1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1519 was composed of four solid (soil) samples designated under SAF No. B01-058 with a Project Designation of: 200-TW-1 & 2 – Soil Sampling.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on December 10, 2001.

2.0 ANALYSIS NOTES

2.1 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.3 Isotopic Thorium 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 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.6 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.7 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.8 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.9 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.10 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.11 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.12 Tritium Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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

Melissa Mannion

Melissa C. Mannion
Program Manager

12/11/01

Date

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

SDG 7094
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1519

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B12MH8	B-7A/200 E	SOLID		R109170-01	B01-058	B01-058-8N	09/21/01 12:05
B12MH9	B-7A/200 E	SOLID		R109170-02	B01-058	B01-058-8N	09/21/01 12:05
B12MJ0	B-7A/200 E	SOLID		R109170-03	B01-058	B01-058-8N	09/21/01 14:40
B12MJ1	B-7A/200 E	SOLID		R109170-04	B01-058	B01-058-8N	09/25/01 09:45
Method Blank		SOLID		R109170-06	B01-058		
Lab Control Sample		SOLID		R109170-05	B01-058		
Duplicate (R109170-01)	B-7A/200 E	SOLID		R109170-07	B01-058		09/21/01 12:05
Spike (R109170-01)	B-7A/200 E	SOLID		R109170-08	B01-058		09/21/01 12:05

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 12/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

SDG 7094
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1519

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
7094	B01-058-8N	B12MH8	SOLID	96.5	1201 g		09/27/01	6	R109170-01	7094-001
		B12MH9	SOLID	96.6	1207 g		09/27/01	6	R109170-02	7094-002
		B12MJ0	SOLID	97.6	1135 g		09/27/01	6	R109170-03	7094-003
		B12MJ1	SOLID	97.4	1171 g		09/27/01	2	R109170-04	7094-004
		Method Blank	SOLID						R109170-06	7094-006
		Lab Control Sample	SOLID						R109170-05	7094-005
		Duplicate (R109170-01)	SOLID	96.5	1201 g		09/27/01	6	R109170-07	7094-007
		Spike (R109170-01)	SOLID		1201 g		09/27/01	6	R109170-08	7094-008

Lab id TMANC
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Report date 12/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

SDG 7094
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1519

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	7008-181	5.0	4			1	1	1/1		
NP	SOLID	Neptunium in Soil	7008-181	5.0	4			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7008-181	5.0	4			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	7008-181	5.0	4			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	7008-181	5.0	4			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	7008-181	10.0	4			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	7008-181	10.0	4			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7008-181	15.0	4			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	7008-181	9.0	4			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Soil	7008-181	10.0	4			1	1	1/1		
H	SOLID	Tritium in Soil	7008-181	10.0	4			1	1	1/1	1/1	
NI_L	SOLID	Nickel 63 in Soil	7008-181	10.0	4			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
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

SDG 7094
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1519

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B12MH8			R109170-01	7094-001	AM		11/17/01	12/09/01	MCM	Americium 241 in Soil
B-7A/200 E		SOLID	09/21/01	7094-001	C		11/01/01	12/09/01	MCM	Carbon 14 in Soil
B01-058-8N	B01-058		09/27/01	7094-001	GAM		11/12/01	12/09/01	MCM	Gamma Scan
				7094-001	H		11/07/01	12/09/01	MCM	Tritium in Soil
				7094-001	NI_L		11/05/01	12/09/01	MCM	Nickel 63 in Soil
				7094-001	NP		11/09/01	12/09/01	MCM	Neptunium in Soil
				7094-001	PU		11/19/01	12/09/01	MCM	Plutonium, Isotopic in Solids
				7094-001	SR		11/05/01	12/09/01	MCM	Total Strontium in Soil
				7094-001	TC		11/26/01	12/09/01	MCM	Technetium 99 in Soil
				7094-001	TH		11/13/01	12/09/01	MCM	Thorium, Isotopic in Soil
				7094-001	U		11/07/01	12/09/01	MCM	Uranium, Isotopic in Soil
				7094-001	U_T		11/21/01	12/09/01	MCM	Uranium, Total in Soil
B12MH9			R109170-02	7094-002	AM		11/17/01	12/09/01	MCM	Americium 241 in Soil
B-7A/200 E		SOLID	09/21/01	7094-002	C		11/01/01	12/09/01	MCM	Carbon 14 in Soil
B01-058-8N	B01-058		09/27/01	7094-002	GAM		11/12/01	12/09/01	MCM	Gamma Scan
				7094-002	H		11/07/01	12/09/01	MCM	Tritium in Soil
				7094-002	NI_L		11/05/01	12/09/01	MCM	Nickel 63 in Soil
				7094-002	NP		11/09/01	12/09/01	MCM	Neptunium in Soil
				7094-002	PU		11/17/01	12/09/01	MCM	Plutonium, Isotopic in Solids
				7094-002	SR		11/05/01	12/09/01	MCM	Total Strontium in Soil
				7094-002	TC		11/24/01	12/09/01	MCM	Technetium 99 in Soil
				7094-002	TH		11/07/01	12/09/01	MCM	Thorium, Isotopic in Soil
				7094-002	U		11/07/01	12/09/01	MCM	Uranium, Isotopic in Soil
				7094-002	U_T		11/21/01	12/09/01	MCM	Uranium, Total in Soil
B12MJ0			R109170-03	7094-003	AM		11/17/01	12/09/01	MCM	Americium 241 in Soil
B-7A/200 E		SOLID	09/21/01	7094-003	C		11/01/01	12/09/01	MCM	Carbon 14 in Soil
B01-058-8N	B01-058		09/27/01	7094-003	GAM		11/12/01	12/09/01	MCM	Gamma Scan
				7094-003	H		11/07/01	12/09/01	MCM	Tritium in Soil
				7094-003	NI_L		11/05/01	12/09/01	MCM	Nickel 63 in Soil
				7094-003	NP		11/09/01	12/09/01	MCM	Neptunium in Soil
				7094-003	PU		11/17/01	12/09/01	MCM	Plutonium, Isotopic in Solids
				7094-003	SR		11/05/01	12/09/01	MCM	Total Strontium in Soil
				7094-003	TC		11/26/01	12/09/01	MCM	Technetium 99 in Soil
				7094-003	TH		11/13/01	12/09/01	MCM	Thorium, Isotopic in Soil
				7094-003	U		11/07/01	12/09/01	MCM	Uranium, Isotopic in Soil
				7094-003	U_T		11/21/01	12/09/01	MCM	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

SDG 7094
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1519

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B12MJ1			R109170-04	7094-004	AM		11/17/01	12/09/01	MCM	Americium 241 in Soil
B-7A/200 E		SOLID	09/25/01	7094-004	C		11/01/01	12/09/01	MCM	Carbon 14 in Soil
B01-058-8N	B01-058		09/27/01	7094-004	GAM		11/12/01	12/09/01	MCM	Gamma Scan
				7094-004	H		11/07/01	12/09/01	MCM	Tritium in Soil
				7094-004	NI_L		11/05/01	12/09/01	MCM	Nickel 63 in Soil
				7094-004	NP		11/09/01	12/09/01	MCM	Neptunium in Soil
				7094-004	PU		11/19/01	12/09/01	MCM	Plutonium, Isotopic in Solids
				7094-004	SR		11/05/01	12/09/01	MCM	Total Strontium in Soil
				7094-004	TC		11/24/01	12/09/01	MCM	Technetium 99 in Soil
				7094-004	TH		11/12/01	12/09/01	MCM	Thorium, Isotopic in Soil
				7094-004	U		11/07/01	12/09/01	MCM	Uranium, Isotopic in Soil
				7094-004	U_T		11/21/01	12/09/01	MCM	Uranium, Total in Soil
Method Blank			R109170-06	7094-006	AM		11/17/01	12/09/01	MCM	Americium 241 in Soil
		SOLID		7094-006	C		11/01/01	12/09/01	MCM	Carbon 14 in Soil
	B01-058			7094-006	GAM		11/13/01	12/09/01	MCM	Gamma Scan
				7094-006	H		11/07/01	12/09/01	MCM	Tritium in Soil
				7094-006	NI_L		11/05/01	12/09/01	MCM	Nickel 63 in Soil
				7094-006	NP		11/09/01	12/09/01	MCM	Neptunium in Soil
				7094-006	PU		11/19/01	12/09/01	MCM	Plutonium, Isotopic in Solids
				7094-006	SR		11/05/01	12/09/01	MCM	Total Strontium in Soil
				7094-006	TC		11/27/01	12/09/01	MCM	Technetium 99 in Soil
				7094-006	TH		11/13/01	12/09/01	MCM	Thorium, Isotopic in Soil
				7094-006	U		11/08/01	12/09/01	MCM	Uranium, Isotopic in Soil
				7094-006	U_T		11/21/01	12/09/01	MCM	Uranium, Total in Soil
Lab Control Sample			R109170-05	7094-005	AM		11/17/01	12/09/01	MCM	Americium 241 in Soil
		SOLID		7094-005	C		11/01/01	12/09/01	MCM	Carbon 14 in Soil
	B01-058			7094-005	GAM		11/12/01	12/09/01	MCM	Gamma Scan
				7094-005	H		11/07/01	12/09/01	MCM	Tritium in Soil
				7094-005	NI_L		11/05/01	12/09/01	MCM	Nickel 63 in Soil
				7094-005	NP		11/09/01	12/09/01	MCM	Neptunium in Soil
				7094-005	PU		11/19/01	12/09/01	MCM	Plutonium, Isotopic in Solids
				7094-005	SR		11/05/01	12/09/01	MCM	Total Strontium in Soil
				7094-005	TC		11/29/01	12/09/01	MCM	Technetium 99 in Soil
				7094-005	TH		11/07/01	12/09/01	MCM	Thorium, Isotopic in Soil
				7094-005	U		11/07/01	12/09/01	MCM	Uranium, Isotopic in Soil
				7094-005	U_T		11/21/01	12/09/01	MCM	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
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Report date 12/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

SDG 7094
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1519

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Duplicate (R109170-01)			R109170-07	7094-007	AM		11/19/01	12/09/01	MCM	Americium 241 in Soil
B-7A/200 E		SOLID	09/21/01	7094-007	C		11/01/01	12/09/01	MCM	Carbon 14 in Soil
	B01-058		09/27/01	7094-007	GAM		11/14/01	12/09/01	MCM	Gamma Scan
				7094-007	H		11/07/01	12/09/01	MCM	Tritium in Soil
				7094-007	NI_L		11/05/01	12/09/01	MCM	Nickel 63 in Soil
				7094-007	NP		11/09/01	12/09/01	MCM	Neptunium in Soil
				7094-007	PU		11/19/01	12/09/01	MCM	Plutonium, Isotopic in Solids
				7094-007	SR		11/05/01	12/09/01	MCM	Total Strontium in Soil
				7094-007	TC		11/26/01	12/09/01	MCM	Technetium 99 in Soil
				7094-007	TH		11/08/01	12/09/01	MCM	Thorium, Isotopic in Soil
				7094-007	U		11/08/01	12/09/01	MCM	Uranium, Isotopic in Soil
				7094-007	U_T		11/21/01	12/09/01	MCM	Uranium, Total in Soil
Spike (R109170-01)			R109170-08	7094-008	H		11/07/01	12/09/01	MCM	Tritium in Soil
B-7A/200 E		SOLID	09/21/01							
	B01-058		09/27/01							

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	4			1	1	1		7
C	B01-058	Carbon 14 in Soil	C14_COX_LSC	4			1	1	1		7
GAM	B01-058	Gamma Scan	GAMMA_GS	4			1	1	1		7
H	B01-058	Tritium in Soil	906.0_H3_LSC	4			1	1	1	1	8
NI_L	B01-058	Nickel 63 in Soil	NI63_LSC	4			1	1	1		7
NP	B01-058	Neptunium in Soil	NP237_LLE_PLATE_AEA	4			1	1	1		7
PU	B01-058	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	4			1	1	1		7
SR	B01-058	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	4			1	1	1		7
TC	B01-058	Technetium 99 in Soil	TC99_TR_SEP_LSC	4			1	1	1		7
TH	B01-058	Thorium, Isotopic in Soil	THISO_IE_PLATE_AEA	4			1	1	1		7
U	B01-058	Uranium, Isotopic in Soil	UISO_PLATE_AEA	4			1	1	1		7
U_T	B01-058	Uranium, Total in Soil	UTOT_KPA	4			1	1	1		7
TOTALS				48			12	12	12	1	85

Lab id TMANC
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

R109170-06 Method Blank

METHOD BLANK

SDG	7094	Client/Case no	Hanford SDG H1519
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R109170-06	Client sample id	Method Blank
Dept sample id	7094-006	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	-0.040	0.13	0.23	400	U	H
Carbon 14	14762-75-5	0.520	2.8	4.7	50	U	C
Nickel 63	13981-37-8	-1.59	1.3	2.2	30	U	NI_L
Total Strontium	SR-RAD	0.008	0.15	0.30	1.0	U	SR
Americium 241	14596-10-2	0.025	0.10	0.19	1.0	U	AM
Technetium 99	14133-76-7	-0.025	0.11	0.36	15	U	TC
Thorium 228	14274-82-9	-0.062	0.25	0.55		U	TH
Thorium 230	14269-63-7	-0.093	0.25	0.47	1.0	U	TH
Thorium 232	TH-232	0.093	0.12	0.24	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	-0.021	0.084	0.20	1.0	U	U
Uranium 235	15117-96-1	0.025	0.10	0.19	1.0	U	U
Uranium 238	U-238	0.063	0.084	0.16	1.0	U	U
Neptunium 237	13994-20-2	0	0.092	0.14	1.0	U	NP
Plutonium 238	13981-16-3	0	0.053	0.20	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.053	0.20	1.0	U	PU
Potassium 40	13966-00-2	U		0.079		U	GAM
Cobalt 60	10198-40-0	U		0.007	0.050	U	GAM
Cesium 137	10045-97-3	U		0.006	0.10	U	GAM
Radium 226	13982-63-3	U		0.013	0.10	U	GAM
Radium 228	15262-20-1	U		0.030	0.20	U	GAM
Europium 152	14683-23-9	U		0.015	0.10	U	GAM
Europium 154	15585-10-1	U		0.019	0.10	U	GAM
Europium 155	14391-16-3	U		0.013	0.10	U	GAM
Thorium 228	14274-82-9	U		0.008		U	GAM
Thorium 232	TH-232	U		0.030		U	GAM
Uranium 235	15117-96-1	U		0.019		U	GAM
Uranium 238	U-238	U		0.73		U	GAM
Americium 241	14596-10-2	U		0.017		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	12/10/01

B L A N K , c o n t .

