1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1397 was composed of one other solid sample designated under SAF No. B01-098 with a Project Designation of: REDOX Unknown Chemical Residue.

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

2.0 ANALYSIS NOTES

2.1 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.2 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.3 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

8/9/01

Date

RECEIVED
NOV 15 2001
EDMC

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1397

SDG 7035
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1397

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B126F5	200 West REDOX	SOLID		R107084-01	B01-098	B01-098-01	06/19/01 08:50
Method Blank		SOLID		R107084-03	B01-098		
Lab Control Sample		SOLID		R107084-02	B01-098		
Duplicate (R107084-01)	200 West REDOX	SOLID		R107084-04	B01-098		06/19/01 08:50

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 08/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1397

SDG 7035
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1397

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
7035	B01-098-01	B126F5	SOLID	100.0	20.0 g		07/14/01	25	R107084-01	7035-001
		Method Blank	SOLID						R107084-03	7035-003
		Lab Control Sample	SOLID						R107084-02	7035-002
		Duplicate (R107084-01)	SOLID	100.0	20.0 g		07/14/01	25	R107084-04	7035-004

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 08/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1397

SDG 7035
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1397

TEST	MATRIX	METHOD	PREPARATION ERROR BATCH	2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	6994-116	5.0	1			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6994-116	5.0	1			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6994-116	10.0	1			1	1	1/1		

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 08/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1397

SDG 7035
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1397

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B126F5			R107084-01	7035-001	AM		07/25/01	08/06/01	MCM	Americium 241 in Soil
200 West REDOX		SOLID	06/19/01	7035-001	PU		07/20/01	08/06/01	MCM	Plutonium, Isotopic in Solids
B01-098-01	B01-098		07/14/01	7035-001	SR		07/19/01	08/06/01	MCM	Total Strontium in Soil
Method Blank			R107084-03	7035-003	AM		07/26/01	08/06/01	MCM	Americium 241 in Soil
		SOLID		7035-003	PU		07/20/01	08/06/01	MCM	Plutonium, Isotopic in Solids
	B01-098			7035-003	SR		07/19/01	08/06/01	MCM	Total Strontium in Soil
Lab Control Sample			R107084-02	7035-002	AM		07/25/01	08/06/01	MCM	Americium 241 in Soil
		SOLID		7035-002	PU		07/20/01	08/06/01	MCM	Plutonium, Isotopic in Solids
	B01-098			7035-002	SR		07/19/01	08/06/01	MCM	Total Strontium in Soil
Duplicate (R107084-01)			R107084-04	7035-004	AM		07/25/01	08/06/01	MCM	Americium 241 in Soil
200 West REDOX		SOLID	06/19/01	7035-004	PU		07/20/01	08/06/01	MCM	Plutonium, Isotopic in Solids
	B01-098		07/14/01	7035-004	SR		07/19/01	08/06/01	MCM	Total Strontium in Soil

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	B01-098	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	1			1	1	1	4
PU	B01-098	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	1			1	1	1	4
SR	B01-098	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	1			1	1	1	4
TOTALS				3			3	3	3	12

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 08/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1397

R107084-03 Method Blank

METHOD BLANK

SDG	7035	Client/Case no	Hanford SDG H1397
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R107084-03	Client sample id	Method Blank
Dept sample id	7035-003	Material/Matrix	SOLID
		SAF No	B01-098

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.048	0.22	0.47	1.0	U	SR
Americium 241	14596-10-2	0.074	0.099	0.19	1.0	U	AM
Plutonium 238	13981-16-3	0	0.047	0.18	1.0	U	PU
Plutonium 239/240	PU-239/240	0.023	0.047	0.18	1.0	U	PU

REDOX Unknown Chemical Residue

QC-BLANK 39226

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1397

R107084-02 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7035 Client/Case no Hanford SDG H1397
Contact Melissa C. Mannion Case no No. 630

Lab sample id R107084-02 Client sample id Lab Control Sample
Dept sample id 7035-002 Material/Matrix SOLID
SAF No B01-098

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
Total Strontium	25.1	1.2	0.39	1.0		SR	23.1	0.92	109	81-119	80-120
Americium 241	21.8	2.2	0.20	1.0		AM	21.0	0.84	104	81-119	80-120
Plutonium 238	25.4	2.4	0.18	1.0		PU	27.2	1.1	93	84-116	80-120
Plutonium 239/240	27.2	2.5	0.18	1.0		PU	29.0	1.2	94	84-116	80-120

REDOX Unknown Chemical Residue

QC-LCS 39225

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 08/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1397

R107084-04 B126F5

DUPLICATE

SDG	7035			Client/Case no	Hanford SDG H1397
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R107084-04	Lab sample id	R107084-01	Client sample id	B126F5
Dept sample id	7035-004	Dept sample id	7035-001	Location/Matrix	200 West REDOX SOLID
		Received	07/14/01	Collected/Weight	06/19/01 08:50 20.0 g
% solids	100.0	% solids	100.0	Custody/SAF No	B01-098-01 B01-098

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
Total Strontium	-0.125	0.17	0.40	1.0	U	SR	0.054	0.21	0.41	U	-		
Americium 241	0.847	0.39	0.29	1.0	J	AM	0.644	0.43	0.47	J	27	117	
Plutonium 238	0	0.049	0.19	1.0	U	PU	-0.026	0.051	0.20	U	-		
Plutonium 239/240	0.729	0.25	0.19	1.0	J	PU	0.487	0.21	0.20	J	40	81	

REDOX Unknown Chemical Residue

QC-DUP#1 39227

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	08/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1397

R107084-01 B126F5

DATA SHEET

SDG	7035	Client/Case no	Hanford	SDG H1397	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R107084-01	Client sample id	B126F5		
Dept sample id	7035-001	Location/Matrix	200 West REDOX	SOLID	
Received	07/14/01	Collected/Weight	06/19/01 08:50	20.0 g	
% solids	100.0	Custody/SAF No	B01-098-01	B01-098	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.054	0.21	0.41	1.0	U	SR
Americium 241	14596-10-2	0.644	0.43	0.47	1.0	J	AM
Plutonium 238	13981-16-3	-0.026	0.051	0.20	1.0	U	PU
Plutonium 239/240	PU-239/240	0.487	0.21	0.20	1.0	J	PU

REDOX Unknown Chemical Residue

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1397

Test AM Matrix SOLID
SDG 7035
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1397

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241
Preparation batch 6994-116					
B126F5	R107084-01			7035-001	0.644 J
BLK (QC ID=39226)	R107084-03			7035-003	U
LCS (QC ID=39225)	R107084-02			7035-002	ok
Duplicate (R107084-01)	R107084-04			7035-004	ok J
Nominal values and limits from method				RDLs (pCi/g)	1.0
REDOX Unknown Chemical Residue					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6994-116	2σ prep error 5.0 %				Reference Lab Notebook 6994 pg. 116											
B126F5	R107084-01			0.47	0.500			50		108			36	07/24/01	07/25	SS-041
BLK (QC ID=39226)	R107084-03			0.19	0.500			90		103				07/24/01	07/26	SS-031
LCS (QC ID=39225)	R107084-02			0.20	0.500			83		108				07/24/01	07/25	SS-042
Duplicate (R107084-01) (QC ID=39227)	R107084-04			0.29	0.500			58		108			36	07/24/01	07/25	SS-027
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES				
MDA	0.29	±	0.26
YIELD	70	±	39

