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EDMC

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1429 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

The tritium matrix spike percent recovery (84%) was slightly below the 3σ limits (85 to 115%), but within the laboratory protocol limits (80 to 120%). No other 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

8/31/01

Date

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1429

SDG 7041
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1429

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B12C15	T-26/200 W	SOLID		R107103-01	B01-058	B01-058-202	07/18/01 06:00
Method Blank		SOLID		R107103-03	B01-058		
Lab Control Sample		SOLID		R107103-02	B01-058		
Duplicate (R107103-01)	T-26/200 W	SOLID		R107103-04	B01-058		07/18/01 06:00
Spike (R107103-01)	T-26/200 W	SOLID		R107103-05	B01-058		07/18/01 06:00

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 08/31/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1429

SDG 7041
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1429

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
7041	B01-058-202	B12C15	SOLID	94.3	296.1 g		07/20/01	2	R107103-01	7041-001
		Method Blank	SOLID						R107103-03	7041-003
		Lab Control Sample	SOLID						R107103-02	7041-002
		Duplicate (R107103-01)	SOLID	94.3	296.1 g		07/20/01	2	R107103-04	7041-004
		Spike (R107103-01)	SOLID	94.3	296.1 g		07/20/01	2	R107103-05	7041-005

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 08/31/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1429

SDG 7041
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1429

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	6994-141	5.0	1			1	1	1/1		
NP	SOLID	Neptunium in Soil	6994-141	5.0	1			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6994-141	5.0	1			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	6994-141	5.0	1			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	6994-141	5.0	1			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6994-141	10.0	1			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6994-141	10.0	1			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6994-141	15.0	1			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	6994-141	9.0	1			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Soil	6994-141	10.0	1			1	1	1/1		
H	SOLID	Tritium in Soil	6994-141	10.0	1			1	1	1/1	1/1	X
NI_L	SOLID	Nickel 63 in Soil	6994-141	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
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 08/31/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1429

WORK SUMMARY

SDG 7041
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H1429

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B12C15			R107103-01	7041-001	AM		08/10/01	08/31/01	MCM	Americium 241 in Soil
T-26/200 W		SOLID	07/18/01	7041-001	C		08/19/01	08/31/01	MCM	Carbon 14 in Soil
B01-058-202	B01-058		07/20/01	7041-001	GAM		08/15/01	08/31/01	MCM	Gamma Scan
				7041-001	H		08/14/01	08/31/01	MCM	Tritium in Soil
				7041-001	NI_L		08/02/01	08/31/01	MCM	Nickel 63 in Soil
				7041-001	NP		08/15/01	08/31/01	MCM	Neptunium in Soil
				7041-001	PU		08/14/01	08/31/01	MCM	Plutonium, Isotopic in Solids
				7041-001	SR		08/02/01	08/31/01	MCM	Total Strontium in Soil
				7041-001	TC		08/27/01	08/31/01	MCM	Technetium 99 in Soil
				7041-001	TH		08/14/01	08/31/01	MCM	Thorium, Isotopic in Soil
				7041-001	U		08/08/01	08/31/01	MCM	Uranium, Isotopic in Soil
				7041-001	U_T		08/21/01	08/31/01	MCM	Uranium, Total in Soil
Method Blank			R107103-03	7041-003	AM		08/10/01	08/31/01	MCM	Americium 241 in Soil
		SOLID		7041-003	C		08/19/01	08/31/01	MCM	Carbon 14 in Soil
	B01-058			7041-003	GAM		08/15/01	08/31/01	MCM	Gamma Scan
				7041-003	H		08/14/01	08/31/01	MCM	Tritium in Soil
				7041-003	NI_L		08/02/01	08/31/01	MCM	Nickel 63 in Soil
				7041-003	NP		08/15/01	08/31/01	MCM	Neptunium in Soil
				7041-003	PU		08/14/01	08/31/01	MCM	Plutonium, Isotopic in Solids
				7041-003	SR		08/02/01	08/31/01	MCM	Total Strontium in Soil
				7041-003	TC		08/27/01	08/31/01	MCM	Technetium 99 in Soil
				7041-003	TH		08/14/01	08/31/01	MCM	Thorium, Isotopic in Soil
				7041-003	U		08/08/01	08/31/01	MCM	Uranium, Isotopic in Soil
				7041-003	U_T		08/21/01	08/31/01	MCM	Uranium, Total in Soil
Lab Control Sample			R107103-02	7041-002	AM		08/10/01	08/31/01	MCM	Americium 241 in Soil
		SOLID		7041-002	C		08/20/01	08/31/01	MCM	Carbon 14 in Soil
	B01-058			7041-002	GAM		08/15/01	08/31/01	MCM	Gamma Scan
				7041-002	H		08/14/01	08/31/01	MCM	Tritium in Soil
				7041-002	NI_L		08/02/01	08/31/01	MCM	Nickel 63 in Soil
				7041-002	NP		08/15/01	08/31/01	MCM	Neptunium in Soil
				7041-002	PU		08/14/01	08/31/01	MCM	Plutonium, Isotopic in Solids
				7041-002	SR		08/02/01	08/31/01	MCM	Total Strontium in Soil
				7041-002	TC		08/27/01	08/31/01	MCM	Technetium 99 in Soil
				7041-002	TH		08/10/01	08/31/01	MCM	Thorium, Isotopic in Soil
				7041-002	U		08/08/01	08/31/01	MCM	Uranium, Isotopic in Soil
				7041-002	U_T		08/21/01	08/31/01	MCM	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 08/31/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1429

SDG 7041
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1429

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Duplicate (R107103-01)			R107103-04	7041-004	AM		08/10/01	08/31/01	MCM	Americium 241 in Soil
T-26/200 W		SOLID	07/18/01	7041-004	C		08/19/01	08/31/01	MCM	Carbon 14 in Soil
	B01-058		07/20/01	7041-004	GAM		08/15/01	08/31/01	MCM	Gamma Scan
				7041-004	H		08/14/01	08/31/01	MCM	Tritium in Soil
				7041-004	NI_L		08/03/01	08/31/01	MCM	Nickel 63 in Soil
				7041-004	NP		08/15/01	08/31/01	MCM	Neptunium in Soil
				7041-004	PU		08/14/01	08/31/01	MCM	Plutonium, Isotopic in Solids
				7041-004	SR		08/02/01	08/31/01	MCM	Total Strontium in Soil
				7041-004	TC		08/28/01	08/31/01	MCM	Technetium 99 in Soil
				7041-004	TH		08/10/01	08/31/01	MCM	Thorium, Isotopic in Soil
				7041-004	U		08/07/01	08/31/01	MCM	Uranium, Isotopic in Soil
				7041-004	U_T		08/21/01	08/31/01	MCM	Uranium, Total in Soil
Spike (R107103-01)			R107103-05	7041-005	H		08/14/01	08/31/01	MCM	Tritium in Soil
T-26/200 W		SOLID	07/18/01							
	B01-058		07/20/01							

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
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 08/31/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1429

R107103-03 **Method Blank**

METHOD BLANK

SDG	7041	Client/Case no	Hanford	SDG_H1429	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R107103-03	Client sample id	Method Blank		
Dept sample id	7041-003	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	0.151	0.16	0.27	400	U	H
Carbon 14	14762-75-5	-1.09	3.0	5.1	50	U	C
Nickel 63	13981-37-8	0.812	1.1	1.8	30	U	NI_L
Total Strontium	SR-RAD	0.086	0.19	0.36	1.0	U	SR
Americium 241	14596-10-2	0.028	0.056	0.21	1.0	U	AM
Technetium 99	14133-76-7	-0.114	0.16	0.58	15	U	TC
Thorium 228	14274-82-9	0.298	0.30	0.48		U	TH
Thorium 230	14269-63-7	-0.198	0.20	0.47	1.0	U	TH
Thorium 232	TH-232	-0.049	0.099	0.38	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0	0.001	0.003	0.10	U	U_T
Uranium 233	U-233/234	-0.027	0.055	0.21	1.0	U	U
Uranium 235	15117-96-1	0.033	0.066	0.25	1.0	U	U
Uranium 238	U-238	0	0.054	0.21	1.0	U	U
Neptunium 237	13994-20-2	0.023	0.062	0.11	1.0	U	NP
Plutonium 238	13981-16-3	0	0.092	0.35	1.0	U	PU
Plutonium 239/240	PU-239/240	0.046	0.092	0.35	1.0	U	PU
Potassium 40	13966-00-2	U		0.72		U	GAM
Cobalt 60	10198-40-0	U		0.039	0.050	U	GAM
Cesium 137	10045-97-3	U		0.038	0.10	U	GAM
Radium 226	13982-63-3	U		0.071	0.10	U	GAM
Radium 228	15262-20-1	U		0.17	0.20	U	GAM
Europium 152	14683-23-9	U		0.092	0.10	U	GAM
Europium 154	15585-10-1	U		0.099	0.10	U	GAM
Europium 155	14391-16-3	U		0.090	0.10	U	GAM
Thorium 228	14274-82-9	U		0.050		U	GAM
Thorium 232	TH-232	U		0.17		U	GAM
Uranium 235	15117-96-1	U		0.14		U	GAM
Uranium 238	U-238	U		4.7		U	GAM
Americium 241	14596-10-2	U		0.17		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	08/31/01

B L A N K , c o n t .

SDG	7041	Client/Case no	Hanford	SDG H1429	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R107103-03	Client sample id	Method Blank		
Dept sample id	7041-003	Material/Matrix		SOLID	
		SAF No	B01-058		

QC-BLANK 39330

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/31/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1429

R107103-02 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7041
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1429
Case no No. 630

Lab sample id R107103-02
Dept sample id 7041-002

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	22.2	0.52	0.28	400	J	H	23.9	0.96	93	84-116	80-120
Carbon 14	10200	200	30	50		C	11300	450	90	85-115	80-120
Nickel 63	219	4.1	1.8	30		NI_L	232	9.3	94	84-116	80-120
Total Strontium	23.6	0.66	0.20	1.0		SR	22.0	0.88	107	82-118	80-120
Americium 241	20.2	2.2	0.24	1.0		AM	19.1	0.76	106	80-120	80-120
Technetium 99	122	3.1	0.64	15		TC	118	4.7	103	83-117	80-120
Thorium 230	46.2	4.3	0.49	1.0		TH	40.8	1.6	113	81-119	80-120
Total Uranium (ug/g)	14.3	1.7	0.026	0.10		U_T	14.4	0.58	99	77-123	80-120
Uranium 233	18.8	1.9	0.95	1.0		U	18.6	0.74	101	82-118	80-120
Uranium 235	15.6	1.7	0.23	1.0		U	15.1	0.60	103	80-120	80-120
Uranium 238	20.0	2.0	0.90	1.0		U	20.2	0.81	99	82-118	80-120
Neptunium 237	19.7	0.98	0.057	1.0		NP	21.2	0.85	93	88-112	80-120
Plutonium 238	24.6	2.6	0.24	1.0		PU	24.8	0.99	99	82-118	80-120
Plutonium 239/240	26.7	2.8	0.24	1.0		PU	26.4	1.1	101	81-119	80-120
Cobalt 60	1.52	0.080	0.041	0.050		GAM	1.67	0.067	91	77-123	80-120
Cesium 137	1.67	0.075	0.052	0.10		GAM	1.74	0.070	96	77-123	80-120