SDG	7094	Client/Case no	Hanford SDG H1519
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R109170-06	Client sample id	Method Blank
Dept sample id	7094-006	Material/Matrix	SOLID
		SAF No	B01-058

QC-BLANK 40061

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

R109170-05

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7094

Contact Melissa C. Mannion

Client/Case no Hanford SDG H1519

Case no No. 630

Lab sample id R109170-05

Dept sample id 7094-005

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	23.9	0.50	0.22	400	J	H	24.6	0.98	97	84-116	80-120
Carbon 14	9960	200	30	50		C	11300	450	88	85-115	80-120
Nickel 63	258	5.5	2.7	30		NI_L	264	11	98	84-116	80-120
Total Strontium	23.7	0.91	0.28	1.0		SR	22.9	0.92	104	82-118	80-120
Americium 241	21.6	2.1	0.19	1.0		AM	21.0	0.84	103	82-118	80-120
Technetium 99	133	2.6	0.37	15		TC	131	5.2	102	83-117	80-120
Thorium 230	44.8	2.1	0.34	1.0		TH	44.8	1.8	100	88-112	80-120
Total Uranium (ug/g)	18.7	2.2	0.026	0.10		U_T	18.1	0.72	103	76-124	80-120
Uranium 233	18.8	1.8	0.88	1.0		U	19.1	0.76	98	83-117	80-120
Uranium 235	15.2	1.6	0.20	1.0		U	15.7	0.63	97	82-118	80-120
Uranium 238	20.7	1.9	0.83	1.0		U	21.0	0.84	99	83-117	80-120
Neptunium 237	23.9	1.9	0.11	1.0		NP	23.8	0.95	100	85-115	80-120
Plutonium 238	29.3	3.3	0.28	1.0		PU	27.2	1.1	108	79-121	80-120
Plutonium 239/240	32.4	3.6	0.28	1.0		PU	29.0	1.2	112	79-121	80-120
Cobalt 60	0.288	0.013	0.006	0.050		GAM	0.276	0.011	104	75-125	80-120
Cesium 137	0.341	0.012	0.009	0.10		GAM	0.318	0.013	107	74-126	80-120

200-TW-1 & 2 - Soil Sampling

QC-LCS 40060

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 12/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

R109170-07 B12MH8

DUPLICATE

SDG	7094			Client/Case no	Hanford SDG H1519
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R109170-07	Lab sample id	R109170-01	Client sample id	B12MH8
Dept sample id	7094-007	Dept sample id	7094-001	Location/Matrix	B-7A/200 E SOLID
		Received	09/27/01	Collected/Weight	09/21/01 12:05 1201 g
% solids	96.5	% solids	96.5	Custody/SAF No	B01-058-8N B01-058

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Tritium	0.299	0.055	0.076	400	J	H	0.288	0.053	0.075	J	4	44	
Carbon 14	1.87	2.4	3.9	50	U	C	-1.44	2.2	3.7	U	-		
Nickel 63	-1.09	1.4	2.3	30	U	NI_L	-1.47	1.3	2.3	U	-		
Total Strontium	0.120	0.14	0.27	1.0	U	SR	-0.043	0.12	0.26	U	-		
Americium 241	0.029	0.057	0.22	1.0	U	AM	0.142	0.17	0.31	U	-		
Technetium 99	0.084	0.21	0.65	15	U	TC	0.093	0.21	0.66	U	-		
Thorium 228	0.345	0.35	0.62		U	TH	0.481	0.44	0.68	U	-		
Thorium 230	0	0.26	0.33	1.0	U	TH	0.110	0.37	0.56	U	-		
Thorium 232	0.686	0.35	0.33	1.0	J	TH	0.439	0.29	0.28	J	44	122	
Total Uranium (ug/g)	2.34	0.27	0.026	0.10		U_T	2.39	0.28	0.026		2	31	
Uranium 233	0.788	0.27	0.17	1.0	J	U	0.928	0.25	0.12	J	16	65	
Uranium 235	0.027	0.053	0.20	1.0	U	U	0	0.037	0.14	U	-		
Uranium 238	1.03	0.31	0.17	1.0		U	0.943	0.25	0.12	J	9	61	
Neptunium 237	0	0.089	0.13	1.0	U	NP	0.029	0.058	0.088	U	-		
Plutonium 238	0	0.062	0.24	1.0	U	PU	0	0.046	0.17	U	-		
Plutonium 239/240	0.031	0.061	0.24	1.0	U	PU	0	0.046	0.17	U	-		
Potassium 40	15.8	0.57	0.22			GAM	14.0	0.32	0.14		12	33	
Cobalt 60	U		0.026	0.050	U	GAM	U		0.016	U	-		
Cesium 137	U		0.022	0.10	U	GAM	U		0.013	U	-		
Radium 226	0.443	0.049	0.048	0.10		GAM	0.405	0.027	0.026		9	38	
Radium 228	0.674	0.092	0.091	0.20		GAM	0.632	0.073	0.069		6	42	
Europium 152	U		0.052	0.10	U	GAM	U		0.029	U	-		
Europium 154	U		0.089	0.10	U	GAM	U		0.056	U	-		
Europium 155	U		0.096	0.10	U	GAM	U		0.046	U	-		
Thorium 228	0.582	0.045	0.060			GAM	0.579	0.016	0.015		1	34	
Thorium 232	0.674	0.092	0.091			GAM	0.632	0.073	0.069		6	42	
Uranium 235	U		0.096		U	GAM	U		0.070	U	-		
Uranium 238	U		3.2		U	GAM	U		2.8	U	-		

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	12/10/01

DUPLICATE, cont.

SDG	7094			Client/Case no	Hanford SDG H1519
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R109170-07	Lab sample id	R109170-01	Client sample id	B12MH8
Dept sample id	7094-007	Dept sample id	7094-001	Location/Matrix	B-7A/200 E SOLID
		Received	09/27/01	Collected/Weight	09/21/01 12:05 1201 g
% solids	96.5	% solids	96.5	Custody/SAF No	B01-058-8N 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
Americium 241	U		0.17		U	GAM	U		0.017	U	-	

200-TW-1 & 2 - Soil Sampling

QC-DUP#1 40062

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	12/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

R109170-08 B12MH8

MATRIX SPIKE

SDG	7094			Client/Case no	Hanford SDG H1519
Contact	Melissa C. Mannion			Case no	No. 630
MATRIX SPIKE		ORIGINAL			
Lab sample id	R109170-08	Lab sample id	R109170-01	Client sample id	B12MH8
Dept sample id	7094-008	Dept sample id	7094-001	Location/Matrix	B-7A/200 E SOLID
		Received	09/27/01	Collected/Weight	09/21/01 12:05 1201 g
		% solids	96.5	Custody/SAF No	B01-058-8N 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	52.6	0.54	0.10	400	J	H	57.0	2.3	0.288	0.053	92	85-115	60-140

200-TW-1 & 2 - Soil Sampling

QC-MS#1 40063

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

SAMPLE DELIVERY GROUP H1519

R109170-01 **B12MH8**

DATA SHEET

SDG	7094	Client/Case no	Hanford SDG H1519
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R109170-01	Client sample id	B12MH8
Dept sample id	7094-001	Location/Matrix	B-7A/200 E SOLID
Received	09/27/01	Collected/Weight	09/21/01 12:05 1201 g
% solids	96.5	Custody/SAF No	B01-058-8N B01-058

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.288	0.053	0.075	400	J	H
Carbon 14	14762-75-5	-1.44	2.2	3.7	50	U	C
Nickel 63	13981-37-8	-1.47	1.3	2.3	30	U	NI_L
Total Strontium	SR-RAD	-0.043	0.12	0.26	1.0	U	SR
Americium 241	14596-10-2	0.142	0.17	0.31	1.0	U	AM
Technetium 99	14133-76-7	0.093	0.21	0.66	15	U	TC
Thorium 228	14274-82-9	0.481	0.44	0.68		U	TH
Thorium 230	14269-63-7	0.110	0.37	0.56	1.0	U	TH
Thorium 232	TH-232	0.439	0.29	0.28	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	2.39	0.28	0.026	0.10		U_T
Uranium 233	U-233/234	0.928	0.25	0.12	1.0	J	U
Uranium 235	15117-96-1	0	0.037	0.14	1.0	U	U
Uranium 238	U-238	0.943	0.25	0.12	1.0	J	U
Neptunium 237	13994-20-2	0.029	0.058	0.088	1.0	U	NP
Plutonium 238	13981-16-3	0	0.046	0.17	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.046	0.17	1.0	U	PU
Potassium 40	13966-00-2	14.0	0.32	0.14			GAM
Cobalt 60	10198-40-0	U		0.016	0.050	U	GAM
Cesium 137	10045-97-3	U		0.013	0.10	U	GAM
Radium 226	13982-63-3	0.405	0.027	0.026	0.10		GAM
Radium 228	15262-20-1	0.632	0.073	0.069	0.20		GAM
Europium 152	14683-23-9	U		0.029	0.10	U	GAM
Europium 154	15585-10-1	U		0.056	0.10	U	GAM
Europium 155	14391-16-3	U		0.046	0.10	U	GAM
Thorium 228	14274-82-9	0.579	0.016	0.015			GAM
Thorium 232	TH-232	0.632	0.073	0.069			GAM
Uranium 235	15117-96-1	U		0.070		U	GAM
Uranium 238	U-238	U		2.8		U	GAM

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
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Version	3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

R109170-01 **B12MH8**

DATA SHEET, cont

SDG	7094	Client/Case no	Hanford	SDG H1519	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R109170-01	Client sample id	B12MH8		
Dept sample id	7094-001	Location/Matrix	B-7A/200 E	SOLID	
Received	09/27/01	Collected/Weight	09/21/01 12:05	1201 g	
% solids	96.5	Custody/SAF No	B01-058-8N	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		0.017		U	GAM

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

R109170-02 **B12MH9**

DATA SHEET

SDG	7094	Client/Case no	Hanford	SDG H1519	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R109170-02	Client sample id	B12MH9		
Dept sample id	7094-002	Location/Matrix	B-7A/200 E	SOLID	
Received	09/27/01	Collected/Weight	09/21/01 12:05	1207 g	
% solids	96.6	Custody/SAF No	B01-058-8N	B01-058	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.313	0.057	0.078	400	J	H
Carbon 14	14762-75-5	-1.79	2.3	3.9	50	U	C
Nickel 63	13981-37-8	-0.333	1.4	2.4	30	U	NI_L
Total Strontium	SR-RAD	-0.025	0.14	0.28	1.0	U	SR
Americium 241	14596-10-2	0.091	0.12	0.23	1.0	U	AM
Technetium 99	14133-76-7	0.185	0.26	0.57	15	U	TC
Thorium 228	14274-82-9	0.731	0.46	0.66			TH
Thorium 230	14269-63-7	0.182	0.36	0.44	1.0	U	TH
Thorium 232	TH-232	0.773	0.37	0.35	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	2.59	0.30	0.026	0.10		U_T
Uranium 233	U-233/234	1.04	0.31	0.18	1.0		U
Uranium 235	15117-96-1	0.023	0.091	0.17	1.0	U	U
Uranium 238	U-238	0.812	0.27	0.14	1.0	J	U
Neptunium 237	13994-20-2	0	0.069	0.19	1.0	U	NP
Plutonium 238	13981-16-3	-0.039	0.077	0.29	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.077	0.29	1.0	U	PU
Potassium 40	13966-00-2	16.6	0.52	0.090			GAM
Cobalt 60	10198-40-0	U		0.010	0.050	U	GAM
Cesium 137	10045-97-3	U		0.009	0.10	U	GAM
Radium 226	13982-63-3	U		0.030	0.10	U	GAM
Radium 228	15262-20-1	0.706	0.061	0.041	0.20		GAM
Europium 152	14683-23-9	U		0.021	0.10	U	GAM
Europium 154	15585-10-1	U		0.033	0.10	U	GAM
Europium 155	14391-16-3	U		0.025	0.10	U	GAM
Thorium 228	14274-82-9	0.817	0.021	0.018			GAM
Thorium 232	TH-232	0.706	0.061	0.041			GAM
Uranium 235	15117-96-1	0.027	0.020	0.032		U	GAM
Uranium 238	U-238	U		1.9		U	GAM

200-TW-1 & 2 - Soil Sampling

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Protocol	Hanford
Version	Ver 1.0
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DATA SHEET, cont

SDG	7094	Client/Case no	Hanford		SDG H1519
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R109170-02	Client sample id	B12MH9		
Dept sample id	7094-002	Location/Matrix	B-7A/200 E		SOLID
Received	09/27/01	Collected/Weight	09/21/01 12:05	1207 g	
% solids	96.6	Custody/SAF No	B01-058-8N	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		0.013		U	GAM

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

R109170-03 B12MJ0

DATA SHEET

SDG	7094	Client/Case no	Hanford	SDG H1519	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R109170-03	Client sample id	B12MJ0		
Dept sample id	7094-003	Location/Matrix	B-7A/200 E	SOLID	
Received	09/27/01	Collected/Weight	09/21/01 14:40	1135 g	
% solids	97.6	Custody/SAF No	B01-058-8N	B01-058	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.308	0.052	0.071	400	J	H
Carbon 14	14762-75-5	1.28	2.3	3.7	50	U	C
Nickel 63	13981-37-8	-1.21	1.5	2.5	30	U	NI_L
Total Strontium	SR-RAD	0.079	0.14	0.27	1.0	U	SR
Americium 241	14596-10-2	0	0.076	0.29	1.0	U	AM
Technetium 99	14133-76-7	0.184	0.17	0.58	15	U	TC
Thorium 228	14274-82-9	0.701	0.31	0.32			TH
Thorium 230	14269-63-7	0.308	0.31	0.46	1.0	U	TH
Thorium 232	TH-232	0.411	0.26	0.25	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	1.21	0.14	0.026	0.10		U_T
Uranium 233	U-233/234	0.425	0.19	0.15	1.0	J	U
Uranium 235	15117-96-1	0.047	0.047	0.18	1.0	U	U
Uranium 238	U-238	0.503	0.20	0.15	1.0	J	U
Neptunium 237	13994-20-2	0	0.081	0.12	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	0.092	0.35	1.0	U	PU
Potassium 40	13966-00-2	15.3	0.39	0.23			GAM
Cobalt 60	10198-40-0	U		0.018	0.050	U	GAM
Cesium 137	10045-97-3	U		0.014	0.10	U	GAM
Radium 226	13982-63-3	0.429	0.033	0.033	0.10		GAM
Radium 228	15262-20-1	0.681	0.086	0.086	0.20		GAM
Europium 152	14683-23-9	U		0.036	0.10	U	GAM
Europium 154	15585-10-1	U		0.055	0.10	U	GAM
Europium 155	14391-16-3	U		0.041	0.10	U	GAM
Thorium 228	14274-82-9	0.668	0.018	0.018			GAM
Thorium 232	TH-232	0.681	0.086	0.086			GAM
Uranium 235	15117-96-1	U		0.064		U	GAM
Uranium 238	U-238	U		2.1		U	GAM

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
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DATA SHEET, cont

