



EBERLINE
SERVICES

0060078

July 3, 2003

Mr. Steve Trent
Fluor Hanford Inc.
825 Jadwin Avenue
Richland, WA 99352



Reference: P.O. #630
Eberline Services R3-05-136-7525, SDG/H2220

Dear Mr. Trent:

Enclosed is the data report for two solid samples designated under SAF No. F03-006 received at Eberline Services on May 23, 2003. The samples were analyzed according to the accompanying chain-of-custody documents.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion
Program Manager

MCM

Enclosure: Data Package

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Analytical Services
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1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H2220 was composed of two solid (soil) samples designated under SAF No. F03-006 with a Project Designations of: 200-PW-2/200-PW-4 OU – Borehole 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.

2.0 ANALYSIS NOTES

2.1 Tritium Analyses

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.3 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.4 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.5 Technetium-99 Analyses

The Tc-99 samples in SDG H2220 were batched with the Tc-99 samples in SDG H2208 (Group R305091-7517). No problems were encountered during the course of the analyses.

2.6 Iodine-129 Analyses

No problems were encountered during the course of the analyses.

2.7 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.8 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.9 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.10 Neptunium-237 Analyses

The LCS percent recovery (83%) was below the 3σ limits (89 to 111%), but was within the laboratory protocol limits (80 to 120%). No other problems were encountered during the course of the analyses.

2.11 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.12 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.13 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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



Melissa C. Mannion
Program Manager



Date

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2220

SDG 7525
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2220

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Melissa Mannion
Prepared by

Melissa Mannion
Reviewed by

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 07/03/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2220

SDG 7525
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2220

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

REPORT GUIDES

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SUMMARY DATA SECTION

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SAMPLE DELIVERY GROUP H2220

SDG 7525
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GUIDE, cont.

Client Hanford
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ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

REPORT GUIDES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2220

SDG 7525

Contact Melissa C. Mannion

Client Hanford

Contract No. 630

Case no SDG H2220

LAB SAMPLE SUMMARY

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R305091-04	Lab Control Sample		SOLID		F03-006		
R305091-05	Method Blank		SOLID		F03-006		
R305136-01	B17113	216-A-10 (C3245)	SOLID		F03-006	F03-006-104	05/15/03 14:20
R305136-02	B17114	216-A-10 (C3247)	SOLID		F03-006	F03-006-105	05/16/03 10:10
R305136-03	Lab Control Sample		SOLID		F03-006		
R305136-04	Method Blank		SOLID		F03-006		
R305136-05	Duplicate (R305136-01)	216-A-10 (C3245)	SOLID		F03-006		05/15/03 14:20
R305136-06	Spike (R305136-01)	216-A-10 (C3245)	SOLID		F03-006		05/15/03 14:20

LAB SUMMARY

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SUMMARY DATA SECTION

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Lab id EBRLNE

Protocol Hanford

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2220

QC SUMMARY

SDG 7525
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Case no SDG H2220

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7517		Method Blank	SOLID						R305091-05	7517-005
		Lab Control Sample	SOLID						R305091-04	7517-004
7525	F03-006-104	B17113	SOLID	93.9	186.5 g		05/21/03	6	R305136-01	7525-001
	F03-006-105	B17114	SOLID	97.2	215.5 g		05/21/03	5	R305136-02	7525-002
		Method Blank	SOLID						R305136-04	7525-004
		Lab Control Sample	SOLID						R305136-03	7525-003
		Duplicate (R305136-01)	SOLID	93.9	186.5 g		05/21/03	6	R305136-05	7525-005
		Spike (R305136-01)	SOLID	93.9	186.5 g		05/21/03	6	R305136-06	7525-006

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SAMPLE DELIVERY GROUP H2220

SDG 7525
 Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG H2220

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED				QUALIFIERS	
			BATCH	2σ %	CLIENT	MORE	RE	BLANK		LCS
Alpha Spectroscopy										
AM	SOLID	Americium 241 in Soil	7071-024	5.0	2			1	1	1/1
NP	SOLID	Neptunium in Soil	7071-024	5.0	2			1	1	1/1
PU	SOLID	Plutonium, Isotopic in Solids	7071-024	5.0	2			1	1	1/1
TH	SOLID	Thorium, Isotopic in Soil	7071-024	5.0	2			1	1	1/1
U	SOLID	Uranium, Isotopic in Soil	7071-024	5.0	2			1	1	1/1
Beta Counting										
SR	SOLID	Total Strontium in Soil	7071-024	10.0	2			1	1	1/1
TC	SOLID	Technetium 99 in Soil	7060-198	10.0	2			1	1	1/1
Gamma Spectroscopy										
GAM	SOLID	Gamma Scan	7071-024	15.0	2			1	1	1/1
I	SOLID	Iodine 129 in Soil	7071-024	10.0	2			1	1	1/1
Kinetic Phosphorimetry (KPA)										
U_T	SOLID	Uranium, Total in Soil	7071-024	9.0	2			1	1	1/1
Liquid Scintillation Counting										
C	SOLID	Carbon 14 in Soil	7071-024	10.0	2			1	1	1/1
H	SOLID	Tritium in Soil	7071-024	10.0	2			1	1	1/1 1/1 X
NI_L	SOLID	Nickel 63 in Soil	7071-024	10.0	2			1	1	1/1

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

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SAMPLE DELIVERY GROUP H2220

LAB WORK SUMMARY

SDG 7525
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2220

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R305091-04	Lab Control Sample		SOLID	7517-004	TC		06/27/03	07/02/03	MCM	Technetium 99 in Soil
		F03-006								
R305091-05	Method Blank		SOLID	7517-005	TC		06/28/03	07/02/03	MCM	Technetium 99 in Soil
		F03-006								
R305136-01	B17113			7525-001	AM		06/18/03	07/03/03	MCM	Americium 241 in Soil
05/15/03	216-A-10 (C3245)		SOLID	7525-001	C		07/01/03	07/03/03	MCM	Carbon 14 in Soil
05/21/03	F03-006-104	F03-006		7525-001	GAM		06/20/03	07/03/03	MCM	Gamma Scan
				7525-001	H		06/23/03	07/03/03	MCM	Tritium in Soil
				7525-001	I		06/24/03	07/03/03	MCM	Iodine 129 in Soil
				7525-001	NI_L		06/20/03	07/03/03	MCM	Nickel 63 in Soil
				7525-001	NP		06/24/03	07/03/03	MCM	Neptunium in Soil
				7525-001	PU		06/20/03	07/03/03	MCM	Plutonium, Isotopic in Solids
				7525-001	SR		06/19/03	07/03/03	MCM	Total Strontium in Soil
				7525-001	TC		06/28/03	07/03/03	MCM	Technetium 99 in Soil
				7525-001	TH		06/25/03	07/03/03	MCM	Thorium, Isotopic in Soil
				7525-001	U		06/24/03	07/03/03	MCM	Uranium, Isotopic in Soil
				7525-001	U_T		06/17/03	07/03/03	MCM	Uranium, Total in Soil
R305136-02	B17114			7525-002	AM		06/18/03	07/03/03	MCM	Americium 241 in Soil
05/16/03	216-A-10 (C3247)		SOLID	7525-002	C		07/02/03	07/03/03	MCM	Carbon 14 in Soil
05/21/03	F03-006-105	F03-006		7525-002	GAM		06/20/03	07/03/03	MCM	Gamma Scan
				7525-002	H		06/23/03	07/03/03	MCM	Tritium in Soil
				7525-002	I		06/25/03	07/03/03	MCM	Iodine 129 in Soil
				7525-002	NI_L		06/20/03	07/03/03	MCM	Nickel 63 in Soil
				7525-002	NP		06/24/03	07/03/03	MCM	Neptunium in Soil
				7525-002	PU		06/20/03	07/03/03	MCM	Plutonium, Isotopic in Solids
				7525-002	SR		06/19/03	07/03/03	MCM	Total Strontium in Soil
				7525-002	TC		06/28/03	07/03/03	MCM	Technetium 99 in Soil
				7525-002	TH		06/25/03	07/03/03	MCM	Thorium, Isotopic in Soil
				7525-002	U		06/24/03	07/03/03	MCM	Uranium, Isotopic in Soil
				7525-002	U_T		06/17/03	07/03/03	MCM	Uranium, Total in Soil

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 Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
 Contract No. 630
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LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R305136-03	Lab Control Sample	F03-006	SOLID	7525-003	AM		06/18/03	07/03/03	MCM	Americium 241 in Soil
				7525-003	C		07/02/03	07/03/03	MCM	Carbon 14 in Soil
				7525-003	GAM		06/21/03	07/03/03	MCM	Gamma Scan
				7525-003	H		06/24/03	07/03/03	MCM	Tritium in Soil
				7525-003	I		06/26/03	07/03/03	MCM	Iodine 129 in Soil
				7525-003	NI_L		06/20/03	07/03/03	MCM	Nickel 63 in Soil
				7525-003	NP		06/24/03	07/03/03	MCM	Neptunium in Soil
				7525-003	PU		06/20/03	07/03/03	MCM	Plutonium, Isotopic in Solids
				7525-003	SR		06/19/03	07/03/03	MCM	Total Strontium in Soil
				7525-003	TH		06/25/03	07/03/03	MCM	Thorium, Isotopic in Soil
				7525-003	U		06/25/03	07/03/03	MCM	Uranium, Isotopic in Soil
				7525-003	U_T		06/17/03	07/03/03	MCM	Uranium, Total in Soil
				R305136-04	Method Blank	F03-006	SOLID	7525-004	AM	
7525-004	C		07/01/03					07/03/03	MCM	Carbon 14 in Soil
7525-004	GAM		06/20/03					07/03/03	MCM	Gamma Scan
7525-004	H		06/24/03					07/03/03	MCM	Tritium in Soil
7525-004	I		06/25/03					07/03/03	MCM	Iodine 129 in Soil
7525-004	NI_L		06/20/03					07/03/03	MCM	Nickel 63 in Soil
7525-004	NP		06/24/03					07/03/03	MCM	Neptunium in Soil
7525-004	PU		06/20/03					07/03/03	MCM	Plutonium, Isotopic in Solids
7525-004	SR		06/19/03					07/03/03	MCM	Total Strontium in Soil
7525-004	TH		06/25/03					07/03/03	MCM	Thorium, Isotopic in Soil
7525-004	U		06/25/03					07/03/03	MCM	Uranium, Isotopic in Soil
7525-004	U_T		06/17/03					07/03/03	MCM	Uranium, Total in Soil
R305136-05	Duplicate (R305136-01) 05/15/03 216-A-10 (C3245) 05/21/03	F03-006	SOLID					7525-005	AM	
				7525-005	C		07/01/03	07/03/03	MCM	Carbon 14 in Soil
				7525-005	GAM		06/20/03	07/03/03	MCM	Gamma Scan
				7525-005	H		06/24/03	07/03/03	MCM	Tritium in Soil
				7525-005	I		06/25/03	07/03/03	MCM	Iodine 129 in Soil
				7525-005	NI_L		06/20/03	07/03/03	MCM	Nickel 63 in Soil
				7525-005	NP		06/24/03	07/03/03	MCM	Neptunium in Soil
				7525-005	PU		06/20/03	07/03/03	MCM	Plutonium, Isotopic in Solids
				7525-005	SR		06/19/03	07/03/03	MCM	Total Strontium in Soil
				7525-005	TC		06/28/03	07/03/03	MCM	Technetium 99 in Soil
				7525-005	TH		06/25/03	07/03/03	MCM	Thorium, Isotopic in Soil
				7525-005	U		06/25/03	07/03/03	MCM	Uranium, Isotopic in Soil
				7525-005	U_T		06/17/03	07/03/03	MCM	Uranium, Total in Soil

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EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2220

SDG 7525
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2220

WORK SUMMARY, cont.

LAB SAMPLE	CLIENT SAMPLE ID	MATRIX	SUF-	REVIEWED BY	METHOD
COLLECTED	LOCATION	PLANCHET	TEST	ANALYZED	
RECEIVED	CUSTODY	SAF No	FIX		
R305136-06	Spike (R305136-01)	7525-006	H	06/24/03	07/03/03 MCM Tritium in Soil
05/15/03	216-A-10 (C3245)	SOLID			
05/21/03		F03-006			

COUNTS OF TESTS BY SAMPLE TYPE										
TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	F03-006	Americium 241 in Soil	AMCHISO_IE_PLATE_AEA	2			1	1	1	5
C	F03-006	Carbon 14 in Soil	C14_COX_LSC	2			1	1	1	5
GAM	F03-006	Gamma Scan	GAMMA_GS	2			1	1	1	5
H	F03-006	Tritium in Soil	906.0_H3_LSC	2			1	1	1	6
I	F03-006	Iodine 129 in Soil	I129_SEP_LEPS_GS	2			1	1	1	5
NI_L	F03-006	Nickel 63 in Soil	NI63_LSC	2			1	1	1	5
NP	F03-006	Neptunium in Soil	NP237_LLE_PLATE_AEA	2			1	1	1	5
PU	F03-006	Plutonium, Isotopic in Solids	PUIISO_PLATE_AEA	2			1	1	1	5
SR	F03-006	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	2			1	1	1	5
TC	F03-006	Technetium 99 in Soil	TC99_TR_SEP_LSC	2			1	1	1	5
TH	F03-006	Thorium, Isotopic in Soil	THISO_IE_PLATE_AEA	2			1	1	1	5
U	F03-006	Uranium, Isotopic in Soil	UIISO_PLATE_AEA	2			1	1	1	5
U_T	F03-006	Uranium, Total in Soil	UTOT_KPA	2			1	1	1	5
TOTALS				26			13	13	13	1
										66

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2220

7517-005

Method Blank

METHOD BLANK

SDG <u>7525</u>	Client/Case no <u>Hanford</u>	SDG <u>H2220</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R305091-05</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7517-005</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F03-006</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Tritium	10028-17-8	N.A.			400		H
Carbon 14	14762-75-5	N.A.			50		C
Nickel 63	13981-37-8	N.A.			30		NI_L
Total Strontium	SR-RAD	N.A.			1.0		SR
Technetium 99	14133-76-7	0.149	0.28	0.58	15	U	TC
Thorium 228	14274-82-9	N.A.					TH
Thorium 230	14269-63-7	N.A.			1.0		TH
Thorium 232	TH-232	N.A.			1.0		TH
Total Uranium (ug/g)	7440-61-1	N.A.			1.0		U_T
Uranium 233/234	U-233/234	N.A.			1.0		U
Uranium 235	15117-96-1	N.A.			1.0		U
Uranium 238	U-238	N.A.			1.0		U
Neptunium 237	13994-20-2	N.A.			1.0		NP
Plutonium 238	13981-16-3	N.A.			1.0		PU
Plutonium 239/240	PU-239/240	N.A.			1.0		PU
Americium 241	14596-10-2	N.A.			1.0		AM
Iodine 129	15046-84-1	N.A.			2.0		I
Potassium 40	13966-00-2	N.A.					GAM
Cobalt 60	10198-40-0	N.A.			0.050		GAM
Tin 126	15832-50-5	N.A.					GAM
Cesium 134	13967-70-9	N.A.					GAM
Cesium 137	10045-97-3	N.A.			0.10		GAM
Radium 226	13982-63-3	N.A.					GAM
Radium 228	15262-20-1	N.A.					GAM
Europium 152	14683-23-9	N.A.			0.10		GAM
Europium 154	15585-10-1	N.A.			0.10		GAM
Europium 155	14391-16-3	N.A.			0.10		GAM
Thorium 228	14274-82-9	N.A.					GAM
Thorium 232	TH-232	N.A.					GAM

200-PW-2/200-PW-4 OU - Borehole Soil

METHOD BLANKS
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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2220

7517-005

Method Blank

BLANK, cont.

SDG <u>7525</u>	Client/Case no <u>Hanford</u>	SDG <u>H2220</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R305091-05</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7517-005</u>	Material/Matrix _____	<u>SOLID</u>
	SAF No <u>F03-006</u>	

ANALYTE	CAS NO	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Uranium 235	15117-96-1	N.A.					GAM
Uranium 238	U-238	N.A.					GAM
Americium 241	14596-10-2	N.A.					GAM

200-PW-2/200-PW-4 OU - Borehole Soil

QC-BLANK #44789

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>07/03/03</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2220

7525-004

Method Blank

METHOD BLANK

SDG <u>7525</u>	Client/Case no <u>Hanford</u>	SDG <u>H2220</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R305136-04</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7525-004</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F03-006</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	-0.105	0.18	0.30	400	U	H
Carbon 14	14762-75-5	-0.061	1.8	3.1	50	U	C
Nickel 63	13981-37-8	-0.840	1.2	2.0	30	U	NI_L
Total Strontium	SR-RAD	0.033	0.19	0.38	1.0	U	SR
Thorium 228	14274-82-9	0	0.088	0.33		U	TH
Thorium 230	14269-63-7	-0.044	0.17	0.42	1.0	U	TH
Thorium 232	TH-232	0	0.087	0.33	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0	0.001	0.003	1.0	U	U_T
Uranium 233/234	U-233/234	0	0.044	0.17	1.0	U	U
Uranium 235	15117-96-1	0	0.053	0.20	1.0	U	U
Uranium 238	U-238	0	0.044	0.17	1.0	U	U
Neptunium 237	13994-20-2	0	0.015	0.037	1.0	U	NP
Plutonium 238	13981-16-3	0	0.094	0.36	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.094	0.36	1.0	U	PU
Americium 241	14596-10-2	0.041	0.082	0.31	1.0	U	AM
Iodine 129	15046-84-1	0.401	0.63	1.5	2.0	U	I
Potassium 40	13966-00-2	U		0.81		U	GAM
Cobalt 60	10198-40-0	U		<u>0.069</u>	0.050	U	GAM
Tin 126	15832-50-5	U		0.069		U	GAM
Cesium 134	13967-70-9	U		0.080		U	GAM
Cesium 137	10045-97-3	U		0.061	0.10	U	GAM
Radium 226	13982-63-3	U		0.12		U	GAM
Radium 228	15262-20-1	U		0.27		U	GAM
Europium 152	14683-23-9	U		<u>0.14</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.19</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.11</u>	0.10	U	GAM
Thorium 228	14274-82-9	U		0.080		U	GAM
Thorium 232	TH-232	U		0.27		U	GAM
Uranium 235	15117-96-1	U		0.17		U	GAM

200-PW-2/200-PW-4 OU - Borehole Soil

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>07/03/03</u>

METHOD BLANKS

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SUMMARY DATA SECTION

Page 11

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2220

7525-004

Method Blank

B L A N K , c o n t .

SDG <u>7525</u>	Client/Case no <u>Hanford</u>	SDG <u>H2220</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R305136-04</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7525-004</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F03-006</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Uranium 238	U-238	U		6.9		U	GAM
Americium 241	14596-10-2	U		0.14		U	GAM

200-PW-2/200-PW-4 OU - Borehole Soil

QC-BLANK #44876

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>07/03/03</u>

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2220

7517-004

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7525</u> Contact <u>Melissa C. Mannion</u>	Client/Case no <u>Hanford</u> SDG <u>H2220</u> Contract <u>No. 630</u>
Lab sample id <u>R305091-04</u> Dept sample id <u>7517-004</u>	Client sample id <u>Lab Control Sample</u> Material/Matrix <u>SOLID</u> SAF No <u>F03-006</u>

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 LNTS (TOTAL)	PROTOCOL LIMITS
Tritium	N.A.			400		H					80-120
Carbon 14	N.A.			50		C					80-120
Nickel 63	N.A.			30		NI_L					80-120
Total Strontium	N.A.			1.0		SR					80-120
Technetium 99	114	2.7	0.52	15		TC	109	4.4	105	83-117	80-120
Thorium 230	N.A.			1.0		TH					80-120
Total Uranium (ug/g)	N.A.			1.0		U_T					80-120
Uranium 233/234	N.A.			1.0		U					80-120
Uranium 235	N.A.			1.0		U					80-120
Uranium 238	N.A.			1.0		U					80-120
Neptunium 237	N.A.			1.0		NP					80-120
Plutonium 238	N.A.			1.0		PU					80-120
Plutonium 239/240	N.A.			1.0		PU					80-120
Americium 241	N.A.			1.0		AM					80-120
Iodine 129	N.A.			2.0		I					80-120
Cobalt 60	N.A.			0.050		GAM					80-120
Cesium 137	N.A.			0.10		GAM					80-120

200-PW-2/200-PW-4 OU - Borehole Soil

QC-LCS #44788

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>07/03/03</u>

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2220

7525-003

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7525</u>	Client/Case no <u>Hanford</u> SDG <u>H2220</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>
Lab sample id <u>R305136-03</u>	Client sample id <u>Lab Control Sample</u>
Dept sample id <u>7525-003</u>	Material/Matrix <u>SOLID</u>
	SAF No <u>F03-006</u>

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	12.3	0.41	0.29	400		H	13.0	0.52	95	84-116	80-120
Carbon 14	2040	41	11	50		C	1950	78	105	83-117	80-120
Nickel 63	208	4.4	2.2	30		NI_L	228	9.1	91	85-115	80-120
Total Strontium	21.6	0.91	0.27	1.0		SR	21.0	0.84	103	82-118	80-120
Thorium 230	38.7	2.9	0.34	1.0		TH	40.8	1.6	95	86-114	80-120
Total Uranium (ug/g)	16.4	1.9	0.035	1.0		U_T	16.5	0.66	99	77-123	80-120
Uranium 233/234	18.7	2.1	<u>1.1</u>	1.0		U	18.6	0.74	100	81-119	80-120
Uranium 235	15.6	1.9	0.29	1.0		U	15.1	0.60	103	79-121	80-120
Uranium 238	18.7	2.1	1.0	1.0		U	20.2	0.81	93	82-118	80-120
Neptunium 237	16.5	0.83	0.030	1.0		NP	19.9	0.80	<u>83</u>	89-111	80-120
Plutonium 238	26.1	3.3	0.34	1.0		PU	24.4	0.98	107	77-123	80-120
Plutonium 239/240	26.7	3.4	0.34	1.0		PU	26.4	1.1	101	78-122	80-120
Americium 241	19.7	2.1	0.23	1.0		AM	19.0	0.76	104	81-119	80-120
Iodine 129	116	1.2	1.4	2.0		I	116	4.6	100	84-116	80-120
Cobalt 60	5.67	0.24	<u>0.12</u>	0.050		GAM	5.93	0.24	96	77-123	80-120
Cesium 137	5.91	0.21	<u>0.15</u>	0.10		GAM	5.83	0.23	101	76-124	80-120

200-PW-2/200-PW-4 OU - Borehole Soil

QC-LCS #44875

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>07/03/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2220

7525-005

B17113

DUPLICATE

SDG <u>7525</u>	Client/Case no <u>Hanford</u>	SDG <u>H2220</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>R305136-05</u>	Lab sample id <u>R305136-01</u>	Client sample id <u>B17113</u>
Dept sample id <u>7525-005</u>	Dept sample id <u>7525-001</u>	Location/Matrix <u>216-A-10 (C3245)</u> <u>SOLID</u>
	Received <u>05/21/03</u>	Collected/Weight <u>05/15/03 14:20</u> <u>186.5 g</u>
% solids <u>93.9</u>	% solids <u>93.9</u>	Custody/SAF No <u>F03-006-104</u> <u>F03-006</u>

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	-0.025	0.18	0.30	400	U	H	0.166	0.18	0.30	U	-		
Carbon 14	0.113	1.7	2.9	50	U	C	-0.903	1.8	3.1	U	-		
Nickel 63	-0.922	1.2	2.1	30	U	NI_L	-0.581	1.3	2.2	U	-		
Total Strontium	0.003	0.14	0.29	1.0	U	SR	0.002	0.14	0.29	U	-		
Technetium 99	0.150	0.27	0.52	15	U	TC	0.186	0.24	0.57	U	-		
Thorium 228	0.616	0.31	0.29			TH	0.545	0.21	0.16		12	97	
Thorium 230	0.538	0.31	0.29	1.0		TH	0.481	0.21	0.16		11	111	
Thorium 232	0.192	0.15	0.29	1.0	U	TH	0.481	0.21	0.16		86	116	
Total Uranium (ug/g)	0.415	0.046	0.003	1.0		U_T	0.442	0.049	0.003		6	30	
Uranium 233/234	0.394	0.19	0.14	1.0	U	U	0.390	0.21	0.20		1	109	
Uranium 235	0.023	0.045	0.17	1.0	U	U	0.032	0.063	0.24	U	-		
Uranium 238	0.526	0.19	0.14	1.0	U	U	0.338	0.21	0.20		44	99	
Neptunium 237	0.016	0.024	0.039	1.0	U	NP	0.043	0.034	0.041		92	212	
Plutonium 238	0	0.14	0.53	1.0	U	PU	0	0.092	0.35	U	-		
Plutonium 239/240	0	0.14	0.53	1.0	U	PU	0	0.092	0.35	U	-		
Americium 241	0.040	0.060	0.077	1.0	U	AM	-0.037	0.074	0.28	U	-		
Iodine 129	-0.085	0.52	1.2	2.0	U	I	0.552	0.83	1.9	U	-		
Potassium 40	12.4	11	1.8			GAM	18.7	2.7	1.7		41	114	
Cobalt 60	U		<u>0.17</u>	0.050	U	GAM	U		<u>0.16</u>	U	-		
Tin 126	U		0.18		U	GAM	U		0.21	U	-		
Cesium 134	U		0.22		U	GAM	U		0.18	U	-		
Cesium 137	U		<u>0.16</u>	0.10	U	GAM	U		<u>0.15</u>	U	-		
Radium 226	0.461	0.36	0.33			GAM	0.820	0.24	0.26		56	107	
Radium 228	U		1.6		U	GAM	U		1.3	U	-		
Europium 152	U		<u>0.38</u>	0.10	U	GAM	U		<u>0.36</u>	U	-		
Europium 154	U		<u>0.48</u>	0.10	U	GAM	U		<u>0.42</u>	U	-		
Europium 155	U		<u>0.25</u>	0.10	U	GAM	U		<u>0.31</u>	U	-		
Thorium 228	1.14	0.31	0.28			GAM	0.977	0.16	0.15		15	59	

200-PW-2/200-PW-4 DU - Borehole Soil

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>07/03/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2220

7525-005

B17113

DUPLICATE, cont.

