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1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1424 was composed of one solid (soil) sample designated under SAF No. B01-058 with a Project Designation of: 200-TW-1 & 2 – Soil Sampling.

The sample was received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Tritium Analyses

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.3 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.4 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.5 Total Strontium 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 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.8 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.9 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.10 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.11 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.12 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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

Melissa Mannion

Melissa C. Mannion
Program Manager

8/29/01

Date

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

SDG 7036
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1424

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B12CR8	B-38/200 E	SOLID		R107085-01	B01-058	B01-058-200	07/13/01 06:10
Method Blank		SOLID		R107085-03	B01-058		
Lab Control Sample		SOLID		R107085-02	B01-058		
Duplicate (R107085-01)	B-38/200 E	SOLID		R107085-04	B01-058		07/13/01 06:10
Spike (R107085-01)	B-38/200 E	SOLID		R107085-05	B01-058		07/13/01 06:10

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 08/28/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

SDG 7036
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1424

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
7036	B01-058-200	B12CR8	SOLID	97.1	261.1 g		07/14/01	1	R107085-01	7036-001
		Method Blank	SOLID						R107085-03	7036-003
		Lab Control Sample	SOLID						R107085-02	7036-002
		Duplicate (R107085-01)	SOLID	97.1	261.1 g		07/14/01	1	R107085-04	7036-004
		Spike (R107085-01)	SOLID		261.1 g		07/14/01	1	R107085-05	7036-005

Lab id TMANC
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

SDG 7036
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1424

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	6994-124	5.0	1			1	1	1/1		
NP	SOLID	Neptunium in Soil	6994-124	5.0	1			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6994-124	5.0	1			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	6994-124	5.0	1			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	6994-124	5.0	1			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6994-124	10.0	1			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6994-124	10.0	1			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6994-124	15.0	1			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	6994-124	9.0	1			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Soil	6994-124	10.0	1			1	1	1/1		
H	SOLID	Tritium in Soil	6994-124	10.0	1			1	1	1/1	1/1	X
NI_L	SOLID	Nickel 63 in Soil	6994-124	10.0	1			1	1	1/1		

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

Lab id TMANC
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

SDG 7036
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1424

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B12CR8			R107085-01	7036-001	AM		08/08/01	08/28/01	MCM	Americium 241 in Soil
B-38/200 E		SOLID	07/13/01	7036-001	C		08/14/01	08/28/01	MCM	Carbon 14 in Soil
B01-058-200	B01-058		07/14/01	7036-001	GAM		07/27/01	08/28/01	MCM	Gamma Scan
				7036-001	H		08/08/01	08/28/01	MCM	Tritium in Soil
				7036-001	NI_L		07/26/01	08/28/01	MCM	Nickel 63 in Soil
				7036-001	NP		08/02/01	08/28/01	MCM	Neptunium in Soil
				7036-001	PU		07/27/01	08/28/01	MCM	Plutonium, Isotopic in Solids
				7036-001	SR		07/24/01	08/28/01	MCM	Total Strontium in Soil
				7036-001	TC		08/10/01	08/28/01	MCM	Technetium 99 in Soil
				7036-001	TH		07/25/01	08/28/01	MCM	Thorium, Isotopic in Soil
				7036-001	U		07/24/01	08/28/01	MCM	Uranium, Isotopic in Soil
				7036-001	U_T		08/06/01	08/28/01	MCM	Uranium, Total in Soil
Method Blank			R107085-03	7036-003	AM		08/08/01	08/28/01	MCM	Americium 241 in Soil
		SOLID		7036-003	C		08/14/01	08/28/01	MCM	Carbon 14 in Soil
	B01-058			7036-003	GAM		07/27/01	08/28/01	MCM	Gamma Scan
				7036-003	H		08/08/01	08/28/01	MCM	Tritium in Soil
				7036-003	NI_L		07/26/01	08/28/01	MCM	Nickel 63 in Soil
				7036-003	NP		08/02/01	08/28/01	MCM	Neptunium in Soil
				7036-003	PU		07/27/01	08/28/01	MCM	Plutonium, Isotopic in Solids
				7036-003	SR		07/24/01	08/28/01	MCM	Total Strontium in Soil
				7036-003	TC		08/11/01	08/28/01	MCM	Technetium 99 in Soil
				7036-003	TH		07/30/01	08/28/01	MCM	Thorium, Isotopic in Soil
				7036-003	U		07/24/01	08/28/01	MCM	Uranium, Isotopic in Soil
				7036-003	U_T		08/06/01	08/28/01	MCM	Uranium, Total in Soil
Lab Control Sample			R107085-02	7036-002	AM		08/08/01	08/28/01	MCM	Americium 241 in Soil
		SOLID		7036-002	C		08/15/01	08/28/01	MCM	Carbon 14 in Soil
	B01-058			7036-002	GAM		07/27/01	08/28/01	MCM	Gamma Scan
				7036-002	H		08/08/01	08/28/01	MCM	Tritium in Soil
				7036-002	NI_L		07/26/01	08/28/01	MCM	Nickel 63 in Soil
				7036-002	NP		08/02/01	08/28/01	MCM	Neptunium in Soil
				7036-002	PU		07/27/01	08/28/01	MCM	Plutonium, Isotopic in Solids
				7036-002	SR		07/24/01	08/28/01	MCM	Total Strontium in Soil
				7036-002	TC		08/13/01	08/28/01	MCM	Technetium 99 in Soil
				7036-002	TH		07/25/01	08/28/01	MCM	Thorium, Isotopic in Soil
				7036-002	U		07/25/01	08/28/01	MCM	Uranium, Isotopic in Soil
				7036-002	U_T		08/06/01	08/28/01	MCM	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 08/28/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

SDG 7036
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1424

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Duplicate (R107085-01)			R107085-04	7036-004	AM		08/08/01	08/28/01	MCM	Americium 241 in Soil
B-38/200 E		SOLID	07/13/01	7036-004	C		08/14/01	08/28/01	MCM	Carbon 14 in Soil
	B01-058		07/14/01	7036-004	GAM		07/27/01	08/28/01	MCM	Gamma Scan
				7036-004	H		08/09/01	08/28/01	MCM	Tritium in Soil
				7036-004	NI_L		07/26/01	08/28/01	MCM	Nickel 63 in Soil
				7036-004	NP		08/02/01	08/28/01	MCM	Neptunium in Soil
				7036-004	PU		07/27/01	08/28/01	MCM	Plutonium, Isotopic in Solids
				7036-004	SR		07/24/01	08/28/01	MCM	Total Strontium in Soil
				7036-004	TC		08/13/01	08/28/01	MCM	Technetium 99 in Soil
				7036-004	TH		07/25/01	08/28/01	MCM	Thorium, Isotopic in Soil
				7036-004	U		07/24/01	08/28/01	MCM	Uranium, Isotopic in Soil
				7036-004	U_T		08/06/01	08/28/01	MCM	Uranium, Total in Soil
Spike (R107085-01)			R107085-05	7036-005	H		08/09/01	08/28/01	MCM	Tritium in Soil
B-38/200 E		SOLID	07/13/01							
	B01-058		07/14/01							

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
AM	B01-058	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	1			1	1	1		4
C	B01-058	Carbon 14 in Soil	C14_COX_LSC	1			1	1	1		4
GAM	B01-058	Gamma Scan	GAMMA_GS	1			1	1	1		4
H	B01-058	Tritium in Soil	906.0_H3_LSC	1			1	1	1	1	5
NI_L	B01-058	Nickel 63 in Soil	NI63_LSC	1			1	1	1		4
NP	B01-058	Neptunium in Soil	NP237_LLE_PLATE_AEA	1			1	1	1		4
PU	B01-058	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	1			1	1	1		4
SR	B01-058	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	1			1	1	1		4
TC	B01-058	Technetium 99 in Soil	TC99_TR_SEP_LSC	1			1	1	1		4
TH	B01-058	Thorium, Isotopic in Soil	THISO_IE_PLATE_AEA	1			1	1	1		4
U	B01-058	Uranium, Isotopic in Soil	UISO_PLATE_AEA	1			1	1	1		4
U_T	B01-058	Uranium, Total in Soil	UTOT_KPA	1			1	1	1		4
TOTALS				12			12	12	12	1	49

Lab id TMANC
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

R107085-03 Method Blank

METHOD BLANK

SDG	7036	Client/Case no	Hanford SDG H1424
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R107085-03	Client sample id	Method Blank
Dept sample id	7036-003	Material/Matrix	SOLID
		SAF No	B01-058

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.041	0.18	0.31	400	U	H
Carbon 14	14762-75-5	1.63	2.5	4.1	50	U	C
Nickel 63	13981-37-8	0.808	1.3	2.1	30	U	NI_L
Total Strontium	SR-RAD	-0.136	0.15	0.34	1.0	U	SR
Americium 241	14596-10-2	0.029	0.059	0.22	1.0	U	AM
Technetium 99	14133-76-7	-0.109	0.80	2.2	15	U	TC
Thorium 228	14274-82-9	0.080	0.062	0.085		U	TH
Thorium 230	14269-63-7	-0.151	0.13	0.28	1.0	U	TH
Thorium 232	TH-232	-0.004	0.027	0.042	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0	0.001	0.002	0.10	U	U_T
Uranium 233	U-233/234	0	0.057	0.22	1.0	U	U
Uranium 235	15117-96-1	0	0.069	0.26	1.0	U	U
Uranium 238	U-238	0	0.057	0.22	1.0	U	U
Neptunium 237	13994-20-2	0	0.12	0.18	1.0	U	NP
Plutonium 238	13981-16-3	0.028	0.11	0.22	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.056	0.22	1.0	U	PU
Potassium 40	13966-00-2	U		0.66		U	GAM
Cobalt 60	10198-40-0	U		0.072	0.050	U	GAM
Cesium 137	10045-97-3	U		0.047	0.10	U	GAM
Radium 226	13982-63-3	U		0.093	0.10	U	GAM
Radium 228	15262-20-1	U		0.21	0.20	U	GAM
Europium 152	14683-23-9	U		0.10	0.10	U	GAM
Europium 154	15585-10-1	U		0.17	0.10	U	GAM
Europium 155	14391-16-3	U		0.062	0.10	U	GAM
Thorium 228	14274-82-9	U		0.050		U	GAM
Thorium 232	TH-232	U		0.21		U	GAM
Uranium 235	15117-96-1	U		0.11		U	GAM
Uranium 238	U-238	U		6.8		U	GAM
Americium 241	14596-10-2	U		0.036		U	GAM

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/28/01

BLANK, cont.