SDG	7094	Client/Case no	Hanford		SDG H1519
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R109170-03	Client sample id	B12MJ0		
Dept sample id	7094-003	Location/Matrix	B-7A/200 E		SOLID
Received	09/27/01	Collected/Weight	09/21/01 14:40	1135 g	
% solids	97.6	Custody/SAF No	B01-058-8N	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		0.052		U	GAM

200-TW-1 & 2 - Soil Sampling

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

SAMPLE DELIVERY GROUP H1519

R109170-04 B12MJ1

DATA SHEET

SDG	7094	Client/Case no	Hanford SDG H1519
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R109170-04	Client sample id	B12MJ1
Dept sample id	7094-004	Location/Matrix	B-7A/200 E SOLID
Received	09/27/01	Collected/Weight	09/25/01 09:45 1171 g
% solids	97.4	Custody/SAF No	B01-058-8N B01-058

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.221	0.049	0.071	400	J	H
Carbon 14	14762-75-5	2.80	2.5	4.0	50	U	C
Nickel 63	13981-37-8	0.252	1.4	2.3	30	U	NI_L
Total Strontium	SR-RAD	-0.078	0.12	0.27	1.0	U	SR
Americium 241	14596-10-2	0	0.086	0.33	1.0	U	AM
Technetium 99	14133-76-7	0.155	0.34	1.0	15	U	TC
Thorium 228	14274-82-9	0.446	0.17	0.20			TH
Thorium 230	14269-63-7	-0.047	0.21	0.36	1.0	U	TH
Thorium 232	TH-232	0.357	0.15	0.16	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	1.25	0.14	0.026	0.10		U_T
Uranium 233	U-233/234	0.440	0.20	0.15	1.0	J	U
Uranium 235	15117-96-1	0	0.048	0.19	1.0	U	U
Uranium 238	U-238	0.500	0.20	0.15	1.0	J	U
Neptunium 237	13994-20-2	0.025	0.051	0.076	1.0	U	NP
Plutonium 238	13981-16-3	0	0.061	0.23	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.061	0.23	1.0	U	PU
Potassium 40	13966-00-2	15.2	0.21	0.075			GAM
Cobalt 60	10198-40-0	U		0.009	0.050	U	GAM
Cesium 137	10045-97-3	U		0.007	0.10	U	GAM
Radium 226	13982-63-3	0.349	0.016	0.015	0.10		GAM
Radium 228	15262-20-1	0.519	0.034	0.034	0.20		GAM
Europium 152	14683-23-9	U		0.017	0.10	U	GAM
Europium 154	15585-10-1	U		0.030	0.10	U	GAM
Europium 155	14391-16-3	U		0.037	0.10	U	GAM
Thorium 228	14274-82-9	0.492	0.010	0.010			GAM
Thorium 232	TH-232	0.519	0.034	0.034			GAM
Uranium 235	15117-96-1	U		0.029		U	GAM
Uranium 238	U-238	U		1.0		U	GAM

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
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DATA SHEET, cont

SDG	7094	Client/Case no	Hanford	SDG H1519	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R109170-04	Client sample id	B12MJ1		
Dept sample id	7094-004	Location/Matrix	B-7A/200 E	SOLID	
Received	09/27/01	Collected/Weight	09/25/01 09:45	1171 g	
% solids	97.4	Custody/SAF No	B01-058-8N	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		0.026		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	12/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

Test AM Matrix SOLID
SDG 7094
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1519

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 7008-181						
B12MH8	R109170-01			7094-001	U	
B12MH9	R109170-02			7094-002	U	
B12MJ0	R109170-03			7094-003	U	
B12MJ1	R109170-04			7094-004	U	
BLK (QC ID=40061)	R109170-06			7094-006	U	
LCS (QC ID=40060)	R109170-05			7094-005	ok	
Duplicate (R109170-01)	R109170-07			7094-007	-	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 7008-181	2σ prep error 5.0 %				Reference Lab Notebook 7008 pg. 181											
B12MH8	R109170-01			0.31	0.500			70		117			57	11/17/01	11/17	SS-041
B12MH9	R109170-02			0.23	0.500			63		116			57	11/17/01	11/17	SS-045
B12MJ0	R109170-03			0.29	0.500			52		117			57	11/17/01	11/17	SS-047
B12MJ1	R109170-04			0.33	0.500			46		117			53	11/17/01	11/17	SS-048
BLK (QC ID=40061)	R109170-06			0.19	0.500			76		117				11/17/01	11/17	SS-050
LCS (QC ID=40060)	R109170-05			0.19	0.500			83		117				11/17/01	11/17	SS-049
Duplicate (R109170-01) (QC ID=40062)	R109170-07			0.22	0.500			72		113			59	11/17/01	11/19	SS-032
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

Test NP Matrix SOLID
SDG 7094
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1519

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 7008-181						
B12MH8	R109170-01			7094-001	U	
B12MH9	R109170-02			7094-002	U	
B12MJ0	R109170-03			7094-003	U	
B12MJ1	R109170-04			7094-004	U	
BLK (QC ID=40061)	R109170-06			7094-006	U	
LCS (QC ID=40060)	R109170-05			7094-005	ok	
Duplicate (R109170-01)	R109170-07			7094-007	-	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 7008-181 2σ prep error 5.0 % Reference Lab Notebook 7008 pg. 181																
B12MH8	R109170-01			0.088	0.500			66		121			49	11/07/01	11/09	SS-042
B12MH9	R109170-02			0.19	0.500			74		237			49	11/07/01	11/09	SS-021
B12MJ0	R109170-03			0.12	0.500			48		121			49	11/07/01	11/09	SS-043
B12MJ1	R109170-04			0.076	0.500			74		121			45	11/07/01	11/09	SS-044
BLK (QC ID=40061)	R109170-06			0.14	0.500			40		121				11/07/01	11/09	SS-048
LCS (QC ID=40060)	R109170-05			0.11	0.500			52		121				11/07/01	11/09	SS-047
Duplicate (R109170-01) (QC ID=40062)	R109170-07			0.13	0.500			44		122			49	11/07/01	11/09	SS-049
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 7 SAMPLES
MDA 0.12 ± 0.075
YIELD 57 ± 29

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

Test PU Matrix SOLID
SDG 7094
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1519

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 7008-181								
B12MH8	R109170-01			7094-001	U		U	
B12MH9	R109170-02			7094-002	U		U	
B12MJ0	R109170-03			7094-003	U		U	
B12MJ1	R109170-04			7094-004	U		U	
BLK (QC ID=40061)	R109170-06			7094-006	U		U	
LCS (QC ID=40060)	R109170-05			7094-005	ok		ok	
Duplicate (R109170-01)	R109170-07			7094-007	-	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 7008-181 2σ prep error 5.0 % Reference Lab Notebook 7008 pg. 181																
B12MH8	R109170-01			0.17	0.500			96		113			59	11/17/01	11/19	SS-031
B12MH9	R109170-02			0.29	0.500			60		105			57	11/17/01	11/17	SS-031
B12MJ0	R109170-03			0.35	0.500			50		105			57	11/17/01	11/17	SS-032
B12MJ1	R109170-04			0.23	0.500			65		113			55	11/17/01	11/19	SS-044
BLK (QC ID=40061)	R109170-06			0.20	0.500			78		113				11/17/01	11/19	SS-047
LCS (QC ID=40060)	R109170-05			0.28	0.500			54		112				11/17/01	11/19	SS-045
Duplicate (R109170-01) (QC ID=40062)	R109170-07			0.24	0.500			66		113			59	11/17/01	11/19	SS-048
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 7 SAMPLES
MDA 0.25 ± 0.12
YIELD 67 ± 31

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

Test TH Matrix SOLID
SDG 7094
Contact Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1519

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 7008-181							
B12MH8	R109170-01			7094-001	U	U	0.439 J
B12MH9	R109170-02			7094-002	0.731	U	0.773 J
B12MJ0	R109170-03			7094-003	0.701	U	0.411 J
B12MJ1	R109170-04			7094-004	0.446	U	0.357 J
BLK (QC ID=40061)	R109170-06			7094-006	U	U	U
LCS (QC ID=40060)	R109170-05			7094-005		ok	
Duplicate (R109170-01)	R109170-07			7094-007	- U	- 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 7008-181 2σ prep error 5.0 % Reference Lab Notebook 7008 pg. 181																
B12MH8	R109170-01			0.56	0.250			65		262			53	11/05/01	11/13	SS-021
B12MH9	R109170-02			0.44	0.250			79		163			47	11/05/01	11/07	SS-024
B12MJ0	R109170-03			0.46	0.250			95		263			53	11/05/01	11/13	SS-022
B12MJ1	R109170-04			0.36	0.250			73		941			48	11/05/01	11/12	SS-022
BLK (QC ID=40061)	R109170-06			0.47	0.250			73		263				11/05/01	11/13	SS-024
LCS (QC ID=40060)	R109170-05			0.34	0.250			77		617				11/05/01	11/07	SS-024
Duplicate (R109170-01) (QC ID=40062)	R109170-07			0.33	0.250			84		163			48	11/05/01	11/08	SS-024
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 7 SAMPLES
MDA 0.42 ± 0.17
YIELD 78 ± 19

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

Test U Matrix SOLID
SDG 7094
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1519

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 7008-181											
B12MH8	R109170-01			7094-001	0.928 J	U	0.943 J	98	37	0	4
B12MH9	R109170-02			7094-002	1.04	U	0.812 J	128	57	3	11
B12MJ0	R109170-03			7094-003	0.425 J	U	0.503 J	84	51	9	10
B12MJ1	R109170-04			7094-004	0.440 J	U	0.500 J	88	53	0	10
BLK (QC ID=40061)	R109170-06			7094-006	U	U	U				
LCS (QC ID=40060)	R109170-05			7094-005	ok	ok	ok				
Duplicate (R109170-01)	R109170-07			7094-007	ok J	- U	ok	77	35	3	5
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
200-TW-1 & 2 - Soil Sampling							Averages	95		3	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7008-181	2σ prep error 5.0 %	Reference Lab Notebook 7008 pg. 181														
B12MH8	R109170-01			0.14	0.500			92		158			47	11/07/01	11/07	SS-050
B12MH9	R109170-02			0.18	0.500			99		163			47	11/07/01	11/07	SS-021
B12MJ0	R109170-03			0.18	0.500			101		116			47	11/07/01	11/07	SS-050
B12MJ1	R109170-04			0.19	0.500			103		116			43	11/07/01	11/07	SS-049
BLK (QC ID=40061)	R109170-06			0.20	0.500			89		162				11/07/01	11/08	SS-021
LCS (QC ID=40060)	R109170-05			0.88	0.500			91		153				11/07/01	11/07	SS-021
Duplicate (R109170-01) (QC ID=40062)	R109170-07			0.20	0.500			93		111			48	11/07/01	11/08	SS-033
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

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

AVERAGES ± 2 SD FOR 7 SAMPLES				
MDA	0.28	±	0.53
YIELD	95	±	11

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

Test SR Matrix SOLID
SDG 7094
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1519

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 7008-181						
B12MH8	R109170-01			7094-001	U	
B12MH9	R109170-02			7094-002	U	
B12MJ0	R109170-03			7094-003	U	
B12MJ1	R109170-04			7094-004	U	
BLK (QC ID=40061)	R109170-06			7094-006	U	
LCS (QC ID=40060)	R109170-05			7094-005	ok	
Duplicate (R109170-01)	R109170-07			7094-007	-	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 7008-181 2σ prep error 10.0 % Reference Lab Notebook 7008 pg. 181																
B12MH8	R109170-01			0.26	1.00			89		100			45	11/05/01	11/05	GRB-218
B12MH9	R109170-02			0.28	1.00			87		100			45	11/05/01	11/05	GRB-219
B12MJ0	R109170-03			0.27	1.00			86		100			45	11/05/01	11/05	GRB-220
B12MJ1	R109170-04			0.27	1.00			88		100			41	11/05/01	11/05	GRB-221
BLK (QC ID=40061)	R109170-06			0.30	1.00			82		100				11/05/01	11/05	GRB-223
LCS (QC ID=40060)	R109170-05			0.28	1.00			82		100				11/05/01	11/05	GRB-231
Duplicate (R109170-01) (QC ID=40062)	R109170-07			0.27	1.00			87		100			45	11/05/01	11/05	GRB-224
Nominal values and limits from method				1.0	1.00			30-105		100			180			

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

AVERAGES ± 2 SD FOR 7 SAMPLES				
	MDA	0.28	±	0.025
	YIELD	86	±	6

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

Test TC Matrix SOLID
SDG 7094
Contact Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1519

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 7008-181						
B12MH8	R109170-01			7094-001	U	
B12MH9	R109170-02			7094-002	U	
B12MJ0	R109170-03			7094-003	U	
B12MJ1	R109170-04			7094-004	U	
BLK (QC ID=40061)	R109170-06			7094-006	U	
LCS (QC ID=40060)	R109170-05			7094-005	ok	
Duplicate (R109170-01)	R109170-07			7094-007	-	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 7008-181 2σ prep error 10.0 % Reference Lab Notebook 7008 pg. 181																
B12MH8	R109170-01			0.66	1.00			77		50			66	11/20/01	11/26	GRB-222
B12MH9	R109170-02			0.57	1.04			86		50			64	11/20/01	11/24	GRB-203
B12MJ0	R109170-03			0.58	1.04			85		50			66	11/20/01	11/26	GRB-224
B12MJ1	R109170-04			1.0	1.02			50		50			60	11/20/01	11/24	GRB-205
BLK (QC ID=40061)	R109170-06			0.36	1.00			96		100				11/20/01	11/27	GRB-222
LCS (QC ID=40060)	R109170-05			0.37	1.00			93		100				11/20/01	11/29	GRB-222
Duplicate (R109170-01) (QC ID=40062)	R109170-07			0.65	1.00			87		50			66	11/20/01	11/26	GRB-231
Nominal values and limits from method				15	1.00			20-105		50			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

Test TC	Matrix SOLID
SDG 7094	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H1519	

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	MDA	0.60	±	0.43
FOR 7 SAMPLES	YIELD	82	±	31

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

Test GAM Matrix SOLID
SDG 7094
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1519

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 7008-181								
B12MH8	R109170-01			7094-001	U		U	
B12MH9	R109170-02			7094-002	U		U	
B12MJ0	R109170-03			7094-003	U		U	
B12MJ1	R109170-04			7094-004	U		U	
BLK (QC ID=40061)	R109170-06			7094-006	U		U	
LCS (QC ID=40060)	R109170-05			7094-005	ok		ok	
Duplicate (R109170-01)	R109170-07			7094-007	-	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 7008-181	2σ prep error 15.0 % Reference Lab Notebook 7008 pg. 181															
B12MH8	R109170-01			0.016	883					944			52	11/12/01	11/12	02,01,00
B12MH9	R109170-02			0.010	829					944			52	11/12/01	11/12	MB,07,00
B12MJ0	R109170-03			0.018	840					944			52	11/12/01	11/12	02,03,00
B12MJ1	R109170-04			0.009	858					944			48	11/12/01	11/12	02,04,00
BLK (QC ID=40061)	R109170-06			0.007	829					209				11/12/01	11/13	01,04,00
LCS (QC ID=40060)	R109170-05			0.006	829					944				11/12/01	11/12	MB,05,00
Duplicate (R109170-01) (QC ID=40062)	R109170-07			0.026	883					218			54	11/12/01	11/14	MB,05,00
Nominal values and limits from method				0.050	829					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 7 SAMPLES
MDA 0.013 ± 0.014
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