200-TW-1 & 2 - Soil Sampling

QC-LCS 39329

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

SAMPLE DELIVERY GROUP H1429

R107103-04 B12C15

DUPLICATE

SDG	7041			Client/Case no	Hanford SDG H1429
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R107103-04	Lab sample id	R107103-01	Client sample id	B12C15
Dept sample id	7041-004	Dept sample id	7041-001	Location/Matrix	T-26/200 W SOLID
		Received	07/20/01	Collected/Weight	07/18/01 06:00 296.1 g
% solids	94.3	% solids	94.3	Custody/SAF No	B01-058-202 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 PROT TOT LIMIT
Tritium	4.33	0.14	0.10	400	J	H	3.84	0.13	0.091	J	12	22
Carbon 14	1.26	2.8	4.7	50	U	C	-0.805	2.9	4.8	U	-	
Nickel 63	0.206	1.1	1.9	30	U	NI_L	0.283	1.1	1.9	U	-	
Total Strontium	-0.068	0.086	0.16	1.0	U	SR	0.034	0.15	0.30	U	-	
Americium 241	0.027	0.055	0.21	1.0	U	AM	0.029	0.12	0.28	U	-	
Technetium 99	-0.032	0.20	0.66	15	U	TC	-0.092	0.19	0.63	U	-	
Thorium 228	0.758	0.42	0.40			TH	0.783	0.38	0.41		3	111
Thorium 230	0.168	0.34	0.40	1.0	U	TH	0	0.30	0.50	U	-	
Thorium 232	0.588	0.34	0.32	1.0	J	TH	0.260	0.22	0.28	U	77	144
Total Uranium (ug/g)	1.11	0.14	0.026	0.10		U_T	1.16	0.14	0.026		4	32
Uranium 233	0.074	0.098	0.19	1.0	U	U	0.158	0.16	0.20	U	-	
Uranium 235	0.059	0.060	0.23	1.0	U	U	0	0.064	0.24	U	-	
Uranium 238	0.196	0.15	0.19	1.0	J	U	0.184	0.16	0.20	U	6	173
Neptunium 237	0	0.030	0.071	1.0	U	NP	0.024	0.049	0.10	U	-	
Plutonium 238	0.134	0.18	0.34	1.0	U	PU	0	0.14	0.32	U	-	
Plutonium 239/240	0.089	0.090	0.34	1.0	U	PU	0	0.048	0.18	U	-	
Potassium 40	10.4	0.95	0.55			GAM	11.0	1.2	0.68		6	38
Cobalt 60	U		0.062	0.050	U	GAM	U		0.084	U	-	
Cesium 137	U		0.052	0.10	U	GAM	U		0.064	U	-	
Radium 226	0.291	0.092	0.096	0.10		GAM	0.285	0.11	0.12		2	81
Radium 228	0.532	0.26	0.26	0.20		GAM	0.537	0.26	0.27		1	108
Europium 152	U		0.11	0.10	U	GAM	U		0.15	U	-	
Europium 154	U		0.18	0.10	U	GAM	U		0.25	U	-	
Europium 155	U		0.076	0.10	U	GAM	U		0.097	U	-	
Thorium 228	0.623	0.083	0.076			GAM	0.608	0.10	0.096		2	45
Thorium 232	0.532	0.26	0.26			GAM	0.537	0.26	0.27		1	108
Uranium 235	U		0.14		U	GAM	U		0.17	U	-	
Uranium 238	U		6.9		U	GAM	U		9.8	U	-	

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	08/31/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1429

R107103-04 B12C15

DUPLICATE, cont.

SDG	7041			Client/Case no	Hanford SDG H1429
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R107103-04	Lab sample id	R107103-01	Client sample id	B12C15
Dept sample id	7041-004	Dept sample id	7041-001	Location/Matrix	T-26/200 W SOLID
		Received	07/20/01	Collected/Weight	07/18/01 06:00 296.1 g
% solids	94.3	% solids	94.3	Custody/SAF No	B01-058-202 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		0.051		U	GAM	U		0.063	U	-		

200-TW-1 & 2 - Soil Sampling

QC-DUP#1 39331

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	08/31/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1429

R107103-05 B12C15

MATRIX SPIKE

SDG	7041			Client/Case no	Hanford SDG H1429
Contact	Melissa C. Mannion			Case no	No. 630
	MATRIX SPIKE		ORIGINAL		
Lab sample id	R107103-05	Lab sample id	R107103-01	Client sample id	B12C15
Dept sample id	7041-005	Dept sample id	7041-001	Location/Matrix	T-26/200 W SOLID
		Received	07/20/01	Collected/Weight	07/18/01 06:00 296.1 g
% solids	94.3	% solids	94.3	Custody/SAF No	B01-058-202 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	45.3	0.47	0.11	400	JX	H	49.3	2.0	3.84	0.13	84	85-115	60-140

200-TW-1 & 2 - Soil Sampling

QC-MS#1 39332

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-MS
Version	3.06
Report date	08/31/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1429

R107103-01 B12C15

DATA SHEET

SDG	7041	Client/Case no	Hanford	SDG H1429	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R107103-01	Client sample id	B12C15		
Dept sample id	7041-001	Location/Matrix	T-26/200 W	SOLID	
Received	07/20/01	Collected/Weight	07/18/01 06:00	296.1 g	
% solids	94.3	Custody/SAF No	B01-058-202	B01-058	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	3.84	0.13	0.091	400	J	H
Carbon 14	14762-75-5	-0.805	2.9	4.8	50	U	C
Nickel 63	13981-37-8	0.283	1.1	1.9	30	U	NI_L
Total Strontium	SR-RAD	0.034	0.15	0.30	1.0	U	SR
Americium 241	14596-10-2	0.029	0.12	0.28	1.0	U	AM
Technetium 99	14133-76-7	-0.092	0.19	0.63	15	U	TC
Thorium 228	14274-82-9	0.783	0.38	0.41			TH
Thorium 230	14269-63-7	0	0.30	0.50	1.0	U	TH
Thorium 232	TH-232	0.260	0.22	0.28	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	1.16	0.14	0.026	0.10		U_T
Uranium 233	U-233/234	0.158	0.16	0.20	1.0	U	U
Uranium 235	15117-96-1	0	0.064	0.24	1.0	U	U
Uranium 238	U-238	0.184	0.16	0.20	1.0	U	U
Neptunium 237	13994-20-2	0.024	0.049	0.10	1.0	U	NP
Plutonium 238	13981-16-3	0	0.14	0.32	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.048	0.18	1.0	U	PU
Potassium 40	13966-00-2	11.0	1.2	0.68			GAM
Cobalt 60	10198-40-0	U		0.084	0.050	U	GAM
Cesium 137	10045-97-3	U		0.064	0.10	U	GAM
Radium 226	13982-63-3	0.285	0.11	0.12	0.10		GAM
Radium 228	15262-20-1	0.537	0.26	0.27	0.20		GAM
Europium 152	14683-23-9	U		0.15	0.10	U	GAM
Europium 154	15585-10-1	U		0.25	0.10	U	GAM
Europium 155	14391-16-3	U		0.097	0.10	U	GAM
Thorium 228	14274-82-9	0.608	0.10	0.096			GAM
Thorium 232	TH-232	0.537	0.26	0.27			GAM
Uranium 235	15117-96-1	U		0.17		U	GAM
Uranium 238	U-238	U		9.8		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	08/31/01

DATA SHEET, cont

SDG	7041	Client/Case no	Hanford		SDG H1429
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R107103-01	Client sample id	B12C15		
Dept sample id	7041-001	Location/Matrix	T-26/200 W		SOLID
Received	07/20/01	Collected/Weight	07/18/01 06:00	296.1 g	
% solids	94.3	Custody/SAF No	B01-058-202	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		0.063		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	08/31/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1429

Test AM Matrix SOLID
SDG 7041
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1429

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 6994-141						
B12C15	R107103-01			7041-001	U	
BLK (QC ID=39330)	R107103-03			7041-003	U	
LCS (QC ID=39329)	R107103-02			7041-002	ok	
Duplicate (R107103-01)	R107103-04			7041-004	-	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 6994-141	2σ prep error 5.0 %							Reference Lab Notebook 6994 pg. 141								
B12C15	R107103-01			0.28	0.500			77		103			23	08/10/01	08/10	SS-041
BLK (QC ID=39330)	R107103-03			0.21	0.500			81		103				08/10/01	08/10	SS-043
LCS (QC ID=39329)	R107103-02			0.24	0.500			74		103				08/10/01	08/10	SS-042
Duplicate (R107103-01) (QC ID=39331)	R107103-04			0.21	0.500			80		103			23	08/10/01	08/10	SS-044
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	0.24	±	0.066
YIELD	78	±	6

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/31/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1429

Test NP Matrix SOLID
SDG 7041
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1429

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 6994-141						
B12C15	R107103-01			7041-001	U	
BLK (QC ID=39330)	R107103-03			7041-003	U	
LCS (QC ID=39329)	R107103-02			7041-002	ok	
Duplicate (R107103-01)	R107103-04			7041-004	-	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 6994-141 2σ prep error 5.0 % Reference Lab Notebook 6994 pg. 141																
B12C15	R107103-01			0.10	0.500			48		596			28	08/15/01	08/15	SS-031
BLK (QC ID=39330)	R107103-03			0.11	0.500			50		596				08/15/01	08/15	SS-033
LCS (QC ID=39329)	R107103-02			0.057	0.500			51		596				08/15/01	08/15	SS-032
Duplicate (R107103-01) (QC ID=39331)	R107103-04			0.071	0.500			52		596			28	08/15/01	08/15	SS-034
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 0.084 ± 0.049
YIELD 50 ± 3

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/31/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1429

Test PU Matrix SOLID
SDG 7041
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1429

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6994-141								
B12C15	R107103-01			7041-001	U		U	
BLK (QC ID=39330)	R107103-03			7041-003	U		U	
LCS (QC ID=39329)	R107103-02			7041-002	ok		ok	
Duplicate (R107103-01)	R107103-04			7041-004	-	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 6994-141 2σ prep error 5.0 % Reference Lab Notebook 6994 pg. 141																
B12C15	R107103-01			0.32	0.500			56		175			27	08/14/01	08/14	SS-041
BLK (QC ID=39330)	R107103-03			0.35	0.500			51		101				08/14/01	08/14	SS-028
LCS (QC ID=39329)	R107103-02			0.24	0.500			43		175				08/14/01	08/14	SS-042
Duplicate (R107103-01) (QC ID=39331)	R107103-04			0.34	0.500			51		101			27	08/14/01	08/14	SS-029
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 0.31 ± 0.10
YIELD 50 ± 11

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/31/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1429