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1397

Test PU Matrix SOLID
SDG 7035
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1397

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6994-116								
B126F5	R107084-01			7035-001	U		0.487	J
BLK (QC ID=39226)	R107084-03			7035-003	U		U	
LCS (QC ID=39225)	R107084-02			7035-002	ok		ok	
Duplicate (R107084-01)	R107084-04			7035-004	-	U	ok	J
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0	

REDOX Unknown Chemical Residue

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6994-116	2σ prep error 5.0 %			Reference Lab Notebook 6994 pg. 116												
B126F5	R107084-01			0.20	0.500			92		104			31	07/20/01	07/20	SS-027
BLK (QC ID=39226)	R107084-03			0.18	0.500			100		104				07/20/01	07/20	SS-029
LCS (QC ID=39225)	R107084-02			0.18	0.500			95		104				07/20/01	07/20	SS-028
Duplicate (R107084-01) (QC ID=39227)	R107084-04			0.19	0.500			89		104			31	07/20/01	07/20	SS-031
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.19 ± 0.019
YIELD 94 ± 9

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/06/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1397

Test SR Matrix SOLID
SDG 7035
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1397

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 6994-116						
B126F5	R107084-01			7035-001	U	
BLK (QC ID=39226)	R107084-03			7035-003	U	
LCS (QC ID=39225)	R107084-02			7035-002	ok	
Duplicate (R107084-01)	R107084-04			7035-004	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
REDOX Unknown Chemical Residue						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6994-116 2σ prep error 10.0 % Reference Lab Notebook 6994 pg. 116																
B126F5	R107084-01			0.41	1.00			87		100			30	07/19/01	07/19	GRB-229
BLK (QC ID=39226)	R107084-03			0.47	1.00			74		100				07/19/01	07/19	GRB-219
LCS (QC ID=39225)	R107084-02			0.39	1.00			71		100				07/19/01	07/19	GRB-203
Duplicate (R107084-01) (QC ID=39227)	R107084-04			0.40	1.00			85		100			30	07/19/01	07/19	GRB-220
Nominal values and limits from method				1.0	1.00			30-105		100			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.42 ± 0.072
YIELD 79 ± 16

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/06/01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-098-01	Page 1 of 1

Collector: Fahlberg	Company Contact: D Jacques	Telephone No.: 373-5299	Project Coordinator: TRENT, SJ
Price Code: 9L	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: REDOX Unknown Chemical Residue	Sampling Location: 200 West REDOX H1397 (7035)	SAF No.: B01-098	
Ice Chest No.: ERC01-014 ~~ERC 97-0792+6.2.a~~	Field Logbook No.: EL 1517-2	COA: BREDOX2W28	Method of Shipment: Fed EX H1397
Shipped To: TMA/RECRA / RCF	Offsite Property No.: A0 0424		Bill of Lading/Air Bill No.:

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SAMPLE ANALYSIS

Preservation	None												
Type of Container	P												
No. of Container(s)	1												
Volume	~~1000mL~~	MM 7/10/01											
	~~See item (1) in Special Instructions.~~ *		RCF										
Sample No.	Matrix *	Sample Date	Sample Time										
B126F5	OTHER SOLID	6-19-01	0850	X		9408							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	6-19-01 0955	J Duffey / J Duffey	6-19-01 0955
Chandler / Chandler	6-21-01 1645	SJ GALE / SJ GALE	6-21-01 10:45
SJ GALE / SJ GALE	6-21-01 10:55	R. Thoren / R. Thoren	6/21/01 1055
R. Thoren / R. Thoren	6/21/01 1055	FEDEX	
FedEx	6-22-01 0900	Thoral	6-22-01 0900
FedEX	7-14-01 1100	James Lind / James Lind	7-14-01 1100

SPECIAL INSTRUCTIONS
See SAF Comments

(1) ~~RCF GEA Shipping Screen, Isotopic Plutonium, Americium-241, Strontium-89,90 - Total Sr, ICP Metals - 6010A (SW-846), Mercury - 7471 - (CV), Metals by ICP (TCLP) - 1311/6010, Mercury (TCLP) - 1311/7470, IC Anions - 300.0, pH (Soil) - 9045~~ KT 6.21.01

Sample origiated from a non Rad area

*Contact Joan Kessner for instructions Isotopic Pu, Am-24, Total Sr

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 MM 7/16/01
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

RECRA LabNet **OFF-LOAD / SUBCONTRACT FORM** (side 2)

REASON FOR ~~SUBCONTRACTING:~~ client shipped to wrong lab

Subcontract Laboratory: ATTN: Sample Receipt
Laboratory Address: Eberline Services
Point of Contact: 2030 Wright Avenue
Phone Number: Richmond, CA
Purchase Order No.:

CHECKLIST FOR SUBCONTRACTED SAMPLES (to be completed at time of shipment):

REQUIRED	SENT	
YES	YES/NO	~~RECRA~~ / CLIENT (circle) CHAIN-OF-CUSTODY (attach copy to this checklist as record of applicable samples)
YES/NO	YES/NO	COVER LETTER
YES/NO	YES/NO	OFF-LOAD/SUBCONTRACT FORM (side 1 only)
YES/NO	YES/NO	BLUE ICE
YES/NO	YES/NO	SHIPPING BILLABLE (If yes, notify Shipping Unit)

COMMENTS: — complete container type, #, and volume section of client COC

— Ship 20g ~~or whatever~~ if possible

SHIPPED VIA: FED EX / UPS / EMERY / OTHER: _____

SHIPMENT PACKED BY/DATE: [signature] 7/13/01

REVIEWED BY/DATE: _____

RFW 21-21-007/8-10/97

#7397

RECRA LabNet

OFF-LOAD / SUBCONTRACT FORM (side 1)

Client Name: TNU Hanford 601-098

Lab Project Manager: OJ

Date Rec'd/Expected: 7/14/01
(circle one)

Today's Date: 7/13/01

Total No. Samples in Shipment: 1

RECRA Project No.:

RECRA Batch #	Date of Collection	Quant.	Matrix	Parameter	Due Date	Unit Cost	QC Required	Del.	Detect. Limits	Analyte List	Hold Time Sample/Ext.	Method Ref.
01066142 -001	6/19/01		Solid	Rad								

Must ship today

Sample originated from ~~Hot~~ Non-rad area

Other special requirements/certifications:

Hazard/Safety Yes/No/Unknown = Radiation High Hazard High PCBs/Dioxins Other
(please circle and indicate)