SDG	7036	Client/Case no	Hanford	SDG H1424	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R107085-03	Client sample id	Method Blank		
Dept sample id	7036-003	Material/Matrix		SOLID	
		SAF No	B01-058		

QC-BLANK 39256

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/28/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

R107085-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7036
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1424
Case no No. 630

Lab sample id R107085-02
Dept sample id 7036-002

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B01-058

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	24.2	0.62	0.30	400	J	H	24.9	1.0	97	84-116	80-120
Carbon 14	10200	200	25	50		C	11300	450	90	85-115	80-120
Nickel 63	256	4.4	2.0	30		NI_L	264	11	97	84-116	80-120
Total Strontium	25.4	1.1	0.34	1.0		SR	23.1	0.92	110	81-119	80-120
Americium 241	21.0	2.1	0.25	1.0		AM	21.0	0.84	100	82-118	80-120
Technetium 99	542	10	2.3	15		TC	524	21	103	83-117	80-120
Thorium 230	45.4	3.3	0.37	1.0		TH	42.8	1.7	106	85-115	80-120
Total Uranium (ug/g)	16.6	1.9	0.024	0.10		U_T	16.5	0.66	101	77-123	80-120
Uranium 233	18.6	1.9	0.97	1.0		U	19.3	0.77	96	83-117	80-120
Uranium 235	15.7	1.8	0.24	1.0		U	15.7	0.63	100	80-120	80-120
Uranium 238	22.5	2.2	0.93	1.0		U	21.0	0.84	107	81-119	80-120
Neptunium 237	20.5	2.4	0.19	1.0		NP	23.8	0.95	86	82-118	80-120
Plutonium 238	28.1	3.1	0.26	1.0		PU	27.2	1.1	103	80-120	80-120
Plutonium 239/240	29.1	3.1	0.26	1.0		PU	29.0	1.2	100	81-119	80-120
Cobalt 60	1.87	0.11	0.051	0.050		GAM	1.86	0.074	100	75-125	80-120
Cesium 137	2.03	0.089	0.052	0.10		GAM	1.90	0.076	107	74-126	80-120

200-TW-1 & 2 - Soil Sampling

QC-LCS 39255

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 08/28/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

R107085-04 B12CR8

DUPLICATE

SDG	7036			Client/Case no	Hanford SDG H1424
Contact	Melissa C. Mannion			Case no	No. 630
DUPLICATE		ORIGINAL			
Lab sample id	R107085-04	Lab sample id	R107085-01	Client sample id	B12CR8
Dept sample id	7036-004	Dept sample id	7036-001	Location/Matrix	B-38/200 E SOLID
		Received	07/14/01	Collected/Weight	07/13/01 06:10 261.1 g
% solids	97.1	% solids	97.1	Custody/SAF No	B01-058-200 B01-058

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	-0.031	0.058	0.10	400	U	H	-0.012	0.059	0.10	U	-		
Carbon 14	1.35	2.3	3.8	50	U	C	1.15	2.5	4.1	U	-		
Nickel 63	0.432	1.3	2.2	30	U	NI_L	1.02	1.3	2.2	U	-		
Total Strontium	0.007	0.13	0.28	1.0	U	SR	0.020	0.11	0.18	U	-		
Americium 241	0	0.060	0.23	1.0	U	AM	0	0.11	0.21	U	-		
Technetium 99	0.447	1.1	2.4	15	U	TC	0.777	0.84	2.4	U	-		
Thorium 228	0.463	0.65	1.2		U	TH	0.578	0.24	0.18		22	200	
Thorium 230	0.138	0.37	0.57	1.0	U	TH	0.674	0.34	0.30	J	132	186	
Thorium 232	0.736	0.37	0.35	1.0	J	TH	0.505	0.24	0.18	J	37	107	
Total Uranium (ug/g)	0.695	0.081	0.002	0.10		U_T	0.710	0.084	0.002		2	31	
Uranium 233	0.315	0.21	0.20	1.0	J	U	0.370	0.21	0.20	J	16	130	
Uranium 235	0.064	0.064	0.24	1.0	U	U	0	0.064	0.24	U	-		
Uranium 238	0.447	0.21	0.20	1.0	J	U	0.264	0.16	0.20	J	51	112	
Neptunium 237	0.008	0.046	0.084	1.0	U	NP	0.062	0.12	0.19	U	-		
Plutonium 238	0	0.093	0.36	1.0	U	PU	0.084	0.11	0.21	U	-		
Plutonium 239/240	0.047	0.093	0.36	1.0	U	PU	0	0.056	0.21	U	-		
Potassium 40	13.0	0.52	0.25			GAM	12.6	0.74	0.37		3	34	
Cobalt 60	U		0.025	0.050	U	GAM	U		0.041	U	-		
Cesium 137	U		0.022	0.10	U	GAM	U		0.031	U	-		
Radium 226	0.291	0.042	0.045	0.10		GAM	0.297	0.074	0.072		2	54	
Radium 228	0.541	0.10	0.089	0.20		GAM	0.462	0.19	0.18		16	72	
Europium 152	U		0.049	0.10	U	GAM	U		0.073	U	-		
Europium 154	U		0.082	0.10	U	GAM	U		0.14	U	-		
Europium 155	U		0.047	0.10	U	GAM	U		0.073	U	-		
Thorium 228	0.455	0.027	0.026			GAM	0.436	0.039	0.039		4	36	
Thorium 232	0.541	0.10	0.089			GAM	0.462	0.19	0.18		16	72	
Uranium 235	U		0.077		U	GAM	U		0.12	U	-		
Uranium 238	U		3.0		U	GAM	U		4.5	U	-		

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	08/28/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

R107085-04 B12CR8

DUPLICATE, cont.

SDG	7036			Client/Case no	Hanford SDG H1424
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R107085-04	Lab sample id	R107085-01	Client sample id	B12CR8
Dept sample id	7036-004	Dept sample id	7036-001	Location/Matrix	B-38/200 E SOLID
		Received	07/14/01	Collected/Weight	07/13/01 06:10 261.1 g
% solids	97.1	% solids	97.1	Custody/SAF No	B01-058-200 B01-058

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
Americium 241	U		0.045		U	GAM	U		0.068	U	-		

200-TW-1 & 2 - Soil Sampling

QC-DUP#1 39257

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 08/28/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

R107085-05 B12CR8

MATRIX SPIKE

SDG	7036			Client/Case no	Hanford SDG H1424
Contact	Melissa C. Mannion			Case no	No. 630
MATRIX SPIKE		ORIGINAL			
Lab sample id	R107085-05	Lab sample id	R107085-01	Client sample id	B12CR8
Dept sample id	7036-005	Dept sample id	7036-001	Location/Matrix	B-38/200 E SOLID
		Received	07/14/01	Collected/Weight	07/13/01 06:10 261.1 g
		% solids	97.1	Custody/SAF No	B01-058-200 B01-058

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	49.4	0.50	0.10	400	JX	H	55.5	2.2	-0.012	0.059	89	85-115	60-140

200-TW-1 & 2 - Soil Sampling

QC-MS#1 39258

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-MS
Version	3.06
Report date	08/28/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

R107085-01 B12CR8

DATA SHEET

SDG	7036	Client/Case no	Hanford SDG_H1424
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R107085-01	Client sample id	B12CR8
Dept sample id	7036-001	Location/Matrix	B-38/200 E SOLID
Received	07/14/01	Collected/Weight	07/13/01 06:10 261.1 g
% solids	97.1	Custody/SAF No	B01-058-200 B01-058

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.012	0.059	0.10	400	U	H
Carbon 14	14762-75-5	1.15	2.5	4.1	50	U	C
Nickel 63	13981-37-8	1.02	1.3	2.2	30	U	NI_L
Total Strontium	SR-RAD	0.020	0.11	0.18	1.0	U	SR
Americium 241	14596-10-2	0	0.11	0.21	1.0	U	AM
Technetium 99	14133-76-7	0.777	0.84	2.4	15	U	TC
Thorium 228	14274-82-9	0.578	0.24	0.18			TH
Thorium 230	14269-63-7	0.674	0.34	0.30	1.0	J	TH
Thorium 232	TH-232	0.505	0.24	0.18	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	0.710	0.084	0.002	0.10		U_T
Uranium 233	U-233/234	0.370	0.21	0.20	1.0	J	U
Uranium 235	15117-96-1	0	0.064	0.24	1.0	U	U
Uranium 238	U-238	0.264	0.16	0.20	1.0	J	U
Neptunium 237	13994-20-2	0.062	0.12	0.19	1.0	U	NP
Plutonium 238	13981-16-3	0.084	0.11	0.21	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.056	0.21	1.0	U	PU
Potassium 40	13966-00-2	12.6	0.74	0.37			GAM
Cobalt 60	10198-40-0	U		0.041	0.050	U	GAM
Cesium 137	10045-97-3	U		0.031	0.10	U	GAM
Radium 226	13982-63-3	0.297	0.074	0.072	0.10		GAM
Radium 228	15262-20-1	0.462	0.19	0.18	0.20		GAM
Europium 152	14683-23-9	U		0.073	0.10	U	GAM
Europium 154	15585-10-1	U		0.14	0.10	U	GAM
Europium 155	14391-16-3	U		0.073	0.10	U	GAM
Thorium 228	14274-82-9	0.436	0.039	0.039			GAM
Thorium 232	TH-232	0.462	0.19	0.18			GAM
Uranium 235	15117-96-1	U		0.12		U	GAM
Uranium 238	U-238	U		4.5		U	GAM

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/28/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

R107085-01 B12CR8

DATA SHEET, cont

SDG	7036	Client/Case no	Hanford	SDG H1424	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R107085-01	Client sample id	B12CR8		
Dept sample id	7036-001	Location/Matrix	B-38/200 E	SOLID	
Received	07/14/01	Collected/Weight	07/13/01 06:10	261.1 g	
% solids	97.1	Custody/SAF No	B01-058-200	B01-058	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Americium 241	14596-10-2	U		0.068		U	GAM

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/28/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

Test AM Matrix SOLID
SDG 7036
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1424

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 6994-124						
B12CR8	R107085-01			7036-001	U	
BLK (QC ID=39256)	R107085-03			7036-003	U	
LCS (QC ID=39255)	R107085-02			7036-002	ok	
Duplicate (R107085-01)	R107085-04			7036-004	-	U
Nominal values and limits from method 200-TW-1 & 2 - Soil Sampling				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 6994-124 2σ prep error 5.0 % Reference Lab Notebook 6994 pg. 124																
B12CR8	R107085-01			0.21	0.500			80		105			26	08/07/01	08/08	SS-031
BLK (QC ID=39256)	R107085-03			0.22	0.500			77		105				08/07/01	08/08	SS-042
LCS (QC ID=39255)	R107085-02			0.25	0.500			84		105				08/07/01	08/08	SS-041
Duplicate (R107085-01) (QC ID=39257)	R107085-04			0.23	0.500			49		159			26	08/07/01	08/08	SS-043
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 4 SAMPLES
MDA 0.23 ± 0.034
YIELD 72 ± 32

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/28/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

Test NP Matrix SOLID
SDG 7036
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1424

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 6994-124						
B12CR8	R107085-01			7036-001	U	
BLK (QC ID=39256)	R107085-03			7036-003	U	
LCS (QC ID=39255)	R107085-02			7036-002	ok	
Duplicate (R107085-01)	R107085-04			7036-004	-	U
Nominal values and limits from method 200-TW-1 & 2 - Soil Sampling				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 6994-124 2σ prep error 5.0 % Reference Lab Notebook 6994 pg. 124																
B12CR8	R107085-01			0.19	0.500			37		102			20	08/01/01	08/02	SS-041
BLK (QC ID=39256)	R107085-03			0.18	0.500			40		104				08/01/01	08/02	SS-027
LCS (QC ID=39255)	R107085-02			0.19	0.500			36		102				08/01/01	08/02	SS-034
Duplicate (R107085-01) (QC ID=39257)	R107085-04			0.084	0.500			52		771			20	08/01/01	08/02	SS-019
Nominal values and limits from method				1.0	0.500			20-105		100			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES				
MDA	0.16	±	0.10
YIELD	41	±	15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/28/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

Test	PU
Matrix	SOLID
SDG	7036
Contact	Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	No. 630
Contract	SDG H1424

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6994-124								
B12CR8	R107085-01			7036-001	U		U	
BLK (QC ID=39256)	R107085-03			7036-003	U		U	
LCS (QC ID=39255)	R107085-02			7036-002	ok		ok	
Duplicate (R107085-01)	R107085-04			7036-004	-	U	-	U
Nominal values and limits from method 200-TW-1 & 2 - Soil Sampling				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 6994-124 2σ prep error 5.0 % Reference Lab Notebook 6994 pg. 124																
B12CR8	R107085-01			0.21	0.500			77		112			14	07/27/01	07/27	SS-027
BLK (QC ID=39256)	R107085-03			0.22	0.500			74		112				07/27/01	07/27	SS-029
LCS (QC ID=39255)	R107085-02			0.26	0.500			62		112				07/27/01	07/27	SS-028
Duplicate (R107085-01) (QC ID=39257)	R107085-04			0.36	0.500			44		112			14	07/27/01	07/27	SS-031
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES	MDA	0.26	± 0.14
	YIELD	64	± 30