Test TH Matrix SOLID
SDG 7041
Contact Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1429

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 6994-141							
B12C15	R107103-01			7041-001	0.783	U	U
BLK (QC ID=39330)	R107103-03			7041-003	U	U	U
LCS (QC ID=39329)	R107103-02			7041-002		ok	
Duplicate (R107103-01)	R107103-04			7041-004	ok	- U	ok J
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 6994-141	2σ prep error 5.0 %							Reference Lab Notebook 6994 pg. 141								
B12C15	R107103-01			0.50	0.250			89		185			27	08/10/01	08/14	SS-024
BLK (QC ID=39330)	R107103-03			0.47	0.250			68		185				08/10/01	08/14	SS-021
LCS (QC ID=39329)	R107103-02			0.49	0.250			71		170				08/10/01	08/10	SS-019
Duplicate (R107103-01) (QC ID=39331)	R107103-04			0.40	0.250			89		168			23	08/10/01	08/10	SS-021
Nominal values and limits from method				1.0	0.250			20-105		150			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.46 ± 0.090
YIELD 79 ± 23

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/31/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1429

Test U Matrix SOLID
SDG 7041
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1429

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 6994-141														
B12C15	R107103-01			7041-001	U		U		U					
BLK (QC ID=39330)	R107103-03			7041-003	U		U		U					
LCS (QC ID=39329)	R107103-02			7041-002	ok		ok		ok					
Duplicate (R107103-01)	R107103-04			7041-004	-	U	-	U	ok	J	38	58	30	38
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0		1.0		100		4	
200-TW-1 & 2 - Soil Sampling											Averages 38		30	

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 6994-141	2σ prep error 5.0 %			Reference Lab Notebook 6994 pg. 141												
B12C15	R107103-01			0.24	0.500			81		105			21	08/07/01	08/08	SS-032
BLK (QC ID=39330)	R107103-03			0.25	0.500			81		105				08/07/01	08/08	SS-034
LCS (QC ID=39329)	R107103-02			0.95	0.500			90		105				08/07/01	08/08	SS-033
Duplicate (R107103-01) (QC ID=39331)	R107103-04			0.23	0.500			92		105			20	08/07/01	08/07	SS-005
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 0.42 ± 0.71
YIELD 86 ± 12

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/31/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1429

Test SR Matrix SOLID
SDG 7041
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1429

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 6994-141						
B12C15	R107103-01			7041-001	U	
BLK (QC ID=39330)	R107103-03			7041-003	U	
LCS (QC ID=39329)	R107103-02			7041-002	ok	
Duplicate (R107103-01)	R107103-04			7041-004	-	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 6994-141 2σ prep error 10.0 % Reference Lab Notebook 6994 pg. 141																
B12C15	R107103-01			0.30	1.00			90		100			15	08/02/01	08/02	GRB-229
BLK (QC ID=39330)	R107103-03			0.36	1.00			73		100				08/02/01	08/02	GRB-231
LCS (QC ID=39329)	R107103-02			0.20	1.00			73		200				08/02/01	08/02	GRB-201
Duplicate (R107103-01) (QC ID=39331)	R107103-04			0.16	1.00			89		200			15	08/02/01	08/02	GRB-202
Nominal values and limits from method				1.0	1.00			30-105		100			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.26 ± 0.18
YIELD 81 ± 19

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/31/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1429

Test	TC
Matrix	SOLID
SDG	7041
Contact	Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client	Hanford
Contract	No. 630
Contract	SDG H1429

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6994-141						
B12C15	R107103-01			7041-001	U	
BLK (QC ID=39330)	R107103-03			7041-003	U	
LCS (QC ID=39329)	R107103-02			7041-002	ok	
Duplicate (R107103-01)	R107103-04			7041-004	-	U
Nominal values and limits from method				RDLs (pCi/g)	15	
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 6994-141	2σ prep error 10.0 % Reference Lab Notebook 6994 pg. 141															
B12C15	R107103-01			0.63	1.01			86		50			40	08/23/01	08/27	GRB-201
BLK (QC ID=39330)	R107103-03			0.58	1.00			88		50				08/23/01	08/27	GRB-203
LCS (QC ID=39329)	R107103-02			0.64	1.00			83		50				08/23/01	08/27	GRB-202
Duplicate (R107103-01) (QC ID=39331)	R107103-04			0.66	1.01			80		50			41	08/23/01	08/28	GRB-202
Nominal values and limits from method				15	1.00			20-105		50			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES				
MDA	0.63	±	0.068
YIELD	84	±	7

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	08/31/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1429

Test GAM Matrix SOLID
SDG 7041
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1429

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 6994-141								
B12C15	R107103-01			7041-001	U		U	
BLK (QC ID=39330)	R107103-03			7041-003	U		U	
LCS (QC ID=39329)	R107103-02			7041-002	ok		ok	
Duplicate (R107103-01)	R107103-04			7041-004	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.10	
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 6994-141	2σ prep error 15.0 % Reference Lab Notebook 6994 pg. 141															
B12C15	R107103-01			0.19	139					432			28	08/15/01	08/15	JR,01,00
BLK (QC ID=39330)	R107103-03			0.078	139					429				08/15/01	08/15	JR,05,00
LCS (QC ID=39329)	R107103-02			0.041	139					431				08/15/01	08/15	JR,04,00
Duplicate (R107103-01) (QC ID=39331)	R107103-04			0.14	139					695			28	08/15/01	08/15	JR,01,00
Nominal values and limits from method				0.050	139					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 0.11 ± 0.13
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/31/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1429

Test U T Matrix SOLID
SDG 7041
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract No. 630
Contract SDG H1429

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium (ug/g)
Preparation batch 6994-141					
B12C15	R107103-01			7041-001	1.16
BLK (QC ID=39330)	R107103-03			7041-003	U
LCS (QC ID=39329)	R107103-02			7041-002	ok
Duplicate (R107103-01)	R107103-04			7041-004	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 6994-141 2σ prep error 9.0 % Reference Lab Notebook 6994 pg. 141																
B12C15	R107103-01			0.026	0.100								34	08/21/01	08/21	KPA-001
BLK (QC ID=39330)	R107103-03			0.003	0.100									08/21/01	08/21	KPA-001
LCS (QC ID=39329)	R107103-02			0.026	0.100									08/21/01	08/21	KPA-001
Duplicate (R107103-01) (QC ID=39331)	R107103-04			0.026	0.100								34	08/21/01	08/21	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 0.020 ± 0.023
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/31/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1429

Test C Matrix SOLID
SDG 7041
Contact Melissa C. Mannion

METHOD SUMMARY

CARBON 14 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1429

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Carbon 14	
Preparation batch 6994-141						
B12C15	R107103-01			7041-001	U	
BLK (QC ID=39330)	R107103-03			7041-003	U	
LCS (QC ID=39329)	R107103-02			7041-002	ok	
Duplicate (R107103-01)	R107103-04			7041-004	-	U
Nominal values and limits from method				RDLs (pCi/g)	50	
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 6994-141	2σ prep error 10.0 %				Reference Lab Notebook 6994 pg. 141											
B12C15	R107103-01			4.8	0.212			100		100			32	08/17/01	08/19	LSC-004
BLK (QC ID=39330)	R107103-03			5.1	0.200			100		100				08/17/01	08/19	LSC-004
LCS (QC ID=39329)	R107103-02			30	0.200			100		3				08/17/01	08/20	LSC-004
Duplicate (R107103-01) (QC ID=39331)	R107103-04			4.7	0.223			100		100			32	08/17/01	08/19	LSC-004
Nominal values and limits from method				50	0.200					50			180			

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

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/31/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1429

Test H	Matrix SOLID
SDG 7041	
Contact Melissa C. Mannion	

METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H1429	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6994-141						
B12C15	R107103-01			7041-001	3.84	J
BLK (QC ID=39330)	R107103-03			7041-003	U	
LCS (QC ID=39329)	R107103-02			7041-002	ok	J
Duplicate (R107103-01)	R107103-04			7041-004	ok	J
Spike (R107103-01)	R107103-05			7041-005	LOW	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 6994-141 2σ prep error 10.0 % Reference Lab Notebook 6994 pg. 141																
B12C15	R107103-01			0.091	20.8			99		120			27	08/13/01	08/14	LSC-006
BLK (QC ID=39330)	R107103-03			0.27	20.0			33		120				08/13/01	08/14	LSC-006
LCS (QC ID=39329)	R107103-02			0.28	20.0			33		120				08/13/01	08/14	LSC-006
Duplicate (R107103-01) (QC ID=39331)	R107103-04			0.10	20.4			93		120			27	08/13/01	08/14	LSC-006
Spike (R107103-01) (QC ID=39332)	R107103-05			0.11	20.5			100		89			27	08/13/01	08/14	LSC-006
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	0.17	± 0.19
	YIELD	72	± 71

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	08/31/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1429

Test NI L Matrix SOLID
SDG 7041
Contact Melissa C. Mannion

METHOD SUMMARY

NICKEL 63 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1429

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 6994-141						
B12C15	R107103-01			7041-001	U	
BLK (QC ID=39330)	R107103-03			7041-003	U	
LCS (QC ID=39329)	R107103-02			7041-002	ok	
Duplicate (R107103-01)	R107103-04			7041-004	-	U
Nominal values and limits from method 200-TW-1 & 2 - Soil Sampling				RDLs (pCi/g)	30	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6994-141 2σ prep error 10.0 % Reference Lab Notebook 6994 pg. 141																
B12C15	R107103-01			1.9	0.500			91		100			15	08/02/01	08/02	LSC-007
BLK (QC ID=39330)	R107103-03			1.8	0.500			96		100				08/02/01	08/02	LSC-007
LCS (QC ID=39329)	R107103-02			1.8	0.500			96		100				08/02/01	08/02	LSC-007
Duplicate (R107103-01) (QC ID=39331)	R107103-04			1.9	0.500			90		100			16	08/02/01	08/03	LSC-007
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	1.8	±	0.12
	YIELD	93	±	6

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/31/01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-202	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
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: T-26/200 W H1429 (7041)	SAF No.: B01-058	Air Quality ☐
Ice Chest No.: CRC 99-010	Field Logbook No.: EL-1518 — COA: B20TW1A44C	Method of Shipment: Fed EX	
Shipped To: MARBORA	Offsite Property No.: A010271	Bill of Lading/Air Bill No.: 4235795 45903	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	NONE			
Type of Container	sG	sG	sG	sG	sG	sG	sG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	120mL	60mL	60mL	250mL	60mL	250mL	250mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	SEE ITEM (4) IN SPECIAL INSTRUCTIONS			

Sample No.	Matrix *	Sample Date	Sample Time									
B12C15	SOIL	07-18-01	~~2355~~ 0800						X		TETO	B12BP8

DSW 07/18/01

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DSWATSON	07/18/01 0805	REF-1A	07/18/01 0805
		Fed EX	7-19-01
Fed EX	7-20-01 1000	James Lind	7-20-01 1000

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

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

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

BHI-EE-011 (10/99)