Test U T Matrix SOLID
SDG 7094
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract No. 630
Contract SDG H1519

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium
Preparation batch 7008-181					
B12MH8	R109170-01			7094-001	2.39
B12MH9	R109170-02			7094-002	2.59
B12MJ0	R109170-03			7094-003	1.21
B12MJ1	R109170-04			7094-004	1.25
BLK (QC ID=40061)	R109170-06			7094-006	U
LCS (QC ID=40060)	R109170-05			7094-005	ok
Duplicate (R109170-01)	R109170-07			7094-007	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 7008-181 2σ prep error 9.0 % Reference Lab Notebook 7008 pg. 181																
B12MH8	R109170-01			0.026	0.100								61	11/21/01	11/21	KPA-001
B12MH9	R109170-02			0.026	0.100								61	11/21/01	11/21	KPA-001
B12MJ0	R109170-03			0.026	0.100								61	11/21/01	11/21	KPA-001
B12MJ1	R109170-04			0.026	0.100								57	11/21/01	11/21	KPA-001
BLK (QC ID=40061)	R109170-06			0.003	0.100									11/21/01	11/21	KPA-001
LCS (QC ID=40060)	R109170-05			0.026	0.100									11/21/01	11/21	KPA-001
Duplicate (R109170-01) (QC ID=40062)	R109170-07			0.026	0.100								61	11/21/01	11/21	KPA-001
Nominal values and limits from method				0.10	0.100								180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

Test U T	Matrix SOLID
SDG 7094	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

Client Hanford	
Contract No. 630	
Contract SDG H1519	

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

AVERAGES ± 2 SD	MDA	0.023	±	0.017
FOR 7 SAMPLES	YIELD		±	

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

Test C Matrix SOLID
SDG 7094
Contact Melissa C. Mannion

METHOD SUMMARY

CARBON 14 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1519

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Carbon 14	
Preparation batch 7008-181						
B12MH8	R109170-01			7094-001	U	
B12MH9	R109170-02			7094-002	U	
B12MJ0	R109170-03			7094-003	U	
B12MJ1	R109170-04			7094-004	U	
BLK (QC ID=40061)	R109170-06			7094-006	U	
LCS (QC ID=40060)	R109170-05			7094-005	ok	
Duplicate (R109170-01)	R109170-07			7094-007	-	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 7008-181	2σ prep error 10.0 % Reference Lab Notebook 7008 pg. 181															
B12MH8	R109170-01			3.7	0.257			100		100			41	10/31/01	11/01	LSC-004
B12MH9	R109170-02			3.9	0.239			100		100			41	10/31/01	11/01	LSC-004
B12MJ0	R109170-03			3.7	0.256			100		100			41	10/31/01	11/01	LSC-004
B12MJ1	R109170-04			4.0	0.240			100		100			37	10/31/01	11/01	LSC-004
BLK (QC ID=40061)	R109170-06			4.7	0.200			100		100				10/31/01	11/01	LSC-004
LCS (QC ID=40060)	R109170-05			30	0.200			100		3				10/31/01	11/01	LSC-004
Duplicate (R109170-01) (QC ID=40062)	R109170-07			3.9	0.247			100		100			41	10/31/01	11/01	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 7 SAMPLES
MDA 7.7 ± 20
YIELD 100 ± 0

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

Test H	Matrix SOLID
SDG 7094	
Contact Melissa C. Mannion	

METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H1519	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 7008-181						
B12MH8	R109170-01			7094-001	0.288	J
B12MH9	R109170-02			7094-002	0.313	J
B12MJ0	R109170-03			7094-003	0.308	J
B12MJ1	R109170-04			7094-004	0.221	J
BLK (QC ID=40061)	R109170-06			7094-006	U	
LCS (QC ID=40060)	R109170-05			7094-005	ok	J
Duplicate (R109170-01)	R109170-07			7094-007	ok	J
Spike (R109170-01)	R109170-08			7094-008	ok	J

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 7008-181	2σ prep error 10.0 % Reference Lab Notebook 7008 pg. 181															
B12MH8	R109170-01			0.075	20.3			100		120			47	11/06/01	11/07	LSC-007
B12MH9	R109170-02			0.078	20.3			97		120			47	11/06/01	11/07	LSC-007
B12MJ0	R109170-03			0.071	20.9			99		120			47	11/06/01	11/07	LSC-007
B12MJ1	R109170-04			0.071	21.2			99		120			43	11/06/01	11/07	LSC-007
BLK (QC ID=40061)	R109170-06			0.23	20.0			33		120				11/06/01	11/07	LSC-007
LCS (QC ID=40060)	R109170-05			0.22	20.0			33		120				11/06/01	11/07	LSC-007
Duplicate (R109170-01) (QC ID=40062)	R109170-07			0.076	20.4			98		120			47	11/06/01	11/07	LSC-007
Spike (R109170-01) (QC ID=40063)	R109170-08			0.10	20.1			100		72			47	11/06/01	11/07	LSC-007
Nominal values and limits from method				400	20.0					25			180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

Test H	Matrix SOLID
SDG 7094	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H1519	

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	MDA	0.12	±	0.14
FOR 8 SAMPLES	YIELD	82	±	61

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/10/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1519

Test NI_L Matrix SOLID
SDG 7094
Contact Melissa C. Mannion

METHOD SUMMARY

NICKEL 63 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1519

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 7008-181						
B12MH8	R109170-01			7094-001	U	
B12MH9	R109170-02			7094-002	U	
B12MJ0	R109170-03			7094-003	U	
B12MJ1	R109170-04			7094-004	U	
BLK (QC ID=40061)	R109170-06			7094-006	U	
LCS (QC ID=40060)	R109170-05			7094-005	ok	
Duplicate (R109170-01)	R109170-07			7094-007	-	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 7008-181 2σ prep error 10.0 % Reference Lab Notebook 7008 pg. 181																
B12MH8	R109170-01			2.3	0.500			88		100			45	11/03/01	11/05	LSC-004
B12MH9	R109170-02			2.4	0.500			87		100			45	11/03/01	11/05	LSC-004
B12MJ0	R109170-03			2.5	0.500			84		100			45	11/03/01	11/05	LSC-004
B12MJ1	R109170-04			2.3	0.500			89		100			41	11/03/01	11/05	LSC-004
BLK (QC ID=40061)	R109170-06			2.2	0.500			93		100				11/03/01	11/05	LSC-004
LCS (QC ID=40060)	R109170-05			2.7	0.500			95		66				11/03/01	11/05	LSC-004
Duplicate (R109170-01) (QC ID=40062)	R109170-07			2.3	0.500			89		100			45	11/03/01	11/05	LSC-004
Nominal values and limits from method				30	0.500			30-105		50			180			

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

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 2.4 ± 0.34
YIELD 89 ± 7

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/10/01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-058-228	Page 1 of 1
Collector: Thomas G./Watson D. / Fa Hilberg	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: B-7A/200 E H1519 (7094)		SAF No.: B01-058	Air Quality ☐
Ice Chest No.: See OSRC	Field Logbook No.: EL-1518-1	COA: B20TW2674C	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA JSW 09/18/01	Offsite Property No.: A010384		Bill of Lading/Air Bill No.: SEE OSRC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 9/21/01. Collector not available to relinquish samples on 9/26/01 for shipment. RT 9.26.01

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	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL			
SAMPLE ANALYSIS	Chromium Hex - 7196 JSW 09/15/01	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.			

TIE TO

Sample No.	Matrix *	Sample Date	Sample Time								
✓ B12MH8	SOIL	9-21-01	1205						X	B12MK6	
✓ B12MH9	Soil	9-21-01	1205						X	B12MK6	
✓ B12MT0	Soil	9-21-01	1440						X	B12MK5	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fellb / R Fellberg	9.21.01 1630	Ref 1A	9.21.01 1630
Ref 1A 3728	9.26.01 0700	R. Thore	9.26.01 0700
R Thore ERC	9.26.01 0700		9-26-01
Fed Ex	9-27-01 9:32	JR Corso	9-27-01 9:32

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

JSW 09/18/01

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

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

BHI-EE-011 (10/99)

From: Melissa Mannion

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-231	Page 1 of 1
Collector: Thomas G./Watson D. / Fahlberg	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: B-7A/200 E — H1519 (7094)	SAF No.: B01-058	Air Quality ☐
Ice Chest No.: SEE OSPC	Field Logbook No.: EL-1518-1 — COA: B20TW2674C	Method of Shipment: Fed EX	
Shipped To: TMA/~~REGRA~~ DJW 08/15/01	Offsite Property No.: A010384	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 1C at the 3728
Shipping Facility on 9 125 01.
Collector not available to relinquish samples on 9 126 01 for shipment..
RT 9-26-01

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	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL				
SAMPLE ANALYSIS	Chromium Hex - 7196 DJW 08/15/01	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	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								
h B12MJ1	SOIL	9-25-01	0945						x		B12MK6

TIE TO

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg / R. Fahlberg	1600 9 25 01	Ref 1C	1100 9.25.01
Ref 1C 3728	0700 9.26.01	R. Thorne	0700 9.26.01
R. L. Thorne ERC	0700 9.26.01	HEDEN	9-26-01
Fed Ex	9-27-01 9:30	Deborah J Blavou	9:30 9-27-01

SPECIAL INSTRUCTIONS

(1) ~~ICP Metals - 6010A (TAL) (Cadmium, Chromium, Copper, Nickel, Silver); ICP Metals - 6010A (Add-on) (Lead)~~
(2) ~~IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045~~
(3) ~~Semi-VOA - 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D~~
(4) ~~Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 – Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium~~

Activity < D-

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

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

BHI-EE-011 (10/99)

ThermoRetec
Richmond Laboratory

Analytical Services

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Date/Time received 9-27-01 9:30

CoC No. B01-058-72, B01-058-228, B01-058-231

Container I.D. No. _____ Requested TAT (Days) 45 P.O. Received Yes [ ] No [✓]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 5
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: _____
13. Was P.M. notified of any anomalies? Yes [✓] No [ ] Date 9-27-01
14. Received by [signature] Date: 9-27-01 Time: 9:30

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

LvLI
LIONVILLE LABORATORY INC.

30 October 2001

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

Subject: Contract No. 630
Analytical Data Package

Dear Ms. Kessner:

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

LvLI Batch #	0109L949
SDG #	H1519
SAF #	B01-058
Date Received	9-27-01
# Samples	4
Matrix	Soil
Volatiles	X
Semivolatiles	X
Pest/PCB	
DRO/GRO	X
GC Scan	
Metals	X
Inorganics	X

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

Sincerely,
Lionville Laboratory Incorporated

Orlette S. Johnson
Project Manager

NOV 2001
RECEIVED

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

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

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-058
LVL #: 0109L949
SDG/SAF #: H1519/B01-058

W.O. #: 11343-606-001-9999-00
Date Received: 09-27-2001

GC/MS VOLATILE

Four (4) soil samples were collected on 09-21,25-2001.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260B for TCL Volatile target compounds on 10-04-2001.

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

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

2. Samples were analyzed within required holding time.

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

4. 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."

J. Michael Taylor
President
Lionville Laboratory Incorporated

10/23/01
Date

som\group\data\voa\tnu-hanford\0109-949.doc

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

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

GLOSSARY OF VOA DATA

ABBREVIATIONS

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

VLI
LIONVILLE LABORATORY INC.

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
JACKSONVILLE LABORATORY INC.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

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

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

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

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

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

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

Lionville Laboratory, Inc.

Volatiles by GC/MS, HSL List

Report Date: 10/13/01 09:30

RFW Batch Number: **0109L949** Client: **TNUHANFORD B01-058 H1519** Work Order: 11343606001 Page: 1a

	Cust ID:	B12MJ1		B12MH8		B12MH8		B12MH8		B12MH9		B12MJ0	
Sample Information	RFW#:	001		002		002 MS		002 MSD		003		004	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.06		1.06		1.19		1.11		0.926		1.09	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	103	%	100	%	88	%	98	%	99	%	102	%
	Bromofluorobenzene	79	%	83	%	76	%	87	%	85	%	86	%
	1,2-Dichloroethane-d4	70	%	76	%	68	%	76	%	74	%	78	%
			fl		fl		fl		fl		fl		fl
Chloromethane		11	U	11	U	12	U	12	U	10	U	11	U
Bromomethane		11	U	11	U	12	U	12	U	10	U	11	U
Vinyl Chloride		11	U	11	U	12	U	12	U	10	U	11	U
Chloroethane		11	U	11	U	12	U	12	U	10	U	11	U
Methylene Chloride		15	B	16	B	15	B	15	B	14	B	17	B
Acetone		8	J	5	J	10	J	9	J	4	J	5	J
Carbon Disulfide		6	U	6	U	6	U	6	U	5	U	6	U
1,1-Dichloroethene		6	U	6	U	87	%	88	%	5	U	6	U
1,1-Dichloroethane		6	U	6	U	6	U	6	U	5	U	6	U
1,2-Dichloroethene (total)		6	U	6	U	6	U	6	U	5	U	6	U
Chloroform		6	U	6	U	6	U	6	U	5	U	6	U
1,2-Dichloroethane		6	U	6	U	6	U	6	U	5	U	6	U
2-Butanone		11	U	11	U	12	U	12	U	10	U	11	U
1,1,1-Trichloroethane		6	U	6	U	6	U	6	U	5	U	6	U
Carbon Tetrachloride		6	U	6	U	6	U	6	U	5	U	6	U
Bromodichloromethane		6	U	6	U	6	U	6	U	5	U	6	U
1,2-Dichloropropane		6	U	6	U	6	U	6	U	5	U	6	U
cis-1,3-Dichloropropene		6	U	6	U	6	U	6	U	5	U	6	U
Trichloroethene		6	U	6	U	86	%	91	%	5	U	6	U
Dibromochloromethane		6	U	6	U	6	U	6	U	5	U	6	U
1,1,2-Trichloroethane		6	U	6	U	6	U	6	U	5	U	6	U
Benzene		6	U	6	U	88	%	94	%	5	U	6	U
Trans-1,3-Dichloropropene		6	U	6	U	6	U	6	U	5	U	6	U
Bromoform		6	U	6	U	6	U	6	U	5	U	6	U
4-Methyl-2-pentanone		11	U	11	U	12	U	12	U	10	U	11	U
2-Hexanone		11	U	11	U	12	U	12	U	10	U	11	U
Tetrachloroethene		6	U	6	U	6	U	6	U	5	U	6	U
1,1,2,2-Tetrachloroethane		6	U	6	U	6	U	6	U	5	U	6	U
Toluene		6	U	6	U	95	%	99	%	5	U	6	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0109L949** Client: **TNUHANFORD B01-058 H1519** Work Order: 11343606001 Page: 1b

