H1470

EBERLINE SERVICES

0056751

November 9, 2001

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

Reference: **P.O. #630**
Eberline Services R1-08-110-7063 SDG H1470

Dear Ms. Kessner:

Enclosed is the data report for two solid samples designated under SAF No. B01-103 received at Eberline Services on August 23, 2001. The samples were analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa Mannion

Melissa C. Mannion
Program Manager

MCM

Enclosure: Data Package

NOV 2001
RECEIVED

Analytical Services
2030 Wright Avenue
P.O. Box 4040
Richmond, California 94804-0040
(510) 235-2633 Fax (510) 235-0438
Toll Free (800) 841-5487
www.eberlineservices.com

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-07	Page 1 of 1

Collector: FAHLBERG	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East H1470 (7063)		SAF No.: B01-103
Ice Chest No.: ERC99-052	Field Logbook No.: EL 1517-2	COA: JRCRA14114	Method of Shipment: Fed EX
Shipped To: TMA/RECRA EBERline	Offsite Property No.: A010349		Bill of Lading/Air Bill No.: 4235795 4 - 6634

Price Code: 8N

Air Quality ☐

Date Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 8/17/01. Collector not available to relinquish samples on 8/22/01 for shipment. RT 8-22-01

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG	sG	
No. of Container(s)	1	1	1	1	1	1	1	1	1	
Volume	60mL	120mL	120mL	250mL	500mL	500mL	500mL	500mL	1000mL	
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions.	VOA - 8260A (TCL) RG 8-17-01	PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	See item (5) in Special Instructions.	See item (6) in Special Instructions.	TICTO
Sample No.	Matrix *	Sample Date	Sample Time							
✓ B12MK9	SOIL	8/17/01	1115						X	B12MK2
✓ B12ML0	SOIL	8/17/01	1205						X	B12ML3

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By: R. Fahlberg / R. Fahlberg, Date/Time: 8-17-01 1330	Received By: Stored in Ref 2-A, Date/Time: 8-17-01 1330	(1) ~~Alcohols, Glycols, & Ketones - 8015M (Add-on) (Kerosene, Normal paraffin hydrocarbons (petroleum))~~ RT 8-22-01	Soil
Relinquished By: Remained in Ref 2-A 3728, Date/Time: 8-22-01 0900	Received By: R. Thorenson, Date/Time: 8-22-01 0900	~~(2) IC Anions - 300.0 (Nitrite, Nitrate); Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030.~~	Sediment
Relinquished By: R. Thorenson, Date/Time: 8-22-01 0900	Received By: FEDEX, Date/Time:	~~(3) ICP Metals - 6010A (TCL) (Aluminum, Calcium, Copper, Iron, Magnesium, Manganese, Potassium, Sodium); ICP Metals - 6010A (Add-on) (Bismuth, Molybdenum, Tin).~~	Solid
Relinquished By: Fedex 8-23-01 1000	Received By: John J. Lind, Date/Time: 8-23-01 1000	~~(4) Semi-VOA - 8270A (PCBs); Semi-VOA - 8270A (Add-On) (Tributylphosphate).~~	Sludge
Relinquished By:	Received By:	~~(5) Metals by ICP (TCLP) - 1311/6010 (Barium, Cadmium, Chromium, Lead, Selenium, Silver); Metals by ICP (TCLP) Add-on - 1311/6010 (Antimony, Beryllium, Nickel, Vanadium, Zinc); Mercury (TCLP) - 1311/7470.~~	Water
Relinquished By:	Received By:	(6) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 - TOTAL SCI Technetium 99	Oil
			Air
			Drum Solids
			Drum Liquids
			Tissue
			Wipe
			Liquid
			Vegetation
			Other

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

BHI-EE-011 (10/99)

Melissa Mannion

"Kessner, Joan H"
<JHKessne@mail.bhi-erc.com>

11/27/2001 04:47 PM

To: 'melissa mannion' <mmannion@eberlineservices.com>
cc: "Trent, Stephen J" <SJTrent@mail.bhi-erc.com>, "Ayres, Doris E" <DEAyres@mail.bhi-erc.com>, "Fukumoto, Joyce A" <JAFukumo@mail.bhi-erc.com>
Subject: SDG H1470 (7063)

Melissa---
I think we finally have it figured out..... -1 -2
We need to have tritium and Iso-U for samples B12MK9 and B12ML0. Would you please let me know what kind of time frame we are talking for this add-on data.
Joan

R108110

ThermoRetec
Richmond Laboratory

Analytical Services

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Date/Time received 8-23-01 1000

CoC No. B01-103-07

Container I.D. No. ERC99-052 Requested TAT (Days) 45 P.O. Received Yes [ ] No [ ]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 2
7. Number of containers per sample: 1 (Or see CoC _____)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: ~~Tape [✓]~~ Hazard labels [ ] Rad ~~labels [✓]~~ Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by [signature] Date: 8-23-01 Time: 1000

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1470 was composed of two solid (soil) samples designated under SAF No. B01-103 with a Project Designation of: 200 Area RCRA Drilling Waste Designation.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on November 5, 2001.

2.0 ANALYSIS NOTES

2.1 Isotopic Plutonium Analyses

Due to low yields (less than 20%) the Pu samples were reanalyzed with new QC samples. No problems were encountered during the course of the reanalyses.

2.2 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.3 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.4 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.5 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

2.6 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.7 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.8 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.9 Americium-241 Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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

Melissa Mannion

Melissa C. Mannion
Program Manager

11/9/01

Date

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 H1470

SDG	7063
Contact	Melissa C. Mannion

Client	Hanford
Contract	No. 630
Case no	SDG H1470

S U M M A R Y D A T A S E C T I O N

T A B L E O F C O N T E N T S

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Melissa Mannion
Prepared by

Melissa Mannion
Reviewed by

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	11/05/01

SDG 7063
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H1470

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.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/05/01

SDG 7063
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H1470

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.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

SDG 7063
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1470

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B12MK9	200 East	SOLID		R108110-01	B01-103	B01-103-07	08/17/01 11:15
B12ML0	200 East	SOLID		R108110-02	B01-103	B01-103-07	08/17/01 12:05
Method Blank		SOLID		R108110-04	B01-103		
Method Blank		SOLID		R108110-07	B01-103		
Method Blank		SOLID		R108110-10	B01-103		
Lab Control Sample		SOLID		R108110-03	B01-103		
Lab Control Sample		SOLID		R108110-06	B01-103		
Lab Control Sample		SOLID		R108110-09	B01-103		
Duplicate (R108110-01)	200 East	SOLID		R108110-05	B01-103		08/17/01 11:15
Duplicate (R108110-01)	200 East	SOLID		R108110-08	B01-103		08/17/01 11:15
Duplicate (R108110-01)	200 East	SOLID		R108110-11	B01-103		08/17/01 11:15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

SDG 7063
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1470

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7063	B01-103-07	B12MK9	SOLID	93.1	987.8 g		08/23/01	6	R108110-01	7063-001
		B12ML0	SOLID	94.2	1447 g		08/23/01	6	R108110-02	7063-002
		Method Blank	SOLID						R108110-04	7063-004
		Method Blank	SOLID						R108110-07	7063-007
		Method Blank	SOLID						R108110-10	7063-010
		Lab Control Sample	SOLID						R108110-03	7063-003
		Lab Control Sample	SOLID						R108110-06	7063-006
		Lab Control Sample	SOLID						R108110-09	7063-009
		Duplicate (R108110-01)	SOLID	93.1	987.8 g		08/23/01	6	R108110-05	7063-005
		Duplicate (R108110-01)	SOLID	93.1	987.8 g		08/23/01	6	R108110-08	7063-008
		Duplicate (R108110-01)	SOLID	93.1	987.8 g		08/23/01	6	R108110-11	7063-011

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

SDG 7063
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1470

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	7008-032	5.0	2			1	1	1/1		
NP	SOLID	Neptunium in Soil	7008-032	5.0	2			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7008-032	5.0	2			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	7008-032	5.0	2			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	7008-032	10.0	2			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	7008-032	10.0	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7008-032	15.0	2			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Soil	7008-032	10.0	2			1	1	1/1		
NI_L	SOLID	Nickel 63 in Soil	7008-032	10.0	2			1	1	1/1		

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

SDG 7063
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1470

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B12MK9			R108110-01	7063-001	AM		10/09/01	11/04/01	MCM	Americium 241 in Soil
200 East		SOLID	08/17/01	7063-001	C		10/07/01	11/04/01	MCM	Carbon 14 in Soil
B01-103-07	B01-103		08/23/01	7063-001	GAM		10/01/01	11/04/01	MCM	Gamma Scan
				7063-001	NI_L		10/07/01	11/04/01	MCM	Nickel 63 in Soil
				7063-001	NP		10/18/01	11/04/01	MCM	Neptunium in Soil
				7063-001	PU	A1	11/01/01	11/04/01	MCM	Plutonium, Isotopic in Solids
				7063-001	SR		10/05/01	11/04/01	MCM	Total Strontium in Soil
				7063-001	TC		10/16/01	11/04/01	MCM	Technetium 99 in Soil
				7063-001	TH		10/09/01	11/04/01	MCM	Thorium, Isotopic in Soil
B12ML0			R108110-02	7063-002	AM		10/09/01	11/04/01	MCM	Americium 241 in Soil
200 East		SOLID	08/17/01	7063-002	C		10/07/01	11/04/01	MCM	Carbon 14 in Soil
B01-103-07	B01-103		08/23/01	7063-002	GAM		10/16/01	11/04/01	MCM	Gamma Scan
				7063-002	NI_L		10/07/01	11/04/01	MCM	Nickel 63 in Soil
				7063-002	NP		10/19/01	11/04/01	MCM	Neptunium in Soil
				7063-002	PU	A1	11/02/01	11/04/01	MCM	Plutonium, Isotopic in Solids
				7063-002	SR		10/05/01	11/04/01	MCM	Total Strontium in Soil
				7063-002	TC		10/09/01	11/04/01	MCM	Technetium 99 in Soil
				7063-002	TH		10/09/01	11/04/01	MCM	Thorium, Isotopic in Soil
Method Blank			R108110-04	7063-004	AM		10/18/01	11/04/01	MCM	Americium 241 in Soil
		SOLID		7063-004	C		10/07/01	11/04/01	MCM	Carbon 14 in Soil
	B01-103			7063-004	GAM		10/01/01	11/04/01	MCM	Gamma Scan
				7063-004	NI_L		10/07/01	11/04/01	MCM	Nickel 63 in Soil
				7063-004	SR		10/05/01	11/04/01	MCM	Total Strontium in Soil
				7063-004	TC		10/16/01	11/04/01	MCM	Technetium 99 in Soil
				7063-004	TH		10/10/01	11/04/01	MCM	Thorium, Isotopic in Soil
Method Blank			R108110-07	7063-007	NP		10/18/01	11/04/01	MCM	Neptunium in Soil
		SOLID								
	B01-103									
Method Blank			R108110-10	7063-010	PU		10/31/01	11/04/01	MCM	Plutonium, Isotopic in Solids
		SOLID								
	B01-103									

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

SDG 7063
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1470

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample			R108110-03	7063-003	AM		10/27/01	11/04/01	MCM	Americium 241 in Soil
		SOLID		7063-003	C		10/07/01	11/04/01	MCM	Carbon 14 in Soil
	B01-103			7063-003	GAM		10/01/01	11/04/01	MCM	Gamma Scan
				7063-003	NI_L		10/07/01	11/04/01	MCM	Nickel 63 in Soil
				7063-003	SR		10/05/01	11/04/01	MCM	Total Strontium in Soil
				7063-003	TC		10/23/01	11/04/01	MCM	Technetium 99 in Soil
				7063-003	TH		10/10/01	11/04/01	MCM	Thorium, Isotopic in Soil
Lab Control Sample			R108110-06	7063-006	NP		10/20/01	11/04/01	MCM	Neptunium in Soil
		SOLID								
	B01-103									
Lab Control Sample			R108110-09	7063-009	PU		10/31/01	11/04/01	MCM	Plutonium, Isotopic in Solids
		SOLID								
	B01-103									
Duplicate (R108110-01)			R108110-05	7063-005	AM		10/09/01	11/04/01	MCM	Americium 241 in Soil
200 East		SOLID	08/17/01	7063-005	C		10/07/01	11/04/01	MCM	Carbon 14 in Soil
	B01-103		08/23/01	7063-005	GAM		10/01/01	11/04/01	MCM	Gamma Scan
				7063-005	NI_L		10/07/01	11/04/01	MCM	Nickel 63 in Soil
				7063-005	SR		10/05/01	11/04/01	MCM	Total Strontium in Soil
				7063-005	TC		10/16/01	11/04/01	MCM	Technetium 99 in Soil
				7063-005	TH		10/18/01	11/04/01	MCM	Thorium, Isotopic in Soil
Duplicate (R108110-01)			R108110-08	7063-008	NP		10/25/01	11/04/01	MCM	Neptunium in Soil
200 East		SOLID	08/17/01							
	B01-103		08/23/01							
Duplicate (R108110-01)			R108110-11	7063-011	PU		10/31/01	11/04/01	MCM	Plutonium, Isotopic in Solids
200 East		SOLID	08/17/01							
	B01-103		08/23/01							

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

SDG 7063
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1470

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	B01-103	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	2			1	1	1	5
C	B01-103	Carbon 14 in Soil	C14_COX_LSC	2			1	1	1	5
GAM	B01-103	Gamma Scan	GAMMA_GS	2			1	1	1	5
NI_L	B01-103	Nickel 63 in Soil	NI63_LSC	2			1	1	1	5
NP	B01-103	Neptunium in Soil	NP237_LLE_PLATE_AEA	2			1	1	1	5
PU	B01-103	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	2			1	1	1	5
SR	B01-103	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	2			1	1	1	5
TC	B01-103	Technetium 99 in Soil	TC99_TR_SEP_LSC	2			1	1	1	5
TH	B01-103	Thorium, Isotopic in Soil	THISO_IE_PLATE_AEA	2			1	1	1	5
TOTALS				18			9	9	9	45

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

R108110-04 Method Blank

METHOD BLANK

SDG	7063	Client/Case no	Hanford SDG H1470
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R108110-04	Client sample id	Method Blank
Dept sample id	7063-004	Material/Matrix	SOLID
		SAF No	B01-103

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Carbon 14	14762-75-5	-6.80	3.4	5.9	50	U	C
Nickel 63	13981-37-8	0.229	1.1	1.9	30	U	NI_L
Total Strontium	SR-RAD	-0.057	0.11	0.25	1.0	U	SR
Americium 241	14596-10-2	-0.020	0.040	0.15	1.0	U	AM
Technetium 99	14133-76-7	-0.065	0.16	0.56	15	U	TC
Thorium 228	14274-82-9	0.242	0.32	0.54		U	TH
Thorium 230	14269-63-7	-0.160	0.24	0.38	1.0	U	TH
Thorium 232	TH-232	-0.040	0.080	0.31	1.0	U	TH
Potassium 40	13966-00-2	U		1.3		U	GAM
Cobalt 60	10198-40-0	U		0.14	0.050	U	GAM
Cesium 137	10045-97-3	U		0.11	0.10	U	GAM
Radium 226	13982-63-3	U		0.31	0.10	U	GAM
Radium 228	15262-20-1	U		0.48	0.20	U	GAM
Europium 152	14683-23-9	U		0.25	0.10	U	GAM
Europium 154	15585-10-1	U		0.36	0.10	U	GAM
Europium 155	14391-16-3	U		0.14	0.10	U	GAM
Thorium 228	14274-82-9	U		0.24		U	GAM
Thorium 232	TH-232	U		0.48		U	GAM
Uranium 235	15117-96-1	U		0.27		U	GAM
Uranium 238	U-238	U		14		U	GAM
Americium 241	14596-10-2	U		0.099		U	GAM

200 Area RCRA Drilling Waste Desig.

QC-BLANK 39786

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/05/01

M E T H O D B L A N K

SDG	7063	Client/Case no	Hanford	SDG H1470	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R108110-07	Client sample id	Method Blank		
Dept sample id	7063-007	Material/Matrix		SOLID	
		SAF No	B01-103		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Neptunium 237	13994-20-2	0	0.11	0.43	1.0	U	NP

200 Area RCRA Drilling Waste Desig.

QC-BLANK 39871

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/05/01

M E T H O D B L A N K

SDG	7063	Client/Case no	Hanford SDG H1470
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R108110-10	Client sample id	Method Blank
Dept sample id	7063-010	Material/Matrix	SOLID
		SAF No	B01-103

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Plutonium 238	13981-16-3	-0.021	0.085	0.23	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.042	0.16	1.0	U	PU

200 Area RCRA Drilling Waste Desig.

QC-BLANK #40105

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

R108110-03

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7063

Contact Melissa C. Mannion

Client/Case no Hanford SDG H1470

Case no No. 630

Lab sample id R108110-03

Dept sample id 7063-003

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B01-103

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Carbon 14	9920	99	15	50		C	11300	450	88	85-115	80-120
Nickel 63	227	4.2	1.9	30		NI_L	232	9.3	98	84-116	80-120
Total Strontium	21.9	0.53	0.13	1.0		SR	21.9	0.88	100	83-117	80-120
Americium 241	19.5	1.7	0.21	1.0		AM	19.1	0.76	102	83-117	80-120
Technetium 99	120	2.5	0.56	15		TC	118	4.7	102	83-117	80-120
Thorium 230	38.9	3.3	0.50	1.0		TH	40.8	1.6	95	85-115	80-120
Cobalt 60	7.11	0.33	0.15	0.050		GAM	6.45	0.26	110	73-127	80-120
Cesium 137	8.27	0.31	0.20	0.10		GAM	7.36	0.29	112	73-127	80-120

200 Area RCRA Drilling Waste Desig.

QC-LCS 39785

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

R108110-06

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7063
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1470
Case no No. 630

Lab sample id R108110-06
Dept sample id 7063-006

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

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Neptunium 237	19.6	1.5	0.075	1.0		NP	21.2	0.85	92	86-114	80-120

200 Area RCRA Drilling Waste Desig.

QC-LCS 39870

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

R108110-09

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7063

Contact Melissa C. Mannion

Client/Case no Hanford SDG H1470

Case no No. 630

Lab sample id R108110-09

Dept sample id 7063-009

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B01-103

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Plutonium 238	24.3	2.4	0.20	1.0		PU	24.6	0.98	99	83-117	80-120
Plutonium 239/240	25.6	2.5	0.20	1.0		PU	26.4	1.1	97	83-117	80-120

200 Area RCRA Drilling Waste Desig.

QC-LCS #40104

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

R108110-05 B12MK9

DUPLICATE

SDG	7063			Client/Case no	Hanford SDG H1470
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R108110-05	Lab sample id	R108110-01	Client sample id	B12MK9
Dept sample id	7063-005	Dept sample id	7063-001	Location/Matrix	200 East SOLID
		Received	08/23/01	Collected/Weight	08/17/01 11:15 987.8 g
% solids	93.1	% solids	93.1	Custody/SAF No	B01-103-07 B01-103

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Carbon 14	-2.93	3.1	5.3	50	U	C	-3.89	3.3	5.7	U	-	
Nickel 63	-1.25	1.2	2.1	30	U	NI_L	-1.34	1.5	2.7	U	-	
Total Strontium	0.022	0.11	0.23	1.0	U	SR	-0.025	0.12	0.24	U	-	
Americium 241	0.054	0.16	0.30	1.0	U	AM	0	0.040	0.15	U	-	
Technetium 99	-0.100	0.16	0.58	15	U	TC	-0.114	0.15	0.53	U	-	
Thorium 228	1.27	0.38	0.32			TH	1.08	0.20	0.20		16	56
Thorium 230	0.745	0.33	0.39	1.0	J	TH	0.599	0.20	0.31	J	22	87
Thorium 232	0.884	0.28	0.18	1.0	J	TH	0.879	0.16	0.074	J	1	56
Potassium 40	14.4	1.2	0.84			GAM	17.2	0.85	0.35		18	35
Cobalt 60	U		0.067	0.050	U	GAM	U		0.037	U	-	
Cesium 137	U		0.055	0.10	U	GAM	U		0.035	U	-	
Radium 226	0.594	0.11	0.11	0.10		GAM	0.537	0.060	0.069		10	46
Radium 228	1.08	0.30	0.27	0.20		GAM	1.04	0.18	0.17		4	59
Europium 152	U		0.13	0.10	U	GAM	U		0.081	U	-	
Europium 154	U		0.20	0.10	U	GAM	U		0.13	U	-	
Europium 155	U		0.14	0.10	U	GAM	U		0.12	U	-	
Thorium 228	0.850	0.069	0.070			GAM	0.871	0.045	0.043		2	35
Thorium 232	1.08	0.30	0.27			GAM	1.04	0.18	0.17		4	59
Uranium 235	U		0.21		U	GAM	U		0.15	U	-	
Uranium 238	U		6.7		U	GAM	U		4.6	U	-	
Americium 241	U		0.21		U	GAM	U		0.30	U	-	

200 Area RCRA Drilling Waste Desig.

QC-DUP#1 39787

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

R108110-08 B12MK9

DUPLICATE

SDG	7063			Client/Case no	Hanford SDG H1470
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R108110-08	Lab sample id	R108110-01	Client sample id	B12MK9
Dept sample id	7063-008	Dept sample id	7063-001	Location/Matrix	200 East SOLID
		Received	08/23/01	Collected/Weight	08/17/01 11:15 987.8 g
% solids	93.1	% solids	93.1	Custody/SAF No	B01-103-07 B01-103

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Neptunium 237	-0.008	0.032	0.075	1.0	U	NP	0	0.090	0.34	U	-		

200 Area RCRA Drilling Waste Desig.

QC-DUP#1 39872

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

R108110-11 B12MK9

DUPLICATE

SDG	7063			Client/Case no	Hanford SDG H1470
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R108110-11	Lab sample id	R108110-01	Client sample id	B12MK9
Dept sample id	7063-011	Dept sample id	7063-001	Location/Matrix	200 East SOLID
		Received	08/23/01	Collected/Weight	08/17/01 11:15 987.8 g
% solids	93.1	% solids	93.1	Custody/SAF No	B01-103-07 B01-103

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Plutonium 238	-0.021	0.042	0.16	1.0	U	PU	0.010	0.021	0.039	U	-		
Plutonium 239/240	0	0.042	0.16	1.0	U	PU	0.003	0.014	0.033	U	-		