ThermoRetec
Richmond Laboratory

Analytical Services

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Date/Time received 7-20-01 1000

CoC No. B01-058-202, B01-059-02

Container I.D. No. ERC 99-010 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~~ 2 ~~2~~ 7-20-01
7. Number of containers per sample: ✓ (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: Sample B12BW6 Has two Containers
13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by James Lind Date: 7-20-01 Time: 1000

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 H1429

DATE RECEIVED: 07/20/01 LVL LOT # :0107L368

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12C15						
% SOLIDS	001	S	01L%S093	07/18/01	07/23/01	07/24/01
% SOLIDS	001 REP	S	01L%S093	07/18/01	07/23/01	07/24/01
CHLORIDE BY IC	001	S	01LICD48	07/18/01	07/24/01	07/24/01
CHLORIDE BY IC	001 REP	S	01LICD48	07/18/01	07/24/01	07/24/01
CHLORIDE BY IC	001 MS	S	01LICD48	07/18/01	07/24/01	07/24/01
FLUORIDE BY IC	001	S	01LICC48	07/18/01	07/24/01	07/24/01
FLUORIDE BY IC	001 REP	S	01LICC48	07/18/01	07/24/01	07/24/01
FLUORIDE BY IC	001 MS	S	01LICC48	07/18/01	07/24/01	07/24/01
NITRITE BY IC	001	S	01LICE48	07/18/01	07/24/01	07/24/01
NITRITE BY IC	001 REP	S	01LICE48	07/18/01	07/24/01	07/24/01
NITRITE BY IC	001 MS	S	01LICE48	07/18/01	07/24/01	07/24/01
NITRATE BY IC	001	S	01LICF48	07/18/01	07/24/01	07/24/01
NITRATE BY IC	001 REP	S	01LICF48	07/18/01	07/24/01	07/24/01
NITRATE BY IC	001 MS	S	01LICF48	07/18/01	07/24/01	07/24/01
TOTAL CYANIDE	001	S	01LC072	07/18/01	07/27/01	07/27/01
TOTAL CYANIDE	001 REP	S	01LC072	07/18/01	07/27/01	07/27/01
TOTAL CYANIDE	001 MS	S	01LC072	07/18/01	07/27/01	07/27/01
PHOSPHATE BY IC	001	S	01LICD48	07/18/01	07/24/01	07/24/01
PHOSPHATE BY IC	001 REP	S	01LICD48	07/18/01	07/24/01	07/24/01
PHOSPHATE BY IC	001 MS	S	01LICD48	07/18/01	07/24/01	07/24/01
CHROMIUM VI	001	S	01LVI065	07/18/01	08/02/01	08/02/01
CHROMIUM VI	001 REP	S	01LVI065	07/18/01	08/02/01	08/02/01
CHROMIUM VI	001 MS	S	01LVI065	07/18/01	08/02/01	08/02/01
CHROMIUM VI	001 MSD	S	01LVI065	07/18/01	08/02/01	08/02/01
SULFATE BY IC	001	S	01LICD48	07/18/01	07/24/01	07/24/01
SULFATE BY IC	001 REP	S	01LICD48	07/18/01	07/24/01	07/24/01
SULFATE BY IC	001 MS	S	01LICD48	07/18/01	07/24/01	07/24/01
NITRATE NITRITE	001	S	01LN3A41	07/18/01	07/31/01	07/31/01
NITRATE NITRITE	001 REP	S	01LN3A41	07/18/01	07/31/01	07/31/01
NITRATE NITRITE	001 MS	S	01LN3A41	07/18/01	07/31/01	07/31/01
AMMONIA	001	S	01LAM038	07/18/01	07/30/01	07/31/01
AMMONIA	001 REP	S	01LAM038	07/18/01	07/30/01	07/31/01
AMMONIA	001 MS	S	01LAM038	07/18/01	07/30/01	07/31/01
TOTAL ORGANIC CARBON	001	S	01LTZ021	07/18/01	08/03/01	08/06/01
TOTAL ORGANIC CARBON	001 REP	S	01LTZ021	07/18/01	08/03/01	08/06/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1429

DATE RECEIVED: 07/20/01 LVL LOT # :0107L368

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TOTAL ORGANIC CARBON	001 MS	S	01LTZ021	07/18/01	08/03/01	08/06/01
PH	001	S	01LPH052	07/18/01	07/23/01	07/23/01
PH	001 REP	S	01LPH052	07/18/01	07/23/01	07/23/01
B12684						
% SOLIDS	002	S	01L%S093	07/18/01	07/23/01	07/24/01

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	01LC072	N/A	07/27/01	07/27/01
TOTAL CYANIDE	LCS L	S	01LC072	N/A	07/27/01	07/27/01
TOTAL CYANIDE	MB1	S	01LC072	N/A	07/27/01	07/27/01
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	01LVI065	N/A	08/02/01	08/02/01
CHROMIUM VI	MB1 BS	S	01LVI065	N/A	08/02/01	08/02/01
CHROMIUM VI	MB1 BSD	S	01LVI065	N/A	08/02/01	08/02/01
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	S	01LAM038	N/A	07/30/01	07/31/01
AMMONIA	MB1 BS	S	01LAM038	N/A	07/30/01	07/31/01
AMMONIA	MB1 BSD	S	01LAM038	N/A	07/30/01	07/31/01
TOTAL ORGANIC CARBON	MB1	S	01LTZ021	N/A	08/03/01	08/06/01
TOTAL ORGANIC CARBON	MB1 BS	S	01LTZ021	N/A	08/03/01	08/06/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-058 H1429
LVL#: 0107L368

W.O.#: 11343-606-001-9999-00
Date Received: 07-20-01

INORGANIC NARRATIVE

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

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

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

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

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS 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 Insoluble Chromium VI that was above the control limit that may be attributed sample inhomogeneity.

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

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

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

8/23/01
Date

njp\i07-368

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 15 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

L-WI-034/B-01/01

Lionville Laboratory Incorporated

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 08/07/01

CLIENT: TNUHANFORD B01-058 H1429 LVL LOT #: 0107L368

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12C15	% Solids	95.0		%	0.01	1.0
		Chloride by IC	6.3		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.32	u	MG/KG	1.32	1.0
		Nitrate by IC	5.56		MG/KG	1.32	1.0
		Cyanide, Total	0.40	u	MG/KG	0.40	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.64		MG/KG	0.42	1.0
		Sulfate by IC	16.9		MG/KG	1.3	1.0
		Nitrate Nitrite	1.3		MG/KG	0.21	1.0
		Ammonia, as N	5.2	u	MG/KG	5.2	1.0
		Total Organic Carbon	204		MG/KG	174	1.0
		pH	9.2		SOIL PH	0.01	1.0
-002	B12684	% Solids	95.0		%	0.01	1.0

6

Lionville Lababoratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 08/07/01

CLIENT: TNUHANFORD B01-058 H1429 LVL LOT #: 0107L368

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	01LICB48-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	01LC072-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	01LVI065-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	5.0	u	MG/KG	5.0	1.0
BLANK10	01LTZ021-MB1	Total Organic Carbon	20.0	u	MG/KG	20.0	1.0

Lionville Lababoratory, Inc.

INORGANICS ACCURACY REPORT 08/07/01

CLIENT: TNUHANFORD B01-058 H1429

LVL LOT #: 0107L368

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12C15	Chloride by IC	57.7	6.3	52.6	97.6	2.0
		Fluoride by IC	115	0.67	105	108.3	2.0
		Nitrite by IC	52.5	1.32u	52.6	99.8	2.0
		Nitrate by IC	57.4	5.56	52.6	98.6	2.0
		Cyanide, Total	3.63	0.40u	4.54	80.0	1.0
		Phosphate by IC	49.6	1.3 u	52.6	94.4	2.0
		Soluble Chromium VI	4.0	0.64	4.2	80.5	1.0
		Insoluble Chromium VI	1710	0.64	1360	126.3	100
		Sulfate by IC	69.9	16.9	52.6	100.7	2.0
		Nitrate Nitrite	5.9	1.3	5.2	88.4	1.0
		Ammonia, as N	211	5.2 u	208	101.2	1.0
		Total Organic Carbon	4260	204	4120	98.5	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	01LVI065-MB1	Soluble Chromium VI	3.5	0.40u	4.0	87.8	1.0
		Insoluble Chromium VI	1420	0.40u	1420	100.1	100
BLANK10	01LN3A41-MB1	Nitrate Nitrite	5.1	0.20u	5.0	102.6	1.0
BLANK10	01LAM038-MB1	Ammonia, as N	104	5.0 u	100	103.5	1.0
		Ammonia, as N MSD	103	5.0 u	100	103.0	1.0
BLANK10	01LTZ021-MB1	Total Organic Carbon	394	20.0 u	400	98.4	1.0

8

Lionville Lababoratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 08/07/01

CLIENT: TNUHANFORD B01-058 H1429 LVL LOT #: 0107L368

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	01LAM038-MB1	Ammonia, as N	103.5	103.0	0.48

Lionville Lababoratory, Inc.

INORGANICS PRECISION REPORT 08/07/01

CLIENT: TNUHANFORD B01-058 H1429 LVL LOT #: 0107L368

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12C15	% Solids	95.0	95.0	0.00	1.0
		Chloride by IC	6.3	6.1	3.7	1.0
		Fluoride by IC	2.6 u	2.6 u	NC	1.0
		Nitrite by IC	1.32u	1.32u	NC	1.0
		Nitrate by IC	5.56	5.30	4.7	1.0
		Cyanide, Total	0.40u	0.46u	NC	1.0
		Phosphate by IC	1.3 u	1.3 u	NC	1.0
		Chromium VI	0.64	0.63	1.7	1.0
		Sulfate by IC	16.9	17.8	4.9	1.0
		Nitrate Nitrite	1.3	1.2	7.6	1.0
		Ammonia, as N	5.2 u	5.2 u	NC	1.0
		Total Organic Carbon	204	192	6.0	1.0
		pH	9.2	9.2	0.8	1.0

Lionville Lababoratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 08/07/01

CLIENT: TNUHANFORD B01-058 H1429 LVL LOT #: 0107L368

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	01LC072-LCS1	Cyanide, Total LCS	1.71	2.0	MG/KG	85.4
LCSS2	01LC072-LCS2	Cyanide, Total LCS	8.99	10.0	MG/KG	89.9

01072368

Custody Transfer Record/Lab Work Request

Page 1 of 1

VL

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B01-058

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 7-20-01 Date Due: 8-19-01

		A	B		C				D		E	F	G			
Refrigerator #		1	S		S				S		S	S	S			
#/Type Container	Liquid															
	Solid	1AG	1AG		1AG				1AG		1AG	1AG	1AG			
Volume	Liquid															
	Solid	60	250		250				120		250	60	60			
Preservatives																
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Shake Herb				TCLP Metal	CN	TC Analysis	Chrom Hex	Mercury			
		Lionville Laboratory Use Only														
		0024H	0025X 0DRO		OHBGX				MT1		Inorg1	ICRL0	MHGT0			

