1.0
		Vanadium, TCLP Leachat	884	8.9 u	1000	88.4	1.0
		Zinc, TCLP Leachate	896	9.7	1000	88.7	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 10/23/01

CLIENT: TNUHANFORD B01-103 H1510 LVL LOT #: 0109L896

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12XJ7	Aluminum, Total	8100	8390	3.5	1.0
		Bismuth, Total	5.8	4.4 u	~~NC~~ 200	1.0
		Copper, Total	11.7	13.1	11.3	1.0
		Iron, Total	25100	25900	3.2	1.0
		Potassium, Total	1280	1310	1.8	1.0
		Magnesium, Total	5640	5870	4.0	1.0
		Manganese, Total	397	421	5.8	1.0
		Molybdenum, Total	0.94u	0.94u	NC	1.0
		Sodium, Total	383	391	2.0	1.0
		Tin, Total	4.6	3.7	21.7	1.0
-003REP	B12XJ7	Mercury, TCLP Leachate	0.10u	0.10u	NC	1.0

cyp 10/22/01

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 10/23/01

CLIENT: TNUHANFORD B01-103 H1510 LVL LOT #: 0109L896

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-004REP	B12XJ8	Silver, TCLP Leachate	9.6 u	9.6 u	NC	1.0
		Barium, TCLP Leachate	729	737	1.1	1.0
		Beryllium TCLP Leachate	0.79	0.79	0.00	1.0
		Cadmium, TCLP Leachate	6.3 u	6.3 u	NC	1.0
		Chromium, TCLP Leachate	94.6	91.0	3.9	1.0
		Nickel, Leachate	39.9	44.5	10.9	1.0
		Lead, TCLP Leachate	33.8	22.7 u	~~NC~~ 200	1.0
		Antimony, Leachate	45.4 u	45.4 u	NC	1.0
		Selenium, TCLP Leachate	62.1 u	62.1 u	NC	1.0
		Vanadium, TCLP Leachate	8.9 u	8.9 u	NC	1.0
		Zinc, Leachate	21.0	22.6	7.3	1.0

LMB 10/23/01

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/23/01

CLIENT: TNUHANFORD B01-103 H1510 LVL LOT #: 0109L896

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0686-LC1	Aluminum, LCS	486	500	MG/KG	97.2
		Bismuth, LCS	467	500	MG/KG	93.3
		Copper, LCS	119	125	MG/KG	95.0
		Iron, LCS	489	500	MG/KG	97.9
		Potassium, LCS	2370	2500	MG/KG	94.9
		Magnesium, LCS	2400	2500	MG/KG	96.0
		Manganese, LCS	73.7	75.0	MG/KG	98.3
		Molybdenum, LCS	487	500	MG/KG	97.3
		Sodium, LCS	2360	2500	MG/KG	94.2
		Tin, LCS	473	500	MG/KG	94.7
LCS1	01L0639-LC1	Silver, LCS	451	500	UG/L	90.1
		Barium, LCS	5030	5000	UG/L	100.5
		Beryllium, LCS	246	250	UG/L	98.2
		Cadmium, LCS	243	250	UG/L	97.2
		Chromium, LCS	500	500	UG/L	99.9
		Nickel, LCS	2030	2000	UG/L	101.7
		Lead, LCS	2480	2500	UG/L	99.4
		Antimony, LCS	2950	3000	UG/L	98.3
		Selenium, LCS	9730	10000	UG/L	97.3
		Vanadium, LCS	2430	2500	UG/L	97.1
		Zinc, LCS	978	1000	UG/L	97.8
LCS1	01C0302-LC1	Mercury, LCS	5.1	5.0	UG/L	102.0

(8) [illegible] BNA [illegible] From Nicki DIG metals

Lionville Laboratory Use Only

01091896

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client: TNU-Hanford B01-103

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30

Date Rec'd: 9.21.01 Date Due: 10-21-01

	A	B	C	D	E	F	G	H
Refrigerator #								
#/Type Container – Liquid								
#/Type Container – Solid	1Aq	1Aq	1Aq	1Aq	1Aq P DS 9/21/01	1P	1Aq	1P
Volume – Liquid								
Volume – Solid	120	500	250	120	500	500	60	500
Preservatives	—	—	—	—	—	—	—	—
ANALYSES REQUESTED (ORGANIC)	TCL VOA	BNA (5)	Pest/PCB	Herb	(4) Alcohols Glycols Ketones	INORG Metal (1)	CN	Metals (2) Hex Chrome TC (3) Anions
Lionville Laboratory Use Only	0624H	0625X	0PCB		0DRO 0GRO	ME1	ME2	ETCLP ~~ME2~~ Sm ZCRG INORG (1)