200 Area RCRA Drilling Waste Desig.

QC-DUP#1A1 40106

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

R108110-01 B12MK9

DATA SHEET

SDG	7063	Client/Case no	Hanford SDG H1470
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R108110-01	Client sample id	B12MK9
Dept sample id	7063-001	Location/Matrix	200 East SOLID
Received	08/23/01	Collected/Weight	08/17/01 11:15 987.8 g
% solids	93.1	Custody/SAF No	B01-103-07 B01-103

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Carbon 14	14762-75-5	-3.89	3.3	5.7	50	U	C
Nickel 63	13981-37-8	-1.34	1.5	2.7	30	U	NI_L
Total Strontium	SR-RAD	-0.025	0.12	0.24	1.0	U	SR
Americium 241	14596-10-2	0	0.040	0.15	1.0	U	AM
Technetium 99	14133-76-7	-0.114	0.15	0.53	15	U	TC
Thorium 228	14274-82-9	1.08	0.20	0.20			TH
Thorium 230	14269-63-7	0.599	0.20	0.31	1.0	J	TH
Thorium 232	TH-232	0.879	0.16	0.074	1.0	J	TH
Neptunium 237	13994-20-2	0	0.090	0.34	1.0	U	NP
Plutonium 238	13981-16-3	0.010	0.021	0.039	1.0	U	PU
Plutonium 239/240	PU-239/240	0.003	0.014	0.033	1.0	U	PU
Potassium 40	13966-00-2	17.2	0.85	0.35			GAM
Cobalt 60	10198-40-0	U		0.037	0.050	U	GAM
Cesium 137	10045-97-3	U		0.035	0.10	U	GAM
Radium 226	13982-63-3	0.537	0.060	0.069	0.10		GAM
Radium 228	15262-20-1	1.04	0.18	0.17	0.20		GAM
Europium 152	14683-23-9	U		0.081	0.10	U	GAM
Europium 154	15585-10-1	U		0.13	0.10	U	GAM
Europium 155	14391-16-3	U		0.12	0.10	U	GAM
Thorium 228	14274-82-9	0.871	0.045	0.043			GAM
Thorium 232	TH-232	1.04	0.18	0.17			GAM
Uranium 235	15117-96-1	U		0.15		U	GAM
Uranium 238	U-238	U		4.6		U	GAM
Americium 241	14596-10-2	U		0.30		U	GAM

200 Area RCRA Drilling Waste Desig.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

R108110-02 B12ML0

DATA SHEET

SDG	7063	Client/Case no	Hanford	SDG H1470	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R108110-02	Client sample id	B12ML0		
Dept sample id	7063-002	Location/Matrix	200 East	SOLID	
Received	08/23/01	Collected/Weight	08/17/01 12:05	1447 g	
% solids	94.2	Custody/SAF No	B01-103-07	B01-103	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Carbon 14	14762-75-5	0.554	2.5	4.1	50	U	C
Nickel 63	13981-37-8	-0.556	1.2	2.1	30	U	NI_L
Total Strontium	SR-RAD	-0.024	0.11	0.23	1.0	U	SR
Americium 241	14596-10-2	0	0.043	0.16	1.0	U	AM
Technetium 99	14133-76-7	-0.001	0.16	0.52	15	U	TC
Thorium 228	14274-82-9	0.473	0.15	0.17			TH
Thorium 230	14269-63-7	0.073	0.16	0.31	1.0	U	TH
Thorium 232	TH-232	0.440	0.11	0.075	1.0	J	TH
Neptunium 237	13994-20-2	0.021	0.041	0.062	1.0	U	NP
Plutonium 238	13981-16-3	-0.024	0.048	0.18	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.048	0.18	1.0	U	PU
Potassium 40	13966-00-2	10.4	2.3	2.0			GAM
Cobalt 60	10198-40-0	U		0.15	0.050	U	GAM
Cesium 137	10045-97-3	U		0.16	0.10	U	GAM
Radium 226	13982-63-3	U		0.53	0.10	U	GAM
Radium 228	15262-20-1	U		0.65	0.20	U	GAM
Europium 152	14683-23-9	U		0.35	0.10	U	GAM
Europium 154	15585-10-1	U		0.54	0.10	U	GAM
Europium 155	14391-16-3	U		0.30	0.10	U	GAM
Thorium 228	14274-82-9	0.496	0.19	0.20			GAM
Thorium 232	TH-232	U		0.65		U	GAM
Uranium 235	15117-96-1	U		0.49		U	GAM
Uranium 238	U-238	U		19		U	GAM
Americium 241	14596-10-2	U		0.37		U	GAM

200 Area RCRA Drilling Waste Desig.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

Test AM Matrix SOLID
SDG 7063
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1470

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 7008-032						
B12MK9	R108110-01			7063-001	U	
B12ML0	R108110-02			7063-002	U	
BLK (QC ID=39786)	R108110-04			7063-004	U	
LCS (QC ID=39785)	R108110-03			7063-003	ok	
Duplicate (R108110-01)	R108110-05			7063-005	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
200 Area RCRA Drilling Waste Desig.						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7008-032	2σ prep error 5.0 %				Reference Lab Notebook 7008 pg. 032											
B12MK9	R108110-01			0.15	0.500			76		152			53	10/08/01	10/09	SS-043
B12ML0	R108110-02			0.16	0.500			69		152			53	10/08/01	10/09	SS-044
BLK (QC ID=39786)	R108110-04			0.15	0.500			74		157				10/08/01	10/18	SS-014
LCS (QC ID=39785)	R108110-03			0.21	0.500			84		146				10/08/01	10/27	SS-041
Duplicate (R108110-01) (QC ID=39787)	R108110-05			0.30	0.500			76		154			53	10/08/01	10/09	SS-021
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES				
MDA	0.19	±	0.13
YIELD	76	±	11

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

Test NP Matrix SOLID
SDG 7063
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1470

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 7008-032						
B12MK9	R108110-01			7063-001	U	
B12MLO	R108110-02			7063-002	U	
BLK (QC ID=39871)	R108110-07			7063-007	U	
LCS (QC ID=39870)	R108110-06			7063-006	ok	
Duplicate (R108110-01)	R108110-08			7063-008	-	U
Nominal values and limits from method 200 Area RCRA Drilling Waste Desig.				RDLs (pCi/g)	1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7008-032 2σ prep error 5.0 % Reference Lab Notebook 7008 pg. 032																
B12MK9	R108110-01			0.34	0.500			63		113			62	10/06/01	10/18	SS-021
B12MLO	R108110-02			0.062	0.500			59		204			63	10/06/01	10/19	SS-015
BLK (QC ID=39871)	R108110-07			0.43	0.500			47		113				10/06/01	10/18	SS-024
LCS (QC ID=39870)	R108110-06			0.075	0.500			45		203				10/06/01	10/20	SS-043
Duplicate (R108110-01) (QC ID=39872)	R108110-08			0.075	0.500			76		1000			69	10/06/01	10/25	SS-019
Nominal values and limits from method				1.0	0.500			20-105		100			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES				
	MDA	0.20	±	0.35
	YIELD	58	±	25

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

Test PU	Matrix SOLID
SDG 7063	
Contact Melissa C. Mannion	

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford	
Contract No. 630	
Contract SDG H1470	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 7008-032								
B12MK9	R108110-01		A1	7063-001	U		U	
B12MLD	R108110-02		A1	7063-002	U		U	
BLK (QC ID=40106)	R108110-10			7063-010	U		U	
LCS (QC ID=40104)	R108110-09			7063-009	ok		ok	
Duplicate (R108110-01)	R108110-11			7063-011	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0	
200 Area RCRA Drilling Waste Desig.								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7008-032	2σ prep error 5.0 %			Reference Lab Notebook 7008 pg. 032												
B12MK9	R108110-01		A1	0.039	0.500			80		802			76	10/30/01	11/01	SS-045
B12MLD	R108110-02		A1	0.18	0.500			100		104			77	10/30/01	11/02	SS-031
BLK (QC ID=40106)	R108110-10			0.23	0.500			87		125				10/30/01	10/31	SS-041
LCS (QC ID=40104)	R108110-09			0.20	0.500			75		125				10/30/01	10/31	SS-032
Duplicate (R108110-01)	R108110-11			0.16	0.500			87		125			75	10/30/01	10/31	SS-042
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES				
MDA	0.16	±	0.15
YIELD	86	±	19

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

Test TH Matrix SOLID
SDG 7063
Contact Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1470

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 7008-032							
B12MK9	R108110-01			7063-001	1.08	0.599 J	0.879 J
B12ML0	R108110-02			7063-002	0.473	U	0.440 J
BLK (QC ID=39786)	R108110-04			7063-004	U	U	U
LCS (QC ID=39785)	R108110-03			7063-003		ok	
Duplicate (R108110-01)	R108110-05			7063-005	ok	ok J	ok J
Nominal values and limits from method 200 Area RCRA Drilling Waste Desig.				RDLs (pCi/g)		1.0	1.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7008-032 2σ prep error 5.0 % Reference Lab Notebook 7008 pg. 032																
B12MK9	R108110-01			0.31	0.250			88		1078			53	10/08/01	10/09	SS-021
B12ML0	R108110-02			0.31	0.250			91		1078			53	10/08/01	10/09	SS-024
BLK (QC ID=39786)	R108110-04			0.38	0.250			77		193				10/08/01	10/10	SS-024
LCS (QC ID=39785)	R108110-03			0.50	0.250			88		192				10/08/01	10/10	SS-021
Duplicate (R108110-01) (QC ID=39787)	R108110-05			0.39	0.250			99		204			62	10/08/01	10/18	SS-041
Nominal values and limits from method				1.0	0.250			20-105		150			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.38 ± 0.16
YIELD 89 ± 16

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

Test SR	Matrix SOLID
SDG 7063	
Contact Melissa C. Mannion	

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H1470	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 7008-032						
B12MK9	R108110-01			7063-001	U	
B12ML0	R108110-02			7063-002	U	
BLK (QC ID=39786)	R108110-04			7063-004	U	
LCS (QC ID=39785)	R108110-03			7063-003	ok	
Duplicate (R108110-01)	R108110-05			7063-005	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
200 Area RCRA Drilling Waste Desig.						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7008-032	2σ prep error 10.0 % Reference Lab Notebook 7008 pg. 032															
B12MK9	R108110-01			0.24	1.00			84		100			49	10/05/01	10/05	GRB-201
B12ML0	R108110-02			0.23	1.00			85		100			49	10/05/01	10/05	GRB-202
BLK (QC ID=39786)	R108110-04			0.25	1.00			78		100				10/05/01	10/05	GRB-203
LCS (QC ID=39785)	R108110-03			0.13	1.00			81		200				10/05/01	10/05	GRB-205
Duplicate (R108110-01) (QC ID=39787)	R108110-05			0.23	1.00			89		100			49	10/05/01	10/05	GRB-204
Nominal values and limits from method				1.0	1.00			30-105		100			180			

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

AVERAGES ± 2 SD	MDA	0.22	± 0.098
FOR 5 SAMPLES	YIELD	83	± 8

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

Test TC Matrix SOLID
SDG 7063
Contact Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1470

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 7008-032						
B12MK9	R108110-01			7063-001	U	
B12ML0	R108110-02			7063-002	U	
BLK (QC ID=39786)	R108110-04			7063-004	U	
LCS (QC ID=39785)	R108110-03			7063-003	ok	
Duplicate (R108110-01)	R108110-05			7063-005	-	U
Nominal values and limits from method				RDLs (pCi/g)	15	
200 Area RCRA Drilling Waste Desig.						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7008-032	2σ prep error 10.0 % Reference Lab Notebook 7008 pg. 032															
B12MK9	R108110-01			0.53	1.02			93		50			60	10/06/01	10/16	GRB-220
B12ML0	R108110-02			0.52	1.06			92		50			53	10/06/01	10/09	GRB-224
BLK (QC ID=39786)	R108110-04			0.56	1.00			93		50				10/06/01	10/16	GRB-222
LCS (QC ID=39785)	R108110-03			0.56	1.00			95		50				10/06/01	10/23	GRB-221
Duplicate (R108110-01) (QC ID=39787)	R108110-05			0.58	1.02			90		50			60	10/06/01	10/16	GRB-223
Nominal values and limits from method				15	1.00			20-105		50			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.55 ± 0.049
YIELD 93 ± 4

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

Test GAM Matrix SOLID	Client Hanford
SDG 7063	Contract No. 630
Contact Melissa C. Mannion	Contract SDG H1470

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 7008-032								
B12MK9	R108110-01			7063-001	U		U	
B12MLO	R108110-02			7063-002	U		U	
BLK (QC ID=39786)	R108110-04			7063-004	U		U	
LCS (QC ID=39785)	R108110-03			7063-003	ok		ok	
Duplicate (R108110-01)	R108110-05			7063-005	-	U	-	U
Nominal values and limits from method 200 Area RCRA Drilling Waste Desig.				RDLs (pCi/g)	0.050		0.10	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7008-032 2σ prep error 15.0 % Reference Lab Notebook 7008 pg. 032																
B12MK9	R108110-01			0.10	811					122			45	09/25/01	10/01	MB,05,00
B12MLO	R108110-02			0.44	131					119			60	09/25/01	10/16	JR,03,00
BLK (QC ID=39786)	R108110-04			0.27	131					117				09/25/01	10/01	01,01,00
LCS (QC ID=39785)	R108110-03			0.15	131					122				09/25/01	10/01	MB,07,00
Duplicate (R108110-01) (QC ID=39787)	R108110-05			0.18	811					101			45	09/25/01	10/01	02,03,00
Nominal values and limits from method				0.050	131					100			180			

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

AVERAGES ± 2 SD	MDA	0.23	± 0.27
FOR 5 SAMPLES	YIELD		±

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

Test C Matrix SOLID
SDG 7063
Contact Melissa C. Mannion

METHOD SUMMARY

CARBON 14 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1470

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Carbon 14	
Preparation batch 7008-032						
B12MK9	R108110-01			7063-001	U	
B12MLO	R108110-02			7063-002	U	
BLK (QC ID=39786)	R108110-04			7063-004	U	
LCS (QC ID=39785)	R108110-03			7063-003	ok	
Duplicate (R108110-01)	R108110-05			7063-005	-	U

Nominal values and limits from method RDLs (pCi/g) 50
200 Area RCRA Drilling Waste Desig.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7008-032	2σ prep error 10.0 %				Reference Lab Notebook 7008 pg. 032											
B12MK9	R108110-01			5.7	0.204			100		100			51	10/07/01	10/07	LSC-006
B12MLO	R108110-02			4.1	0.257			100		100			51	10/07/01	10/07	LSC-006
BLK (QC ID=39786)	R108110-04			5.9	0.200			100		100				10/07/01	10/07	LSC-006
LCS (QC ID=39785)	R108110-03			15	0.200			100		13				10/07/01	10/07	LSC-006
Duplicate (R108110-01) (QC ID=39787)	R108110-05			5.3	0.219			100		100			51	10/07/01	10/07	LSC-006
Nominal values and limits from method				50	0.200					50			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 7.2 ± 8.8
YIELD 100 ± 0

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

Test NI L Matrix SOLID
SDG 7063
Contact Melissa C. Mannion

METHOD SUMMARY

NICKEL 63 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1470

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 7008-032						
B12MK9	R108110-01			7063-001	U	
B12ML0	R108110-02			7063-002	U	
BLK (QC ID=39786)	R108110-04			7063-004	U	
LCS (QC ID=39785)	R108110-03			7063-003	ok	
Duplicate (R108110-01)	R108110-05			7063-005	-	U
Nominal values and limits from method				RDLs (pCi/g)	30	
200 Area RCRA Drilling Waste Desig.						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7008-032	2σ prep error 10.0 % Reference Lab Notebook 7008 pg. 032															
B12MK9	R108110-01			2.7	0.500			69		100			51	10/07/01	10/07	LSC-007
B12ML0	R108110-02			2.1	0.500			85		100			51	10/07/01	10/07	LSC-007
BLK (QC ID=39786)	R108110-04			1.9	0.500			95		100				10/07/01	10/07	LSC-007
LCS (QC ID=39785)	R108110-03			1.9	0.500			94		100				10/07/01	10/07	LSC-007
Duplicate (R108110-01) (QC ID=39787)	R108110-05			2.1	0.500			86		100			51	10/07/01	10/07	LSC-007
Nominal values and limits from method				30	0.500			30-105		50			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 2.1 ± 0.66
YIELD 86 ± 21

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/05/01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-103-07	Page 1 of 1
Collector: FAHLBERG	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ	Price Code: 8N
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East H1470 (7063)		SAF No.: B01-103	Air Quality ☐
Ice Chest No.: ERC99-052	Field Logbook No.: EL 1517-2	COA: JRCRA14114	Method of Shipment: Fed EX	Data Turnaround: 45 Days
Shipped To: TMA/RECRA EBERline	Offsite Property No.: AØ10349		Bill of Lading/Air Bill No.: 4235795 4 - 6634	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 8/17/01. Collector not available to relinquish samples on 8/22/01 for shipment. RT 8-22-01

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	
No. of Container(s)	1	1	1	1	1	1	1	1	1	
Volume	60mL	120mL	120mL	250mL	500mL	500mL	500mL	500mL	1000mL	
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions.	VOA - 8260A (TCL) RG 8-17-01	PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	See item (5) in Special Instructions.	See item (6) in Special Instructions.	TICTO

Sample No.	Matrix *	Sample Date	Sample Time									
✓ B12MK9	SOIL	8/17/01	1115								X	B12MK2
✓ B12ML0	SOIL	8/17/01	1205								X	B12ML3

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: R. Fahlberg R. Fahlberg — Date/Time: 8-17-01 1330	Received By: Stored in Ref 2-A — Date/Time: 8-17-01 1350	
Relinquished By: Removed from Ref 2-A 3728 — Date/Time: 8-22-01 0900	Received By: R. Thorer R. Thorer — Date/Time: 8-22-01 0900	
Relinquished By: R. Thorer R. Thorer — Date/Time: 8-22-01 0900	Received By: FEDEX — Date/Time:	
Relinquished By: Fedex — Date/Time: 8-23-01 1000	Received By: John J. Lind — Date/Time: 8-23-01 1000	
Relinquished By: — Date/Time:	Received By: — Date/Time:	
Relinquished By: — Date/Time:	Received By: — Date/Time:	

SPECIAL INSTRUCTIONS

~~(1) Alcohols, Glycols, & Ketones - 8015M (Add-on) (Kerosene, Normal paraffin hydrocarbons (petroleum))~~ RT 8-22-01

~~(2) IC Anions - 300.0 (Nitrate, Nitrite); Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030.~~

~~(3) ICP Metals - 6010A (TAL) (Aluminum, Calcium, Copper, Iron, Magnesium, Manganese, Potassium, Sodium); ICP Metals - 6010A (Add-on) (Diamond, Molybdenum, Tin)~~

~~(4) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (Tributyl phosphate)~~

~~(5) Metals by ICP (TCLP) - 1311/6010 (Barium, Cadmium, Chromium, Lead, Selenium, Silver); Metals by ICP (TCLP) Add-on - 1311/6010 (Antimony, Beryllium, Nickel, Vanadium, Zinc); Mercury (TCLP) - 1311/7470~~

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

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

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

BHI-EE-011 (10/99)

Melissa Mannion

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Date/Time received 8-23-01 1000

CoC No. B01-103-07

Container I.D. No. ERC99-052 Requested TAT (Days) 45 P.O. Received Yes [ ] No [ ]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 2
7. Number of containers per sample: 1 (Or see CoC _____)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: ~~Tape [✓]~~ Hazard labels [ ] Rad ~~labels [✓]~~ Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by [signature] Date: 8-23-01 Time: 1000

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

ORIGINAL
Daynes

SDR # B02-027
Revision #: 0
Date Initiated: 11/28/01

SAMPLE DISPOSITION RECORD

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

Laboratory: TMA/RECRA

Task Manager: R. L. Jackson

Sampling Information:
Number of Samples: 2
ID Numbers: B12MK9, B12ML0
Matrix: Soil
Collection Date: 08/17/01

Issue Background:

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

Type: Chain of Custody Problem

Description: Analytical Request List Incomplete

Disposition:

Description: The chain of custody for the listed samples did not identify all the necessary analyses needed by the Groundwater/Vadose Zone Integration project to complete waste designation tasks. The missing analyses included tritium and isotopic uranium. The laboratory was subsequently requested to perform these analyses on the listed samples (see SDR B02-028).

Justification: All required analyses need to be identified on the chain of custody form.

Approval Signatures:

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

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

ORIGINAL
Dayes

SDR # B02-028
Revision #: 0
Date Initiated: 11/28/01

SAMPLE DISPOSITION RECORD

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

Laboratory: TMA/RECRA

Task Manager: R. L. Jackson

Sampling Information:
Number of Samples: 2
ID Numbers: B12MK9, B12ML0
Matrix: Soil
Collection Date: 08/17/01

Issue Background:

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

Type: Addition of Analyses

Description: Addition of Tritium and Isotopic Uranium Analyses

Disposition:

Description: The chain of custody for the listed samples did not identify all the necessary analyses needed by the Groundwater/Vadose Zone Integration project to complete waste designation tasks (see SDR B02-027). The missing analyses included tritium and isotopic uranium. The laboratory was subsequently requested to perform these analyses on the listed samples.

Justification: Tritium and isotopic uranium results are needed to complete waste designation tasks.

Approval Signatures:

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

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

ORIGINAL
Payes

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

SAMPLE DISPOSITION RECORD

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

Laboratory: TMA/RECRA

Task Manager: R. L. Jackson

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

Issue Background:

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

Type: Other

Description: Reissue Final Data Package Reports

Disposition:

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

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

Approval Signatures:

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

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

ORIGINAL
Dayes

SDR # B02-031
Revision #: 0
Date Initiated: 11/15/01

SAMPLE DISPOSITION RECORD

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

Laboratory: TMA/RECRA

Task Manager: R. L. Jackson

Sampling Information:
Number of Samples: 13
ID Numbers: B12D77, B12D78, B12MB7, B12MB8, B12MK9, B12ML0, B12V25, B12V26, B135C3, B139C4, B139C5, B139C6, B139D1
Matrix: Soil
Collection Date: 07/17/01 – 10/19/01

Issue Background:

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

Type: Addition of Analyses

Description: Addition of Analysis of Arsenic By Toxic Characteristic Leach Procedure

Disposition:

Description: The Groundwater/Vadose Zone Integration Project requested that analysis of arsenic by the Toxic Characteristic Leach Procedure (TCLP) be added to the analytical request for the listed samples. The request was made after the samples had been analyzed for other TCLP constituents.