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0024H	0025X 0DRO		OHBGX				MT1		Inorg1	ICRL0	MHGT0			
001	B12C15			S	7-18-01	0715	X	X						X	\	X	X	X			
002	B12684					0000				X											

Special Instructions: SAP B01-058

Run Matrix QC

DATE/REVISIONS:

MT1 1. Cd, Cr, Cu, Ni, Ag, Pb

Inorg1 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4,

3. ICSO4, ICNH3D, ICNO2, ICNTU,

4. ICCT, ICPH

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. 3 °C

Relinquished by	Received by	Date	Time
FEDEX	Carlos Hernandez	7-20-01	~~9:05~~
			9:05

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

NOTES:

4235 7954 5914

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-202	Page 1 of 1

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: T-26/200 W		SAF No.: B01-058
Ice Chest No.: ERC 99 056	Field Logbook No.: EL-1518	COA: B20TW1A44C	Method of Shipment: Fed EX
Shipped To: ~~TMA~~/RECRA	Offsite Property No.: A010317		Bill of Lading/Air Bill No.: 4235795459 14

Price Code: 8N

Data Turnaround: 45 Days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	NONE			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	120mL	60mL	60mL	250mL	60mL	250mL	250mL			

SAMPLE ANALYSIS

				See item (1) in Special Instructions.	Mercury - 7470 - (CV)	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	SEE ITEM (4) IN SPECIAL INSTRUCTIONS			
Sample No.	Matrix *	Sample Date	Sample Time										
B12C15	SOIL	07-18-01	~~2355~~ 0800	X	X	X	X	X	X			TETO	B12BP8

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 7/18/01. Collector not available to relinquish samples on 7/19/01 for shipment.

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: DS Watson	07/18/01 0805	Received By/Stored In: REF-1A	07/18/01 0805
Relinquished By/Removed From: REF 1A	71901 1000	Received By/Stored In: SJGALE	71901 1000
Relinquished By/Removed From: SJGALE	71901 1000	Received By/Stored In: FED EX	
Relinquished By/Removed From: FEDEX	7-20-01 9:05	Received By/Stored In: Carlos Vera	7-20-01 9:05
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

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B01-058-46 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		
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: T-26/200 W	SAF No.: B01-058	Air Quality ☐
Ice Chest No.: ERC 99 056	Field Logbook No.: EL-1518	COA: B20TW1A44C	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: AP10317	Bill of Lading/Air Bill No.: 4235 7954 5914	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

Preservation	Cool 4C										
Type of Container	sG										
No. of Container(s)	1										
Volume	250mL										
SAMPLE ANALYSIS	Chloro-Herbicides - EPA8151										

Sample No.	Matrix *	Sample Date	Sample Time										
B12684	SOIL	07/18/01	0715	X								TETO	B12625

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: DS WATSON	07/18/01 0805	REF 1A	07/18/01 0805
Relinquished By/Removed From: REF 1A 71901	1000	Received By/Stored In: SJ GALE 71901	1000
Relinquished By/Removed From: SJ GALE 71901	1000	Received By/Stored In: FED EX	
Relinquished By/Removed From: FEDEX 7-20-01	9:05	Received By/Stored In: Carlos Henry 7-20-01	9:05
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 7/18/01. Collector not available to relinquish samples on 7/19/01 for shipment.

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: 7-20-01 9:05

SDG#: 01072 368

Work Order Number: _____ SAF# B01-058

Shipping Container ID: 4235 7954 5914 Chain of Custody # B01-058-46

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 3°
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 26
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: Carlos Hernandez Date: 7-20-01

Telephoned to: _____ On _____ By _____

15

SEP 2001 RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1429

DATE RECEIVED: 07/20/01 LVL LOT # :0107L368

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12C15						
SILVER, TOTAL	001	S	01L0478	07/18/01	08/02/01	08/02/01
SILVER, TOTAL	001 REP	S	01L0478	07/18/01	08/02/01	08/02/01
SILVER, TOTAL	001 MS	S	01L0478	07/18/01	08/02/01	08/02/01
CADMIUM, TOTAL	001	S	01L0478	07/18/01	08/02/01	08/02/01
CADMIUM, TOTAL	001 REP	S	01L0478	07/18/01	08/02/01	08/02/01
CADMIUM, TOTAL	001 MS	S	01L0478	07/18/01	08/02/01	08/02/01
CHROMIUM, TOTAL	001	S	01L0478	07/18/01	08/02/01	08/02/01
CHROMIUM, TOTAL	001 REP	S	01L0478	07/18/01	08/02/01	08/02/01
CHROMIUM, TOTAL	001 MS	S	01L0478	07/18/01	08/02/01	08/02/01
COPPER, TOTAL	001	S	01L0478	07/18/01	08/02/01	08/02/01
COPPER, TOTAL	001 REP	S	01L0478	07/18/01	08/02/01	08/02/01
COPPER, TOTAL	001 MS	S	01L0478	07/18/01	08/02/01	08/02/01
MERCURY, TOTAL	001	S	01C0232	07/18/01	07/30/01	07/31/01
MERCURY, TOTAL	001 REP	S	01C0232	07/18/01	07/30/01	07/31/01
MERCURY, TOTAL	001 MS	S	01C0232	07/18/01	07/30/01	07/31/01
NICKEL, TOTAL	001	S	01L0478	07/18/01	08/02/01	08/02/01
NICKEL, TOTAL	001 REP	S	01L0478	07/18/01	08/02/01	08/02/01
NICKEL, TOTAL	001 MS	S	01L0478	07/18/01	08/02/01	08/02/01
LEAD, TOTAL	001	S	01L0478	07/18/01	08/02/01	08/02/01
LEAD, TOTAL	001 REP	S	01L0478	07/18/01	08/02/01	08/02/01
LEAD, TOTAL	001 MS	S	01L0478	07/18/01	08/02/01	08/02/01

LAB QC:

SILVER LABORATORY	LC1 BS	S	01L0478	N/A	08/02/01	08/02/01
SILVER, TOTAL	MB1	S	01L0478	N/A	08/02/01	08/02/01
CADMIUM LABORATORY	LC1 BS	S	01L0478	N/A	08/02/01	08/02/01
CADMIUM, TOTAL	MB1	S	01L0478	N/A	08/02/01	08/02/01
CHROMIUM LABORATORY	LC1 BS	S	01L0478	N/A	08/02/01	08/02/01
CHROMIUM, TOTAL	MB1	S	01L0478	N/A	08/02/01	08/02/01
COPPER LABORATORY	LC1 BS	S	01L0478	N/A	08/02/01	08/02/01
COPPER, TOTAL	MB1	S	01L0478	N/A	08/02/01	08/02/01
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	01L0478	N/A	08/02/01	08/02/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1429

DATE RECEIVED: 07/20/01 LVL LOT # :0107L368

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NICKEL, TOTAL	MB1	S	01L0478	N/A	08/02/01	08/02/01
LEAD LABORATORY	LC1 BS	S	01L0478	N/A	08/02/01	08/02/01
LEAD, TOTAL	MB1	S	01L0478	N/A	08/02/01	08/02/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-058
LVL#: 0107L368
SDG/SAF#: H1429/B01-058

W.O.#: 11343-606-001-9999-00
Date Received: 07-20-01

METALS CASE NARRATIVE

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

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

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

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

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

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

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

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

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

10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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

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

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 14 pages.

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

08-28-01
Date

jjw/m07-368

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#: 0107L368

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	X6010B	__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	X6010B	__7211 [5]	__200.7	__220.2			__99
Iron	__6010B		__200.7				__99
Lead	X6010B	__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	__6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

L-WI-033/M-11/99

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

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

4. Flame AA.

5. Graphite Furnace AA.

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

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/03/01

CLIENT: TNUHANFORD B01-058 H1429 LVL LOT #: 0107L368

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12C15	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Cadmium, Total	0.07	MG/KG	0.03	1.0
		Chromium, Total	93.6	MG/KG	0.09	1.0
		Copper, Total	11.8	MG/KG	0.07	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	51.4	MG/KG	0.12	1.0
		Lead, Total	3.1	MG/KG	0.26	1.0

Lionville Lababoratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 08/03/01

CLIENT: TNUHANFORD B01-058 H1429 LVL LOT #: 0107L368

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0478-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	0.14	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

Lionville Lababoratory, Inc.

INORGANICS ACCURACY REPORT 08/03/01

CLIENT: TNUHANFORD B01-058 H1429

LVL LOT #: 0107L368

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12C15	Silver, Total	4.7	0.10u	5.1	92.2	1.0
		Cadmium, Total	4.9	0.07	5.1	94.7	1.0
		Chromium, Total	117	93.6	20.2	114.9*	1.0
		Copper, Total	34.9	11.8	25.3	91.3	1.0
		Mercury, Total	0.16	0.02u	0.16	99.4	1.0
		Nickel, Total	102	51.4	50.6	99.2	1.0
		Lead, Total	50.8	3.1	50.6	94.3	1.0

Lionville Lababoratory, Inc.

INORGANICS PRECISION REPORT 08/03/01

CLIENT: TNUHANFORD B01-058 H1429 LVL LOT #: 0107L368

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12C15	Silver, Total	0.10u	0.10u	NC	1.0
		Cadmium, Total	0.07	0.07	2.8	1.0
		Chromium, Total	93.6	97.6	4.2	1.0
		Copper, Total	11.8	12.2	3.3	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Nickel, Total	51.4	53.4	3.8	1.0
		Lead, Total	3.1	2.6	17.5	1.0

Lionville Lababoratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 08/03/01

CLIENT: TNUHANFORD B01-058 H1429 LVL LOT #: 0107L368

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0478-LC1	Silver, LCS	48.6	50.0	MG/KG	97.2
		Cadmium, LCS	24.7	25.0	MG/KG	98.8
		Chromium, LCS	50.2	50.0	MG/KG	100.4
		Copper, LCS	123	125	MG/KG	98.7
		Nickel, LCS	197	200	MG/KG	98.6
		Lead, LCS	243	250	MG/KG	97.3
LCS1	01C0232-LC1	Mercury, LCS	3.0	2.5	MG/KG	119.9

Lionville Laboratory Use Only

0107L368

Custody Transfer Record/Lab Work Request

Page 1 of 1

VLI Lionville Laboratory Inc.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B01-058

Est. Final Proj. Sampling Date:

Project #: 11343-1006-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 7-20-01 Date Due: 8-19-01

		A	B		C				D		E	F	G			
Refrigerator #		1	5		5				5		5	5	5			
#/Type Container	Liquid															
	Solid	1AG	1AG		1AG				1AG		1AG	1AG	1AG			
Volume	Liquid															
	Solid	60	250		250				120		250	60	60			
Preservatives																
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Shake Herb				Total Metal	CN	IC Anions	Chrom Hex	Mercury			
		Lionville Laboratory Use Only														
		OG24H	OG25X ODRO		OHBGX				MET(1)		Inorg(1)	ICRLO	MHGTO			

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OG24H	OG25X ODRO		OHBGX				MET(1)		Inorg(1)	ICRLO	MHGTO			
001	B12C15			S	7/18-01	0715	X	X						X		X	X	X			
002	B126B4					0000				X											

Special Instructions: SAF B01-058

Run Matrix QC

DATE/REVISIONS:

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

Inorg(1) 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4,

3. ICSO4, INH3N, IN3N2, ICMTO,

4. IOCT, IPH

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. 3 °C

Relinquished by	Received by	Date	Time
FEDEX	Carlos Hernandez	7-20-01	~~9:05~~ 9:05

Relinquished by	Received by	Date	Time
COMPOSITE	ORIGINAL		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7954 5914

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-202	Page 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: T-26/200 W	SAF No.: B01-058	
Ice Chest No.: ERC 99 056	Field Logbook No.: EL-1518	COA: B20TW1A44C	Method of Shipment: Fed EX
Shipped To: ~~TMA~~ RECRA	Offsite Property No.: A010317	Bill of Lading/Air Bill No.: 4235795 45914	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	NONE				
Type of Container	sG	sG	sG	sG	sG	sG	sG				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	120mL	60mL	60mL	250mL	60mL	250mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	SEE ITEM (4) IN SPECIAL INSTRUCTIONS				
Sample No.	Matrix *	Sample Date	Sample Time								
B12C15	SOIL	07-18-01	~~2355~~ 0800	X	X	X	X	X	X	TETO	B12BP8

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 7/18/01. Collector not available to relinquish samples on 7/19/01 for shipment.