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	08/28/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

Test	TH
Matrix	SOLID
SDG	7036
Contact	Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	No. 630
Contract	SDG H1424

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228		Thorium 230		Thorium 232	
Preparation batch 6994-124										
B12CR8	R107085-01			7036-001	0.578		0.674	J	0.505	J
BLK (QC ID=39256)	R107085-03			7036-003	U		U		U	
LCS (QC ID=39255)	R107085-02			7036-002			ok			
Duplicate (R107085-01)	R107085-04			7036-004	ok	U	ok	U	ok	J
Nominal values and limits from method				RDLs (pCi/g)			1.0		1.0	
200-TW-1 & 2 - Soil Sampling										

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 6994-124	2σ prep error 5.0 %				Reference Lab Notebook 6994 pg. 124											
B12CR8	R107085-01			0.30	0.250			86		221			12	07/25/01	07/25	SS-043
BLK (QC ID=39256)	R107085-03			0.28	0.250			86		1217				07/25/01	07/30	SS-028
LCS (QC ID=39255)	R107085-02			0.37	0.250			68		222				07/25/01	07/25	SS-044
Duplicate (R107085-01) (QC ID=39257)	R107085-04			0.57	0.250			98		158			12	07/25/01	07/25	SS-046
Nominal values and limits from method				1.0	0.250			20-105		150			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES				
MDA	0.38	±	0.26
YIELD	84	±	25

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	08/28/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

Test U Matrix SOLID
SDG 7036
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1424

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 6994-124											
B12CR8	R107085-01			7036-001	0.370 J	U	0.264 J	140	116	0	24
BLK (QC ID=39256)	R107085-03			7036-003	U	U	U				
LCS (QC ID=39255)	R107085-02			7036-002	ok	ok	ok				
Duplicate (R107085-01)	R107085-04			7036-004	ok J	- U	ok J	70	57	14	16
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
200-TW-1 & 2 - Soil Sampling								Averages 105		7	

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 6994-124 2σ prep error 5.0 % Reference Lab Notebook 6994 pg. 124																
B12CR8	R107085-01			0.24	0.500			84		101			11	07/24/01	07/24	SS-032
BLK (QC ID=39256)	R107085-03			0.26	0.500			82		101				07/24/01	07/24	SS-034
LCS (QC ID=39255)	R107085-02			0.97	0.500			86		108				07/24/01	07/25	SS-029
Duplicate (R107085-01) (QC ID=39257)	R107085-04			0.24	0.500			88		101			11	07/24/01	07/24	SS-041
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.43 ± 0.72
YIELD 85 ± 5

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/28/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

Test SR Matrix SOLID
SDG 7036
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1424

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 6994-124						
B12CR8	R107085-01			7036-001	U	
BLK (QC ID=39256)	R107085-03			7036-003	U	
LCS (QC ID=39255)	R107085-02			7036-002	ok	
Duplicate (R107085-01)	R107085-04			7036-004	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
200-TW-1 & 2 - Soil Sampling						

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 6994-124 2σ prep error 10.0 % Reference Lab Notebook 6994 pg. 124																
B12CR8	R107085-01			0.18	1.00			87		200			11	07/24/01	07/24	GRB-201
BLK (QC ID=39256)	R107085-03			0.34	1.00			74		100				07/24/01	07/24	GRB-223
LCS (QC ID=39255)	R107085-02			0.34	1.00			71		100				07/24/01	07/24	GRB-222
Duplicate (R107085-01) (QC ID=39257)	R107085-04			0.28	1.00			89		100			11	07/24/01	07/24	GRB-224
Nominal values and limits from method				1.0	1.00			30-105		100			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	0.28	±	0.15
	YIELD	80	±	18

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/28/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

Test TC Matrix SOLID
SDG 7036
Contact Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1424

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6994-124						
B12CR8	R107085-01			7036-001	U	
BLK (QC ID=39256)	R107085-03			7036-003	U	
LCS (QC ID=39255)	R107085-02			7036-002	ok	
Duplicate (R107085-01)	R107085-04			7036-004	-	U
Nominal values and limits from method 200-TW-1 & 2 - Soil Sampling				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 6994-124 2σ prep error 10.0 % Reference Lab Notebook 6994 pg. 124																
B12CR8	R107085-01			2.4	0.250			85		50			28	08/07/01	08/10	GRB-205
BLK (QC ID=39256)	R107085-03			2.2	0.250			94		50				08/07/01	08/11	GRB-203
LCS (QC ID=39255)	R107085-02			2.3	0.250			87		50				08/07/01	08/13	GRB-218
Duplicate (R107085-01) (QC ID=39257)	R107085-04			2.4	0.250			84		50			31	08/07/01	08/13	GRB-220
Nominal values and limits from method				15	0.250			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 4 SAMPLES
MDA 2.3 ± 0.19
YIELD 88 ± 9

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/28/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

Test GAM Matrix SOLID
SDG 7036
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1424

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 6994-124								
B12CR8	R107085-01			7036-001	U		U	
BLK (QC ID=39256)	R107085-03			7036-003	U		U	
LCS (QC ID=39255)	R107085-02			7036-002	ok		ok	
Duplicate (R107085-01)	R107085-04			7036-004	-	U	-	U
Nominal values and limits from method 200-TW-1 & 2 - Soil Sampling				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 6994-124 2σ prep error 15.0 % Reference Lab Notebook 6994 pg. 124																
B12CR8	R107085-01			0.10	140					413			14	07/25/01	07/27	JR,04,00
BLK (QC ID=39256)	R107085-03			0.10	140					401				07/25/01	07/27	JR,01,00
LCS (QC ID=39255)	R107085-02			0.051	140					412				07/25/01	07/27	JR,05,00
Duplicate (R107085-01) (QC ID=39257)	R107085-04			0.063	140					941			14	07/25/01	07/27	JR,04,00
Nominal values and limits from method				0.050	140					100			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.078 ± 0.051
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/28/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

Test U_T Matrix SOLID
SDG 7036
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract No. 630
Contract SDG H1424

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium (ug/g)
Preparation batch 6994-124					
B12CR8	R107085-01			7036-001	0.710
BLK (QC ID=39256)	R107085-03			7036-003	U
LCS (QC ID=39255)	R107085-02			7036-002	ok
Duplicate (R107085-01)	R107085-04			7036-004	ok
Nominal values and limits from method 200-TW-1 & 2 - Soil Sampling				RDLs (ug/g)	0.10

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA ug/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6994-124 2σ prep error 9.0 % Reference Lab Notebook 6994 pg. 124																
B12CR8	R107085-01			0.002	0.100								24	08/06/01	08/06	KPA-001
BLK (QC ID=39256)	R107085-03			0.002	0.100									08/06/01	08/06	KPA-001
LCS (QC ID=39255)	R107085-02			0.024	0.100									08/06/01	08/06	KPA-001
Duplicate (R107085-01) (QC ID=39257)	R107085-04			0.002	0.100								24	08/06/01	08/06	KPA-001
Nominal values and limits from method				0.10	0.100								180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.008 ± 0.022
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/28/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

Test C	Matrix SOLID
SDG 7036	
Contact Melissa C. Mannion	

METHOD SUMMARY

CARBON 14 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H1424	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Carbon 14	
Preparation batch 6994-124						
B12CR8	R107085-01			7036-001	U	
BLK (QC ID=39256)	R107085-03			7036-003	U	
LCS (QC ID=39255)	R107085-02			7036-002	ok	
Duplicate (R107085-01)	R107085-04			7036-004	-	U
Nominal values and limits from method 200-TW-1 & 2 - Soil Sampling				RDLs (pCi/g)	50	

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 6994-124	2σ prep error 10.0 %				Reference Lab Notebook 6994 pg. 124											
B12CR8	R107085-01			4.1	0.200			100		100			32	08/14/01	08/14	LSC-005
BLK (QC ID=39256)	R107085-03			4.1	0.200			100		100				08/14/01	08/14	LSC-005
LCS (QC ID=39255)	R107085-02			25	0.200			100		3				08/14/01	08/15	LSC-005
Duplicate (R107085-01) (QC ID=39257)	R107085-04			3.8	0.217			100		100			32	08/14/01	08/14	LSC-005
Nominal values and limits from method				50	0.200					50			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES	MDA	9.2	±	21
	YIELD	100	±	0

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	08/28/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

Test H Matrix SOLID
SDG 7036
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1424

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6994-124						
B12CR8	R107085-01			7036-001	U	
BLK (QC ID=39256)	R107085-03			7036-003	U	
LCS (QC ID=39255)	R107085-02			7036-002	ok	J
Duplicate (R107085-01)	R107085-04			7036-004	-	U
Spike (R107085-01)	R107085-05			7036-005	ok	JX

Nominal values and limits from method RDLs (pCi/g) 400
200-TW-1 & 2 - Soil Sampling

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 6994-124 2σ prep error 10.0 % Reference Lab Notebook 6994 pg. 124																
B12CR8	R107085-01			0.10	20.4			99		100			26	08/08/01	08/08	LSC-005
BLK (QC ID=39256)	R107085-03			0.31	20.0			33		100				08/08/01	08/08	LSC-005
LCS (QC ID=39255)	R107085-02			0.30	20.0			33		100				08/08/01	08/08	LSC-005
Duplicate (R107085-01) (QC ID=39257)	R107085-04			0.10	20.9			99		100			27	08/08/01	08/09	LSC-005
Spike (R107085-01) (QC ID=39258)	R107085-05			0.10	20.7			100		97			27	08/08/01	08/09	LSC-005
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 5 SAMPLES
MDA 0.18 ± 0.22
YIELD 73 ± 73

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/28/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1424

Test NI_L Matrix SOLID
SDG 7036
Contact Melissa C. Mannion

METHOD SUMMARY

NICKEL 63 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1424

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 6994-124						
B12CR8	R107085-01			7036-001	U	
BLK (QC ID=39256)	R107085-03			7036-003	U	
LCS (QC ID=39255)	R107085-02			7036-002	ok	
Duplicate (R107085-01)	R107085-04			7036-004	-	U
Nominal values and limits from method				RDLs (pCi/g)	30	
200-TW-1 & 2 - Soil Sampling						

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 6994-124	2σ prep error 10.0 % Reference Lab Notebook 6994 pg. 124															
B12CR8	R107085-01			2.2	0.500			91		100			13	07/25/01	07/26	LSC-006
BLK (QC ID=39256)	R107085-03			2.1	0.500			96		100				07/25/01	07/26	LSC-006
LCS (QC ID=39255)	R107085-02			2.0	0.500			97		100				07/25/01	07/26	LSC-006
Duplicate (R107085-01) (QC ID=39257)	R107085-04			2.2	0.500			91		100			13	07/25/01	07/26	LSC-006
Nominal values and limits from method				30	0.500			30-105		50			180			

PROCEDURES	REFERENCE	NI63_LSC
	CP-060	Soil Preparation, rev 3
	RP-431	Nickel-63 Purification, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 2.1 ± 0.19
YIELD 94 ± 6

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/28/01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-200	Page 1 of 1

Collector: Thomas G./Watson D.	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-38/200 E H1424 (7036)	SAF No.: B01-058	
Ice Chest No.: ORC 96 082	Field Logbook No.: EL-1518	COA: B20TW1A44C	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A0 10269	Bill of Lading/Air Bill No.: 42357954	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive Background counts on Split Spoon Dose < 0.5 mr/hr