Laboratory Sign-Off:

Date:

RFW 21-21-007/B-10/97

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Date/Time received 7-16-01 800

CoC No. B01-098-01

Container I.D. No. 641 Requested TAT (Days) 21 P.O. Received Yes [ ] No [ ]

INSPECTION

1. Custody seals on shipping container intact? Yes [ ] No [ ] N/A [✓]
2. Custody seals on shipping container dated & signed? Yes [ ] No [ ] N/A [✓]
3. Custody seals on sample containers intact? Yes [ ] No [✓] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [ ] No [✓] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 1
7. Number of containers per sample: 1 (Or see CoC _____)
8. Paperwork agrees with samples? Yes [ ] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [✓] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: No Custody Seals on Shipping Container Broken Custody Seals on Sample. Not Signed
13. Was P.M. notified of any anomalies? Yes [✓] No [ ] Date _____
14. Received by James Rud Date: 7-16-01 Time: _____

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

RECEIVED JUL 2001

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-098 H1397

DATE RECEIVED: 06/22/01 LVL LOT # :0106L142

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B126F5						
% SOLIDS	001	SO	01L%S077	06/19/01	06/25/01	06/26/01
BROMIDE BY IC	001	SO	01LIC045	06/19/01	07/10/01	07/10/01
BROMIDE BY IC	001 REP	SO	01LIC045	06/19/01	07/10/01	07/10/01
BROMIDE BY IC	001 MS	SO	01LIC045	06/19/01	07/10/01	07/10/01
CHLORIDE BY IC	001	SO	01LIC045	06/19/01	07/10/01	07/10/01
CHLORIDE BY IC	001 REP	SO	01LIC045	06/19/01	07/10/01	07/10/01
CHLORIDE BY IC	001 MS	SO	01LIC045	06/19/01	07/10/01	07/10/01
FLUORIDE BY IC	001	SO	01LIC045	06/19/01	07/10/01	07/10/01
FLUORIDE BY IC	001 REP	SO	01LIC045	06/19/01	07/10/01	07/10/01
FLUORIDE BY IC	001 MS	SO	01LIC045	06/19/01	07/10/01	07/10/01
NITRITE BY IC	001	SO	01LIC045	06/19/01	07/10/01	07/10/01
NITRITE BY IC	001 REP	SO	01LIC045	06/19/01	07/10/01	07/10/01
NITRITE BY IC	001 MS	SO	01LIC045	06/19/01	07/10/01	07/10/01
NITRATE BY IC	001	SO	01LIC045	06/19/01	07/10/01	07/10/01
NITRATE BY IC	001 REP	SO	01LIC045	06/19/01	07/10/01	07/10/01
NITRATE BY IC	001 MS	SO	01LIC045	06/19/01	07/10/01	07/10/01
PHOSPHATE BY IC	001	SO	01LIC045	06/19/01	07/10/01	07/10/01
PHOSPHATE BY IC	001 REP	SO	01LIC045	06/19/01	07/10/01	07/10/01
PHOSPHATE BY IC	001 MS	SO	01LIC045	06/19/01	07/10/01	07/10/01
SULFATE BY IC	001	SO	01LIC045	06/19/01	07/10/01	07/10/01
SULFATE BY IC	001 REP	SO	01LIC045	06/19/01	07/10/01	07/10/01
SULFATE BY IC	001 MS	SO	01LIC045	06/19/01	07/10/01	07/10/01
PH	001	SO	01LPH046	06/19/01	06/29/01	06/29/01
PH	001 REP	SO	01LPH046	06/19/01	06/29/01	06/29/01
TCLP	001	SO	01LTO081	06/19/01	07/09/01	07/10/01

LAB QC:

BROMIDE BY IC	MB1	S	01LIC045	N/A	07/10/01	07/10/01
BROMIDE BY IC	MB1 BS	S	01LIC045	N/A	07/10/01	07/10/01
CHLORIDE BY IC	MB1	S	01LIC045	N/A	07/10/01	07/10/01
CHLORIDE BY IC	MB1 BS	S	01LIC045	N/A	07/10/01	07/10/01
FLUORIDE BY IC	MB1	S	01LIC045	N/A	07/10/01	07/10/01
FLUORIDE BY IC	MB1 BS	S	01LIC045	N/A	07/10/01	07/10/01
NITRITE BY IC	MB1	S	01LIC045	N/A	07/10/01	07/10/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-098 H1397

DATE RECEIVED: 06/22/01 LVL LOT # :0106L142

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRITE BY IC	MB1 BS	S	01LIC045	N/A	07/10/01	07/10/01
NITRATE BY IC	MB1	S	01LIC045	N/A	07/10/01	07/10/01
NITRATE BY IC	MB1 BS	S	01LIC045	N/A	07/10/01	07/10/01
PHOSPHATE BY IC	MB1	S	01LIC045	N/A	07/10/01	07/10/01
PHOSPHATE BY IC	MB1 BS	S	01LIC045	N/A	07/10/01	07/10/01
SULFATE BY IC	MB1	S	01LIC045	N/A	07/10/01	07/10/01
SULFATE BY IC	MB1 BS	S	01LIC045	N/A	07/10/01	07/10/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-098 H1397
LVL#: 0106L142

W.O.#: 11343-606-001-9999-00
Date Received: 06-22-01

INORGANIC NARRATIVE

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

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

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

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

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits.

7. The matrix spike recoveries were within the 75-125% control limits with the exception of Phosphate recovery that was below the control limit that may be attributed to sample interference.

8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.

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 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

07-26-01
Date

njp\i06-142

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 12 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	__ 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: Bromide, Chloride, **Method:** EPA 300.0 (mod.)

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

L-WI-034/B-01/01

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/25/01

CLIENT: TNUHANFORD B01-098 H1397 LVL LOT #: 0106L142

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B126P5	% Solids	92.2		%	0.01	1.0
		Bromide by IC	678	u	MG/KG	678	500
		Chloride by IC	1900		MG/KG	678	500
		Fluoride by IC	1360	u	MG/KG	1360	500
		Nitrite by IC	678	u	MG/KG	678	500
		Nitrate by IC	147000		MG/KG	6780	5000
		Phosphate by IC	678	u	MG/KG	678	500
		Sulfate by IC	853		MG/KG	678	500
		pH	1.9		SOIL PH	0.01	1.0

Lionville Lababoratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 07/25/01

CLIENT: TNUHANFORD B01-098 H1397 LVL LOT #: 0106L142

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LIC045-MB1	Bromide by IC	1.2	u	MG/KG	1.2	1.0
		Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	1.25	u	MG/KG	1.25	1.0
		Nitrate by IC	1.25	u	MG/KG	1.25	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0

Lionville Lababoratory, Inc.