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: DS WATSON	07/18/01 0805	REF-1A	07/18/01 0805
Relinquished By/Removed From: REF 1A	71901 1000	SJGALE	71901 1000
Relinquished By/Removed From: SJGALE	71901 1000	FED EX	
Relinquished By/Removed From: FED EX	7-20-01 9:05	Carly Young	7-20-01 9:05
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

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-46	Page 1 of

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: T-26/200 W		SAF No.: B01-058
Ice Chest No.: ERC 99 056	Field Logbook No.: EL-1518	COA: B20TW1A44C	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A Ø10317		Bill of Lading/Air Bill No.: 4235 7954 5914

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

Preservation	Cool 4C										
Type of Container	sG										
No. of Container(s)	1										
Volume	250mL										
SAMPLE ANALYSIS	Chloro-Herbicides - EPA8151										
Sample No. / Matrix * / Sample Date / Sample Time											
B12684 / SOIL / 07/18/01 / 0715	X									TIETO	B12625

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DJ WATSON	07/18/01 0805	REF 1A	07/18/01 0805
REF 1A 71901	1000	SJGALE 71901	1000
SJGALE 71901	1000	FED EX	
FEDEX 7-20-01	9:05	Carlos Henry 7-20-01	9:05

SPECIAL INSTRUCTIONS

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 7/18/01. Collector not available to relinquish samples on 7/19/01 for shipment.

Matrix *

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

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

BHI-EE-011 (10/99)

Lionville Laboratory, Inc.
DRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1429

SEP 2001 RECEIVED

RFW LOT # :01C7L368

CLIENT ID	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
B12C15	001	S	01LE0877	07/18/01	07/20/01	07/23/01	07/30/01
B12C15	001 MS	S	01LE0877	07/18/01	07/20/01	07/23/01	07/31/01
B12C15	001 MSD	S	01LE0877	07/18/01	07/20/01	07/23/01	07/31/01
LAB QC:							
BLK	MB1	S	01LE0877	N/A	N/A	07/23/01	07/30/01
BLK	MB1 BS	S	01LE0877	N/A	N/A	07/23/01	07/30/01

LK 7-31-01

8/1/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-058
LVL#: 0107L368
SDG/SAF#: H1429/B01-058

W.O.#: 11343-606-001-9999-00
Date Received: 07-20-01

DIESEL RANGE ORGANICS

One (1) soil sample was collected on 07-18-01.

The sample and it's associated QC samples were prepared on 07-23-01 and analyzed according to Lionville Laboratory OPs based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 07-30,31-01. 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

8/1/01
Date

R:\share\dro\07-368.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 5 pages.

GLOSSARY OF DIESEL RANGE ORGANICS DATA

DATA QUALIFIERS

U	=	Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g. 10U).
J	=	Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 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: 07/31/01 13:16

RFW Batch Number: 0107L368 Client: TNUHANFORD B01-058 H1429 Work Order: 11343606001 Page: 1

04

	Cust ID:	B12C15	B12C15	B12C15	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	01LE0877-MB1	01LE0877-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	88 %	90 %	84 %	80 %	87 %
Diesel Range Organics		12.6 U	85 %	82 %	12.0 U	75 %
Motor Oil		20	NS	NS	12.0 U	NS

JK 7-31-01

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

Lionville Laboratory Use Only

01072368

Custody Transfer Record/Lab Work Request

Page 1 of 1

VLI LIONVILLE LABORATORY INC

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford 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: 7-20-01 Date Due: 8-19-01

		A	B		C				D		E	F	G			
Refrigerator #		1	S		S				S		S	S	S			
#/Type Container	Liquid															
	Solid	1AG	1AG		1AG				1AG		1AG	1AG	1AG			
Volume	Liquid															
	Solid	60	250		250				120		250	60	60			
Preservatives																
ANALYSES REQUESTED		ORGANIC: VOA	BNA	Pest/PCB	Shield Herb				INORG: ICP Metal	CN	IC Anions	Chrom Hex	Mercury			
Lionville Laboratory Use Only		0024H	0025X ODRO		OHBGX				Mr+		Inorg	ICPLG	MHGTO			
MATRIX CODES: S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EP/TCLP Leachate, WI - Wipe, X - Other, F - Fish																

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0024H	0025X ODRO		OHBGX				Mr+		Inorg	ICPLG	MHGTO			
001	B12C15			S	7/18/01	0715	X	X						X	1	X	X	X			
002	B12B84			1	1	0600				X											

Special Instructions: Saf B01-058

Run Matrix QC

DATE/REVISIONS:

Mr+ 1. Cd, Cr, Cu, Ni, Ag, Pb

Inorg 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4,

1 3. ICSO4, INH3N, IN3N2, ICNTU,

4. IOCT, IPH

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. 3 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7954 5914

Relinquished by	Received by	Date	Time
FEDEX	Carla [illegible]	7-20-01	~~9:05~~ 9:05

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

SEP 2001
RECEIVED

Lionville Laboratory, Inc.
HBGX ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1429

DATE RECEIVED: 07/20/01 LVL LOT # :0107L368

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12684	002	S	01LE0879	07/18/01	07/24/01	08/06/01
B12684	002 R1	S	01LE0985	07/18/01	08/22/01	08/23/01
B12684	002 MS	S	01LE0879	07/18/01	07/24/01	08/07/01
B12684	002 MSD	S	01LE0879	07/18/01	07/24/01	08/07/01

LAB QC:

PBLKMU	MB1	S	01LE0879	N/A	07/24/01	08/06/01
PBLKMU	MB1 BS	S	01LE0879	N/A	07/24/01	08/06/01
PBLKMU	MB1 BSD	S	01LE0879	N/A	07/24/01	08/06/01
PBLKNQ	MB1	S	01LE0985	N/A	08/22/01	08/23/01
PBLKNQ	MB1 BS	S	01LE0985	N/A	08/22/01	08/23/01
PBLKNQ	MB1 BSD	S	01LE0985	N/A	08/22/01	08/23/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU HANFORD B01-058
LVL#: 0107L368
SDG/SAF#: H1429/B01-058

W.O.#: 11343-606-001-9999-00
Date Received: 07-20-01

HERBICIDE

One (1) soil sample was collected on 07-18-01.

The sample and its associated QC samples were extracted on 07-24-01, re-extracted on 08-22-01, and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 08-06,07,23-01. The extraction and analysis procedure was based on method 8151.

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

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

2. This sample was originally extracted within its required holding time. Due to low surrogate recoveries, the sample was re-extracted outside of hold time. Both the original and the re-extracted results have been reported. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

3. All method blanks were below the reporting limits for all target compounds.

4. One (1) of ten (10) surrogate recoveries was outside acceptance criteria. A copy of the SDR has been enclosed.

5. Four (4) of thirty-two (32) blank spike recoveries were outside acceptance criteria. A copy of the SDR has been enclosed.

6. Two (2) of sixteen (16) matrix spike recoveries were outside acceptance criteria. A copy of the SDR has been enclosed.

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

8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria, with the exception of target compounds 2,4-D, 2,4,5-T and 2,4-DB analyzed on 08-06-01 at 19:36 on the primary column. The confirmation column CCVs were within acceptance criteria. A copy of the SDR has been enclosed.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 11 pages.

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

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.

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

Date

pef\r:\group\data\herb\07L-368.her

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: OGC 534

Initiator: Bryce Santoro Batch: 0107L365 Parameter: OHBGX
Date: 8/20/01 Samples: 002, all spikes Matrix: Soil
Client: TNU Method: SW846/MCAWW/CLP/ Prep Batch: 01LE0879

1. Reason for SDR

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

b. General Discrepancy

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

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

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

① Low surrogate in sample 002 @ 2%.
② Low Dalapon in all spikes except BSD which was fine; all other recoveries are fine.
→ sample is free of target analytes, → sample was also re-derivitized and re-run, again yielding low surrogate recovery.

2. Known or Probable Causes(s)

③ CCV analyzed prior to sampler was low on primary side, ok on confirmation side.

3. Discussion and Proposed Action Other Description:

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

4. Project Manager Instructions...signature/date: Freeman Johnson 8/20/01

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

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

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

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

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 016C342

Initiator: Bryce Santoro Batch: 01072368 Parameter: DHBGX
Date: 8/23/01 Samples: BS, BSD Matrix: Soil
Client: TNU Method: SW846/MCAWW/CLP/ Prep Batch: 01LE0985

1. Reason for SDR

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

b. General Discrepancy

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

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

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

① High Dinoseb recovery in BS. BSD is fine.

② Low Dalapon recovery in BS and BSD @ 41 and 24%, respectively. (QC limit is 50).

Note: All other spike recoveries are good. Sample is clean of target compounds.

2. Known or Probable Causes(s)

② Dalapon is easily lost in the blow-down step of the extraction process.

3. Discussion and Proposed Action Other Description:

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

4. Project Manager Instructions...signature/date: [signature] 8/27/01

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

5. Final Action...signature/date: [signature] Other Explanation:

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

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

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

L-WI-006/E-01/01

GLOSSARY OF HERBICIDE DATA

DATA QUALIFIERS

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

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

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

E = Indicates that the compound was detected beyond the calibration range.

I = Interference.

SUFFIXES

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

ABBREVIATIONS

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Reported.

SP = Indicates spiked compound.

Lionville Laboratory, Inc.