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4°C			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	120mL	60mL	250mL	60mL	250mL	250mL	60 mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Mercury 7470 (CV)			

Sample No.	Matrix *	Sample Date	Sample Time									
B12CR8	SOIL	07/13/01	0610						X			B12CR8 1 MS 71301

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: Greg Thomas/Greg Thomas	07/13/01 0755	Received By/Stored In: Ref 1B	07/13/01 0755
Relinquished By/Removed From: REF 1B 71301	1000	Received By/Stored In: SSGALE	71301 1000
Relinquished By/Removed From: SSGALE	71301 1000	Received By/Stored In: FED EX	
Relinquished By/Removed From: Fed EX	7-14-01	Received By/Stored In: James Lind James Lind	7-14-01 1000
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA – 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D
(4) 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; Total Uranium; Tritium - H3; Isotopic Uranium

COLLECTOR UNAVAILABLE TO SIGN COC. MS 71301

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

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

BHI-EE-011 (10/99)

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Date/Time received 7-14-01 1100

CoC No. B01-058-200

Container I.D. No. ERC 96-082 Requested TAT (Days) 45 P.O. Received Yes [ ] No [ ]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 1
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 7-14-01
14. Received by James Lind Date: 7-14-01 Time: 1100

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

SEP 2001
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1424

DATE RECEIVED: 07/14/01 LVL LOT # :0107L310

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12CR8						
% SOLIDS	001	S	01L%S088	07/13/01	07/17/01	07/18/01
% SOLIDS	001 REP	S	01L%S088	07/13/01	07/17/01	07/18/01
CHLORIDE BY IC	001	S	01LICD48	07/13/01	07/24/01	07/24/01
CHLORIDE BY IC	001 REP	S	01LICD48	07/13/01	07/24/01	07/24/01
CHLORIDE BY IC	001 MS	S	01LICD48	07/13/01	07/24/01	07/24/01
FLUORIDE BY IC	001	S	01LICC48	07/13/01	07/24/01	07/24/01
FLUORIDE BY IC	001 REP	S	01LICC48	07/13/01	07/24/01	07/24/01
FLUORIDE BY IC	001 MS	S	01LICC48	07/13/01	07/24/01	07/24/01
NITRITE BY IC	001	S	01LICE48	07/13/01	07/24/01	07/24/01
NITRITE BY IC	001 REP	S	01LICE48	07/13/01	07/24/01	07/24/01
NITRITE BY IC	001 MS	S	01LICE48	07/13/01	07/24/01	07/24/01
NITRATE BY IC	001	S	01LICF48	07/13/01	07/24/01	07/24/01
NITRATE BY IC	001 REP	S	01LICF48	07/13/01	07/24/01	07/24/01
NITRATE BY IC	001 MS	S	01LICF48	07/13/01	07/24/01	07/24/01
TOTAL CYANIDE	001	S	01LCB70	07/13/01	07/19/01	07/19/01
TOTAL CYANIDE	001 REP	S	01LCB70	07/13/01	07/19/01	07/19/01
TOTAL CYANIDE	001 MS	S	01LCB70	07/13/01	07/19/01	07/19/01
PHOSPHATE BY IC	001	S	01LICD48	07/13/01	07/24/01	07/24/01
PHOSPHATE BY IC	001 REP	S	01LICD48	07/13/01	07/24/01	07/24/01
PHOSPHATE BY IC	001 MS	S	01LICD48	07/13/01	07/24/01	07/24/01
CHROMIUM VI	001	S	01LVI062	07/13/01	07/24/01	07/24/01
CHROMIUM VI	001 REP	S	01LVI062	07/13/01	07/24/01	07/24/01
CHROMIUM VI	001 MS	S	01LVI062	07/13/01	07/24/01	07/24/01
CHROMIUM VI	001 MSD	S	01LVI062	07/13/01	07/24/01	07/24/01
SULFATE BY IC	001	S	01LICD48	07/13/01	07/24/01	07/24/01
SULFATE BY IC	001 REP	S	01LICD48	07/13/01	07/24/01	07/24/01
SULFATE BY IC	001 MS	S	01LICD48	07/13/01	07/24/01	07/24/01
NITRATE NITRITE	001	S	01LN3A41	07/13/01	07/31/01	07/31/01
NITRATE NITRITE	001 REP	S	01LN3A41	07/13/01	07/31/01	07/31/01
NITRATE NITRITE	001 MS	S	01LN3A41	07/13/01	07/31/01	07/31/01
AMMONIA	001	S	01LAM038	07/13/01	07/30/01	07/31/01
AMMONIA	001 REP	S	01LAM038	07/13/01	07/30/01	07/31/01
AMMONIA	001 MS	S	01LAM038	07/13/01	07/30/01	07/31/01
TOTAL ORGANIC CARBON	001	S	01LTZ020	07/13/01	07/24/01	07/25/01
TOTAL ORGANIC CARBON	001 REP	S	01LTZ020	07/13/01	07/24/01	07/25/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1424

DATE RECEIVED: 07/14/01 LVL LOT # :0107L310

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TOTAL ORGANIC CARBON	001 MS	S	01LTZ020	07/13/01	07/24/01	07/25/01
PH	001	S	01LPH050	07/13/01	07/19/01	07/19/01
PH	001 REP	S	01LPH050	07/13/01	07/19/01	07/19/01

LAB QC:

CHLORIDE BY IC	MB1	S	01LICD48	N/A	07/24/01	07/24/01
CHLORIDE BY IC	MB1 BS	S	01LICD48	N/A	07/24/01	07/24/01
FLUORIDE BY IC	MB1	S	01LICC48	N/A	07/24/01	07/24/01
FLUORIDE BY IC	MB1 BS	S	01LICC48	N/A	07/24/01	07/24/01
NITRITE BY IC	MB1	S	01LICE48	N/A	07/24/01	07/24/01
NITRITE BY IC	MB1 BS	S	01LICE48	N/A	07/24/01	07/24/01
NITRATE BY IC	MB1	S	01LICF48	N/A	07/24/01	07/24/01
NITRATE BY IC	MB1 BS	S	01LICF48	N/A	07/24/01	07/24/01
TOTAL CYANIDE	LCS L	S	01LCB70	N/A	07/19/01	07/19/01
TOTAL CYANIDE	LCS L	S	01LCB70	N/A	07/19/01	07/19/01
TOTAL CYANIDE	MB1	S	01LCB70	N/A	07/19/01	07/19/01
PHOSPHATE BY IC	MB1	S	01LICD48	N/A	07/24/01	07/24/01
PHOSPHATE BY IC	MB1 BS	S	01LICD48	N/A	07/24/01	07/24/01
CHROMIUM VI	MB1	S	01LVI062	N/A	07/24/01	07/24/01
CHROMIUM VI	MB1 BS	S	01LVI062	N/A	07/24/01	07/24/01
CHROMIUM VI	MB1 BSD	S	01LVI062	N/A	07/24/01	07/24/01
SULFATE BY IC	MB1	S	01LICD48	N/A	07/24/01	07/24/01
SULFATE BY IC	MB1 BS	S	01LICD48	N/A	07/24/01	07/24/01
NITRATE NITRITE	MB1	S	01LN3A41	N/A	07/31/01	07/31/01
NITRATE NITRITE	MB1 BS	S	01LN3A41	N/A	07/31/01	07/31/01
AMMONIA	MB1	W	01LAM038	N/A	07/30/01	07/31/01
AMMONIA	MB1 BS	W	01LAM038	N/A	07/30/01	07/31/01
AMMONIA	MB1 BSD	W	01LAM038	N/A	07/30/01	07/31/01
TOTAL ORGANIC CARBON	MB1	S	01LTZ020	N/A	07/24/01	07/25/01
TOTAL ORGANIC CARBON	MB1 BS	S	01LTZ020	N/A	07/24/01	07/25/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-058 H1424
LVL#: 0107L310

W.O.#: 11343-606-001-9999-00
Date Received: 07-14-01

INORGANIC NARRATIVE

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

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

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

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

5. The method blanks were within the method criteria.

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

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

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

9. Results for solid samples are reported on a dry weight basis andTotal Organic Carbon samples are dried prior to analysis.

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

08-16-01
Date

njp\i07-310

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

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

Nitrate Nitrite EPA 353.2 (mod.)

Ammonia EPA 350.3 ~~(mod)~~ 8-16-01

L-WI-034/B-01/01

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/01/01

CLIENT: TNUHANFORD B01-058 H1424 LVL LOT #: 0107L310

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12CR8	% Solids	98.0		%	0.01	1.0
		Chloride by IC	4.0		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.28	u	MG/KG	1.28	1.0
		Nitrate by IC	2.15		MG/KG	1.28	1.0
		Cyanide, Total	0.49	u	MG/KG	0.49	1.0
		Phosphate by IC	2.2		MG/KG	1.3	1.0
		Chromium VI	0.41	u	MG/KG	0.41	1.0
		Sulfate by IC	17.0		MG/KG	1.3	1.0
		Nitrate Nitrite	0.35		MG/KG	0.20	1.0
		Ammonia, as N	5.1	u	MG/KG	5.1	1.0
		Total Organic Carbon	141	u	MG/KG	141	1.0
		pH	9.0		SOIL PH	0.01	1.0

Lionville Lababoratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/01/01

CLIENT: TNUHANFORD B01-058 H1424 LVL LOT #: 0107L310

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LICD48-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK10	01LICC48-MB1	Fluoride by IC	2.5	u	MG/KG	2.5	1.0
BLANK10	01LICE48-MB1	Nitrite by IC	1.25	u	MG/KG	1.25	1.0
BLANK10	01LICF48-MB1	Nitrate by IC	1.25	u	MG/KG	1.25	1.0
BLANK1	01LCB70-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	01LVI062-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	01LN3A41-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	01LAM038-MB1	Ammonia, as N	0.10	u	MG/L	0.10	1.0
BLANK10	01LTZ020-MB1	Total Organic Carbon	20.0	u	MG/KG	20.0	1.0

Lionville Lababoratory, Inc.

INORGANICS ACCURACY REPORT 08/01/01

CLIENT: TNUHANFORD B01-058 H1424 LVL LOT #: 0107L310

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12CR8	Chloride by IC	57.1	4.0	51.0	104.0	2.0
		Fluoride by IC	113	0.64	102	110.4	2.0
		Nitrite by IC	52.4	1.28u	51.0	102.7	2.0
		Nitrate by IC	52.1	2.15	51.0	97.9	2.0
		Cyanide, Total	4.36	0.49u	4.78	91.3	1.0
		Phosphate by IC	51.6	2.2	51.0	96.9	2.0
		Soluble Chromium VI	2.9	0.28	4.1	64.3	1.0
		Insoluble Chromium VI	1360	0.28	1190	114.4	100
		Sulfate by IC	69.3	17.0	51.0	102.5	2.0
		Nitrate Nitrite	5.2	0.35	5.0	96.9	1.0
		Ammonia, as N	203	5.1 u	204	99.7	1.0
		Total Organic Carbon	2910	95.1	2800	100.7	1.0
BLANK10	01LICD48-MB1	Chloride by IC	23.3	1.2 u	25.0	93.2	1.0
		Phosphate by IC	26.0	1.2 u	25.0	104.0	1.0
		Sulfate by IC	24.1	1.2 u	25.0	96.5	1.0
BLANK10	01LICC48-MB1	Fluoride by IC	54.8	2.5 u	50.0	109.7	1.0
BLANK10	01LICE48-MB1	Nitrite by IC	23.8	1.25u	25.0	95.3	1.0
BLANK10	01LICF48-MB1	Nitrate by IC	24.8	1.25u	25.0	99.4	1.0
BLANK10	01LVI062-MB1	Soluble Chromium VI	4.4	0.40u	4.0	109.6	1.0
		Insoluble Chromium VI	1110	0.40u	1220	90.6	100
BLANK10	01LN3A41-MB1	Nitrate Nitrite	5.1	0.20u	5.0	102.6	1.0
BLANK10	01LAM038-MB1	Ammonia, as N	2.1	0.10u	2.0	103.5	1.0
		Ammonia, as N MSD	2.1	0.10u	2.0	103.0	1.0
BLANK10	01LTZ020-MB1	Total Organic Carbon	405	20.0 u	400	101.2	1.0

Lionville Lababoratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 08/01/01

CLIENT: TNUHANFORD B01-058 H1424 LVL LOT #: 0107L310

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
~~001~~	~~B12CR8~~	~~Chromium VI~~	~~84.3~~	~~114.4~~	~~56.0~~
~~BLANK10~~	~~01LVI062-MB1~~	~~Chromium VI~~	~~109.6~~	~~90.6~~	~~19.0~~
BLANK10	01LAM038-MB1	Ammonia, as N	103.5	103.0	0.48

not duplicate spike results
mjp 8-16-01

Lionville Lababoratory, Inc.