INORGANICS ACCURACY REPORT 07/25/01

CLIENT: TNUHANFORD B01-098 H1397 LVL LOT #: 0106L142

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B126F5	Bromide by IC	255000	0.0	271000	94.0	10000
		Chloride by IC	14500	1900	13600	93.0	500
		Fluoride by IC	30200	0.0	27100	111.3	500
		Nitrite by IC	13200	678 u	13600	97.7	500
		Nitrate by IC	421000	147000	271000	100.9	10000
		Phosphate by IC	183000	678 u	271000	67.5	10000
		Sulfate by IC	250000	853	271000	92.0	10000
BLANK10	01LIC045-MB1	Bromide by IC	24.6	1.2 u	25.0	98.4	1.0
		Chloride by IC	23.5	1.2 u	25.0	93.9	1.0
		Fluoride by IC	54.6	2.5 u	50.0	109.2	1.0
		Nitrite by IC	23.6	1.25u	25.0	94.4	1.0
		Nitrate by IC	25.0	1.25u	25.0	100.1	1.0
		Phosphate by IC	25.4	1.2 u	25.0	101.8	1.0
		Sulfate by IC	23.1	1.2 u	25.0	92.4	1.0

Lionville Lababoratory, Inc.

INORGANICS PRECISION REPORT 07/25/01

CLIENT: TNUHANFORD B01-098 H1397 LVL LOT #: 0106L142

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT		REPLICATE		RPD	DILUTION FACTOR(REP)
-001REP	B126F5	Bromide by IC	678	u	678	u	NC	500
		Chloride by IC	1900		2180		14.0	500
		Fluoride by IC	1360	u	1360	u	NC	500
		Nitrite by IC	678	u	678	u	NC	500
		Nitrate by IC	147000		149000		1.2	5000
		Phosphate by IC	678	u	678	u	NC	500
		Sulfate by IC	853		762		11.2	500
		pH	1.9		1.9		0.0	1.0

Lionville Laboratory Use Only: 0106L142

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client: TPU-Hanford B01-098
Est. Final Proj. Sampling Date:
Project #: 11343-006001-999900
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: Std TAT: 21 day
Date Rec'd: 6-22-01 Date Due: 7-13-01

Refrigerator #: 1-Cachaje

#/Type Container	Volume	Preservatives
Liquid	Liquid	
Solid	Solid	

ANALYSES REQUESTED →

ORGANIC				INORG	
VOA	BNA	Pest/PCB	Herb	Metal	CN

Lionville Laboratory Use Only

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	RCRA TCLP	Met ① ICP ITCLP	IC ①	HPF
001	B12L6ES	✓	✓	SO	6-19-01	0850		✓	✓	
002	B12L6ES tclp of 001			L	*		✓			

Special Instructions: Sa9 B01-098

DATE/REVISIONS:
* 1. See labchron
Met ① 2. Al, Ag, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K,
1 3. Mg, Mn, Na, Ni, Sb, V, Zn
IC ① 4. ICl, ICBR, ICF1, ICNO2, ICNO3, ICPO4, ICSO4
5.
6.

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered
Airbill # 4235795453071
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. 5.5 °C

Relinquished by	Received by	Date	Time
FedEx	T Kappel	6-22-01	0800

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-098-01	Page 1 of 1

Collector: Fahlberg	Company Contact: D Jacques	Telephone No.: 373-5299	Project Coordinator: TRENT, SJ
Price Code: 9L	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: REDOX Unknown Chemical Residue	Sampling Location: 200 West REDOX	SAF No.: B01-098	
Ice Chest No.: ERC01-014 ~~ERC 97-0792+6.2.a~~	Field Logbook No.: EL 1517-2	COA: BREDOX2W28	Method of Shipment: Fed EX
Shipped To: TMA/RECRA / RCF	Offsite Property No.: A0/0424		Bill of Lading/Air Bill No.:

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None											
Type of Container	P											
No. of Container(s)	1											
Volume	1000mL											
SAMPLE ANALYSIS	See item (1) in Special Instructions.			RCF								
Sample No.	Matrix *	Sample Date	Sample Time									
B126F5	OTHER SOLID	6-19-01	0850	X		9408						

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By: R. Fahlberg / R. Fahlberg Date/Time: 0955 6-19-01	Received By: J Duffey / J Duffey Date/Time: 0955 6-19-01	See SAF Comments
Relinquished By: C. Hendes / C. Hendes Date/Time: 6-21-01/1645	Received By: S J GALE / S J GALE Date/Time: 6-21-01 10:45	(1) ~~RCF GEA Shipping Screen; Isotopic Plutonium; Americium-241; Strontium-89,90 - Total Sr; ICP~~ KT 6-21-01 Metals - 6010A (SW-846); Mercury - 7471 - (CV); Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; IC Anions - 300.0; pH (Soil) - 9045
Relinquished By: S J GALE / S J GALE Date/Time: 6-21-01 10:55	Received By: R. Thoren / R. Thoren Date/Time: 1055 6/21/01	Sample origiated from a non Rad area
Relinquished By: R. Thoren / R. Thoren Date/Time: 1055 6/21/01	Received By: FEDEX Date/Time:	
Relinquished By: FedEx Date/Time: 6-22-01 0900	Received By: T Bryant Date/Time: 6-22-01 0900	
Relinquished By: Date/Time:	Received By: Date/Time:	

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: 6-22-01 0900

SDG#: 01060142

Work Order Number: — SAF# B01-098

Shipping Container ID: EBC-01-014 Chain of Custody # B01-098-01

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 5.5°C
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 1
7. Sample holding times exceeded? Yes [ ] No [✓]

