Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD I03-041 H2416

DATE RECEIVED: 10/30/03 LVL LOT # :0310L972

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	ANALYSIS TIME
B17JN7							
BROMIDE BY IC	001	W	03LICB72	10/27/03	10/29/03	10/29/03	
BROMIDE BY IC	001 REP	W	03LICB72	10/27/03	10/29/03	10/29/03	
BROMIDE BY IC	001 MS	W	03LICB72	10/27/03	10/29/03	10/29/03	
CHLORIDE BY IC	001	W	03LICB72	10/27/03	10/29/03	10/29/03	
CHLORIDE BY IC	001 REP	W	03LICB72	10/27/03	10/29/03	10/29/03	
CHLORIDE BY IC	001 MS	W	03LICB72	10/27/03	10/29/03	10/29/03	
FLUORIDE BY IC	001	W	03LICB72	10/27/03	10/29/03	10/29/03	
FLUORIDE BY IC	001 REP	W	03LICB72	10/27/03	10/29/03	10/29/03	
FLUORIDE BY IC	001 MS	W	03LICB72	10/27/03	10/29/03	10/29/03	
NITRITE BY IC	001	W	03LICB72	10/27/03	10/29/03	10/29/03	1259
NITRITE BY IC	001 REP	W	03LICB72	10/27/03	10/29/03	10/29/03	1314 mjo 11-19-03
NITRITE BY IC	001 MS	W	03LICB72	10/27/03	10/29/03	10/29/03	~~12~~ 1329
NITRATE BY IC	001	W	03LICB72	10/27/03	10/29/03	10/29/03	1259
NITRATE BY IC	001 REP	W	03LICB72	10/27/03	10/29/03	10/29/03	1314
NITRATE BY IC	001 MS	W	03LICB72	10/27/03	10/29/03	10/29/03	1329
PHOSPHATE BY IC	001	W	03LICB72	10/27/03	10/29/03	10/29/03	1259
PHOSPHATE BY IC	001 REP	W	03LICB72	10/27/03	10/29/03	10/29/03	1314
PHOSPHATE BY IC	001 MS	W	03LICB72	10/27/03	10/29/03	10/29/03	1329
SULFATE BY IC	001	W	3LICB72	10/27/03	10/29/03	10/29/03	
SULFATE BY IC	001 REP	W	3LICB72	10/27/03	10/29/03	10/29/03	
SULFATE BY IC	001 MS	W	3LICB72	10/27/03	10/29/03	10/29/03	

LAB QC:

BROMIDE BY IC	MB1	W	03LICB72	N/A	10/29/03	10/29/03
BROMIDE BY IC	MB1 BS	W	03LICB72	N/A	10/29/03	10/29/03
CHLORIDE BY IC	MB1	W	03LICB72	N/A	10/29/03	10/29/03
CHLORIDE BY IC	MB1 BS	W	03LICB72	N/A	10/29/03	10/29/03
FLUORIDE BY IC	MB1	W	03LICB72	N/A	10/29/03	10/29/03
FLUORIDE BY IC	MB1 BS	W	03LICB72	N/A	10/29/03	10/29/03
NITRITE BY IC	MB1	W	03LICB72	N/A	10/29/03	10/29/03
NITRITE BY IC	MB1 BS	W	03LICB72	N/A	10/29/03	10/29/03
NITRATE BY IC	MB1	W	03LICB72	N/A	10/29/03	10/29/03
NITRATE BY IC	MB1 BS	W	03LICB72	N/A	10/29/03	10/29/03
PHOSPHATE BY IC	MB1	W	03LICB72	N/A	10/29/03	10/29/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD I03-041 H2416

DATE RECEIVED: 10/30/03 LVL LOT # :0310L972

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PHOSPHATE BY IC	MB1 BS	W	03LICB72	N/A	10/29/03	10/29/03

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD I03-041 H2416
LVL#: 0310L972

W.O.#: 11343-606-001-9999-00
Date Received: 10-30-03

INORGANIC NARRATIVE

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

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

3. Sample holding times as required by the method and/or contract were met with the exception of Nitrite, Nitrate and Phosphate (see the sample chronology summary for analyses times for short hold samples).

4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy with the exception of Nitrate, Nitrite and Phosphate as noted on the Sample Receipt Checklist.

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 for Bromide, Chloride, Fluoride, Nitrite, Nitrate, Phosphate and Sulfate were within the 75-125% control limits.