Herbicides, Special List

Report Date: 08/23/01 15:43

RFW Batch Number: 0107L368 Client: TNUHANFORD B01-058 H1429 Work Order: 11343606001 Page: 1

	Cust ID:	B12684	B12684	B12684	B12684	PBLKMU	PBLKMU BS
Sample Information	RFW#:	002	002	002 MS	002 MSD	01LE0879-MB1	01LE0879-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/kg	ug/kg REPREP	ug/kg	ug/kg	ug/kg	ug/kg
Surrogate:	DCAA	2 * %	63 %	71 %	82 %	50 %	71 %
Dalapon		170 U	170 U	34 * %	29 * %	170 U	25 * %
Dicamba		69 U	70 U	74 %	82 %	67 U	69 %
Dichloroprop		170 U	170 U	68 %	77 %	170 U	67 %
2,4-D		35 U	35 U	81 %	85 %	33 U	71 %
2,4,5-TP (Silvex)		17 U	17 U	71 %	84 %	17 U	76 %
2,4,5-T		17 U	17 U	88 %	104 %	17 U	88 %
2,4-DB		170 U	170 U	74 %	92 %	170 U	82 %
Dinoseb		17 U	17 U	71 %	91 %	17 U	80 %

	Cust ID:	PBLKMU BSD	PBLKNQ	PBLKNQ BS	PBLKNQ BSD
Sample Information	RFW#:	01LE0879-MB1	01LE0985-MB1	01LE0985-MB1	01LE0985-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	ug/kg	ug/kg	ug/kg	ug/kg
Surrogate:	DCAA	89 %	66 %	120 %	97 %
Dalapon		54 %	170 U	41 * %	24 * %
Dicamba		89 %	67 U	124 %	76 %
Dichloroprop		86 %	170 U	124 %	79 %
2,4-D		98 %	33 U	113 %	72 %
2,4,5-TP (Silvex)		93 %	17 U	138 %	87 %
2,4,5-T		115 %	17 U	142 %	94 %
2,4-DB		103 %	170 U	128 %	82 %
Dinoseb		94 %	17 U	107 * %	60 %

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

01072368

Custody Transfer Record/Lab Work Request

Page 1 of 1

VLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B01-058

Est. Final Proj. Sampling Date:

Project #: 11343-2006-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 7-20-01 Date Due: 8-19-01

		A	B		C				D		E	F	G			
Refrigerator #		1	S		S				S		S	S	S			
#/Type Container	Liquid															
	Solid	1AG	1AG		1AG				1AG		1AG	1AG	1AG			
Volume	Liquid															
	Solid	60	250		250				120		250	60	60			
Preservatives																
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Sv8270 Herb				FCS Metal	CN	IC Anions	Chrom Hex	Mercury			
		Lionville Laboratory Use Only														
		8024H	8025X 8DRO		8HBGX				Mrt (1)		Inorg (1)	ICP/MS	MHGTO			

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8024H	8025X 8DRO		8HBGX				Mrt (1)		Inorg (1)	ICP/MS	MHGTO			
001	B12C15			S	7-18-01	0715	X	X						X	1	X	X	X			
002	B12684			↓	↓	0000				X											

Special Instructions: SAP B01-058

Run Matrix QC

DATE/REVISIONS:

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

Inorg (1) 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4,

3. ICSO4, INH3N, IN3N2, ICNTU,

4. IOCT, IPH

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. 3 °C

Relinquished by	Received by	Date	Time
FEDEX	Carlos [illegible]	7-20-01	~~9:05~~ 9:05

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL RE-WRITTEN		

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

NOTES: 4235 7954 5914

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

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** T-26/200 W		**SAF No.** B01-058
Ice Chest No. ERC 99 056	**Field Logbook No.** EL-1518	**COA** B20TW1A44C	**Method of Shipment** Fed EX
Shipped To ~~TMA~~/RECRA	**Offsite Property No.** A010317		**Bill of Lading/Air Bill No.** 4235795 45914

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

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

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

Sample No.	Matrix *	Sample Date	Sample Time									
B12C15	SOIL	07-18-01	~~2355~~ 0800	X	X	X	X	X	X		TE TO	B12BP8

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 7/18/01. Collector not available to relinquish samples on 7/19/01 for shipment.

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: DS WATSON	07/18/01 0805	REF-1A	07/18/01 0805
Relinquished By/Removed From: REF 1A	71901 1000	Received By/Stored In: SJGALE	71901 1000
Relinquished By/Removed From: SJGALE	71901 1000	Received By/Stored In: FED EX	
Relinquished By/Removed From: FED EX	7-20-01 9:05	Received By/Stored In:	7-20-01 9:05
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

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)

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

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** T-26/200 W		**SAF No.** B01-058
Ice Chest No. ERC 99 056	**Field Logbook No.** EL-1518	**COA** B20TW1A44C	**Method of Shipment** Fed EX
Shipped To TMA/RECRA	**Offsite Property No.** A Ø10317		**Bill of Lading/Air Bill No.** 4235 7954 5914

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

Air Quality ☐

10

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

Preservation	Cool 4C										
Type of Container	aG										
No. of Container(s)	1										
Volume	250mL										
SAMPLE ANALYSIS	Chloro-Herbicides - EPA8151										

Sample No.	Matrix *	Sample Date	Sample Time										
B12684	SOIL	07/18/01	0715	X								TETD	B12625

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DS WATSON/	07/18/01 0805	REF 1A	07/18/01 0805
REF 1A 71901 1000		SJ GALE 71901	1000
SJ GALE 71901 1000		FED EX	
FEDEX 7-20-01	9:05	7-20-01	9:05

SPECIAL INSTRUCTIONS

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 7/18/01. Collector not available to relinquish samples on 7/19/01 for shipment.

Matrix *

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: 7-20-01 9:05

SDG#: 01070 368

Work Order Number: _____ SAF# B01-058

Shipping Container ID: 4235 7954 5914 Chain of Custody # B01-058-46

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

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

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

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

Sample Custodian/Laboratory: Carlos Hernandez Date: 7-20-01

Telephoned to: _____ On _____ By _____

SEP 2001
RECEIVED

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1429

DATE RECEIVED: 07/20/01 LVL LOT # :0107L368

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12C15	001	S	01LE0880	07/18/01	07/24/01	08/02/01
B12C15	001 MS	S	01LE0880	07/18/01	07/24/01	08/02/01
B12C15	001 MSD	S	01LE0880	07/18/01	07/24/01	08/02/01
LAB QC:						
SBLKCS	MB1	S	01LE0880	N/A	07/24/01	08/03/01
SBLKCS	MB1 BS	S	01LE0880	N/A	07/24/01	08/03/01
SBLKCS	MB1 BSD	S	01LE0880	N/A	07/24/01	08/03/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-058
LVL #: 0107L368
SDG/SAF #: H1429/B01-058

W.O. #: 11343-606-001-9999-00
Date Received: 07-20-01

SEMIVOLATILE

One (1) soil sample was collected on 07-18-01.

The sample and its associated QC samples were extracted on 07-24-01 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 08-02,03-01.

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. All matrix spike recoveries were within EPA QC limits.
6. One (1) of twenty-two (22) blank spike recoveries was outside EPA QC limits.
7. The method blank contained the common laboratory contaminant Bis(2-Ethylhexyl)phthalate at a level 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

8/9/01
Date

pef\gorup\data\bna\tnu-hanford-0107-368.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.

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 07:16

RFW Batch Number: 0107L368 Client: TNUHANFORD B01-058 H1429 Work Order: 11343606001 Page: 1a

	Cust ID:	B12C15		B12C15		B12C15		SBLKCS		SBLKCS BS		SBLKCS BSD	
Sample Information	RFW#:	001		001 MS		001 MSD		01LE0880-MB1		01LE0880-MB1		01LE0880-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	81	%	84	%	72	%	90	%	89	%	80	%
	2-Fluorobiphenyl	83	%	87	%	80	%	87	%	88	%	80	%
	p-Terphenyl-d14	107	%	105	%	100	%	104	%	114	%	101	%
	Phenol-d5	66	%	71	%	61	%	91	%	89	%	78	%
	2-Fluorophenol	69	%	71	%	61	%	86	%	88	%	76	%
	2,4,6-Tribromophenol	76	%	84	%	78	%	92	%	95	%	89	%
			fl		fl		fl		fl		fl		fl
Phenol		350	U	64	%	60	%	330	U	87	%	73	%
bis(2-Chloroethyl)ether		350	U	340	U	350	U	330	U	330	U	330	U
2-Chlorophenol		350	U	69	%	63	%	330	U	83	%	71	%
1,3-Dichlorobenzene		350	U	340	U	350	U	330	U	330	U	330	U
1,4-Dichlorobenzene		350	U	70	%	65	%	330	U	78	%	67	%
1,2-Dichlorobenzene		350	U	340	U	350	U	330	U	330	U	330	U
2-Methylphenol		350	U	340	U	350	U	330	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		350	U	340	U	350	U	330	U	330	U	330	U
4-Methylphenol		350	U	340	U	350	U	330	U	330	U	330	U
N-Nitroso-Di-n-propylamine		350	U	76	%	69	%	330	U	89	%	74	%
Hexachloroethane		350	U	340	U	350	U	330	U	330	U	330	U
Nitrobenzene		350	U	340	U	350	U	330	U	330	U	330	U
Isophorone		350	U	340	U	350	U	330	U	330	U	330	U
2-Nitrophenol		350	U	340	U	350	U	330	U	330	U	330	U
2,4-Dimethylphenol		350	U	340	U	350	U	330	U	330	U	330	U
bis(2-Chloroethoxy)methane		350	U	340	U	350	U	330	U	330	U	330	U
2,4-Dichlorophenol		350	U	340	U	350	U	330	U	330	U	330	U
1,2,4-Trichlorobenzene		350	U	77	%	69	%	330	U	79	%	69	%
Naphthalene		350	U	340	U	350	U	330	U	330	U	330	U
4-Chloroaniline		350	U	340	U	350	U	330	U	330	U	330	U
Hexachlorobutadiene		350	U	340	U	350	U	330	U	330	U	330	U
4-Chloro-3-methylphenol		350	U	69	%	66	%	330	U	89	%	79	%
2-Methylnaphthalene		350	U	340	U	350	U	330	U	330	U	330	U
Hexachlorocyclopentadiene		350	U	340	U	350	U	330	U	330	U	330	U
2,4,6-Trichlorophenol		350	U	340	U	350	U	330	U	330	U	330	U
2,4,5-Trichlorophenol		870	U	850	U	870	U	830	U	830	U	830	U

*= Outside of EPA CLP QC limits.