Cust ID:	B12MJ1	B12MH8	B12MH8	B12MH8	B12MH9	B12MJ0
RFW#:	001	002	002 MS	002 MSD	003	004
Chlorobenzene	6 U	6 U	92 %	96 %	5 U	6 U
Ethylbenzene	6 U	6 U	6 U	6 U	5 U	6 U
Styrene	6 U	6 U	6 U	6 U	5 U	6 U
Xylene (total)	6 U	6 U	6 U	6 U	5 U	6 U

*= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.
Volatiles by GC/MS, HSL List
Report Date: 10/13/01 09:30

RFW Batch Number: **0109L949** Client: ***TNUHANFORD B01-058 H1519*** Work Order: 11343606001 Page: 2a

	Cust ID:	**VBLKRL**		**VBLKRL BS**	
Sample Information	RFW#:	**01LVH418-MB1**		**01LVH418-MB1**	
	Matrix:	SOIL		SOIL	
	D.F.:	1.00		1.00	
	Units:	ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	94	%	94	%
	Bromofluorobenzene	79	%	81	%
	1,2-Dichloroethane-d4	78	%	77	%
Chloromethane		10	U	10	U
Bromomethane		10	U	10	U
Vinyl Chloride		10	U	10	U
Chloroethane		10	U	10	U
Methylene Chloride		11		11	B
Acetone		10	U	10	U
Carbon Disulfide		5	U	5	U
1,1-Dichloroethene		5	U	85	%
1,1-Dichloroethane		5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U
Chloroform		5	U	5	U
1,2-Dichloroethane		5	U	5	U
2-Butanone		10	U	10	U
1,1,1-Trichloroethane		5	U	5	U
Carbon Tetrachloride		5	U	5	U
Bromodichloromethane		5	U	5	U
1,2-Dichloropropane		5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U
Trichloroethene		5	U	86	%
Dibromochloromethane		5	U	5	U
1,1,2-Trichloroethane		5	U	5	U
Benzene		5	U	89	%
Trans-1,3-Dichloropropene		5	U	5	U
Bromoform		5	U	5	U
4-Methyl-2-pentanone		10	U	10	U
2-Hexanone		10	U	10	U
Tetrachloroethene		5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U
Toluene		5	U	95	%

*= Outside of EPA CLP QC limits.

Cust ID:	VBLKRL		VBLKRL BS	
RFW#:	01LVH418-MB1		01LVH418-MB1	
Chlorobenzene	5	U	92	%
Ethylbenzene	5	U	5	U
Styrene	5	U	5	U
Xylene (total)	5	U	5	U

*= Outside of EPA CLP QC limits.

Lionville Laboratory Use Only

01091949

Custody Transfer Record/Lab Work Request

Page 1 of 1

BNA Lynn Metals Nicki

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client: TNU Hanford B01-058

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30

Date Rec'd: 9-27-01 Date Due: 10-27-01

		A	B			B			C		D	E	F			
Refrigerator #																
#/Type Container	Liquid															
	Solid	1Aq	1Aq			1			1Aq		1Aq	1Aq	1Aq			
Volume	Liquid															
	Solid	120	500			1			500		60	120	1L			
Preservatives		—	—						—		—	—	—			
ANALYSES REQUESTED		ORGANIC							INORG							
		TCL VOA	BNA (5)	Pest/ PCB	Herb				TCP Metal (1)	CN	Hex Chrome	Merc.	TCC (2) Anions			
Lionville Laboratory Use Only		0624H	0625X			ODRO			MET		ICPL	MHG TO	INORG (1)			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625X			ODRO			MET		ICPL	MHG TO	INORG (1)			
S - Soil	001	B12MJ1			S	9/25/01	0945	X	X			X			X		X	X	X			
SE - Sediment	002	B12MH8				9/26/01	1205	X	X			X			X		X	X	X			
SO - Solid	003	B12MH9						X	X			X			X		X	X	X			
SL - Sludge	004	B12MJ0					1440	X	X			X			X		X	X	X			
W - Water																						
O - Oil																						
A - Air																						
DS - Drum Solids																						
DL - Drum Liquids																						
L - EP/TCLP Leachate																						
WI - Wipe																						
X - Other																						
F - Fish																						

Special Instructions:

Run Matrix QC

SAF # B01-058

DATE/REVISIONS:

MET	1.	Cd, Cr, Cu, Ni, Ag, Pb
INORG (1)	2.	ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4,
	3.	INH3N, IN3N2, ICNTO, IOCT, IPH
9-28-01	4.	Add ODRO
	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. 3.6 °C

Relinquished by	Received by	Date	Time
[signature]	[signature]	9/27/01	09:00

Relinquished	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7954 7620 / 3.9° 4235 7954 7630

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-231	Page 1 of 1

Collector: Thomas G./Watson D. Fahlberg	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E	SAF No.: B01-058	
Ice Chest No.: SEE OSPC	Field Logbook No.: EL-1518-1	COA: B20TW2674C	Method of Shipment: Fed EX
Shipped To: TMA/RECRA DSW 08/14/01	Offsite Property No.: A010440	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 1C at the 3728 Shipping Facility on 9/25/01.
Collector not available to relinquish samples on 9/26/01 for shipment.
RT 9.26.01

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	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL			
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	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										
B12MJ1 / SOIL / 9.25.01 / 0945	X	X	X	X	X	X				

Tie To B12MJ1 B12MK6

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By/Removed From: R. Fahlberg / R. Fahlberg — Date/Time: 1600 9.25.01	Received By/Stored In: R. F 1-C — Date/Time: 1600 9.25.01
Relinquished By/Removed From: R. F 1C 3728 — Date/Time: 0700 9.26.01	Received By/Stored In: R. Thorson — Date/Time: 0700 9.26.01
Relinquished By/Removed From: R. Thorson ERC — Date/Time: 0700 9.26.01	Received By/Stored In: FEDEX — Date/Time:
Relinquished By/Removed From: FEDEX — Date/Time: 9.27.01 09:00	Received By/Stored In: D. Smith — Date/Time: 9.27.01 09:00
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {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~~

Activity < D.

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-228	Page 1 of 1

Collector: Thomas G./Watson D. / Fahlberg	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E	SAF No.: B01-058	
Ice Chest No.: SEE OSPC	Field Logbook No.: EL-1518-1	COA: B20TW2674C	Method of Shipment: Fed EX
Shipped To: ~~TMA~~/RECRA DSW 09/15/01	Offsite Property No.: A010440	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 7A at the 3728 Shipping Facility on 9/21/01. Collector not available to relinquish samples on 9/26/01 for shipment. RT 9.26.01

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	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL				
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions. DSW 09/15/01		TIE TO		
Sample No.	Matrix *	Sample Date	Sample Time								
B12MH8	SOIL	9.21.01	1205	X	X	X	X	X	X	B12MK6	
B12MH9	soil	9.21.01	1205	X	X	X	X	X	X	B12MK6	
B12MJ0	soil	9.21.01	1440	X	X	X	X	X	X	B12MK5	

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: R. Fahlberg / R. Fahlberg	9.21.01 1630	Received By/Stored In: Ref RT 9.21.01 / 1.A	9.21.01
Relinquished By/Removed From: Ref 1A 3728	9.26.01 0700	Received By/Stored In: R. Thor	9.26.01 0700
Relinquished By/Removed From: R. Thor ERC	9.26.01 0700	Received By/Stored In: FEDEX	
Relinquished By/Removed From: FEDEX	9.27.01 09:00	Received By/Stored In: [illegible]	9.27.01 09:00
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~~ DSW 09/15/01

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

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

BHI-EE-011 (10/99)

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-058
LVL #: 0109L949
SDG/SAF #: H1519/B01-058

W.O. #: 11343-606-001-9999-00
Date Received: 09-27-2001

SEMIVOLATILE

Four (4) soil samples were collected on 09-21,25-2001.

The samples and their associated QC samples were extracted on 09-28-2001 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for TCL and Tributylphosphate Semivolatile target compounds on 10-02-2001.

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

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

J. Michael Taylor
President
Lionville Laboratory Incorporated

10/23/01
Date

som\gorup\data\bna\tnu-hanford-0109-949.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 8 pages.

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

GLOSSARY OF BNA DATA

DATA QUALIFIERS

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

GLOSSARY OF BNA DATA

ABBREVIATIONS

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

TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

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

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

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

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

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

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

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List — Report Date: 10/18/01 14:21

RFW Batch Number: 0109L949 — Client: TNUHANFORD B01-058 H1519 — Work Order: 11343606001 — Page: 1a

	Cust ID:	B12MJ1	B12MH8	B12MH9	B12MJ0	B12MJ0	B12MJ0
Sample Information	RFW#:	001	002	003	004	004 MS	004 MSD
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	91 %	80 %	95 %	98 %	86 %	95 %
	2-Fluorobiphenyl	92 %	81 %	94 %	96 %	84 %	92 %
	p-Terphenyl-d14	119 %	101 %	116 %	118 %	107 %	113 %
	Phenol-d5	85 %	78 %	85 %	88 %	79 %	93 %
	2-Fluorophenol	87 %	78 %	90 %	96 %	79 %	90 %
	2,4,6-Tribromophenol	68 %	66 %	81 %	78 %	76 %	81 %
		fl	fl	fl	fl	fl	fl
Phenol		340 U	350 U	350 U	340 U	72 %	83 %
bis(2-Chloroethyl)ether		340 U	350 U	350 U	340 U	340 U	340 U
2-Chlorophenol		340 U	350 U	350 U	340 U	75 %	86 %
1,3-Dichlorobenzene		340 U	350 U	350 U	340 U	340 U	340 U
1,4-Dichlorobenzene		340 U	350 U	350 U	340 U	69 %	78 %
1,2-Dichlorobenzene		340 U	350 U	350 U	340 U	340 U	340 U
2-Methylphenol		340 U	350 U	350 U	340 U	340 U	340 U
2,2'-oxybis(1-Chloropropane)		340 U	350 U	350 U	340 U	340 U	340 U
4-Methylphenol		340 U	350 U	350 U	340 U	340 U	340 U
N-Nitroso-Di-n-propylamine		340 U	350 U	350 U	340 U	80 %	105 %
Hexachloroethane		340 U	350 U	350 U	340 U	340 U	340 U
Nitrobenzene		340 U	350 U	350 U	340 U	340 U	340 U
Isophorone		340 U	350 U	350 U	340 U	340 U	340 U
2-Nitrophenol		340 U	350 U	350 U	340 U	340 U	340 U
2,4-Dimethylphenol		340 U	350 U	350 U	340 U	340 U	340 U
bis(2-Chloroethoxy)methane		340 U	350 U	350 U	340 U	340 U	340 U
2,4-Dichlorophenol		340 U	350 U	350 U	340 U	340 U	340 U
1,2,4-Trichlorobenzene		340 U	350 U	350 U	340 U	74 %	77 %
Naphthalene		340 U	350 U	350 U	340 U	340 U	340 U
4-Chloroaniline		340 U	350 U	350 U	340 U	340 U	340 U
Hexachlorobutadiene		340 U	350 U	350 U	340 U	340 U	340 U
4-Chloro-3-methylphenol		340 U	350 U	350 U	340 U	76 %	85 %
2-Methylnaphthalene		340 U	350 U	350 U	340 U	340 U	340 U
Hexachlorocyclopentadiene		340 U	350 U	350 U	340 U	340 U	340 U
2,4,6-Trichlorophenol		340 U	350 U	350 U	340 U	340 U	340 U
2,4,5-Trichlorophenol		850 U	860 U	860 U	840 U	840 U	840 U

*= Outside of EPA CLP QC limits.

Cust ID:	B12MJ1		B12MH8		B12MH9		B12MJ0		B12MJ0		B12MJ0	
RFW#:	001		002		003		004		004 MS		004 MSD	
2-Chloronaphthalene	340	U	350	U	350	U	340	U	340	U	340	U
2-Nitroaniline	850	U	860	U	860	U	840	U	840	U	840	U
Dimethylphthalate	340	U	350	U	350	U	340	U	340	U	340	U
Acenaphthylene	340	U	350	U	350	U	340	U	340	U	340	U
2,6-Dinitrotoluene	340	U	350	U	350	U	340	U	340	U	340	U
3-Nitroaniline	850	U	860	U	860	U	840	U	840	U	840	U
Acenaphthene	340	U	350	U	350	U	340	U	81	%	88	%
2,4-Dinitrophenol	850	U	860	U	860	U	840	U	840	U	840	U
4-Nitrophenol	850	U	860	U	860	U	840	U	80	%	83	%
Dibenzofuran	340	U	350	U	350	U	340	U	340	U	340	U
2,4-Dinitrotoluene	340	U	350	U	350	U	340	U	77	%	83	%
Diethylphthalate	340	U	350	U	350	U	340	U	340	U	340	U
4-Chlorophenyl-phenylether	340	U	350	U	350	U	340	U	340	U	340	U
Fluorene	340	U	350	U	350	U	340	U	340	U	340	U
4-Nitroaniline	850	U	860	U	860	U	840	U	840	U	840	U
4,6-Dinitro-2-methylphenol	850	U	860	U	860	U	840	U	840	U	840	U
N-Nitrosodiphenylamine (1)	340	U	350	U	350	U	340	U	340	U	340	U
4-Bromophenyl-phenylether	340	U	350	U	350	U	340	U	340	U	340	U
Hexachlorobenzene	340	U	350	U	350	U	340	U	340	U	340	U
Pentachlorophenol	850	U	860	U	860	U	840	U	89	%	96	%
Phenanthrene	340	U	350	U	350	U	340	U	340	U	340	U
Anthracene	340	U	350	U	350	U	340	U	340	U	340	U
Carbazole	340	U	350	U	350	U	340	U	340	U	340	U
Di-n-Butylphthalate	340	U	350	U	350	U	340	U	340	U	340	U
Fluoranthene	340	U	350	U	350	U	340	U	340	U	340	U
Pyrene	340	U	350	U	350	U	340	U	95	%	103	%
Butylbenzylphthalate	340	U	350	U	350	U	340	U	340	U	340	U
3,3'-Dichlorobenzidine	340	U	350	U	350	U	340	U	340	U	340	U
Benzo(a)anthracene	340	U	350	U	350	U	340	U	340	U	340	U
Chrysene	340	U	350	U	350	U	340	U	340	U	340	U
bis(2-Ethylhexyl)phthalate	340	U	350	U	350	U	340	U	340	U	340	U
Di-n-Octyl phthalate	340	U	350	U	350	U	340	U	340	U	340	U
Benzo(b)fluoranthene	340	U	350	U	350	U	340	U	340	U	340	U
Benzo(k)fluoranthene	340	U	350	U	350	U	340	U	340	U	340	U
Benzo(a)pyrene	340	U	350	U	350	U	340	U	340	U	340	U
Indeno(1,2,3-cd)pyrene	340	U	350	U	350	U	340	U	340	U	340	U
Dibenzo(a,h)anthracene	340	U	350	U	350	U	340	U	340	U	340	U
Benzo(g,h,i)perylene	340	U	350	U	350	U	340	U	340	U	340	U
Tributylphosphate	340	U	350	U	350	U	340	U	340	U	340	U