8. The replicate analyses for Bromide, Chloride, Fluoride, Nitrite, Nitrate, Phosphate and Sulfate 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
Laboratory Manager
Lionville Laboratory Incorporated

11-21-03
Date

njp\i10-972

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.

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

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	EPA /600	SW846	OTHER
Acidity	___ 305.1		
___Alkalinity ___Bicarbonate ___Carbonate	___ 310.1		
BOD	___ 405.1		___ 5210B (b)
Ion Chromatography:			
✓ Bromide ✓ Chloride ✓ Fluoride	✓ 300.0	___ 9056	
✓ Nitrate ✓ Nitrite ✓ Phosphate	✓ 300.0	___ 9056	
✓ Sulfate ___Formate ___Acetate ___Oxalate	✓ 300.0	___ 9056	
Chloride	___ 325.2	___ 9251	
Chorine, Residual	___ 330.5 (mod)		
Cyanide, Amenable to Chlorination	___ 335.2	___ 9010B	
Cyanide, Total	___ 335.2	___ 9010B ___ 9014	___ ILMO4.0 (e)
Cyanide, Weak Acid Dissociable		___	___ 412 (a) ___ 4500CN-I (b)
COD	___ 410.4(mod)		___ 5220C (b)
Color	___ 110.2		
Corrosivity by Coupon		___ 1110(mod)	
Chromium VI		___ 7196A	___ 3500Cr-D (b)
Fluoride	___ 340.2		___ 4500-FC
Hardness, Calcium	___ 215.2		
Hardness, Total	___ 130.2		
Iodide			___ ASTM D19P202 (1)
Surfactant	___ 425.1		
___Nitrate-Nitrite ___Nitrate ___Nitrite	___ 353.2		
Ammonia	___ 350.3		
Total___ Kjeldahl ___ Organic Nitrogen	___ 351.3		
Total___ Organic ___ Inorganic Carbon	___ 415.1	___ 9060	
Oil & Grease	___ 413.1	___ 9070	
___ pH ____ pH; paper	___ 150.1	___ 9040B ___ 9041A	
Petroleum Hydrocarbons, Total Recoverable	___ 418.1		
Phenol	___ 420.1 ___ 420.2	___ 9065 ___ 9066	
___Ortho ___Total Phosphate	___ 365.2		___ 4500-P B ___ C
Salinity			___ 210A (a) ___ 2520 (b)
Settleable Solids	___ 160.5		
Sulfide	___ 376.1	___ 9030B/9034 (acid soluble)	
Reactive ___Cyanide ___Sulfide		___ Section 7.3 (__9014__9030B)	
Silica	___ 370.1		
Sulfite	___ 377.1		
Sulfate	___ 375.4	___ 9038	
Specific Conductance	___ 120.1	___ 9050A	
Specific Gravity			___ D5057-90 ___ 213E (a)
Synthetic Precipitation Leach	___ 1312		
Total ___Dissolved __Suspended ___Solids	160 ___.1 ___.2 ___.3		
Total Organic Halides	___ 450.1	___ 9020B	
Turbidity	___ 180.1		
Volatile Solids:			
__Total __Dissolved __Suspended	___ 160.4		
Other:		**Method:**	

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 11/20/03

CLIENT: TNUHANFORD I03-041 H2416 LVL LOT #: 0310L972

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B17JN7	Bromide by IC	0.25 u	MG/L	0.25	1.0
		Chloride by IC	1.5	MG/L	0.25	1.0
		Fluoride by IC	0.25 u	MG/L	0.25	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	1.71	MG/L	0.25	1.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	12.1	MG/L	1.2	5.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/20/03

CLIENT: TNUHANFORD I03-041 H2416 LVL LOT #: 0310L972

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	03LICB72-MB1	Bromide by IC	0.25 u	MG/L	0.25	1.0
		Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.25 u	MG/L	0.25	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/20/03