INORGANICS PRECISION REPORT 08/01/01

CLIENT: TNUHANFORD B01-058 H1424 LVL LOT #: 0107L310

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12CR8	% Solids	98.0	98.3	0.32	1.0
		Chloride by IC	4.0	3.7	9.0	1.0
		Fluoride by IC	2.6 u	2.6 u	NC	1.0
		Nitrite by IC	1.28u	1.28u	NC	1.0
		Nitrate by IC	2.15	2.29	6.4	1.0
		Cyanide, Total	0.49u	0.50u	NC	1.0
		Phosphate by IC	2.2	2.2	2.1	1.0
		Chromium VI	0.41u	0.41u	NC	1.0
		Sulfate by IC	17.0	17.6	3.8	1.0
		Nitrate Nitrite	0.35	0.35	0.00	1.0
		Ammonia, as N	5.1 u	5.1 u	NC	1.0
		Total Organic Carbon	141 u	151	NC	1.0
		pH	9.0	8.9	0.6	1.0

Lionville Lababoratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 08/01/01

CLIENT: TNUHANFORD B01-058 H1424 LVL LOT #: 0107L310

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	01LCB70-LCS1	Cyanide, Total LCS	1.75	2.0	MG/KG	87.4
LCSS2	01LCB70-LCS2	Cyanide, Total LCS	10.3	10.0	MG/KG	102.9

Lionville Laboratory Use Only

01071310

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI Lionville Laboratory Inc

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU HANFORD SAF B01-058

Est. Final Proj. Sampling Date:

Project #: 11343-6010-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: D

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 7-14-01 Date Due: 8-13-01

		A	B						C		D	E	F			
Refrigerator #		1	S						S		S	S	S			
#/Type Container	Liquid															
	Solid	1AG	1AG						1AG		1AG	1AG	1AG			
Volume	Liquid															
	Solid	60	250						100		250	6oz	60			
Preservatives		-	-						-		-	-	-			
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	Anions	Sulfide	Mercury			

Lionville Laboratory Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected													
								8260HH	8260SX DDRO						Mrt(1)		Inorg(1)	IC RLO	MHG TO	
	001	B12CR8	✓	✓	S	7/13/01	0610	1	1						1		1	1	1	

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

Special Instructions: SAF B01-058

DATE/REVISIONS:

Mrt(1) 1. Cd, Cr, Cu, Ni, Ag, Pb

Inorg 6 2. ICCL, ICFL, ICN02, ICN03, ICPO4, ICSO4,

1 3. ICNH3N, ICN3N2, ICNTO, ICCT, IPH

4.

5.

6.

Lionville Laboratory Use Only

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

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

Relinquished by	Received by	Date	Time
[signature]	[signature]	7/14/01	1130

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: N235795457 30

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-200	Page 1 of 1

Collector: Thomas G./Watson D.	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-38/200 E	SAF No.: B01-058	
Ice Chest No.: SML 525	Field Logbook No.: EL-1518	COA: B20TW1A44C	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A-010314		Bill of Lading/Air Bill No.: 4235 7954

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive Background Counts on Split Spoon Dose < 0.5 mr/hr

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4°C			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	120mL	60mL	250mL	60mL	250mL	250mL	60 mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Mercury 7470 (CV)			

Sample No.	Matrix *	Sample Date	Sample Time								Tie to
B12CR8	SOIL	07/13/01	0610	X	X	X	X	X		X		B12647 1 MD 7/30/01

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From: Greg Thomas/Greg Thomas	Date/Time: 07/13/01 0755	Received By/Stored In: Ref IB	Date/Time: 07/13/01 0755
Relinquished By/Removed From: REF IB	Date/Time: 71301 1000	Received By/Stored In: SJOALE	Date/Time: 71301 1000
Relinquished By/Removed From: SJOALE	Date/Time: 71301 1000	Received By/Stored In: FED EX	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 7/14/01	Received By/Stored In: [illegible]	Date/Time: 7/14/01
Relinquished By/Removed From: Fed Ex	Date/Time: 7/14/01	Received By/Stored In: [illegible]	Date/Time: 7/14/01
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D
(4) 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; Total Uranium; Tritium - H3; Isotopic Uranium

COLLECTOR UNAVAILABLE TO SIGN COC. SJO 7/30/01

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: 7/14/01

SDG#: 0107L310

Work Order Number: _____ SAF# B01-058

Shipping Container ID: SML 625 Chain of Custody # _____

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°
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 7
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: Lionville Laboratory Incorporated Date: 7/14/01

Telephoned to: _____ On _____ By _____

11

SEP 2001
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1424

DATE RECEIVED: 07/14/01 LVL LOT # :0107L310

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12CR8						
SILVER, TOTAL	001	S	01L0439	07/13/01	07/18/01	07/20/01
SILVER, TOTAL	001 REP	S	01L0439	07/13/01	07/18/01	07/20/01
SILVER, TOTAL	001 MS	S	01L0439	07/13/01	07/18/01	07/20/01
CADMIUM, TOTAL	001	S	01L0439	07/13/01	07/18/01	07/20/01
CADMIUM, TOTAL	001 REP	S	01L0439	07/13/01	07/18/01	07/20/01
CADMIUM, TOTAL	001 MS	S	01L0439	07/13/01	07/18/01	07/20/01
CHROMIUM, TOTAL	001	S	01L0439	07/13/01	07/18/01	07/20/01
CHROMIUM, TOTAL	001 REP	S	01L0439	07/13/01	07/18/01	07/20/01
CHROMIUM, TOTAL	001 MS	S	01L0439	07/13/01	07/18/01	07/20/01
COPPER, TOTAL	001	S	01L0439	07/13/01	07/18/01	07/20/01
COPPER, TOTAL	001 REP	S	01L0439	07/13/01	07/18/01	07/20/01
COPPER, TOTAL	001 MS	S	01L0439	07/13/01	07/18/01	07/20/01
MERCURY, TOTAL	001	S	01C0232	07/13/01	07/30/01	07/31/01
MERCURY, TOTAL	001 REP	S	01C0232	07/13/01	07/30/01	07/31/01
MERCURY, TOTAL	001 MS	S	01C0232	07/13/01	07/30/01	07/31/01
NICKEL, TOTAL	001	S	01L0439	07/13/01	07/18/01	07/20/01
NICKEL, TOTAL	001 REP	S	01L0439	07/13/01	07/18/01	07/20/01
NICKEL, TOTAL	001 MS	S	01L0439	07/13/01	07/18/01	07/20/01
LEAD, TOTAL	001	S	01L0439	07/13/01	07/18/01	07/20/01
LEAD, TOTAL	001 REP	S	01L0439	07/13/01	07/18/01	07/20/01
LEAD, TOTAL	001 MS	S	01L0439	07/13/01	07/18/01	07/20/01

LAB QC:

SILVER LABORATORY	LC1 BS	S	01L0439	N/A	07/18/01	07/20/01
SILVER, TOTAL	MB1	S	01L0439	N/A	07/18/01	07/20/01
CADMIUM LABORATORY	LC1 BS	S	01L0439	N/A	07/18/01	07/20/01
CADMIUM, TOTAL	MB1	S	01L0439	N/A	07/18/01	07/20/01
CHROMIUM LABORATORY	LC1 BS	S	01L0439	N/A	07/18/01	07/20/01
CHROMIUM, TOTAL	MB1	S	01L0439	N/A	07/18/01	07/20/01
COPPER LABORATORY	LC1 BS	S	01L0439	N/A	07/18/01	07/20/01
COPPER, TOTAL	MB1	S	01L0439	N/A	07/18/01	07/20/01
MERCURY LABORATORY	LC1 BS	S	01C0232	N/A	07/30/01	07/30/01
MERCURY, TOTAL	MB1	S	01C0232	N/A	07/30/01	07/30/01
NICKEL LABORATORY	LC1 BS	S	01L0439	N/A	07/18/01	07/20/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1424

DATE RECEIVED: 07/14/01 LVL LOT # :0107L310

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NICKEL, TOTAL	MB1	S	01L0439	N/A	07/18/01	07/20/01
LEAD LABORATORY	LC1 BS	S	01L0439	N/A	07/18/01	07/20/01
LEAD, TOTAL	MB1	S	01L0439	N/A	07/18/01	07/20/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-058
LVL#: 0107L310
SDG/SAF#: H1424/B01-058

W.O.#: 11343-606-001-9999-00
Date Received: 07-14-01

METALS CASE NARRATIVE

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

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 were within method criteria {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

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

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

10. The matrix spike (MS) recovery for 1 analyte was outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B12CR8	Chromium	120	105.0

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 16 pages.

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

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

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

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

8/24/01
Date

jjw/m07-310

LVLI
LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 0107L310

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A __3010A __3015 __3020A X3050B __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	X 6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	X6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	X 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]	X7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	X6010B		__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	X6010B	__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	X 6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

L-WI-033/M-11/99

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METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

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

4. Flame AA.

5. Graphite Furnace AA.

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/01/01

CLIENT: TNUHANFORD B01-058 H1424 LVL LOT #: 0107L310

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12CR8	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	42.0	MG/KG	0.09	1.0
		Copper, Total	11.6	MG/KG	0.07	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	24.1	MG/KG	0.12	1.0
		Lead, Total	3.0	MG/KG	0.26	1.0

Lionville Lababoratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 08/01/01

CLIENT: TNUHANFORD B01-058 H1424 LVL LOT #: 0107L310

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0439-MB1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.09 u	MG/KG	0.09	1.0
		Copper, Total	0.07 u	MG/KG	0.07	1.0
		Nickel, Total	0.12 u	MG/KG	0.12	1.0
		Lead, Total	0.26 u	MG/KG	0.26	1.0
BLANK1	01C0232-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

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Lionville Lababoratory, Inc.

INORGANICS ACCURACY REPORT 08/01/01

CLIENT: TNUHANFORD B01-058 H1424 LVL LOT #: 0107L310

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12CR8	Silver, Total	4.7	0.10u	5.1	92.2	1.0
		Cadmium, Total	4.7	0.03u	5.1	92.2	1.0
		Chromium, Total	52.5	42.0	20.2	52.0	1.0
		Copper, Total	36.0	11.6	25.2	96.8	1.0
		Mercury, Total	0.15	0.02u	0.16	92.1	1.0
		Nickel, Total	69.1	24.1	50.5	89.1	1.0
		Lead, Total	50.6	3.0	50.5	94.3	1.0

Lionville Lababoratory, Inc.