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

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List

Report Date: 10/18/01 14:21

RFW Batch Number: **0109L949** Client: **TNUHANFORD B01-058 H1519** Work Order: 11343606001 Page: 2a

	Cust ID:	**SBLKGT**		**SBLKGT BS**	
Sample Information	RFW#:	**01LE1155-MB1**		**01LE1155-MB1**	
	Matrix:	SOIL		SOIL	
	D.F.:	1.00		1.00	
	Units:	ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	87	%	105	%
	2-Fluorobiphenyl	86	%	107	%
	p-Terphenyl-d14	111	%	132	%
	Phenol-d5	85	%	98	%
	2-Fluorophenol	84	%	105	%
	2,4,6-Tribromophenol	66	%	90	%
Phenol		330	U	87	%
bis(2-Chloroethyl)ether		330	U	330	U
2-Chlorophenol		330	U	93	%
1,3-Dichlorobenzene		330	U	330	U
1,4-Dichlorobenzene		330	U	87	%
1,2-Dichlorobenzene		330	U	330	U
2-Methylphenol		330	U	330	U
2,2'-oxybis(1-Chloropropane)		330	U	330	U
4-Methylphenol		330	U	330	U
N-Nitroso-Di-n-propylamine		330	U	89	%
Hexachloroethane		330	U	330	U
Nitrobenzene		330	U	330	U
Isophorone		330	U	330	U
2-Nitrophenol		330	U	330	U
2,4-Dimethylphenol		330	U	330	U
bis(2-Chloroethoxy)methane		330	U	330	U
2,4-Dichlorophenol		330	U	330	U
1,2,4-Trichlorobenzene		330	U	90	%
Naphthalene		330	U	330	U
4-Chloroaniline		330	U	330	U
Hexachlorobutadiene		330	U	330	U
4-Chloro-3-methylphenol		330	U	88	%
2-Methylnaphthalene		330	U	330	U
Hexachlorocyclopentadiene		330	U	330	U
2,4,6-Trichlorophenol		330	U	330	U
2,4,5-Trichlorophenol		830	U	830	U

*= Outside of EPA CLP QC limits.

Cust ID:	SBLKGT		SBLKGT BS	
RFW#:	01LE1155-MB1		01LE1155-MB1	
2-Chloronaphthalene	330	U	330	U
2-Nitroaniline	830	U	830	U
Dimethylphthalate	330	U	330	U
Acenaphthylene	330	U	330	U
2,6-Dinitrotoluene	330	U	330	U
3-Nitroaniline	830	U	830	U
Acenaphthene	330	U	99	%
2,4-Dinitrophenol	830	U	830	U
4-Nitrophenol	830	U	90	%
Dibenzofuran	330	U	330	U
2,4-Dinitrotoluene	330	U	92 *	%
Diethylphthalate	330	U	330	U
4-Chlorophenyl-phenylether	330	U	330	U
Fluorene	330	U	330	U
4-Nitroaniline	830	U	830	U
4,6-Dinitro-2-methylphenol	830	U	830	U
N-Nitrosodiphenylamine (1)	330	U	330	U
4-Bromophenyl-phenylether	330	U	330	U
Hexachlorobenzene	330	U	330	U
Pentachlorophenol	830	U	98	%
Phenanthrene	330	U	330	U
Anthracene	330	U	330	U
Carbazole	330	U	330	U
Di-n-Butylphthalate	330	U	330	U
Fluoranthene	330	U	330	U
Pyrene	330	U	117	%
Butylbenzylphthalate	330	U	330	U
3,3'-Dichlorobenzidine	330	U	330	U
Benzo(a)anthracene	330	U	330	U
Chrysene	330	U	330	U
bis(2-Ethylhexyl)phthalate	330	U	330	U
Di-n-Octyl phthalate	330	U	330	U
Benzo(b)fluoranthene	330	U	330	U
Benzo(k)fluoranthene	330	U	330	U
Benzo(a)pyrene	330	U	330	U
Indeno(1,2,3-cd)pyrene	330	U	330	U
Dibenzo(a,h)anthracene	330	U	330	U
Benzo(g,h,i)perylene	330	U	330	U
Tributylphosphate	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.

B12MJ1

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

Client: TNUHANFORD B01-058 H1519

Matrix: (soil/water) SOIL

Lab Sample ID: 0109L949-001

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

Lab File ID: D100206

Level: (low/med) LOW

Date Received: 09/27/01

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

Date Extracted: 09/28/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 10/02/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.421	500	JB
2.	UNKNOWN	6.308	200	JB
3.	UNKNOWN	6.873	100	JB

10

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B12MH8

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

Client: TNUHANFORD B01-058 H1519

Matrix: (soil/water) SOIL

Lab Sample ID: 0109L949-002

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

Lab File ID: D100207

Level: (low/med) LOW

Date Received: 09/27/01

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

Date Extracted: 09/28/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 10/02/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.424	500	JB
2.	UNKNOWN	6.310	200	JB
3.	UNKNOWN	6.875	100	JB

11

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B12MH9

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

Client: TNUHANFORD B01-058 H1519

Matrix: (soil/water) SOIL

Lab Sample ID: 0109L949-003

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

Lab File ID: D100208

Level: (low/med) LOW

Date Received: 09/27/01

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

Date Extracted: 09/28/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 10/02/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.429	500	JB
2.	UNKNOWN	6.307	100	JB
3.	UNKNOWN	6.872	90	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B12MJ0

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

Client: TNUHANFORD B01-058 H1519

Matrix: (soil/water) SOIL

Lab Sample ID: 0109L949-004

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

Lab File ID: D100209

Level: (low/med) LOW

Date Received: 09/27/01

% Moisture: 1 decanted: (Y/N)__

Date Extracted: 09/28/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 10/02/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.431	500	JB
2.	UNKNOWN	6.309	90	JB
3.	UNKNOWN	6.874	70	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKGT

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

Client: TNUHANFORD B01-058 H1519

Matrix: (soil/water) SOIL

Lab Sample ID: 01LE1155-MB1

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

Lab File ID: D100204

Level: (low/med) LOW

Date Received: 09/28/01

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

Date Extracted: 09/28/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 10/02/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.429	600	J
2.	UNKNOWN	6.307	100	J
3.	UNKNOWN	6.872	100	J

14

Lionville Laboratory Use Only

01091949

Custody Transfer Record/Lab Work Request

Page 1 of 1

BNA Lynn Metals Nicki

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMU Hanford B01-058

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30

Date Rec'd: 9-27-01 Date Due: 10-27-01

		A	B			B			C		D	E	F			
Refrigerator #																
#/Type Container	Liquid															
	Solid	1Aq	1Aq			1			1Aq		1Aq	1Aq	1Aq			
Volume	Liquid															
	Solid	120	500			1			500		60	120	1L			
Preservatives		—	—						—		—	—	—			
ANALYSES REQUESTED		ORGANIC							INORG							
		TCL VOA	BNA (3)	Pest/PCB	Herb				ICP Metal (1)	CN	Hex Chrome	Merc.	IC (3) Anions			
		Lionville Laboratory Use Only														
		0624H	0625X			ODRO			MET		ICP6	MHG TO	INORG (1)			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625X			ODRO			MET		ICP6	MHG TO	INORG (1)			
S - Soil	001	B12MJ1			S	9/26/01	0945	X	X			X			X		X	X	X			
SE - Sediment	002	B12MH8				9/26/01	1005	X	X			X			X		X	X	X			
SO - Solid	003	B12MH9					1	X	X			X			X		X	X	X			
SL - Sludge	004	B12MJ0					1440	X	X			X			X		X	X	X			
W - Water																						
O - Oil																						
A - Air																						
DS - Drum Solids																						
DL - Drum Liquids																						
L - EP/TCLP Leachate																						
WI - Wipe																						
X - Other																						
F - Fish																						

Special Instructions:

Run Matrix QC

SAF # B01-058

DATE/REVISIONS:

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

INORG(1) 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4,

3. INH3N, IN3N2, ICNTO, IOCT, IPH

9-28-01 4. Add ODRO

5.

6.

Relinquished by	Received by	Date	Time
Alex Fox	D. Smith	9/27/01	09:00

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # ___ See Below

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

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

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

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

Cooler Temp. 3.6 °C

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

NOTES:

4235 7954 7620 / 3.9° 4235 7954 7630

7119142

Lionville Laboratory Use Only
01091949

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford B01-058
Est. Final Proj. Sampling Date:
Project #: 11343-606-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: SPEC Del: STD TAT: 30
Date Rec'd: 9-27-01 Date Due: 10-27-01

		A	B						C		D	E	F				
Refrigerator #																	
#/Type Container	Liquid																
	Solid	1Aq	1Aq						1Aq		1Aq	1Aq	1Aq				
Volume	Liquid																
	Solid	120	500						500		60	120	1L				
Preservatives		—	—						—		—	—	—				
ANALYSES REQUESTED →		ORGANIC							INORG								
		PCL VOA	BNA (3)	Pest/ PCB	Herb				ICP Metal (1)	CN	Hex Chrome	Merc.	IC (7) Anions				
		Lionville Laboratory Use Only															
		0624H	0625X						MET		ICR6	MHG70	INORG①				

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625X						MET		ICR6	MHG70	INORG①				
001	B12MJ1			S	9/25/01	0945	X	X						X		X	X	X				
002	B12MH8				9/21/01	1205	X	X						X		X	X	X				
003	B12MH9					↓	X	X						X		X	X	X				
004	B12MJ0			↓	↓	1440	X	X						X		X	X	X				

Special Instructions:
Run Matrix QC
SAF # B01-058

DATE/REVISIONS:
MET 1. Cd, Cr, Cu, Ni, Ag, Pb
INORG① 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4,
3. INH3N, IN3N2, ICNTO, IOCT, IPH
4.
5.
6.

Lionville Laboratory Use Only
Samples were:
1) Shipped ✓ or
Hand Delivered
Airbill #
See Below
2) Ambient or Chilled
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N
Tamper Resistant Seal was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 3.6 °C

Relinquished by	Received by	Date	Time
[signature]	[signature]	9/27/01	09:00

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7954 7630 / 3.9° 4235 7954 7630

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-231	Page 1 of 1

Collector: Thomas G./Watson D. Fahlberg	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E	SAF No.: B01-058	
Ice Chest No.: SEE OSPC	Field Logbook No.: EL-1518-1	COA: B20TW2674C	Method of Shipment: Fed EX
Shipped To: ~~TMA~~/RECRA 08/14/01	Offsite Property No.: A010440	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 1C at the 3728 Shipping Facility on 9/25/01. Collector not available to relinquish samples on 9/26/01 for shipment.
RT 9.26.01

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	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL			
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	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										
B12MJ1 / SOIL / 9.25.01 / 0945	X	X	X	X	X	X				

Tie To B12MK6

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg / R. Fahlberg	1600 9.25.01	R. F / 1-C	1600 9.25.01
R. Fahlberg / 1C 3728	0700 9.26.01	R. L. Thorne	0700 9.26.01
R. L. Thorne / ERC	0700 9.26.01	FEDEX	
FEDEX	9.27.01 / 09:00	D. Minton	9.27.01 / 09:00

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}
(2) IC Anions - 300.0 {Chloride, 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

Activity < D.

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-228	Page 1 of 1
Collector: Thomas G./Watson D. / Fahlberg	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: B-7A/200 E	SAF No.: B01-058	Air Quality ☐
Ice Chest No.: SEE OSPC	Field Logbook No.: EL-1518-1 — COA: B20TW2674C	Method of Shipment: Fed EX	
Shipped To: ~~TWA~~/RECRA DJW 09/15/01	Offsite Property No.: A010440	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 7A at the 3728 Shipping Facility on 9/21/01.
Collector not available to relinquish samples on 9/26/01 for shipment.
RT 9.26.01

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	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL			
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions. DJW 09/15/01			
Sample No. / Matrix* / Sample Date / Sample Time										
B12MH8 / SOIL / 9-21-01 / 1205	X	X	X	X	X	X		B12MK6		
B12MH9 / soil / 9-21-01 / 1205	X	X	X	X	X	X		B12MK6		
B12MJ0 / soil / 9-21-01 / 1440	X	X	X	X	X	X		B12MK5		

TIE TO

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: B. Fahlberg / B. Fahlberg	1630 9-21-01	Received By/Stored In: Ref 7A / 1-A	9-21-01
Relinquished By/Removed From: Ref 7A 3728	0700 9-26-01	Received By/Stored In: R. Thomas	0700 9-26-01
Relinquished By/Removed From: R. Rivera ERC	0700 9-26-01	Received By/Stored In: FEDEX	
Relinquished By/Removed From: FEDEX	9-27-01 09:00	Received By/Stored In: D. Hamer	9-27-01 09:00
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-230}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium~~

DJW 09/15/01

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

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

BHI-EE-011 (10/99)

LIONVILLE LABORATORY INC.

Analytical Report

Client: THU-HANFORD B01-058
LVL#: 0109L949
SDG/SAF#: H1519/B01-058

W.O #: 11343-606-001-9999-00
Date Received: 09-27-01

DIESEL RANGE ORGANICS

The set of samples consisted of four (4) soil samples collected on 09-21,25-01.

The samples and their associated QC samples were extracted on 10-03-01 and analyzed according to Lionville Laboratory OPs based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 10-05,06,09-01.

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

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

3. All surrogate recoveries were within acceptance criteria.

4. The blank spike was within acceptance criteria.

5. One (1) of two (2) matrix spikes was outside acceptance criteria. A copy of Sample Discrepancy Report (SDR) is enclosed.

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

7. All continuing calibration checks analyzed prior to samples were within acceptance criteria.

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

10/15/01
Date

R:\SHARE\GCPEST\narr temp\tnu949dro.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.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 0160435

Initiator: John Lach. Batch: 0109L949 Parameter: ODRO
Date: 10/9/01 Samples: 001 MSD. Matrix: Soil
Client: TNV Method: SW846/MCAWW/CLP/ Prep Batch: 01LE1186

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)

Sample 1 matrix spike duplicate. ~~Surrogate and~~ spike recovery below QC limits
10/9/01

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

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

Other Description:

Blank spike and matrix spike within limits
No hits in any samples in batch.