Justification: Arsenic TCLP data are needed by the project to complete the designation of waste generated during groundwater well drilling and installation.

Approval Signatures:

S. J. Trent Steve J Trent 12/19/01
Project Coordinator (Print/Sign Name) Date

R. L. Jackson Ronald L Jackson 12/19/01
Task Manager (Print/Sign Name) Date

LIONVILLE LABORATORY INC.

30 November 2001

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

Subject: Contract No. 630
Analytical Data Package

Dear Ms. Kessner:

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

SDG #	H1428 H1461 H1470 H1491 H1510 H1547 H1556
SAF #	B01-103
Metals	Revised to include Arsenic, TCLP

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

Sincerely,
Lionville Laboratory Incorporated

Orlette S. Johnson
Project Manager

9 30 31 — 1 2 3 4 5 6 7 8 9 10 11

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Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1470

DATE RECEIVED: 08/23/01 LVL LOT # :0108L657

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12MK9						
TCLP	001	S	01LTO106	08/17/01	08/30/01	08/31/01
ALUMINUM, TOTAL	001	S	01L0562	08/17/01	09/08/01	09/11/01
ALUMINUM, TOTAL	001 REP	S	01L0562	08/17/01	09/08/01	09/11/01
ALUMINUM, TOTAL	001 MS	S	01L0562	08/17/01	09/08/01	09/11/01
BISMUTH, TOTAL	001	S	01L0562	08/17/01	09/08/01	09/11/01
BISMUTH, TOTAL REP	001 REP	S	01L0562	08/17/01	09/08/01	09/11/01
BISMUTH, TOTAL SPIKE	001 MS	S	01L0562	08/17/01	09/08/01	09/11/01
CALCIUM, TOTAL	001	S	01L0562	08/17/01	09/08/01	09/11/01
CALCIUM, TOTAL	001 REP	S	01L0562	08/17/01	09/08/01	09/11/01
CALCIUM, TOTAL	001 MS	S	01L0562	08/17/01	09/08/01	09/11/01
COPPER, TOTAL	001	S	01L0562	08/17/01	09/08/01	09/11/01
COPPER, TOTAL	001 REP	S	01L0562	08/17/01	09/08/01	09/11/01
COPPER, TOTAL	001 MS	S	01L0562	08/17/01	09/08/01	09/11/01
IRON, TOTAL	001	S	01L0562	08/17/01	09/08/01	09/11/01
IRON, TOTAL	001 REP	S	01L0562	08/17/01	09/08/01	09/11/01
IRON, TOTAL	001 MS	S	01L0562	08/17/01	09/08/01	09/11/01
POTASSIUM, TOTAL	001	S	01L0562	08/17/01	09/08/01	09/11/01
POTASSIUM, TOTAL	001 REP	S	01L0562	08/17/01	09/08/01	09/11/01
POTASSIUM, TOTAL	001 MS	S	01L0562	08/17/01	09/08/01	09/11/01
MAGNESIUM, TOTAL	001	S	01L0562	08/17/01	09/08/01	09/11/01
MAGNESIUM, TOTAL	001 REP	S	01L0562	08/17/01	09/08/01	09/11/01
MAGNESIUM, TOTAL	001 MS	S	01L0562	08/17/01	09/08/01	09/11/01
MANGANESE, TOTAL	001	S	01L0562	08/17/01	09/08/01	09/11/01
MANGANESE, TOTAL	001 REP	S	01L0562	08/17/01	09/08/01	09/11/01
MANGANESE, TOTAL	001 MS	S	01L0562	08/17/01	09/08/01	09/11/01
MOLYBDENUM, TOTAL	001	S	01L0562	08/17/01	09/08/01	09/11/01
MOLYBDENUM, TOTAL	001 REP	S	01L0562	08/17/01	09/08/01	09/11/01
MOLYBDENUM, TOTAL	001 MS	S	01L0562	08/17/01	09/08/01	09/11/01
SODIUM, TOTAL	001	S	01L0562	08/17/01	09/08/01	09/11/01
SODIUM, TOTAL	001 REP	S	01L0562	08/17/01	09/08/01	09/11/01
SODIUM, TOTAL	001 MS	S	01L0562	08/17/01	09/08/01	09/11/01
TIN, TOTAL	001	S	01L0562	08/17/01	09/08/01	09/11/01
TIN, TOTAL	001 REP	S	01L0562	08/17/01	09/08/01	09/11/01
TIN, TOTAL	001 MS	S	01L0562	08/17/01	09/08/01	09/11/01
B12ML0						
TCLP	002	S	01LTO106	08/17/01	08/30/01	08/31/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1470

DATE RECEIVED: 08/23/01 LVL LOT # :0108L657

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ALUMINUM, TOTAL	002	S	01L0562	08/17/01	09/08/01	09/11/01
BISMUTH, TOTAL	002	S	01L0562	08/17/01	09/08/01	09/11/01
CALCIUM, TOTAL	002	S	01L0562	08/17/01	09/08/01	09/11/01
COPPER, TOTAL	002	S	01L0562	08/17/01	09/08/01	09/11/01
IRON, TOTAL	002	S	01L0562	08/17/01	09/08/01	09/11/01
POTASSIUM, TOTAL	002	S	01L0562	08/17/01	09/08/01	09/11/01
MAGNESIUM, TOTAL	002	S	01L0562	08/17/01	09/08/01	09/11/01
MANGANESE, TOTAL	002	S	01L0562	08/17/01	09/08/01	09/11/01
MOLYBDENUM, TOTAL	002	S	01L0562	08/17/01	09/08/01	09/11/01
SODIUM, TOTAL	002	S	01L0562	08/17/01	09/08/01	09/11/01
TIN, TOTAL	002	S	01L0562	08/17/01	09/08/01	09/11/01
B12MK9						
SILVER, TCLP LEACHAT	003	W	01L0560	08/31/01	09/07/01	09/10/01
SILVER, TCLP LEACHAT	003 REP	W	01L0560	08/31/01	09/07/01	09/10/01
SILVER, TCLP LEACHAT	003 MS	W	01L0560	08/31/01	09/07/01	09/10/01
ARSENIC, TCLP LEACHA	003	W	01L0560	08/31/01	09/07/01	09/10/01
ARSENIC, TCLP LEACHA	003 REP	W	01L0560	08/31/01	09/07/01	09/10/01
ARSENIC, TCLP LEACHA	003 MS	W	01L0560	08/31/01	09/07/01	09/10/01
BARIUM, TCLP LEACHAT	003	W	01L0560	08/31/01	09/07/01	09/10/01
BARIUM, TCLP LEACHAT	003 REP	W	01L0560	08/31/01	09/07/01	09/10/01
BARIUM, TCLP LEACHAT	003 MS	W	01L0560	08/31/01	09/07/01	09/10/01
BERYLLIUM, TCLP LEAC	003	W	01L0560	08/31/01	09/07/01	09/10/01
BERYLLIUM, TCLP LEAC	003 REP	W	01L0560	08/31/01	09/07/01	09/10/01
BERYLLIUM, TCLP LEAC	003 MS	W	01L0560	08/31/01	09/07/01	09/10/01
CADMIUM, TCLP LEACHA	003	W	01L0560	08/31/01	09/07/01	09/10/01
CADMIUM, TCLP LEACHA	003 REP	W	01L0560	08/31/01	09/07/01	09/10/01
CADMIUM, TCLP LEACHA	003 MS	W	01L0560	08/31/01	09/07/01	09/10/01
CHROMIUM, TCLP LEACH	003	W	01L0560	08/31/01	09/07/01	09/10/01
CHROMIUM, TCLP LEACH	003 REP	W	01L0560	08/31/01	09/07/01	09/10/01
CHROMIUM, TCLP LEACH	003 MS	W	01L0560	08/31/01	09/07/01	09/10/01
MERCURY, TCLP LEACHA	003	W	01C0271	08/31/01	09/05/01	09/06/01
MERCURY, TCLP LEACHA	003 REP	W	01C0271	08/31/01	09/05/01	09/06/01
MERCURY, TCLP LEACHA	003 MS	W	01C0271	08/31/01	09/05/01	09/06/01
NICKEL, TCLP LEACHAT	003	W	01L0560	08/31/01	09/07/01	09/10/01
NICKEL, TCLP LEACHAT	003 REP	W	01L0560	08/31/01	09/07/01	09/10/01
NICKEL, TCLP LEACHAT	003 MS	W	01L0560	08/31/01	09/07/01	09/10/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1470

DATE RECEIVED: 08/23/01 LVL LOT # :0108L657

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LEAD, TCLP LEACHATE	003	W	01L0560	08/31/01	09/07/01	09/10/01
LEAD, TCLP LEACHATE	003 REP	W	01L0560	08/31/01	09/07/01	09/10/01
LEAD, TCLP LEACHATE	003 MS	W	01L0560	08/31/01	09/07/01	09/10/01
ANTIMONY, TCLP LEACH	003	W	01L0560	08/31/01	09/07/01	09/10/01
ANTIMONY, TCLP LEACH	003 REP	W	01L0560	08/31/01	09/07/01	09/10/01
ANTIMONY, TCLP LEACH	003 MS	W	01L0560	08/31/01	09/07/01	09/10/01
SELENIUM, TCLP LEACH	003	W	01L0560	08/31/01	09/07/01	09/10/01
SELENIUM, TCLP LEACH	003 REP	W	01L0560	08/31/01	09/07/01	09/10/01
SELENIUM, TCLP LEACH	003 MS	W	01L0560	08/31/01	09/07/01	09/10/01
VANADIUM, TCLP LEACH	003	W	01L0560	08/31/01	09/07/01	09/10/01
VANADIUM, TCLP LEACH	003 REP	W	01L0560	08/31/01	09/07/01	09/10/01
VANADIUM, TCLP LEACH	003 MS	W	01L0560	08/31/01	09/07/01	09/10/01
ZINC, TCLP LEACHATE	003	W	01L0560	08/31/01	09/07/01	09/10/01
ZINC, TCLP LEACHATE	003 REP	W	01L0560	08/31/01	09/07/01	09/10/01
ZINC, TCLP LEACHATE	003 MS	W	01L0560	08/31/01	09/07/01	09/10/01
B12ML0						
SILVER, TCLP LEACHAT	004	W	01L0560	08/31/01	09/07/01	09/10/01
ARSENIC, TCLP LEACHA	004	W	01L0560	08/31/01	09/07/01	09/10/01
BARIUM, TCLP LEACHAT	004	W	01L0560	08/31/01	09/07/01	09/10/01
BERYLLIUM, TCLP LEAC	004	W	01L0560	08/31/01	09/07/01	09/10/01
CADMIUM, TCLP LEACHA	004	W	01L0560	08/31/01	09/07/01	09/10/01
CHROMIUM, TCLP LEACH	004	W	01L0560	08/31/01	09/07/01	09/10/01
MERCURY, TCLP LEACHA	004	W	01C0271	08/31/01	09/05/01	09/06/01
NICKEL, TCLP LEACHAT	004	W	01L0560	08/31/01	09/07/01	09/10/01
LEAD, TCLP LEACHATE	004	W	01L0560	08/31/01	09/07/01	09/10/01
ANTIMONY, TCLP LEACH	004	W	01L0560	08/31/01	09/07/01	09/10/01
SELENIUM, TCLP LEACH	004	W	01L0560	08/31/01	09/07/01	09/10/01
VANADIUM, TCLP LEACH	004	W	01L0560	08/31/01	09/07/01	09/10/01
ZINC, TCLP LEACHATE	004	W	01L0560	08/31/01	09/07/01	09/10/01

LAB QC:

ALUMINUM LABORTORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
ALUMINUM, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
BISMUTH, LCS	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
BISMUTH, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1470

DATE RECEIVED: 08/23/01 LVL LOT # :0108L657

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CALCIUM LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
CALCIUM, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
COPPER LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
COPPER, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
IRON LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
IRON, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
POTASSIUM LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
POTASSIUM, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
MAGNESIUM LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
MAGNESIUM, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
MANGANESE LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
MANGANESE, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
MOLYBDENUM LABORATOR	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
MOLYBDENUM, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
SODIUM LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
SODIUM, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
TIN LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
TIN, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
SILVER LABORATORY	LC1 BS	W	01L0560	N/A	09/07/01	09/10/01
SILVER, TCLP LEACHAT	MB1	W	01L0560	N/A	09/07/01	09/10/01
SILVER, TCLP LEACHAT	MB2	W	01L0560	N/A	09/07/01	09/10/01
SILVER, TCLP LEACHAT	MB3	W	01L0560	N/A	09/07/01	09/10/01
ARSENIC LABORATORY	LC1 BS	W	01L0560	N/A	09/07/01	09/10/01
ARSENIC, TCLP LEACHA	MB1	W	01L0560	N/A	09/07/01	09/10/01
ARSENIC, TCLP LEACHA	MB2	W	01L0560	N/A	09/07/01	09/10/01
ARSENIC, TCLP LEACHA	MB3	W	01L0560	N/A	09/07/01	09/10/01
BARIUM LABORATORY	LC1 BS	W	01L0560	N/A	09/07/01	09/10/01
BARIUM, TCLP LEACHAT	MB1	W	01L0560	N/A	09/07/01	09/10/01
BARIUM, TCLP LEACHAT	MB2	W	01L0560	N/A	09/07/01	09/10/01
BARIUM, TCLP LEACHAT	MB3	W	01L0560	N/A	09/07/01	09/10/01
BERYLLIUM LABORATORY	LC1 BS	W	01L0560	N/A	09/07/01	09/10/01
BERYLLIUM, TCLP LEAC	MB1	W	01L0560	N/A	09/07/01	09/10/01
BERYLLIUM, TCLP LEAC	MB2	W	01L0560	N/A	09/07/01	09/10/01
BERYLLIUM, TCLP LEAC	MB3	W	01L0560	N/A	09/07/01	09/10/01
CADMIUM LABORATORY	LC1 BS	W	01L0560	N/A	09/07/01	09/10/01
CADMIUM, TCLP LEACHA	MB1	W	01L0560	N/A	09/07/01	09/10/01
CADMIUM, TCLP LEACHA	MB2	W	01L0560	N/A	09/07/01	09/10/01
CADMIUM, TCLP LEACHA	MB3	W	01L0560	N/A	09/07/01	09/10/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1470

DATE RECEIVED: 08/23/01 LVL LOT # :0108L657

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM LABORATORY	LC1 BS	W	01L0560	N/A	09/07/01	09/10/01
CHROMIUM, TCLP LEACH	MB1	W	01L0560	N/A	09/07/01	09/10/01
CHROMIUM, TCLP LEACH	MB2	W	01L0560	N/A	09/07/01	09/10/01
CHROMIUM, TCLP LEACH	MB3	W	01L0560	N/A	09/07/01	09/10/01
MERCURY LABORATORY	LC1 BS	W	01C0271	N/A	09/05/01	09/06/01
MERCURY, TOTAL	MB1	W	01C0271	N/A	09/05/01	09/06/01
MERCURY, TCLP LEACHA	MB2	W	01C0271	N/A	09/05/01	09/06/01
MERCURY, TCLP LEACHA	MB3	W	01C0271	N/A	09/05/01	09/06/01
NICKEL LABORATORY	LC1 BS	W	01L0560	N/A	09/07/01	09/10/01
NICKEL, TCLP LEACHAT	MB1	W	01L0560	N/A	09/07/01	09/10/01
NICKEL, TCLP LEACHAT	MB2	W	01L0560	N/A	09/07/01	09/10/01
NICKEL, TCLP LEACHAT	MB3	W	01L0560	N/A	09/07/01	09/10/01
LEAD LABORATORY	LC1 BS	W	01L0560	N/A	09/07/01	09/10/01
LEAD, TCLP LEACHATE	MB1	W	01L0560	N/A	09/07/01	09/10/01
LEAD, TCLP LEACHATE	MB2	W	01L0560	N/A	09/07/01	09/10/01
LEAD, TCLP LEACHATE	MB3	W	01L0560	N/A	09/07/01	09/10/01
ANTIMONY LABORATORY	LC1 BS	W	01L0560	N/A	09/07/01	09/10/01
ANTIMONY, TCLP LEACH	MB1	W	01L0560	N/A	09/07/01	09/10/01
ANTIMONY, TCLP LEACH	MB2	W	01L0560	N/A	09/07/01	09/10/01
ANTIMONY, TCLP LEACH	MB3	W	01L0560	N/A	09/07/01	09/10/01
SELENIUM LABORATORY	LC1 BS	W	01L0560	N/A	09/07/01	09/10/01
SELENIUM, TCLP LEACH	MB1	W	01L0560	N/A	09/07/01	09/10/01
SELENIUM, TCLP LEACH	MB2	W	01L0560	N/A	09/07/01	09/10/01
SELENIUM, TCLP LEACH	MB3	W	01L0560	N/A	09/07/01	09/10/01
VANADIUM LABORATORY	LC1 BS	W	01L0560	N/A	09/07/01	09/10/01
VANADIUM, TCLP LEACH	MB1	W	01L0560	N/A	09/07/01	09/10/01
VANADIUM, TCLP LEACH	MB2	W	01L0560	N/A	09/07/01	09/10/01
VANADIUM, TCLP LEACH	MB3	W	01L0560	N/A	09/07/01	09/10/01
ZINC LABORATORY	LC1 BS	W	01L0560	N/A	09/07/01	09/10/01
ZINC, TCLP LEACHATE	MB1	W	01L0560	N/A	09/07/01	09/10/01
ZINC, TCLP LEACHATE	MB2	W	01L0560	N/A	09/07/01	09/10/01
ZINC, TCLP LEACHATE	MB3	W	01L0560	N/A	09/07/01	09/10/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-103
LVL#: 0108L657
SDG/SAF#: H1470/B01-103

W.O.#: 11343-606-001-9999-00
Date Received: 08-23-01

****Revision****

METALS CASE NARRATIVE

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

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

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. All TCLP leachate samples were reported with a six fold dilution for ICP analytes due to sample matrix.

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

4. All cooler temperatures have been recorded on the Chain of Custody.

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

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

7. The preparation/method blanks for 2 analytes were outside method criteria. {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a). The soil MB, 01L0562, results for Sodium and Tin were greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and all samples for Tin and sample B12ML0 for Sodium read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.

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

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.

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

10. The matrix spike (MS) recoveries for 3 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B12MK9	Aluminum	20,000	108.0
	Calcium	20,000	112.0
	Iron	20,000	120.6

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

13. The TCLP extract from sample B12MK9 was selected for the matrix spike (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria.

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

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

11-28-01
Date

gmb/m08-657r

LVLI
LIONVILLE LABORATORY INC

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 01PM150

Initiator: OJohnson Batch: 0108L657 Parameter: metals
Date: 11/16/01 Samples: all Matrix: SOIL
Client: TNu Hanford Method: SW646/MCAWW/CLP/ Prep Batch:
H1470

1. Reason for SDR

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

b. General Discrepancy

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

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

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

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:

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

Add Arsenic, TCLP to Batch

4. Project Manager Instructions...signature/date: Gwen Johnson 11/16/01

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

5. Final Action...signature/date: [illegible] 11/26/01 Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative [illegible] 11/28/01
✓ Hard Copy COC Revised
✓ Electronic COC Revised
__ EDD Corrections Completed

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	2	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rychlak/Layman
__	X QA (file): Alberts	1	✓ Log-in: ~~Keppel~~ Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

QA-105-A-0801

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 01081657

Leaching Procedure: __1310 ✓ __1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A ✓ __3010A __3015 __3020A ✓ __3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

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

Other:_____ Method:_____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

Q QUALIFIERS

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

M = Duplicate injection precision not met.

N = Spiked sample recovery not within control limits.

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

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

* = Duplicate analysis not within control limits.