Cust ID:	B12C15		B12C15		B12C15		SBLKCS		SBLKCS BS		SBLKCS BSD	
RFW#:	001		001 MS		001 MSD		01LE0880-MB1		01LE0880-MB1		01LE0880-MB1	
2-Chloronaphthalene	350	U	340	U	350	U	330	U	330	U	330	U
2-Nitroaniline	870	U	850	U	870	U	830	U	830	U	830	U
Dimethylphthalate	350	U	340	U	350	U	330	U	330	U	330	U
Acenaphthylene	350	U	340	U	350	U	330	U	330	U	330	U
2,6-Dinitrotoluene	350	U	340	U	350	U	330	U	330	U	330	U
3-Nitroaniline	870	U	850	U	870	U	830	U	830	U	830	U
Acenaphthene	350	U	80	%	78	%	330	U	87	%	77	%
2,4-Dinitrophenol	870	U	850	U	870	U	830	U	830	U	830	U
4-Nitrophenol	870	U	70	%	71	%	830	U	93	%	87	%
Dibenzofuran	350	U	340	U	350	U	330	U	330	U	330	U
2,4-Dinitrotoluene	350	U	81	%	79	%	330	U	95 *	%	86	%
Diethylphthalate	350	U	340	U	350	U	330	U	330	U	330	U
4-Chlorophenyl-phenylether	350	U	340	U	350	U	330	U	330	U	330	U
Fluorene	350	U	340	U	350	U	330	U	330	U	330	U
4-Nitroaniline	870	U	850	U	870	U	830	U	830	U	830	U
4,6-Dinitro-2-methylphenol	870	U	850	U	870	U	830	U	830	U	830	U
N-Nitrosodiphenylamine (1)	350	U	340	U	350	U	330	U	330	U	330	U
4-Bromophenyl-phenylether	350	U	340	U	350	U	330	U	330	U	330	U
Hexachlorobenzene	350	U	340	U	350	U	330	U	330	U	330	U
Pentachlorophenol	870	U	77	%	73	%	830	U	91	%	83	%
Phenanthrene	350	U	340	U	350	U	330	U	330	U	330	U
Anthracene	350	U	340	U	350	U	330	U	330	U	330	U
Carbazole	350	U	340	U	350	U	330	U	330	U	330	U
Di-n-Butylphthalate	350	U	340	U	350	U	330	U	330	U	330	U
Fluoranthene	350	U	340	U	350	U	330	U	330	U	330	U
Pyrene	350	U	85	%	91	%	330	U	103	%	88	%
Butylbenzylphthalate	350	U	340	U	350	U	330	U	330	U	330	U
3,3'-Dichlorobenzidine	350	U	340	U	350	U	330	U	330	U	330	U
Benzo(a)anthracene	350	U	340	U	350	U	330	U	330	U	330	U
Chrysene	350	U	340	U	350	U	330	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	59	J	62	J	71	J	330	U	330	U	330	U
Di-n-Octyl phthalate	350	U	340	U	350	U	330	U	330	U	330	U
Benzo(b)fluoranthene	350	U	340	U	350	U	330	U	330	U	330	U
Benzo(k)fluoranthene	350	U	340	U	350	U	330	U	330	U	330	U
Benzo(a)pyrene	350	U	340	U	350	U	330	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	350	U	340	U	350	U	330	U	330	U	330	U
Dibenzo(a,h)anthracene	350	U	340	U	350	U	330	U	330	U	330	U
Benzo(g,h,i)perylene	350	U	340	U	350	U	330	U	330	U	330	U
Tributylphosphate	350	U	340	U	350	U	330	U	330	U	330	U

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B12C15

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

Client: TNUHANFORD B01-058 H1429

Matrix: (soil/water) SOIL

Lab Sample ID: 0107L368-001

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

Lab File ID: A080206

Level: (low/med) LOW

Date Received: 07/20/01

% Moisture: 5 decanted: (Y/N)__

Date Extracted: 07/24/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 08/02/01

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.	UNKNOWN	7.090	200	JB
2.	ALKANE	21.948	100	J
3.	ALKANE	22.962	200	J
4.	ALKANE	24.181	100	J
5.	UNKNOWN	25.038	100	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKCS

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

Client: TNUHANFORD B01-058 H1429

Matrix: (soil/water) SOIL

Lab Sample ID: 01LE0880-MB1

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

Lab File ID: D080310

Level: (low/med) LOW

Date Received: 07/24/01

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

Date Extracted: 07/24/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 08/03/01

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	7.345	90	J

Lionville Laboratory Use Only

0107L368

Custody Transfer Record/Lab Work Request

Page 1 of 1

VL7 Lionville Laboratory, Inc.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B01-058

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 7-20-01 Date Due: 8-19-01

		A	B		C				D		E	F	G			
Refrigerator #		1	S		S				S		S	S	S			
#/Type Container	Liquid															
	Solid	1AG	1AG		1AG				1AG		1AG	1AG	1AG			
Volume	Liquid															
	Solid	60	250		250				120		250	60	60			
Preservatives																
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Chloro Herb				ICP Metal	CN	IC Anions	Chrom Hex	Acidity			
Lionville Laboratory Use Only		0624H	625SX 8270		OHBGX				Mrt (1)		Inorg (1)	ICPLO	MHGTO			
Lab ID	Client ID/Description			Matrix	Date Collected	Time Collected										
001	B12C15			S	7-18-01	0715	X	X			X	1	X	X	X	
002	B12684					0000			X							

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

Special Instructions: Saf B01-058

Run Matrix QC

DATE/REVISIONS:

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

Inorg (1) 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4,

3. ICSO4, INH3N, IN3N2, ICNTU,

4. IOCT, IPH

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. 3 °C

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

NOTES:

4235 7954 5914

Relinquished by	Received by	Date	Time
FEDEX	Carlos Hernandez	7-20-01	~~9:05~~ 9:05

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

SEP 2001
RECEIVED

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1429

RFW LOT # :0107L368

CLIENT ID	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
B12C15	001	S	01LVX260	07/18/01	07/20/01	N/A	07/25/01
B12C15	001 MS	S	01LVX260	07/18/01	07/20/01	N/A	07/25/01
B12C15	001 MSD	S	01LVX260	07/18/01	07/20/01	N/A	07/25/01
LAB QC:							
VBLKHX	MB1	S	01LVX260	N/A	N/A	N/A	07/25/01
VBLKHX	MB1 BS	S	01LVX260	N/A	N/A	N/A	07/25/01

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-058
RFW #: 0107L368
SDG/SAF #: H1429/B01-058

W.O. #: 11343-606-001-9999-00
Date Received: 07-20-2001

GC/MS VOLATILE

One (1) soil sample was collected on 07-18-2001.

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 07-25-2001.

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

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

2. The sample was analyzed within required holding time.

3. Non-target compounds were 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 contaminant Methylene Chloride at a level less than 2x 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."

by

J. Michael Taylor
President
Lionville Laboratory Incorporated

08-29-01
Date

som\group\data\voa\tnu-hanford\0107-368.doc

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

208 Welsh Pool Road • 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.

VLI
LIONVILLE LABORATORY INC

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.

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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:

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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: 0107L368 Client: TNUHANFORD B01-058 H1429 Work Order: 11343606001 Page: 1a Report Date: 08/22/01 14:27

	Cust ID:	B12C15		B12C15		B12C15		VBLKHX		VBLKHX BS	
Sample Information	RFW#:	001		001 MS		001 MSD		01LVX260-MB1		01LVX260-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	0.980		1.02		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	108	%	105	%	107	%	105	%	106	%
	Bromofluorobenzene	97	%	98	%	102	%	101	%	105	%
	1,2-Dichloroethane-d4	112	%	106	%	108	%	97	%	102	%
Chloromethane		10	U	11	U	11	U	10	U	10	U
Bromomethane		10	U	11	U	11	U	10	U	10	U
Vinyl Chloride		10	U	11	U	11	U	10	U	10	U
Chloroethane		10	U	11	U	11	U	10	U	10	U
Methylene Chloride		16	B	15	B	14	B	5		9	B
Acetone		18		13		16		10	U	10	U
Carbon Disulfide		5	U	6	U	6	U	5	U	5	U
1,1-Dichloroethene		5	U	84	%	81	%	5	U	82	%
1,1-Dichloroethane		5	U	6	U	6	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	6	U	6	U	5	U	5	U
Chloroform		5	U	6	U	6	U	5	U	5	U
1,2-Dichloroethane		5	U	6	U	6	U	5	U	5	U
2-Butanone		10	U	11	U	11	U	10	U	10	U
1,1,1-Trichloroethane		5	U	6	U	6	U	5	U	5	U
Carbon Tetrachloride		5	U	6	U	6	U	5	U	5	U
Bromodichloromethane		5	U	6	U	6	U	5	U	5	U
1,2-Dichloropropane		5	U	6	U	6	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	6	U	6	U	5	U	5	U
Trichloroethene		5	U	106	%	102	%	5	U	106	%
Dibromochloromethane		5	U	6	U	6	U	5	U	5	U
1,1,2-Trichloroethane		5	U	6	U	6	U	5	U	5	U
Benzene		5	U	105	%	103	%	5	U	105	%
Trans-1,3-Dichloropropene		5	U	6	U	6	U	5	U	5	U
Bromoform		5	U	6	U	6	U	5	U	5	U
4-Methyl-2-pentanone		10	U	11	U	11	U	10	U	10	U
2-Hexanone		10	U	11	U	11	U	10	U	10	U
Tetrachloroethene		5	U	6	U	6	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	6	U	6	U	5	U	5	U
Toluene		5	U	106	%	106	%	5	U	105	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0107L368 Client: TNUHANFORD B01-058 H1429 Work Order: 11343606001 Page: 1b

Cust ID:	B12C15		B12C15		B12C15		VBLKHX		VBLKHX BS	
RFW#:	001		001 MS		001 MSD		01LVX260-MB1		01LVX260-MB1	
Chlorobenzene	5	U	104	%	103	%	5	U	106	%
Ethylbenzene	5	U	6	U	6	U	5	U	5	U
Styrene	5	U	6	U	6	U	5	U	5	U
Xylene (total)	5	U	6	U	6	U	5	U	5	U

*= Outside of EPA CLP QC limits.

Lionville Laboratory Use Only

01076368

Custody Transfer Record/Lab Work Request

Page 1 of 1

VLI Lionville Laboratory Inc.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: INU-Hanford B01-058

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 7-20-01 Date Due: 8-19-01

		A	B		C				D		E	F	G			
Refrigerator #		1	S		S				S		S	S	S			
#/Type Container	Liquid															
	Solid	1AG	1AG		1AG				1AG		1AG	1AG	1AG			
Volume	Liquid															
	Solid	60	250		250				120		250	60	60			
Preservatives																
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Chlo Herb				FCP Metal	CN	IC Anions	Chrom Hex	Mercury			
		Lionville Laboratory Use Only														
		OC24H	OC25X	ODRO	OHBGX				Mrt(1)		Inorg(1)	ICPLO	MHGTO			

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OC24H	OC25X	ODRO	OHBGX				Mrt(1)		Inorg(1)	ICPLO	MHGTO			
001	B12C15			S	7-18-01	0715	X	X						X	1	X	X	X			
002	B12684			↓	↓	0600				X											

Special Instructions: Sa# B01-058

Run Matrix QC

DATE/REVISIONS:

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

Inorg(1) 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4,

3. ICSO4, INH3N, IN3N2, ICNTU,

4. IOCI, IPH

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. 3 °C

Relinquished by	Received by	Date	Time
FEDEX	Carlos [illegible]	7-20-01	~~9:05~~ 9:05

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

NOTES: 4235 7954 5914