SDG <u>7525</u>	Client/Case no <u>Hanford</u>	SDG <u>H2220</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>R305136-05</u>	Lab sample id <u>R305136-01</u>	Client sample id <u>B17113</u>
Dept sample id <u>7525-005</u>	Dept sample id <u>7525-001</u>	Location/Matrix <u>216-A-10 (C3245)</u> <u>SOLID</u>
	Received <u>05/21/03</u>	Collected/Weight <u>05/15/03 14:20</u> <u>186.5 g</u>
% solids <u>93.9</u>	% solids <u>93.9</u>	Custody/SAF No <u>F03-006-104</u> <u>F03-006</u>

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
Thorium 232	U		1.6		U	GAM	U		1.3	U	-		
Uranium 235	U		0.50		U	GAM	U		0.46	U	-		
Uranium 238	U		17		U	GAM	U		17	U	-		
Americium 241	U		0.13		U	GAM	U		0.34	U	-		

200-PW-2/200-PW-4 OU - Borehole Soil

QC-DUP#1 44877

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>07/03/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2220

7525-006

B17113

MATRIX SPIKE

SDG <u>7525</u>	Client/Case no <u>Hanford</u>	SDG <u>H2220</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
MATRIX SPIKE	ORIGINAL	
Lab sample id <u>R305136-06</u>	Lab sample id <u>R305136-01</u>	Client sample id <u>B17113</u>
Dept sample id <u>7525-006</u>	Dept sample id <u>7525-001</u>	Location/Matrix <u>216-A-10 (C3245)</u> <u>SOLID</u>
	Received <u>05/21/03</u>	Collected/Weight <u>05/15/03 14:20</u> <u>186.5 g</u>
% solids <u>93.9</u>	% solids <u>93.9</u>	Custody/SAF No <u>F03-006-104</u> <u>F03-006</u>

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 % (TOTAL)	3σ LMTS	PROTOCOL LIMITS
Tritium	45.3	0.71	0.28	400	X	H	49.6	2.0	0.166	0.18	91	85-115	60-140

200-PW-2/200-PW-4 OU - Borehole Soil

QC-MS#1 44878

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-MS</u>
Version <u>3.06</u>
Report date <u>07/03/03</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2220

7525-001

B17113

DATA SHEET

SDG <u>7525</u>	Client/Case no <u>Hanford</u>	SDG <u>H2220</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R305136-01</u>	Client sample id <u>B17113</u>	
Dept sample id <u>7525-001</u>	Location/Matrix <u>216-A-10 (C3245)</u>	<u>SOLID</u>
Received <u>05/21/03</u>	Collected/Weight <u>05/15/03 14:20</u>	<u>186.5 g</u>
% solids <u>93.9</u>	Custody/SAF No <u>F03-006-104</u>	<u>F03-006</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	0.166	0.18	0.30	400	U	H
Carbon 14	14762-75-5	-0.903	1.8	3.1	50	U	C
Nickel 63	13981-37-8	-0.581	1.3	2.2	30	U	NI_L
Total Strontium	SR-RAD	0.002	0.14	0.29	1.0	U	SR
Technetium 99	14133-76-7	0.186	0.24	0.57	15	U	TC
Thorium 228	14274-82-9	0.545	0.21	0.16			TH
Thorium 230	14269-63-7	0.481	0.21	0.16	1.0		TH
Thorium 232	TH-232	0.481	0.21	0.16	1.0		TH
Total Uranium (ug/g)	7440-61-1	0.442	0.049	0.003	1.0		U_T
Uranium 233/234	U-233/234	0.390	0.21	0.20	1.0		U
Uranium 235	15117-96-1	0.032	0.063	0.24	1.0	U	U
Uranium 238	U-238	0.338	0.21	0.20	1.0		U
Neptunium 237	13994-20-2	0.043	0.034	0.041	1.0		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
Americium 241	14596-10-2	-0.037	0.074	0.28	1.0	U	AM
Iodine 129	15046-84-1	0.552	0.83	1.9	2.0	U	I
Potassium 40	13966-00-2	18.7	2.7	1.7			GAM
Cobalt 60	10198-40-0	U		0.16	0.050	U	GAM
Tin 126	15832-50-5	U		0.21		U	GAM
Cesium 134	13967-70-9	U		0.18		U	GAM
Cesium 137	10045-97-3	U		0.15	0.10	U	GAM
Radium 226	13982-63-3	0.820	0.24	0.26			GAM
Radium 228	15262-20-1	U		1.3		U	GAM
Europium 152	14683-23-9	U		0.36	0.10	U	GAM
Europium 154	15585-10-1	U		0.42	0.10	U	GAM
Europium 155	14391-16-3	U		0.31	0.10	U	GAM
Thorium 228	14274-82-9	0.977	0.16	0.15			GAM

200-PW-2/200-PW-4 OU - Borehole Soil

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>07/03/03</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2220

7525-001

B17113

DATA SHEET, cont

SDG <u>7525</u>	Client/Case no <u>Hanford</u>	SDG <u>H2220</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R305136-01</u>	Client sample id <u>B17113</u>	
Dept sample id <u>7525-001</u>	Location/Matrix <u>216-A-10 (C3245)</u>	<u>SOLID</u>
Received <u>05/21/03</u>	Collected/Weight <u>05/15/03 14:20</u>	<u>186.5 g</u>
% solids <u>93.9</u>	Custody/SAF No <u>F03-006-104</u>	<u>F03-006</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Thorium 232	TH-232	U		1.3		U	GAM
Uranium 235	15117-96-1	U		0.46		U	GAM
Uranium 238	U-238	U		17		U	GAM
Americium 241	14596-10-2	U		0.34		U	GAM

200-PW-2/200-PW-4 OU - Borehole Soil

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>07/03/03</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2220

7525-002

B17114

DATA SHEET

SDG <u>7525</u>	Client/Case no <u>Hanford</u>	SDG <u>H2220</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R305136-02</u>	Client sample id <u>B17114</u>	
Dept sample id <u>7525-002</u>	Location/Matrix <u>216-A-10 (C3247)</u>	<u>SOLID</u>
Received <u>05/21/03</u>	Collected/Weight <u>05/16/03 10:10</u>	<u>215.5 g</u>
% solids <u>97.2</u>	Custody/SAF No <u>F03-006-105</u>	<u>F03-006</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	9.45	0.35	0.27	400		H
Carbon 14	14762-75-5	-0.033	1.5	2.5	50	U	C
Nickel 63	13981-37-8	-0.321	1.3	2.2	30	U	NI_L
Total Strontium	SR-RAD	0.015	0.14	0.29	1.0	U	SR
Technetium 99	14133-76-7	-0.029	0.20	0.54	15	U	TC
Thorium 228	14274-82-9	0.449	0.28	0.26			TH
Thorium 230	14269-63-7	0.517	0.28	0.26	1.0		TH
Thorium 232	TH-232	0.862	0.35	0.26	1.0		TH
Total Uranium (ug/g)	7440-61-1	0.514	0.057	0.003	1.0		U_T
Uranium 233/234	U-233/234	0.322	0.15	0.14	1.0		U
Uranium 235	15117-96-1	0	0.046	0.18	1.0	U	U
Uranium 238	U-238	0.265	0.15	0.14	1.0		U
Neptunium 237	13994-20-2	0.027	0.030	0.042	1.0	U	NP
Plutonium 238	13981-16-3	0	0.060	0.23	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.060	0.23	1.0	U	PU
Americium 241	14596-10-2	0	0.13	0.25	1.0	U	AM
Iodine 129	15046-84-1	0.353	0.58	1.3	2.0	U	I
Potassium 40	13966-00-2	21.0	1.2	0.63			GAM
Cobalt 60	10198-40-0	U		0.056	0.050	U	GAM
Tin 126	15832-50-5	U		0.079		U	GAM
Cesium 134	13967-70-9	U		0.078		U	GAM
Cesium 137	10045-97-3	U		0.052	0.10	U	GAM
Radium 226	13982-63-3	0.564	0.099	0.10			GAM
Radium 228	15262-20-1	0.994	0.23	0.23			GAM
Europium 152	14683-23-9	U		0.11	0.10	U	GAM
Europium 154	15585-10-1	U		0.19	0.10	U	GAM
Europium 155	14391-16-3	U		0.10	0.10	U	GAM
Thorium 228	14274-82-9	0.969	0.064	0.055			GAM

200-PW-2/200-PW-4 OU - Borehole Soil

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>07/03/03</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2220

7525-002

B17114

DATA SHEET, cont

SDG <u>7525</u>	Client/Case no <u>Hanford</u>	SDG <u>H2220</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R305136-02</u>	Client sample id <u>B17114</u>	
Dept sample id <u>7525-002</u>	Location/Matrix <u>216-A-10 (C3247)</u>	<u>SOLID</u>
Received <u>05/21/03</u>	Collected/Weight <u>05/16/03 10:10</u>	<u>215.5 g</u>
% solids <u>97.2</u>	Custody/SAF No <u>F03-006-105</u>	<u>F03-006</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Thorium 232	TH-232	0.994	0.23	0.23			GAM
Uranium 235	15117-96-1	U		0.14		U	GAM
Uranium 238	U-238	U		6.2		U	GAM
Americium 241	14596-10-2	U		0.12		U	GAM

200-PW-2/200-PW-4 OU - Borehole Soil

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>07/03/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2220

Test AM Matrix SOLID
 SDG 7525
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

AMERICIUM 241 IN SOIL
 ALPHA SPECTROSCOPY

Client Hanford
 Contract No. 630
 Contract SDG H2220

RESULTS

LAB	RAW	SUF-		Americium
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	241

Preparation batch 7071-024

R305136-01	7525-001	B17113		U
R305136-02	7525-002	B17114		U
R305136-03	7525-003	LCS (QC ID=44875)		ok
R305136-04	7525-004	BLK (QC ID=44876)		U
R305136-05	7525-005	Duplicate (R305136-01)		- U

Nominal values and limits from method RDLs (pCi/g) 1.0
 200-PW-2/200-PW-4 OU - Borehole Soil

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR

Preparation batch 7071-024 2σ prep error 5.0 % Reference Lab Notebook 7071 pg. 024

R305136-01	B17113	0.28	0.500	58	105	34	06/18/03	06/18	SS-072
R305136-02	B17114	0.25	0.500	64	105	33	06/18/03	06/18	SS-075
R305136-03	LCS (QC ID=44875)	0.23	0.500	72	105		06/18/03	06/18	SS-077
R305136-04	BLK (QC ID=44876)	0.31	0.500	60	109		06/18/03	06/18	SS-065
R305136-05	Duplicate (R305136-01) (QC ID=44877)	0.077	0.500	68	381	35	06/18/03	06/19	SS-059

Nominal values and limits from method 1.0 0.500 20-105 100 100 180

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
CP-060	Soil Preparation, rev 4	
CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2	
CP-963	Americium and Curium in Water and Dissolved Samples by Extraction Chromatography, rev 3	
CP-008	Heavy Element Electroplating, rev 7	

AVERAGES ± 2 SD	MDA	<u>0.23</u> ± <u>0.18</u>
FOR 5 SAMPLES	YIELD	<u>64</u> ± <u>11</u>

METHOD SUMMARIES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2220

LAB METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Test NP Matrix SOLID
SDG 7525
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2220

RESULTS

LAB	RAW	SUF-	CLIENT SAMPLE ID	Neptunium
SAMPLE ID	TEST FIX	PLANCHET		237
Preparation batch 7071-024				
R305136-01		7525-001	B17113	0.043
R305136-02		7525-002	B17114	U
R305136-03		7525-003	LCS (QC ID=44875)	<u>LOW</u>
R305136-04		7525-004	BLK (QC ID=44876)	U
R305136-05		7525-005	Duplicate (R305136-01)	ok U
Nominal values and limits from method RDLs (pCi/g) 1.0				
200-PW-2/200-PW-4 OU - Borehole Soil				

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7071-024 2σ prep error 5.0 % Reference Lab Notebook 7071 pg. 024															
R305136-01		B17113	0.041	0.500			58		1078			40	06/24/03	06/24	SS-042
R305136-02		B17114	0.042	0.500			63		1079			39	06/24/03	06/24	SS-051
R305136-03		LCS (QC ID=44875)	0.030	0.500			59		1079				06/24/03	06/24	SS-052
R305136-04		BLK (QC ID=44876)	0.037	0.500			67		1079				06/24/03	06/24	SS-053
R305136-05		Duplicate (R305136-01) (QC ID=44877)	0.039	0.500			59		1079			40	06/24/03	06/24	SS-055
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 4	
CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2	
CP-930	Neptunium from Solids and Water by Extraction Chromatography, rev 0	
CP-008	Heavy Element Electroplating, rev 7	

AVERAGES ± 2 SD	MDA <u>0.038 ± 0.010</u>
FOR 5 SAMPLES	YIELD <u>61 ± 8</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2220

Test PU Matrix SOLID
 SDG 7525
 Contact Melissa C. Mannion

LAB METHOD SUMMARY
 PLUTONIUM, ISOTOPIC IN SOLIDS
 ALPHA SPECTROSCOPY

Client Hanford
 Contract No. 630
 Contract SDG H2220

RESULTS

LAB	RAW	SUF-		Plutonium	Plutonium
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	238	239/240
Preparation batch 7071-024					
R305136-01		7525-001	B17113	U	U
R305136-02		7525-002	B17114	U	U
R305136-03		7525-003	LCS (QC ID=44875)	ok	ok
R305136-04		7525-004	BLK (QC ID=44876)	U	U
R305136-05		7525-005	Duplicate (R305136-01)	- U	- U

Nominal values and limits from method RDLs (pCi/g) 1.0 1.0
 200-PW-2/200-PW-4 OU - Borehole Soil

METHOD PERFORMANCE

LAB	RAW	SUF-		MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID		pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD PREPARED	YZED DETECTOR
Preparation batch 7071-024 2σ prep error 5.0 % Reference Lab Notebook 7071 pg. 024														
R305136-01		B17113		0.35	0.500			58		103			36 06/20/03 06/20	SS-060
R305136-02		B17114		0.23	0.500			85		103			35 06/20/03 06/20	SS-061
R305136-03		LCS (QC ID=44875)		0.34	0.500			57		104			06/20/03 06/20	SS-062
R305136-04		BLK (QC ID=44876)		0.36	0.500			61		104			06/20/03 06/20	SS-063
R305136-05		Duplicate (R305136-01) (QC ID=44877)		0.53	0.500			37		104			36 06/20/03 06/20	SS-064

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 4
CP-071		Soil Dissolution, > 1.0g Aliquot, rev 2
CP-941		Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 1
CP-008		Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA	<u>0.36</u> ± <u>0.22</u>
FOR 5 SAMPLES	YIELD	<u>60</u> ± <u>34</u>

METHOD SUMMARIES

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Lab id EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2220

Test TH Matrix SOLID
 SDG 7525
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
 ALPHA SPECTROSCOPY

Client Hanford
 Contract No. 630
 Contract SDG H2220

RESULTS

LAB RAW SUF-
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Thorium 230

Preparation batch 7071-024

R305136-01	7525-001	B17113	0.481
R305136-02	7525-002	B17114	0.517
R305136-03	7525-003	LCS (QC ID=44875)	ok
R305136-04	7525-004	BLK (QC ID=44876)	U
R305136-05	7525-005	Duplicate (R305136-01)	ok

Nominal values and limits from method RDLs (pCi/g) 1.0
 200-PW-2/200-PW-4 OU - Borehole Soil

METHOD PERFORMANCE

LAB RAW SUF- MAX MDA ALIQ PREP DILU- YIELD EFF COUNT FWHM DRIFT DAYS ANAL-
 SAMPLE ID TEST FIX CLIENT SAMPLE ID pCi/g g FAC TION % % min keV KeV HELD PREPARED YZED DETECTOR

Preparation batch 7071-024 2σ prep error 5.0 % Reference Lab Notebook 7071 pg. 024

R305136-01	B17113	0.16	0.250	86	360	41	06/24/03	06/25	SS-063
R305136-02	B17114	0.26	0.250	43	360	40	06/24/03	06/25	SS-065
R305136-03	LCS (QC ID=44875)	0.34	0.250	76	360		06/24/03	06/25	SS-066
R305136-04	BLK (QC ID=44876)	0.42	0.250	68	179		06/24/03	06/25	SS-042
R305136-05	Duplicate (R305136-01) (QC ID=44877)	0.29	0.250	78	180	41	06/24/03	06/25	SS-058

Nominal values and limits from method 1.0 0.250 20-105 150 180

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
	CP-060	Soil Preparation, rev 4
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-900	Thorium in Water and Dissolved Solid Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA	<u>0.29 ± 0.19</u>
FOR 5 SAMPLES	YIELD	<u>70 ± 33</u>

METHOD SUMMARIES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2220

Test U Matrix SOLID
 SDG 7525
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
 ALPHA SPECTROSCOPY

Client Hanford
 Contract No. 630
 Contract SDG H2220

RESULTS

LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	CLIENT SAMPLE ID	1: Uranium	2: Uranium	3: Uranium	RESULT RATIOS (%)				
				233/234	235	238	1+3	2σ	2+3	2σ	
Preparation batch 7071-024											
R305136-01		7525-001	B17113	0.390	U	0.338	115	95	9	20	
R305136-02		7525-002	B17114	0.322	U	0.265	122	89	0	17	
R305136-03		7525-003	LCS (QC ID=44875)	ok	ok	ok					
R305136-04		7525-004	BLK (QC ID=44876)	U	U	U					
R305136-05		7525-005	Duplicate (R305136-01)	ok	- U	ok	75	45	4	9	
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100	4		
200-PW-2/200-PW-4 OU - Borehole Soil							Averages 104	5			

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST FIX	SUF- CLIENT SAMPLE ID	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL-		
													PREPARED	YZED	DETECTOR
Preparation batch 7071-024														2σ prep error 5.0 %	Reference Lab Notebook 7071 pg. 024
R305136-01		B17113	0.24	0.500			98		104			40	06/24/03	06/24	SS-042
R305136-02		B17114	0.18	0.500			88		159			39	06/24/03	06/24	SS-042
R305136-03		LCS (QC ID=44875)	1.1	0.500			88		101				06/24/03	06/25	SS-053
R305136-04		BLK (QC ID=44876)	0.20	0.500			91		138				06/24/03	06/25	SS-053
R305136-05		Duplicate (R305136-01) (QC ID=44877)	0.17	0.500			96		139			41	06/24/03	06/25	SS-060
Nominal values and limits from method			1.0	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	UIISO_PLATE_AEA
CP-060		Soil Preparation, rev 4
CP-071		Soil Dissolution, > 1.0g Aliquot, rev 2
CP-921		Uranium in Water and Dissolved Samples by Extraction Chromatography, rev 0
CP-008		Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA	0.38 ± 0.81
FOR 5 SAMPLES	YIELD	92 ± 9

METHOD SUMMARIES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2220

Test SR Matrix SOLID
 SDG 7525
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
 BETA COUNTING

Client Hanford
 Contract No. 630
 Contract SDG H2220

RESULTS

LAB	RAW	SUF-		Total
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Strontium
Preparation batch 7071-024				
R305136-01		7525-001	B17113	U
R305136-02		7525-002	B17114	U
R305136-03		7525-003	LCS (QC ID=44875)	ok
R305136-04		7525-004	BLK (QC ID=44876)	U
R305136-05		7525-005	Duplicate (R305136-01)	- U

Nominal values and limits from method RDLs (pCi/g) 1.0
 200-PW-2/200-PW-4 OU - Borehole Soil

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7071-024 2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 024															
R305136-01		B17113	0.29	1.00			97	100				35	06/19/03	06/19	GRB-223
R305136-02		B17114	0.29	1.00			97	100				34	06/19/03	06/19	GRB-224
R305136-03		LCS (QC ID=44875)	0.27	1.00			80	81					06/19/03	06/19	GRB-223
R305136-04		BLK (QC ID=44876)	0.38	1.00			79	100					06/19/03	06/19	GRB-229
R305136-05		Duplicate (R305136-01) (QC ID=44877)	0.29	1.00			100	100				35	06/19/03	06/19	GRB-230

Nominal values and limits from method 1.0 1.00 30-105 100 180

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
CP-060		Soil Preparation, rev 4
CP-071		Soil Dissolution, > 1.0g Aliquot, rev 2
CP-381		Strontium in Solids, rev 1

AVERAGES ± 2 SD	MDA	<u>0.30</u> ± <u>0.087</u>
FOR 5 SAMPLES	YIELD	<u>91</u> ± <u>20</u>

Lab id EBRLNE
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METHOD SUMMARIES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2220

Test IC Matrix SOLID
 SDG 7525
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

TECHNETIUM 99 IN SOIL
 BETA COUNTING

Client Hanford
 Contract No. 630
 Contract SDG H2220

RESULTS

LAB	RAW	SUF-		Technetium
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	99
Preparation batch 7060-198				
R305091-04		7517-004	LCS (QC ID=44788)	ok
R305091-05		7517-005	BLK (QC ID=44789)	U
R305136-01		7525-001	B17113	U
R305136-02		7525-002	B17114	U
R305136-05		7525-005	Duplicate (R305136-01)	- U

Nominal values and limits from method RDLs (pCi/g) 15
 200-PW-2/200-PW-4 OU - Borehole Soil

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7060-198 2σ prep error 10.0 % Reference Lab Notebook 7060 pg. 198															
R305091-04		LCS (QC ID=44788)	0.52	1.00			98		50				06/24/03	06/27	GRB-218
R305091-05		BLK (QC ID=44789)	0.58	1.00			87		50				06/24/03	06/28	GRB-202
R305136-01		B17113	0.57	1.05			87		50			44	06/24/03	06/28	GRB-219
R305136-02		B17114	0.54	1.01			91		50			43	06/24/03	06/28	GRB-220
R305136-05		Duplicate (R305136-01) (QC ID=44877)	0.52	1.00			89		50			44	06/24/03	06/28	GRB-224

Nominal values and limits from method 15 1.00 20-105 50 180

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2	
CP-021	Preparation of Tc-99m Tracer, rev 2	
CP-002	Q.C. Preparation, rev 4	
CP-003	Addition of Carriers and Tracers, rev 5	
CP-542	Technetium-99 Purification (Soil) by Extraction Chromatography, rev 2	
CP-008	Heavy Element Electroplating, rev 7	

AVERAGES ± 2 SD	MDA <u>0.55 ± 0.056</u>
FOR 5 SAMPLES	YIELD <u>90 ± 9</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2220

Test GAM Matrix SOLID
 SDG 7525
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

GAMMA SCAN
 GAMMA SPECTROSCOPY

Client Hanford
 Contract No. 630
 Contract SDG H2220

RESULTS

LAB	RAW	SUF-				
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Cobalt 60	Cesium 137	
Preparation batch 7071-024						
R305136-01		7525-001	B17113	U	U	
R305136-02		7525-002	B17114	U	U	
R305136-03		7525-003	LCS (QC ID=44875)	ok	ok	
R305136-04		7525-004	BLK (QC ID=44876)	U	U	
R305136-05		7525-005	Duplicate (R305136-01)	- U	- U	
Nominal values and limits from method						
			RDLs (pCi/g)	0.050	0.10	
200-PW-2/200-PW-4 OU - Borehole Soil						

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7071-024 2σ prep error 15.0 % Reference Lab Notebook 7071 pg. 024															
R305136-01		B17113	<u>1.3</u>	39.8					433			36	06/11/03	06/20	PD,03,00
R305136-02		B17114	<u>0.43</u>	70.4					474			35	06/11/03	06/20	PD,04,00
R305136-03		LCS (QC ID=44875)	<u>0.12</u>	39.8					1150				06/11/03	06/21	PD,03,00
R305136-04		BLK (QC ID=44876)	<u>0.48</u>	39.8					412				06/11/03	06/20	PD,04,00
R305136-05		Duplicate (R305136-01) (QC ID=44877)	<u>1.2</u>	39.8					413			36	06/11/03	06/20	PD,07,00
Nominal values and limits from method															
			0.050	39.8					100				180		

PROCEDURES	REFERENCE	GAMMA_GS
CP-060	Soil Preparation, rev 4	
CP-100	Ge(Li) Preparation for Commercial Samples, rev 5	

AVERAGES ± 2 SD	MDA	<u>0.71</u> ± <u>1.0</u>
FOR 5 SAMPLES	YIELD	_____ ± _____

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2220

Test I Matrix SOLID
 SDG 7525
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

IODINE 129 IN SOIL
 GAMMA SPECTROSCOPY

Client Hanford
 Contract No. 630
 Contract SDG H2220

RESULTS

LAB	RAW	SUF-		
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Iodine 129
Preparation batch 7071-024				
R305136-01	7525-001		B17113	U
R305136-02	7525-002		B17114	U
R305136-03	7525-003		LCS (QC ID=44875)	ok
R305136-04	7525-004		BLK (QC ID=44876)	U
R305136-05	7525-005		Duplicate (R305136-01)	- U

Nominal values and limits from method RDLs (pCi/g) 2.0
 200-PW-2/200-PW-4 OU - Borehole Soil

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD PREPARED	YZED DETECTOR
Preparation batch 7071-024			2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 024										
R305136-01		B17113	1.9	1.00			64		1122			40 06/24/03	06/24 XSPEC-016
R305136-02		B17114	1.3	1.00			58		602			40 06/24/03	06/25 XSPEC-004
R305136-03		LCS (QC ID=44875)	1.4	1.00			93		935			06/24/03	06/26 XSPEC-004
R305136-04		BLK (QC ID=44876)	1.5	1.00			94		616			06/24/03	06/25 XSPEC-016
R305136-05		Duplicate (R305136-01) (QC ID=44877)	1.2	1.00			67		617			41 06/24/03	06/25 XSPEC-004

Nominal values and limits from method 2.0 1.00 20-105 300 180

PROCEDURES	REFERENCE	1129_SEP_LEPS_GS
	CP-024	Iodine-129, Sample Dissolution, rev 3
	CP-530	Iodine-129 Purification, rev 0

AVERAGES ± 2 SD	MDA	<u>1.5</u> ± <u>0.54</u>
FOR 5 SAMPLES	YIELD	<u>75</u> ± <u>34</u>

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 07/03/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2220

Test U Matrix SOLID
 SDG 7525
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

URANIUM, TOTAL IN SOIL
 KINETIC PHOSPHORIMETRY (KPA)