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

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

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1470 LVL LOT #: 0108L657

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12MK9	Aluminum, Total	9040	MG/KG	1.7	1.0
		Bismuth, Total	0.33 u	MG/KG	0.33	1.0
		Calcium, Total	9310	MG/KG	0.84	1.0
		Copper, Total	13.0	MG/KG	0.05	1.0
		Iron, Total	19400	MG/KG	1.7	1.0
		Potassium, Total	2110	MG/KG	1.1	1.0
		Magnesium, Total	5870	MG/KG	0.86	1.0
		Manganese, Total	354	MG/KG	0.01	1.0
		Molybdenum, Total	1.2	MG/KG	0.11	1.0
		Sodium, Total	312	MG/KG	0.17	1.0
		Tin, Total	1.7	MG/KG	0.42	1.0
-002	B12ML0	Aluminum, Total	2650	MG/KG	1.6	1.0
		Bismuth, Total	0.31 u	MG/KG	0.31	1.0
		Calcium, Total	1260	MG/KG	0.78	1.0
		Copper, Total	4.8	MG/KG	0.05	1.0
		Iron, Total	6040	MG/KG	1.6	1.0
		Potassium, Total	434	MG/KG	1.1	1.0
		Magnesium, Total	1610	MG/KG	0.80	1.0
		Manganese, Total	91.7	MG/KG	0.01	1.0
		Molybdenum, Total	1.1	MG/KG	0.10	1.0
		Sodium, Total	181	MG/KG	0.16	1.0
		Tin, Total	1.3	MG/KG	0.39	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1470 LVL LOT #: 0108L657

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B12MK9	Silver, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Arsenic, TCLP Leachate	23.4	u	UG/L	23.4	6.0
		Barium, TCLP Leachate	811		UG/L	0.60	6.0
		Beryllium,TCLP Leachate	1.2	u	UG/L	1.2	6.0
		Cadmium, TCLP Leachate	2.4		UG/L	1.8	6.0
		Chromium, TCLP Leachate	8.4	u	UG/L	8.4	6.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Nickel, TCLP Leachate	27.7		UG/L	10.2	6.0
		Lead, TCLP Leachate	14.4	u	UG/L	14.4	6.0
		Antimony, TCLP Leachate	13.8	u	UG/L	13.8	6.0
		Selenium, TCLP Leachate	19.2	u	UG/L	19.2	6.0
		Vanadium, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Zinc, TCLP Leachate	33.4		UG/L	2.4	6.0
-004	B12ML0	Silver, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Arsenic, TCLP Leachate	23.4	u	UG/L	23.4	6.0
		Barium, TCLP Leachate	232		UG/L	0.60	6.0
		Beryllium,TCLP Leachate	1.2	u	UG/L	1.2	6.0
		Cadmium, TCLP Leachate	1.8	u	UG/L	1.8	6.0
		Chromium, TCLP Leachate	8.7		UG/L	8.4	6.0
		Mercury, TCLP Leachate	0.23		UG/L	0.10	1.0
		Nickel, TCLP Leachate	10.2	u	UG/L	10.2	6.0
		Lead, TCLP Leachate	14.4	u	UG/L	14.4	6.0
		Antimony, TCLP Leachate	13.8	u	UG/L	13.8	6.0
		Selenium, TCLP Leachate	19.2	u	UG/L	19.2	6.0
		Vanadium, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Zinc, TCLP Leachate	12.4		UG/L	2.4	6.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/28/01

CLIENT: TNUHANFORD B01-103 H1470 LVL LOT #: 0108L657

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0562-MB1	Aluminum, Total	2.1	MG/KG	1.6	1.0
		Bismuth, Total	0.31 u	MG/KG	0.31	1.0
		Calcium, Total	3.0	MG/KG	0.78	1.0
		Copper, Total	0.05	MG/KG	0.05	1.0
		Iron, Total	6.3	MG/KG	1.6	1.0
		Potassium, Total	2.2	MG/KG	1.1	1.0
		Magnesium, Total	0.95	MG/KG	0.80	1.0
		Manganese, Total	0.02	MG/KG	0.01	1.0
		Molybdenum, Total	0.10 u	MG/KG	0.10	1.0
		Sodium, Total	9.7	MG/KG	0.16	1.0
		Tin, Total	1.4	MG/KG	0.39	1.0
BLANK1	01L0560-MB1	Silver, TCLP Leachate	0.50 u	UG/L	0.50	1.0
		Arsenic, TCLP Leachate	3.9 u	UG/L	3.9	1.0
		Barium, TCLP Leachate	0.10 u	UG/L	0.10	1.0
		Beryllium,TCLP Leachate	0.20 u	UG/L	0.20	1.0
		Cadmium, TCLP Leachate	0.30 u	UG/L	0.30	1.0
		Chromium, TCLP Leachate	1.4 u	UG/L	1.4	1.0
		Nickel, TCLP Leachate	1.7 u	UG/L	1.7	1.0
		Lead, TCLP Leachate	2.4 u	UG/L	2.4	1.0
		Antimony, TCLP Leachate	2.3 u	UG/L	2.3	1.0
		Selenium, TCLP Leachate	3.2 u	UG/L	3.2	1.0
		Vanadium, TCLP Leachate	0.50 u	UG/L	0.50	1.0
		Zinc, TCLP Leachate	3.6	UG/L	0.40	1.0
BLANK2	01L0560-MB2	Silver, TCLP Leachate	3.0 u	UG/L	3.0	6.0
		Arsenic, TCLP Leachate	23.4 u	UG/L	23.4	6.0
		Barium, TCLP Leachate	0.84	UG/L	0.60	6.0
		Beryllium,TCLP Leachate	1.2 u	UG/L	1.2	6.0
		Cadmium, TCLP Leachate	1.8 u	UG/L	1.8	6.0
		Chromium, TCLP Leachate	8.4 u	UG/L	8.4	6.0
		Nickel, TCLP Leachate	10.2 u	UG/L	10.2	6.0
		Lead, TCLP Leachate	14.4 u	UG/L	14.4	6.0
		Antimony, TCLP Leachate	13.8 u	UG/L	13.8	6.0
		Selenium, TCLP Leachate	19.2 u	UG/L	19.2	6.0
		Vanadium, TCLP Leachate	3.0 u	UG/L	3.0	6.0
		Zinc, TCLP Leachate	6.2	UG/L	2.4	6.0
BLANK3	01L0560-MB3	Silver, TCLP Leachate	3.0 u	UG/L	3.0	6.0
		Arsenic, TCLP Leachate	23.4 u	UG/L	23.4	6.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/28/01

CLIENT: TNUHANFORD B01-103 H1470 LVL LOT #: 0108L657

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK3	01L0560-MB3	Barium, TCLP Leachate	0.60	u	UG/L	0.60	6.0
		Beryllium,TCLP Leachate	1.2	u	UG/L	1.2	6.0
		Cadmium, TCLP Leachate	1.8	u	UG/L	1.8	6.0
		Chromium, TCLP Leachate	8.4	u	UG/L	8.4	6.0
		Nickel, TCLP Leachate	10.2	u	UG/L	10.2	6.0
		Lead, TCLP Leachate	14.4	u	UG/L	14.4	6.0
		Antimony, TCLP Leachate	13.8	u	UG/L	13.8	6.0
		Selenium, TCLP Leachate	19.2	u	UG/L	19.2	6.0
		Vanadium, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Zinc, TCLP Leachate	5.9		UG/L	2.4	6.0
BLANK1	01C0271-MB1	Mercury, Total	0.10	u	UG/L	0.10	1.0
BLANK2	01C0271-MB2	Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
BLANK3	01C0271-MB3	Mercury, TCLP Leachate	1.3		UG/L	0.10	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1470 LVL LOT #: 0108L657

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12MK9	Aluminum, Total	10200	9040	215	560.4*	1.0
		Bismuth, Total	499	0.33u	537	93.0	1.0
		Calcium, Total	13100	9310	2680	139.4	1.0
		Copper, Total	38.7	13.0	26.9	95.5	1.0
		Iron, Total	19600	19400	107	167.7*	1.0
		Potassium, Total	4860	2110	2680	102.5	1.0
		Magnesium, Total	8890	5870	2680	112.4	1.0
		Manganese, Total	395	354	53.7	77.8*	1.0
		Molybdenum, Total	101	1.2	107	93.2	1.0
		Sodium, Total	3000	312	2680	100.2	1.0
		Tin, Total	104	1.7	107	95.1	1.0
-003	B12MK9	Silver, TCLP Leachate	2980	3.0 u	5000	59.6	6.0
		Arsenic, TCLP Leachate	5140	23.4 u	5000	102.9	6.0
		Barium, TCLP Leachate	96200	811	100000	95.4	6.0
		Beryllium, TCLP Leacha	1050	1.2 u	1000	104.8	6.0
		Cadmium, TCLP Leachate	1030	2.4	1000	103.2	6.0
		Chromium, TCLP Leachat	5110	8.4 u	5000	102.1	6.0
		Mercury, TCLP Leachate	178	0.10u	200	89.0	50.0
		Nickel, TCLP Leachate	1070	27.7	1000	104.5	6.0
		Lead, TCLP Leachate	5170	14.4 u	5000	103.3	6.0
		Antimony, TCLP Leachat	1050	13.8 u	1000	104.8	6.0
		Selenium, TCLP Leachat	1020	19.2 u	1000	102.1	6.0
		Vanadium, TCLP Leachat	1040	3.0 u	1000	104.4	6.0
		Zinc, TCLP Leachate	1080	33.4	1000	104.8	6.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1470 LVL LOT #: 0108L657

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12MK9	Aluminum, Total	9040	9340	3.2	1.0
		Bismuth, Total	0.33u	0.33u	NC	1.0
		Calcium, Total	9310	9270	0.36	1.0
		Copper, Total	13.0	12.4	4.7	1.0
		Iron, Total	19400	19500	0.61	1.0
		Potassium, Total	2110	2160	2.4	1.0
		Magnesium, Total	5870	5990	2.0	1.0
		Manganese, Total	354	335	5.4	1.0
		Molybdenum, Total	1.2	1.2	0.00	1.0
		Sodium, Total	312	330	5.8	1.0
		Tin, Total	1.7	1.8	5.7	1.0
-003REP	B12MK9	Silver, TCLP Leachate	3.0 u	3.0 u	NC	6.0
		Arsenic, TCLP Leachate	23.4 u	23.4 u	NC	6.0
		Barium, TCLP Leachate	811	760	6.5	6.0
		Beryllium TCLP Leachate	1.2 u	1.2 u	NC	6.0
		Cadmium, TCLP Leachate	2.4	2.1	13.3	6.0
		Chromium, TCLP Leachate	8.4 u	8.4 u	NC	6.0
		Mercury, TCLP Leachate	0.10u	0.10u	NC	1.0
		Nickel, Leachate	27.7	21.2	26.6	6.0
		Lead, TCLP Leachate	14.4 u	14.4 u	NC	6.0
		Antimony, Leachate	13.8 u	13.8 u	NC	6.0
		Selenium, TCLP Leachate	19.2 u	19.2 u	NC	6.0
		Vanadium, TCLP Leachate	3.0 u	3.0 u	NC	6.0
		Zinc, Leachate	33.4	12.3	92.3	6.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1470 LVL LOT #: 0108L657

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0562-LC1	Aluminum, LCS	496	500	MG/KG	99.1
		Bismuth, LCS	484	500	MG/KG	96.9
		Calcium, LCS	2430	2500	MG/KG	97.1
		Copper, LCS	123	125	MG/KG	98.1
		Iron, LCS	493	500	MG/KG	98.6
		Potassium, LCS	2520	2500	MG/KG	100.8
		Magnesium, LCS	2500	2500	MG/KG	99.8
		Manganese, LCS	75.5	75.0	MG/KG	100.7
		Molybdenum, LCS	494	500	MG/KG	98.8
		Sodium, LCS	2450	2500	MG/KG	98.0
		Tin, LCS	489	500	MG/KG	97.8
LCS1	01L0560-LC1	Silver, LCS	480	500	UG/L	96.1
		Arsenic, LCS	9640	10000	UG/L	96.4
		Barium, LCS	4690	5000	UG/L	93.8
		Beryllium, LCS	250	250	UG/L	99.9
		Cadmium, LCS	247	250	UG/L	98.7
		Chromium, LCS	494	500	UG/L	98.7
		Nickel, LCS	1970	2000	UG/L	98.6
		Lead, LCS	2470	2500	UG/L	98.7
		Antimony, LCS	2930	3000	UG/L	97.6
		Selenium, LCS	9550	10000	UG/L	95.5
		Vanadium, LCS	2490	2500	UG/L	99.7
		Zinc, LCS	980	1000	UG/L	98.0
LCS1	01C0271-LC1	Mercury, LCS	4.9	5.0	UG/L	98.3

(8) INCHES DIG

Lionville Laboratory Use Only

01086657

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI LIONVILLE LABORATORY INC

Client: TNU-Hanford B01-103

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 8-23-01 Date Due: 9-22-01

		A	B	C		D			E		F	G	H			
Refrigerator #		1	5	5		5			5		5	5	5		5	
#/Type Container	Liquid														2	
	Solid	1ag	1ag	1ag		1ag			1ag		1ag	1ag	1ag		4	
Volume	Liquid	8	8	8		8					8	8	8		8	
	Solid	120	500	360		120			500		60	500	500		500	
Preservatives		—	—	—		—			—		—	—	—		—	
ANALYSES REQUESTED →		ORGANIC: Tot VOA	BNA	Pest/PCB	Herb	Alcohols Glycols Ketones			INORG: Metal	CN	Hex Chrome IC	Anions Metals by ICP			Total Cn	
		Lionville Laboratory Use Only														
		0824H	0825X	0PCB		0RG 0GRO			Met①		ICR0	Inorg①	ICP		Met②	

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected												
001	B12MK9			S	8/17/01	1115	X	X	X		X		X	X	X			
002	B12MLO			S	8/17/01	1205	X	X	X		X		X	X	X			
003	B12MK9 tclp of 001			L	*													✓
004	B12MLO 1 of 002																	✓

Special Instructions: Soil B01-103

FEDEX NOS. + Temps

4235 7954 6690 5.2°
6667 3.4°
6678 5.4°
6715 3.8°
6704 4.3°
6689 5.0°

Run matrix QC

*See labchron

DATE/REVISIONS:

Inorg① 1. ICNO3, ICNO2, INH3N, ICNTO, IPH

2. ISED

Met① 3. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn

Met② 4. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V, Zn, Hg

11-26-01 5. Add As to tclp Met ②

6.

Lionville Laboratory Use Only

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

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

Relinquished by	Received by	Date	Time
FEDEX	[signature]	8-23-01	9150

Relinquished by	Received by	Date	Time

COMPOSITE WASTE

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

OCT 2001
RECEIVED

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1470

DATE RECEIVED: 08/23/01 LVL LOT # :0108L657

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12MK9	001	S	01LE1003	08/17/01	08/27/01	09/07/01
B12ML0	002	S	01LE1003	08/17/01	08/27/01	09/10/20
B12ML0	002 MS	S	01LE1003	08/17/01	08/27/01	09/10/20
B12ML0	002 MSD	S	01LE1003	08/17/01	08/27/01	09/10/20

LAB QC:

SBLKEI	MB1	S	01LE1003	N/A	08/27/01	09/07/01
SBLKEI	MB1 BS	S	01LE1003	N/A	08/27/01	09/07/01

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-103
LVL #: 0108L657
SDG/SAF #: H1470/B01-103

W.O. #: 11343-606-001-9999-00
Date Received: 08-23-2001

SEMIVOLATILE

Two (2) soil samples were collected on 08-17-2001.

The samples and their associated QC samples were extracted on 08-27-2001 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for TCL and Tributylphosphate Semivolatile target compounds on 09-07,10-2001.

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

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

J. Michael Taylor
President
Lionville Laboratory Incorporated

9/25/01
Date

som\gorup\data\bna\tnu-hanford-0108-657.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.

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

GLOSSARY OF BNA DATA

DATA QUALIFIERS

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

GLOSSARY OF BNA DATA

ABBREVIATIONS

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

VLI
LIONVILLE LABORATORY INC

TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

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

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

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

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

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

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

Lionville Laboratory, Inc.
Semivolatiles by GC/MS, Special List

RFW Batch Number: 0108L657 Client: TNUHANFORD B01-103 H1470 Work Order: 11343606001 Report Date: 12/12/01 07:35 Page: 1a

	Cust ID:	B12MK9		B12ML0		B12ML0		B12NL0		SBLKEI		SBLKEI BS	
Sample Information	RFW#:	001		002		002 MS		002 MSD		01LE1003-MB1		01LE1003-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	61	%	77	%	71	%	69	%	61	%	73	%
	2-Fluorobiphenyl	71	%	76	%	71	%	73	%	65	%	80	%
	p-Terphenyl-d14	90	%	99	%	93	%	95	%	81	%	90	%
	Phenol-d5	44	%	61	%	59	%	60	%	48	%	58	%
	2-Fluorophenol	39	%	60	%	58	%	57	%	50	%	60	%
	2,4,6-Tribromophenol	50	%	67	%	65	%	70	%	55	%	65	%
Phenol		360	U	330	U	64	%	62	%	330	U	66	%
bis(2-Chloroethyl)ether		360	U	330	U	330	U	330	U	330	U	330	U
2-Chlorophenol		360	U	330	U	63	%	60	%	330	U	66	%
1,3-Dichlorobenzene		360	U	330	U	330	U	330	U	330	U	330	U
1,4-Dichlorobenzene		360	U	330	U	69	%	65	%	330	U	76	%
1,2-Dichlorobenzene		360	U	330	U	330	U	330	U	330	U	330	U
2-Methylphenol		360	U	330	U	330	U	330	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		360	U	330	U	330	U	330	U	330	U	330	U
3- and/or 4-Methylphenol		360	U	330	U	330	U	330	U	330	U	330	U
N-Nitroso-Di-n-propylamine		360	U	330	U	73	%	73	%	330	U	64	%
Hexachloroethane		360	U	330	U	330	U	330	U	330	U	330	U
Nitrobenzene		360	U	330	U	330	U	330	U	330	U	330	U
Isophorone		360	U	330	U	330	U	330	U	330	U	330	U
2-Nitrophenol		360	U	330	U	330	U	330	U	330	U	330	U
2,4-Dimethylphenol		360	U	330	U	330	U	330	U	330	U	330	U
bis(2-Chloroethoxy)methane		360	U	330	U	330	U	330	U	330	U	330	U
2,4-Dichlorophenol		360	U	330	U	330	U	330	U	330	U	330	U
1,2,4-Trichlorobenzene		360	U	330	U	72	%	66	%	330	U	78	%
Naphthalene		360	U	330	U	330	U	330	U	330	U	330	U
4-Chloroaniline		360	U	330	U	330	U	330	U	330	U	330	U
Hexachlorobutadiene		360	U	330	U	330	U	330	U	330	U	330	U
4-Chloro-3-methylphenol		360	U	330	U	68	%	65	%	330	U	66	%
2-Methylnaphthalene		360	U	330	U	330	U	330	U	330	U	330	U
Hexachlorocyclopentadiene		360	U	330	U	330	U	330	U	330	U	330	U
2,4,6-Trichlorophenol		360	U	330	U	330	U	330	U	330	U	330	U
2,4,5-Trichlorophenol		900	U	820	U	840	U	830	U	840	U	840	U

*= Outside of EPA CLP QC limits.

6 Pages
12/13/01

RPW Batch Number: 0108L657 Client: TNUHANFORD B01-103 B1470 Work Order: 11343606001 Page: 1b

Cust ID:	B12MK9	B12ML0	B12ML0	B12ML0	SBLKEI	SBLKEI BS
RPW#:	001	002	002 MS	002 MSD	01LE1003-MB1	01LE1003-MB1
2-Chloronaphthalene	360 U	330 U	330 U	330 U	330 U	330 U
2-Nitroaniline	900 U	820 U	840 U	830 U	840 U	840 U
Dimethylphthalate	360 U	330 U	330 U	330 U	330 U	330 U
Acenaphthylene	360 U	330 U	330 U	330 U	330 U	37 J
2,6-Dinitrotoluene	360 U	330 U	330 U	330 U	330 U	330 U
3-Nitroaniline	900 U	820 U	840 U	830 U	840 U	840 U
Acenaphthene	360 U	330 U	76 %	76 %	330 U	81 %
2,4-Dinitrophenol	900 U	820 U	840 U	830 U	840 U	840 U
4-Nitrophenol	900 U	820 U	76 %	79 %	840 U	80 %
Dibenzofuran	360 U	330 U	330 U	330 U	330 U	330 U
2,4-Dinitrotoluene	360 U	330 U	86 %	88 %	330 U	87 %
Diethylphthalate	360 U	330 U	330 U	330 U	330 U	330 U
4-Chlorophenyl-phenylether	360 U	330 U	330 U	330 U	330 U	330 U
Fluorene	360 U	330 U	330 U	330 U	330 U	330 U
4-Nitroaniline	900 U	820 U	840 U	830 U	840 U	840 U
4,6-Dinitro-2-methylphenol	900 U	820 U	840 U	830 U	840 U	840 U
N-Nitrosodiphenylamine (1)	360 U	330 U	330 U	330 U	330 U	330 U
4-Bromophenyl-phenylether	360 U	330 U	330 U	330 U	330 U	330 U
Hexachlorobenzene	360 U	330 U	330 U	330 U	330 U	330 U
Pentachlorophenol	900 U	820 U	70 %	71 %	840 U	67 %
Phenanthrene	360 U	330 U	330 U	330 U	330 U	330 U
Anthracene	360 U	330 U	330 U	330 U	330 U	330 U
Carbazole	360 U	330 U	330 U	330 U	330 U	330 U
Di-n-Butylphthalate	360 U	330 U	330 U	330 U	330 U	330 U
Fluoranthene	360 U	330 U	330 U	330 U	330 U	330 U
Pyrene	360 U	330 U	90 %	88 %	330 U	90 %
Butylbenzylphthalate	360 U	330 U	330 U	330 U	330 U	330 U
3,3'-Dichlorobenzidine	360 U	330 U	330 U	330 U	330 U	330 U
Benzo(a)anthracene	360 U	330 U	330 U	330 U	330 U	330 U
Chrysene	360 U	330 U	330 U	330 U	330 U	330 U
bis(2-Ethylhexyl)phthalate	360 U	330 U	330 U	330 U	330 U	330 U
Di-n-Octyl phthalate	360 U	330 U	330 U	330 U	330 U	330 U
Benzo(b)fluoranthene	360 U	330 U	330 U	330 U	330 U	330 U
Benzo(k)fluoranthene	360 U	330 U	330 U	330 U	330 U	330 U
Benzo(a)pyrene	360 U	330 U	330 U	330 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	360 U	330 U	330 U	330 U	330 U	330 U
Dibenzo(a,h)anthracene	360 U	330 U	330 U	330 U	330 U	330 U
Benzo(g,h,i)perylene	360 U	330 U	330 U	330 U	330 U	330 U
Tributylphosphate	360 U	330 U	330 U	330 U	330 U	330 U

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

7 Days 12/13/01

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B12ML0

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

Client: TNUHANFORD B01-103 H1470

Matrix: (soil/water) SOIL

Lab Sample ID: 0108L657-002

Sample wt/vol: 30.7 (g/mL) G

Lab File ID: C091009

Level: (low/med) LOW

Date Received: 08/23/01

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

Date Extracted: 08/27/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 09/10/20

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	6.991	300	JB

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKEI

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

Client: TNUHANFORD B01-103 H1470

Matrix: (soil/water) SOIL

Lab Sample ID: 01LE1003-MB1

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

Lab File ID: C090710

Level: (low/med) LOW

Date Received: 08/27/01

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

Date Extracted: 08/27/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 09/07/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.052	200	J

Lionville Laboratory Use Only

0108L657

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI Lionville Laboratory Inc.

Client: TMU-Hanford B01-103

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 8-23-01 Date Due: 9-22-01

		A	B	C		D			E		F	G	H			
Refrigerator #		1	5	5		5			5		5	5	5		5	
#/Type Container	Liquid															
	Solid	1pg	1pg	1pg		1pg			1pg		1pg	1pg	1pg		1pt	
Volume	Liquid															
	Solid	120	500	350		120			500		60	500	500		500	
Preservatives		—	—	—		—			—		—	—	—		—	
ANALYSES REQUESTED		ORGANIC							INORG							
		Pet VOA	BNA	Pest/PCB	Herb	Alcohols Glycols Ketones			Metal	CN	Hex Chrome	HC	Anions Method by IC		TCLP	
		Lionville Laboratory Use Only														
		OA24H	OA25X	OPCB		OPRO OGRO			Met(1)		ICP9	Inorg(1)	ITCLP		Met(2)	

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OA24H	OA25X	OPCB		OPRO OGRO			Met(1)		ICP9	Inorg(1)	ITCLP		Met(2)
001	B12MK9			S	8/17/01	1115	X	X	X		X			X		X	X	X		
002	B12MLO			S	8/17/01	1205	X	X	X		X			X		X	X	X		
003	B12MK9 trip of 001			L	*	-														✓
004	B12MLO 1 002			↓	↓	↓														✓

Special Instructions: Saf B01-103

FEDEX NOS. + TEMPS

4235	7954	6690	5.2°
		6667	3.4°
		6678	5.4°
		6715	3.8°
		6704	4.3°
		6689	5.0°

Run matrix QC

*See labchron

DATE/REVISIONS:

Inorg(1) 1. TCN03, TCN02, TNH3N, TCNTO, TPH

1 2. ISED

Met(1) 3. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn

Met(2) 4. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V, Zn, Hg

5.