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

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

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

Sample Custodian/Laboratory: T Kappel / LULI Date: 6-22-01

Telephoned to: _____ On _____ By _____

JUL 2001
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-098 H1397

DATE RECEIVED: 06/22/01 LVL LOT # :0106L142

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B126F5						
TCLP	001	SO	01LTO081	06/19/01	07/09/01	07/10/01
SILVER, TOTAL	001	SO	01L0393	06/19/01	07/05/01	07/09/01
SILVER, TOTAL	001 REP	SO	01L0393	06/19/01	07/05/01	07/09/01
SILVER, TOTAL	001 MS	SO	01L0393	06/19/01	07/05/01	07/09/01
ALUMINUM, TOTAL	001	SO	01L0393	06/19/01	07/05/01	07/09/01
ALUMINUM, TOTAL	001 REP	SO	01L0393	06/19/01	07/05/01	07/09/01
ALUMINUM, TOTAL	001 MS	SO	01L0393	06/19/01	07/05/01	07/09/01
BARIUM, TOTAL	001	SO	01L0393	06/19/01	07/05/01	07/09/01
BARIUM, TOTAL	001 REP	SO	01L0393	06/19/01	07/05/01	07/09/01
BARIUM, TOTAL	001 MS	SO	01L0393	06/19/01	07/05/01	07/09/01
BERYLLIUM, TOTAL	001	SO	01L0393	06/19/01	07/05/01	07/09/01
BERYLLIUM, TOTAL	001 REP	SO	01L0393	06/19/01	07/05/01	07/09/01
BERYLLIUM, TOTAL	001 MS	SO	01L0393	06/19/01	07/05/01	07/09/01
CALCIUM, TOTAL	001	SO	01L0393	06/19/01	07/05/01	07/09/01
CALCIUM, TOTAL	001 REP	SO	01L0393	06/19/01	07/05/01	07/09/01
CALCIUM, TOTAL	001 MS	SO	01L0393	06/19/01	07/05/01	07/09/01
CADMIUM, TOTAL	001	SO	01L0393	06/19/01	07/05/01	07/09/01
CADMIUM, TOTAL	001 REP	SO	01L0393	06/19/01	07/05/01	07/09/01
CADMIUM, TOTAL	001 MS	SO	01L0393	06/19/01	07/05/01	07/09/01
COBALT, TOTAL	001	SO	01L0393	06/19/01	07/05/01	07/09/01
COBALT, TOTAL	001 REP	SO	01L0393	06/19/01	07/05/01	07/09/01
COBALT, TOTAL	001 MS	SO	01L0393	06/19/01	07/05/01	07/09/01
CHROMIUM, TOTAL	001	SO	01L0393	06/19/01	07/05/01	07/09/01
CHROMIUM, TOTAL	001 REP	SO	01L0393	06/19/01	07/05/01	07/09/01
CHROMIUM, TOTAL	001 MS	SO	01L0393	06/19/01	07/05/01	07/09/01
COPPER, TOTAL	001	SO	01L0393	06/19/01	07/05/01	07/09/01
COPPER, TOTAL	001 REP	SO	01L0393	06/19/01	07/05/01	07/09/01
COPPER, TOTAL	001 MS	SO	01L0393	06/19/01	07/05/01	07/09/01
IRON, TOTAL	001	SO	01L0393	06/19/01	07/05/01	07/09/01
IRON, TOTAL	001 REP	SO	01L0393	06/19/01	07/05/01	07/09/01
IRON, TOTAL	001 MS	SO	01L0393	06/19/01	07/05/01	07/09/01
MERCURY, TOTAL	001	SO	01C0201	06/19/01	07/09/01	07/10/01
MERCURY, TOTAL	001 REP	SO	01C0201	06/19/01	07/09/01	07/10/01
MERCURY, TOTAL	001 MS	SO	01C0201	06/19/01	07/09/01	07/10/01
POTASSIUM, TOTAL	001	SO	01L0393	06/19/01	07/05/01	07/09/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-098 H1397

DATE RECEIVED: 06/22/01 LVL LOT # :0106L142

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
POTASSIUM, TOTAL	001 REP	SO	01L0393	06/19/01	07/05/01	07/09/01
POTASSIUM, TOTAL	001 MS	SO	01L0393	06/19/01	07/05/01	07/09/01
MAGNESIUM, TOTAL	001	SO	01L0393	06/19/01	07/05/01	07/09/01
MAGNESIUM, TOTAL	001 REP	SO	01L0393	06/19/01	07/05/01	07/09/01
MAGNESIUM, TOTAL	001 MS	SO	01L0393	06/19/01	07/05/01	07/09/01
MANGANESE, TOTAL	001	SO	01L0393	06/19/01	07/05/01	07/09/01
MANGANESE, TOTAL	001 REP	SO	01L0393	06/19/01	07/05/01	07/09/01
MANGANESE, TOTAL	001 MS	SO	01L0393	06/19/01	07/05/01	07/09/01
SODIUM, TOTAL	001	SO	01L0393	06/19/01	07/05/01	07/09/01
SODIUM, TOTAL	001 REP	SO	01L0393	06/19/01	07/05/01	07/09/01
SODIUM, TOTAL	001 MS	SO	01L0393	06/19/01	07/05/01	07/09/01
NICKEL, TOTAL	001	SO	01L0393	06/19/01	07/05/01	07/09/01
NICKEL, TOTAL	001 REP	SO	01L0393	06/19/01	07/05/01	07/09/01
NICKEL, TOTAL	001 MS	SO	01L0393	06/19/01	07/05/01	07/09/01
ANTIMONY, TOTAL	001	SO	01L0393	06/19/01	07/05/01	07/09/01
ANTIMONY, TOTAL	001 REP	SO	01L0393	06/19/01	07/05/01	07/09/01
ANTIMONY, TOTAL	001 MS	SO	01L0393	06/19/01	07/05/01	07/09/01
VANADIUM, TOTAL	001	SO	01L0393	06/19/01	07/05/01	07/09/01
VANADIUM, TOTAL	001 REP	SO	01L0393	06/19/01	07/05/01	07/09/01
VANADIUM, TOTAL	001 MS	SO	01L0393	06/19/01	07/05/01	07/09/01
ZINC, TOTAL	001	SO	01L0393	06/19/01	07/05/01	07/09/01
ZINC, TOTAL	001 REP	SO	01L0393	06/19/01	07/05/01	07/09/01
ZINC, TOTAL	001 MS	SO	01L0393	06/19/01	07/05/01	07/09/01
SILVER, TCLP LEACHAT	002	W	01L0406	07/10/01	07/10/01	07/11/01
SILVER, TCLP LEACHAT	002 REP	W	01L0406	07/10/01	07/10/01	07/11/01
SILVER, TCLP LEACHAT	002 MS	W	01L0406	07/10/01	07/10/01	07/11/01
ARSENIC, TCLP LEACHA	002	W	01L0406	07/10/01	07/10/01	07/11/01
ARSENIC, TCLP LEACHA	002 REP	W	01L0406	07/10/01	07/10/01	07/11/01
ARSENIC, TCLP LEACHA	002 MS	W	01L0406	07/10/01	07/10/01	07/11/01
BARIUM, TCLP LEACHAT	002	W	01L0406	07/10/01	07/10/01	07/11/01
BARIUM, TCLP LEACHAT	002 REP	W	01L0406	07/10/01	07/10/01	07/11/01
BARIUM, TCLP LEACHAT	002 MS	W	01L0406	07/10/01	07/10/01	07/11/01
CADMIUM, TCLP LEACHA	002	W	01L0406	07/10/01	07/10/01	07/11/01
CADMIUM, TCLP LEACHA	002 REP	W	01L0406	07/10/01	07/10/01	07/11/01
CADMIUM, TCLP LEACHA	002 MS	W	01L0406	07/10/01	07/10/01	07/11/01
CHROMIUM, TCLP LEACH	002	W	01L0406	07/10/01	07/10/01	07/11/01
CHROMIUM, TCLP LEACH	002 REP	W	01L0406	07/10/01	07/10/01	07/11/01
CHROMIUM, TCLP LEACH	002 MS	W	01L0406	07/10/01	07/10/01	07/11/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-098 H1397