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625X	0PCB			0DRO 0GRO	ME1	ME2	ETCLP ~~ME2~~ Sm	ZCRG	INORG (1)
S - Soil	001	B12XJ7			S	9/19/01	1350	X	X	X			X	X		X	X	X
SE - Sediment	002	B12XJ8			L	L	1410	X	X	X			X	X		X	X	X
SO - Solid	003	tclp of 001			L	*									X			
SL - Sludge	004	tclp of 002			L	L									*			
W - Water																		
O - Oil																		
A - Air																		
DS - Drum Solids																		
DL - Drum Liquids																		
L - EP/TCLP Leachate																		
WI - Wipe																		
X - Other																		
F - Fish																		

Special Instructions:

DATE/REVISIONS:

ME1	1.	Al, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
Inorg 1	2.	ICNO3 ICNO2, INH3N, ICNTO, IPH, ISFD
ME2	3.	Ba, Cd, Cr, Pb, Se, Ag, As Sb, Be, Ni, V, Zn,
9-24-01	4.	Hg Add tclp for ME2
*	5.	see lab chron
	6.	

Lionville Laboratory Use Only

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

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

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	9/21/01	09:10

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

4235 7954 7446

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-12	Page 1 of 1

Collector: Daney Bowers	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	
Ice Chest No.: ERC-99-039	Field Logbook No.: EL-1551	COA: JRCRA14114	Method of Shipment: Fed EX
Shipped To: TMA RECRA	Offsite Property No.: A010360	Bill of Lading/Air Bill No.: 42357954 - 74416	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref. #2A at the 3728 Shipping Facility on 9/19/01. Collector not available to relinquish samples on 9/20/01 for shipment.

RT 9-20-01

SAMPLE ANALYSIS

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None
Type of Container	P	P	aG	P	aG	aG	aG	aG	P
No. of Container(s)	1	1	1	1	1	1	1	1	1
Volume	500mL	500mL	60mL	500mL	120mL	120mL	500mL	250mL	1000mL
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	See item (3) in Special Instructions.	VOA - 8260A (TCL)	See item (4) in Special Instructions.	See item (5) in Special Instructions.	PCBs - 8082	See item (6) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										Tie To
B12XJ7	SOIL	9-19-01	1350	X	X	X	X	X	X	X	X		B12XJ9
B12XJ8	SOIL	9-19-01	1410	X	X	X	X	X	X	X	X		B12XK0

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Daney Bowers	9-19-01 / 1525	Ref 2A 3728	9-19-01 / 1530
Ref 2A 3728	9-20-01 0800	R. L. Thorene	9-20-01 0800
R. L. Thorene	9-20-01 0800	FED EX	
Fed Ex	9-21-01 / 09:10	D. Smith	9-21-01 / 09:10

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Aluminum, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(2) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
(3) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(4) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(5) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
~~(6) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241, Carbon-14, Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-99; Tritium - H3; Isotopic Uranium~~

RT 9-20-01

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
Ve=Vegetation
X=Other

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

BHI-EE-011 (10/99)