6.

Lionville Laboratory Use Only

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

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Samples Properly Preserved Y or N

5) Received Within Holding Times Y or N

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

2) Unbroken on Outer Package Y or N

3) Present on Sample Y or N

4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. ** °C

Relinquished by	Received by	Date	Time
FEDEX	[signature]	8-23-01	9150

Relinquished by	Received by	Date	Time

COMPOSITE WASTE

ORIGINAL

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-07	Page 1 of 1

Collector: FAHLBERG	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	
Ice Chest No.: ERC99-065	Field Logbook No.: EL 1517-2	COA: JRCRA14114	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A010437	Bill of Lading/Air Bill No.: 4235795 4-6667	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 8/17/01. Collector not available to relinquish samples on 8/22/01 for shipment. RT 8-22-01

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1	1		
Volume	60mL	120mL	120mL	250mL	500mL	500mL	500mL	500mL	1000mL		
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions.	VOA - 8260A (TCL)	PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	See item (5) in Special Instructions.	See item (6) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time								
B12MK9	SOIL	8/17/01	1115	X	X	X	X	X	X	X	X
B12ML0	SOIL	8/17/01	1205	X	X	X	X	X	X	X	X

8/17/01 TIETO

B12ML2
B12ML3

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	8-17-01 1330	Stored in Ref 2-A	8-17-01 1330
Removed from Ref 2-A 3728	8-22-01 0900	R. Thorez	8-22-01 0900
R. Thorez	8-22-01 0900	FEDEX	
FEDEX	8-23-01 9:50	Carl Dennis	8-23-01 9:50

SPECIAL INSTRUCTIONS

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

RT 8-20-01

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

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

BHI-EE-011 (10/99)

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1470

RFW LOT #:01081650

OCT 2001
RECEIVED

CLIENT ID	RFW #	MTX	PREP #	COLLECTN DATE	REC DATE	EXT/PREP	ANALYSIS
B12MK9	001	S	01LVH352	08/17/01	08/23/01	N/A	08/28/01
B12MK9	001 MS	S	01LVH352	08/17/01	08/23/01	N/A	08/28/01
B12MK9	001 MSD	S	01LVH352	08/17/01	08/23/01	N/A	08/28/01
B12ML0	002	S	01LVH352	08/17/01	08/23/01	N/A	08/28/01
LAB QC:							
VBLKOR	MB1	S	01LVH352	N/A	N/A	N/A	08/28/01
VBLKOR	MB1 BS	S	01LVH352	N/A	N/A	N/A	08/28/01

09-27-01

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-103
LVL #: 0108L657
SDG/SAF #: H1470/B01-103

W.O. #: 11343-606-001-9999-00
Date Received: 08-23-2001

GC/MS VOLATILE

Two (2) soil samples were collected on 08-17-2001.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 08-28-2001.

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

1. The cooler temperatures upon receipt have been recorded on the chain-of-custody.
2. Samples were analyzed within required holding time.
3. Non-target compounds were detected in these samples.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blank contained the common laboratory 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

10/2/01
Date

Som\group\data\voa\tnu-hanford\0108-657.doc

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

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

GLOSSARY OF VOA DATA

ABBREVIATIONS

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

VLI
LIONVILLE LABORATORY INC.

GLOSSARY OF VOA DATA

DATA QUALIFIERS

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

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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

RFW Batch Number: 0108L657 Client: **TNUHANFORD B01-103 H1470** Work Order: 11343606001 Page: 1a

Report Date: 09/27/01 12:43

	Cust ID:	B12MK9		B12MK9		B12MK9		B12ML0		VBLKOR		VBLKOR BS	
Sample Information	RFW#:	001		001 MS		001 MSD		002		01LVH352-MB1		01LVH352-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		0.980		1.00		1.04		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	112	%	101	%	102	%	106	%	104	%	101	%
	Bromofluorobenzene	107	%	95	%	96	%	105	%	106	%	99	%
	1,2-Dichloroethane-d4	110	%	101	%	103	%	107	%	100	%	103	%
Chloromethane		11	U	11	U	11	U	11	U	10	U	10	U
Bromomethane		11	U	11	U	11	U	11	U	10	U	10	U
Vinyl Chloride		11	U	11	U	11	U	11	U	10	U	10	U
Chloroethane		11	U	11	U	11	U	11	U	10	U	10	U
Methylene Chloride		12	B	10	B	11	B	9	B	7		7	B
Acetone		11	U	11	U	11	U	6	JB	14		2	B
Carbon Disulfide		6	U	6	U	6	U	6	U	5	U	5	U
1,1-Dichloroethene		6	U	89	%	86	%	6	U	5	U	87	%
1,1-Dichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
1,2-Dichloroethene (total)		6	U	6	U	6	U	6	U	5	U	5	U
Chloroform		6	U	6	U	6	U	6	U	5	U	5	U
1,2-Dichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
2-Butanone		11	U	11	U	11	U	11	U	10	U	10	U
1,1,1-Trichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
Carbon Tetrachloride		6	U	6	U	6	U	6	U	5	U	5	U
Bromodichloromethane		6	U	6	U	6	U	6	U	5	U	5	U
1,2-Dichloropropane		6	U	6	U	6	U	6	U	5	U	5	U
cis-1,3-Dichloropropene		6	U	6	U	6	U	6	U	5	U	5	U
Trichloroethene		6	U	88	%	85	%	6	U	1	J	86	%
Dibromochloromethane		6	U	6	U	6	U	6	U	5	U	5	U
1,1,2-Trichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
Benzene		6	U	106	%	101	%	6	U	5	U	105	%
Trans-1,3-Dichloropropene		6	U	6	U	6	U	6	U	5	U	5	U
Bromoform		6	U	6	U	6	U	6	U	5	U	5	U
4-Methyl-2-pentanone		11	U	11	U	11	U	11	U	10	U	10	U
2-Hexanone		11	U	11	U	11	U	11	U	10	U	10	U
Tetrachloroethene		6	U	6	U	6	U	6	U	5	U	5	U
1,1,2,2-Tetrachloroethane		6	U	6	U	6	U	6	U	5	U	5	U
Toluene		1	J	107	%	101	%	6	U	5	U	107	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0108L657 Client: TNUHANFORD B01-103 H1470 Work Order: 11343606001 Page: 1b

Cust ID:	B12MK9		B12MK9		B12MK9		B12ML0		VBLKOR		VBLKOR BS	
RFW#:	001		001 MS		001 MSD		002		01LVH352-MB1		01LVH352-MB1	
Chlorobenzene	6	U	105	%	100	%	6	U	5	U	105	%
Ethylbenzene	6	U	6	U	6	U	6	U	5	U	5	U
Styrene	6	U	6	U	6	U	6	U	5	U	5	U
Xylene (total)	6	U	6	U	6	U	6	U	5	U	5	U

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B12MK9

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

Client: TNUHANFORD B01-103 H1470

Matrix: SOIL

Lab Sample ID: 0108L657-001

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

Lab File ID: h082808

Level: (low/med) LOW

Date Received: 08/23/01

% Moisture: not dec. 7

Date Analyzed: 08/28/01

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	22.248	7	J

FORM 1 VOA-TIC 12/88 Rev.

8

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B12ML0

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

Client: TNUHANFORD B01-103 H1470

Matrix: SOIL

Lab Sample ID: 0108L657-002

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

Lab File ID: h082809

Level: (low/med) LOW

Date Received: 08/23/01

% Moisture: not dec. 1

Date Analyzed: 08/28/01

Column: (pack/cap) CAP

Dilution Factor: 1.04

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	22.248	10	J

FORM 1 VOA-TIC 12/88 Rev.

9

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLKOR

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

Client: TNUHANFORD B01-103 H1470

Matrix: SOIL

Lab Sample ID: 01LVH352-MB1

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

Lab File ID: h082805

Level: (low/med) LOW

Date Received: 08/28/01

% Moisture: not dec. 0

Date Analyzed: 08/28/01

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

FORM 1 VOA-TIC 12/88 Rev.

10

Lionville Laboratory Use Only

0108L657

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client: TNU-Hanford B01-103

Est. Final Proj. Sampling Date:

Project #: 11343-6016-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: DJ

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 8-23-01 Date Due: 9-22-01

		A	B	C		D			E		F	G	H			
Refrigerator #		1	5	5		5			5		5	5	5		5	
#/Type Container	Liquid														2	
	Solid	1 jag	1 jag	1 jag		1 jag			1 jag		1 jag	1 jag	1 jag		1	
Volume	Liquid														500	
	Solid	120	500	350		120			500		60	500	500			
Preservatives		—	—	—		—			—		—	—	—		HCl	
ANALYSES REQUESTED		ORGANIC: Pest VOA	ORGANIC: BNA	ORGANIC: Pest/PCB	ORGANIC: Herb	ORGANIC: Alcohols Glycols Ketones			INORG: Metal	INORG: CN	Hex Chrome / TC	Anions	Metals by ICP		Lionville Laboratory Use Only: 1 PCB	
Lionville Laboratory Use Only		0C24H	0C25X	0PCB		0DRO 0GRO			Mx(1)		ICP 9	Inorg(1)	ITCLP		Mx(2)	

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0C24H	0C25X	0PCB		0DRO 0GRO			Mx(1)		ICP 9	Inorg(1)	ITCLP		Mx(2)
001	B12MK9			S	8/17/01	1115	X	X	X		X			X		X	X	X		
002	B12MLO			S	8/17/01	1205	X	X	X		X			X		X	X	X		
003	B12MK9 tcp of 001			L	*															✓
004	B12MLO " 002			↓	↓	↓														✓

Special Instructions: Saf B01-103

FEDEX NOS. + Temps

4235 7954 6690 5.2°
6667 3.4°
6678 5.4°
6715 3.8°
6704 4.3°
6689 5.0°

Run matrix QC

*See labchron

DATE/REVISIONS:

Inorg(1) 1. ICNO3, ICNO2, INH3N, ICNTO, IPH

2. ISED

Mt(1) 3. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn

Mt(2) 4. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V, Zn, Hg

5.

6.

Lionville Laboratory Use Only

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

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

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

Cooler Temp. * * °C

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

NOTES:

Relinquished by	Received by	Date	Time
FEDEX	[signature]	8-23-01	9150

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL DEMONITTER		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-07	Page 1 of 1

Collector: FAHLBERG	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	
Ice Chest No.: ERC99-065	Field Logbook No.: EL 1517-2	COA: JRCRA14114	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A010437	Bill of Lading/Air Bill No.: 4238795 4-6667	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 8/17/01. Collector not available to relinquish samples on 8/22/01 for shipment. RT 8-22-01

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Chromium Hex - 7196	See item (1) in Special Instructions.	VOA - 8260A (TCL)	PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	See item (5) in Special Instructions.	See item (6) in Special Instructions.	
Preservation				Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	
Type of Container				aG	aG	aG	aG	aG	aG	aG	aG	aG	
No. of Container(s)				1	1	1	1	1	1	1	1	1	
Volume				60mL	120mL	120mL	250mL	500mL	500mL	500mL	500mL	1000mL	
B12MK9	SOIL	8/17/01	1115	X	X	X	X	X	X	X	X		TIETC
B12ML0	SOIL	8/17/01	1205	X	X	X	X	X	X	X	X		B12ML2
													B12ML3

8/17/01

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg R. Fahlberg	1330 8-17-01	Ref 2-A	1330 8-17-01
Removed from Ref 2-A 3728	0400 8-22-01	R. Thoren	0400 8-22-01
R. Thoren	0400 8-22-01	FEDEX	
FEDEX	8-23-01 9:50	Carla Dammf	8-23-01 9:50

SPECIAL INSTRUCTIONS

(1) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(2) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(3) ICP Metals - 6010A (TAL) {Aluminum, Calcium, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(4) Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) {Tributyl phosphate}
(5) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
~~(6) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec. - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90~~ RT 8.20.01

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

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

BHI-EE-011 (10/99)

OCT 2001
RECEIVED

Lionville Laboratory, Inc.
PCB ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1470

DATE RECEIVED: 08/23/01 LVL LOT # :0108L657

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12MK9	001	S	01LE0995	08/17/01	08/24/01	09/01/01
B12MK9	001 MS	S	01LE0995	08/17/01	08/24/01	09/07/01
B12MK9	001 MSD	S	01LE0995	08/17/01	08/24/01	09/01/01
B12ML0	002	S	01LE0995	08/17/01	08/24/01	09/07/01

LAB QC:

PBLKOX	MB1	S	01LE0995	N/A	08/24/01	09/01/01
PBLKOX	MB1 BS	S	01LE0995	N/A	08/24/01	09/01/01

Flagg 1/3/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU HANFORD B01-103
LVL#: 0108L657
SDG/SAF#: H1470/B01-103

W.O.#: 11343-606-001-9999-00
Date Received: 08-23-01

PCB

The set of samples consisted of two (2) soil samples collected on 08-17-01.

The samples and their associated QC samples were extracted on 08-24-01 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 09-01,07-01. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

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

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

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

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

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

5. Three (3) of twelve (12) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

6. The blank spike recovery was within acceptance criteria.

7. One (1) of two (2) matrix spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

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

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

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

9/17/01
Date

pef\r:\group\data\pest\08L-657.pcb

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 9 pages.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 01GC371

Initiator: M. Kobel Batch: 0108L057 Parameter: OPCB
Date: 9/11/01 Samples: MSD Matrix: soil
Client: TNV Method: SW846/MCAWW/CLP/ Prep Batch: 01LE0995

1. Reason for SDR

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

b. General Discrepancy

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

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

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

① low surrogates in MSD; TCX @ 15% and DCB @ 26%.
② low spike (AR1254) in MSD @ 20%.
* The MS + BS both have good recoveries (both surrogates and spikes), and the samples are clean of targets.

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:

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

4. Project Manager Instructions...signature/date: [signature] 9/11/01

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

5. Final Action...signature/date: [signature] 9/11/01 Other Explanation:

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

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

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

L-WI-006/E-01/01

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

P = This flag is used for an PESTICIDE/PCB target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".

D = This flag identifies all compounds identified in an analysis at a secondary dilution factor.

C = This flag applies to a compound that has been confirmed by GC/MS.

R:/SHARE/HPLC/PESTICIDE/PCBGLOS

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 09/12/01 11:38

RFW Batch Number: 0108L657 Client: TNUHANFORD B01-103 H1470 Work Order: 11343606001 Page: 1

	Cust ID:	B12MK9	B12MK9	B12MK9	B12ML0	PBLKOX	PBLKOX BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	01LE0995-MB1	01LE0995-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	95 %	92 %	15 * %	90 %	30 %	78 %
	Decachlorobiphenyl	95 %	94 %	26 * %	87 %	16 * %	39 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		36 U	36 U	36 U	34 U	33 U	33 U
Aroclor-1221		72 U	71 U	72 U	67 U	67 U	67 U
Aroclor-1232		36 U	36 U	36 U	34 U	33 U	33 U
Aroclor-1242		36 U	36 U	36 U	34 U	33 U	33 U
Aroclor-1248		36 U	36 U	36 U	34 U	33 U	33 U
Aroclor-1254		36 U	82 %	20 * %	34 U	33 U	52 %
Aroclor-1260		36 U	36 U	36 U	34 U	33 U	33 U

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

Lionville Laboratory Use Only
0108L657

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client: TNU-Hanford B01-103
Est. Final Proj. Sampling Date:
Project #: 11343-6006-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 8-23-01 Date Due: 9-22-01

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

Lionville Laboratory Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OC24H	OC25X	OPCB		OPRO OGRO			Met(1)		ICPRO	Inorg(1)	ITCLP		Met(2)
S - Soil	001	B12MK9			S	8/17/01	1115	X	X	X		X			X		X	X	X		
SE - Sediment	002	B12MLO			S	8/17/01	1205	X	X	X		X			X		X	X	X		
SO - Solid	003	B12MK9 tclp of 001			L	*															✓
SL - Sludge	004	B12MLO 1 002																			✓
W - Water																					
O - Oil																					
A - Air																					
DS - Drum Solids																					
DL - Drum Liquids																					
L - EP/TCLP Leachate																					
WI - Wipe																					
X - Other																					
F - Fish																					

Special Instructions: Saf B01-103
FEDEX NOS. + TEMPS
4235 7954 6690 5.2°
6667 3.4°
6678 5.4°
6715 3.8°
6704 4.3°
6689 5.0°
Run matrix QC
*See labchron

DATE/REVISIONS:
Inorg(1) 1. TCN03, TCN02, TNH3N, TCNTO, TPH
1 2. ISED
Met(1) 3. Al, Ca, Cu, Fe, Mg, mn, K, Na, Bi, Mo, Sn
Met(2) 4. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V, Zn, Hg
5.
6.

Lionville Laboratory Use Only

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

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

Relinquished by	Received by	Date	Time
FEDEX	[signature]	8-23-01	9150

Relinquished by	Received by	Date	Time

COMPOSITE WASTE

ORIGINAL

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-07	Page 1 of 1

Collector: FAHLBERG	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	
Ice Chest No.: ERC99-065	Field Logbook No.: EL 1517-2	COA: JRCRA14114	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A010437	Bill of Lading/Air Bill No.: 42357954-6667	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 8/17/01. Collector not available to relinquish samples on 8/22/01 for shipment. RT 8-22-01

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

8-17-01 TIETO

Sample No.	Matrix *	Sample Date	Sample Time										
B12MK9	SOIL	8/17/01	1115	X	X	X	X	X	X	X	X		B12MK2
B12ML0	SOIL	8/17/01	1205	X	X	X	X	X	X	X	X		B12ML3

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	1330 8-17-01	Stored in Ref 2-A	1330 8-17-01
Removed from Ref 2-A 3728	0900 8-22-01	R. Thoren	0900 8-22-01
R. Thoren	0900 8-22-01	FEDEX	
FEDEX	8-23-01 9:50	Carla Dennis	8-23-01 9:50

SPECIAL INSTRUCTIONS

(1) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(2) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(3) ICP Metals - 6010A (TAL) {Aluminum, Calcium, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(4) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(5) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
~~(6) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90~~ RT 8-20-01

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: _____

SDG#: 0108L657

Work Order Number: _____ SAF# B01-103

Shipping Container ID: ERC99-065 Chain of Custody # B01-103-07

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 5.2, 3.4, 5.4, 3.8, 4.3, 5.0
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: _____
7. Sample holding times exceeded? Yes [ ] No [✓]

8. Samples have:
   ____tape ____hazard labels
   ✓ custody seals ____appropriate sample labels

9. Samples are:
   ✓ in good condition ____leaking
   ____broken ____have air bubbles

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

Sample Custodian/Laboratory: Carla Heimuf Date: 8-23-01

Telephoned to: _____ On _____ By _____

OCT 2001
RECEIVED

Lionville Laboratory, Inc.
DRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1470

DATE RECEIVED: 08/23/01 LVL LOT # :0108L657

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12MK9	001	S	01LE1010	08/17/01	08/28/01	09/14/01
B12MK9	001 MS	S	01LE1010	08/17/01	08/28/01	09/14/01
B12ML0	002	S	01LE1010	08/17/01	08/28/01	09/14/01
LAB QC:						
BLK	MB1	S	01LE1010	N/A	08/28/01	09/13/01
BLK	MB1 BS	S	01LE1010	N/A	08/28/01	09/13/01

LIONVILLE LABORATORY INC.

Analytical Report

Analytical Report

Client: THU-HANFORD B01-103
LVL#: 0108L657
SDG/SAF#: H1470/B01-103

W.O #: 11343-606-001-9999-00
Date Received: 08-23-01

DIESEL RANGE ORGANICS

The set of samples consisted of two (2) soil samples collected on 08-17-2001.

The samples and their associated QC samples were extracted on 08-28-01 and analyzed according to Lionville Laboratory OPs based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 09-13,14-01. The analysis met the intent of method WTPH-D.

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

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

3. One (1) of five (5) surrogate recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

4. The blank spike was within acceptance criteria.

5. The matrix spike was within acceptance criteria.

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

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

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

9/28/01
Date

R:\SHARE\GCPEST\narr temp\tnu657dro.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 9 pages.

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 01GC 373

Initiator: John Lech. Batch: 01081657 Parameter: ODRD
Date: 9/14/01 Samples: #1 Matrix: Soil
Client: TVU Method: SW846/MCAWW/CLP/ Prep Batch: 01LE1010

1. Reason for SDR

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

b. General Discrepancy

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

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

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

① Surrogate below acceptable limit. 11% recovery.
② Matrix spike & DUP not transferred.

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

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

Other Description:

② Blank spike & MSD inclusion in control.

4. Project Manager Instructions...signature/date: [signature] 9/24/01

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative ① only
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: [signature] 9/26/01

Other Explanation:

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

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

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

L-WI-006/E-01/01

GLOSSARY OF DIESEL RANGE ORGANICS DATA

DATA QUALIFIERS

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

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 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: 09/26/01 08:40

RFW Batch Number: 0108L657 Client: TNUHANFORD B01-103 H1470 Work Order: 11343606001 Page: 1

90

	Cust ID:	B12MK9	B12MK9	B12ML0	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	002	01LE1010-MB1	01LE1010-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
	p-Terphenyl	11 * %	117 %	75 %	81 %	68 %
Diesel Range Organics		12.8 U	124 %	12.1 U	12.0 U	81 %
Kerosene		12.8 U	12.7 U	12.1 U	12.0 U	12.0 U

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

Lionville Laboratory Use Only

0108L657

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client: TNU-Hanford B01-103

Est. Final Proj. Sampling Date:

Project #: 11343-6016-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: DJ

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 8-23-01 Date Due: 9-22-01

		A	B	C		D			E		F	G	H			
Refrigerator #		1	5	5		5			5		5	5	5		5	
#/Type Container	Liquid														2	
	Solid	1 jag	1 jag	1 jag		1 jag			1 jag		1 jag	1 jag	1 jag		1	
Volume	Liquid														500	
	Solid	120	500	350		120			500		60	500	500		500	
Preservatives		—	—	—		—			—		—	—	—			
ANALYSES REQUESTED →		ORGANIC: Tot VOA	BNA	Pest/PCB	Herb	Alcohols Glycols Ketones			INORG: Metal	CN	Hex Chrome	HC	Anions	Metals by ICP	1,2,3,4,5,6	
		Lionville Laboratory Use Only														
		0824H	0825X	OPCB		OPRO OGRO			Mrt①		ICPU	Inorg①	ICCP		Mrt②	

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0824H	0825X	OPCB		OPRO OGRO			Mrt①		ICPU	Inorg①	ICCP		Mrt②
001	B12MK9			S	8/17/01	1115	X	X	X		X			X		X	X	X		
002	B12MLO			S	8/17/01	1205	X	X	X		X			X		X	X	X		
003	B12MK9 tcp of 001			L	*	-														✓
004	B12MLO ⊥ 002			↓	↓	↓														✓

Special Instructions: Saf B01-103

FEDEX NOS. + TEMPS

4235 7954 6690 5.2°
6667 3.4°
6678 5.4°
6715 3.8°
6704 4.3°
6689 5.0°

Run Matrix QC

*See labchron

DATE/REVISIONS:

Inorg① 1. ICNO3, ICNO2, INH3N, ICNTO, IPH

2. ISFD

Mrt① 3. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn

Mrt② 4. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V, Zn, Hg

5.