Client Hanford
 Contract No. 630
 Contract SDG H2220

RESULTS

LAB	RAW	SUF-		Total		
SAMPLE ID	TEST	FIX	PLANCHET	CLIENT SAMPLE ID	Uranium	
Preparation batch 7071-024						
R305136-01			7525-001	B17113	0.442	
R305136-02			7525-002	B17114	0.514	
R305136-03			7525-003	LCS (QC ID=44875)	ok	
R305136-04			7525-004	BLK (QC ID=44876)	U	
R305136-05			7525-005	Duplicate (R305136-01)	ok	
Nominal values and limits from method					RDLs (ug/g)	1.0
200-PW-2/200-PW-4 OU - Borehole Soil						

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-				
SAMPLE ID	TEST	FIX	CLIENT	SAMPLE ID	ug/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7071-024					2σ prep error 9.0 % Reference Lab Notebook 7071 pg. 024												
R305136-01			B17113		0.003	0.100								33	06/17/03	06/17	KPA-001
R305136-02			B17114		0.003	0.100								32	06/17/03	06/17	KPA-001
R305136-03			LCS (QC ID=44875)		0.035	0.100									06/17/03	06/17	KPA-001
R305136-04			BLK (QC ID=44876)		0.003	0.100									06/17/03	06/17	KPA-001
R305136-05			Duplicate (R305136-01)		0.003	0.100								33	06/17/03	06/17	KPA-001
					(QC ID=44877)												
Nominal values and limits from method					1.0	0.100											180

PROCEDURES	REFERENCE	UTOT_KPA
CP-060		Soil Preparation, rev 4
CP-071		Soil Dissolution, > 1.0g Aliquot, rev 2
CP-044		Sample Preparation for Total Uranium by Kinetic Phosphorimetry, rev 4
CP-928		Total Uranium by Kinetic Phosphorimetry, rev 5

AVERAGES ± 2 SD	MDA <u>0.009</u> ± <u>0.029</u>
FOR 5 SAMPLES	YIELD _____ ± _____

Lab id EBRLNE
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 Form DVD-LMS
 Version 3.06
 Report date 07/03/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2220

Test C Matrix SOLID
 SDG 7525
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

CARBON 14 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
 Contract No. 630
 Contract SDG H2220

RESULTS

LAB	RAW	SUF-		
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Carbon 14
Preparation batch 7071-024				
R305136-01		7525-001	B17113	U
R305136-02		7525-002	B17114	U
R305136-03		7525-003	LCS (QC ID=44875)	ok
R305136-04		7525-004	BLK (QC ID=44876)	U
R305136-05		7525-005	Duplicate (R305136-01)	- U

Nominal values and limits from method RDLs (pCi/g) 50
 200-PW-2/200-PW-4 OU - Borehole Soil

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD PREPARED	YZED DETECTOR
Preparation batch 7071-024 2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 024													
R305136-01		B17113	3.1	0.327			100					47 07/01/03	07/01 LSC-004
R305136-02		B17114	2.5	0.396			100					47 07/01/03	07/02 LSC-004
R305136-03		LCS (QC ID=44875)	11	0.327			100		10			07/01/03	07/02 LSC-004
R305136-04		BLK (QC ID=44876)	3.1	0.327			100		100			07/01/03	07/01 LSC-004
R305136-05		Duplicate (R305136-01) (QC ID=44877)	2.9	0.351			100		100			47 07/01/03	07/01 LSC-004

Nominal values and limits from method 50 0.327 50 180

PROCEDURES REFERENCE C14_COX_LSC
 CP-251 Tritium/Carbon-14 Oxidation, rev 5

AVERAGES ± 2 SD MDA 4.5 ± 7.3
 FOR 5 SAMPLES YIELD 100 ± 0

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 07/03/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2220

LAB METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Test H Matrix SOLID
 SDG 7525
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG H2220

RESULTS

LAB	RAW	SUF-			Tritium
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID		
Preparation batch 7071-024					
R305136-01		7525-001	B17113	U	
R305136-02		7525-002	B17114	9.45	
R305136-03		7525-003	LCS (QC ID=44875)	ok	
R305136-04		7525-004	BLK (QC ID=44876)	U	
R305136-05		7525-005	Duplicate (R305136-01)	-	U
R305136-06		7525-006	Spike (R305136-01)	ok	X

Nominal values and limits from method RDLs (pCi/g) 400
 200-PW-2/200-PW-4 OU - Borehole Soil

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7071-024 2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 024															
R305136-01		B17113	0.30	20.6			33		120		39	06/23/03	06/23	LSC-004	
R305136-02		B17114	0.27	22.1			33		120		38	06/23/03	06/23	LSC-004	
R305136-03		LCS (QC ID=44875)	0.29	20.0			33		120			06/23/03	06/24	LSC-004	
R305136-04		BLK (QC ID=44876)	0.30	20.0			33		120			06/23/03	06/24	LSC-004	
R305136-05		Duplicate (R305136-01)	0.30	20.6			33		120		40	06/23/03	06/24	LSC-004	
		(QC ID=44877)													
R305136-06		Spike (R305136-01)	0.28	21.0			33		120		40	06/23/03	06/24	LSC-004	
		(QC ID=44878)													

Nominal values and limits from method 400 20.0 25 180

PROCEDURES REFERENCE 906.0_H3_LSC
 CP-216 Tritium in Solid Samples by Azeotropic
 Distillation, rev 6

AVERAGES ± 2 SD MDA 0.29 ± 0.025
 FOR 6 SAMPLES YIELD 33 ± 0

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 07/03/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2220

Test NI_L Matrix SOLID
 SDG 7525
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
 Contract No. 630
 Contract SDG H2220

RESULTS

LAB RAW SUF-
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Nickel 63

Preparation batch 7071-024

R305136-01		7525-001	B17113	U
R305136-02		7525-002	B17114	U
R305136-03		7525-003	LCS (QC ID=44875)	ok
R305136-04		7525-004	BLK (QC ID=44876)	U
R305136-05		7525-005	Duplicate (R305136-01)	- U

Nominal values and limits from method RDLs (pCi/g) 30
 200-PW-2/200-PW-4 OU - Borehole Soil

METHOD PERFORMANCE

LAB RAW SUF- MDA ALIQ PREP DILU- YIELD EFF COUNT FWHM DRIFT DAYS ANAL-
 SAMPLE ID TEST FIX CLIENT SAMPLE ID pCi/g g FAC TION % % min keV KeV HELD PREPARED YZED DETECTOR

Preparation batch 7071-024 2σ prep error 10.0 % Reference Lab Notebook 7071 pg. 024

R305136-01		B17113	2.2	0.500	90	100	36	06/19/03	06/20	LSC-004
R305136-02		B17114	2.2	0.500	88	100	35	06/19/03	06/20	LSC-004
R305136-03		LCS (QC ID=44875)	2.2	0.500	96	79		06/19/03	06/20	LSC-004
R305136-04		BLK (QC ID=44876)	2.0	0.500	95	100		06/19/03	06/20	LSC-004
R305136-05		Duplicate (R305136-01) (QC ID=44877)	2.1	0.500	90	100	36	06/19/03	06/20	LSC-004

Nominal values and limits from method 30 0.500 30-105 50 180

PROCEDURES	REFERENCE	NI63_LSC
CP-060	Soil Preparation, rev 4	
CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2	
CP-280	Nickel-63 Purification, rev 0	

AVERAGES ± 2 SD	MDA	<u>2.1</u> ± <u>0.18</u>
FOR 5 SAMPLES	YIELD	<u>92</u> ± <u>7</u>

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2220

SDG 7525
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2220

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- * LAB SAMPLE ID is the lab's primary identification for a sample.
- * DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- * CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- * QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

- * All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

REPORT GUIDES

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SUMMARY DATA SECTION

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E B E R L I N E S E R V I C E S / R I C H M O N D

SAMPLE DELIVERY GROUP H2220

SDG 7525
 Contact Melissa C. Mannion

R E P O R T G U I D E

Client Hanford
 Contract No. 630
 Case no SDG H2220

P R E P A R A T I O N B A T C H S U M M A R Y

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- * The preparation batches are shown in the same order as the Method Summary Reports are printed.
- * Only analyses of planchets relevant to the SDG are included.
- * Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- * The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified. Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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Lab id EERLINE
 Protocol Hanford
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SAMPLE DELIVERY GROUP H2220

SDG 7525
 Contact Melissa C. Mannion

REPORT GUIDE

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 Case no SDG H2220

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- * TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- * SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- * The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- * PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- * For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- * The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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 Protocol Hanford
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SAMPLE DELIVERY GROUP H2220

SDG 7525
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REPORT GUIDE

Client Hanford
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DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

- * TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- * The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

- * ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- * A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- * When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

- U The RESULT is less than the MDA (Minimum Detectable Activity).

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SAMPLE DELIVERY GROUP H2220

SDG 7525
 Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
 Contract No. 630
 Case no SDG H2220

DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
 - B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.
- Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.
- For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.
- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
 - H Similar to 'L' except the recovery was high.
 - P The RESULT is 'preliminary'.
 - X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
 - 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

- * An MDA is underlined if it is bigger than its RDL.

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SAMPLE DELIVERY GROUP H2220

SDG 7525

Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford

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Case no SDG H2220

DATA SHEET

- * An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- * A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- * When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

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Version 3.06

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SAMPLE DELIVERY GROUP H2220

REPORT GUIDE

SDG 7525

Contact Melissa C. Mannion

Client Hanford

Contract No. 630

Case no SDG H2220

LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- * An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- * The first, computed limits for the recovery reflect:
 1. The error of RESULT, including that introduced by rounding the result prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
 2. The error of ADDED.
 3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- * The second limits are protocol defined upper and lower QC limits for the recovery.
- * The recovery is underlined if it is outside either of these ranges.

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Protocol Hanford

Version Ver 1.0

Form DVD-RG

Version 3.06

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SAMPLE DELIVERY GROUP H2220

SDG 7525
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2220

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTS divided by their average expressed as a percent.

If both RESULTS are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

- * The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTS prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTS. If labeled CNT, it does not.

This value reported for this limit is at most 999.

- * The second limit for the RPD is the larger of:

1. A fixed percentage specified in the protocol.

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Version Ver 1.0
Form DVD-RG
Version 3.06
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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2220

SDG 7525
 Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
 Contract No. 630
 Case no SDG H2220

DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

- * The RPD is underlined if it is greater than either limit.
- * If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

- * The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

- * The first, computed limits for the recovery reflect:

1. The errors of the two RESULTS, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

2. The error of ADDED.

3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

- * The second limits are protocol defined upper and lower QC limits

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MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

- * The recovery is underlined (out of spec) if it is outside either of these ranges.

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METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

- * Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

- * The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

- * If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- * Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- * Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

- * Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
 - * If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.
- MDAs are underlined if greater than the printed RDL.
- * Aliquots are underlined if less than the nominal value specified for the method.
 - * Preparation factors are underlined if greater than the nominal value specified for the method.
 - * Dilution factors are underlined if greater than the nominal value specified for the method.
 - * Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
 - * Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
 - * Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

REPORT GUIDES

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METHOD SUMMARY

- * Count times are underlined if less than the nominal value specified for the method.
- * Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- * Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- * Days Held are underlined if greater than the holding time specified in the protocol.
- * Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1+3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

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GUIDE, cont.

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METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

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FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-105	Page 2 of 2
Collector Johansen/Pope/Pfister	Company Contact LC Hulstrom	Telephone No. 373-3928	Project Coordinator TRENT, SJ		Price Code 8N	Data Turnaround 45 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	Sampling Location 216-A-10 (C3247) 45-47.5 ft	SDA H2220 (7525)		SAF No. F03-006	Air Quality <input type="checkbox"/>		
Ice Chest No. JANS 026	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express				
Shipped To EBERLINE SERVICES (Formerly TMA)	Offsite Property No. A030 264	Bill of Lading/Air Bill No. SEE OSP C					
POSSIBLE SAMPLE HAZARDS/REMARKS radioactive TLETO: B17130 Special Handling and/or Storage N/A			Preservation None				
			Type of Container aG				
			No. of Container(s) 1				
			Volume 60mL				
SAMPLE ANALYSIS			Tritium - H3				
Sample No.	Matrix *	Sample Date	Sample Time				
B17114	SOIL	5-16-03	1010	X			
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS			Matrix *
Relinquished By/Removed From J. S. Pope 1494	Date/Time 5-16-03 1320	Received By/Stored In M0-026 REF # 2	Date/Time 5-16-03 1320	** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis. Personnel not available to relinquish samples from the 3728 Ref # 1B on 5/20/03			S=Soil SE=Soil/Sediment SO=Solid Sl=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue Wl=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From M0-026 REF # 2	Date/Time 5-19-03 1315	Received By/Stored In J. S. Pope	Date/Time 5-19-03 1315				
Relinquished By/Removed From M0-026 REF # 2	Date/Time 5-19-03 1400	Received By/Stored In K. A. Pope	Date/Time 5-19-03 1400				
Relinquished By/Removed From K. A. Pope	Date/Time 5-19-03 1400	Received By/Stored In J. S. Pope	Date/Time 5-19-03 1400				
Relinquished By/Removed From REF # B 3728	Date/Time 5-20-03 1300	Received By/Stored In S. J. Pope	Date/Time 5-20-03 1300				
Relinquished By/Removed From S. J. Pope	Date/Time 5-20-03 1300	Received By/Stored In FED EX	Date/Time				
LABORATORY SECTION	Received By L. C. Hulstrom	1000	5-21-03	Title	Date/Time		
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By			Date/Time		



ANALYTICAL SERVICES GROUP

Richmond, CA Laboratory

SAMPLE RECEIPT CHECKLIST

Client: FLR Date/Time received 1000 5-21-03
 CoC No. F03-006-104, 115
 Container I.D. No. SAWS-026 Requested TAT (Days) 45 P.O. Received Yes [] No []

INSPECTION

- Custody seals on shipping container intact? Yes [] No [] N/A []
- Custody seals on shipping container dated & signed? Yes [] No [] N/A []
- Custody seals on sample containers intact? Yes [] No [] N/A []
- Custody seals on sample containers dated & signed? Yes [] No [] N/A []
- Packing material is: Wet [] Dry []
- Number of samples in shipping container: 2
- Number of containers per sample: 3 (Or see CoC _____)
- Paperwork agrees with samples? Yes [] No []
- Samples have: Tape [] Hazard labels [] Rad labels [] Appropriate sample labels []
- Samples are: In good condition [] Leaking [] Broken Container [] Missing []
- Samples are: Preserved [] Not preserved [] Preservative _____
- Describe any anomalies: B17113: TIME ON COC = 1420, TIME ON ONE OF JARS = 1520
- Was P.M. notified of any anomalies? Yes [] No [] Date 5-21-03
- Received by Jim Co Date: 5-21-03 Time: 1000

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe
<u>B17113</u>	<u>240</u>						
<u>B17114</u>	<u>240</u>						

Ion Chamber Ser. No. _____ Calibration date _____
 Alpha Meter Ser. No. _____ Calibration date _____
 Beta/Gamma Meter Ser. No. 99574 Calibration date 12-12-02



2 July 2003

Mr. Steve Trent
Fluor Hanford Inc.
825 Jadwin Ave.
Richland, WA 99352



**Subject: Contract No. 630
Analytical Data Package**

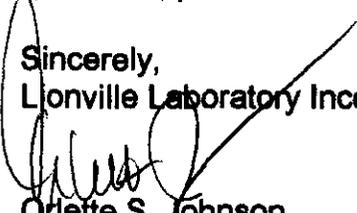
Dear Mr. Trent:

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

LvLI Batch #	0305L456
SDG #	H2220
SAF #	F03-006
Date Received	5-21-03
# Samples	3
Matrix	Soil
Volatiles	X
Semivolatiles	X
Pest/PCB	X
DRO/GRO/KRO	X
Herbicides	
GC Alcohol	X
Metals	X
Inorganics	X

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

Sincerely,
Lionville Laboratory Incorporated


Oriette S. Johnson
Project Manager

Lionville Laboratory, Inc.
 VOA ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2220

RFW LOT # :0305L456

CLIENT ID	RFW #	MTX	PREP #	COLLECTN DATE	REC	EXT/PREP	ANALYSIS
B17114	003	S	03LVG113	05/16/03	05/21/03	N/A	05/22/03
B17114	003 MS	S	03LVG113	05/16/03	05/21/03	N/A	05/22/03
B17114	003 MSD	S	03LVG113	05/16/03	05/21/03	N/A	05/22/03
LAB QC:							
VBLKSV	MB1	S	03LVG113	N/A	N/A	N/A	05/22/03
VBLKSV	MB1 BS	S	03LVG113	N/A	N/A	N/A	05/22/03





Client: TNU-HANFORD F03-006
LVL #: 0305L456
SDG/SAF # H2220/F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 05-21-2003

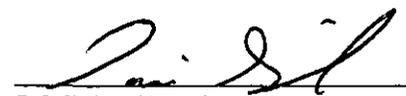
GC/MS VOLATILE

One (1) soil sample was collected on 05-16-2003.

The sample and its 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 05-22-2003.

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

1. All results presented in this report are derived from a sample that met LvLI's sample acceptance policy.
2. The sample was analyzed within holding time.
3. Non-target compounds were not detected in the sample.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blank contained the common laboratory contaminants Methylene Chloride and Acetone at levels 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

6/22/03
Date

son\group\data\voaltnu-hanford\0305-456.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 13 pages.

GLOSSARY

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.

mmz\10-94\gloss.bna



GLOSSARY

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.

mmz\10-94\gloss.bna



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: 06/18/03 20:19

RFW Batch Number: 0305L456

Client: TNUHANFORD F03-006 H2220 Work Order: 11343606001 Page: 1a

Sample Information	Cust ID:	B17114	B17114	B17114	VBLKSV	VBLKSV BS
	RFW#:	003	003 MS	003 MSD	03LVG113-MB1	03LVG113-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.04	1.02	1.06	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate	Toluene-d8	89 %	90 %	86 %	94 %	86 %
Recovery	Bromofluorobenzene	69 %	77 %	74 %	80 %	75 %
	1,2-Dichloroethane-d4	124 %	124 %	124 %	119 %	106 %
=====fl=====fl=====fl=====fl=====fl=====fl=====						
Chloromethane		11 U	10 U	11 U	10 U	10 U
Bromomethane		11 U	10 U	11 U	10 U	10 U
Vinyl Chloride		11 U	10 U	11 U	10 U	10 U
Chloroethane		11 U	10 U	11 U	10 U	10 U
Methylene Chloride		21 B	15 B	12 B	8	12 B
Acetone		3 JB	3 JB	3 BJ	2 J	2 JB
Carbon Disulfide		6 U	5 U	6 U	5 U	5 U
1,1-Dichloroethene		6 U	90 %	82 %	5 U	83 %
1,1-Dichloroethane		6 U	5 U	6 U	5 U	5 U
1,2-Dichloroethene (total)		6 U	5 U	6 U	5 U	5 U
Chloroform		6 U	5 U	6 U	5 U	5 U
1,2-Dichloroethane		6 U	5 U	6 U	5 U	5 U
2-Butanone		11 U	10 U	11 U	10 U	10 U
1,1,1-Trichloroethane		6 U	5 U	6 U	5 U	5 U
Carbon Tetrachloride		6 U	5 U	6 U	5 U	5 U
Bromodichloromethane		6 U	5 U	6 U	5 U	5 U
1,2-Dichloropropane		6 U	5 U	6 U	5 U	5 U
cis-1,3-Dichloropropene		6 U	5 U	6 U	5 U	5 U
Trichloroethene		6 U	117 %	109 %	5 U	102 %
Dibromochloromethane		6 U	5 U	6 U	5 U	5 U
1,1,2-Trichloroethane		6 U	5 U	6 U	5 U	5 U
Benzene		6 U	128 %	118 %	5 U	108 %
Trans-1,3-Dichloropropene		6 U	5 U	6 U	5 U	5 U
Bromoform		6 U	5 U	6 U	5 U	5 U
4-Methyl-2-pentanone		11 U	10 U	11 U	10 U	10 U
2-Hexanone		11 U	10 U	11 U	10 U	10 U
Tetrachloroethene		6 U	5 U	6 U	5 U	5 U
1,1,2,2-Tetrachloroethane		6 U	5 U	6 U	5 U	5 U
Toluene		6 U	118 %	108 %	5 U	104 %

*= Outside of EPA CLP QC limits.

Cust ID: B17114 B17114 B17114 VBLKSV VBLKSV BS

RFW#: 003 003 MS 003 MSD 03LVG113-MB1 03LVG113-MB1

Chlorobenzene	6 U	119 %	108 %	5 U	105 %
Ethylbenzene	6 U	5 U	6 U	5 U	5 U
Styrene	6 U	5 U	6 U	5 U	5 U
Xylene (total)	6 U	5 U	6 U	5 U	5 U

*= Outside of EPA CLP QC limits.



FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

0305L456

Client <u>TNU-Hanford</u> <u>F03-006</u>	Refrigerator #	1	2															
Est. Final Proj. Sampling Date	#/Type Container	Liquid																
Project # <u>11343-606-001-9999-00</u>		Solid	10g	10g	10g	10g	10g		10g		10g	10g	10g	10g				
Project Contact/Phone #	Volume	Liquid																
Lionville Laboratory Project Manager <u>Orlitta Johnson</u>		Solid	60	125	60	250	60		60		60	125	60	60				
QC <u>SPEC</u> Del <u>STD</u> TAT <u>30 days</u>	Preservatives		-	-	-	-												
Date Rec'd <u>5.21.03</u> Date Due <u>6.20.03</u>	ANALYSES REQUESTED →	ORGANIC						INORG										
		VOA	BNA (2)	Pos/BCB	Herb	Alcohols	Glycols	Metal (2)	CN	Hex	Chrom	IC	Asims	NO2	NO3	Oil + Grease		

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 (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only														
			MS	MSD				0624H	0625X	0626O	0627O	0609H	0H86X	0GC5C	MCTO	ICR6	INORG O	INHNZ	FOG6A			
	001	B17112			S	5.15.03	0920								X	X						
	002	B17113			L	1420		X			X		X	X	X	X	X	X				
	003	B17114			L	5.16.03	1010	X	X		X		X	X	X	X	X	X				

Special instructions: SAP # F03-006
Run Matrix QC

- DATE/REVISIONS:
- _____
 - _____
 - _____
 - _____
 - _____
 - _____

MCTO: RCRA + Sb, Be, Bi, B, Cu, Ni
INORG O: IC: Cl, F, I, NO3, NO2, PO4, SO4
INHNZ, ZPH, ICNTO

Lionville Laboratory Use Only	
Samples were: 1) Shipped <input checked="" type="checkbox"/> or Hand Delivered _____ Airbill # _____	Tamper Resistant Seal was: 1) Present on Outer Package <input checked="" type="checkbox"/> or N 2) Unbroken on Outer Package <input checked="" type="checkbox"/> or N 3) Present on Sample <input checked="" type="checkbox"/> or N 4) Unbroken on Sample <input checked="" type="checkbox"/> or N COC Record Present Upon Sample Rec't <input checked="" type="checkbox"/> or N Cooler Temp. <u>1.3</u> °C
2) Ambient or <input checked="" type="checkbox"/> Chilled 3) Received in Good Condition <input checked="" type="checkbox"/> or N 4) Samples Properly Preserved <input checked="" type="checkbox"/> or N 5) Received Within Holding Time <input checked="" type="checkbox"/> or N	

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
<u>Steve</u>	<u>Johnson</u>	<u>5.21.03</u>	<u>0900</u>	<u>COMPOSITE WASTE</u>	<u>ORIGINAL REWRITTEN</u>		

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
7913 8618 0953

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-103		Page 1 of 1	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 45 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C3247); (0.5')		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. <i>ERC 96 061</i>		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express			
Shipped To <i>BERLINE SERVICES (Formerly TMA) RECRA</i>		Offsite Property No. <i>A030 235</i>			Bill of Lading/Air Bill No. <i>SEE OSPL</i>				
POSSIBLE SAMPLE HAZARDS/REMARKS				Preservation	Cool 4C	Cool 4C			
Special Handling and/or Storage				Type of Container	aG	aG			
				No. of Container(s)	1	1			
				Volume	60mL	250mL			
SAMPLE ANALYSIS				Pesticides - 8081	Chloro-Herbicides - EPA8151				
Sample No.	Matrix *	Sample Date	Sample Time						
B17112	SOIL	5-15-03	0900	X	X				<i>Tie To: B17112</i>
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		<p>** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>Personnel not available to relinquish samples from the 3728 Ref # <i>1B</i> on <i>5/20/03</i></p> <ul style="list-style-type: none"> 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 	
<i>RECRA</i>		<i>5/15/03</i>		<i>RECRA</i>		<i>5/15/03</i>			
<i>RECRA</i>		<i>5/15/03</i>		<i>IB 3728</i>		<i>5-15-03</i>			
<i>RECRA</i>		<i>5/20/03 1300</i>		<i>RECRA</i>		<i>5/20/03 1300</i>			
<i>RECRA</i>		<i>5/20/03 1300</i>		<i>FED EX</i>					
<i>RECRA</i>		<i>5/20/03 0900</i>		<i>RECRA</i>		<i>5/20/03 0900</i>			
LABORATORY SECTION		Received By		Title				Date/Time	
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time	

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						F03-006-104		Page 1 of 1						
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days						
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-10 (C3245) 12.5-15 ft		SAF No. F03-006		Air Quality <input type="checkbox"/>										
Ice Chest No. ERC 96061		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express										
Shipped To EBERLINE SERVICES (Formerly TMA) <i>Recrea</i>		Offsite Property No. A030235		Bill of Lading/Air Bill No. SEE OSPC												
POSSIBLE SAMPLE HAZARDS/REMARKS Radioactive Tieto: B17119 Special Handling and/or Storage				Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None		
				Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
				No. of Container(s)	1	1	1	1	1	1	1	1	1	1	1	1
				Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3			
				Sample No.	Matrix *	Sample Date	Sample Time									
B17113	SOIL	5-15-03	1420	X	X	X	X	X	X	X						
				Personnel not available to relinquish samples from the 3728 Ref # 1B on 5/20/03												
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *				
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		<p>** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>(1) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol)</p> <p>(2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G</p> <p>(3) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel); Mercury - 7471 - (CV)</p> <p>(4) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010</p> <p>(5) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Cesium-134, Radium-226, Radium-228, Tin-126); Total Uranium; Americium-241; Isotopic Plutonium; Isotopic Uranium</p> <p>(6) Technetium-99; Strontium-89,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-</p>				<p>S=Soil SE=Soil/element SO=Solid S=Sludge W=Water O=Oil A=Air DS=Dry Solids DL=Dry Liquids T=Tissue W=Wipe L=Liquid V=Vegetation X=Other</p>				
<i>[Signature]</i>		5-15-03 1515		<i>[Signature]</i>		5-15-03 1515										
<i>[Signature]</i>		5-15-03 1515		<i>[Signature]</i>		5-15-03 1515										
<i>[Signature]</i>		5-15-03 1300		<i>[Signature]</i>		5-20-03 1300										
<i>[Signature]</i>		5-20-03 1300		<i>[Signature]</i>		5-20-03 1300										
<i>[Signature]</i>		5-21-03 0900		<i>[Signature]</i>		5-21-03 0900										
LABORATORY SECTION		Received By		Title				Date/Time								
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time								

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-105		Page 2 of 2	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 45 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-10 (C3247) 45-47.5 ft		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No.		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express			
Shipped To TMS 5/10/03 EBERLINE SERVICES (Formerly TMA) Recra		Offsite Property No.		Bill of Lading/Air Bill No.					
POSSIBLE SAMPLE HAZARDS/REMARKS 5-19-03 Radioactive TILTD: B17130		Preservation		Type of Container		No. of Container(s)		Volume	
Special Handling and/or Storage N/A		None		AG		2		60mL	
SAMPLE ANALYSIS		N/A		N/A		N/A		N/A	
Sample No.		Matrix *		Sample Date		Sample Time			
B17114		SOIL		5-16-03		1610			
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From T.S. POPE / ASH		Date/Time 5-16-03 1320		Received By/Stored In MO-026 REF HZ		Date/Time 5-16-03 1320		** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.	
Relinquished By/Removed From MD-026 REF #2		Date/Time 5-19-03 1315		Received By/Stored In M. J. ...		Date/Time 5-19-03			
Relinquished By/Removed From M. J. ...		Date/Time 5-19-03 1400		Received By/Stored In ...		Date/Time 5-19-03 1400			
Relinquished By/Removed From R. F. ...		Date/Time 5-19-03 1400		Received By/Stored In ...		Date/Time 5-19-03			
Relinquished By/Removed From LB 3728		Date/Time 5-20-03		Received By/Stored In Fed Ex		Date/Time			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
LABORATORY SECTION		Received By				Title			
FINAL SAMPLE DISPOSITION		Disposal Method				Disposed By			

**LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST**

CLIENT: *TWU Hartford*

Purchase Order/Project:

DATE: *5.21.03*

PO# / SOW# / Release #: *FO3-006*

Laboratory SDG #:

0305L456

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LVL1 Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC-96-061 / 1.3°C

Laboratory Sample Custodian:

Laboratory Project Manager:

[Signature]

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2220

DATE RECEIVED: 05/21/03

LVL LOT # :0305L456

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17113	002	S	03LE0641	05/15/03	05/28/03	06/09/03
B17114	003	S	03LE0641	05/16/03	05/28/03	06/09/03
B17114	003 MS	S	03LE0641	05/16/03	05/28/03	06/09/03
B17114	003 MSD	S	03LE0641	05/16/03	05/28/03	06/09/03

LAB QC:

SBLKUL	MB1	S	03LE0641	N/A	05/28/03	06/09/03
SBLKUL	MB1 BS	S	03LE0641	N/A	05/28/03	06/09/03





Client: TNU-HANFORD F03-006
LVL #: 0305L456
SDG/SAF # H2220/F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 05-21-2003

SEMIVOLATILE

Two (2) soil samples were collected on 05-15,16-2003.