ERC 99-039

NOV 2001 RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1510

DATE RECEIVED: 09/21/01 LVL LOT # :0109L896

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12XJ7						
% SOLIDS	001	S	01L%S129	09/19/01	10/01/01	10/02/01
% SOLIDS	001 REP	S	01L%S129	09/19/01	10/01/01	10/02/01
NITRITE BY IC	001	S	01LICF64	09/19/01	10/08/01	10/08/01
NITRITE BY IC	001 REP	S	01LICF64	09/19/01	10/08/01	10/08/01
NITRITE BY IC	001 MS	S	01LICF64	09/19/01	10/08/01	10/08/01
NITRATE BY IC	001	S	01LICF64	09/19/01	10/08/01	10/08/01
NITRATE BY IC	001 REP	S	01LICF64	09/19/01	10/08/01	10/08/01
NITRATE BY IC	001 MS	S	01LICF64	09/19/01	10/08/01	10/08/01
TOTAL CYANIDE	001	S	01LCB90	09/19/01	09/26/01	09/26/01
CHROMIUM VI	001	S	01LVI078	09/19/01	10/11/01	10/11/01
CHROMIUM VI	001 REP	S	01LVI078	09/19/01	10/11/01	10/11/01
CHROMIUM VI	001 MS	S	01LVI078	09/19/01	10/11/01	10/11/01
CHROMIUM VI	001 MSD	S	01LVI078	09/19/01	10/11/01	10/11/01
AMMONIA	001	S	01LAMA45	09/19/01	10/02/01	10/02/01
AMMONIA	001 REP	S	01LAMA45	09/19/01	10/02/01	10/02/01
AMMONIA	001 MS	S	01LAMA45	09/19/01	10/02/01	10/02/01
PH	001	S	01LPH064	09/19/01	10/02/01	10/02/01
PH	001 REP	S	01LPH064	09/19/01	10/02/01	10/02/01
SULFIDE	001	S	01LSD050	09/19/01	09/26/01	09/26/01
TCLP	001	S	01LTO115	09/19/01	09/26/01	09/26/01
B12XJ8						
% SOLIDS	002	S	01L%S129	09/19/01	10/01/01	10/02/01
NITRITE BY IC	002	S	01LICF64	09/19/01	10/08/01	10/08/01
NITRATE BY IC	002	S	01LICF64	09/19/01	10/08/01	10/08/01
TOTAL CYANIDE	002	S	01LCB90	09/19/01	09/26/01	09/26/01
TOTAL CYANIDE	002 REP	S	01LCB90	09/19/01	09/26/01	09/26/01
TOTAL CYANIDE	002 MS	S	01LCB90	09/19/01	09/26/01	09/26/01
CHROMIUM VI	002	S	01LVI078	09/19/01	10/11/01	10/11/01
AMMONIA	002	S	01LAMA45	09/19/01	10/02/01	10/02/01
PH	002	S	01LPH064	09/19/01	10/02/01	10/02/01
SULFIDE	002	S	01LSD050	09/19/01	09/26/01	09/26/01
SULFIDE	002 REP	S	01LSD050	09/19/01	09/26/01	09/26/01
SULFIDE	002 MS	S	01LSD050	09/19/01	09/26/01	09/26/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1510

DATE RECEIVED: 09/21/01 LVL LOT # :0109L896

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TCLP	002	S	01LTO115	09/19/01	09/26/01	09/26/01

LAB QC:

NITRITE BY IC	MB1	S	01LICF64	N/A	10/08/01	10/08/01
NITRITE BY IC	MB1 BS	S	01LICF64	N/A	10/08/01	10/08/01
NITRATE BY IC	MB1	S	01LICF64	N/A	10/08/01	10/08/01
NITRATE BY IC	MB1 BS	S	01LICF64	N/A	10/08/01	10/08/01
TOTAL CYANIDE	LCS L	S	01LCB90	N/A	09/26/01	09/26/01
TOTAL CYANIDE	LCS L	S	01LCB90	N/A	09/26/01	09/26/01
TOTAL CYANIDE	MB1	S	01LCB90	N/A	09/26/01	09/26/01
CHROMIUM VI	MB1	S	01LVI078	N/A	10/11/01	10/11/01
CHROMIUM VI	MB1 BS	S	01LVI078	N/A	10/11/01	10/11/01
CHROMIUM VI	MB1 BSD	S	01LVI078	N/A	10/11/01	10/11/01
AMMONIA	MB1	S	01LAMA45	N/A	10/02/01	10/02/01
AMMONIA	MB1 BS	S	01LAMA45	N/A	10/02/01	10/02/01
AMMONIA	MB1 BSD	S	01LAMA45	N/A	10/02/01	10/02/01
SULFIDE	MB1	S	01LSD050	N/A	09/26/01	09/26/01
SULFIDE	MB1 BS	S	01LSD050	N/A	09/26/01	09/26/01
SULFIDE	MB1 BSD	S	01LSD050	N/A	09/26/01	09/26/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-103 H1510
LVL#: 0109L896

W.O.#: 11343-606-001-9999-00
Date Received: 09-21-01

INORGANIC NARRATIVE

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

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

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

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

5. The method blanks were within the method criteria.

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

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

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

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

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

10-22-01
Date

njp\i09-896

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 14 pages.