6.

Lionville Laboratory Use Only

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

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

Relinquished by	Received by	Date	Time
FedEx	Carla [illegible]	8-23-01	9150

Relinquished by	Received by	Date	Time

COMPOSITE WASTE

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

ORIGINAL

DEWHITTEN

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-07	Page 1 of 1

Collector: FAHLBERG	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East		SAF No.: B01-103
Ice Chest No.: ERC99-065	Field Logbook No.: EL 1517-2	COA: JRCRA14114	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A010437		Bill of Lading/Air Bill No.: 4235795 4-6667

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 8/17/01. Collector not available to relinquish samples on 8/22/01 for shipment. RT 8-22-01

SAMPLE ANALYSIS

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

Sample No.	Matrix *	Sample Date	Sample Time									
B12MK9	SOIL	8/17/01	1115	X	X	X	X	X	X	X	X	B12ML2
B12ML0	SOIL	8/17/01	1205	X	X	X	X	X	X	X	X	B12ML3

8/17/01 TIETO

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By (Sign/Print Names)	Date/Time
R. Fahlberg / R. Fahlberg	8-17-01 1330	Stored in Ref 2-A	8-17-01 1350
Removed from Ref 2-A 3728	8-22-01 0900	R Thoren	8-22-01 0900
R Thoren	8-22-01 0900	FEDEX	
FEDEX	8-23-01 9:50	Carla Damm	8-23-01 9:50

SPECIAL INSTRUCTIONS

(1) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(2) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(3) ICP Metals - 6010A (TAL) {Aluminum, Calcium, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(4) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(5) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
~~(6) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}, Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90~~ RT 8-20-01

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: _____

SDG#: 01084657

Work Order Number: _____ SAF# B01-103

Shipping Container ID: ERC99-065 Chain of Custody # B01-103-07

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 5.2, 3.4, 5.4, 3.8, 4.3, 5.0
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: _____
7. Sample holding times exceeded? Yes [ ] No [✓]

8. Samples have:
   ____tape ____hazard labels
   ✓ custody seals ____appropriate sample labels

9. Samples are:
   ✓ in good condition ____leaking
   ____broken ____have air bubbles

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

Sample Custodian/Laboratory: Carla Heimuf Date: 8-23-01

Telephoned to: _____ On _____ By _____

Lionville Laboratory, Inc.
GRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1470

OCT 2001 RECEIVED

DATE RECEIVED: 08/23/01 LVL LOT # :0108L65

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12MK9	001	S	01LVJ828	08/17/01	N/A	08/28/01
B12MK9	001 MS	S	01LVJ828	08/17/01	N/A	08/28/01
B12ML0	002	S	01LVJ828	08/17/01	N/A	08/28/01

LAB QC:

TBLKZA	MB1	S	01LVJ828	N/A	N/A	08/28/01
TBLKZA	MB1 BS	S	01LVJ828	N/A	N/A	08/28/01

flg 8/26/01

LIONVILLE LABORATORY INC.

Analytical Report

Client : TNU-HANFORD B01-103
LVL# : 0108L657
SDG/SAF#: H1470/B01-103

W.O #: 11343-606-001-9999-00
Date Received: 08-23-01

GASOLINE RANGE ORGANICS

The set of samples consisted of two (2) soil samples collected on 08-17-01

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on Method 8015B for Gasoline Range Organic (GRO) target compounds on 08-28-01.

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

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

3. All surrogate recoveries were within acceptance criteria.

4. The blank spike recovery was within acceptance criteria.

5. The matrix spike recovery was within acceptance criteria. The matrix spike duplicate failed to run due to an instrument failure. A copy of the sample discrepancy report (SDR) is included.

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

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

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

9/28/01
Date

r:\share\gcpest\narr temp\tnu657gro.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 9 pages.

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 016C350

Initiator: John Lach. Batch: 01081657 Parameter: 06R0
Date: 8/24/01 Samples: #2 Matrix: Soil
Client: TNU Method: SW846/MCAWW/CLP/ Prep Batch: 01LVJ828

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 X Not Amenable to Analysis

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

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

① Sample #2 consists of rocks. most are larger in Diameter than the Purge tube.

② ~~(MS Failed to)~~ JN 8/24/01 No recovery for matrix spike.

2. Known or Probable Causes(s)

② Instrument failure.

3. Discussion and Proposed Action

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

Other Description:

① used 3.3 grams of gravel from the Bottom.

② BS + MSD in control.

MSD renamed as the MS. on Prep sheet + report. JN 8/25/01

4. Project Manager Instructions...signature/date: 9/24/01

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

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

Other Explanation:

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

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

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

03

L-WI-006/E-01/01

GLOSSARY OF GASOLINE RANGE ORGANICS DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

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: 09/25/01 11:01

RFW Batch Number: 0108L657 Client: **TNUHANFORD B01-103 H1470** Work Order: 11343606001 Page: 1

90

	Cust ID:	B12MK9	B12MK9	B12ML0	TBLKZA	TBLKZA BS
Sample Information	RFW#:	001	001 MS	002	01LVJ828-MB1	01LVJ828-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
Fluorobenzene		58 %	61 %	75 %	59 %	66 %
Gasoline Range Organics (GRO)		44 U	80 %	60 U	40 U	91 %

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

Lionville Laboratory Use Only

0108L657

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B01-103

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 8-23-01 Date Due: 9-22-01

		A	B	C		D			E		F	G	H		
Refrigerator #		1	5	5		5			5		5	5	5		5
#/Type Container	Liquid														2
	Solid	1pg	1pg	1pg		1pg			1pg		1pg	1pg	1pg		1pt
Volume	Liquid														
	Solid	120	500	350		120			500		60	500	500		120
Preservatives		–	–	–		–			–		–	–	–		–
ANALYSES REQUESTED →		ORGANIC: TCL VOA	BNA	Pest/PCB	Herb	Alcohols Glycols Ketones			INORG: Metal	CN	Hex Chrome	HC	Anions	Metals by ICP	Total Cyanide
Lionville Laboratory Use Only		OA24H	OA25X	OPCB		OPPO OGPO			Mrt①		ICPU	Inorg①	ITCD		Mrt②
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															
001	B12MK9			S	8/17/01	1115	X	X	X		X	X	X	X	
002	B12MLO			S	8/17/01	1205	X	X	X		X	X	X	X	
003	B12MK9 tcp of 001			L	*	–									✓
004	B12MLO 1 002			↓	↓	↓									✓

Special Instructions: Saf B01-103

FEDEX NOS. + TEMPS

4235 7954 6690 5.2°
6667 3.4°
6678 5.4°
6715 3.8°
6704 4.3°
6689 5.0°

Run matrix QC

*See labchron

DATE/REVISIONS:

Inorg① 1. ICN03, ICN02, INH3N, ICOTO, IPH

1 2. ISED

Mrt① 3. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn

Mrt② 4. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V, Zn, Hg

5.

6.

Lionville Laboratory Use Only

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

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Samples Properly Preserved Y or N

5) Received Within Holding Times Y or N

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

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. ** °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

Relinquished by	Received by	Date	Time
FEDEX	[signature]	8-23-01	9150

Relinquished by	Received by	Date	Time

COMPOSITE WASTE

ORIGINAL

DEWATTER

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-07	Page 1 of 1

Collector: FAHLBERG	Company Contact: D Weekes — Telephone No.: 372-9130	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	Air Quality ☐
Ice Chest No.: ERC99.065	Field Logbook No.: EL 1517-2 — COA: JRCRA14114	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA	Offsite Property No.: A010437	Bill of Lading/Air Bill No.: 9235795 4-6667	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 8/17/01. Collector not available to relinquish samples on 8/22/01 for shipment. RT 8-22-01

SAMPLE ANALYSIS

Preservation				Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None		
Type of Container				aG	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)				1	1	1	1	1	1	1	1	1		
Volume				60mL	120mL	120mL	250mL	500mL	500mL	500mL	500mL	1000mL		
SAMPLE ANALYSIS				Chromium Hex - 7196	See item (1) in Special Instructions.	VOA - 8260A (TCL)	PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	See item (5) in Special Instructions.	See item (6) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time											
B12MK9	SOIL	8/17/01	1115	X	X	X	X	X	X	X	X		B12MK2	
B12ML0	SOIL	8/17/01	1205	X	X	X	X	X	X	X	X		B12ML3	

RT 8-17-01 TIETO

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	8-17-01 1330	Stored in Ref 2-A	8-17-01 1330
Removed from Ref 2-A 3728	8-22-01 0900	R Thoren	8-22-01 0900
R Thoren	8-22-01 0900	FEDEX	
FEDEX	8-23-01 9:50	Calvin Damm	8-23-01 9:50

Sign/Print Names

SPECIAL INSTRUCTIONS

(1) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(2) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(3) ICP Metals - 6010A (TAL) {Aluminum, Calcium, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(4) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(5) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
~~(6) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90~~ RT 8-20-01

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: _____

SDG#: 0108L657

Work Order Number: _____ SAF# B01-103

Shipping Container ID: ERC99-065 Chain of Custody # B01-103-07

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 5.2, 3.4, 5.4, 3.8, 4.3, 5.0
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: _____
7. Sample holding times exceeded? Yes [ ] No [✓]

8. Samples have:
   ____tape ____hazard labels
   ✓ custody seals ____appropriate sample labels

9. Samples are:
   ✓ in good condition ____leaking
   ____broken ____have air bubbles

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

Sample Custodian/Laboratory: Carla Heimuf Date: 8-23-01

Telephoned to: _____ On _____ By _____

OCT 2001
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1470

DATE RECEIVED: 08/23/01 LVL LOT # :0108L657

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12MK9						
TCLP	001	S	01LTO106	08/17/01	08/30/01	08/31/01
ALUMINUM, TOTAL	001	S	01L0562	08/17/01	09/08/01	09/11/01
ALUMINUM, TOTAL	001 REP	S	01L0562	08/17/01	09/08/01	09/11/01
ALUMINUM, TOTAL	001 MS	S	01L0562	08/17/01	09/08/01	09/11/01
BISMUTH, TOTAL	001	S	01L0562	08/17/01	09/08/01	09/11/01
BISMUTH, TOTAL REP	001 REP	S	01L0562	08/17/01	09/08/01	09/11/01
BISMUTH, TOTAL SPIKE	001 MS	S	01L0562	08/17/01	09/08/01	09/11/01
CALCIUM, TOTAL	001	S	01L0562	08/17/01	09/08/01	09/11/01
CALCIUM, TOTAL	001 REP	S	01L0562	08/17/01	09/08/01	09/11/01
CALCIUM, TOTAL	001 MS	S	01L0562	08/17/01	09/08/01	09/11/01
COPPER, TOTAL	001	S	01L0562	08/17/01	09/08/01	09/11/01
COPPER, TOTAL	001 REP	S	01L0562	08/17/01	09/08/01	09/11/01
COPPER, TOTAL	001 MS	S	01L0562	08/17/01	09/08/01	09/11/01
IRON, TOTAL	001	S	01L0562	08/17/01	09/08/01	09/11/01
IRON, TOTAL	001 REP	S	01L0562	08/17/01	09/08/01	09/11/01
IRON, TOTAL	001 MS	S	01L0562	08/17/01	09/08/01	09/11/01
POTASSIUM, TOTAL	001	S	01L0562	08/17/01	09/08/01	09/11/01
POTASSIUM, TOTAL	001 REP	S	01L0562	08/17/01	09/08/01	09/11/01
POTASSIUM, TOTAL	001 MS	S	01L0562	08/17/01	09/08/01	09/11/01
MAGNESIUM, TOTAL	001	S	01L0562	08/17/01	09/08/01	09/11/01
MAGNESIUM, TOTAL	001 REP	S	01L0562	08/17/01	09/08/01	09/11/01
MAGNESIUM, TOTAL	001 MS	S	01L0562	08/17/01	09/08/01	09/11/01
MANGANESE, TOTAL	001	S	01L0562	08/17/01	09/08/01	09/11/01
MANGANESE, TOTAL	001 REP	S	01L0562	08/17/01	09/08/01	09/11/01
MANGANESE, TOTAL	001 MS	S	01L0562	08/17/01	09/08/01	09/11/01
MOLYBDENUM, TOTAL	001	S	01L0562	08/17/01	09/08/01	09/11/01
MOLYBDENUM, TOTAL	001 REP	S	01L0562	08/17/01	09/08/01	09/11/01
MOLYBDENUM, TOTAL	001 MS	S	01L0562	08/17/01	09/08/01	09/11/01
SODIUM, TOTAL	001	S	01L0562	08/17/01	09/08/01	09/11/01
SODIUM, TOTAL	001 REP	S	01L0562	08/17/01	09/08/01	09/11/01
SODIUM, TOTAL	001 MS	S	01L0562	08/17/01	09/08/01	09/11/01
TIN, TOTAL	001	S	01L0562	08/17/01	09/08/01	09/11/01
TIN, TOTAL	001 REP	S	01L0562	08/17/01	09/08/01	09/11/01
TIN, TOTAL	001 MS	S	01L0562	08/17/01	09/08/01	09/11/01
B12ML0						
TCLP	002	S	01LTO106	08/17/01	08/30/01	08/31/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1470

DATE RECEIVED: 08/23/01 LVL LOT # :0108L657

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ALUMINUM, TOTAL	002	S	01L0562	08/17/01	09/08/01	09/11/01
BISMUTH, TOTAL	002	S	01L0562	08/17/01	09/08/01	09/11/01
CALCIUM, TOTAL	002	S	01L0562	08/17/01	09/08/01	09/11/01
COPPER, TOTAL	002	S	01L0562	08/17/01	09/08/01	09/11/01
IRON, TOTAL	002	S	01L0562	08/17/01	09/08/01	09/11/01
POTASSIUM, TOTAL	002	S	01L0562	08/17/01	09/08/01	09/11/01
MAGNESIUM, TOTAL	002	S	01L0562	08/17/01	09/08/01	09/11/01
MANGANESE, TOTAL	002	S	01L0562	08/17/01	09/08/01	09/11/01
MOLYBDENUM, TOTAL	002	S	01L0562	08/17/01	09/08/01	09/11/01
SODIUM, TOTAL	002	S	01L0562	08/17/01	09/08/01	09/11/01
TIN, TOTAL	002	S	01L0562	08/17/01	09/08/01	09/11/01
B12MK9						
SILVER, TCLP LEACHAT	003	W	01L0560	08/31/01	09/07/01	09/10/01
SILVER, TCLP LEACHAT	003 REP	W	01L0560	08/31/01	09/07/01	09/10/01
SILVER, TCLP LEACHAT	003 MS	W	01L0560	08/31/01	09/07/01	09/10/01
BARIUM, TCLP LEACHAT	003	W	01L0560	08/31/01	09/07/01	09/10/01
BARIUM, TCLP LEACHAT	003 REP	W	01L0560	08/31/01	09/07/01	09/10/01
BARIUM, TCLP LEACHAT	003 MS	W	01L0560	08/31/01	09/07/01	09/10/01
BERYLLIUM, TCLP LEAC	003	W	01L0560	08/31/01	09/07/01	09/10/01
BERYLLIUM, TCLP LEAC	003 REP	W	01L0560	08/31/01	09/07/01	09/10/01
BERYLLIUM, TCLP LEAC	003 MS	W	01L0560	08/31/01	09/07/01	09/10/01
CADMIUM, TCLP LEACHA	003	W	01L0560	08/31/01	09/07/01	09/10/01
CADMIUM, TCLP LEACHA	003 REP	W	01L0560	08/31/01	09/07/01	09/10/01
CADMIUM, TCLP LEACHA	003 MS	W	01L0560	08/31/01	09/07/01	09/10/01
CHROMIUM, TCLP LEACH	003	W	01L0560	08/31/01	09/07/01	09/10/01
CHROMIUM, TCLP LEACH	003 REP	W	01L0560	08/31/01	09/07/01	09/10/01
CHROMIUM, TCLP LEACH	003 MS	W	01L0560	08/31/01	09/07/01	09/10/01
MERCURY, TCLP LEACHA	003	W	01C0271	08/31/01	09/05/01	09/06/01
MERCURY, TCLP LEACHA	003 REP	W	01C0271	08/31/01	09/05/01	09/06/01
MERCURY, TCLP LEACHA	003 MS	W	01C0271	08/31/01	09/05/01	09/06/01
NICKEL, TCLP LEACHAT	003	W	01L0560	08/31/01	09/07/01	09/10/01
NICKEL, TCLP LEACHAT	003 REP	W	01L0560	08/31/01	09/07/01	09/10/01
NICKEL, TCLP LEACHAT	003 MS	W	01L0560	08/31/01	09/07/01	09/10/01
LEAD, TCLP LEACHATE	003	W	01L0560	08/31/01	09/07/01	09/10/01
LEAD, TCLP LEACHATE	003 REP	W	01L0560	08/31/01	09/07/01	09/10/01
LEAD, TCLP LEACHATE	003 MS	W	01L0560	08/31/01	09/07/01	09/10/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1470

DATE RECEIVED: 08/23/01 LVL LOT # :0108L657

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ANTIMONY, TCLP LEACH	003	W	01L0560	08/31/01	09/07/01	09/10/01
ANTIMONY, TCLP LEACH	003 REP	W	01L0560	08/31/01	09/07/01	09/10/01
ANTIMONY, TCLP LEACH	003 MS	W	01L0560	08/31/01	09/07/01	09/10/01
SELENIUM, TCLP LEACH	003	W	01L0560	08/31/01	09/07/01	09/10/01
SELENIUM, TCLP LEACH	003 REP	W	01L0560	08/31/01	09/07/01	09/10/01
SELENIUM, TCLP LEACH	003 MS	W	01L0560	08/31/01	09/07/01	09/10/01
VANADIUM, TCLP LEACH	003	W	01L0560	08/31/01	09/07/01	09/10/01
VANADIUM, TCLP LEACH	003 REP	W	01L0560	08/31/01	09/07/01	09/10/01
VANADIUM, TCLP LEACH	003 MS	W	01L0560	08/31/01	09/07/01	09/10/01
ZINC, TCLP LEACHATE	003	W	01L0560	08/31/01	09/07/01	09/10/01
ZINC, TCLP LEACHATE	003 REP	W	01L0560	08/31/01	09/07/01	09/10/01
ZINC, TCLP LEACHATE	003 MS	W	01L0560	08/31/01	09/07/01	09/10/01
B12ML0						
SILVER, TCLP LEACHAT	004	W	01L0560	08/31/01	09/07/01	09/10/01
BARIUM, TCLP LEACHAT	004	W	01L0560	08/31/01	09/07/01	09/10/01
BERYLLIUM, TCLP LEAC	004	W	01L0560	08/31/01	09/07/01	09/10/01
CADMIUM, TCLP LEACHA	004	W	01L0560	08/31/01	09/07/01	09/10/01
CHROMIUM, TCLP LEACH	004	W	01L0560	08/31/01	09/07/01	09/10/01
MERCURY, TCLP LEACHA	004	W	01C0271	08/31/01	09/05/01	09/06/01
NICKEL, TCLP LEACHAT	004	W	01L0560	08/31/01	09/07/01	09/10/01
LEAD, TCLP LEACHATE	004	W	01L0560	08/31/01	09/07/01	09/10/01
ANTIMONY, TCLP LEACH	004	W	01L0560	08/31/01	09/07/01	09/10/01
SELENIUM, TCLP LEACH	004	W	01L0560	08/31/01	09/07/01	09/10/01
VANADIUM, TCLP LEACH	004	W	01L0560	08/31/01	09/07/01	09/10/01
ZINC, TCLP LEACHATE	004	W	01L0560	08/31/01	09/07/01	09/10/01

LAB QC:

ALUMINUM LABORTORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
ALUMINUM, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
BISMUTH, LCS	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
BISMUTH, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
CALCIUM LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
CALCIUM, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
COPPER LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
COPPER, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1470

DATE RECEIVED: 08/23/01 LVL LOT # :0108L657

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
IRON LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
IRON, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
POTASSIUM LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
POTASSIUM, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
MAGNESIUM LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
MAGNESIUM, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
MANGANESE LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
MANGANESE, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
MOLYBDENUM LABORATOR	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
MOLYBDENUM, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
SODIUM LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
SODIUM, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
TIN LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
TIN, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
SILVER LABORATORY	LC1 BS	W	01L0560	N/A	09/07/01	09/10/01
SILVER, TCLP LEACHAT	MB1	W	01L0560	N/A	09/07/01	09/10/01
SILVER, TCLP LEACHAT	MB2	W	01L0560	N/A	09/07/01	09/10/01
SILVER, TCLP LEACHAT	MB3	W	01L0560	N/A	09/07/01	09/10/01
BARIUM LABORATORY	LC1 BS	W	01L0560	N/A	09/07/01	09/10/01
BARIUM, TCLP LEACHAT	MB1	W	01L0560	N/A	09/07/01	09/10/01
BARIUM, TCLP LEACHAT	MB2	W	01L0560	N/A	09/07/01	09/10/01
BARIUM, TCLP LEACHAT	MB3	W	01L0560	N/A	09/07/01	09/10/01
BERYLLIUM LABORATORY	LC1 BS	W	01L0560	N/A	09/07/01	09/10/01
BERYLLIUM, TCLP LEAC	MB1	W	01L0560	N/A	09/07/01	09/10/01
BERYLLIUM, TCLP LEAC	MB2	W	01L0560	N/A	09/07/01	09/10/01
BERYLLIUM, TCLP LEAC	MB3	W	01L0560	N/A	09/07/01	09/10/01
CADMIUM LABORATORY	LC1 BS	W	01L0560	N/A	09/07/01	09/10/01
CADMIUM, TCLP LEACHA	MB1	W	01L0560	N/A	09/07/01	09/10/01
CADMIUM, TCLP LEACHA	MB2	W	01L0560	N/A	09/07/01	09/10/01
CADMIUM, TCLP LEACHA	MB3	W	01L0560	N/A	09/07/01	09/10/01
CHROMIUM LABORATORY	LC1 BS	W	01L0560	N/A	09/07/01	09/10/01
CHROMIUM, TCLP LEACH	MB1	W	01L0560	N/A	09/07/01	09/10/01
CHROMIUM, TCLP LEACH	MB2	W	01L0560	N/A	09/07/01	09/10/01
CHROMIUM, TCLP LEACH	MB3	W	01L0560	N/A	09/07/01	09/10/01
MERCURY LABORATORY	LC1 BS	W	01C0271	N/A	09/05/01	09/06/01
MERCURY, TOTAL	MB1	W	01C0271	N/A	09/05/01	09/06/01
MERCURY, TCLP LEACHA	MB2	W	01C0271	N/A	09/05/01	09/06/01
MERCURY, TCLP LEACHA	MB3	W	01C0271	N/A	09/05/01	09/06/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1470