INORGANICS PRECISION REPORT 08/01/01

CLIENT: TNUHANFORD B01-058 H1424 LVL LOT #: 0107L310

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12CR8	Silver, Total	0.10u	0.10u	NC	1.0
		Cadmium, Total	0.03u	0.03u	NC	1.0
		Chromium, Total	42.0	27.5	41.7	1.0
		Copper, Total	11.6	10.2	12.8	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Nickel, Total	24.1	17.1	34.0	1.0
		Lead, Total	3.0	2.5	18.2	1.0

Lionville Lababoratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 08/01/01

CLIENT: TNUHANFORD B01-058 H1424 LVL LOT #: 0107L310

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0439-LC1	Silver, LCS	48.7	50.0	MG/KG	97.4
		Cadmium, LCS	24.9	25.0	MG/KG	99.6
		Chromium, LCS	51.0	50.0	MG/KG	102.0
		Copper, LCS	124	125	MG/KG	99.4
		Nickel, LCS	200	200	MG/KG	100.2
		Lead, LCS	245	250	MG/KG	98.1
LCS1	01C0232-LC1	Mercury, LCS	3.0	2.5	MG/KG	119.9

M

Lionville Laboratory Use Only

01074310

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI Lionville Laboratory Inc.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU HANFORD SAF B01-058

Est. Final Proj. Sampling Date:

Project #: 11343-6010-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: DJ

QC: Spec Del: STD TAT: 30 day

Date Rec'd: 7-14-01 Date Due: 8-13-01

		A	B						C		D	E	F			
Refrigerator #		1	S						S		S	S	S			
#/Type Container	Liquid															
	Solid	1AG	1AG						1AG		1AG	1AG	1AG			
Volume	Liquid															
	Solid	60	250						60		250	60	60			
Preservatives		–	–						–		–	–	–			
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	Inorg	IC	Mercury			
Lionville Laboratory Use Only		8260HH	8270SX	8082 8015RO					Mrt(1)		Inorg(1)	IC PKG	MHG TO			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected													
S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	001	B12CR8	✓	✓	S	7/13/01	0610	1	1				1		1	1	1			

Special Instructions: SAF B01-058

DATE/REVISIONS:

Mrt(1) 1. Cd, Cr, Cu, Ni, Ag, Pb

Inorg 6 2. TCL, TCFL, TCNO2, TCNO3, TCPO4, TCSO4,

1 3. TDH3N, TN3N2, TCNTO, TOCT, TPH

4.

5.

6.

Relinquished by	Received by	Date	Time
[illegible]	V. Henry	7/14/01	1130

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL

Lionville Laboratory Use Only

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

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

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

Cooler Temp. 4° °C

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

NOTES:

N235795457 30

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B01-058-200

Collector Thomas G./Watson D.	**Company Contact** Todd, M.E.	**Telephone No.** (509) 372-9631	**Project Coordinator** TRENT, SJ
Project Designation 200-TW-1 & 2 - Soil Sampling	**Sampling Location** B-38/200 E		**SAF No.** B01-058
Ice Chest No. SML 525	**Field Logbook No.** EL-1518	**COA** B20TW1A44C	**Method of Shipment** Fed EX
Shipped To TMA/RECRA	**Offsite Property No.** A010314		**Bill of Lading/Air Bill No.** 4235 7954

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

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive Background Counts on Split Spoon Dose < 0.5 mr/hr

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4°C			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	120mL	60mL	250mL	60mL	250mL	250mL	60 mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Mercury 7470 (CV)		Tie to	

Sample No.	Matrix *	Sample Date	Sample Time									
B12CR8	SOIL	07/13/01	0610	X	X	X	X	X		X		B12642 1 MC 71901

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	07/13/01 0755	Ref IB	07/13/01 0755
REF IB	71301 1000	SJOALE	71301 1000
SJOALE	71301 1000	FED EX	
Fed Ex	7/14/01	J. Hermann	7/14/01
Fed Ex	7/14/01	J. Hermann	7/14/01

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D
(4) 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; Total Uranium; Tritium - H3; Isotopic Uranium

COLLECTOR UNAVAILABLE TO SIGN COC. SJO 71301

Matrix *

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

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

BHI-EE-011 (10/99)

Lionville Laboratory

MERCURY PREPARATION

Logbook # 8698

Analyst: [illegible]
Date 7/30/01
Start Time/Temp: 1900/96°C
End Time/Temp: 1930/97°C

Instrument ID HG1.1/HG1.1
Balance #: B29 /NA
Pipette Calibration (Daily) (Y) ___

Prep Batch: 01C0232, HG07311
Worksheet: HG07311/HG07311
OP No. L-ME-7470A, Rev. 00

pH < 2 for Liquids? __ Yes N/A No (If no: designate affected samples in Comments column, and initiate an SDR)

NOTE: The Inital/Final Volume for water samples = 33mL, unless otherwise noted.
The Final volume for soil samples = 50mL, unless otherwise noted.

LvLI Batch #	Container Number	Spike Volume (mL)	Spike Conc. (µg/L)	Initial Wt. or Volume (g or mL)	Final Sample Volume (mL)	Comments, % Solids, etc.
Blank	146			10ml	50ml	
0.2 µg/L	215	0.100				
1.0 µg/L	325	0.500				
2.0 µg/L	512	1.000				
5.0 µg/L	730	2.500				
10.0 µg/L	214	5.000				
IW	50	0.126	2.5			
CW	80	0.250	5.0			
ICB/CCB	116					% solids
MB1	AB			0.30gm		PBS132 100.00
LCS	202	*	*	0.15gm		LCSS132
01072239-001 C	128			0.30gm		RAD 94.07
001R	88			0.33gm		
001S	18	0.500	1.0	0.30gm		
003	95			0.31gm		96.19
005	28			0.30gm		87.99
01072269-001 B	~~AT~~ 557			0.32gm		90.48
001R	64 MJ 7/30/01			0.33gm		
001S	16	0.500	1.0	0.32gm		
002	428			0.31gm		93.70
01072260-001 B	217			0.32gm		RAD 97.55
001R	208			0.33gm		

Standard:	ID	Prep Date/Time
ICAL/MS	EM-E032B0730	7/30/01 1430
ICV/CCV/LCS	US-U385AN730	

Reviewed By/Date: [illegible] 8/6/01

see book # 4527 for std traceability information

* Soil LCS = ERA Metals in soil; True Value = 2.48 mg/Kg
Catalogue # 540, Lot # 245

Water Matrix Spiking Solution Concentration= 0.1µg/ml
Water LCS Spiking Concentration: 1.0µg/ml

L-WI-18/H-03/01

Page # 056 B

14

Lionville Laboratory

MERCURY PREPARATION

Logbook # 8698

Analyst: [illegible]
Date 7/30/01
Start Time/Temp: See pg 056B
End Time/Temp:

Instrument ID HG1.1/HG1.1
Balance #: B29 /NA
Pipette Calibration (Daily) (Y) ___

Prep Batch: 01C0232
Worksheet: H6073011/H6073111
OP No. L-ME-7470A, Rev. 00

pH < 2 for Liquids? __ Yes N/A No (If no: designate affected samples in Comments column, and initiate an SDR)

NOTE: The Inital/Final Volume for water samples = 33mL, unless otherwise noted.
The Final volume for soil samples = 50mL, unless otherwise noted.

LvLI Batch #	Container Number	Spike Volume (mL)	Spike Conc. (µg/L)	Initial Wt. or Volume (g or mL)	Final Sample Volume (mL)	Comments, % Solids, etc.
0107L260-001S A	011	0.500	1.0	0.32gm	50ml	RAD 97.55
0107L310-001 F	59			0.31gm		97.96
001R	K41			0.30gm		
001S	C	0.500	1.0	0.31gm		
0107L341-001 A	94			0.31gm		99.67
001R	24			0.30gm		
001S	34	0.500	1.0	0.31gm		
002	23			0.30gm		99.16
003	35			0.32gm		99.97
004	3			0.31gm		99.54
005 B	812			0.30gm		99.74
006 A	205			0.31gm		99.67
0107L342-001 A	B4			0.33gm		68.28
001R	92			0.32gm		
001S	K4	0.500	1.0	0.33gm		
0107L368-001	37			0.33gm		RAD 95.04
001R	220			0.31gm		
001S	414	0.500	1.0	0.33gm		

[illegible] 7/30/01

Standard:	ID	Prep Date/Time
ICAL/MS		
ICV/CCV/LCS	See page 056B	

Reviewed By/Date: [illegible] 8/6/01

see book # 4527 for std traceability information

Soil LCS = ERA Metals in soil; True Value = 2.48 mg/Kg
Catalogue # 540, Lot # 245

Water Matrix Spiking Solution Concentration= 0.1µg/ml
Water LCS Spiking Concentration: 1.0µg/ml

L-WI-18/H-03/01

Page # 057 B

SAMPLE DIGESTION RECORD

SOP: L-SPI-3020 Rev. 00

Digestion Batch #: 01L0439
Date/Time Initiated: 07/18/01
Date/Time Completed: 07/18/01
Analyst(s): SEJ
Matrix: (Soil) Water Other:
Instr. Type: AA (ICP)
Parameters: mixed - see backlog

(Digested) Undigested (circle one)
Balance #: B20
Balance Cal Verif: (Y) NA
Hot Plate Temp: 89°

Method: SW (circle)
3005A
3010A
3015
3020A
7060A (As/Se)
7760A (Ag)
(3050B)
3051
CLP ILMO3.0
ILMO4.0

DW 200.7 (1994)
200.9
3113B
MCAWW 200.7 (1982)
200 (AA)
206.2 (As/Se)
SM 3030C (NC)
Other

ECC/TNU/Unitech

COC Batch #	Spike Vol(s) (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/So/TC	Texture	Color/Appearance	Artifact	Turb
01071L310-001		1.01g	100mL	NA	TOT	fine w/rocks	grey	NA	NA
001R		↓	↓	↓	↓	↓	↓	↓	↓
001S	1.0	↓	↓	↓	↓	↓	↓	↓	↓
01071L312-001		1.00g	↓	↓	↓	coarse	brown	↓	↓
001R		↓	↓	↓	↓	↓	↓	↓	↓
001S	1.0	↓	↓	↓	↓	↓	↓	↓	↓
002		↓	↓	↓	↓	clay	grey	↓	↓
01071L329-001		↓	↓	↓	↓	coarse	black	↓	↓
01L0439-MB1		100mL	↓	↓	↓	NA	clear	↓	↓
01L0439-LC1	1.0	↓	↓	↓	↓	↓	↓	↓	↓

7/18/01

Spiking IDs:
MS #: 8100-02-01
↓ 02
↓ 03
6072-44-12
LCS #: 6072-37-05
↓ 10
↓ 11
↓ 12

Reagent IDs:
HNO_3 V08041
HCL 2612751001
H_2O_2 708417
1:1 HNO_3 8095-45-06
1:1 HCL ~~NA~~

File ID#: IC043901
LIMS Transfer: (Y) N
Data Review By/Date: RMP, 07/20/01

Lionville Laboratory, Inc.
DRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1424

SEP 2001 RECEIVED

RFW LOT # :01[illegible]310

CLIENT ID	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
B12CR8	001	S	01LE0850	07/13/01	07/14/01	07/17/01	07/26/01
B12CR8	001 MS	S	01LE0850	07/13/01	07/14/01	07/17/01	07/26/01
B12CR8	001 MSD	S	01LE0850	07/13/01	07/14/01	07/17/01	07/26/01
LAB QC:							
BLK	MB1	S	01LE0850	N/A	N/A	07/17/01	07/26/01
BLK	MB1 BS	S	01LE0850	N/A	N/A	07/17/01	07/26/01

LK 7-30-01

[illegible] 7/30/01

LIONVILLE LABORATORY INC.