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: Nitrite, Nitrate **Method:** EPA 300.0(mod.)

Other: Ammonia **Method** EPA 350.3

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 10/15/01

CLIENT: TNUHANFORD B01-103 H1510 LVL LOT #: 0109L896

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12XJ7	% Solids	96.5		%	0.01	1.0
		Nitrite by IC	1.30	u	MG/KG	1.30	1.0
		Nitrate by IC	1.30	u	MG/KG	1.30	1.0
		Cyanide, Total	0.47	u	MG/KG	0.47	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Ammonia, as N	2.7		MG/KG	2.5	1.0
		pH	8.7		SOIL PH	0.01	1.0
		Sulfide	41.5	u	MG/KG	41.5	1.0
-002	B12XJ8	% Solids	71.9		%	0.01	1.0
		Nitrite by IC	1.74	u	MG/KG	1.74	1.0
		Nitrate by IC	1.74	u	MG/KG	1.74	1.0
		Cyanide, Total	0.61	u	MG/KG	0.61	1.0
		Chromium VI	4.3		MG/KG	0.56	1.0
		Ammonia, as N	3.2	u	MG/KG	3.2	1.0
		pH	9.2		SOIL PH	0.01	1.0
		Sulfide	51.7	u	MG/KG	51.7	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/15/01

CLIENT: TNUHANFORD B01-103 H1510 LVL LOT #: 0109L896

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LICP64-MB1	Nitrite by IC	1.25 u	MG/KG	1.25	1.0
		Nitrate by IC	1.25 u	MG/KG	1.25	1.0
BLANK1	01LCB90-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0
BLANK10	01LVI078-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0
BLANK10	01LAMA45-MB1	Ammonia, as N	2.5 u	MG/KG	2.5	1.0
BLANK10	01LSD050-MB1	Sulfide	1.0 u	MG/KG	1.0	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 10/15/01

CLIENT: TNUHANFORD B01-103 H1510 LVL LOT #: 0109L896

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12XJ7	Nitrite by IC	24.0	1.30u	26.0	92.2	1.0
		Nitrate by IC	26.1	1.30u	26.0	100.5	1.0
		Soluble Chromium VI	3.9	0.42u	4.1	87.4	1.0
		Insoluble Chromium VI	1400	0.42u	1200	116.3	100
		Ammonia, as N	95.6	2.7	100	92.6	1.0
-002	B12XJ8	Cyanide, Total	6.04	0.61u	6.08	99.3	1.0
		Sulfide	614	15.5	670	89.3	1.0
BLANK10	01LICP64-MB1	Nitrite by IC	22.8	1.25u	25.0	91.3	1.0
		Nitrate by IC	24.7	1.25u	25.0	98.7	1.0
BLANK10	01LVI078-MB1	Soluble Chromium VI	3.9	0.40u	4.0	97.2	1.0
		Insoluble Chromium VI	1350	0.40u	1160	116.3	100
BLANK10	01LAMA45-MB1	Ammonia, as N	97.0	2.5 u	100	97.0	1.0
		Ammonia, as N MSD	94.8	2.5 u	100	94.8	1.0
BLANK10	01LSD050-MB1	Sulfide	12.3	1.0 u	13.2	93.1	1.0
		Sulfide MSD	12.6	1.0 u	13.2	95.4	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 10/15/01

CLIENT: TNUHANFORD B01-103 H1510 LVL LOT #: 0109L896

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	01LAMA45-MB1	Ammonia, as N	97.0	94.8	2.3
BLANK10	01LSD050-MB1	Sulfide	93.1	95.4	2.4

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 10/15/01

CLIENT: TNUHANFORD B01-103 H1510 LVL LOT #: 0109L896

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12XJ7	% Solids	96.5	96.1	0.42	1.0
		Nitrite by IC	1.30u	1.30u	NC	1.0
		Nitrate by IC	1.30u	1.30u	NC	1.0
		Chromium VI	0.42u	0.42u	NC	1.0
		Ammonia, as N	2.7	2.4 u	NC	1.0
		pH	8.7	8.7	0.6	1.0
-002REP	B12XJ8	Cyanide, Total	0.61u	0.61u	NC	1.0
		Sulfide	51.7 u	48.7 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/15/01

CLIENT: TNUHANFORD B01-103 H1510 LVL LOT #: 0109L896

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	01LCB90-LCS1	Cyanide, Total LCS	2.10	2.0	MG/KG	105.2
LCSS2	01LCB90-LCS2	Cyanide, Total LCS	10.7	10.0	MG/KG	107.3