DATE RECEIVED: 08/23/01 LVL LOT # :0108L657

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NICKEL LABORATORY	LC1 BS	W	01L0560	N/A	09/07/01	09/10/01
NICKEL, TCLP LEACHAT	MB1	W	01L0560	N/A	09/07/01	09/10/01
NICKEL, TCLP LEACHAT	MB2	W	01L0560	N/A	09/07/01	09/10/01
NICKEL, TCLP LEACHAT	MB3	W	01L0560	N/A	09/07/01	09/10/01
LEAD LABORATORY	LC1 BS	W	01L0560	N/A	09/07/01	09/10/01
LEAD, TCLP LEACHATE	MB1	W	01L0560	N/A	09/07/01	09/10/01
LEAD, TCLP LEACHATE	MB2	W	01L0560	N/A	09/07/01	09/10/01
LEAD, TCLP LEACHATE	MB3	W	01L0560	N/A	09/07/01	09/10/01
ANTIMONY LABORATORY	LC1 BS	W	01L0560	N/A	09/07/01	09/10/01
ANTIMONY, TCLP LEACH	MB1	W	01L0560	N/A	09/07/01	09/10/01
ANTIMONY, TCLP LEACH	MB2	W	01L0560	N/A	09/07/01	09/10/01
ANTIMONY, TCLP LEACH	MB3	W	01L0560	N/A	09/07/01	09/10/01
SELENIUM LABORATORY	LC1 BS	W	01L0560	N/A	09/07/01	09/10/01
SELENIUM, TCLP LEACH	MB1	W	01L0560	N/A	09/07/01	09/10/01
SELENIUM, TCLP LEACH	MB2	W	01L0560	N/A	09/07/01	09/10/01
SELENIUM, TCLP LEACH	MB3	W	01L0560	N/A	09/07/01	09/10/01
VANADIUM LABORATORY	LC1 BS	W	01L0560	N/A	09/07/01	09/10/01
VANADIUM, TCLP LEACH	MB1	W	01L0560	N/A	09/07/01	09/10/01
VANADIUM, TCLP LEACH	MB2	W	01L0560	N/A	09/07/01	09/10/01
VANADIUM, TCLP LEACH	MB3	W	01L0560	N/A	09/07/01	09/10/01
ZINC LABORATORY	LC1 BS	W	01L0560	N/A	09/07/01	09/10/01
ZINC, TCLP LEACHATE	MB1	W	01L0560	N/A	09/07/01	09/10/01
ZINC, TCLP LEACHATE	MB2	W	01L0560	N/A	09/07/01	09/10/01
ZINC, TCLP LEACHATE	MB3	W	01L0560	N/A	09/07/01	09/10/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-103
LVL#: 0108L657
SDG/SAF#: H1470/B01-103

W.O.#: 11343-606-001-9999-00
Date Received: 08-23-01

METALS CASE NARRATIVE

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

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

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

4. All cooler temperatures have been recorded on the Chain of Custody.

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

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

7. The preparation/method blanks for 2 analytes were outside method criteria. {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a). The soil MB, 01L0562, results for Sodium and Tin were greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and all samples for Tin and sample B12ML0 for Sodium read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.

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

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

10. The matrix spike (MS) recoveries for 3 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B12MK9	Aluminum	20,000	108.0
	Calcium	20,000	112.0
	Iron	20,000	120.6

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

13. The TCLP extract from sample B12MK9 was selected for the matrix spike (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria.

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

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

09-19-01
Date

gmb/m08-657

LVLI
LIONVILLE LABORATORY INC

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 0108L657

Leaching Procedure: __1310 ✓1311 __1312 __Other:_____

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

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

Metals Analysis Methods

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

Other:_____ Method:_____

08

L-WI-033/M-03/01

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

Q QUALIFIERS

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

M = Duplicate injection precision not met.

N = Spiked sample recovery not within control limits.

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

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

* = Duplicate analysis not within control limits.

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

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

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/17/01

CLIENT: TNUHANFORD B01-103 H1470 LVL LOT #: 0108L657

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12MK9	Aluminum, Total	9040	MG/KG	1.7	1.0
		Bismuth, Total	0.33 u	MG/KG	0.33	1.0
		Calcium, Total	9310	MG/KG	0.84	1.0
		Copper, Total	13.0	MG/KG	0.05	1.0
		Iron, Total	19400	MG/KG	1.7	1.0
		Potassium, Total	2110	MG/KG	1.1	1.0
		Magnesium, Total	5870	MG/KG	0.86	1.0
		Manganese, Total	354	MG/KG	0.01	1.0
		Molybdenum, Total	1.2	MG/KG	0.11	1.0
		Sodium, Total	312	MG/KG	0.17	1.0
		Tin, Total	1.7	MG/KG	0.42	1.0
-002	B12ML0	Aluminum, Total	2650	MG/KG	1.6	1.0
		Bismuth, Total	0.31 u	MG/KG	0.31	1.0
		Calcium, Total	1260	MG/KG	0.78	1.0
		Copper, Total	4.8	MG/KG	0.05	1.0
		Iron, Total	6040	MG/KG	1.6	1.0
		Potassium, Total	434	MG/KG	1.1	1.0
		Magnesium, Total	1610	MG/KG	0.80	1.0
		Manganese, Total	91.7	MG/KG	0.01	1.0
		Molybdenum, Total	1.1	MG/KG	0.10	1.0
		Sodium, Total	181	MG/KG	0.16	1.0
		Tin, Total	1.3	MG/KG	0.39	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/17/01

CLIENT: TNUHANFORD B01-103 H1470 LVL LOT #: 0108L657

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B12MK9	Silver, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Barium, TCLP Leachate	811		UG/L	0.60	6.0
		Beryllium,TCLP Leachate	1.2	u	UG/L	1.2	6.0
		Cadmium, TCLP Leachate	2.4		UG/L	1.8	6.0
		Chromium, TCLP Leachate	8.4	u	UG/L	8.4	6.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Nickel, TCLP Leachate	27.7		UG/L	10.2	6.0
		Lead, TCLP Leachate	14.4	u	UG/L	14.4	6.0
		Antimony, TCLP Leachate	13.8	u	UG/L	13.8	6.0
		Selenium, TCLP Leachate	19.2	u	UG/L	19.2	6.0
		Vanadium, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Zinc, TCLP Leachate	33.4		UG/L	2.4	6.0
-004	B12ML0	Silver, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Barium, TCLP Leachate	232		UG/L	0.60	6.0
		Beryllium,TCLP Leachate	1.2	u	UG/L	1.2	6.0
		Cadmium, TCLP Leachate	1.8	u	UG/L	1.8	6.0
		Chromium, TCLP Leachate	8.7		UG/L	8.4	6.0
		Mercury, TCLP Leachate	0.23		UG/L	0.10	1.0
		Nickel, TCLP Leachate	10.2	u	UG/L	10.2	6.0
		Lead, TCLP Leachate	14.4	u	UG/L	14.4	6.0
		Antimony, TCLP Leachate	13.8	u	UG/L	13.8	6.0
		Selenium, TCLP Leachate	19.2	u	UG/L	19.2	6.0
		Vanadium, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Zinc, TCLP Leachate	12.4		UG/L	2.4	6.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/17/01

CLIENT: TNUHANFORD B01-103 H1470 LVL LOT #: 0108L657

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0562-MB1	Aluminum, Total	2.1	MG/KG	1.6	1.0
		Bismuth, Total	0.31 u	MG/KG	0.31	1.0
		Calcium, Total	3.0	MG/KG	0.78	1.0
		Copper, Total	0.05	MG/KG	0.05	1.0
		Iron, Total	6.3	MG/KG	1.6	1.0
		Potassium, Total	2.2	MG/KG	1.1	1.0
		Magnesium, Total	0.95	MG/KG	0.80	1.0
		Manganese, Total	0.02	MG/KG	0.01	1.0
		Molybdenum, Total	0.10 u	MG/KG	0.10	1.0
		Sodium, Total	9.7	MG/KG	0.16	1.0
		Tin, Total	1.4	MG/KG	0.39	1.0
BLANK1	01L0560-MB1	Silver, TCLP Leachate	0.50 u	UG/L	0.50	1.0
		Barium, TCLP Leachate	0.10 u	UG/L	0.10	1.0
		Beryllium,TCLP Leachate	0.20 u	UG/L	0.20	1.0
		Cadmium, TCLP Leachate	0.30 u	UG/L	0.30	1.0
		Chromium, TCLP Leachate	1.4 u	UG/L	1.4	1.0
		Nickel, TCLP Leachate	1.7 u	UG/L	1.7	1.0
		Lead, TCLP Leachate	2.4 u	UG/L	2.4	1.0
		Antimony, TCLP Leachate	2.3 u	UG/L	2.3	1.0
		Selenium, TCLP Leachate	3.2 u	UG/L	3.2	1.0
		Vanadium, TCLP Leachate	0.50 u	UG/L	0.50	1.0
		Zinc, TCLP Leachate	3.6	UG/L	0.40	1.0
BLANK2	01L0560-MB2	Silver, TCLP Leachate	3.0 u	UG/L	3.0	6.0
		Barium, TCLP Leachate	0.84	UG/L	0.60	6.0
		Beryllium,TCLP Leachate	1.2 u	UG/L	1.2	6.0
		Cadmium, TCLP Leachate	1.8 u	UG/L	1.8	6.0
		Chromium, TCLP Leachate	8.4 u	UG/L	8.4	6.0
		Nickel, TCLP Leachate	10.2 u	UG/L	10.2	6.0
		Lead, TCLP Leachate	14.4 u	UG/L	14.4	6.0
		Antimony, TCLP Leachate	13.8 u	UG/L	13.8	6.0
		Selenium, TCLP Leachate	19.2 u	UG/L	19.2	6.0
		Vanadium, TCLP Leachate	3.0 u	UG/L	3.0	6.0
		Zinc, TCLP Leachate	6.2	UG/L	2.4	6.0
BLANK3	01L0560-MB3	Silver, TCLP Leachate	3.0 u	UG/L	3.0	6.0
		Barium, TCLP Leachate	0.60 u	UG/L	0.60	6.0
		Beryllium,TCLP Leachate	1.2 u	UG/L	1.2	6.0
		Cadmium, TCLP Leachate	1.8 u	UG/L	1.8	6.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/17/01

CLIENT: TNUHANFORD B01-103 H1470 LVL LOT #: 0108L657

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK3	01L0560-MB3	Chromium, TCLP Leachate	8.4	u	UG/L	8.4	6.0
		Nickel, TCLP Leachate	10.2	u	UG/L	10.2	6.0
		Lead, TCLP Leachate	14.4	u	UG/L	14.4	6.0
		Antimony, TCLP Leachate	13.8	u	UG/L	13.8	6.0
		Selenium, TCLP Leachate	19.2	u	UG/L	19.2	6.0
		Vanadium, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Zinc, TCLP Leachate	5.9		UG/L	2.4	6.0
BLANK1	01C0271-MB1	Mercury, Total	0.10	u	UG/L	0.10	1.0
BLANK2	01C0271-MB2	Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
BLANK3	01C0271-MB3	Mercury, TCLP Leachate	1.3		UG/L	0.10	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/17/01

CLIENT: TNUHANFORD B01-103 H1470 LVL LOT #: 0108L657

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12MK9	Aluminum, Total	10200	9040	215	560.4*	1.0
		Bismuth, Total	499	0.33u	537	93.0	1.0
		Calcium, Total	13100	9310	2680	139.4	1.0
		Copper, Total	38.7	13.0	26.9	95.5	1.0
		Iron, Total	19600	19400	107	167.7*	1.0
		Potassium, Total	4860	2110	2680	102.5	1.0
		Magnesium, Total	8890	5870	2680	112.4	1.0
		Manganese, Total	395	354	53.7	77.8*	1.0
		Molybdenum, Total	101	1.2	107	93.2	1.0
		Sodium, Total	3000	312	2680	100.2	1.0
		Tin, Total	104	1.7	107	95.1	1.0
-003	B12MK9	Silver, TCLP Leachate	2980	3.0 u	5000	59.6	6.0
		Barium, TCLP Leachate	96200	811	100000	95.4	6.0
		Beryllium, TCLP Leacha	1050	1.2 u	1000	104.8	6.0
		Cadmium, TCLP Leachate	1030	2.4	1000	103.2	6.0
		Chromium, TCLP Leachat	5110	8.4 u	5000	102.1	6.0
		Mercury, TCLP Leachate	178	0.10u	200	89.0	50.0
		Nickel, TCLP Leachate	1070	27.7	1000	104.5	6.0
		Lead, TCLP Leachate	5170	14.4 u	5000	103.3	6.0
		Antimony, TCLP Leachat	1050	13.8 u	1000	104.8	6.0
		Selenium, TCLP Leachat	1020	19.2 u	1000	102.1	6.0
		Vanadium, TCLP Leachat	1040	3.0 u	1000	104.4	6.0
		Zinc, TCLP Leachate	1080	33.4	1000	104.8	6.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/17/01

CLIENT: TNUHANFORD B01-103 H1470 LVL LOT #: 0108L657

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12MK9	Aluminum, Total	9040	9340	3.2	1.0
		Bismuth, Total	0.33u	0.33u	NC	1.0
		Calcium, Total	9310	9270	0.36	1.0
		Copper, Total	13.0	12.4	4.7	1.0
		Iron, Total	19400	19500	0.61	1.0
		Potassium, Total	2110	2160	2.4	1.0
		Magnesium, Total	5870	5990	2.0	1.0
		Manganese, Total	354	335	5.4	1.0
		Molybdenum, Total	1.2	1.2	0.00	1.0
		Sodium, Total	312	330	5.8	1.0
		Tin, Total	1.7	1.8	5.7	1.0
-003REP	B12MK9	Silver, TCLP Leachate	3.0 u	3.0 u	NC	6.0
		Barium, TCLP Leachate	811	760	6.5	6.0
		Beryllium TCLP Leachate	1.2 u	1.2 u	NC	6.0
		Cadmium, TCLP Leachate	2.4	2.1	13.3	6.0
		Chromium, TCLP Leachate	8.4 u	8.4 u	NC	6.0
		Mercury, TCLP Leachate	0.10u	0.10u	NC	1.0
		Nickel, Leachate	27.7	21.2	26.6	6.0
		Lead, TCLP Leachate	14.4 u	14.4 u	NC	6.0
		Antimony, Leachate	13.8 u	13.8 u	NC	6.0
		Selenium, TCLP Leachate	19.2 u	19.2 u	NC	6.0
		Vanadium, TCLP Leachate	3.0 u	3.0 u	NC	6.0
		Zinc, Leachate	33.4	12.3	92.3	6.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/17/01

CLIENT: TNUHANFORD B01-103 H1470 *LVL LOT #: 0109L657*

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0562-LC1	Aluminum, LCS	496	500	MG/KG	99.1
		Bismuth, LCS	484	500	MG/KG	96.9
		Calcium, LCS	2430	2500	MG/KG	97.1
		Copper, LCS	123	125	MG/KG	98.1
		Iron, LCS	493	500	MG/KG	98.6
		Potassium, LCS	2520	2500	MG/KG	100.8
		Magnesium, LCS	2500	2500	MG/KG	99.8
		Manganese, LCS	75.5	75.0	MG/KG	100.7
		Molybdenum, LCS	494	500	MG/KG	98.8
		Sodium, LCS	2450	2500	MG/KG	98.0
		Tin, LCS	489	500	MG/KG	97.8
LCS1	01L0560-LC1	Silver, LCS	480	500	UG/L	96.1
		Barium, LCS	4690	5000	UG/L	93.8
		Beryllium, LCS	250	250	UG/L	99.9
		Cadmium, LCS	247	250	UG/L	98.7
		Chromium, LCS	494	500	UG/L	98.7
		Nickel, LCS	1970	2000	UG/L	98.6
		Lead, LCS	2470	2500	UG/L	98.7
		Antimony, LCS	2930	3000	UG/L	97.6
		Selenium, LCS	9550	10000	UG/L	95.5
		Vanadium, LCS	2490	2500	UG/L	99.7
		Zinc, LCS	980	1000	UG/L	98.0
LCS1	01C0271-LC1	Mercury, LCS	4.9	5.0	UG/L	98.3

Lionville Laboratory Use Only
01081657

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI Lionville Laboratory Inc.

Client: TNU-Hanford Bol-103
Est. Final Proj. Sampling Date:
Project #: 11343-0006-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 8-23-01 Date Due: 9-22-01

		A	B	C		D			E		F	G	H			
Refrigerator #		1	5	5		5			5		5	5	5		5	
#/Type Container	Liquid														2	
	Solid	1ag	1ag	1ag		1ag			1ag		1Ag	1ag	1ag		1	
Volume	Liquid														0	
	Solid	120	500	350		120			500		60	500	500		50	
Preservatives		—	—	—		—			—		—	—	—		—	
ANALYSES REQUESTED		ORGANIC: Tot VOA	BNA	Pest/PCB	Herb	Alcohols Glycols Ketones			INORG: Metal	CN	Hex Chrome	HC	Anions Metals by IC		1 ICP/CN	
		Lionville Laboratory Use Only														
		0824H	0825X	OPCB		OPRO OGRO			Mrt(1)		ICPO	Inorg(1)	ITCP		Mrt(2)	

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected													
001	B12MK9			S	8/17/01	1115	X	X	X		X		X		X	X	X		
002	B12MLO			S	8/17/01	1205	X	X	X		X		X		X	X	X		
003	B12MK9 tcp of 001			L	*	-													✓
004	B12MLO 1 002			↓	↓	↓													✓

Special Instructions: SOF Bol-103
FEDEX NOS. + TEMPS
4235 7954 6690 5.2°
6667 3.4°
6678 5.4°
6715 3.8°
6704 4.3°
6689 5.0°
Run Matrix QC
*See labchron

DATE/REVISIONS:
Inorg(1) 1. ICNO3, ICNO2, INH3D, ICNTO, IPH
2. ISFD
Met(1) 3. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
Met(2) 4. Ba, Cd, Cr, Pb, Sr, Ag, Sb, Be, Ni, V, Zn, Hg
5.
6.