DATE RECEIVED: 06/22/01 LVL LOT # :0106L142

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TCLP LEACHA	002	W	01C0209	07/10/01	07/12/01	07/13/01
MERCURY, TCLP LEACHA	002 REP	W	01C0209	07/10/01	07/12/01	07/13/01
MERCURY, TCLP LEACHA	002 MS	W	01C0209	07/10/01	07/12/01	07/13/01
LEAD, TCLP LEACHATE	002	W	01L0406	07/10/01	07/10/01	07/11/01
LEAD, TCLP LEACHATE	002 REP	W	01L0406	07/10/01	07/10/01	07/11/01
LEAD, TCLP LEACHATE	002 MS	W	01L0406	07/10/01	07/10/01	07/11/01
SELENIUM, TCLP LEACH	002	W	01L0406	07/10/01	07/10/01	07/11/01
SELENIUM, TCLP LEACH	002 REP	W	01L0406	07/10/01	07/10/01	07/11/01
SELENIUM, TCLP LEACH	002 MS	W	01L0406	07/10/01	07/10/01	07/11/01

LAB QC:

SILVER LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
SILVER, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
ALUMINUM LABORTORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
ALUMINUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
BARIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
BARIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
BERYLLIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
BERYLLIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
CALCIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
CALCIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
CADMIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
CADMIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
COBALT LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
COBALT, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
CHROMIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
CHROMIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
COPPER LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
COPPER, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
IRON LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
IRON, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
MERCURY LABORATORY	LC1 BS	S	01C0201	N/A	07/09/01	07/10/01
MERCURY, TOTAL	MB1	S	01C0201	N/A	07/09/01	07/10/01
POTASSIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
POTASSIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
MAGNESIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
MAGNESIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-098 H1397

DATE RECEIVED: 06/22/01 LVL LOT # :0106L142

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MANGANESE LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
MANGANESE, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
SODIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
SODIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
NICKEL LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
NICKEL, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
ANTIMONY LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
ANTIMONY, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
VANADIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
VANADIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
ZINC LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
ZINC, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
SILVER LABORATORY	LC1 BS	W	01L0406	N/A	07/10/01	07/11/01
SILVER, TCLP LEACHAT	MB1	W	01L0406	N/A	07/10/01	07/11/01
SILVER, TCLP LEACHAT	MB2	W	01L0406	N/A	07/10/01	07/11/01
SILVER, TCLP LEACHAT	MB3	W	01L0406	N/A	07/10/01	07/11/01
ARSENIC LABORATORY	LC1 BS	W	01L0406	N/A	07/10/01	07/11/01
ARSENIC, TCLP LEACHA	MB1	W	01L0406	N/A	07/10/01	07/11/01
ARSENIC, TCLP LEACHA	MB2	W	01L0406	N/A	07/10/01	07/11/01
ARSENIC, TCLP LEACHA	MB3	W	01L0406	N/A	07/10/01	07/11/01
BARIUM LABORATORY	LC1 BS	W	01L0406	N/A	07/10/01	07/11/01
BARIUM, TCLP LEACHAT	MB1	W	01L0406	N/A	07/10/01	07/11/01
BARIUM, TCLP LEACHAT	MB2	W	01L0406	N/A	07/10/01	07/11/01
BARIUM, TCLP LEACHAT	MB3	W	01L0406	N/A	07/10/01	07/11/01
CADMIUM LABORATORY	LC1 BS	W	01L0406	N/A	07/10/01	07/11/01
CADMIUM, TCLP LEACHA	MB1	W	01L0406	N/A	07/10/01	07/11/01
CADMIUM, TCLP LEACHA	MB2	W	01L0406	N/A	07/10/01	07/11/01
CADMIUM, TCLP LEACHA	MB3	W	01L0406	N/A	07/10/01	07/11/01
CHROMIUM LABORATORY	LC1 BS	W	01L0406	N/A	07/10/01	07/11/01
CHROMIUM, TCLP LEACH	MB1	W	01L0406	N/A	07/10/01	07/11/01
CHROMIUM, TCLP LEACH	MB2	W	01L0406	N/A	07/10/01	07/11/01
CHROMIUM, TCLP LEACH	MB3	W	01L0406	N/A	07/10/01	07/11/01
MERCURY LABORATORY	LC1 BS	W	01C0209	N/A	07/12/01	07/13/01
MERCURY, TOTAL	MB1	W	01C0209	N/A	07/12/01	07/13/01
MERCURY, TCLP LEACHA	MB2	W	01C0209	N/A	07/12/01	07/13/01
LEAD LABORATORY	LC1 BS	W	01L0406	N/A	07/10/01	07/11/01
LEAD, TCLP LEACHATE	MB1	W	01L0406	N/A	07/10/01	07/11/01
LEAD, TCLP LEACHATE	MB2	W	01L0406	N/A	07/10/01	07/11/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-098 H1397

DATE RECEIVED: 06/22/01 LVL LOT # :0106L142

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LEAD, TCLP LEACHATE	MB3	W	01L0406	N/A	07/10/01	07/11/01
SELENIUM LABORATORY	LC1 BS	W	01L0406	N/A	07/10/01	07/11/01
SELENIUM, TCLP LEACH	MB1	W	01L0406	N/A	07/10/01	07/11/01
SELENIUM, TCLP LEACH	MB2	W	01L0406	N/A	07/10/01	07/11/01
SELENIUM, TCLP LEACH	MB3	W	01L0406	N/A	07/10/01	07/11/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-098
LVL#: 0106L142
SDG/SAF#: H1397/B01-098

W.O.#: 11343-606-001-9999-00
Date Received: 06-22-01

METALS CASE NARRATIVE

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

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

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

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

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).

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

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

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

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

10. The matrix spike (MS) recoveries for 6 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 17 pages.

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

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B126F5	Chromium	10,000	108.6
	Copper	100	96.4
	Iron	20,000	101.1
	Manganese	1000	100.3
	Nickel	4000	97.8
	Zinc	100	99.9

12. The total duplicate analyses for 5 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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

14. The TCLP extract from sample B126F5 was selected for the matrix spike (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria.

15. 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.

16. 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.

17. As of January 27, 2001, Recra LabNet Philadelphia became Lionville Laboratory Incorporated. Some forms may still reference Recra LabNet Philadelphia.

for Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

07-23-01
Date

mld/m

LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 0106L42

Leaching Procedure: __1310 X1311 __1312 __Other:_____

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

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

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	X 6010B		__200.7				__99
Antimony	X 6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	__6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	X 6010B		__200.7				__99
Beryllium	X 6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	X 6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	X 6010B		__200.7				__99
Chromium	X 6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	X 6010B		__200.7				__99
Copper	X 6010B	__7211 [5]	__200.7	__220.2			__99
Iron	X 6010B		__200.7				__99
Lead	__6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	X 6010B		__200.7				__99
Manganese	X 6010B		__200.7				__99
Mercury	X 7470A [3]	X 7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	X 6010B		__200.7				__99
Potassium	X 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	X 6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	X 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	X 6010B		__200.7				__99
Zinc	X 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.