Analytical Report

Client : TNU HANFORD B01-058
LVL# : 0107L310
SDG/SAF#: H1424/B01-058

W.O #: 11343-606-001-9999-00
Date Received: 07-14-01

DIESEL RANGE ORGANICS

One (1) soil sample was collected on 07-13-01.

The sample and it's associated QC samples were prepared on 07-17-01 and analyzed according to Lionville Laboratory OPs based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 07-26-01. The analysis met the intent of method WTPH-D.

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

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

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

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

5. All surrogate recoveries were within acceptance criteria. .

6. The blank spike recovery was within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

7/31/01
Date

R:\share\dro\07-310.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.

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7/31/01

GLOSSARY OF DIESEL RANGE ORGANICS DATA

DATA QUALIFIERS

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

ABBREVIATIONS

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

Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

Report Date: 07/30/01 10:40

RFW Batch Number: 0107L260 Client: TNUHANFORD B01-058 H1414 Work Order: 11343606001 Page: 1

	Cust ID:	B125X7	B125X7	B125X7	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	01LE0816-MB1	01LE0816-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
	p-Terphenyl	97 %	106 %	90 %	85 %	89 %
Diesel Range Organics		12.3 U	90 %	74 %	12.0 U	70 %

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

Lionville Laboratory Use Only

01071310

Custody Transfer Record/Lab Work Request

Page 1 of 1

9

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU HANFORD SAF B01-058

Est. Final Proj. Sampling Date:

Project #: 11343-6006-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: DJ

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 7-14-01 Date Due: 8-13-01

		A	B	C	D	E	F
Refrigerator #		1	5	5	5	5	5
#/Type Container	Liquid						
	Solid	1AG	1AG	1AG	1AG	1AG	1AG
Volume	Liquid						
	Solid	60	250	60	250	60	60
Preservatives		–	–	–	–	–	–
ANALYSES REQUESTED	ORGANIC	VOA	BNA	Pest/PCB	Herb	INORG Metal	CN
						Metals	Cyanide
						Mercury	

Lionville Laboratory Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8024H	8025X 8DRO	Mercury (1)	Metals (1)	IC Blo	MHGTO
001	B12CR8	✓	✓	S	7/13/01	0610	1	1	1	1	1	1

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

Special Instructions: SAF B01-058

DATE/REVISIONS:

Mrt (1) 1. Cd, Cr, Cu, Ni, Ag, Pb

Inorg 6 2. TCL, TCFL, TCNO2, TCNO3, TCPO4, TCSO4,

1 3. TNH3N, TN3N2, TCNTO, TOCT, TPH

4.

5.

6.

Lionville Laboratory Use Only

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

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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
N235295457 30

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	7/14/01	1130

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL

REWRITTEN

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-200	Page 1 of 1

Collector: Thomas G./Watson D.	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-38/200 E	SAF No.: B01-058	
Ice Chest No.: SML 525	Field Logbook No.: EL-1518	COA: B20TW1A44C	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A010314		Bill of Lading/Air Bill No.: 4235 7954

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive Background Counts on Split Spoon Dose < 0.5 mr/hr

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4°C			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	120mL	60mL	250mL	60mL	250mL	250mL	60 mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Mercury 7470 (CV)			

Sample No.	Matrix *	Sample Date	Sample Time									Tie to
B12CR8	SOIL	07/13/01	0610	X	X	X	X	X		X		B12642 1 MC 7/30/01

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: Greg Thomas/Greg Thomas	07/13/01 0755	Received By/Stored In: Ref IB	07/13/01 0755
Relinquished By/Removed From: REF IB	7/30/01 1000	Received By/Stored In: SJOALE	7/30/01 1000
Relinquished By/Removed From: SJOALE	7/30/01 1000	Received By/Stored In: FED EX	
Relinquished By/Removed From: Fed Ex	7/14/01	Received By/Stored In: J. Hernandez	7/14/01
Relinquished By/Removed From: Fed Ex	7/14/01	Received By/Stored In: J. Hernandez	7/14/01
Relinquished By/Removed From:		Received By/Stored In:	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA – 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D
(4) 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; Total Uranium; Tritium - H3; Isotopic Uranium

COLLECTOR UNAVAILABLE TO SIGN COC. 7/30/01

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: 7/14/01

SDG#: 0107L310

Work Order Number: _____ SAF# B01-058

Shipping Container ID: SML 525 Chain of Custody # _____

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°
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 7
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: Lionville Laboratory Incorporated Date: 7/14/01

Telephoned to: _____ On _____ By _____

8

SEP 2001
RECEIVED

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1424

DATE RECEIVED: 07/14/01 LVL LOT # :0107L310

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12CR8	001	S	01LE0852	07/13/01	07/17/01	07/27/01
B12CR8	001 MS	S	01LE0852	07/13/01	07/17/01	07/27/01
B12CR8	001 MSD	S	01LE0852	07/13/01	07/17/01	07/27/01

LAB QC:

SBLKCI	MB1	S	01LE0852	N/A	07/17/01	07/27/01
SBLKCI	MB1 BS	S	01LE0852	N/A	07/17/01	07/27/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-058
LVL #: 0107L310
SDG/SAF #: H1424/B01-058

W.O. #: 11343-606-001-9999-00
Date Received: 07-14-01

SEMIVOLATILE

One (1) soil sample was collected on 07-13-01.

The sample and its associated QC samples were extracted on 07-17-01 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 07-27-01.

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

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The sample was extracted and analyzed within required holding times.
3. Non-target compounds were detected in the samples.
4. All surrogate recoveries were within EPA QC limits.
5. One (1) of twenty-two (22) matrix spike recoveries was outside EPA QC limits.
6. One (1) of eleven (11) blank spike recoveries was outside EPA QC limits.
7. Internal standard area and retention time criteria were met.
8. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

by J. Michael Taylor
President
Lionville Laboratory Incorporated

08-08-01
Date

pef\gorup\data\bna\tnu-hanford-0107-310.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 12 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.

GLOSSARY OF BNA DATA

ABBREVIATIONS

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

TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

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

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

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

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

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

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

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List

Report Date: 08/07/01 18:10

RFW Batch Number: 0107L310 Client: TNUHANFORD B01-058 H1424 Work Order: 11343606001 Page: 1a

	Cust ID:	B12CR8		B12CR8		B12CR8		SBLKCI		SBLKCI BS	
Sample Information	RFW#:	001		001 MS		001 MSD		01LE0852-MB1		01LE0852-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	77	%	84	%	94	%	102	%	97	%
	2-Fluorobiphenyl	77	%	77	%	91	%	96	%	92	%
	p-Terphenyl-d14	80	%	81	%	93	%	98	%	99	%
	Phenol-d5	70	%	76	%	90	%	97	%	92	%
	2-Fluorophenol	68	%	71	%	85	%	98	%	90	%
	2,4,6-Tribromophenol	75	%	83	%	86	%	104	%	98	%
Phenol		340	U	69	%	82	%	330	U	85	%
bis(2-Chloroethyl)ether		340	U	340	U	340	U	330	U	330	U
2-Chlorophenol		340	U	67	%	79	%	330	U	84	%
1,3-Dichlorobenzene		340	U	340	U	340	U	330	U	330	U
1,4-Dichlorobenzene		340	U	62	%	70	%	330	U	78	%
1,2-Dichlorobenzene		340	U	340	U	340	U	330	U	330	U
2-Methylphenol		340	U	340	U	340	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		340	U	340	U	340	U	330	U	330	U
4-Methylphenol		340	U	340	U	340	U	330	U	330	U
N-Nitroso-Di-n-propylamine		340	U	62	%	77	%	330	U	78	%
Hexachloroethane		340	U	340	U	340	U	330	U	330	U
Nitrobenzene		340	U	340	U	340	U	330	U	330	U
Isophorone		340	U	340	U	340	U	330	U	330	U
2-Nitrophenol		340	U	340	U	340	U	330	U	330	U
2,4-Dimethylphenol		340	U	340	U	340	U	330	U	330	U
bis(2-Chloroethoxy)methane		340	U	340	U	340	U	330	U	330	U
2,4-Dichlorophenol		340	U	340	U	340	U	330	U	330	U
1,2,4-Trichlorobenzene		340	U	65	%	73	%	330	U	78	%
Naphthalene		340	U	340	U	340	U	330	U	330	U
4-Chloroaniline		340	U	340	U	340	U	330	U	330	U
Hexachlorobutadiene		340	U	340	U	340	U	330	U	330	U
4-Chloro-3-methylphenol		340	U	73	%	82	%	330	U	84	%
2-Methylnaphthalene		340	U	340	U	340	U	330	U	330	U
Hexachlorocyclopentadiene		340	U	340	U	340	U	330	U	330	U
2,4,6-Trichlorophenol		340	U	340	U	340	U	330	U	330	U
2,4,5-Trichlorophenol		850	U	850	U	840	U	840	U	840	U

*= Outside of EPA CLP QC limits.

Cust ID:	B12CR8		B12CR8		B12CR8		SBLKCI		SBLKCI BS	
RFW#:	001		001 MS		001 MSD		01LE0852-MB1		01LE0852-MB1	
2-Chloronaphthalene	340	U	340	U	340	U	330	U	330	U
2-Nitroaniline	850	U	850	U	840	U	840	U	840	U
Dimethylphthalate	340	U	340	U	340	U	330	U	330	U
Acenaphthylene	340	U	340	U	340	U	330	U	330	U
2,6-Dinitrotoluene	340	U	340	U	340	U	330	U	330	U
3-Nitroaniline	850	U	850	U	840	U	840	U	840	U
Acenaphthene	340	U	70	%	79	%	330	U	79	%
2,4-Dinitrophenol	850	U	850	U	840	U	840	U	840	U
4-Nitrophenol	850	U	71	%	80	%	840	U	81	%
Dibenzofuran	340	U	340	U	340	U	330	U	330	U
2,4-Dinitrotoluene	340	U	82	%	93 *	%	330	U	92 *	%
Diethylphthalate	340	U	340	U	340	U	330	U	330	U
4-Chlorophenyl-phenylether	340	U	340	U	340	U	330	U	330	U
Fluorene	340	U	340	U	340	U	330	U	330	U
4-Nitroaniline	850	U	850	U	840	U	840	U	840	U
4,6-Dinitro-2-methylphenol	850	U	850	U	840	U	840	U	840	U
N-Nitrosodiphenylamine (1)	340	U	340	U	340	U	330	U	330	U
4-Bromophenyl-phenylether	340	U	340	U	340	U	330	U	330	U
Hexachlorobenzene	340	U	340	U	340	U	330	U	330	U
Pentachlorophenol	850	U	65	%	78	%	840	U	79	%
Phenanthrene	340	U	340	U	340	U	330	U	330	U
Anthracene	340	U	340	U	340	U	330	U	330	U
Carbazole	340	U	340	U	340	U	330	U	330	U
Di-n-Butylphthalate	340	U	340	U	340	U	330	U	330	U
Fluoranthene	340	U	340	U	340	U	330	U	330	U
Pyrene	340	U	68	%	79	%	330	U	82	%
Butylbenzylphthalate	340	U	340	U	340	U	330	U	330	U
3,3'-Dichlorobenzidine	340	U	340	U	340	U	330	U	330	U
Benzo(a)anthracene	340	U	340	U	340	U	330	U	330	U
Chrysene	340	U	340	U	340	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	30	J	340	U	29	J	330	U	330	U
Di-n-Octyl phthalate	340	U	340	U	340	U	330	U	330	U
Benzo(b)fluoranthene	340	U	340	U	340	U	330	U	330	U
Benzo(k)fluoranthene	340	U	340	U	340	U	330	U	330	U
Benzo(a)pyrene	340	U	340	U	340	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	340	U	340	U	340	U	330	U	330	U
Dibenzo(a,h)anthracene	340	U	340	U	340	U	330	U	330	U
Benzo(g,h,i)perylene	340	U	340	U	340	U	330	U	330	U
Tributylphosphate	340	U	340	U	340	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.