Lionville Laboratory Use Only

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

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

Relinquished by	Received by	Date	Time
Fedex	[signature]	8-23-01	9150

Relinquished by	Received by	Date	Time

COMPOSITE ORIGINAL

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-07	Page 1 of 1

Collector: FAHLBERG	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	
Ice Chest No.: ERC99-065	Field Logbook No.: EL 1517-2	COA: JRCRA14114	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A010437	Bill of Lading/Air Bill No.: 4235 7954 - 6667	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 8/17/01. Collector not available to relinquish samples on 8/22/01 for shipment. RT 8-22-01

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

Sample No.	Matrix*	Sample Date	Sample Time									
B12MK9	SOIL	8/17/01	1115	X	X	X	X	X	X	X	X	B12MK2
B12ML0	SOIL	8/17/01	1205	X	X	X	X	X	X	X	X	B12ML3

8-17-01 TICTO

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg R. Fahlberg	1330 8-17-01	Ref Stordin Ref 2-A	1350 8-17-01
Relinquished By: Removed from Ref 2-A 3728	0400 8-22-01	Received By: R Thorez	0400 8-22-01
Relinquished By: R Thorez	0400 8-22-01	Received By: FEDEX	
Relinquished By: FEDEX	8-23-01 9:50	Received By: Carl Hamp	8-23-01 9:50
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(2) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(3) ICP Metals - 6010A (TAL) {Aluminum, Calcium, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(4) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(5) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
~~(6) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90~~ RT 8-20-01

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

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

BHI-EE-011 (10/99)

OCT 2001
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1470

DATE RECEIVED: 08/23/01 LVL LOT # :0108L657

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12MK9						
% SOLIDS	001	S	01L%S111	08/17/01	08/24/01	08/27/01
% SOLIDS	001 REP	S	01L%S111	08/17/01	08/24/01	08/27/01
NITRITE BY IC	001	S	01LICE60	08/17/01	09/12/01	09/12/01
NITRITE BY IC	001 REP	S	01LICE60	08/17/01	09/12/01	09/12/01
NITRITE BY IC	001 MS	S	01LICE60	08/17/01	09/12/01	09/12/01
NITRATE BY IC	001	S	01LICE60	08/17/01	09/12/01	09/12/01
NITRATE BY IC	001 REP	S	01LICE60	08/17/01	09/12/01	09/12/01
NITRATE BY IC	001 MS	S	01LICE60	08/17/01	09/12/01	09/12/01
TOTAL CYANIDE	001	S	01LCB81	08/17/01	08/31/01	08/31/01
TOTAL CYANIDE	001 REP	S	01LCB81	08/17/01	08/31/01	08/31/01
TOTAL CYANIDE	001 MS	S	01LCB81	08/17/01	08/31/01	08/31/01
CHROMIUM VI	001	S	01LVI074	08/17/01	09/10/01	09/10/01
AMMONIA	001	S	01LAM042	08/17/01	09/06/01	09/06/01
AMMONIA	001 REP	S	01LAM042	08/17/01	09/06/01	09/06/01
AMMONIA	001 MS	S	01LAM042	08/17/01	09/06/01	09/06/01
PH	001	S	01LPH059	08/17/01	08/31/01	08/31/01
PH	001 REP	S	01LPH059	08/17/01	08/31/01	08/31/01
SULFIDE	001	S	01LSDA44	08/17/01	08/30/01	08/30/01
TCLP	001	S	01LTO106	08/17/01	08/30/01	08/31/01
B12ML0						
% SOLIDS	002	S	01L%S111	08/17/01	08/24/01	08/27/01
NITRITE BY IC	002	S	01LICE60	08/17/01	09/12/01	09/12/01
NITRATE BY IC	002	S	01LICE60	08/17/01	09/12/01	09/12/01
TOTAL CYANIDE	002	S	01LCC81	08/17/01	08/31/01	08/31/01
CHROMIUM VI	002	S	01LVI074	08/17/01	09/10/01	09/10/01
CHROMIUM VI	002 REP	S	01LVI074	08/17/01	09/10/01	09/10/01
CHROMIUM VI	002 MS	S	01LVI074	08/17/01	09/10/01	09/10/01
CHROMIUM VI	002 MSD	S	01LVI074	08/17/01	09/10/01	09/10/01
AMMONIA	002	S	01LAM042	08/17/01	09/06/01	09/06/01
PH	002	S	01LPH059	08/17/01	08/31/01	08/31/01
SULFIDE	002	S	01LSDA44	08/17/01	08/30/01	08/30/01
SULFIDE	002 REP	S	01LSDA44	08/17/01	08/30/01	08/30/01
SULFIDE	002 MS	S	01LSDA44	08/17/01	08/30/01	08/30/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1470

DATE RECEIVED: 08/23/01 LVL LOT # :0108L657

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TCLP	002	S	01LTO106	08/17/01	08/30/01	08/31/01

LAB QC:

NITRITE BY IC	MB1	S	01LICE60	N/A	09/12/01	09/12/01
NITRITE BY IC	MB1 BS	S	01LICE60	N/A	09/12/01	09/12/01
NITRATE BY IC	MB1	S	01LICE60	N/A	09/12/01	09/12/01
NITRATE BY IC	MB1 BS	S	01LICE60	N/A	09/12/01	09/12/01
TOTAL CYANIDE	LCS L	S	01LCB81	N/A	08/31/01	08/31/01
TOTAL CYANIDE	LCS L	S	01LCB81	N/A	08/31/01	08/31/01
TOTAL CYANIDE	MB1	S	01LCB81	N/A	08/31/01	08/31/01
CHROMIUM VI	MB1	S	01LVI074	N/A	09/10/01	09/10/01
CHROMIUM VI	MB1 BS	S	01LVI074	N/A	09/10/01	09/10/01
CHROMIUM VI	MB1 BSD	S	01LVI074	N/A	09/10/01	09/10/01
AMMONIA	MB1	S	01LAM042	N/A	09/06/01	09/06/01
AMMONIA	MB1 BS	S	01LAM042	N/A	09/06/01	09/06/01
AMMONIA	MB1 BSD	S	01LAM042	N/A	09/06/01	09/06/01
SULFIDE	MB1	S	01LSDA44	N/A	08/30/01	08/30/01
SULFIDE	MB1 BS	S	01LSDA44	N/A	08/30/01	08/30/01
SULFIDE	MB1 BSD	S	01LSDA44	N/A	08/30/01	08/30/01
TOTAL CYANIDE	LCS L	S	01LCC81	N/A	08/31/01	08/31/01
TOTAL CYANIDE	LCS L	S	01LCC81	N/A	08/31/01	08/31/01
TOTAL CYANIDE	MB1	S	01LCC81	N/A	08/31/01	08/31/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-103 H1470
LVL#: 0108L657

W.O.#: 11343-606-001-9999-00
Date Received: 08-23-01

INORGANIC NARRATIVE

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

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

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

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

5. The method blanks were within the method criteria.

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

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

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

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

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

for Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

09-19-01
Date

njp\i08-657

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

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	✓ D2216-80		__ ILMO4.0 (e)
% Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Chromium VI		✓ 3060A/7196A	
Corrosivity __ by coupon __ by pH		__ 1110(mod) __ 9045C	
Cyanide, Total		✓ 9010B/9014	__ ILMO4.0 (e)
Cyanide, Reactive		__ Section 7.3/9014	
Halides, Extractable Organic		__ 9020B	__ EPA 600/4/84-008
Halides, Total		__ 9020B	__ EPA 600/4/84-008
EP Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Oil & Grease		__ 9071A	
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1
pH, Soil		✓ 9045C	
Sulfide, Reactive		__ Section 7.3/9030B	
Sulfide		✓ 9030B(mod)	
Specific Gravity	__ D1429-76C/	__ D5057-90	
Sulfur, Total		__ 9056	
Synthetic Preparation Leach		__ 1312	
Paint Filter		__ 9095A	

Other: Nitrate, Nitrite **Method:** EPA 300.0

Other: Ammonia **Method** 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 09/19/01

CLIENT: TNUHANFORD B01-103 H1470 LVL LOT #: 0108L657

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12MK9	% Solids	93.1	%	0.01	1.0
		Nitrite by IC	1.34 u	MG/KG	1.34	1.0
		Nitrate by IC	1.34 u	MG/KG	1.34	1.0
		Cyanide, Total	0.49 u	MG/KG	0.49	1.0
		Chromium VI	0.52	MG/KG	0.43	1.0
		Ammonia, as N	2.4 u	MG/KG	2.4	1.0
		pH	9.4	SOIL PH	0.01	1.0
		Sulfide	40.2 u	MG/KG	40.2	1.0
-002	B12ML0	% Solids	98.7	%	0.01	1.0
		Nitrite by IC	1.27 u	MG/KG	1.27	1.0
		Nitrate by IC	1.27 u	MG/KG	1.27	1.0
		Cyanide, Total	0.30 u	MG/KG	0.30	1.0
		Chromium VI	0.40 u	MG/KG	0.40	1.0
		Ammonia, as N	1.7 u	MG/KG	1.7	1.0
		pH	8.2	SOIL PH	0.01	1.0
		Sulfide	39.5 u	MG/KG	39.5	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/19/01

CLIENT: TNUHANFORD B01-103 H1470 LVL LOT #: 0108L657

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LICE60-MB1	Nitrite by IC	1.25 u	MG/KG	1.25	1.0
		Nitrate by IC	1.25 u	MG/KG	1.25	1.0
BLANK1	01LCB81-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0
BLANK10	01LVI074-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0
BLANK10	01LAM042-MB1	Ammonia, as N	2.5 u	MG/KG	2.5	1.0
BLANK10	01LSDA44-MB1	Sulfide	40.0 u	MG/KG	40.0	1.0
BLANK1	01LCC81-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/19/01

CLIENT: TNUHANFORD B01-103 H1470 LVL LOT #: 0108L657

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12MK9	Nitrite by IC	54.6	1.34u	53.7	101.7	2.0
		Nitrate by IC	54.2	1.34u	53.7	100.9	2.0
		Cyanide, Total	3.99	0.49u	4.38	91.1	1.0
		Ammonia, as N	91.8	2.4 u	95.8	95.7	1.0
-002	B12ML0	Soluble Chromium VI	4.3	0.24	4.1	101.4	1.0
		Insoluble Chromium VI	1350	0.24	1300	103.6	100
		Sulfide	443	23.8	468	89.7	1.0
BLANK10	01LICE60-MB1	Nitrite by IC	22.6	1.25u	25.0	90.4	1.0
		Nitrate by IC	24.1	1.25u	25.0	96.5	1.0
BLANK10	01LVI074-MB1	Soluble Chromium VI	3.9	0.40u	4.0	98.3	1.0
		Insoluble Chromium VI	1210	0.40u	1160	104.2	100
BLANK10	01LAM042-MB1	Ammonia, as N	104	2.5 u	100	103.8	1.0
		Ammonia, as N MSD	114	2.5 u	100	113.8	1.0
BLANK10	01LSDA44-MB1	Sulfide	477	40.0 u	508	94.0	1.0
		Sulfide MSD	501	40.0 u	508	98.7	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 09/19/01

CLIENT: TNUHANFORD B01-103 H1470 LVL LOT #: 0108L657

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	01LAM042-MB1	Ammonia, as N	103.8	113.8	9.2
BLANK10	01LSDA44-MB1	Sulfide	94.0	98.7	4.9

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/19/01

CLIENT: TNUHANFORD B01-103 H1470 LVL LOT #: 0108L657

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12MK9	% Solids	93.1	93.9	0.93	1.0
		Nitrite by IC	1.34u	1.34u	NC	1.0
		Nitrate by IC	1.34u	1.34u	NC	1.0
		Cyanide, Total	0.49u	0.51u	NC	1.0
		Ammonia, as N	2.4 u	2.6 u	NC	1.0
		pH	9.4	9.4	0.0	1.0
-002REP	B12ML0	Chromium VI	0.40u	0.40u	NC	1.0
		Sulfide	39.5 u	35.3 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/19/01

CLIENT: TNUHANFORD B01-103 H1470 LVL LOT #: 0108L657

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	01LCB81-LCS1	Cyanide, Total LCS	2.05	2.0	MG/KG	102.6
LCSS2	01LCB81-LCS2	Cyanide, Total LCS	10.4	10.0	MG/KG	104.1
LCSS1	01LCC81-LCS1	Cyanide, Total LCS	1.75	2.0	MG/KG	87.4
LCSS2	01LCC81-LCS2	Cyanide, Total LCS	9.77	10.0	MG/KG	97.7

ville Laboratory Use Only
01086657

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI Lionville Laboratory Inc.

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B01-103
Est. Final Proj. Sampling Date:
Project #: 11343-0006-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 8.23.01 Date Due: 9.22.01

		A	B	C	D	E	F	G	H
Refrigerator #		1	5	5	5	5	5	5	5
#/Type Container	Liquid								
	Solid	1 jar	1 jar	1 jar	1 jar	1 jar	1 jar	1 jar	1 jar
Volume	Liquid								
	Solid	120	500	250	120	500	60	500	500
Preservatives		–	–	–	–	–	–	–	–
ANALYSES REQUESTED		ORGANIC: Tot VOA	BNA	Pest/PCB	Herb	Alcohols Glycols Ketones	INORG: Metal	CN	Hex Chrome EC Anions Metals by ICP
Lionville Laboratory Use Only		8260HH	8270SX	8081PCB	8015 8015		Metal (1)		ICP 9 Inorg (1) ICP
Matrix Codes: W - Water, SO - Solid, SE - Sediment, SL - Sludge, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EP/TCLP Leachate, WI - Wipe, X - Other, F - Fish									

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected														
001	B12MK9			S	8/17/01	1115	X	X	X		X			X		X	X	X		
002	B12MLO			S	8/17/01	1205	X	X	X		X			X		X	X	X		
003	B12MK9 tcp of 001			L	*															✓
004	B12MLO 1 002																			✓

Special Instructions: Saf B01-103

FEDEX NOS. & TEMPS
4235 7954 6690 5.2°
6667 3.4°
6678 5.4°
6715 3.8°
6704 4.3°
6689 5.0°

Run Matrix QC
*See labchron

DATE/REVISIONS:
Inorg (1) 1. TCN03, TCN02, TNH3N, TCN70, TPH
1 2. ISED
Mrt (1) 3. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
Mrt (2) 4. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V, Zn, Hg
5.
6.

Lionville Laboratory Use Only

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

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

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

Relinquished by	Received by	Date	Time
FedEx	[signature]	8-23-01	9150

Relinquished by	Received by	Date	Time

COMPOSITE WASTE

ORIGINAL DOCUMENT

12

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-07	Page 1 of 1

Collector: FAHLBERG	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	
Ice Chest No.: ERC99-065	Field Logbook No.: EL 1517-2	COA: JRCRA14114	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A010437	Bill of Lading/Air Bill No.: 4235795 4-66667	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 8/17/01. Collector not available to relinquish samples on 8/22/01 for shipment. RT 8-22-01

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

8-17-01 TIETO

Sample No.	Matrix *	Sample Date	Sample Time									
B12MK9	SOIL	8/17/01	1115	X	X	X	X	X	X	X	X	B12MK2
B12ML0	SOIL	8/17/01	1205	X	X	X	X	X	X	X	X	B12ML3

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	1330 8-17-01	Stored in Ref 2-A	1350 8-17-01
Removed from Ref 2-A 3728	0900 8-22-01	R Thorez	0900 8-22-01
R Thorez	0900 8-22-01	FEDEX	
FEDEX	8-23-01 9:50	Carl Dennis	8-23-01 9:50

Sign/Print Names

SPECIAL INSTRUCTIONS

(1) Alcohols, Glycols, & Ketones - 8015M (Add-on) (Kerosene, Normal paraffin hydrocarbons (petroleum))
(2) IC Anions - 300.0 (Nitrate, Nitrite); Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(3) ICP Metals - 6010A (TAL) (Aluminum, Calcium, Copper, Iron, Magnesium, Manganese, Potassium, Sodium); ICP Metals - 6010A (Add-on) (Bismuth, Molybdenum, Tin)
(4) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
(5) Metals by ICP (TCLP) - 1311/6010 (Barium, Cadmium, Chromium, Lead, Selenium, Silver); Metals by ICP (TCLP) Add-on - 1311/6010 (Antimony, Beryllium, Nickel, Vanadium, Zinc); Mercury (TCLP) - 1311/7470
~~(6) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90~~ RT 8.20.01

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: _____

SDG#: 01084657

Work Order Number: _____ SAF# B01-103

Shipping Container ID: ERC99-065 Chain of Custody # B01-103-07

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 5.2, 3.4, 5.4, 3.8, 4.3, 5.0
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: _____
7. Sample holding times exceeded? Yes [ ] No [✓]

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

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

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

Sample Custodian/Laboratory: Carlos Heimuf Date: 8-23-01

Telephoned to: _____ On _____ By _____

EBERLINE
SERVICES

January 11, 2002

Ms. Joan Kessner
Bechtel Hanford Inc.
3500 George Washington Way
Richland, WA 99352
MSIN: H0-25

Reference: **P.O. #630**
Eberline Services R1-11-203-7063 SDG H1470 – Supplementary Report

Dear Ms. Kessner:

Enclosed is a supplementary data report for two solid samples designated under SAF No. B01-103 received at Eberline Services on August 23, 2001. BHI requested samples B12MK9 and B12ML0 in SDG H1470 be analyzed for tritium and isotopic uranium on November 27, 2001.

Please call if you have any questions concerning this report.

Sincerely,

Melissa Mannion

Melissa C. Mannion
Program Manager

MCM

Enclosure: Data Package

JAN 2002
RECEIVED

Analytical Services
2030 Wright Avenue
P.O. Box 4040
Richmond, California 94804-0040
(510) 235-2633 Fax (510) 235-0438
Toll Free (800) 841-5487
www.eberlineservices.com

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1470 was composed of two solid (soil) samples designated under SAF No. B01-103 with a Project Designation of: 200 Area RCRA Drilling Waste Designation.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on December 20, 2001.

2.0 ANALYSIS NOTES

2.1 Tritium Analyses

The matrix spike percent recovery (84%) was below the 3σ limits (86 to 114%), but within the laboratory protocol limits (80 to 120%). No other problems were encountered during the course of the analyses.

2.2 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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

Melissa Mannion

Melissa C. Mannion
Program Manager

1/22/02

Date

METHOD BLANK

SDG		Client	
Contact		Contract	
Lab sample id	R111203-13	Client sample id	Method Blank
Dept sample id	7063-013	Material/Matrix	SOLID

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.028	0.16	0.28	400	U	H
Uranium 233/234	U-233/234	-0.025	0.051	0.19	1.0	U	U
Uranium 235	15117-96-1	0	0.061	0.23	1.0	U	U
Uranium 238	U-238	0.025	0.051	0.19	1.0	U	U

QC-BLANK 40449

Lab id	
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/11/02

LAB CONTROL SAMPLE

SDG _____ Client _____
Contact _____ Contract _____

Lab sample id R111203-12 Client sample id Lab Control Sample
Dept sample id 7063-012 Material/Matrix _____ SOLID

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	12.2	0.40	0.27	400	J	H	12.2	0.49	100	83-117	80-120
Uranium 233/234	17.5	1.8	0.93	1.0		U	19.3	0.77	91	83-117	80-120
Uranium 235	16.2	1.7	0.22	1.0		U	15.7	0.63	103	81-119	80-120
Uranium 238	20.0	2.0	0.89	1.0		U	21.0	0.84	95	83-117	80-120

QC-LCS 40448

Lab id _____
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 01/11/02

DUPLICATE

SDG				Client	
Contact				Contract	
DUPLICATE		ORIGINAL			
Lab sample id	R111203-14	Lab sample id	R111203-01	Client sample id	B12MK9
Dept sample id	7063-014	Dept sample id	7063-001	Location/Matrix	200 East SOLID
		Received	08/23/01	Collected/Weight	08/17/01 11:15 987.8 g
% solids	93.1	% solids	93.1	Chain of custody id	B01-103-07

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Tritium	-0.001	0.056	0.094	400	U	H	0.072	0.057	0.092	U	-	
Uranium 233/234	0.557	0.24	0.18	1.0	J	U	0.681	0.29	0.22	J	20	92
Uranium 235	0.028	0.056	0.22	1.0	U	U	0.034	0.069	0.26	U	-	
Uranium 238	0.534	0.23	0.18	1.0	J	U	0.653	0.29	0.22	J	20	94

QC-DUP#1 40450

Lab id	
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/11/02

MATRIX SPIKE

SDG				Client	
Contact				Contract	
	MATRIX SPIKE		ORIGINAL		
Lab sample id	R111203-15	Lab sample id	R111203-01	Client sample id	B12MK9
Dept sample id	7063-015	Dept sample id	7063-001	Location/Matrix	200 East SOLID
		Received	08/23/01	Collected/Weight	08/17/01 11:15 987.8 g
		% solids	93.1	Chain of custody id	B01-103-07

ANALYTE	SPIKE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	ORIGINAL pCi/g	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	45.0	0.47	0.10	400	JX	H	53.2	2.1	0.072	0.057	84	86-114	60-140

QC-MS#1 40451

Lab id	
Protocol	Hanford
Version	Ver 1.0
Form	DVD-MS
Version	3.06
Report date	01/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

7063-001 B12MK9

DATA SHEET

SDG	7063	Client/Case no	Hanford	SDG H1470	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R111203-01	Client sample id	B12MK9		
Dept sample id	7063-001	Location/Matrix	200 East	SOLID	
Received	08/23/01	Collected/Weight	08/17/01 11:15	987.8 g	
% solids	93.1	Custody/SAF No	B01-103-07	B01-103	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.072	0.057	0.092	400	U	H
Uranium 233/234	U-233/234	0.681	0.29	0.22	1.0	J	U
Uranium 235	15117-96-1	0.034	0.069	0.26	1.0	U	U
Uranium 238	U-238	0.653	0.29	0.22	1.0	J	U

200 Area RCRA Drilling Waste Desig.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

7063-002 **B12ML0**

DATA SHEET

SDG	7063	Client/Case no	Hanford	SDG H1470
Contact	Melissa C. Mannion	Contract	No. 630	
Lab sample id	R111203-02	Client sample id	B12ML0	
Dept sample id	7063-002	Location/Matrix	200 East	SOLID
Received	08/23/01	Collected/Weight	08/17/01 12:05	1447 g
% solids	94.2	Custody/SAF No	B01-103-07	B01-103

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.033	0.052	0.087	400	U	H
Uranium 233/234	U-233/234	0.226	0.15	0.19	1.0	J	U
Uranium 235	15117-96-1	0	0.061	0.23	1.0	U	U
Uranium 238	U-238	0.151	0.10	0.19	1.0	U	U

200 Area RCRA Drilling Waste Desig.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

Test U Matrix SOLID
SDG 7063
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1470

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 7008-032											
B12MK9	R111203-01			7063-001	0.681 J	U	0.653 J	104	64	5	11
B12MLO	R111203-02			7063-002	0.226 J	U	U				
BLK (QC ID=40449)	R111203-13			7063-013	U	U	U				
LCS (QC ID=40448)	R111203-12			7063-012	ok	ok	ok				
Duplicate (R111203-01)	R111203-14			7063-014	ok J	- U	ok J	104	64	5	11
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
200 Area RCRA Drilling Waste Desig.								Averages 104		5	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7008-032 2σ prep error 5.0 % Reference Lab Notebook 7008 pg. 032																
B12MK9	R111203-01			0.26	0.500			83		100			105	11/30/01	11/30	SS-032
B12MLO	R111203-02			0.23	0.500			94		100			105	11/30/01	11/30	SS-033
BLK (QC ID=40449)	R111203-13			0.23	0.500			91		101				11/30/01	11/30	SS-047
LCS (QC ID=40448)	R111203-12			0.93	0.500			96		100				11/30/01	11/30	SS-041
Duplicate (R111203-01) (QC ID=40450)	R111203-14			0.22	0.500			97		101			105	11/30/01	11/30	SS-048
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.37 ± 0.62
YIELD 92 ± 11

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1470

Test H Matrix SOLID
SDG 7063
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1470

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 7008-032						
B12MK9	R111203-01			7063-001	U	
B12MLO	R111203-02			7063-002	U	
BLK (QC ID=40449)	R111203-13			7063-013	U	
LCS (QC ID=40448)	R111203-12			7063-012	ok	J
Duplicate (R111203-01)	R111203-14			7063-014	-	U
Spike (R111203-01)	R111203-15			7063-015	LOW	JX
Nominal values and limits from method				RDLs (pCi/g)	400	
200 Area RCRA Drilling Waste Desig.						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7008-032	2σ prep error 10.0 % Reference Lab Notebook 7008 pg. 032															
B12MK9	R111203-01			0.092	21.4			100		120			119	12/11/01	12/14	LSC-006
B12MLO	R111203-02			0.087	21.4			100		120			120	12/11/01	12/15	LSC-006
BLK (QC ID=40449)	R111203-13			0.28	20.0			33		120				12/11/01	12/15	LSC-006
LCS (QC ID=40448)	R111203-12			0.27	20.0			33		120				12/11/01	12/15	LSC-006
Duplicate (R111203-01) (QC ID=40450)	R111203-14			0.094	21.3			95		120			120	12/11/01	12/15	LSC-006
Spike (R111203-01) (QC ID=40451)	R111203-15			0.10	21.6			100		87			120	12/11/01	12/15	LSC-006
Nominal values and limits from method				400	20.0					25			180			

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

AVERAGES ± 2 SD FOR 6 SAMPLES				
	MDA	0.15	±	0.19
	YIELD	77	±	68

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/11/02