4. Project Manager Instructions...signature/date: 10/9/01

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

5. Final Action...signature/date: 10/10/01

Other Explanation:

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

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

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

GLOSSARY OF DIESEL RANGE ORGANICS DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF DIESEL RANGE ORGANICS DATA

D	=	This flag identifies all compounds identified in an analysis at a secondary dilution factor.
C	=	This flag applies to a compound that has been confirmed by GC/MS.

Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

Report Date: 10/09/01 08:48

RFW Batch Number: 0109L949 Client: TNU-HANFORD B01-058 Work Order: 11343606001 Page: 1

	Cust ID:	B12MJ1	B12MJ1	B12MJ1	B12MH8	B12MH9	B12MJ0
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
	p-Terphenyl	117 %	110 %	37 %	103 %	116 %	108 %
Diesel Range Organics		12.0 U	68 %	23 * %	12.0 U	12.0 U	12.0 U
Motor Oil		12.0 U	12.0 U	12.0 U	12.0 U	12.0 U	12.0 U

	Cust ID:	BLK	BLK BS
Sample Information	RFW#:	01LE1186-MB1	01LE1186-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	mg/kg	mg/kg
	p-Terphenyl	71 %	83 %
Diesel Range Organics		12.0 U	81 %
Motor Oil		12.0 U	12.0 U

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

Flyer 10/10/01

Lionville Laboratory Use Only

01091949

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMU Hanford B01-058

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30

Date Rec'd: 9-27-01 Date Due: 10-27-01

	A	B			B			C		D	E	F			
Refrigerator #															
#/Type Container – Liquid															
#/Type Container – Solid	1Ag	1Ag			1			1Ag		1Ag	1Ag	1Ag			
Volume – Liquid															
Volume – Solid	120	500			1			500		60	120	1L			
Preservatives	—	—						—		—	—	—			
ANALYSES REQUESTED	ORGANIC: TCL VOA	ORGANIC: BNA (3)	ORGANIC: Pest/PCB	ORGANIC: Herb				INORG: TCP Metal (7)	INORG: CN	Hex Chrome	Merc.	IC (2) Anions			
Lionville Laboratory Use Only	0624H	0625X			ODRO			MEL		ICRL	MHG TO	INORG ①			

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625X			ODRO			MEL		ICRL	MHG TO	INORG ①			
001	B1AMJ1			S	9/26/01	0945	X	X			X			X		X	X	X			
002	B1AMH8				9/26/01	1205	X	X			X			X		X	X	X			
003	B1AMH9						X	X			X			X		X	X	X			
004	B1AMJ0					1440	X	X			X			X		X	X	X			

Special Instructions:

Run Matrix QC

SAF # B01-058

DATE/REVISIONS:

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

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

3. INH3N, IN3N2, ICNTO, IOCT, IPH

9-28-01 4. Add ODRO

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. 3.6 °C

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

NOTES: 4235 7954 7620 / 3.9° 4235 7954 7630

Relinquished by	Received by	Date	Time
[signature]	[signature]	9/27/01	09:00

Relinquished by	Received by	Date	Time

COMPOSITE WASTE

ORIGINAL REWRITTEN

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-231	Page 1 of 1
Collector: Thomas G./Watson D. Fahlberg	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: B-7A/200 E	SAF No.: B01-058	Air Quality ☐
Ice Chest No.: SEE OSPC	Field Logbook No.: EL-1518-1 — COA: B20TW2674C	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA 03/14/01	Offsite Property No.: A010440	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 1C at the 3728 Shipping Facility on 9/25/01. Collector not available to relinquish samples on 9/26/01 for shipment. RT 9.26.01

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	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL				
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	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											
B12MJ1 / SOIL / 9.25.01 / 0945	X	X	X	X	X	X					

Tie to B12MJ1 ~~B12MJ6~~

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg / R. Fahlberg	1600 9.25.01	R. F / 1-C	1600 9.25.01
R. F / 1C 3728	0700 9.26.01	R. L. Thorne	0700 9.26.01
R. L. Thorne / ERC	0700 9.26.01	FEDEX	
FedEx	9.27.01 / 09:00	D. Minton	9.27.01 / 09:00

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~~ — 01/15/02

Activity < D.

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-228	Page 1 of 1

Collector: Thomas G./Watson D. / Fahlberg	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E	SAF No.: B01-058	
Ice Chest No.: SEE OSPC	Field Logbook No.: EL-1518-1	COA: B20TW2674C	Method of Shipment: Fed EX
Shipped To: ~~TMA~~/RECRA DSW 09/15/01	Offsite Property No.: A010440	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 7A at the 3728 Shipping Facility on 9/21/01. Collector not available to relinquish samples on 9/26/01 for shipment. RT 9.26.01

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	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL				
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions. DSW 09/15/01			TIE TO	
Sample No.	Matrix *	Sample Date	Sample Time								
B12MH8	SOIL	9-21-01	1205	X	X	X	X	X	X	B12MK6	
B12MH9	SOIL	9-21-01	1205	X	X	X	X	X	X	B12MK6	
B12MJ0	SOIL	9-21-01	1440	X	X	X	X	X	X	B12MK5	

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: R. Fahlberg / R. Fahlberg	1630 9-21-01	Received By/Stored In: Ref 7A / 1-A	9-21-01
Relinquished By/Removed From: R. Fahlberg / 7A 3728	0700 9-26-01	Received By/Stored In: R. Thomas	0700 9-26-01
Relinquished By/Removed From: R. Thomas / ERC	0700 9-26-01	Received By/Stored In: FEDEX	
Relinquished By/Removed From: FEDEX	9-27-01 / 09:00	Received By/Stored In: [illegible]	9-27-01 / 09:00
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-230}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 – Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium~~ DSW 09/15/01

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: 9.27.01 1 09:00

SDG#: _____

Work Order Number: _____ SAF# B01-058

Shipping Container ID: ELL 96-021 SML-510 ELL 96-018 ELL 99-030 B01-058-228 Chain of Custody # 1 1 231

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 4.2°C, 3.8°C, 3.6°C, 3.9°C
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 24
7. Sample holding times exceeded? Yes [ ] No [✓]

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

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

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

Sample Custodian/Laboratory: _____ Date: _____

Telephoned to: _____ On _____ By _____

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-058
LVL#: 0109L949
SDG/SAF#: H1519/B01-058

W.O.#: 11343-606-001-9999-00
Date Received: 09-27-01

METALS CASE NARRATIVE

1. This narrative covers the analyses of 4 soil samples.

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

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

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

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

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

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

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

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

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

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B12MJ1	Chromium	250	103.9

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.

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

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

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

10-25-01
Date

gmb/m09-949

LVLI
LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

'he following methods are used as reference for the digestion and analysis of samples contained within this
.ot#: 0109L949

.eaching Procedure: __1310 __1311 __1312 __Other:_____

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

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

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B		__200.7				__99
Antimony	__6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic 1422/n	✓6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	__6010B		__200.7				__99
Beryllium	__6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	✓6010B	__7211 [5]	__200.7	__220.2			__99
Iron	__6010B		__200.7				__99
Lead	__6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	__6010B		__200.7				__99
Manganese	__6010B		__200.7				__99
Mercury	__7470A [3]	✓7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	✓6010B		__200.7				__99
Potassium	__6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	__6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	✓6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	__6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	__6010B	__7841 [5]	__200.7	__279.2__200.9			__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	__6010B		__200.7				__99
Zinc	__6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

Q QUALIFIERS

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

M = Duplicate injection precision not met.

N = Spiked sample recovery not within control limits.

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

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

* = Duplicate analysis not within control limits.

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

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

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 10/24/01

CLIENT: TNUHANFORD B01-058 H1519 LVL LOT #: 0109L949

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12MJ1	Silver, Total	0.94 u	MG/KG	0.94	1.0
		Cadmium, Total	0.61 u	MG/KG	0.61	1.0
		Chromium, Total	22.2	MG/KG	0.47	1.0
		Copper, Total	9.8	MG/KG	0.78	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	17.2	MG/KG	1.1	1.0
		Lead, Total	2.2 u	MG/KG	2.2	1.0
-002	B12MH8	Silver, Total	0.99 u	MG/KG	0.99	1.0
		Cadmium, Total	0.65 u	MG/KG	0.65	1.0
		Chromium, Total	9.4	MG/KG	0.50	1.0
		Copper, Total	12.1	MG/KG	0.83	1.0
		Mercury, Total	0.05	MG/KG	0.02	1.0
		Nickel, Total	8.9	MG/KG	1.2	1.0
		Lead, Total	5.3	MG/KG	2.3	1.0
-003	B12MH9	Silver, Total	0.98 u	MG/KG	0.98	1.0
		Cadmium, Total	0.65 u	MG/KG	0.65	1.0
		Chromium, Total	8.4	MG/KG	0.49	1.0
		Copper, Total	8.9	MG/KG	0.82	1.0
		Mercury, Total	0.03	MG/KG	0.02	1.0
		Nickel, Total	8.0	MG/KG	1.2	1.0
		Lead, Total	6.1	MG/KG	2.3	1.0
-004	B12MJ0	Silver, Total	0.94 u	MG/KG	0.94	1.0
		Cadmium, Total	0.62 u	MG/KG	0.62	1.0
		Chromium, Total	16.9	MG/KG	0.47	1.0
		Copper, Total	9.8	MG/KG	0.79	1.0
		Mercury, Total	0.02	MG/KG	0.02	1.0
		Nickel, Total	13.3	MG/KG	1.1	1.0
		Lead, Total	2.2 u	MG/KG	2.2	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/24/01

CLIENT: TNUHANFORD B01-058 H1519 LVL LOT #: 0109L949

WORK ORDER: 11342-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0686-MB1	Silver, Total	0.96 u	MG/KG	0.96	1.0
		Cadmium, Total	0.63 u	MG/KG	0.63	1.0
		Chromium, Total	0.48 u	MG/KG	0.48	1.0
		Copper, Total	0.80 u	MG/KG	0.80	1.0
		Nickel, Total	1.1 u	MG/KG	1.1	1.0
		Lead, Total	2.3 u	MG/KG	2.3	1.0
BLANK1	01C0323-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 10/24/01

CLIENT: TNUHANFORD B01-058 H1519 LVL LOT #: 0109L949

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12MJ1	Silver, Total	5.4	0.94u	4.9	110.2	1.0
		Cadmium, Total	4.5	0.61u	4.9	91.8	1.0
		Chromium, Total	34.5	22.2	19.5	63.1	1.0
		Copper, Total	32.5	9.8	24.4	93.0	1.0
		Mercury, Total	0.21	0.02u	0.16	138.1	1.0
		Nickel, Total	64.9	17.2	48.8	97.7	1.0
		Lead, Total	52.4	2.2 u	48.8	107.4	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 10/24/01

CLIENT: TNUHANFORD B01-058 H1519 LVL LOT #: 0109L949

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12MJ1	Silver, Total	0.94u	0.94u	NC	1.0
		Cadmium, Total	0.61u	0.61u	NC	1.0
		Chromium, Total	22.2	11.3	65.1	1.0
		Copper, Total	9.8	10.0	2.0	1.0
		Mercury, Total	0.02u	0.01u	NC	1.0
		Nickel, Total	17.2	10.3	50.2	1.0
		Lead, Total	2.2 u	6.4	~~NC~~ 200	1.0

MP 10/24/01

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/24/01

CLIENT: TNUHANFORD B01-058 H1519 LVL LOT #: 0109L949

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0686-LC1	Silver, LCS	43.5	50.0	MG/KG	87.0
		Cadmium, LCS	23.3	25.0	MG/KG	93.2
		Chromium, LCS	48.7	50.0	MG/KG	97.4
		Copper, LCS	119	125	MG/KG	95.0
		Nickel, LCS	195	200	MG/KG	97.6
		Lead, LCS	241	250	MG/KG	96.5
LCS1	01C0323-LC1	Mercury, LCS	2.5	2.5	MG/KG	100

O BNA Lynn Metals Nicki

Lionville Laboratory Use Only

01091949

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMLI Hanford B01-058

Est. Final Proj. Sampling Date:

Project #: 1E3K3-606-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPLC Del: STD TAT: 30

Date Rec'd: 9-27-01 Date Due: 10-27-01

		A	B			B			C		D	E	F			
Refrigerator #																
#/Type Container	Liquid															
	Solid	1Aq	1Aq			1			1Aq		1Aq	1Aq	1Aq			
Volume	Liquid															
	Solid	100	500			1			500		60	120	1L			
Preservatives		—	—						—		—	—	—			
ANALYSES REQUESTED		ORGANIC							INORG							
		TCL VOA	BNA (3)	Pest/ PCB	Herb				ICP Metal (1)	CN	Hex Chrome	Merc.	IC (4)	Anions		
Lionville Laboratory Use Only		0624H	0625X			0D20			Me1		IC26	MHG70	Inorg 1			

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625X			0D20			Me1		IC26	MHG70	Inorg 1			
001	B12MT1			S	9/26/01	0945	X	X			X			X		X	X	X			
002	B12MH2				9/26/01	1000	X	X			X			X		X	X	X			
003	B12MH3						X	X			X			X		X	X	X			
004	B12MH4					1110	X	X			X			X		X	X	X			

Special Instructions:

Run Matrix QC

SAF # B01-058

DATE/REVISIONS:

Me1 1. Cd, Cr, Cu, Ni, Ag, Pb

INORG 1 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4,

3. INH3N, IN3N2, ICNTO, ICCT, IPH

9-28-01 4. Add 0D20

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. 3.6 °C

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

NOTES: 4235 7954 7620 / 3.9° 4235 7954 7630

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	9/27/01	09:00

Relinquished	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

12

L 7119142

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-231	Page 1 of 1

Collector: Thomas G./Watson D. Fahlberg	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E		SAF No.: B01-058
Ice Chest No.: SEE OSPC	Field Logbook No.: EL-1518-1	COA: B20TW2674C	Method of Shipment: Fed EX
Shipped To: TMA/RECRA 03/14/01	Offsite Property No.: A010440		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 1C at the 3728 Shipping Facility on 9/25/01.
Collector not available to relinquish samples on 9/26/01 for shipment.
RT 9.26.01

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	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL	

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Chromium Hex - 7196	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.		
B12MJ1	SOIL	9.25.01	0945	X	X	X	X	X	X			

Tie To B12MJ1 B12MK6

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg / R. Fahlberg	1600 9.25.01	R. F 1-C	1600 9.25.01
R. Fahlberg 3728	9.26.01 0700	R. Thorne	0700 9.26.01
R. Thorne	0700 9.26.01	FEDEX	
FEDEX	9.27.01 09:00	D. Minton	9.27.01 09:00

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~~

Activity < D.