B12CR8

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

Client: TNUHANFORD B01-058 H1424

Matrix: (soil/water) SOIL

Lab Sample ID: 0107L310-001

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

Lab File ID: A072713

Level: (low/med) LOW

Date Received: 07/14/01

% Moisture: 2 decanted: (Y/N)__

Date Extracted: 07/17/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 07/27/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALKANE	20.971	300	J
2.	ALKANE	22.101	300	J
3.	ALKANE	23.141	400	J
4.	ALKANE	24.418	300	J
5.	ALKANE	26.123	300	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKCI

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

Client: TNUHANFORD B01-058 H1424

Matrix: (soil/water) SOIL

Lab Sample ID: 01LE0852-MB1

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

Lab File ID: A072711

Level: (low/med) LOW

Date Received: 07/17/01

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

Date Extracted: 07/17/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 07/27/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.312	200	J

Lionville Laboratory Use Only

0107L310

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI Lionville Laboratory Inc

10

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU HANFORD SAF B01-058

Est. Final Proj. Sampling Date:

Project #: 11343-6000-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: Q

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 7-14-01 Date Due: 8-13-01

		A	B						C		D	E	F			
Refrigerator #		1	S						S		S	S	S			
#/Type Container	Liquid															
	Solid	1AG	1AG						1AG		1AG	1AG	1AG			
Volume	Liquid															
	Solid	60	250						60		250	60	60			
Preservatives		—	—						—		—	—	—			
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	Inorg	Chloride	Nitrate			
Lionville Laboratory Use Only		8024H	8025X	8DRO					Met (1)		Inorg (1)	IC RHO	MHG TO			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8024H	8025X	8DRO	Met (1)	Inorg (1)	IC RHO	MHG TO
S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EP/TCLP Leachate, WI - Wipe, X - Other, F - Fish	001	B12CR8	✓	✓	S	7/13/01	0610	1	1		1	1	1	1

Special Instructions: SAF B01-058

DATE/REVISIONS:

Met (1) 1. Cd, Cr, Cu, Ni, Ag, Pb

Inorg (1) 2. TCL, TCFL, TC002, TC003, TCPON, TCSON,

3. TDH3N, TN3N2, TCOTO, TOCT, TPH

4.

5.

6.

Relinquished by	Received by	Date	Time
[signature]	[signature]	7/14/01	1130

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL

Lionville Laboratory Use Only

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

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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
N235795457 70

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-200	Page 1 of 1

Collector: Thomas G./Watson D.	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-38/200 E	SAF No.: B01-058	
Ice Chest No.: SML 525	Field Logbook No.: EL-1518	COA: B20TW1A44C	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A010314	Bill of Lading/Air Bill No.: 4235 7954	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive Background Counts on Split Spoon Dose < 0.5 mr/hr

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4°C			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	120mL	60mL	250mL	60mL	250mL	250mL	60 mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Mercury 7470 (CV)		Tie to	

Sample No.	Matrix *	Sample Date	Sample Time										
B12CR8	SOIL	07/13/01	0610	X	X	X	X	X		X		B12647	1
												MC	71301

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From: Greg Thomas/Greg Thomas	Received By/Stored In: Ref IB	0755 07/13/01
Relinquished By/Removed From: REF IB	Received By/Stored In: SWOALE	71301 1000
Relinquished By/Removed From: SWOALE	Received By/Stored In: FED EX	
Relinquished By/Removed From: Fed Ex	Received By/Stored In: P. Hernandez	7/14/01
Relinquished By/Removed From: Fed Ex	Received By/Stored In: P. Hernandez	7/14/01
Relinquished By/Removed From:	Received By/Stored In:	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D
(4) 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; Total Uranium; Tritium - H3; Isotopic Uranium

COLLECTOR UNAVAILABLE TO SIGN COC. 71301

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: 7/14/01

SDG#: 0107L310

Work Order Number: _____ SAF# B01-058

Shipping Container ID: SML 525 Chain of Custody # _____

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°
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 7
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: Lionville Laboratory Incorporated Date: 7/14/01

Telephoned to: _____ On _____ By _____

SEP 2001
RECEIVED

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1424

DATE RECEIVED: 07/14/01 LVL LOT # :0107L310

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12CR8	001	S	01LVX257	07/13/01	N/A	07/24/01
B12CR8	001 MS	S	01LVX257	07/13/01	N/A	07/25/01
B12CR8	001 MSD	S	01LVX257	07/13/01	N/A	07/24/01
LAB QC:						
VBLKHZ	MB1	S	01LVX257	N/A	N/A	07/24/01
VBLKHZ	MB1 BS	S	01LVX257	N/A	N/A	07/24/01

gw 08-07-01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-058
RFW #: 0107L310
SDG/SAF #: H1424/B01-058

W.O. #: 11343-606-001-9999-00
Date Received: 07-14-01

GC/MS VOLATILE

One (1) water sample was collected on 07-13-01.

The sample and its associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 07-24,25-01.

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

1. The cooler temperatures upon receipt have been recorded on the chain-of-custody.
2. The sample was analyzed within required holding time.
3. Non-target compound was not detected in the sample.
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 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

8/7/01
Date

pef\group\data\voa\tnu-hanford\0107-310.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.

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

GLOSSARY OF VOA DATA

DATA QUALIFIERS

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

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.

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.
Volatiles by GC/MS, HSL List

RFW Batch Number: **0107L310** Client: **TNUHANFORD B01-058 H1424** Work Order: 11343606001 Page: 1a

Report Date: 08/05/01 08:07

9

	Cust ID:	B12CR8		B12CR8		B12CR8		VBLKHZ		VBLKHZ BS	
Sample Information	RFW#:	001		001 MS		001 MSD		01LVX257-MB1		01LVX257-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.04		0.962		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	106	%	97	%	104	%	104	%	104	%
	Bromofluorobenzene	97	%	88	%	91	%	96	%	98	%
	1,2-Dichloroethane-d4	102	%	93	%	98	%	96	%	108	%
Chloromethane		10	U	11	U	10	U	10	U	10	U
Bromomethane		10	U	11	U	10	U	10	U	10	U
Vinyl Chloride		10	U	11	U	10	U	10	U	10	U
Chloroethane		10	U	11	U	10	U	10	U	10	U
Methylene Chloride		14	B	15	B	8	B	4	J	9	B
Acetone		5	JB	5	BJ	4	BJ	3	J	2	BJ
Carbon Disulfide		5	U	6	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	96	%	85	%	5	U	76	%
1,1-Dichloroethane		5	U	6	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	6	U	5	U	5	U	5	U
Chloroform		5	U	6	U	5	U	5	U	5	U
1,2-Dichloroethane		5	U	6	U	5	U	5	U	5	U
2-Butanone		10	U	11	U	10	U	10	U	10	U
1,1,1-Trichloroethane		5	U	6	U	5	U	5	U	5	U
Carbon Tetrachloride		5	U	6	U	5	U	5	U	5	U
Bromodichloromethane		5	U	6	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	6	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	6	U	5	U	5	U	5	U
Trichloroethene		5	U	103	%	101	%	5	U	104	%
Dibromochloromethane		5	U	6	U	5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	6	U	5	U	5	U	5	U
Benzene		5	U	106	%	100	%	5	U	104	%
Trans-1,3-Dichloropropene		5	U	6	U	5	U	5	U	5	U
Bromoform		5	U	6	U	5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	11	U	10	U	10	U	10	U
2-Hexanone		10	U	11	U	10	U	10	U	10	U
Tetrachloroethene		5	U	6	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	6	U	5	U	5	U	5	U
Toluene		5	U	109	%	106	%	5	U	105	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0107L310 Client: TNUHANFORD B01-058 H1424 Work Order: 11343606001 Page: 1b

Cust ID:	B12CR8		B12CR8		B12CR8		VBLKHZ		VBLKHZ BS	
RFW#:	001		001 MS		001 MSD		01LVX257-MB1		01LVX257-MB1	
Chlorobenzene	5	U	106	%	102	%	5	U	101	%
Ethylbenzene	5	U	6	U	5	U	5	U	5	U
Styrene	5	U	6	U	5	U	5	U	5	U
Xylene (total)	5	U	6	U	5	U	5	U	5	U

*= Outside of EPA CLP QC limits.

Lionville Laboratory Use Only

01074310

Custody Transfer Record/Lab Work Request

Page 1 of 1

VLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU HANFORD SAF B01-058

Est. Final Proj. Sampling Date:

Project #: 11343-6000-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: DJ

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 7-14-01 Date Due: 8-13-01

		A	B	C	D	E	F
Refrigerator #		1	5	5	5	5	5
#/Type Container	Liquid						
	Solid	1AG	1AG	1AG	1AG	1AG	1AG
Volume	Liquid						
	Solid	60	250	100	250	60	60
Preservatives		–	–	–	–	–	–
ANALYSES REQUESTED	ORGANIC	VOA	BNA	Pest/PCB	Herb		
	INORG			Metal	CN	Anions	Mercury

Lionville Laboratory Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8024H	8260SX 8DBC	Mrt (1)	Sout (1)	ICPRO	MHGTO
S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EP/TCLP Leachate, Wi - Wipe, X - Other, F - Fish	001	B12CR8	✓	✓	S	7/13/01	0610	1	1	1	1	1	1

Special Instructions: SAF B01-058

DATE/REVISIONS:

Mrt (1) 1. Cd, Cr, Cu, Ni, Ag, Pb

Inorg (1) 2. TCL, TCFL, TC002, TC003, TCPON, TCSON,

1 3. TDH30, TN302, TCNTO, TOCT, TPH

4.

5.

6.

Relinquished by	Received by	Date	Time
[signature]	[signature]	7/14/01	1130

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL REWRITTEN

Lionville Laboratory Use Only

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

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

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

Cooler Temp. 4° °C

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

NOTES: N235 7954 5730

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-200	Page 1 of 1

Collector: Thomas G./Watson D.	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-38/200 E	SAF No.: B01-058	
Ice Chest No.: SML 525	Field Logbook No.: EL-1518	COA: B20TW1A44C	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A0 10314	Bill of Lading/Air Bill No.: 4235 7954	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive Background Counts on Split Spoon Dose < 0.5 mr/hr

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4°C			
Type of Container	sG	sG	sG	sG	sG	sG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	120mL	60mL	250mL	60mL	250mL	250mL	60 mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Mercury 7470 (CV)		Tie to	

Sample No.	Matrix *	Sample Date	Sample Time										
B12CR8	SOIL	07/13/01	0610	X	X	X	X	X		X		B12642	1
												MC	TP01

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time 0755	Received By/Stored In	Date/Time 0755
Greg Thomas/Greg Thomas	07/13/01	RF IB	07/13/01
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
REF IB 71301	1000	SJOALE	71301 1000
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
SJOALE	71301 1000	FED EX	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	7/14/01	J. Hernandez	7/14/01
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	7/14/01	J. Hernandez	7/14/01
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D
(4) 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; Total Uranium; Tritium - H3; Isotopic Uranium

COLLECTOR UNAVAILABLE TO SIGN COC. SJO 71301

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-In List

Date/Time Received: 7/14/01

SDG#: 0107L310

Work Order Number: _____ SAF# B01-058

Shipping Container ID: SML 625 Chain of Custody # _____

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°
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 7
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: Severville Laboratory Incorporated Date: 7/14/01

Telephoned to: _____ On _____ By _____