The samples and their associated QC samples were extracted according to Lionville Laboratory OPs based on method 3550 on 05-28-2003 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for client specified Semivolatile target compounds on 06-09-2003.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. Non-target compounds were detected in the samples.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. Internal standard area and retention time criteria were met.
8. Manual integrations are performed according to OP 21-06A-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
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

06-25-03
Date

som\group\data\bna\tnu-hanford-0305-454.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 17 pages.

GLOSSARY

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.

mmz\10-94\gloss.bna



GLOSSARY

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.

mmz\10-94\gloss.bna



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.

Semivolatiles by GC/MS, Special List

Report Date: 06/22/03 13:14

RFW Batch Number: 0305L456

Client: TNUHANFORD F03-006 H2220

Work Order: 11343606001

Page: 1a

Sample Information	Cust ID:	B17113	B17114	B17114	B17114	SBLKUL	SBLKUL BS
	RFW#:	002	003	003 MS	003 MSD	03LE0641-MB1	03LE0641-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate	Nitrobenzene-d5	63 %	75 %	70 %	61 %	79 %	73 %
Recovery	2-Fluorobiphenyl	64 %	72 %	71 %	64 %	75 %	72 %
	Terphenyl-d14	88 %	92 %	107 %	93 %	98 %	87 %
	Phenol-d5	66 %	76 %	69 %	64 %	79 %	75 %
	2-Fluorophenol	59 %	67 %	64 %	57 %	68 %	68 %
	2,4,6-Tribromophenol	70 %	68 %	84 %	75 %	70 %	72 %
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====							
	Phenol	360 U	340 U	64 %	60 %	330 U	71 %
	bis(2-Chloroethyl) ether	360 U	340 U	340 U	340 U	330 U	330 U
	2-Chlorophenol	360 U	340 U	59 %	55 %	330 U	65 %
	1,3-Dichlorobenzene	360 U	340 U	340 U	340 U	330 U	330 U
	1,4-Dichlorobenzene	360 U	340 U	60 %	55 %	330 U	67 %
	1,2-Dichlorobenzene	360 U	340 U	340 U	340 U	330 U	330 U
	2-Methylphenol	360 U	340 U	340 U	340 U	330 U	330 U
	2,2'-oxybis(1-Chloropropane)	360 U	340 U	340 U	340 U	330 U	330 U
	3- and/or 4-Methylphenol	360 U	340 U	340 U	340 U	330 U	330 U
	N-Nitroso-di-n-propylamine	360 U	340 U	63 %	62 %	330 U	68 %
	Hexachloroethane	360 U	340 U	340 U	340 U	330 U	330 U
	Nitrobenzene	360 U	340 U	340 U	340 U	330 U	330 U
	Isophorone	360 U	340 U	340 U	340 U	330 U	330 U
	2-Nitrophenol	360 U	340 U	340 U	340 U	330 U	330 U
	2,4-Dimethylphenol	360 U	340 U	340 U	340 U	330 U	330 U
	bis(2-Chloroethoxy) methane	360 U	340 U	340 U	340 U	330 U	330 U
	2,4-Dichlorophenol	360 U	340 U	340 U	340 U	330 U	330 U
	1,2,4-Trichlorobenzene	360 U	340 U	62 %	56 %	330 U	68 %
	Naphthalene	360 U	340 U	340 U	340 U	330 U	330 U
	4-Chloroaniline	360 U	340 U	340 U	340 U	330 U	330 U
	Hexachlorobutadiene	360 U	340 U	340 U	340 U	330 U	330 U
	4-Chloro-3-methylphenol	360 U	340 U	66 %	63 %	330 U	64 %
	2-Methylnaphthalene	360 U	340 U	340 U	340 U	330 U	330 U
	Hexachlorocyclopentadiene	360 U	340 U	340 U	340 U	330 U	330 U
	2,4,6-Trichlorophenol	360 U	340 U	340 U	340 U	330 U	330 U
	2,4,5-Trichlorophenol	890 U	860 U	860 U	860 U	830 U	830 U

*= Outside of EPA CLP QC limits.

	Cust ID: B17113		B17114		B17114		B17114		SBLKUL		SBLKUL BS	
RFW#:	002		003		003 MS		003 MSD		03LE0641-MB1		03LE0641-MB1	
2-Chloronaphthalene	360 U		340 U		340 U		340 U		330 U		330 U	
2-Nitroaniline	890 U		860 U		860 U		860 U		830 U		830 U	
Dimethylphthalate	360 U		340 U		340 U		340 U		330 U		330 U	
Acenaphthylene	360 U		340 U		340 U		340 U		330 U		330 U	
2,6-Dinitrotoluene	360 U		340 U		340 U		340 U		330 U		330 U	
3-Nitroaniline	890 U		860 U		860 U		860 U		830 U		830 U	
Acenaphthene	360 U		340 U		68 %		64 %		330 U		67 %	
2,4-Dinitrophenol	890 U		860 U		860 U		860 U		830 U		830 U	
4-Nitrophenol	890 U		860 U		68 %		62 %		830 U		62 %	
Dibenzofuran	360 U		340 U		340 U		340 U		330 U		330 U	
2,4-Dinitrotoluene	360 U		340 U		85 %		77 %		330 U		78 %	
Diethylphthalate	360 U		340 U		340 U		340 U		330 U		330 U	
4-Chlorophenyl-phenylether	360 U		340 U		340 U		340 U		330 U		330 U	
Fluorene	360 U		340 U		340 U		340 U		330 U		330 U	
4-Nitroaniline	890 U		860 U		860 U		860 U		830 U		830 U	
4,6-Dinitro-2-methylphenol	890 U		860 U		860 U		860 U		830 U		830 U	
N-Nitrosodiphenylamine (1)	360 U		340 U		340 U		340 U		330 U		330 U	
4-Bromophenyl-phenylether	360 U		340 U		340 U		340 U		330 U		330 U	
Hexachlorobenzene	360 U		340 U		340 U		340 U		330 U		330 U	
Pentachlorophenol	890 U		860 U		84 %		79 %		830 U		69 %	
Phenanthrene	360 U		340 U		340 U		340 U		330 U		330 U	
Anthracene	360 U		340 U		340 U		340 U		330 U		330 U	
Carbazole	360 U		340 U		340 U		340 U		330 U		330 U	
Di-n-butylphthalate	360 U		340 U		340 U		340 U		330 U		330 U	
Fluoranthene	360 U		340 U		340 U		340 U		330 U		330 U	
Pyrene	360 U		340 U		94 %		85 %		330 U		79 %	
Butylbenzylphthalate	360 U		340 U		340 U		340 U		330 U		330 U	
3,3'-Dichlorobenzidine	360 U		340 U		340 U		340 U		330 U		330 U	
Benzo (a) anthracene	360 U		340 U		340 U		340 U		330 U		330 U	
Chrysene	360 U		340 U		340 U		340 U		330 U		330 U	
bis (2-Ethylhexyl)phthalate	360 U		340 U		23 J		340 U		330 U		110 J	
Di-n-octyl phthalate	360 U		340 U		340 U		340 U		330 U		330 U	
Benzo (b) fluoranthene	360 U		340 U		340 U		340 U		330 U		330 U	
Benzo (k) fluoranthene	360 U		340 U		340 U		340 U		330 U		330 U	
Benzo (a) pyrene	360 U		340 U		340 U		340 U		330 U		330 U	
Indeno (1,2,3-cd) pyrene	360 U		340 U		340 U		340 U		330 U		330 U	
Dibenz (a,h) anthracene	360 U		340 U		340 U		340 U		330 U		330 U	
Benzo (g,h,i) perylene	360 U		340 U		340 U		340 U		330 U		330 U	
2-Butoxyethanol	360 U		340 U		340 U		340 U		330 U		330 U	
Benzyl alcohol	360 U		340 U		340 U		340 U		330 U		330 U	

*= Outside of EPA CLP QC limits.

Cust ID: B17113 B17114 B17114 B17114 SBLKUL SBLKUL BS

RFW#: 002 003 003 MS 003 MSD 03LE0641-MB1 03LE0641-MB1

Tributylphosphate 360 U 340 U 340 U 340 U 330 U 330 U

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

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B17113

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

Client: TNUHANFORD F03-006 H2220

Matrix: (soil/water) SOIL

Lab Sample ID: 0305L456-002

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

Lab File ID: D060914

Level: (low/med) LOW

Date Received: 05/21/03

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

Date Extracted: 05/28/03

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 06/09/03

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

CONCENTRATION UNITS:

Number TICs found: 3

(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3.177	300	JB
2.	ALDOL CONDENSATE	3.534	200	JAB
3.	ALDOL CONDENSATE	4.090	20000	JAB

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B17114

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

Client: TNUHANFORD F03-006 H2220

Matrix: (soil/water) SOIL

Lab Sample ID: 0305L456-003

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

Lab File ID: D060915

Level: (low/med) LOW

Date Received: 05/21/03

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

Date Extracted: 05/28/03

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 06/09/03

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

CONCENTRATION UNITS:

Number TICs found: 3

(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3.186	400	JB
2.	ALDOL CONDENSATE	3.552	200	JAB
3.	ALDOL CONDENSATE	4.125	20000	JAB

10

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKUL

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

Client: TNUHANFORD F03-006 H2220

Matrix: (soil/water) SOIL

Lab Sample ID: 03LE0641-MB1

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

Lab File ID: D060912

Level: (low/med) LOW

Date Received: 05/28/03

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

Date Extracted: 05/28/03

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 06/09/03

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

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

Number TICs found: 3

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3.183	300	J
2.	ALDOL CONDENSATE	3.548	200	JA
3.	ALDOL CONDENSATE	4.113	20000	JA



0205L456

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client <u>TNU-Hanford F03-006</u>	Refrigerator #	1	2																
Est. Final Proj. Sampling Date	#/Type Container	Liquid																	
Project # <u>11343-606-001-999-00</u>		Solid	10g	10g	10g	10g	10g		10g	10g	10g	10g	10g						
Project Contact/Phone #	Volume	Liquid																	
Lionville Laboratory Project Manager <u>Orlette Johnson</u>		Solid	60	125	60	250	60		60	60	125	60	60						
QC <u>SPEC</u> Del <u>STD</u> TAT <u>30 days</u>	Preservatives	-	-	-	-	-		-	-	-	-	-							
Date Rec'd <u>5-21-03</u> Date Due <u>6-20-03</u>	ANALYSES REQUESTED	ORGANIC						INORG											
		VOA	BNA (2)	Pest/ PCB	Herb	Alcohols	Glycols	Methane	Metal (3)	CN	Hex	Chrom	IC	Arima	NO2	NO3	Oil + Grease		

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 (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only												
			MS	MSD				H 420	0625 X	0640	0609 H	0608 F	0608 C	MCTO	IC66	INORG 0	IN3N L	IOG6 R		
	001	B17112			S	5-15-03	0920				X	X								
	002	B17113			L	1420		X		X		X	X	X	X	X				
	003	B17114			L	5-16-03	1010	X	X		X		X	X	X	X				

Special Instructions: SAP # F03-006
Run Matrix QC

MCTO: RCRA + Sb, Be, Bi, B, Cu, Ni
INORG 0: IC: Cl, F, NO3, NO2, PO4, SO4
IN3N, 2PH, ICN70

DATE/REVISIONS:

- _____
- _____
- _____
- _____
- _____
- _____

Lionville Laboratory Use Only

Samples were: Shipped or Hand Delivered

Airbill # _____

2) Ambient or Chilled

3) Received in Good Condition or N

4) Samples Properly Preserved or N

5) Received Within Holding Times or N

Tamper Resistant Seal was:

1) Present on Outer Package or N

2) Unbroken on Outer Package or N

3) Present on Sample or N

4) Unbroken on Sample or N

COC Record Present Upon Sample Rec't or N

Cooler Temp. 13 °C

Relinquished by	Received by	Date	Time
<u>Hevea</u>	<u>Orlette Johnson</u>	<u>5-21-03</u>	<u>0900</u>

Relinquished by	Received by	Date	Time
<u>COMPOSITE WASTE</u>	<u>ORIGINAL REWRITTEN</u>		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

7913 8618 0953

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-103		Page 1 of 1		
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 45 Days		
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C3247); (0.5')		SAF No. F03-006		Air Quality <input type="checkbox"/>				
Ice Chest No. FRC 96 061		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express				
Shipped To EBERLINE SERVICES (Formerly TMA) RECREA		Offsite Property No. A030 235				Bill of Lading/Air Bill No. SEE OSPL				
POSSIBLE SAMPLE HAZARDS/REMARKS				Preservation	Cool 4C	Cool 4C				
Special Handling and/or Storage				Type of Container	aG	aG				
				No. of Container(s)	1	1				
				Volume	60mL	250mL				
SAMPLE ANALYSIS				Pesticides - 8081	Chloro- Herbicides - EPA8151					
Sample No.	Matrix *	Sample Date	Sample Time							
B17112	SOIL	5-15-03	0400	X	X					
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS		Matrix *
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.		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
XXXXXXXXXXXXXXXXXXXX		5/15/03		REF 1B 3728		5/15/03				
K. F. ...		5/15/03		1B 3728		5/15/03				
REF 1B 3728		5/20/03 1300		210MCS/ML		5/20/03 1300				
S. GALEN ...		5/20/03 1300		FED EX						
D. ...		5/21/03 0900		D. ...		5/21/03 0900				
Personnel not available to relinquish samples from the 3728 Ref # 1B on 5/120/03										
LABORATORY SECTION	Received By	Title				Date/Time				
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By				Date/Time				

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						F03-006-104		Page 1 of 1					
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days					
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-10 (C3245) 12.5'-15 ft		SAF No. F03-006		Air Quality <input type="checkbox"/>									
Ice Chest No. <i>ERC 96061</i>		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express									
Shipped To EBERLINE SERVICES (Formerly TMA) <i>Reera</i>		Offsite Property No. <i>A030235</i>		Bill of Lading/Air Bill No. <i>SEE OSPC</i>											
POSSIBLE SAMPLE HAZARDS/REMARKS <i>Radioactive Tieto: B17113</i> Special Handling and/or Storage				Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None	
				Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
				No. of Container(s)	1	1	1	1	1	1	1	1	1	1	1
				Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS				See Item (1) in Special Instructions.	See Item (2) in Special Instructions.	See Item (3) in Special Instructions.	Chromium - Hex - 7196	See Item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See Item (5) in Special Instructions.	See Item (6) in Special Instructions.	Tritium - H3		
				Sample No.	Matrix *	Sample Date	Sample Time								
B17113	SOIL	5-15-03	1420	X	X	X	X	X	X	X					
												Personnel not available to relinquish samples from the 3728 Ref # 1B on 5/20/03			
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis. (1) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol) (2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G (3) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel); Mercury - 7471 - (CV) (4) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010 (5) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Cesium-134, Radium-226, Radium-228, Tin-126); Total Uranium; Americium-241; Isotopic Plutonium; Isotopic Uranium (6) Technetium-99; Strontium-89,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-				S=Soil SB=Setiment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Dry Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other			
<i>RECEIVED</i>		5-15-03 1515		<i>ERC</i>		5-15-03 1515									
<i>RECEIVED</i>		5-15-03 1515		<i>RECEIVED</i>		5-15-03 1515									
<i>IB 3728</i>		5-20-03 1300		<i>SJ GALE</i>		5-20-03 1300									
<i>SJ GALE</i>		5-20-03 1300		<i>FED EX</i>											
<i>RECEIVED</i>		5-21-03 0900		<i>RECEIVED</i>		5-21-03 0900									
LABORATORY SECTION		Received By		Title		Date/Time									
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time									

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-105	Page 2 of 2
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928	Project Coordinator TRENT, SJ	Price Code 8N	Data Turnaround 45 Days
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-10 (C3247) 45-47.5 ft		SAF No. F03-006	Air Quality <input type="checkbox"/>		
Ice Chest No.		Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express			
Shipped To <i>MD 5110103</i> EBERLINE SERVICES (formerly TMA) <i>Recra</i>		Offsite Property No.		Bill of Lading/Air Bill No.			
POSSIBLE SAMPLE HAZARDS/REMARKS <i>MD 5-19-03 Radioactive TILTO: B17130</i> Special Handling and/or Storage <i>N/A</i>		Preservation	<i>None</i>				
		Type of Container	<i>5G</i>				
		No. of Container(s)	<i>5</i>				
		Volume	<i>68mL</i>				
SAMPLE ANALYSIS							
Sample No.	Matrix *	Sample Date	Sample Time				
B17114	SOIL	5-16-03	1610				
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS		Matrix *	
Relinquished By/Removed From <i>J.S. POPE / A.P.P.</i>		Date/Time <i>5-16-03 1320</i>		Received By/Stored In <i>MO-026 REF #2</i>		Date/Time <i>5-16-03 1320</i>	
Relinquished By/Removed From <i>MD-0260 KEF #2</i>		Date/Time <i>5-19-03 1315</i>		Received By/Stored In <i>Thompson / [Signature]</i>		Date/Time <i>5-19-03</i>	
Relinquished By/Removed From <i>[Signature]</i>		Date/Time <i>5-19-03 1400</i>		Received By/Stored In <i>[Signature]</i>		Date/Time <i>5-19-03 1400</i>	
Relinquished By/Removed From <i>R.F. [Signature]</i>		Date/Time <i>5-19-03 1400</i>		Received By/Stored In <i>LB 3728</i>		Date/Time <i>5-19-03</i>	
Relinquished By/Removed From <i>LB 3728</i>		Date/Time <i>5-20-03</i>		Received By/Stored In <i>FED EX</i>		Date/Time	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time	
LABORATORY SECTION	Received By	Title				Date/Time	
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By				Date/Time	
** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.							
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							

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

AGENT: *TNU Hamford*

Chase Order/Project:

DATE: *5.21.03*

F# / SOW# / Release #: *FO 3-006*

Laboratory SDG #:

0305L456

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LvLI Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC-96-061 / 1.3°C

Laboratory Sample Custodian:

Laboratory Project Manager:

[Signature]

Lionville Laboratory, Inc.
 GCSC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2220

DATE RECEIVED: 05/21/03

LVL LOT # :0305L456

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17113	002	S	03LE0650	05/15/03	05/29/03	05/29/03
B17113	002 MS	S	03LE0650	05/15/03	05/29/03	05/29/03
B17113	002 MSD	S	03LE0650	05/15/03	05/29/03	05/29/03
B17114	003	S	03LE0650	05/16/03	05/29/03	05/29/03

LAB QC:

BLK	MB1	S	03LE0650	N/A	05/29/03	05/29/03
BLK	MB1 BS	S	03LE0650	N/A	05/29/03	05/29/03





Analytical Report

Client: TNU HANFORD F03-006
LVL#: 0305L456
SDG/SAF#: H2220/F03-006

W.O.#: 11343-606-001-9999-00
Date Received: 05-21-03

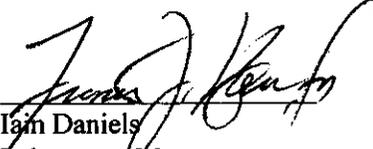
GC SCAN

The set of samples consisted of two (2) soil samples collected on 05-15,16-03.

The samples and their associated QC samples were prepped and analyzed on 05-29-03 according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures based on method 8015B for Methanol, Ethyl Ether, and 1-Butanol.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. The method blank was below the reporting limits for all target compounds.
4. Surrogates are not currently employed in the methodology.
5. All blank spike recoveries were within acceptance criteria.
6. All matrix spike recoveries were within acceptance criteria.
7. All initial calibrations were within acceptance criteria.
8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
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.


Ian Daniels
Laboratory Manager
Lionville Laboratory Incorporated

4/25/03
Date

r:\group\data\gcsc\05L-456b.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 11 pages.



GLOSSARY OF GC SCAN 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 GC SCAN DATA

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

Lionville Laboratory, Inc.