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-228	Page 1 of 1

Collector: Thomas G./Watson D. / Fahlberg	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E	SAF No.: B01-058	
Ice Chest No.: SEE OSPC	Field Logbook No.: EL-1518-1	COA: B20TW2674C	Method of Shipment: Fed EX
Shipped To: TMA/RECRA DSW 09/15/01	Offsite Property No.: A010440	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 7A at the 3728 Shipping Facility on 9/21/01. Collector not available to relinquish samples on 9/26/01 for shipment. RT 9.26.01

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	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL				
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	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								
B12MH8	SOIL	9-21-01	1205	X	X	X	X	X	X		B12MK6
B12MH9	Soil	9-21-01	1205	X	X	X	X	X	X		B12MK6
B12MJ0	Soil	9-21-01	1440	X	X	X	X	X	X		B12MK5

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg / R. Fahlberg	1630 9-21-01	Ref 7A / 1-A	9-21-01
R. Fahlberg / TA 3728	0700 9.26.01	R. Thor	0700 9.26.01
R. Thor / ERC	0700 9-26-01	FedEx	
FedEx	9.27.01 1095 00	[illegible]	9.27.01 1095 00

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, Wp=Wipe, L=Liquid, V=Vegetation, X=Other

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

BHI-EE-011 (10/99)

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-058 H1519
LVL#: 0109L949

W.O.#: 11343-606-001-9999-00
Date Received: 09-27-01

INORGANIC NARRATIVE

1. This narrative covers the analyses of 4 soil samples.

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

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

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

5. The method blanks were within the method criteria.

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

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

8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit with the exception of Chloride that may be attributed to sample inhomogeneity.

9. Matrix quality control analysis was not performed for pH and Total Cyanide.

10. Results for solid samples are reported on a dry weight basis and Total Organic Carbon samples are dried prior to analysis.

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

10-29-01
Date

njp\i09-949

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 18 pages.

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

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

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 10/25/01

CLIENT: TNUHANFORD B01-058 H1519 LVL LOT #: 0109L949

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12MJ1	% Solids	97.6	%	0.01	1.0
		Chloride by IC	12.2	MG/KG	2.6	2.0
		Fluoride by IC	5.1 u	MG/KG	5.1	2.0
		Nitrite by IC	2.56 u	MG/KG	2.56	2.0
		Nitrate by IC	493	MG/KG	25.6	20.0
		Cyanide, Total	0.38 u	MG/KG	0.38	1.0
		Phosphate by IC	2.6 u	MG/KG	2.6	2.0
		Chromium VI	1.3	MG/KG	0.41	1.0
		Sulfate by IC	14.6	MG/KG	2.6	2.0
		Nitrate Nitrite	114	MG/KG	3.9	20.0
		Ammonia, as N	3.1	MG/KG	2.5	1.0
		Total Organic Carbon	143	MG/KG	110	1.0
		pH	6.8	SOIL PH	0.01	1.0
-002	B12MH8	% Solids	96.6	%	0.01	1.0
		Chloride by IC	3.0	MG/KG	1.3	1.0
		Fluoride by IC	11.6	MG/KG	2.6	1.0
		Nitrite by IC	1.30 u	MG/KG	1.30	1.0
		Nitrate by IC	8.51	MG/KG	1.30	1.0
		Cyanide, Total	0.44 u	MG/KG	0.44	1.0
		Phosphate by IC	2.3	MG/KG	1.3	1.0
		Chromium VI	0.96	MG/KG	0.41	1.0
		Sulfate by IC	6.1	MG/KG	1.3	1.0
		Nitrate Nitrite	2.1	MG/KG	0.19	1.0
		Ammonia, as N	2.4 u	MG/KG	2.4	1.0
		Total Organic Carbon	225	MG/KG	104	1.0
		pH	10.2	SOIL PH	0.01	1.0
-003	B12MH9	% Solids	96.5	%	0.01	1.0
		Chloride by IC	2.9	MG/KG	1.3	1.0
		Fluoride by IC	11.8	MG/KG	2.6	1.0
		Nitrite by IC	1.30 u	MG/KG	1.30	1.0
		Nitrate by IC	7.57	MG/KG	1.30	1.0
		Cyanide, Total	0.42 u	MG/KG	0.42	1.0
		Phosphate by IC	2.5	MG/KG	1.3	1.0
		Chromium VI	0.97	MG/KG	0.42	1.0
		Sulfate by IC	6.0	MG/KG	1.3	1.0
		Nitrate Nitrite	1.6	MG/KG	0.21	1.0
		Ammonia, as N	2.6 u	MG/KG	2.6	1.0
		Total Organic Carbon	163	MG/KG	112	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 10/25/01

CLIENT: TNUHANFORD B01-058 H1519 LVL LOT #: 0109L949

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B12MH9	pH	10.4	SOIL PH	0.01	1.0
-004	B12MJ0	% Solids	98.8	%	0.01	1.0
		Chloride by IC	8.5	MG/KG	2.5	2.0
		Fluoride by IC	5.1 u	MG/KG	5.1	2.0
		Nitrite by IC	2.53 u	MG/KG	2.53	2.0
		Nitrate by IC	133	MG/KG	6.32	5.0
		Cyanide, Total	0.38 u	MG/KG	0.38	1.0
		Phosphate by IC	2.5 u	MG/KG	2.5	2.0
		Chromium VI	1.1	MG/KG	0.40	1.0
		Sulfate by IC	14.2	MG/KG	2.5	2.0
		Nitrate Nitrite	25.2	MG/KG	0.99	5.0
		Ammonia, as N	2.7 u	MG/KG	2.7	1.0
		Total Organic Carbon	157	MG/KG	114	1.0
		pH	9.7	SOIL PH	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/25/01

CLIENT: TNUHANFORD B01-058 H1519 LVL LOT #: 0109L949

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LICA65-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	1.25	u	MG/KG	1.25	1.0
		Nitrate by IC	1.25	u	MG/KG	1.25	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK10	01LICA68-MB1	Nitrate by IC	1.25	u	MG/KG	1.25	1.0
BLANK1	01LCB91-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	01LVI083-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	01LN3A54-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	01LAM046-MB1	Ammonia, as N	2.5	u	MG/KG	2.5	1.0
BLANK10	01LTZ032-MB1	Total Organic Carbon	4.7	u	MG/KG	4.7	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 10/25/01

CLIENT: TNUHANFORD B01-058 H1519 LVL LOT #: 0109L949

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12MJ1	Chloride by IC	57.8	12.2	51.2	89.1	2.0
		Fluoride by IC	107	1.3	102	103.0	2.0
		Nitrite by IC	48.7	2.56u	51.2	95.1	2.0
		Nitrate by IC	1740	493	1280	97.1	50.0
		Phosphate by IC	51.7	2.6 u	51.2	101.0	2.0
		Sulfate by IC	63.9	14.6	51.2	96.2	2.0
		Nitrate Nitrite	363	114	250	99.6	50.0
		Total Organic Carbon	2240	143	2200	95.4	1.0
-004	B12MJ0	Soluble Chromium VI	4.5	1.1	4.0	84.9	1.0
		Insoluble Chromium VI	1430	1.1	1500	95.3	100
		Ammonia, as N	93.3	2.7 u	94.5	98.8	1.0
BLANK10	01LICA65-MB1	Chloride by IC	24.6	1.2 u	25.0	98.4	1.0
		Fluoride by IC	54.5	2.5 u	50.0	109.0	1.0
		Nitrite by IC	24.1	1.25u	25.0	96.4	1.0
		Nitrate by IC	25.7	1.25u	25.0	102.8	1.0
		Phosphate by IC	27.1	1.2 u	25.0	108.3	1.0
		Sulfate by IC	24.7	1.2 u	25.0	98.7	1.0
BLANK10	01LICA68-MB1	Nitrate by IC	25.3	1.25u	25.0	101.1	1.0
BLANK10	01LVI083-MB1	Soluble Chromium VI	3.9	0.40u	4.0	98.6	1.0
		Insoluble Chromium VI	1030	0.40u	1030	100	100
BLANK10	01LN3A54-MB1	Nitrate Nitrite	5.2	0.20u	5.0	103.8	1.0
BLANK10	01LAM046-MB1	Ammonia, as N	103	2.5 u	100	103.0	1.0
		Ammonia, as N MSD	102	2.5 u	100	102.0	1.0
BLANK10	01LTZ032-MB1	Total Organic Carbon	407	4.7 u	400	101.8	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 10/25/01

CLIENT: TNUHANFORD B01-058 H1519 LVL LOT #: 0109L949

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	01LAM046-MB1	Ammonia, as N	103.0	102.0	0.98

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 10/25/01

CLIENT: TNUHANFORD B01-058 H1519 LVL LOT #: 0109L949

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12MJ1	Chloride by IC	12.2	9.4	25.8	2.0
		Fluoride by IC	5.1 u	5.1 u	NC	2.0
		Nitrite by IC	2.56u	2.56u	NC	2.0
		Nitrate by IC	493	516	4.6	20.0
		Phosphate by IC	2.6 u	2.6 u	NC	2.0
		Sulfate by IC	14.6	15.5	5.8	2.0
		Nitrate Nitrite	114	112	1.8	20.0
		Total Organic Carbon	143	140	2.0	1.0
-004REP	B12MJ0	% Solids	98.8	97.6	1.2	1.0
		Chromium VI	1.1	0.92	13.7	1.0
		Ammonia, as N	2.7 u	2.5 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/25/01

CLIENT: TNUHANFORD B01-058 H1519 LVL LOT #: 0109L949

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	01LCB91-LCS1	Cyanide, Total LCS	2.00	2.0	MG/KG	100
LCSS2	01LCB91-LCS2	Cyanide, Total LCS	10.2	10.0	MG/KG	102.2

Lionville Laboratory Use Only: 0109L949

BNA Lyna Metals Nicki

Custody Transfer Record/Lab Work Request

LVLI 15

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford B01-058

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30

Date Rec'd: 9-27-01 Date Due: 10-27-01

	A	B		B			C		D	E	F		
Refrigerator #													
#/Type Container – Liquid													
#/Type Container – Solid	1Ag	1Ag	————	1			1Ag		1Ag	1Ag	1Ag		
Volume – Liquid													
Volume – Solid	120	500	————	1			500		60	120	1L		
Preservatives	—	—					—		—	—	—		
ANALYSES REQUESTED →	ORGANIC: TCL VOA	BNA (3)	Pest/PCB	Herb			INORG: ICP Metal (1)	CN	Hex Chrome	Merc.	IC (2) Anions		
Lionville Laboratory Use Only	0624H	0625X		ODRO			MEI		ICR6	MHGTO	INORG ①		

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	TCL VOA	BNA	Pest/PCB	Herb (ODRO)			ICP Metal	CN	Hex Chrome	Merc.	IC Anions		
001	B12MJ1			S	9/25/01	0945	X	X		X			X		X	X	X		
002	B12MH8			|	9/21/01	1205	X	X		X			X		X	X	X		
003	B12MH9			|	|	|	X	X		X			X		X	X	X		
004	B12MJ0			|	|	1410	X	X		X			X		X	X	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:

Run Matrix QC

SAF # B01-058

DATE/REVISIONS:

1. MEI — Cd, Cr, Cu, Ni, Ag, Pb
2. INORG① — ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4,
3. INH3N, IN3N2, ICNTO, IOCT, IPH
4. 9-28-01 — Add ODRO
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. 3.6 °C

Relinquished by	Received by	Date	Time
[signature]	[signature]	9/27/01	09:00

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

NOTES:

4235 7954 7620/3.9° 4235 7954 7630 ...

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-231	Page 1 of 1

Collector: Thomas G./Watson D. Fahlberg	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E		SAF No.: B01-058
Ice Chest No.: SEE OSPC	Field Logbook No.: EL-1518-1	COA: B20TW2674C	Method of Shipment: Fed EX
Shipped To: TMA/RECRA 03/14/01	Offsite Property No.: A010440		Bill of Lading/Air Bill No.: SEE OSPC

Price Code: 8N

Air Quality ☐

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 1C at the 3728 Shipping Facility on 9/25/01. Collector not available to relinquish samples on 9/26/01 for shipment.
RT 9.26.01

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	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL			
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	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										
B12MJ1 / SOIL / 9.25.01 / 0945	X	X	X	X	X	X				

Tie To B12MJ1 ~~B12MJ0~~ B12MK6

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From: R. Fahlberg / R. Fahlberg — Date/Time 1600 9.25.01	Received By/Stored In: R. F. 1-C — Date/Time 1600 9.25.01	
Relinquished By/Removed From: R. Fahlberg 3728 — Date/Time 0700 9.26.01	Received By/Stored In: R. L. Thorne — Date/Time 0700 9.26.01	
Relinquished By/Removed From: R. L. Thorne ERC — Date/Time 0700 9.26.01	Received By/Stored In: FEDEX — Date/Time	
Relinquished By/Removed From: FEDEX — Date/Time 9.27.01 / 09:00	Received By/Stored In: D. Smith — Date/Time 9.27.01 / 09:00	
Relinquished By/Removed From: — Date/Time	Received By/Stored In: — Date/Time	
Relinquished By/Removed From: — Date/Time	Received By/Stored In: — Date/Time	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {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~~ DAM 9/26/01

Activity <D.

Matrix *

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-058-228	Page 1 of 1
Collector: Thomas G./Watson D. / Fahlberg	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N; Air Quality ☐	Data Turnaround: 45 Days
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E		SAF No.: B01-058	
Ice Chest No.: SEE OSPC	Field Logbook No.: EL-1518-1	COA: B20TW2674C	Method of Shipment: Fed EX	
Shipped To: ~~TMA~~/RECRA DSW 09/15/01	Offsite Property No.: A010440		Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 7A at the 3728 Shipping Facility on 9/21/01.
Collector not available to relinquish samples on 9/26/01 for shipment.
RT 9.26.01

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	60mL	500mL	120mL	1000mL	120mL	500mL	1000mL			
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions. DSW 09/15/01		TIE TO	

Sample No.	Matrix *	Sample Date	Sample Time									
B12MH8	SOIL	9-21-01	1205	X	X	X	X	X	X		B2MK6	
B12MH9	soil	9-21-01	1205	X	X	X	X	X	X		B12MK6	
B12MJ0	soil	9-21-01	1440	X	X	X	X	X	X		B12MK5	

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From: R. Fahlberg	R. Fahlberg	9-21-01 1630	Ref 7A 1-A	9-21-01
Relinquished By/Removed From: Ref 7A 3728		9-26-01 0700	R. Thore	9-26-01 0700
Relinquished By/Removed From: R. Thore	ERC	9-26-01 0700	F. Dex	
Relinquished By/Removed From: Dex		9-27-01 09:00	D. Wilmer	9-27-01 09:00
Relinquished By/Removed From		Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From		Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {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~~ DSW 09/15/01

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: 9.27.01 1 09:00

SDG#: _____

Work Order Number: _____ SAF# B01-058

Shipping Container ID: ELL 96-021 SML-510 ELL 96-018 ELL 99-030 Chain of Custody # B01-058-228 1 1 231

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 4.2°C, 3.8°C, 3.6°C, 3.9°C
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 24
7. Sample holding times exceeded? Yes [ ] No [✓]

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

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

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

Sample Custodian/Laboratory: _____ Date: _____

Telephoned to: _____ On _____ By _____