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

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

4. Flame AA.

5. Graphite Furnace AA.

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

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/19/01

CLIENT: TNUHANFORD B01-098 H1397 LVL LOT #: 0106L142

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B126F5	Silver, Total	1.1	u	MG/KG	1.1	10.0
		Aluminum, Total	258		MG/KG	13.8	10.0
		Barium, Total	5.4		MG/KG	0.22	10.0
		Beryllium, Total	0.22	u	MG/KG	0.22	10.0
		Calcium, Total	610		MG/KG	8.8	10.0
		Cadmium, Total	0.50		MG/KG	0.33	10.0
		Cobalt, Total	266		MG/KG	0.87	10.0
		Chromium, Total	61400		MG/KG	0.98	10.0
		Copper, Total	707		MG/KG	0.76	10.0
		Iron, Total	277000		MG/KG	17.0	10.0
		Mercury, Total	0.14		MG/KG	0.02	1.0
		Potassium, Total	80.2		MG/KG	38.3	10.0
		Magnesium, Total	141		MG/KG	9.5	10.0
		Manganese, Total	5720		MG/KG	0.11	10.0
		Sodium, Total	71.7		MG/KG	1.8	10.0
		Nickel, Total	40900		MG/KG	1.3	10.0
		Antimony, Total	3.7		MG/KG	2.1	10.0
		Vanadium, Total	130		MG/KG	0.76	10.0
		Zinc, Total	1400		MG/KG	0.33	10.0
-002	B126F5	Silver, TCLP Leachate	6.0	u	UG/L	6.0	6.0
		Arsenic, TCLP Leachate	60.3		UG/L	13.8	6.0
		Barium, TCLP Leachate	1140		UG/L	1.2	6.0
		Cadmium, TCLP Leachate	1.8	u	UG/L	1.8	6.0
		Chromium, TCLP Leachate	41800		UG/L	5.4	6.0
		Mercury, TCLP Leachate	1.0	u	UG/L	1.0	10.0
		Lead, TCLP Leachate	34.5		UG/L	15.6	6.0
		Selenium, TCLP Leachate	25.6		UG/L	15.6	6.0

Lionville Laboratory Use Only

0106L142

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVL

Client: TBU-Hanford B01-098

Est. Final Proj. Sampling Date:

Project #: 11343-600-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: DS

QC: Spec Del: STC TAT: 21 day

Date Rec'd: 6-22-01 Date Due: 7-13-01

Refrigerator #																	
#/Type Container	Liquid										1-gal chem		2	1			
	Solid												1	1			
Volume	Liquid												1	1			
	Solid												1	1			
Preservatives													1	1			
ANALYSES REQUESTED		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN							
Lionville Laboratory Use Only																	
									RCRA TCLP		Met+Q ITCLP	ICQ IP					

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	B12L6ES	✓	✓	SO	6-19-01	0850									✓		✓			
002	B12L6ES tclp of 001			L	*										✓					

Special Instructions: Sa§ B01-098

DATE/REVISIONS:

* 1. Spec labs/proc

Met+Q 2. Al, Ag, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K,

1 3. Mg, Mn, Mo, Ni, Sb, V, Zn

ICQ 4. ICl, ICBR, ICF1, ICNO2, ICNO3, ICPO4, IC Sol

5.

6.

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered ___
Airbill # 4235719545307
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. 5.5 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

Relinquished by	Received by	Date	Time
FedEx	TBoppel	6-22-01	0900

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Lionville Lababoratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 07/19/01

CLIENT: TNUHANFORD B01-098 H1397 LVL LOT #: 0106L142

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK3	01L0406-MB3	Cadmium, TCLP Leachate	1.8	u	UG/L	1.8	6.0
		Chromium, TCLP Leachate	5.4	u	UG/L	5.4	6.0
		Lead, TCLP Leachate	15.6	u	UG/L	15.6	6.0
		Selenium, TCLP Leachate	25.3		UG/L	15.6	6.0
BLANK1	01C0209-MB1	Mercury, Total	0.10	u	UG/L	0.10	1.0
BLANK2	01C0209-MB2	Mercury, TCLP Leachate	0.13		UG/L	0.10	1.0

Lionville Lababoratory, Inc.

INORGANICS ACCURACY REPORT 07/19/01

CLIENT: TNUHANFORD B01-098 H1397 LVL LOT #: 0106L142

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B126F5	Silver, Total	6.2	1.1 u	5.4	114.8	10.0
		Aluminum, Total	475	258	217	99.9	10.0
		Barium, Total	204	5.4	217	91.5	10.0
		Beryllium, Total	5.0	0.22u	5.4	92.6	10.0
		Calcium, Total	3150	610	2710	93.6	10.0
		Cadmium, Total	5.4	0.50	5.4	90.8	10.0
		Cobalt, Total	311	266	54.3	82.7*	10.0
		Chromium, Total	60300	61400	21.7	-5200. *	10.0
		Copper, Total	724	707	27.1	62.0*	10.0
		Iron, Total	274000	277000	108	-2400. *	10.0
		Mercury, Total	0.30	0.14	0.18	87.8	1.0
		Potassium, Total	2700	80.2	2710	96.5	10.0
		Magnesium, Total	2620	141	2710	91.3	10.0
		Manganese, Total	5700	5720	54.3	-49. *	10.0
		Sodium, Total	2590	71.7	2710	93.0	10.0
		Nickel, Total	39300	40900	54.3	-2800. *	10.0
		Antimony, Total	50.7	3.7	54.3	86.6	10.0
		Vanadium, Total	175	130	54.3	84.0	10.0
		Zinc, Total	1430	1400	54.3	37.9*	10.0
-002	B126F5	Silver, TCLP Leachate	4440	6.0 u	5000	88.8	6.0
		Arsenic, TCLP Leachate	5210	60.3	5000	103.1	6.0
		Barium, TCLP Leachate	99000	1140	100000	97.8	6.0
		Cadmium, TCLP Leachate	1040	1.8 u	1000	103.6	6.0
		Chromium, TCLP Leachat	47300	41800	5000	109.6*	6.0
		Mercury, TCLP Leachate	190	1.0 u	200	94.8	50.0
		Lead, TCLP Leachate	5140	34.5	5000	102.2	6.0
		Selenium, TCLP Leachat	1030	25.6	1000	100.2	6.0

Lionville Lababoratory, Inc.