GC SCAN

Report Date: 06/21/03 10:27

RFW Batch Number: 0305L456

Client: TNUHANFORD F03-006 H2220 Work Order: 11343606001 Page: 1

Cust ID:	B17113	B17113	B17113	B17114	BLK	BLK BS
Sample RFW#:	002	002 MS	002 MSD	003	03LE0650-MB1	03LE0650-MB1
Information Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====						
Methanol	24 U	105 %	86 %	26 U	25 U	100 %
Ethyl Ether	24 U	75 %	77 %	26 U	25 U	92 %
1-Butanol	24 U	98 %	94 %	26 U	25 U	94 %

Handwritten signature

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

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-103		Page 1 of 1	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 45 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C3247); (0.5')		SAF No. F03-006		Air Quality <input type="checkbox"/>		45 Days	
Ice Chest No. ARC 96 061		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express			
Shipped To EBERLINE SERVICES (Formerly TMA) RECRA		Offsite Property No. A030 235		Bill of Lading/Air Bill No. SEE OSPL					
POSSIBLE SAMPLE HAZARDS/REMARKS				Preservation		Cool 4C	Cool 4C		
Special Handling and/or Storage				Type of Container		aG	aG		
				No. of Container(s)		1	1		
				Volume		60mL	250mL		
SAMPLE ANALYSIS				Pesticides - 8081	Chloro-Herbicides - EPA8151				
Sample No.	Matrix *	Sample Date	Sample Time						
B17112	SOIL	5-15-03	0920	X	X				
CHAIN OF POSSESSION				Sign/Print Names		SPECIAL INSTRUCTIONS			
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time	<p>** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>Personnel not available to relinquish samples from the 3728 Ref # 1B on 5/20/03</p>			
XXXXXXXXXXXXXXXXXXXX		5/15/03	REF 1B 3728		5/15/03				
K. F. ...		5-15-03	1B 3728		5-15-03				
REF 1B 3728		5/20/03 1300	210A...		5/20/03 1300				
S. G. ...		5-20-03 1300	FED EX						
D. J. ...		5-21-03 0900	D. J. ...		5-21-03 0900				
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time	Matrix *			
LABORATORY SECTION		Received By	Title		Date/Time	<p>S=Soil SE=Soil/mw SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue W=Wipe L=Liquid V=Vegetation X=Other</p>			
FINAL SAMPLE DISPOSITION		Disposal Method	Disposed By		Date/Time				

FH-Central Plateau Project			CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST							F03-006-104		Page 1 of 1					
Collector Johansen/Pope/Pfister			Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days						
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling			Sampling Location 216-A-10 (C3245) 12.5'-15 ft				SAF No. F03-006		Air Quality <input type="checkbox"/>								
Ice Chest No. ERC 96061			Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express										
Shipped To EBERLINE SERVICES (Formerly TMA) Reera			Offsite Property No. A030 235				Bill of Lading/Air Bill No. 9280SPC										
POSSIBLE SAMPLE HAZARDS/REMARKS Radioactive TETO: B17113 Special Handling and/or Storage				Preservation		Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None		
				Type of Container		aG	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
				No. of Container(s)		1	1	1	1	1	1	1	1	1	1	1	1
				Volume		60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS				See item (1) in Special Instructions.		See item (2) in Special Instructions.		See item (3) in Special Instructions.		Chromium - Hex - 7196		See item (4) in Special Instructions.		NO2/NO3 - 353.2			
				Oil & Grease - 413.1		See item (5) in Special Instructions.		See item (6) in Special Instructions.		Tritium - H3							
Sample No.		Matrix *	Sample Date		Sample Time												
B17113		SOIL	5-15-03		1420		X	X	X	X	X	X	X				
Personnel not available to relinquish samples from the 3728 Ref # 1B on 5/20/03																	
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS						Matrix *			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The lab oratory is to report both kerosene and diesel range compounds from WTPH-D analysis. (1) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol) ; (2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G (3) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel); Mercury - 7471 - (CV) (4) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010 (5) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Cesium-134, Radium-226, Radium-228, Tin-126); Total Uranium; Americium-241; Isotopic Plutonium; Isotopic Uranium (6) Technetium-99; Strontium-89,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-						S=Soil SE=Solids 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			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time											
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time											
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time											
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time											
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time											
LABORATORY SECTION		Received By		Title				Date/Time									
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time									

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-105	Page 2 of 2	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928	Project Coordinator TRENT, SJ	Price Code 8N	Data Turnaround 45 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-10 (C3247) 45-47.5 ft		SAF No. F03-006	Air Quality <input type="checkbox"/>			
Ice Chest No.		Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express				
Shipped To <i>TMS 5/16/03</i> EBERLINE SERVICES (formerly TMA) <i>Recra</i>		Offsite Property No.		Bill of Lading/Air Bill No.				
POSSIBLE SAMPLE HAZARDS/REMARKS <i>M/S 5-14-03 Radioactive TILTD: B17130</i> Special Handling and/or Storage <i>N/A</i>		Preservation	None					
		Type of Container	None					
		No. of Container(s)	None					
		Volume	None					
SAMPLE ANALYSIS			Liquid - HD					
Sample No.	Matrix *	Sample Date	Sample Time					
B17114	SOIL	5-16-03	1610					
CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.				S=Soil SE=Settlement SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Traces Wt=Wipe L=Liquid V=Vegetation X=Other
<i>T.S. POPE / A. Pope</i>	<i>5-16-03 1320</i>	<i>MO-026 REF HZ</i>	<i>5-16-03 1320</i>					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					
<i>MD-0210 KEF #2</i>	<i>5-19-03 1315</i>	<i>Thomson</i>	<i>5-19-03 1315</i>					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					
<i>Thomson</i>	<i>5-19-03 1400</i>	<i>Thomson</i>	<i>5-19-03 1400</i>					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					
<i>R.F. Hill</i>	<i>5-19-03 1400</i>	<i>IB 3728</i>	<i>5-19-03 1400</i>					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					
<i>IB 3728</i>	<i>5-20-03</i>	<i>Fed Ex</i>						
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					
LABORATORY SECTION	Received By	Title	Date/Time					
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time					

10

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

CLIENT: *TWU Homecare*

Purchase Order/Project:

DATE: *5.21.03*

AF# / SOW# / Release #: *FO3-006*

Laboratory SDG #:

0305L456

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LvLI Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC-96-001 / 1.3°C

Laboratory Sample Custodian:

Laboratory Project Manager:

[Signature]

Lionville Laboratory, Inc.
 PEST/PCB ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2220

DATE RECEIVED: 05/21/03

LVL LOT # :0305L456

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17112	001	S	03LE0621	05/15/03	05/23/03	06/06/03
B17112	001	R1	S 03LE0765	05/15/03	06/25/03	06/27/03
B17112	001 MS	S	03LE0621	05/15/03	05/23/03	06/06/03
B17112	001 MS R1	S	03LE0765	05/15/03	06/25/03	06/27/03
B17112	001 MSD	S	03LE0621	05/15/03	05/23/03	06/06/03
B17112	001 MSD R1	S	03LE0765	05/15/03	06/25/03	06/27/03

LAB QC:

PBLKUN	MB1	S	03LE0621	N/A	05/23/03	06/06/03
PBLKUN	MB1 BS	S	03LE0621	N/A	05/23/03	06/06/03
PBLKWY	MB1	S	03LE0765	N/A	06/25/03	06/27/03
PBLKWY	MB1 BS	S	03LE0765	N/A	06/25/03	06/27/03

JFB 7/1/03





Analytical Report

Client: TNU-HANFORD F03-006
LVL #: 0305L456
SDG/SAF #: H2220/F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 05-21-03

PESTICIDE

One (1) soil sample was collected on 06-15-03.

The sample and its associated QC samples were extracted on 05-23-03, re-extracted on 06-25-03, and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 06-06,27-03. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8081A.

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

1. All results presented in this report are derived from samples that met LVL's sample acceptance policy.
2. All required holding times for analysis have been met. The sample was originally extracted within its required holding time. Due to high surrogate recoveries and a result above the reporting limit for Beta-BHC, the sample was re-extracted outside of hold time. Both the original and the re-extracted results have been reported. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
3. The sample and its associated QC samples received a Sulfur cleanup.
4. The method blanks were below the reporting limits for all target compounds.
5. Five (5) of twenty (20) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
6. All blank spike recoveries were within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. All initial calibrations associated with this data set were within acceptance criteria.

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 13 pages.

9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria with the exception of the target compounds listed on the attachment to the enclosed Sample Discrepancy Report (SDR).
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated


Date

pefr:\group\data\pest\trn hanford\05L-456 pes



Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 03GC204

Initiator: D. Walker
 Date: 6/17/03
 Client: TNA

Batch: 0305L456
 Samples: SO1, Blank
 Method: (SVB46)MCAVW/CLPI

Parameter: 0608HV
 Matrix: SO1
 Prep Batch: 03LE0621

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)

Surrogate recoveries were high for 0305L456-001 and 03LE0621-001.
 Beta-BHC was detected in 0305L456-001. (See attached sheets.)

2. Known or Probable Causes(s)

B-BHC peak - possible nontarget collecting contaminant from extraction.
 Reference for 03GC203 w/ BS for prep batch 03LE0619. 7/8/03

3. Discussion and Proposed Action

Other Description:

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

Reextract if sufficient volume remains
 7/8/03

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

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

[Signature] 6/17/03

5. Final Action...signature/date:

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

Other Explanation:

REEXTRACTED IN BATCH
 03LE0765

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

Route Distribution of Completed SDR
 Initiator
 Lab General Manager: M. Taylor
 Project Mgr: Stone/Johnson/Haslett
 Technical Mgr: Wesson/Daniels
 QA (file)
 Data Management: Feldman
 Sample Prep: Beegle/Kiger

Route Distribution of Completed SDR
 Metals: Beegle
 Inorganic: Perrone
 GC/LC: Kiger
 MS: Rychlak/Layman
 Log-in: Melnic
 Admin: Soos
 Other: _____

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 03GC184

Initiator: D. Walker
 Date: 6/10/13
 Client: TNU

Batch: 0305L456
 Samples: 001, 5JT
 Method: SW846/MCAWW/CLP/

Parameter: 0608
 Matrix: Soil
 Prep Batch: 03LE0621

1. Reason for SDR

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

b. General Discrepancy

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

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

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

2. Known or Probable Causes(s) CCU high on confirmation column. Results were quantitated from primary column. Confirmation column used for retention time comparison only.

3. Discussion and Proposed Action

Other Description:

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

Narrate

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

[Signature] 6/10/13

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

5. Final Action...signature/date:

Other Explanation:

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

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

Route Distribution of Completed SDR

- Initiator
- Lab General Manager: M. Taylor
- Project Mgr: Stone/Johnson/Haslett
- Technical Mgr: Wesson/Daniels
- QA (file)
- Data Management: Feldman
- Sample Prep: Beegle/Kiger

Route Distribution of Completed SDR

- Metals: Beegle
- Inorganic: Perrone
- GC/LC: Kiger
- MS: Rychlak/Layman
- Log-in: Melnic
- Admin: Soos
- Other: _____

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lionville Laboratory Incorporated
 Client: _____
 RFW Lot ID: _____

Contract: _____
 GC Sample ID: 060403gc20 .56
 Millennium Result ID: 5724

Instrument ID: GC 20 Initial Calibration Start Date: _____ Date of Analysis: 6/6/03 2
 Processing Method: 06040320B_SPA 6/5/03 Time of Analysis: 4:32:50 PM
 Standard ID: IND A 4104 D

COMPOUND	RT WINDOW			INITIAL RESPONSE	MEAN %D			
	RT	FROM	TO		RT	CONT. RESPONSE	25.9 %D	FL
TCX	6.27	6.20	6.34	33513	6.27	43978	31.2 ✓	!
ALPHA-BHC	8.38	8.31	8.45	31995	8.38	42542	33.0	!
GAMMA-BHC	9.63	9.56	9.70	29821	9.63	39161	31.3	!
HEPTACHLOR	11.12	11.05	11.19	29758	11.11	37045	24.5	+
ENDOSULFAN I	15.51	15.44	15.58	24049	15.51	31085	29.3	!
DIELDRIN	16.45	16.37	16.52	47889	16.44	60527	26.4	!
ENDRIN	17.45	17.38	17.52	40306	17.44	49181	22.0	+
4,4'-DDD	18.06	17.99	18.13	32126	18.06	39933	24.3	+
4,4'-DDT	19.09	19.02	19.16	36334	19.09	44342	22.0	+
METHOXYCHLOR	21.52	21.45	21.59	74249	21.52	85438	15.1	+

RTX-CLPZ

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lionville Laboratory Incorporated
 Client: _____
 RFW Lot ID: _____

Contract: _____
 GC Sample ID: 060403gc20 .57
 Millennium Result ID: 5729

Instrument ID: GC 20 Initial Calibration Start Date: _____ Date of Analysis: 6/6/03 2
 Processing Method: _____ 6/5/03 Time of Analysis: 5:22:03 PM
06040320B_SPB Standard ID: IND B 4204 D

COMPOUND	RT	RT WINDOW		INITIAL RESPONSE	RT	MEAN %D	15.6	FL
		FROM	TO			CONT. RESPONSE	%D <i>6/10/03</i>	+
BETA-BHC	9.98	9.91	10.05	13290	9.99	15350	15.5 ✓	+
DELTA-BHC	10.98	10.91	11.05	28389	11.00	33256	17.1	+
ALDRIN	12.19	12.11	12.26	31840	12.20	37184	16.8	+
HEPT. EPOXIDE	14.20	14.13	14.27	28331	14.22	32951	16.3	+
G CHLORDANE	14.85	14.78	14.92	28673	14.87	33617	17.2	+
A CHLORDANE	15.36	15.29	15.43	28529	15.37	33352	16.9	+
4,4'-DDE	16.09	16.02	16.16	43965	16.11	49711	13.1	
ENDOSULFAN II	18.18	18.11	18.25	43264	18.19	50157	15.9	+
ENDRIN ALDEHYDE	19.34	19.27	19.41	34774	19.36	39138	12.5	
ENDO SULFATE	20.27	20.20	20.34	39090	20.28	45524	16.5	+
ENDRIN KETONE	21.99	21.92	22.06	44489	22.00	50648	13.8	
DCB	26.30	26.23	26.37	84459	26.31	97062	14.9	

LTX-CLP2



GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

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

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.

SP = Indicates Spiked Compound.



GLOSSARY OF PESTICIDE/PCB DATA

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

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 06/30/03 10:55

RFW Batch Number: 0305L456

Client: TNUHANFORD F03-006 H2220 Work Order: 11343606001 Page: 1

Sample Information	Cust ID:	B17112	B17112	B17112	B17112	B17112	B17112
RFW#:	001	001	001 MS	001 MS	001 MSD	001 MSD	001 MSD
Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
D.F.:	1.00	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	UG/KG
		REPREP	REPREP	REPREP	REPREP	REPREP	REPREP
Surrogate: Tetrachloro-m-xylene	125 * %	100 %	100 %	90 %	115 %	95 %	
Decachlorobiphenyl	135 * %	125 * %	100 %	115 %	115 %	120 %	
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====							
Alpha-BHC	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Beta-BHC	7.0	1.7 U	8.4	1.7 U	70	1.7 U	1.7 U
Delta-BHC	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
gamma-BHC (Lindane)	1.7 U	1.7 U	86 %	70 %	102 %	90 %	90 %
Heptachlor	1.7 U	1.7 U	86 %	96 %	98 %	96 %	96 %
Aldrin	1.7 U	1.7 U	74 %	90 %	82 %	90 %	90 %
Heptachlor epoxide	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Endosulfan I	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Dieldrin	3.5 U	3.5 U	91 %	101 %	105 %	104 %	104 %
4,4'-DDE	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U
Endrin	3.5 U	3.5 U	93 %	111 %	110 %	115 %	115 %
Endosulfan II	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U
4,4'-DDD	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U
Endosulfan sulfate	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U
4,4'-DDT	3.5 U	3.5 U	84 %	62 %	97 %	103 %	103 %
Methoxychlor	17 U	17 U	17 U	17 U	17 U	17 U	17 U
Endrin ketone	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U
Endrin aldehyde	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U
alpha-Chlordane	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
gamma-Chlordane	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Toxaphene	170 U	170 U	170 U	170 U	170 U	170 U	170 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

Handwritten signature/initials

**LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST**

CLIENT: TNU Hartford

Purchase Order/Project:

DATE: 5.21.03

AF# / SOW# / Release #: FO3-006

Laboratory SDG #:

0305L456

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets Lvl.1 Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC-96-061 / 1.3°

Laboratory Sample Custodian:

Laboratory Project Manager:

[Signature]

Lionville Laboratory, Inc.
 DRO ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2220

DATE RECEIVED: 05/21/03

LVL LOT # :0305L456

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17113	002	S	03LE0618	05/15/03	05/23/03	06/01/03
B17113	002 MS	S	03LE0618	05/15/03	05/23/03	06/01/03
B17113	002 MSD	S	03LE0618	05/15/03	05/23/03	06/01/03
B17114	003	S	03LE0618	05/16/03	05/23/03	06/01/03

LAB QC:

BLK	MB1	S	03LE0618	N/A	05/23/03	06/01/03
BLK	MB1 BS	S	03LE0618	N/A	05/23/03	06/01/03

9/8/06/24/03





Analytical Report

Client: TNU-HANFORD F03-006
LVL #: 0305L456
SDG/SAF #: H2220/F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 05-21-03

DIESEL RANGE ORGANICS

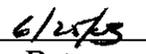
The set of samples consisted of two (2) soil samples collected on 05-15,16-03.

The samples and their associated QC samples were extracted on 05-23-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 06-01-03. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8015B. The analysis met the intent of method WTPH-D.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. The method blank was below the reporting limits for all target compounds.
4. All surrogate recoveries were within acceptance criteria.
5. The blank spike recovery was within acceptance criteria.
6. All matrix spike recoveries were within acceptance criteria.
7. All initial calibrations associated with this data set were within acceptance criteria.
8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated


Date

pefr:\group\data\dro\tnu hanford\05L-456.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 11 pages.



GLOSSARY OF DIESEL RANGE ORGANICS DATA

DATA QUALIFIERS

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

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP** = Indicates Spiked Compound.



GLOSSARY OF DIESEL RANGE ORGANICS DATA

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

Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

Report Date: 06/21/03 15:58

RFW Batch Number: 0305L456

Client: TNUHANFORD F03-006 H2220 Work Order: 11343606001 Page: 1

	Cust ID:	B17113	B17113	B17113	B17114	BLK	BLK BS
Sample	RFW#:	002	002 MS	002 MSD	003	03LE0618-MB1	03LE0618-MB1
Information	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	92 %	99 %	93 %	95 %	87 %	101 %
		fl	fl	fl	fl	fl	fl
Diesel Range Organics		12.8 U	83 %	77 %	12.3 U	12.0 U	87 %
Kerosene		12.8 U	12.8 U	12.8 U	12.3 U	12.0 U	12.0 U

Handwritten signature

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



0205L456

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client <u>TNU-Hanford F03-006</u>		Refrigerator #		1		2																					
Est. Final Proj. Sampling Date		#/Type Container		Liquid																							
Project # <u>11343-606-001-9999-03</u>		Solid		10g		10g		10g		10g		10g		10g		10g		10g		10g							
Project Contact/Phone #		Liquid																									
Lionville Laboratory Project Manager <u>Orlette Johnson</u>		Volume		Solid		60		125		60		250		60													
QC <u>SPEC</u> Del <u>STD</u> TAT <u>30 days</u>		Preservatives				-		-		-		-		-													
Date Rec'd <u>5-21-03</u> Date Due <u>6-20-03</u>		ANALYSES REQUESTED		ORGANIC		VOA		BNA (2)		Pest/BCB		Herb		Alcohols		Sulfides		Inorg									
																		Metal (3)		CN							
																				Hex		Chrom					
																						IC		Annua			
																								NO2, NO3		Oil + Grease	

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-103		Page 1 of 1	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 45 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C3247); (0.5')		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. ERC 96 061		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express			
Shipped To EBERLINE SERVICES (Formerly TMA) RECRA		Offsite Property No. A030 235		Bill of Lading/Air Bill No. SEE OSPL					
POSSIBLE SAMPLE HAZARDS/REMARKS				Preservation	Cool 4C	Cool 4C			
Special Handling and/or Storage				Type of Container	aG	aG			
				No. of Container(s)	1	1			
				Volume	60mL	250mL			
SAMPLE ANALYSIS				Pesticides - 8081	Chloro- Herbicides - EPA8151				
Sample No.	Matrix *	Sample Date	Sample Time						
B17112	SOIL	5-15-03	0920	X	X				
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		<p>** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>Personnel not available to relinquish samples from the 3728 Ref # 1B on 5/12/03</p>	
REMOVED FROM		5/15/03		REF 1B 3728		5/15/03			
K. F. ...		5-15-03		1B 3728		5-15-03			
REF 1B 3728		520 03 1300		210A/C/...		520 03 1300			
S. GALEN...		520 03 1300		FED EX					
D. J. ...		5-21-03 0900		D. J. ...		5-21-03 0900			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		<ul style="list-style-type: none"> S=Soil SB=Settlement 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			

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						F03-006-104		Page 1 of 1						
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days						
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-10 (C3245) 12.5'-15 ft		SAF No. F03-006		Air Quality <input type="checkbox"/>										
Ice Chest No. ERC 96061		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express										
Shipped To EBERLINE SERVICES (Formerly TMA) Reera		Offsite Property No. A030235		Bill of Lading/Air Bill No. SEE OSPC												
POSSIBLE SAMPLE HAZARDS/REMARKS Radioactive Tieto: B17113 Special Handling and/or Storage				Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None		
				Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
				No. of Container(s)	1	1	1	1	1	1	1	1	1	1	1	1
				Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3			
				Sample No.	Matrix *	Sample Date	Sample Time									
B17113	SOIL	5-15-03	1420	X	X	X	X	X	X	X						
				Personnel not available to relinquish samples from the 3728 Ref# 1B on 5/20/03												
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *				
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		<p>** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>(1) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol); (2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G (3) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel); Mercury - 7471 - (CV) (4) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010 (5) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Cesium-134, Radium-226, Radium-228, Tin-126); Total Uranium; Americium-241; Isotopic Plutonium; Isotopic Uranium (6) Technetium-99; Strontium-89,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-</p>				<p>S=Soil SE=Sediment SD=Solid SL=Sludge W=Water D=Oil A=Air OS=Drum Solids DL=Drum Liquids T=Times W=Wipe L=Liquid V=Vegetation X=Other</p>				
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time										
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time										
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time										
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time										
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time										
LABORATORY SECTION		Received By		Title				Date/Time								
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time								

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-105		Page 2 of 2	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 45 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-10 (C3247) 45-47.5 ft			SAF No. F03-006		Air Quality <input type="checkbox"/>		
Ice Chest No.		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express			
Shipped To <i>M/S 5/11/03</i> EBERLINE SERVICES (Formerly TMA) <i>Recra</i>		Offsite Property No.			Bill of Lading/Air Bill No.				
POSSIBLE SAMPLE HAZARDS/REMARKS <i>MD 5-19-03 Radioactive TILTO: B17130</i>		Preservation		Type of Container		No. of Container(s)		Volume	
Special Handling and/or Storage N/A		None		AG		1		68 mL	
SAMPLE ANALYSIS		N/A		N/A		N/A		N/A	
Sample No.		Matrix *	Sample Date	Sample Time					
B17114		SOIL	5-16-03	1010					
CHAIN OF POSSESSION		Sign/Print Names			SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time		** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.		S=Soil
<i>T.S. Pope / J. Hulstrom</i>		5-16-03 1320	<i>MO-026 REF H2</i>		5-16-03 1320				SE=Soilment
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time				SO=Solid
<i>MD-026 Ref #2</i>		5-19-03 1315	<i>Madison Krethans</i>		5-19-03				SL=Sledge
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time				W=Water
<i>Madison Krethans</i>		5-19-03 1400	<i>etc</i>		5-19-03 1400				O=Oil
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time				A=Air
<i>R.F. Hill</i>		5-19-03 1400	<i>IR 3728</i>		5-19-03				DS=Drum Solids
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time				DL=Drum Liquids
<i>IR 3728</i>		5-20-03	<i>Fed Ex</i>						T=Time
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time				W=Wipe
									L=Liquid
LABORATORY SECTION		Received By			Title			Date/Time	
FINAL SAMPLE DISPOSITION		Disposal Method			Disposed By			Date/Time	

**LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST**

CLIENT: TWU Hartford
Purchase Order/Project:

DATE: 5.21.03

AF# / SOW# / Release #: FO3-006

Laboratory SDG #:

0305L456

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LvLl Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC-96-061 / 1.3°C

Laboratory Sample Custodian:

Laboratory Project Manager:

[Signature]

Lionville Laboratory, Inc.
GRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2220

DATE RECEIVED: 05/21/03

LVL LOT # :0305L456

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17113	002	S	03LVJ527	05/15/03	N/A	05/27/03
B17113	002 MS	S	03LVJ527	05/15/03	N/A	05/27/03
B17113	002 MSD	S	03LVJ527	05/15/03	N/A	05/27/03
B17114	003	S	03LVJ527	05/16/03	N/A	05/27/03

LAB QC:

TBLKKE	MB1	S	03LVJ527	N/A	N/A	05/27/03
TBLKKE	MB1 BS	S	03LVJ527	N/A	N/A	05/27/03

9/26/24/03





Analytical Report

Client: TNU HANFORD F03-006
LVL #: 0305L456
SDG/SAF#: H2220/F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 05-21-03

GRO

The set of samples consisted of two (2) soil samples collected on 05-15,16-03.

The samples and their associated QC samples were analyzed according to Lionville Laboratory OPs based on SW-846 method 8015 for Gasoline range organics (GRO) on 05-27-03. The analysis met the intent of method WTPH-G.

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

1. All results presented in this report are derived from samples that met LVL's sample acceptance policy.
2. All required holding times for analysis have been met.
3. The method blank was below the reporting limits for all target compounds.
4. All surrogate recoveries were within acceptance criteria.
5. The blank spike recovery was within acceptance criteria.
6. All matrix spike recoveries were within acceptance criteria.
7. All initial calibrations associated with this data set were within acceptance criteria.
8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated


Date

peflRrgroup\data\gro\tnu\05L-456.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 11 pages.



GLOSSARY OF GASOLINE RANGE ORGANICS DATA

DATA QUALIFIERS

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

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP** = Indicates Spiked Compound.



GLOSSARY OF GASOLINE RANGE ORGANICS DATA

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

R:/SHARE/GCVOLATILE/GCVOLATILEGLOS.DOC

Lionville Laboratory, Inc.