BNA From Nicki DIG

Lionville Laboratory Use Only: 0109L896

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI Lionville Laboratory Inc

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B01-103

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30

Date Rec'd: 9.21.01 Date Due: 10-21-01

		A	B	C	D	E	F	G	H
Refrigerator #									
#/Type Container	Liquid								
	Solid	1Ag	1Ag	1Ag	1Ag	1Ag P DS 9/21/01	1P	1Ag	1P
Volume	Liquid								
	Solid	120	500	250	120	500	500	60	500
Preservatives		—	—	—	—	—	—	—	—
ANALYSES REQUESTED		ORGANIC: TCL VOA	ORGANIC: BNA (5)	ORGANIC: Pest/PCB	ORGANIC: Herb	(4) Alcohols Glycols Ketones	INORG: Metal (1)	INORG: CN	Metals (3) Hex Chrome TC (5) Anions
Lionville Laboratory Use Only		0624H	0625X	0PCB		ODRO OGRO	ME1	ME2	ETCLP AHCT Sm ZCAG INORG (1)

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625X	0PCB	ODRO OGRO	ME1	ME2	ETCLP AHCT Sm	ZCAG	INORG (1)
001	B12XJ7			S	9/19/01	1350	X	X	X	X	X		X	X	X
002	B12XJ8			⊥	⊥	1410	X	X	X	X	X		X	X	X
003	tclp of 001			L	*							X			
004	tclp of 002			⊥	⊥							*			

Special Instructions:

DATE/REVISIONS:

ME1	1.	Al, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
Inorg 1	2.	ICNO3 ICNO2, IN43N, IC NTO, IPH, ISFD
ME2	3.	Ba, Cd, Cr, Pb, Se, Ag, Al Sb, Be, Ni, V, Zn,
9-24-01	4.	Hg Add tclp for ME2
*	5.	see lab chron
	6.	

Lionville Laboratory Use Only

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

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

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	9/21/01	09:10

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

4235 7954 7446

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-12	Page 1 of 1

Collector: Doug Bowers	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	
Ice Chest No.: ERC-99-039	Field Logbook No.: EL-1551	COA: JRCRA14114	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A010360	Bill of Lading/Air Bill No.: 42357954 - 7446	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.#2A at the 3728 Shipping Facility on 9/19/01. Collector not available to relinquish samples on 9/20/01 for shipment.

RT 9-20-01

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time										
Preservation				Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	
Type of Container				P	P	aG	P	aG	aG	aG	aG	P	
No. of Container(s)				1	1	1	1	1	1	1	1	1	
Volume				500mL	500mL	60mL	500mL	120mL	120mL	500mL	250mL	1000mL	
				See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	See item (3) in Special Instructions.	VOA - 8260A (TCL)	See item (4) in Special Instructions.	See item (5) in Special Instructions.	PCBs - 8082	See item (6) in Special Instructions.	
B12XJ7	SOIL	9-19-01	1350	X	X	X	X	X	X	X	X		B12XJ9
B12XJ8	SOIL	9-19-01	1410	X	X	X	X	X	X	X	X		B12XK0

TIE TO:

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: Doug Bowers	9-19-01 / 1530	Received By/Stored In: R of 2A 3728	9-19-01 / 1530
Relinquished By/Removed From: R of 2A 3728	9-20-01 0800	Received By/Stored In: R. Thorne	9-20-01 0800
Relinquished By/Removed From: R. Thorne	9-20-01 0800	Received By/Stored In: ED Q	
Relinquished By/Removed From: Fed Ex	9-21-01 / 09:10	Received By/Stored In: D. Smith	9-21-01 / 09:10
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Aluminum, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(2) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
(3) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(4) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(5) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
~~(6) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-99; Tritium - H3; Isotopic Uranium~~

RT 9-20-01

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

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

BHI-EE-011 (10/99)

ERC 99-039

Figure 1. Sample Check-in List

Date/Time Received: 9.21.01 / 09:10

SDG#: 01096896

Work Order Number: _____ SAF# B01-103

Shipping Container ID: ECC 99-039 Chain of Custody # B01-103-12

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 4.3°C
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 16
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: _____ Date: _____

Telephoned to: _____ On _____ By _____