INORGANICS PRECISION REPORT 07/19/01

CLIENT: TNUHANFORD B01-098 H1397 LVL LOT #: 0106L142

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B126F5	Silver, Total	1.1 u	1.2	~~NC~~ 200	10.0
		Aluminum, Total	258	241	7.1 MW 7/20/01	10.0
		Barium, Total	5.4	5.2	3.8	10.0
		Beryllium, Total	0.22u	0.22u	NC	10.0
		Calcium, Total	610	598	2.0	10.0
		Cadmium, Total	0.50	0.33u	~~NC~~ 200	10.0
		Cobalt, Total	266	262	1.5 MW 7/20/01	10.0
		Chromium, Total	61400	61400	0.088	10.0
		Copper, Total	707	702	0.61	10.0
		Iron, Total	277000	278000	0.48	10.0
		Mercury, Total	0.14	0.12	18.5	1.0
		Potassium, Total	80.2	99.6	21.6	10.0
		Magnesium, Total	141	132	7.0	10.0
		Manganese, Total	5720	5710	0.17	10.0
		Sodium, Total	71.7	56.0	24.6	10.0
		Nickel, Total	40900	40000	2.2	10.0
		Antimony, Total	3.7	2.1 u	~~NC~~ 200 MW 7/20/01	10.0
		Vanadium, Total	130	126	3.1	10.0
		Zinc, Total	1400	1420	1.2	10.0
-002REP	B126F5	Silver, TCLP Leachate	6.0 u	6.0 u	NC	6.0
		Arsenic, TCLP Leachate	60.3	47.5	23.7	6.0
		Barium, TCLP Leachate	1140	1080	4.7	6.0
		Cadmium, TCLP Leachate	1.8 u	1.8 u	NC	6.0
		Chromium, TCLP Leachate	41800	40900	2.2	6.0
		Mercury, TCLP Leachate	1.0 u	1.0 u	NC	10.0
		Lead, TCLP Leachate	34.5	35.3	2.3	6.0
		Selenium, TCLP Leachate	25.6	15.6 u	~~NC~~ 200 MW 7/20/01	6.0

Lionville Lababoratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 07/19/01

CLIENT: TNUHANFORD B01-098 H1397 LVL LOT #: 0106L142

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0393-LC1	Silver, LCS	47.5	50.0	MG/KG	95.0
		Aluminum, LCS	485	500	MG/KG	96.9
		Barium, LCS	483	500	MG/KG	96.5
		Beryllium, LCS	24.3	25.0	MG/KG	97.2
		Calcium, LCS	2400	2500	MG/KG	96.0
		Cadmium, LCS	24.3	25.0	MG/KG	97.2
		Cobalt, LCS	246	250	MG/KG	98.4
		Chromium, LCS	49.9	50.0	MG/KG	99.8
		Copper, LCS	122	125	MG/KG	97.8
		Iron, LCS	496	500	MG/KG	99.2
		Potassium, LCS	2390	2500	MG/KG	95.7
		Magnesium, LCS	2400	2500	MG/KG	95.8
		Manganese, LCS	75.7	75.0	MG/KG	100.9
		Sodium, LCS	2320	2500	MG/KG	92.9
		Nickel, LCS	193	200	MG/KG	96.7
		Antimony, LCS	286	300	MG/KG	95.4
		Vanadium, LCS	253	250	MG/KG	101.2
		Zinc, LCS	95.5	100	MG/KG	95.5
LCS1	01C0201-LC1	Mercury, LCS	2.3	2.5	MG/KG	91.1
LCS1	01L0406-LC1	Silver, LCS	488	500	UG/L	97.7
		Arsenic, LCS	9730	10000	UG/L	97.3
		Barium, LCS	4920	5000	UG/L	98.3
		Cadmium, LCS	250	250	UG/L	100.1
		Chromium, LCS	504	500	UG/L	100.7
		Lead, LCS	2470	2500	UG/L	98.8
		Selenium, LCS	9460	10000	UG/L	94.6
LCS1	01C0209-LC1	Mercury, LCS	5.1	5.0	UG/L	102.9

Lionville Laboratory Use Only
0106L142

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVL

Client: TDU-Hanford B01-098
Est. Final Proj. Sampling Date:
Project #: 11343-600-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OS
QC: Spec Del: STC TAT: 21 day

Date Rec'd: 6-22-01 Date Due: 7-13-01

Refrigerator #

#/Type Container: Liquid / Solid

Volume: Liquid / Solid

Preservatives: 1+ ychart

ANALYSES REQUESTED →

ORGANIC: VOA, BNA, Pest/PCB, Herb

INORG: Metal, CN

Lionville Laboratory Use Only

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	VOA	BNA	Pest/PCB	Herb				Metal	CN						
001	B12L6FS	✓	✓	SO	6-19-01	0850										Met ①	ICP ①	ICP			
002	B12L6FS tclp of 001			L	*									✓							

Special Instructions: SOP B01-098

DATE/REVISIONS:
* 1. Spec labs/proc
Mrt ① 2. Al, Ag, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K,
1 3. Mg, Mn, Mo, Ni, Sb, V, Zn
Ic ① 4. Ica, ICBR, ICFl, Icno2, Icno3, ICBR, Icso4
5.
6.

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered
Airbill # 4235719545307
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. 5.5 °C

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

Relinquished by	Received by	Date	Time
FedEx	TKeppel	6-23-01	0900

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-098-01	Page 1 of 1

Collector Fahlberg	Company Contact D Jacques	Telephone No. 373-5299	Project Coordinator TRENT, SJ	Price Code 9L Air Quality ☐	Data Turnaround 21 Days
Project Designation REDOX Unknown Chemical Residue	Sampling Location 200 West REDOX		SAF No. B01-098		
Ice Chest No. ERC01-014 ~~ERC 97-0798~~ 6.2.01	Field Logbook No. EL 1517-2	COA BREDOX2W28	Method of Shipment Fed EX		
Shipped To TMA/RECRA / RCF	Offsite Property No. A0 0424		Bill of Lading/Air Bill No.		

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None											
Type of Container	P											
No. of Container(s)	1											
Volume	1000mL											
SAMPLE ANALYSIS	See item (1) in Special Instructions.			RCF								
Sample No.	Matrix *	Sample Date	Sample Time									
B126F5	OTHER SOLID	6-19-01	0850	X		9408						

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By R. Fahlberg / R. Fahlberg 6-19-01 0955	Received By J Duffey / J Duffey 6-19-01	Date/Time 0955	
Relinquished By C Hernandez / C Hernandez 6-21-01 1645	Received By S J Gale / S J Gale 6.21.01 10:45	Date/Time	
Relinquished By S J Gale / S J Gale 6.21.01 10:55	Received By R. Thoren / R. Thoren 6/21/01	Date/Time 1055	
Relinquished By R. Thoren / R. Thoren 6/21/01	Received By FEDEX	Date/Time 1055	
Relinquished By FedEx 6-22-01 0900	Received By Bryant 6-22-01 0900	Date/Time	
Relinquished By	Received By	Date/Time	

SPECIAL INSTRUCTIONS
See SAF Comments

(1) ~~RCF OEA Shipping Screen, Isotopic Plutonium, Americium-241, Strontium-89,90 — Total Sr, ICP~~ Metals - 6010A (SW-846); Mercury - 7471 - (CV); Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; IC Anions - 300.0; pH (Soil) - 9045

RT 6-21-01

Sample originated from a non Rad area

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)