GAS RANGE ORGANICS

Report Date: 06/21/03 13:44

RFW Batch Number: 0305L456

Client: TNUHANFORD F03-006 H2220 Work Order: 11343606001 Page: 1

	Cust ID:	B17113	B17113	B17113	B17114	TBLKKE	TBLKKE BS
Sample	RFW#:	002	002 MS	002 MSD	003	03LVJ527-MB1	03LVJ527-MB1
Information	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
	Fluorobenzene	86 %	81 %	84 %	84 %	100 %	100 %
	Gasoline Range Organics (GRO)	30 U	107 %	75 %	29 U	30 U	108 %

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

78mg/mls



0205L456

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client <u>TNU-Hanford F03-006</u>	Refrigerator #	1	2																	
Est. Final Proj. Sampling Date	#/Type Container	Liquid																		
Project # <u>11343-606-001-9999-00</u>		Solid	10g	10g	10g	10g	10g		10g		10g	10g	10g	10g						
Project Contact/Phone #	Volume	Liquid																		
Lionville Laboratory Project Manager <u>Delette Johnson</u>		Solid	60	125	60	250	60		60		60	125	60	60						
QC <u>SPEC</u> Del <u>STD</u> TAT <u>30 days</u>	Preservatives		-	-	-	-		-		-	-	-	-							
Date Rec'd <u>5-21-03</u> Date Due <u>6-20-03</u>	ANALYSES REQUESTED	ORGANIC						INORG												
		VOA	BNA (2)	Pest/ECB	Herb	Alochol's	Glycol's	Metal (3)	CN	Hex	Chry	IC	Ar	NO2	NO3	Oil+	Grease			

MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum DL - Drum L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (M)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only												
			MS	MSD				H4290	X5720	OPRO	0620	0609H	OHBGX	OGCIC	MCTO	IC66	INORG 0	INH3N	IOGGA	
			001	B17112						S	5-15-03	0920			X	X				
002	B17113			L	5-16-03	1420		X			X	X	X	X	X	X	X	X	X	X
003	B17114			L	5-16-03	1010	X	X			X	X	X	X	X	X	X	X	X	X

Special Instructions: SAP # F03-006
Run Matrix QC

MCTO: RCRA + Sb, Be, Bi, B, Cu, Ni
 INORG: IC: Cl, Fl, NO3, NO2, PO4, SO4
 INH3N, ZPH, ICNTO

DATE/REVISIONS:

- _____
- _____
- _____
- _____
- _____
- _____

Lionville Laboratory Use Only	
Samples were: 1) Shipped <input checked="" type="checkbox"/> or Hand Delivered _____ Airbill # _____	Tamper Resistant Seal was: 1) Present on Outer Package <input checked="" type="checkbox"/> or N 2) Unbroken on Outer Package <input checked="" type="checkbox"/> or N 3) Present on Sample <input checked="" type="checkbox"/> or N 4) Unbroken on Sample <input checked="" type="checkbox"/> or N COC Record Present Upon Sample Rec't <input checked="" type="checkbox"/> or N Cooler Temp. <u>1.3</u> °C
2) Ambient or Chilled <input checked="" type="checkbox"/> 3) Received in Good Condition <input checked="" type="checkbox"/> or N 4) Samples Properly Preserved <input checked="" type="checkbox"/> or N 5) Received Within Holding Time <input checked="" type="checkbox"/> or N	

Relinquished by	Received by	Date	Time
<u>Delette Johnson</u>	<u>Delette Johnson</u>	<u>5-21-03</u>	<u>0900</u>

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N
 NOTES:
7913 8618 0953

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-103		Page 1 of 1	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 45 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C3247); (0.5')		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. <i>ERC 96 061</i>		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express			
Shipped To EBERLINE SERVICES (Formerly TMA) <i>RECRE</i>		Offsite Property No. <i>A030 235</i>		Bill of Lading/Air Bill No. <i>SEE OSPL</i>					
POSSIBLE SAMPLE HAZARDS/REMARKS				Preservation	Cool 4C	Cool 4C			
Special Handling and/or Storage				Type of Container	aG	aG			
				No. of Container(s)	1	1			
				Volume	60mL	250mL			
SAMPLE ANALYSIS				Pesticides - 8081	Chloro-Herbicides - EPA8151				
Sample No.	Matrix *	Sample Date	Sample Time						
B17112	SOIL	5-15-03	0900	X	X				<i>Tieto!</i>
									<i>07/08</i>
CHAIN OF POSSESSION				Sign/Print Names		SPECIAL INSTRUCTIONS			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		<p>** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>Personnel not available to relinquish samples from the 3728 Ref # 1B on 5/12/03</p>	
<i>[Signature]</i>		5/15/03		<i>[Signature]</i>		5/15/03			
<i>[Signature]</i>		5/15/03		1B 3728		5/15/03			
REF 1B 3728		5/20/03 1300		<i>[Signature]</i>		5/20/03 1300			
<i>[Signature]</i>		5/20/03 1300		FED EX					
<i>[Signature]</i>		5/21/03 0900		<i>[Signature]</i>		5/21/03 0900			
LABORATORY SECTION		Received By		Title		Date/Time			
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time			
Matrix *									
<ul style="list-style-type: none"> S=Soil SB=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other 									

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					F03-006-104		Page 1 of 1								
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days							
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-10 (C3245) 12.5'-15 ft			SAF No. F03-006		Air Quality <input type="checkbox"/>										
Ice Chest No. ERC 96061		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express											
Shipped To EBERLINE SERVICES (Formerly TMA) Reera		Offsite Property No. A030235				Bill of Lading/Air Bill No. SEE OSPC											
POSSIBLE SAMPLE HAZARDS/REMARKS Radioactive Tieto! B17119 Special Handling and/or Storage				Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None			
				Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG	
				No. of Container(s)	1	1	1	1	1	1	1	1	1	1	1	1	
				Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL	60mL	60mL	
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tridium - H3				
								Personnel not available to relinquish samples from the 3728 Ref # 1B on 5/12/03									
Sample No.	Matrix *	Sample Date	Sample Time														
B17113	SOIL	5-15-03	1420	X	X	X	X	X	X	X							
								Personnel not available to relinquish samples from the 3728 Ref # 1B on 5/12/03									
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS						Matrix *			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis. (1) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol) (2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G (3) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel); Mercury - 7471 - (CV) (4) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010 (5) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Cesium-134, Radium-226, Radium-228, Tin-126); Total Uranium; Americium-241; Isotopic Plutonium; Isotopic Uranium (6) Technetium-99; Strontium-89,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-						S=Soil		SE=Sediment	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								SO=Solid		SL=Sludge	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								W=Water		O=Oil	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								A=Air		DS=Drum Solids	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								DL=Drum Liquids		T=Tissue	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								W1=Wipe		L=Liquid	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		V=Vegetation		X=Other							
LABORATORY SECTION		Received By		Title		Date/Time											
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By						Date/Time							

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-105	Page 2 of 2		
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ	Price Code 8N	Data Turnaround	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-10 (C3247) 45-47.5 ft		SAF No. F03-006		Air Quality <input type="checkbox"/>	45 Days		
Ice Chest No.		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express			
Shipped To <i>Mrs 5110103</i> EBERLINE SERVICES (Formerly TMA) <i>Recra</i>		Offsite Property No.		Bill of Lading/Air Bill No.					
POSSIBLE SAMPLE HAZARDS/REMARKS <i>M/D 5-14-03 Radioactive TILTD: B17130</i> Special Handling and/or Storage <i>N/A</i>			Preservation	<i>None</i>					
			Type of Container	<i>AG</i>					
			No. of Container(s)	<i>2</i>					
			Volume	<i>500L</i>					
SAMPLE ANALYSIS			<i>Radium - HD</i>						
Sample No.	Matrix *	Sample Date	Sample Time						
B17114	SOIL	5-16-03	1010						
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.	
<i>T.S. POPE / A.S.H.</i>		<i>5-16-03 1320</i>		<i>MO-026 REF #2</i>		<i>5-16-03 1320</i>			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
<i>MO-026 Ref #2</i>		<i>5-19-03 1315</i>		<i>Thomson</i>		<i>5-19-03</i>			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
<i>Thomson</i>		<i>5-19-03 1400</i>		<i>Thomson</i>		<i>5-19-03 1400</i>			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
<i>R.F. Hill</i>		<i>5-19-03 1400</i>		<i>LB 3728</i>		<i>5-19-03</i>			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
<i>LB 3728</i>		<i>5-20-03</i>		<i>Fed Ex</i>					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
LABORATORY SECTION	Received By	Title				Date/Time			
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By				Date/Time			

**LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST**

CLIENT: *TUu Hartford*

Purchase Order/Project:

DATE: *5.21.03*

(F#) SOW# / Release #: *FO3-006*

Laboratory SDG #:

0305L456

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LvLI Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC-96-061 / 1.3°C

Laboratory Sample Custodian:

Laboratory Project Manager:

[Signature]

Lionville Laboratory, Inc.
 8015 ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2220

DATE RECEIVED: 05/21/03

LVL LOT # :0305L456

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17113	002	S	03LE0635	05/15/03	05/27/03	05/28/03
B17114	003	S	03LE0635	05/16/03	05/27/03	05/28/03
B17114	003 MS	S	03LE0635	05/16/03	05/27/03	05/28/03
B17114	003 MSD	S	03LE0635	05/16/03	05/27/03	05/28/03

LAB QC:

BLK	MB1	S	03LE0635	N/A	05/27/03	05/28/03
BLK	MB1 BS	S	03LE0635	N/A	05/27/03	05/28/03

Products





Analytical Report

Client: TNU HANFORD F03-006
LVL#: 0305L456
SDG/SAF#: H2220/F03-006

W.O.#: 11343-606-001-9999-00
Date Received: 05-21-03

GC SCAN-Ethylene Glycol

The set of samples consisted of two (2) soil samples collected on 05-15,16-03.

The samples and their associated QC samples were prepped on 05-27-03 and analyzed on 05-28-03 according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures based on method 8015B for Ethylene Glycol.

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

1. All results presented in this report are derived from samples that met LVL's sample acceptance policy.
2. All required holding times for analysis have been met.
3. The method blank was below the reporting limits for all target compounds.
4. Surrogates are not currently employed in the methodology.
5. The blank spike recovery was within acceptance criteria.
6. All matrix spike recoveries were within acceptance criteria.
7. All initial calibrations were within acceptance criteria.
8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

r:\group\data\gcsc\05L-456a.doc

6/16/03
Date

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



GLOSSARY OF GC SCAN 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 GC SCAN DATA

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

Lionville Laboratory, Inc.

Nonhalogenated Volatiles by GC, Method 8015

Report Date: 06/21/03 10:01

RFW Batch Number: 0305L456

Client: TNUHANFORD F03-006 H2220 Work Order: 11343606001 Page: 1

5

	Cust ID:	B17113	B17114	B17114	B17114	BLK	BLK BS
Sample	RFW#:	002	003	003 MS	003 MSD	03LE0635-MB1	03LE0635-MB1
Information	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
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====							
Ethylene Glycol		24.5 U	25.0 U	96 %	97 %	25.0 U	97 %

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

7/8/03

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-103		Page 1 of 1	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 45 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C3247); (0.5')		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. <u>ERC 96 061</u>		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express			
Shipped To EBERLINE SERVICES (Formerly TMA) <u>RECRE</u>		Offsite Property No. <u>A030 235</u>		Bill of Lading/Air Bill No. <u>SEE OSPL</u>					
POSSIBLE SAMPLE HAZARDS/REMARKS				Preservation	Cool 4C	Cool 4C			
Special Handling and/or Storage				Type of Container	aG	aG			
				No. of Container(s)	1	1			
				Volume	60mL	250mL			
SAMPLE ANALYSIS				Pesticides - 8081	Chloro-Herbicides - EPAS151				
Sample No.	Matrix *	Sample Date	Sample Time						
B17112	SOIL	5-15-03	0900	X	X				
CHAIN OF POSSESSION				Sign/Print Names		SPECIAL INSTRUCTIONS			
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time	<p>** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>Personnel not available to relinquish samples from the 3728 Ref # <u>1B</u> on <u>5/20/03</u></p>			
<u>REF 1B 3728</u>		<u>5/15/03</u>	<u>REF 1B 3728</u>		<u>5/15/03</u>				
<u>REF 1B 3728</u>		<u>5/20/03 1300</u>	<u>REF 1B 3728</u>		<u>5/20/03 1300</u>				
<u>SIGALON</u>		<u>5-20-03 1300</u>	<u>FED EX</u>						
<u>REF 1B 3728</u>		<u>5-21-03 0900</u>	<u>REF 1B 3728</u>		<u>5-21-03 0900</u>				
LABORATORY SECTION	Received By	Title			Date/Time				
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By			Date/Time				

FH-Central Plateau Project			CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						F03-006-104		Page 1 of 1				
Collector Johansen/Pope/Pfister			Company Contact LC Hulstrom			Telephone No. 373-3928			Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 45 Days				
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling			Sampling Location 216-A-10 (C3245) 12.5'-15 ft			SAF No. F03-006			Air Quality <input type="checkbox"/>		45 Days				
Ice Chest No. ERC 16061			Field Logbook No. HNF-N-3361			COA 117504ES10			Method of Shipment Federal Express						
Shipped To EBERLINE SERVICES (Formerly TMA) Reera			Offsite Property No. A030235			Bill of Lading/Air Bill No. 92E0SPC									
POSSIBLE SAMPLE HAZARDS/REMARKS Radioactive Tieto! B17113 Special Handling and/or Storage				Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None	
				Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
				No. of Container(s)	1	1	1	1	1	1	1	1	1	1	1
				Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3		
				Sample No.	Matrix *	Sample Date	Sample Time								
B17113	SOIL	5-15-03	1420	X	X	X	X	X	X	X					
												Personnel not available to relinquish samples from the 3728 Ref # 1B on 5/20/03			
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS						Matrix *	
Relinquished By/Removed From <i>[Signature]</i> 5-15-03				Received By/Stored In <i>[Signature]</i> 5-15-03				** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The lab oratory is to report both kerosene and diesel range compounds from WTPH-D analysis. (1) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol) (2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G (3) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel); Mercury - 7471 - (CV) (4) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010 (5) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Cesium-134, Radium-226, Radium-228, Tin-126); Total Uranium; Americium-241; Isotopic Plutonium; Isotopic Uranium (6) Technetium-99; Strontium-89,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-						S=Soil	
Relinquished By/Removed From <i>[Signature]</i> 5-15-03				Received By/Stored In <i>[Signature]</i> 5-15-03										SE=Soliment	
Relinquished By/Removed From <i>[Signature]</i> 5-15-03				Received By/Stored In <i>[Signature]</i> 5-15-03										SO=Solid	
Relinquished By/Removed From <i>[Signature]</i> 5-20-03 1300				Received By/Stored In <i>[Signature]</i> 5-20-03 1300										SP=Sludge	
Relinquished By/Removed From <i>[Signature]</i> 5-20-03 1300				Received By/Stored In <i>[Signature]</i> 5-20-03 1300										W=Water	
Relinquished By/Removed From <i>[Signature]</i> 5-21-03 0900				Received By/Stored In <i>[Signature]</i> 5-21-03 0900										O=Oil	
Relinquished By/Removed From				Received By/Stored In				A=Air							
LABORATORY SECTION				Received By				Title				Date/Time			
FINAL SAMPLE DISPOSITION				Disposal Method				Disposed By				Date/Time			

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-105		Page 1 of 2	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 45 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-10 (C3247) 45-47.5 ft		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. ERC 96 061		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express			
Shipped To ms 5110/03 EDERLINE SERVICES (Formerly TMA) Racra		Offsite Property No. A030235				Bill of Lading/Air Bill No. DEE 03PC			

POSSIBLE SAMPLE HAZARDS/REMARKS <i>MO 5-19-03</i> Radioactive Tilt: B17130 Special Handling and/or Storage <i>N/A</i>	Preservation	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
	Volume	60mL	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL

SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Chromium Hex - 7196	See item (5) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (6) in Special Instructions.	See item (7) in Special Instructions.
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Sample No.	Matrix *	Sample Date	Sample Time										
B17114	SOIL	5-11-03	1010	X	X	X	X	X	X	X	X	X	X

Personnel not available to relinquish samples from the 3728 Ref # 13 on 5/20/03

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
<i>D.S. Pope</i>	5-16-03 1320	<i>MO-026 Ref #2</i>	5-16-03 1320
<i>MO-026 Ref #2</i>	5-16-03 1315	<i>Mohinder</i>	5-19-03
<i>Mohinder</i>	5-19-03 1400	<i>ERC</i>	5-19-03
<i>K. F. ...</i>	5-19-03 1400	<i>IB</i>	5-19-03 1400
<i>IB</i>	5-20-03 1300	<i>Storley</i>	5-20-03 1300
<i>Storley</i>	5-20-03 1300	<i>FED EX</i>	

SPECIAL INSTRUCTIONS
 ** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.

- VOA - 8260A (TCL); VOA - 8260A (Add-On) (2-Pentanone, Benzyl alcohol, n-Butylbenzene)
- Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol)
- Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G
- ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel); Mercury - 7471 - (CV)
- IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010
- Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Cesium-134, Radium-226, Radium-228, Tin-126); Total Uranium, Americium-241, Isotopic Plutonium, Isotopic Uranium, Carbon-14, Lead-210, Nickel-63, Neptunium-237, Technetium-99, Thallium-201, Thallium-203, Thallium-204, Thallium-205, Thallium-206, Thallium-207, Thallium-208, Thallium-209, Thallium-210, Thallium-211, Thallium-212, Thallium-213, Thallium-214, Thallium-215, Thallium-216, Thallium-217, Thallium-218, Thallium-219, Thallium-220, Thallium-221, Thallium-222, Thallium-223, Thallium-224, Thallium-225, Thallium-226, Thallium-227, Thallium-228, Thallium-229, Thallium-230, Thallium-231, Thallium-232, Thallium-233, Thallium-234, Thallium-235, Thallium-236, Thallium-237, Thallium-238, Thallium-239, Thallium-240, Thallium-241, Thallium-242, Thallium-243, Thallium-244, Thallium-245, Thallium-246, Thallium-247, Thallium-248, Thallium-249, Thallium-250, Thallium-251, Thallium-252, 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Matrix *
 S=Soil
 SS=Soilment
 SO=Solid
 SL=Sludge
 W=Water
 O=Oil
 A=Air
 DS=Drum Solids
 DL=Drum Liquids
 T=Trace
 W=Wipe
 L=Liquid
 V=Vegetation
 X=Other

LABORATORY SECTION	Received By <i>Storley</i> 5-21-03 0900	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By
		Date/Time

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-105		Page 2 of 2																																																			
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 45 Days																																																			
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-10 (C3247) 45-47.5 ft		SAF No. F03-006		Air Quality <input type="checkbox"/>																																																					
Ice Chest No.		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express																																																					
Shipped To EBERLINE SERVICES (Formerly TMA) <i>Recra</i>		Offsite Property No.		Bill of Lading/Air Bill No.																																																							
POSSIBLE SAMPLE HAZARDS/REMARKS <i>MD 5-19-03 Radioactive TILTD: B17130</i>			Preservation <i>None</i>																																																								
Special Handling and/or Storage <i>N/A</i>			Type of Container <i>20L</i>																																																								
			No. of Container(s) <i>1</i>																																																								
			Volume <i>20L</i>																																																								
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**LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST**

CLIENT: TNU Hartford

Purchase Order/Project:

DATE: 5.21.03

AF# / SOW# / Release #: FO3-006

Laboratory SDG #:

0305L456

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets Lvl.1 Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC-96-061 / 1.3°C

Laboratory Sample Custodian:

[Signature]

Laboratory Project Manager:

Lionville Laboratory, Inc.
 HBGX ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2220

DATE RECEIVED: 05/21/03

LVL LOT # :0305L456

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17112	001	S	03LE0633	05/15/03	05/27/03	05/28/03
B17112	001 MS	S	03LE0633	05/15/03	05/27/03	05/28/03
B17112	001 MSD	S	03LE0633	05/15/03	05/27/03	05/28/03

LAB QC:

PBLKUS	MB1	S	03LE0633	N/A	05/27/03	05/28/03
PBLKUS	MB1 BS	S	03LE0633	N/A	05/27/03	05/28/03

gls/da





Analytical Report

Client: TNU HANFORD F03-006
LVL#: 0305L456
SDG/SAF#: H2220/F03-006

W.O.#: 11343-606-001-9999-00
Date Received: 05-21-03

HERBICIDE

One (1) soil sample was collected on 05-15-03.

The sample and its associated QC samples were extracted on 05-27-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 05-28-03. The extraction and analysis procedure was based on method 8151A.

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

1. All results presented in this report are derived from samples that met LVL's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. The method blank was below the reporting limits for all target compounds.
4. All surrogate recoveries were within acceptance criteria.
5. All blank spike recoveries were within acceptance criteria.
6. Two (2) of sixteen (16) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
7. All initial calibrations associated with this data set were within acceptance criteria.
8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
9. To the best of my knowledge, this data report is in compliance with the terms and conditions of the purchase order, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hard copy data package and in the electronic data submitted on diskette has been authorized by the cognizant laboratory manager or his/her designee to be accurate as verified by the following signature.


Laird Daniels
Laboratory Manager
Lionville Laboratory Incorporated

6/4/03
Date

pefr:\group\data\herb\lmu\05L-456.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 12 pages.



GLOSSARY OF HERBICIDE DATA

DATA QUALIFIERS

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

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

Lionville Laboratory, Inc.

Herbicides, Special List

Report Date: 05/30/03 10:43 S

RFW Batch Number: 0305L456

Client: TNUHANFORD F03-006 H2220 Work Order: 11343606001 Page: 1

Sample Information	Cust ID:	B17112	B17112	B17112	PBLKUS	PBLKUS BS
	RFW#:	001	001 MS	001 MSD	03LE0633-MB1	03LE0633-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Surrogate:	DCAA	110 %	142 %	136 %	134 %	119 %
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====						
Dalapon		170 U	91 %	98 %	170 U	83 %
Dicamba		70 U	118 %	119 %	67 U	92 %
Dichloroprop		170 U	118 %	123 %	170 U	96 %
2,4-D		35 U	108 %	106 %	33 U	86 %
2,4,5-TP (Silvex)		17 U	118 %	131 %	17 U	92 %
2,4,5-T		17 U	114 %	112 %	17 U	94 %
2,4-DB		170 U	116 %	117 %	170 U	97 %
Dinoseb		17 U	118 * %	140 * %	17 U	99 %

Handwritten signature/initials

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



0305L456

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client <u>TNU-Hanford F03-006</u>	Refrigerator #	1	2																
Est. Final Proj. Sampling Date _____	#/Type Container	Liquid																	
Project # <u>11343-606-001-9999-00</u>		Solid	100	100	100	100	100		100	100	100	100	100						
Project Contact/Phone # _____	Volume	Liquid																	
Lionville Laboratory Project Manager <u>Orlette Johnson</u>		Solid	60	125	60	250	60		60	60	125	60	60						
QC <u>SPEC</u> Del <u>STD</u> TAT <u>30 days</u>	Preservatives		-	-	-	-	-		-	-	-	-							

Date Rec'd <u>5-21-03</u>	Date Due <u>6-20-03</u>	ANALYSES REQUESTED →	ORGANIC						INORG					
			VOA	BNA (2)	Pos/ECB	Herb	Alcohols	Syring	Metal (3)	CN	Hex	Chrom	IF Arsenic	NO2, NO3

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 (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only											
			MS	MSD				H4290	0625 X 0940 0620	0609H	0H6GX	0GCSC	MCTO	IC66	INORG 0	IN3N2	IOG6R		
			001	B17112				S			5/15/03	0920			X	X			
002	B17113	L			L	1420		X		X	X	X	X	X	X	X	X	X	X
003	B17114	L			5/16/03	1010	X	X		X	X	X	X	X	X	X	X	X	X

Special Instructions: SAP # F03-006
Run Matrix QC
 MCTO: AsRA + Sb, Be, Bi, B, Cu, Ni
 INORG: IC: Cl, F, I, NO3, NO2, PO4, SO4
IN3N2, ZPH, ICNTO

DATE/REVISIONS:

- _____
- _____
- _____
- _____
- _____
- _____

Lionville Laboratory Use Only

Samples were: 1) Shipped or Hand Delivered _____
 Airbill # _____

2) Ambient or Chilled _____
 3) Received in Good Condition or N _____
 4) Samples Properly Preserved or N _____
 5) Received Within Holding Time or N _____

Tamper Resistant Seal was:
 1) Present on Outer Package or N _____
 2) Unbroken on Outer Package or N _____
 3) Present on Sample or N _____
 4) Unbroken on Sample or N _____
 COC Record Present Upon Sample Rec't or N _____
 Cooler Temp. 1.3 °C

Discrepancies Between Samples Labels and COC Record? Y or N _____
 NOTES: # 7913 8678 0953

Relinquished by	Received by	Date	Time
<u>Orlette Johnson</u>	<u>Orlette Johnson</u>	<u>5/21/03</u>	<u>0900</u>

Relinquished by	Received by	Date	Time
<u>COMPOSITE WASTE</u>	<u>ORIGINAL REWRITTEN</u>		

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-103		Page 1 of 1	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 45 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C3247); (0.5')		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. ERC 96 06/		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express			
Shipped To BERLINE SERVICES (Formerly TMA) RECRE		Offsite Property No. A030 235		Bill of Lading/Air Bill No. SEE OSPL					
POSSIBLE SAMPLE HAZARDS/REMARKS				Preservation	Cool 4C	Cool 4C			
Special Handling and/or Storage				Type of Container	aG	aG			
				No. of Container(s)	1	1			
				Volume	60mL	250mL			
SAMPLE ANALYSIS				Pesticides - 8081	Chloro-Herbicides - EPA8151				
Sample No.	Matrix *	Sample Date	Sample Time						
B17112	SOIL	5-15-03	0900	X	X				TiETO: B17112
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		<p>** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>Personnel not available to relinquish samples from the 3728 Ref # 1B on 5/12/03</p>	
RECEIVED FROM		5/15/03		RECEIVED FROM		5/15/03			
RECEIVED FROM		5/15/03		RECEIVED FROM		5/15/03			
REF 1B 3728		5/20/03 1300		RECEIVED FROM		5/20/03 1300			
SIGALCO		5/20/03 1300		RECEIVED FROM		FED EX			
Drew Ex		5/21/03 0900		RECEIVED FROM		5/21/03 0900			
LABORATORY SECTION		Received By		Title		Date/Time			
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time			

FH-Central Plateau Project			CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST							F03-006-104		Page 1 of 1		
Collector Johansen/Pope/Pfister			Company Contact LC Hulstrom			Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days		
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling			Sampling Location 216-A-10 (C3245) 12.5'-15 ft			SAF No. F03-006		Air Quality <input type="checkbox"/>						
Ice Chest No. ERC 96061			Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express							
Shipped To EBERLINE SERVICES (Formerly TMA) <i>Reera</i>			Offsite Property No. <i>A030235</i>			Bill of Lading/Air Bill No. <i>SEBOSPC</i>								
POSSIBLE SAMPLE HAZARDS/REMARKS <i>Radioactive Tieto: B17113</i> Special Handling and/or Storage			Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None	
			Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
			No. of Container(s)	1	1	1	1	1	1	1	1	1	1	1
			Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS			See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Trinium - H3		
			Sample No.	Matrix *	Sample Date	Sample Time								
B17113	SOIL	5-15-03	1420	X	X	X	X	X	X	X				
												Personnel not available to relinquish samples from the 3728 Ref # <i>1B</i> on <i>5/20/03</i>		
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS					Matrix *	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		<p>** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The lab oratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>(1) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol) (2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G (3) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel); Mercury - 7471 - (CV) (4) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010 (5) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Cesium-134, Radium-226, Radium-228, Tin-126); Total Uranium; Americium-241; Isotopic Plutonium; Isotopic Uranium (6) Technetium-99; Strontium-89,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-</p>					<p>S=Soil SE=Soilment SO=Solid SP=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Time WI=Wipe L=Liquid V=Vegetation X=Other</p>	
<i>Indira...</i>		5-15-03 1515		<i>RC...</i>		5-15-03 1515								
<i>R. Allen</i>		5-15-03 1300		<i>IB 3728</i>		5-15-03 1300								
<i>IB 3728</i>		5-20-03 1300		<i>SJ GALE</i>		5-20-03 1300								
<i>S. J. Gale</i>		5-20-03 1300		<i>FED EX</i>										
<i>Ex</i>		5-21-03 0900		<i>SJ Gale</i>		5-21-03 0900								
LABORATORY SECTION		Received By		Title				Date/Time						
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time						

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-105		Page 1 of 2	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 45 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-10 (C3247) 45-47.5 ft		SAF No. F03-006		Air Quality <input type="checkbox"/>		45 Days	
Ice Chest No. ERC 96 061		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express			
Shipped To MS 5110103 EBERLINE SERVICES (Formerly TMA) <i>Beera</i>		Offsite Property No. A030235				Bill of Lading/Air Bill No. 000 00PC			

POSSIBLE SAMPLE HAZARDS/REMARKS <i>N/A</i> Radioactive TIE TO: <i>MS 519-03</i> B17130 Special Handling and/or Storage <i>N/A</i>	Preservation	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
	Volume	60mL	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL

SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Chromium Hex - 7196	See item (5) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (6) in Special Instructions.	See item (7) in Special Instructions.
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Sample No.	Matrix *	Sample Date	Sample Time										
B17114	SOIL	5-11-03	1010	X	X	X	X	X	X	X	X	X	✓

Personnel not available to relinquish samples from the 3728 Ref # 15 on 5/12/03

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
<i>J. S. Pope</i>	5-16-03 1320	<i>MO-026 Ref # 2</i>	5-16-03 1320
<i>MO-026 Ref # 2</i>	5-16-03 1315	<i>Madsen</i>	5-19-03
<i>Madsen</i>	5-19-03 1400	<i>KEEL</i>	5-19-03
<i>K. F. ...</i>	5-19-03 1400	<i>IB</i>	5-19-03 1400
<i>IB</i>	5-20-03 1300	<i>W. ...</i>	5-20-03 1300
<i>S. ...</i>	5-20-03 1300	<i>FED EX</i>	

SPECIAL INSTRUCTIONS	Matrix *
** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis. (1) VOA - 8260A (TCL); VOA - 8260A (Add-On) (2-Pentanone, Benzyl alcohol, n-Butylbenzene) (2) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol) (3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G (4) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel); Mercury - 7471 - (CV) (5) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010 (6) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add on (Cesium-134, Radium-226, Radium-228, Tin-126); Total Uranium; Americium-241; Isotopic Phosphorus; Isotopic Uranium (Carbon-14); Nickel-63; Neptunium-237; Technetium-99; Strontium-90; Total SP; Total Uranium; Thorium-232.	S=Soil SE=Soil/rock SO=Solid SL=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Time W=Wipe L=Liquid V=Vegetation X=Other <i>MS 519-03</i>

LABORATORY SECTION	Received By <i>MS 519-03</i>	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By
		Date/Time

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-105	Page 2 of 2				
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ	Price Code 8N	Data Turnaround 45 Days			
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-10 (C3247) 45-47.5 ft			SAF No. F03-006		Air Quality <input type="checkbox"/>	45 Days			
Ice Chest No.		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express		Bill of Lading/Air Bill No.			
Shipped To <i>TMS 5/16/03</i> EBERLINE SERVICES (formerly TMA) <i>Recra</i>		Offsite Property No.									
POSSIBLE SAMPLE HAZARDS/REMARKS <i>TMS 5-16-03 Radioactive TILTD: B17130</i> Special Handling and/or Storage <i>N/A</i>				Preservation	None						
				Type of Container							
				No. of Container(s)							
				Volume	0.001L						
SAMPLE ANALYSIS				Region - HD							
Sample No.	Matrix *	Sample Date	Sample Time								
B17114	SOIL	5-16-03	1610								
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.	S=Soil SS=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Traces WL=Wipe L=Liquid V=Vegetation X=Other		
<i>J.S. Pope</i>		<i>5-16-03 1320</i>		<i>MO-026 REF HZ</i>		<i>5-16-03 1320</i>					
<i>MD-0210 Ref #2</i>		<i>5-19-03 1315</i>		<i>Thad Green</i>		<i>5-19-03</i>					
<i>MD-0210 Ref #2</i>		<i>5-19-03 1400</i>		<i>F. Kelly</i>		<i>5-19-03 1400</i>					
<i>R.F. Kelly</i>		<i>5-19-03 1400</i>		<i>18 3728</i>		<i>5-19-03</i>					
<i>18 3728</i>		<i>5-20-03</i>		<i>FED EX</i>							
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
LABORATORY SECTION		Received By		Title				Date/Time			
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time			

LIONVILLE LABORATORY INCORPORATED

SAMPLE RECEIPT CHECKLIST

CLIENT: *TNU Hanford*

Purchase Order/Project:

DATE: *5.21.03*

SAF# / SOW# / Release #: *FO 3-006*

Laboratory SDG #:

0305L456

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LvlJ Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC-96-061 / 1.3°C

Laboratory Sample Custodian:

Laboratory Project Manager:

[Signature]



Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2220

DATE RECEIVED: 05/21/03

LVL LOT # :0305L456

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17113						
SILVER, TOTAL	002	S	03L0324	05/15/03	06/09/03	06/10/03
SILVER, TOTAL	002 REP	S	03L0324	05/15/03	06/09/03	06/10/03
SILVER, TOTAL	002 MS	S	03L0324	05/15/03	06/09/03	06/10/03
ARSENIC, TOTAL	002	S	03L0324	05/15/03	06/09/03	06/10/03
ARSENIC, TOTAL	002 REP	S	03L0324	05/15/03	06/09/03	06/10/03
ARSENIC, TOTAL	002 MS	S	03L0324	05/15/03	06/09/03	06/10/03
BORON, TOTAL	002	S	03L0324	05/15/03	06/09/03	06/10/03
BORON, TOTAL	002 REP	S	03L0324	05/15/03	06/09/03	06/10/03
BORON, TOTAL	002 MS	S	03L0324	05/15/03	06/09/03	06/10/03
BARIUM, TOTAL	002	S	03L0324	05/15/03	06/09/03	06/10/03
BARIUM, TOTAL	002 REP	S	03L0324	05/15/03	06/09/03	06/10/03
BARIUM, TOTAL	002 MS	S	03L0324	05/15/03	06/09/03	06/10/03
BERYLLIUM, TOTAL	002	S	03L0324	05/15/03	06/09/03	06/10/03
BERYLLIUM, TOTAL	002 REP	S	03L0324	05/15/03	06/09/03	06/10/03
BERYLLIUM, TOTAL	002 MS	S	03L0324	05/15/03	06/09/03	06/10/03
BISMUTH, TOTAL	002	S	03L0324	05/15/03	06/09/03	06/10/03
BISMUTH, TOTAL REP	002 REP	S	03L0324	05/15/03	06/09/03	06/10/03
BISMUTH, TOTAL SPIKE	002 MS	S	03L0324	05/15/03	06/09/03	06/10/03
CADMIUM, TOTAL	002	S	03L0324	05/15/03	06/09/03	06/10/03
CADMIUM, TOTAL	002 REP	S	03L0324	05/15/03	06/09/03	06/10/03
CADMIUM, TOTAL	002 MS	S	03L0324	05/15/03	06/09/03	06/10/03
CHROMIUM, TOTAL	002	S	03L0324	05/15/03	06/09/03	06/10/03
CHROMIUM, TOTAL	002 REP	S	03L0324	05/15/03	06/09/03	06/10/03
CHROMIUM, TOTAL	002 MS	S	03L0324	05/15/03	06/09/03	06/10/03
COPPER, TOTAL	002	S	03L0324	05/15/03	06/09/03	06/10/03
COPPER, TOTAL	002 REP	S	03L0324	05/15/03	06/09/03	06/10/03
COPPER, TOTAL	002 MS	S	03L0324	05/15/03	06/09/03	06/10/03
MERCURY, TOTAL	002	S	03C0139	05/15/03	06/06/03	06/09/03
MERCURY, TOTAL	002 REP	S	03C0139	05/15/03	06/06/03	06/09/03
MERCURY, TOTAL	002 MS	S	03C0139	05/15/03	06/06/03	06/09/03
NICKEL, TOTAL	002	S	03L0324	05/15/03	06/09/03	06/10/03
NICKEL, TOTAL	002 REP	S	03L0324	05/15/03	06/09/03	06/10/03
NICKEL, TOTAL	002 MS	S	03L0324	05/15/03	06/09/03	06/10/03
LEAD, TOTAL	002	S	03L0324	05/15/03	06/09/03	06/10/03
LEAD, TOTAL	002 REP	S	03L0324	05/15/03	06/09/03	06/10/03

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2220

DATE RECEIVED: 05/21/03

LVL LOT # :0305L456

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LEAD, TOTAL	002 MS	S	03L0324	05/15/03	06/09/03	06/10/03
ANTIMONY, TOTAL	002	S	03L0324	05/15/03	06/09/03	06/10/03
ANTIMONY, TOTAL	002 REP	S	03L0324	05/15/03	06/09/03	06/10/03
ANTIMONY, TOTAL	002 MS	S	03L0324	05/15/03	06/09/03	06/10/03
SELENIUM, TOTAL	002	S	03L0324	05/15/03	06/09/03	06/10/03
SELENIUM, TOTAL	002 REP	S	03L0324	05/15/03	06/09/03	06/10/03
SELENIUM, TOTAL	002 MS	S	03L0324	05/15/03	06/09/03	06/10/03

B17114

SILVER, TOTAL	003	S	03L0324	05/16/03	06/09/03	06/12/03
ARSENIC, TOTAL	003	S	03L0324	05/16/03	06/09/03	06/12/03
BORON, TOTAL	003	S	03L0324	05/16/03	06/09/03	06/12/03
BARIUM, TOTAL	003	S	03L0324	05/16/03	06/09/03	06/12/03
BERYLLIUM, TOTAL	003	S	03L0324	05/16/03	06/09/03	06/12/03
BISMUTH, TOTAL	003	S	03L0324	05/16/03	06/09/03	06/12/03
CADMIUM, TOTAL	003	S	03L0324	05/16/03	06/09/03	06/12/03
CHROMIUM, TOTAL	003	S	03L0324	05/16/03	06/09/03	06/12/03
COPPER, TOTAL	003	S	03L0324	05/16/03	06/09/03	06/12/03
MERCURY, TOTAL	003	S	03C0139	05/16/03	06/06/03	06/09/03
NICKEL, TOTAL	003	S	03L0324	05/16/03	06/09/03	06/12/03
LEAD, TOTAL	003	S	03L0324	05/16/03	06/09/03	06/12/03
ANTIMONY, TOTAL	003	S	03L0324	05/16/03	06/09/03	06/12/03
SELENIUM, TOTAL	003	S	03L0324	05/16/03	06/09/03	06/12/03

LAB QC:

SILVER LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
SILVER, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
ARSENIC LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
ARSENIC, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
BORON LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
BORON, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
BARIUM LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
BARIUM, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
BERYLLIUM LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
BERYLLIUM, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
BISMUTH, LCS	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2220

DATE RECEIVED: 05/21/03

LVL LOT # :0305L456

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BISMUTH, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
CADMIUM LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
CADMIUM, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
CHROMIUM LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
CHROMIUM, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
COPPER LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
COPPER, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
MERCURY LABORATORY	LC1 BS	S	03C0139	N/A	06/06/03	06/09/03
MERCURY, TOTAL	MB1	S	03C0139	N/A	06/06/03	06/09/03
NICKEL LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
NICKEL, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
LEAD LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
LEAD, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
ANTIMONY LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
ANTIMONY, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
SELENIUM LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
SELENIUM, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03



Analytical Report

Client: TNU-HANFORD F03-006
LVL#: 0305L456
SDG/SAF#: H2220/F03-006

W.O.#: 11343-606-001-9999-00
Date Received: 05-21-03

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 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. All results presented in this report are derived from samples that met LVL's sample acceptance policy.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
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), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
8. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.
10. The matrix spike (MS) recovery for 1 analyte was outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

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

04

<u>Sample ID</u>	<u>Element</u>	<u>PDS</u> <u>Concentration (ppb)</u>	<u>PDS</u> <u>% Recovery</u>
B17113	Antimony	100	102.4

12. The duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.
14. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


 Iain Daniels
 Laboratory Manager
 Lionville Laboratory Incorporated

6/17/03
 Date

jjw/m05-456

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 03052456

Leaching Procedure: 1310 1311 1312 Other:

CLP Metals Digestion and Analysis Methods: ILM03.0 ILM04.0

Metals Digestion Methods: 3005A 3010A 3015 3020A X3050B 3051 200.7 SS17
 Other:

Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Antimony	<u> X6010B </u> <u> 7041^s </u>	<u> 200.7 </u> <u> 204.2 </u>			<u> 99 </u>
Arsenic	<u> X6010B </u> <u> 7060A^s </u>	<u> 200.7 </u> <u> 206.2 </u>	<u> 3113B </u>		<u> 99 </u>
Barium	<u> X6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Beryllium	<u> X6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Bismuth	<u> X6010B¹ </u>	<u> 200.7¹ </u>		<u> 1620 </u>	<u> 99 </u>
Boron	<u> X6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Cadmium	<u> X6010B </u> <u> 7131A^s </u>	<u> 200.7 </u> <u> 213.2 </u>			<u> 99 </u>
Calcium	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Chromium	<u> X6010B </u> <u> 7191^s </u>	<u> 200.7 </u> <u> 218.2 </u>			<u> SS17 </u>
Cobalt	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Copper	<u> X6010B </u> <u> 7211^s </u>	<u> 200.7 </u> <u> 220.2 </u>			<u> 99 </u>
Iron	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Lead	<u> X6010B </u> <u> 7421^s </u>	<u> 200.7 </u> <u> 239.2 </u>	<u> 3113B </u>		<u> 99 </u>
Lithium	<u> 6010B </u> <u> 7430⁴ </u>	<u> 200.7 </u>		<u> 1620 </u>	<u> 99 </u>
Magnesium	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Manganese	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Mercury	<u> 7470A³ </u> <u> X7471A³ </u>	<u> 245.1² </u> <u> 245.5² </u>			<u> 99 </u>
Molybdenum	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Nickel	<u> X6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Potassium	<u> 6010B </u> <u> 7610⁴ </u>	<u> 200.7 </u> <u> 258.1⁴ </u>			<u> 99 </u>
Rare Earths	<u> 6010B¹ </u>	<u> 200.7¹ </u>		<u> 1620 </u>	<u> 99 </u>
Selenium	<u> X6010B </u> <u> 7740^s </u>	<u> 200.7 </u> <u> 270.2 </u>	<u> 3113B </u>		<u> 99 </u>
Silicon	<u> 6010B¹ </u>	<u> 200.7 </u>		<u> 1620 </u>	<u> 99 </u>
Silica	<u> 6010B </u>	<u> 200.7 </u>		<u> 1620 </u>	<u> 99 </u>
Silver	<u> X6010B </u> <u> 7761^s </u>	<u> 200.7 </u> <u> 272.2 </u>			<u> 99 </u>
Sodium	<u> 6010B </u> <u> 7770⁴ </u>	<u> 200.7 </u> <u> 273.1⁴ </u>			<u> 99 </u>
Strontium	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Thallium	<u> 6010B </u> <u> 7841^s </u>	<u> 200.7 </u> <u> 279.2 </u> <u> 200.9 </u>			<u> 99 </u>
Tin	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Titanium	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Uranium	<u> 6010B¹ </u>	<u> 200.7¹ </u>		<u> 1620 </u>	<u> 99 </u>
Vanadium	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Zinc	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Zirconium	<u> 6010B¹ </u>	<u> 200.7¹ </u>		<u> 1620 </u>	<u> 99 </u>

Other: _____

Method: _____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- * = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.
2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, approximately 0.3 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. Flame AA.
4. Graphite Furnace AA.

L-WI-033/N-04/98

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/16/03

CLIENT: TNUHANFORD F03-006 H2220

LVL LOT #: 0305L456

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B17113	Silver, Total	0.13 u	MG/KG	0.13	1.0
		Arsenic, Total	4.1	MG/KG	0.34	1.0
		Boron, Total	0.89	MG/KG	0.20	1.0
		Barium, Total	53.4	MG/KG	0.02	1.0
		Beryllium, Total	0.05	MG/KG	0.01	1.0
		Bismuth, Total	0.53 u	MG/KG	0.53	1.0
		Cadmium, Total	0.26	MG/KG	0.04	1.0
		Chromium, Total	6.7	MG/KG	0.10	1.0
		Copper, Total	11.2	MG/KG	0.06	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	7.3	MG/KG	0.14	1.0
		Lead, Total	4.0	MG/KG	0.24	1.0
		Antimony, Total	0.48	MG/KG	0.23	1.0
		Selenium, Total	0.44 u	MG/KG	0.44	1.0
-003	B17114	Silver, Total	0.12 u	MG/KG	0.12	1.0
		Arsenic, Total	3.3	MG/KG	0.32	1.0
		Boron, Total	0.69	MG/KG	0.18	1.0
		Barium, Total	43.9	MG/KG	0.02	1.0
		Beryllium, Total	0.31	MG/KG	0.01	1.0
		Bismuth, Total	0.49 u	MG/KG	0.49	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	6.9	MG/KG	0.1	1.0
		Copper, Total	9.6	MG/KG	0.06	1.0
		Mercury, Total	0.04	MG/KG	0.02	1.0
		Nickel, Total	8.3	MG/KG	0.13	1.0
		Lead, Total	3.4	MG/KG	0.22	1.0
		Antimony, Total	0.30	MG/KG	0.21	1.0
		Selenium, Total	0.41 u	MG/KG	0.41	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/16/03

CLIENT: TNUHANFORD F03-006 H2220
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L456

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
*****	*****	*****	*****	*****	*****	*****
BLANK1	03L0324-MB1	Silver, Total	0.12 u	MG/KG	0.12	1.0
		Arsenic, Total	0.33 u	MG/KG	0.33	1.0
		Boron, Total	0.19 u	MG/KG	0.19	1.0
		Barium, Total	0.03	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Bismuth, Total	0.51 u	MG/KG	0.51	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	0.12	MG/KG	0.10	1.0
		Copper, Total	0.08	MG/KG	0.06	1.0
		Nickel, Total	0.13 u	MG/KG	0.13	1.0
		Lead, Total	0.24	MG/KG	0.23	1.0
		Antimony, Total	0.27	MG/KG	0.22	1.0
		Selenium, Total	0.42 u	MG/KG	0.42	1.0
BLANK1	03C0139-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 06/16/03

CLIENT: TNUHANFORD P03-006 H2220
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L456

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-002	B17113	Silver, Total	5.2	0.13u	5.1	102.0	1.0
		Arsenic, Total	190	4.1	205	90.9	1.0
		Boron, Total	90.6	0.89	102	87.5	1.0
		Barium, Total	244	53.4	205	92.8	1.0
		Beryllium, Total	4.9	0.05	5.1	95.1	1.0
		Bismuth, Total	467	0.53u	512	91.1	1.0
		Cadmium, Total	5.1	0.26	5.1	95.0	1.0
		Chromium, Total	27.1	6.7	20.5	99.5	1.0
		Copper, Total	35.9	11.2	25.6	96.5	1.0
		Mercury, Total	0.19	0.02u	0.17	112.0	1.0
		Nickel, Total	59.7	7.3	51.3	102.1	1.0
		Lead, Total	51.2	4.0	51.3	92.0	1.0
		Antimony, Total	29.2	0.48	51.3	56.0	1.0
		Selenium, Total	174	0.44u	205	85.1	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 06/16/03

CLIENT: TNUHANFORD P03-006 H2220
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L456

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR (REP)
			RESULT	REPLICATE RPD		
-002REP	B17113	Silver, Total	0.13u	0.12u	NC	1.0
		Arsenic, Total	4.1	4.3	4.8	1.0
		Boron, Total	0.89	0.63	33.3	1.0
		Barium, Total	53.4	53.1	0.56	1.0
		Beryllium, Total	0.05	0.06	8.6	1.0
		Bismuth, Total	0.53u	0.53u	NC	1.0
		Cadmium, Total	0.26	0.21	18.2	1.0
		Chromium, Total	6.7	6.8	1.5	1.0
		Copper, Total	11.2	11.3	0.89	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Nickel, Total	7.3	7.3	0.00	1.0
		Lead, Total	4.0	3.9	2.5	1.0
		Antimony, Total	0.48	0.34	34.1	1.0
		Selenium, Total	0.44u	0.43u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 06/16/03

CLIENT: TNUHANFORD P03-006 H2220
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L456

SAMPLE	SITE ID	ANALYTE	SPIKED	SPIKED	UNITS	%RECOV
			SAMPLE	AMOUNT		
LCS1	03L0324-LC1	Silver, LCS	50.8	50.0	MG/KG	101.6
		Arsenic, LCS	929	1000	MG/KG	92.9
		Boron, LCS	460	500	MG/KG	91.9
		Barium, LCS	493	500	MG/KG	98.6
		Beryllium, LCS	24.8	25.0	MG/KG	99.2
		Bismuth, LCS	472	500	MG/KG	94.5
		Cadmium, LCS	24.7	25.0	MG/KG	98.8
		Chromium, LCS	51.8	50.0	MG/KG	103.6
		Copper, LCS	126	125	MG/KG	101.1
		Nickel, LCS	198	200	MG/KG	99.0
		Lead, LCS	242	250	MG/KG	96.6
		Antimony, LCS	287	300	MG/KG	95.6
		Selenium, LCS	860	1000	MG/KG	86.0
LCS1	03C0139-LC1	Mercury, LCS	6.6	6.2	MG/KG	107.0

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F03-006-103	Page 1 of 1
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928	Project Coordinator TRENT, SJ	Price Code 8N Data Turnaround 45 Days
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C3247); (0.5')		SAF No. F03-006	Air Quality <input type="checkbox"/>	
Ice Chest No. <i>ERC 96 061</i>		Field Logbook No. HNF-N-3361		COA 117504ES10	Method of Shipment Federal Express	
Shipped To <i>EDERLINE SERVICES (Formerly TMA)</i> <i>RECRA</i>		Offsite Property No. <i>A030 235</i>		Bill of Lading/Air Bill No. <i>SEE OSPL</i>		

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	Cool 4C						
	Special Handling and/or Storage	Type of Container	aG	aG					
		No. of Container(s)	1	1					
		Volume	60mL	250mL					
SAMPLE ANALYSIS		Pesticides - 8081	Chloro-Herbicides - EPA8151						
Sample No.	Matrix *	Sample Date	Sample Time						
B17112	SOIL	5-15-03	0400	X	X				

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS		Matrix * S=Soil SB=Soilment SO=Solid SP=Sedg W=Water O=Oil A=Air DS=Dross Solids DL=Dross Liquids T=Tissue Wt=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From <i>[Signature]</i>	Date/Time <i>5/15/03</i>	Received By/Stored In <i>[Signature]</i>	Date/Time <i>5/15/03</i>	** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.		
Relinquished By/Removed From <i>[Signature]</i>	Date/Time <i>5-15-03</i>	Received By/Stored In <i>[Signature]</i>	Date/Time <i>5-15-03</i>	Personnel not available to relinquish samples from the 3728 Ref # <i>1B</i> on <i>5/20/03</i>		
Relinquished By/Removed From <i>[Signature]</i>	Date/Time <i>5-20-03 1300</i>	Received By/Stored In <i>[Signature]</i>	Date/Time <i>5-20-03 1300</i>			
Relinquished By/Removed From <i>[Signature]</i>	Date/Time <i>5-20-03 1300</i>	Received By/Stored In <i>[Signature]</i>	Date/Time <i>5-20-03 1300</i>			
Relinquished By/Removed From <i>[Signature]</i>	Date/Time <i>5-21-03 0900</i>	Received By/Stored In <i>[Signature]</i>	Date/Time <i>5-21-03 0900</i>			

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

FH-Central Plateau Project			CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST							F03-006-104		Page 1 of 1					
Collector Johansen/Pope/Pfister			Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days						
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling			Sampling Location 216-A-10 (C3245) 12.5'-15 ft			SAF No. F03-006		Air Quality <input type="checkbox"/>									
Ice Chest No. ERC 96061			Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express		Bill of Lading/Air Bill No. SEE OSPC								
Shipped To EDERLINE SERVICES (Formerly TMA) Reera			Offsite Property No. A030235														
POSSIBLE SAMPLE HAZARDS/REMARKS Radioactive Tieto: B17113 Special Handling and/or Storage				Preservation		Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None		
				Type of Container		aG	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
				No. of Container(s)		1	1	1	1	1	1	1	1	1	1	1	1
				Volume		60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS				See item (1) in Special Instructions.		See item (2) in Special Instructions.		See item (3) in Special Instructions.		Chromium Hex - 7196	See item (4) in Special Instructions.		NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3
				Sample No.		Matrix *		Sample Date		Sample Time							
B17113		SOIL		5-15-03		1420		Personnel not available to relinquish samples from the 3728 Ref # 1B on 5/20/03									
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis. (1) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G (2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel); Mercury - 7471 - (CV) (4) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010 (5) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Cesium-134, Radium-226, Radium-228, Tin-126); Total Uranium; Americium-241; Isotopic Plutonium; Isotopic Uranium (6) Technetium-99; Strontium-89,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-				S=Soil SB=Soil/mud SO=Soil SL=Soil/L W=Water O=Oil A=Air DS=Dry Solids DL=Dry Liquids T=Trace W=Wipe L=Liquid V=Vegetation X=Other					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time											
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time											
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time											
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time											
LABORATORY SECTION		Received By		Title		Date/Time											
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time									

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-105	Page 2 of 2
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-10 (C3247) 45-47.5 ft		SAF No. F03-006		Price Code 8N Data Turnaround 45 Days	
Ice Chest No.		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express	
Shipped To EBERLINE SERVICES (Formerly TMA) <i>Recra</i>		Offsite Property No.		Bill of Lading/Air Bill No.			
POSSIBLE SAMPLE HAZARDS/REMARKS <i>14-03 Radioactive TILTD: B17130</i> Special Handling and/or Storage <i>N/A</i>		Preservation		None			
		Type of Container		None			
		No. of Container(s)		None			
		Volume		None			
SAMPLE ANALYSIS							
Sample No.		Matrix *	Sample Date		Sample Time		
B17114		SOIL	5-16-03		1610		
CHAIN OF POSSESSION				Sign/Print Names		SPECIAL INSTRUCTIONS	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time	
<i>T.S. Pope</i>		<i>5-16-03 1320</i>		<i>MO-026 REF HZ</i>		<i>5-16-03 1320</i>	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time	
<i>MD-020 REF #2</i>		<i>5-19-03 1315</i>		<i>Thad Hansen</i>		<i>5-19-03</i>	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time	
<i>Thad Hansen</i>		<i>5-19-03 1400</i>		<i>F. Kelly</i>		<i>5-19-03 1400</i>	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time	
<i>R.F. Hill</i>		<i>5-19-03 1400</i>		<i>IB 3728</i>		<i>5-19-03</i>	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time	
<i>IB 3728</i>		<i>5-20-03</i>		<i>FED EX</i>			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time	
LABORATORY SECTION		Received By		Title		Date/Time	
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time	

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

Client: *TNU Hartford*

Case Order/Project:

DATE: *5.21.03*

SOW# / Release #: *FO3-006*

Laboratory SDG #:

0305L456

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LVLJ Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC-96-061 / 1.3°C

Laboratory Sample Custodian:

Laboratory Project Manager:

[Signature]

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2220



DATE RECEIVED: 05/21/03

LVL LOT # : 0305L456

CLIENT ID / ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17112						
% SOLIDS	001	S	03L&S070	05/15/03	05/22/03	05/23/03
% SOLIDS	001 REP	S	03L&S070	05/15/03	05/22/03	05/23/03
B17113						
% SOLIDS	002	S	03L&S070	05/15/03	05/22/03	05/23/03
CHLORIDE BY IC	002	S	03LICA35	05/15/03	05/28/03	05/28/03
CHLORIDE BY IC	002 REP	S	03LICA35	05/15/03	05/28/03	05/28/03
CHLORIDE BY IC	002 MS	S	03LICA35	05/15/03	05/28/03	05/28/03
FLUORIDE BY IC	002	S	03LICA35	05/15/03	05/28/03	05/28/03
FLUORIDE BY IC	002 REP	S	03LICA35	05/15/03	05/28/03	05/28/03
FLUORIDE BY IC	002 MS	S	03LICA35	05/15/03	05/28/03	05/28/03
NITRITE BY IC	002	S	03LICA35	05/15/03	05/28/03	05/28/03
NITRITE BY IC	002 REP	S	03LICA35	05/15/03	05/28/03	05/28/03
NITRITE BY IC	002 MS	S	03LICA35	05/15/03	05/28/03	05/28/03
NITRATE BY IC	002	S	03LICA35	05/15/03	05/28/03	05/28/03
NITRATE BY IC	002 REP	S	03LICA35	05/15/03	05/28/03	05/28/03
NITRATE BY IC	002 MS	S	03LICA35	05/15/03	05/28/03	05/28/03
TOTAL CYANIDE	002	S	03LC048	05/15/03	05/27/03	05/27/03
PHOSPHATE BY IC	002	S	03LICA35	05/15/03	05/28/03	05/28/03
PHOSPHATE BY IC	002 REP	S	03LICA35	05/15/03	05/28/03	05/28/03
PHOSPHATE BY IC	002 MS	S	03LICA35	05/15/03	05/28/03	05/28/03
CHROMIUM VI	002	S	03LVI047	05/15/03	06/09/03	06/09/03
SULFATE BY IC	002	S	03LICA35	05/15/03	05/28/03	05/28/03
SULFATE BY IC	002 REP	S	03LICA35	05/15/03	05/28/03	05/28/03
SULFATE BY IC	002 MS	S	03LICA35	05/15/03	05/28/03	05/28/03
NITRATE NITRITE	002	S	03LN3B28	05/15/03	05/29/03	05/29/03
NITRATE NITRITE	002 REP	S	03LN3B28	05/15/03	05/29/03	05/29/03
NITRATE NITRITE	002 MS	S	03LN3B28	05/15/03	05/29/03	05/29/03
AMMONIA	002	S	03LAMA14	05/15/03	05/24/03	05/26/03
OIL & GREASE BY GRAV	002	S	03LOG024	05/15/03	06/05/03	06/06/03
OIL AND GREASE BY GR	002 REP	S	03LOG024	05/15/03	06/05/03	06/06/03
OIL AND GREASE BY GR	002 MS	S	03LOG024	05/15/03	06/05/03	06/06/03
PH	002	S	03LPH037	05/15/03	05/30/03	05/30/03
PH	002 REP	S	03LPH037	05/15/03	05/30/03	05/30/03

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2220

DATE RECEIVED: 05/21/03

LVL LOT # :0305L456

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17114						
% SOLIDS	003	S	03L&S070	05/16/03	05/22/03	05/23/03
CHLORIDE BY IC	003	S	03LICA35	05/16/03	05/28/03	05/28/03
FLUORIDE BY IC	003	S	03LICA35	05/16/03	05/28/03	05/28/03
NITRITE BY IC	003	S	03LICA35	05/16/03	05/28/03	05/28/03
NITRATE BY IC	003	S	03LICA35	05/16/03	05/28/03	05/28/03
TOTAL CYANIDE	003	S	03LC048	05/16/03	05/27/03	05/27/03
TOTAL CYANIDE	003 REP	S	03LC048	05/16/03	05/27/03	05/27/03
TOTAL CYANIDE	003 MS	S	03LC048	05/16/03	05/27/03	05/27/03
PHOSPHATE BY IC	003	S	03LICA35	05/16/03	05/28/03	05/28/03
CHROMIUM VI	003	S	03LVI047	05/16/03	06/09/03	06/09/03
CHROMIUM VI	003 REP	S	03LVI047	05/16/03	06/09/03	06/09/03
CHROMIUM VI	003 MS	S	03LVI047	05/16/03	06/09/03	06/09/03
CHROMIUM VI	003 MSD	S	03LVI047	05/16/03	06/09/03	06/09/03
SULFATE BY IC	003	S	03LICA35	05/16/03	05/28/03	05/28/03
NITRATE NITRITE	003	S	03LN3B28	05/16/03	05/29/03	05/29/03
AMMONIA	003	S	03LAMA14	05/16/03	05/24/03	05/26/03
AMMONIA	003 REP	S	03LAMA14	05/16/03	05/24/03	05/26/03
AMMONIA	003 MS	S	03LAMA14	05/16/03	05/24/03	05/26/03
OIL & GREASE BY GRAV	003	S	03LOG024	05/16/03	06/05/03	06/06/03
PH	003	S	03LPH037	05/16/03	05/30/03	05/30/03

LAB QC:

CHLORIDE BY IC	MB1	S	03LICA35	N/A	05/28/03	05/28/03
CHLORIDE BY IC	MB1 BS	S	03LICA35	N/A	05/28/03	05/28/03
FLUORIDE BY IC	MB1	S	03LICA35	N/A	05/28/03	05/28/03
FLUORIDE BY IC	MB1 BS	S	03LICA35	N/A	05/28/03	05/28/03
NITRITE BY IC	MB1	S	03LICA35	N/A	05/28/03	05/28/03
NITRITE BY IC	MB1 BS	S	03LICA35	N/A	05/28/03	05/28/03
NITRATE BY IC	MB1	S	03LICA35	N/A	05/28/03	05/28/03
NITRATE BY IC	MB1 BS	S	03LICA35	N/A	05/28/03	05/28/03
TOTAL CYANIDE	LCS L	S	03LC048	N/A	05/27/03	05/27/03
TOTAL CYANIDE	LCS L	S	03LC048	N/A	05/27/03	05/27/03
TOTAL CYANIDE	MB1	S	03LC048	N/A	05/27/03	05/27/03
PHOSPHATE BY IC	MB1	S	03LICA35	N/A	05/28/03	05/28/03

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-006 H2220

DATE RECEIVED: 05/21/03

LVL LOT # :0305L456

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PHOSPHATE BY IC	MB1 BS	S	03LICA35	N/A	05/28/03	05/28/03
CHROMIUM VI	MB1	S	03LVI047	N/A	06/09/03	06/09/03
CHROMIUM VI	MB1 BS	S	03LVI047	N/A	06/09/03	06/09/03
CHROMIUM VI	MB1 BSD	S	03LVI047	N/A	06/09/03	06/09/03
SULFATE BY IC	MB1	S	03LICA35	N/A	05/28/03	05/28/03
SULFATE BY IC	MB1 BS	S	03LICA35	N/A	05/28/03	05/28/03
NITRATE NITRITE	MB1	S	03LN3B28	N/A	05/29/03	05/29/03
NITRATE NITRITE	MB1 BS	S	03LN3B28	N/A	05/29/03	05/29/03
AMMONIA	MB1	S	03LAMA14	N/A	05/24/03	05/26/03
AMMONIA	MB1 BS	S	03LAMA14	N/A	05/24/03	05/26/03
AMMONIA	MB1 BSD	S	03LAMA14	N/A	05/24/03	05/26/03
OIL & GREASE BY GRAV	MB1	S	03LOG024	N/A	06/05/03	06/06/03
OIL AND GREASE BY GR	MB1 BS	S	03LOG024	N/A	06/05/03	06/06/03
OIL AND GREASE BY GR	MB1 BSD	S	03LOG024	N/A	06/05/03	06/06/03



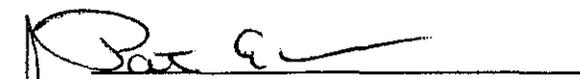
Analytical Report

Client: TNU-HANFORD F03-006 H2220
LVL#: 0305L456

W.O.#: 11343-606-001-9999-00
Date Received: 05-21-03

INORGANIC NARRATIVE

1. This narrative covers the analyses of 3 soil samples.
2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.
3. The sample holding times as required by the method and/or contract were met.
4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.
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 and Oil and Grease were within the 20% Relative Percent Difference (RPD) control limit.
7. The matrix spike (MS) recoveries for Chloride, Fluoride, Nitrite, Nitrate, Phosphate, Sulfate, Nitrate Nitrite, Oil and Grease, Total Cyanide, Chromium VI and Ammonia were within the 75-125% control limits.
8. The replicate analyses for Percent Solids, Chloride, Fluoride, Nitrite, Nitrate, Phosphate, Sulfate, Phosphate, Nitrate Nitrite, Oil and Grease, pH, Total Cyanide, Chromium VI and Ammonia were within the 20% RPD control limit.
9. Results for solid samples are reported on a dry weight basis.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

njpi05-456

06-10-03
Date

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 20 pages.

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
% 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 / 19014	— 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	≤ 413.1 (mod.)
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, Nitrite, } Method: EPA 300.0 (mod.)			
Other: Nitrate, Phosphate, Sulfate } Method			
Nitrate Nitrite		EPA 353.2 (mod.)	
Ammonia		EPA 350.3	

Lionville Laboratory Incorporated

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LC = Laboratory Control Sample.

NC = Not calculated.

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
 - a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).
 - b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).
 - c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).
 - d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
 - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
 - f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/09/03

CLIENT: TNUHANFORD P03-006 H2220
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L456

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B17112	% Solids	95.6	%	0.01	1.0
-002	B17113	% Solids	93.8	%	0.01	1.0
		Chloride by IC	1.3	u MG/KG	1.3	1.0
		Fluoride by IC	1.3	u MG/KG	1.3	1.0
		Nitrite by IC	1.33	u MG/KG	1.33	1.0
		Nitrate by IC	3.81	MG/KG	1.33	1.0
		Cyanide, Total	0.48	u MG/KG	0.48	1.0
		Phosphate by IC	1.3	u MG/KG	1.3	1.0
		Chromium VI	0.42	u MG/KG	0.42	1.0
		Sulfate by IC	1.3	u MG/KG	1.3	1.0
		Nitrate Nitrite	1.0	MG/KG	0.19	1.0
		Ammonia, as N	4.7	u MG/KG	4.7	1.0
		Oil & Grease Gravimetri	711	u MG/KG	711	1.0
		pH	9.2	SOIL PH	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/09/03

CLIENT: TNUHANFORD F03-006 H2220
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L456

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-003	B17114	% Solids	97.4	%	0.01	1.0
		Chloride by IC	1.3	u MG/KG	1.3	1.0
		Fluoride by IC	1.3	u MG/KG	1.3	1.0
		Nitrite by IC	1.28	u MG/KG	1.28	1.0
		Nitrate by IC	5.85	MG/KG	1.28	1.0
		Cyanide, Total	0.31	u MG/KG	0.31	1.0
		Phosphate by IC	1.3	u MG/KG	1.3	1.0
		Chromium VI	0.41	u MG/KG	0.41	1.0
		Sulfate by IC	3.3	MG/KG	1.3	1.0
		Nitrate Nitrite	1.4	MG/KG	0.18	1.0
		Ammonia, as N	5.2	u MG/KG	5.2	1.0
		Oil & Grease Gravimetri	684	u MG/KG	684	1.0
		pH	9.1	SOIL PH	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/09/03

CLIENT: TNUHANFORD F03-006 H2220
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L456

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
BLANK10	03LICA35-MB1	Chloride by IC	1.2	u MG/KG	1.2	1.0
		Fluoride by IC	1.2	u MG/KG	1.2	1.0
		Nitrite by IC	1.25	u MG/KG	1.25	1.0
		Nitrate by IC	1.25	u MG/KG	1.25	1.0
		Phosphate by IC	1.2	u MG/KG	1.2	1.0
		Sulfate by IC	1.2	u MG/KG	1.2	1.0
BLANK1	03LC048-MB1	Cyanide, Total	0.50	u MG/KG	0.50	1.0
BLANK10	03LVI047-MB1	Chromium VI	0.40	u MG/KG	0.40	1.0
BLANK10	03LN3E26-MB1	Nitrate Nitrite	0.20	u MG/KG	0.20	1.0
BLANK10	03LAMA14-MB1	Ammonia, as N	5.0	u MG/KG	5.0	1.0
BLANK10	03LOG024-MB1	Oil & Grease Gravimetri	667	u MG/KG	667	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 06/09/03

CLIENT: TNUHANFORD P03-006 H2220
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L456

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-002	B17113	Chloride by IC	27.0	0.79	27.0	97.2	1.0
		Fluoride by IC	27.6	0.75	27.0	99.3	1.0
		Nitrite by IC	26.9	1.33u	27.0	99.6	1.0
		Nitrate by IC	31.3	3.81	27.0	101.9	1.0
		Phosphate by IC	26.7	1.3 u	27.0	99.0	1.0
		Sulfate by IC	28.6	1.3 u	27.0	106.0	1.0
		Nitrate Nitrite	5.7	1.0	4.7	99.2	1.0
		Oil & Grease Gravimetr	7000	711 u	7150	97.9	1.0
-003	B17114	Cyanide, Total	4.21	0.31u	4.34	97.0	1.0
		Soluble Chromium VI	4.9	0.41u	4.1	113.6	1.0
		Insoluble Chromium VI	1100	0.41u	1140	96.1	100
		Ammonia, as N	186	5.2 u	180	103.2	1.0
BLANK10	03LICA35-MB1	Chloride by IC	24.5	1.2 u	25.0	98.0	1.0
		Fluoride by IC	24.8	1.2 u	25.0	99.3	1.0
		Nitrite by IC	25.3	1.25u	25.0	101.3	1.0
		Nitrate by IC	25.0	1.25u	25.0	100.1	1.0
		Phosphate by IC	24.5	1.2 u	25.0	98.0	1.0
		Sulfate by IC	25.0	1.2 u	25.0	99.9	1.0
BLANK10	03LVIO47-MB1	Soluble Chromium VI	3.6	0.40u	4.0	91.2	1.0
		Insoluble Chromium VI	1290	0.40u	1370	94.1	100
BLANK10	03LN3B28-MB1	Nitrate Nitrite	5.2	0.20u	5.0	103.0	1.0
BLANK10	03LAMA14-MB1	Ammonia, as N	196	5.0 u	200	98.0	1.0
		Ammonia, as N MSD	192	5.0 u	200	96.0	1.0
BLANK10	03LOG024-MB1	Oil & Grease Gravimetr	6160	667 u	6710	91.8	1.0
		Oil & Grease - Grav M	6270	667 u	6710	93.4	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 06/09/03

CLIENT: TNUHANFORD F03-006 H2220
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L456

SAMPLE	SITE ID	ANALYTE	SPIKE#1	SPIKE#2	%DIFF
			%RECOV	%RECOV	
BLANK10	03LAMA14-MB1	Ammonia, as N	98.0	96.0	2.1
BLANK10	03LOG024-MB1	Oil & Grease - Grav	91.8	93.4	1.7

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 06/09/03

CLIENT: TNUHANFORD F03-006 H2220
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L456

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-001REP	B17112	‡ Solids	95.6	95.6	0.031	1.0
-002REP	B17113	Chloride by IC	1.3 u	1.3 u	NC	1.0
		Fluoride by IC	1.3 u	1.3 u	NC	1.0
		Nitrite by IC	1.33u	1.33u	NC	1.0
		Nitrate by IC	3.81	3.78	0.84	1.0
		Phosphate by IC	1.3 u	1.3 u	NC	1.0
		Sulfate by IC	1.3 u	1.3 u	NC	1.0
		Nitrate Nitrite	1.0	0.93	6.9	1.0
		Oil & Grease Gravimetri	711 u	711 u	NC	1.0
		pH	9.2	9.2	0.2	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 06/09/03

CLIENT: TNUHANFORD F03-006 H2220
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L456

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR (REP)
			RESULT	REPLICATE	RPD	
-003REP	B17114	Cyanide, Total	0.31u	0.44u	NC	1.0
		Chromium VI	0.41u	0.41u	NC	1.0
		Ammonia, as N	5.2 u	5.0 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 06/09/03

CLIENT: TNUHANFORD F03-006 H2220
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L456

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	03LC048-LCS1	Cyanide, Total LCS	1.90	2.0	MG/KG	95.0
LCSS2	03LC048-LCS2	Cyanide, Total LCS	10.0	10.0	MG/KG	100.3

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-103		Page 1 of 1	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 45 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C3247); (0.5')		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. <i>FRC 96 06/</i>		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express			
Shipped To EDERLINE SERVICES (Formerly TMA) <i>RECRA</i>		Offsite Property No. <i>A030 235</i>		Bill of Lading/Air Bill No. <i>SEE OSPL</i>					
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage				Preservation		Cool 4C	Cool 4C		
				Type of Container		aG	aG		
				No. of Container(s)		1	1		
				Volume		60mL	250mL		
SAMPLE ANALYSIS				Pesticides - 8081	Chloro-Herbicides - EPA8151				
Sample No.	Matrix *	Sample Date	Sample Time						
B17112	SOIL	5-15-03	0900	X	X			<i>Ti:TO: 107DB</i>	
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis. Personnel not available to relinquish samples from the 3728 Ref # <i>1B</i> on <i>5/20/03</i>	
<i>[Signature]</i>		<i>5/15/03</i>		<i>[Signature]</i>		<i>5/15/03</i>			
<i>[Signature]</i>		<i>5-15-03</i>		<i>[Signature]</i>		<i>5-15-03</i>			
<i>[Signature]</i>		<i>5-20-03 1300</i>		<i>[Signature]</i>		<i>5-20-03 1300</i>			
<i>[Signature]</i>		<i>5-20-03 1300</i>		<i>[Signature]</i>		<i>5-20-03 1300</i>			
<i>[Signature]</i>		<i>5-21-03 0900</i>		<i>[Signature]</i>		<i>5-21-03 0900</i>			
LABORATORY SECTION		Received By		Title				Date/Time	
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time	

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						F03-006-104		Page 1 of 1					
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days					
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-10 (C3245) 12.5'-15 ft		SAF No. F03-006		Air Quality <input type="checkbox"/>									
Ice Chest No. ERC 96061		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express									
Shipped To EDERLINE SERVICES (Formerly TMA) Reera		Offsite Property No. A030235		Bill of Lading/Air Bill No. 5280SPC											
POSSIBLE SAMPLE HAZARDS/REMARKS Radioactive TIE TO: B17113 Special Handling and/or Storage				Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None	
				Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
				No. of Container(s)	1	1	1	1	1	1	1	1	1	1	1
				Volume	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL	60mL
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Chromium Hex - 7196	See item (4) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (5) in Special Instructions.	See item (6) in Special Instructions.	Tritium - H3		
				Sample No.	Matrix *	Sample Date	Sample Time								
B17113	SOIL	5-15-03	1420	X	X	X	X	X	X	X					
												Personnel not available to relinquish samples from the 3728 Ref # 1B on 5/20/03			
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS							
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The lab oratory is to report both kerosene and diesel range compounds from WTPH-D analysis. (1) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol) (2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G (3) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel); Mercury - 7471 - (CV) (4) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010 (5) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Cesium-134, Radium-226, Radium-228, Tin-126); Total Uranium; Americium-241; Isotopic Plutonium; Isotopic Uranium (6) Technetium-99; Strontium-89,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-							
XXXXXXXXXXXXXXXXXXXX		5-15-03 1515		Reera		5-15-03									
Reera		5-15-03 1515		IB 3728		5-15-03									
IB 3728		5-20-03 1300		S. GALE		5-20-03 1300									
S. GALE		5-20-03 1300		FED EX											
FED EX		5-21-03 0900		S. GALE		5-21-03 0900									
LABORATORY SECTION		Received By		Title				Date/Time							
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time							

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-105	Page 1 of 2
Collector Johansen/Pope/Pfister	Company Contact LC Hulstrom	Telephone No. 373-3928	Project Coordinator TRENT, SJ		Price Code 8N	Data Turnaround 45 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	Sampling Location 216-A-10 (C3247) 45-47.5 ft	SAF No. F03-006	Air Quality <input type="checkbox"/>				
Ice Chest No. <i>ERC 96 061</i>	Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express				
Shipped To <i>ms 5110103</i> EBERLINE SERVICES (Formerly TMTA) <i>Rocra</i>	Offsite Property No. <i>A030235</i>	Bill of Lading/Air Bill No. <i>06E08PC</i>					

POSSIBLE SAMPLE HAZARDS/REMARKS <i>N/A</i> <i>Radioactive TIE TO: B17130</i> Special Handling and/or Storage <i>N/A</i>	Preservation	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1	1
	Volume	60mL	60mL	125mL	60mL	60mL	125mL	60mL	60mL	60mL	60mL	60mL

SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Chromium Hex - 7196	See item (5) in Special Instructions.	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (6) in Special Instructions.	See item (7) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time								
B17114	SOIL	5-110-03	1010	X	X	X	X	X	X	X	X

Personnel not available to relinquish samples from the 3728 Ref # 15 on 5/20/03

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From <i>J.S. Pope/Agler</i>	Date/Time 5-16-03 1320	Received By/Stored In <i>MO-026 Ref. # 2</i>	Date/Time 5-16-03 1320
Relinquished By/Removed From <i>MO-026 Ref # 2</i>	Date/Time 5-16-03 1315	Received By/Stored In <i>MO-026 Ref # 2</i>	Date/Time 5-19-03 1315
Relinquished By/Removed From <i>MO-026 Ref # 2</i>	Date/Time 5-19-03 1400	Received By/Stored In <i>ERC</i>	Date/Time 5-19-03 1400
Relinquished By/Removed From <i>R. F. Lee</i>	Date/Time 5-19-03 1400	Received By/Stored In <i>IB</i>	Date/Time 5-19-03 1400
Relinquished By/Removed From <i>IB</i>	Date/Time 5-20-03 1300	Received By/Stored In <i>JOHN/Ad</i>	Date/Time 5-20-03 1300
Relinquished By/Removed From <i>JOHN/Ad</i>	Date/Time 5-20-03 1300	Received By/Stored In <i>FED EX</i>	Date/Time

SPECIAL INSTRUCTIONS	Matrix *
<p>** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>(1) VOA - 8260A (TCL); VOA - 8260A (Add-On) (2-Pentanone, Benzyl alcohol, n-Butylbenzene) (2) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol) (3) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G (4) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Antimony, Beryllium, Bismuth, Boron, Copper, Nickel); Mercury - 7471 - (CV) (5) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; pH (Soil) - 9045; Total Cyanide - 9010 (6) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Cesium-134, Radium-226, Radium-228, Tin-126); Total Uranium, Americium-241; Isotopic Phosphorus; Isotopic Uranium; Carbon-14; Nickel-63; Neptunium-237; Technetium-99; Strontium-90; Total Sr; Total Pb; Total Zn; Thorium-232;</p>	<p>S=Soil SB=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Time W=Wipe L=Liquid V=Vegetation X=Other</p> <p><i>IB</i> 5-10-03</p>

LABORATORY SECTION	Received By <i>MO-026 Ref # 2</i>	Date/Time 5-21-03 0900	Disposal Method	Disposed By	Date/Time
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FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-105	Page 2 of 2	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928	Project Coordinator TRENT, SJ	Price Code 8N	Data Turnaround 45 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-10 (C3247) 45-47.5 ft		SAF No. F03-006	Air Quality <input type="checkbox"/>			
Ice Chest No.		Field Logbook No. HNF-N-3361	COA 117504ES10	Method of Shipment Federal Express				
Shipped To <i>MD 5110103</i> EBERLINE SERVICES (Formerly TMA) <i>Recra</i>		Offsite Property No.		Bill of Lading/Air Bill No.				
POSSIBLE SAMPLE HAZARDS/REMARKS <i>MD 5-19-03 Radioactive TILTD: B17130</i> Special Handling and/or Storage <i>N/A</i>		Preservation	None					
		Type of Container	AG					
		No. of Container(s)	2					
		Volume	60mL					
SAMPLE ANALYSIS		Region - HD						
Sample No.	Matrix *	Sample Date	Sample Time					
B17114	SOIL	5-16-03	1610					
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS			Matrix * S=Soil SE=Sediment SO=Solid SL=Sludge W = Water O=Oil A=Air DS=Dryn Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		
<i>T.S. Pope / A. Pope</i>		<i>5-16-03 1320</i>		<i>MO-026 REF HZ</i>		<i>5-16-03 1320</i>		
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		
<i>MD-026 KEF #2</i>		<i>5-19-03 1315</i>		<i>MD Johnson</i>		<i>5-19-03 1315</i>		
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		
<i>MD Johnson</i>		<i>5-19-03 1400</i>		<i>MD Johnson</i>		<i>5-19-03 1400</i>		
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		
<i>R.F. Hill</i>		<i>5-19-03 1400</i>		<i>IB 3728</i>		<i>5-19-03 1400</i>		
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		
<i>IB 3728</i>		<i>5-20-03</i>		<i>FED EX</i>				
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		
LABORATORY SECTION	Received By	Title				Date/Time		
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By				Date/Time		

**LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST**

CLIENT: *TNU Hartford*

Purchase Order/Project:

DATE: *5.21.03*

AF# / SOW# / Release #: *FO3-006*

Laboratory SDG #:

0305L456

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LvLJ Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC-96-061 / 1.3°C

Laboratory Sample Custodian:

Laboratory Project Manager:

[Signature]