CLIENT: TNUHANFORD I03-041 H2416 LVL LOT #: 0310L972

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B17JN7	Bromide by IC	5.0	0.00	5.0	99.0	1.0
		Chloride by IC	6.6	1.5	5.0	103.1	1.0
		Fluoride by IC	4.8	0.042	5.0	95.8	1.0
		Nitrite by IC	5.04	0.25u	5.00	100.8	1.0
		Nitrate by IC	6.84	1.71	5.00	102.6	1.0
		Phosphate by IC	4.9	0.25u	5.0	97.3	1.0
		Sulfate by IC	38.6	12.1	25.0	106.3	5.0
BLANK10	03LICB72-MB1	Bromide by IC	4.8	0.25u	5.0	95.7	1.0
		Chloride by IC	4.6	0.25u	5.0	91.8	1.0
		Fluoride by IC	4.6	0.25u	5.0	92.6	1.0
		Nitrite by IC	4.76	0.25u	5.00	95.2	1.0
		Nitrate by IC	4.85	0.25u	5.00	97.0	1.0
		Phosphate by IC	4.7	0.25u	5.0	93.5	1.0
		Sulfate by IC	4.7	0.25u	5.0	93.6	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/20/03

CLIENT: TNUHANFORD I03-041 H2416 LVL LOT #: 0310L972

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B17JN7	Bromide by IC	0.25u	0.25u	NC	1.0
		Chloride by IC	1.5	1.5	1.3	1.0
		Fluoride by IC	0.25u	0.25u	NC	1.0
		Nitrite by IC	0.25u	0.25u	NC	1.0
		Nitrate by IC	1.71	1.68	1.7	1.0
		Phosphate by IC	0.25u	0.25u	NC	1.0
		Sulfate by IC	12.1	12.1	0.12	5.0

Lionville Laboratory Use Only

03IOL972

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI LIONVILLE LABORATORY INC.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford, I03-041

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30 days

Date Rec'd: 10/30/03 Date Due: 11-29-03

		A		B	C
Refrigerator #		5		5	5
#/Type Container	Liquid	1PL		1PL	1PL
	Solid				
Volume	Liquid	500		500	500
	Solid				
Preservatives		HNO3		—	HNO3
ANALYSES REQUESTED	ORGANIC: VOA, BNA, Pest/PCB, Herb				
	INORG: Metal (1), CN			IC anions	metals (2)
	Lionville Laboratory Use Only	TOT MET (1)		IC (1)	SOL MET (1)

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	TOT MET (1)	IC (1)	SOL MET (1)
001	B17JN7			W	10/27/03	1100	1	1	
002	B17JN8 (F) gm 10/30/03			⊥	⊥	⊥			1

Special Instructions: SAF # I03-041

Run Matrix QC

MET (2): Al, Ag, Ba, Be, Ca, Cd, Cr, Co, Cu, Fe, K, Mg, Mn, Ni, Na, Sb, Sr, V, Zn

IC (1): Br, Cl, F, NO_3, NO_2, PO_4, SO_4

DATE/REVISIONS:

1.
2.
3.
4.
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

SPEC

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

Relinquished by	Received by	Date	Time
FedEx	JPerry	10/30/03	1920

Relinquished by	Received by	Date	Time
"COMPOSITE WASTE"	ORIGINAL REWRITTEN		

PNNL SDG# H2416

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # I03-041-1

Page 1 of 1

Collector: Merrill	Contact/Requester: DL STEWART	Telephone No.: 509-376-5056 MSIN FAX
SAF No.: I03-041	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code: F43953
Project Title: CERCLA SEEPS, SEPTEMBER 2003	Logbook No.	Ice Chest No. Temp.
Shipped To (Lab): EBERLINE SERVICES (Formerly TMA)	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SDG # H2416

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all samples submitted under "I" SAFs into one SDG, not to exceed SDG closure of 14 days.FAX copies of log-ins and submit invoices & deliverables to DL Stewart (372-1704).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B17JN7		W	10-22-03	11:00	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B17JN7		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B17JN7		W			1x20-mL P	Activity Scan	None
B17JN7		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B17JN7		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B17JN7		W			1x125-mL P	Tritium - H3	None
B17JN8 (F)		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
DL Merrill	D. L. Merrill		10-27-03 1500	Locked Storage	Gw Patton		10/27/03 1500
Locked storage	Gw Patton		10/28/03 1145	FedEx #7909 4463 0776			10/27/03 1145
FED EX							
			1600 10.29.03	FED EX			

Matrix *

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

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

Rel by FedEx Rec. by JPerry (LVLI) 10/30/03 0920

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU Hanford **Date:** 10/30/03

Purchase Order / Project# / I03-041
SAF# / SOW# / Release #:

LvLI Batch # : 03100972 **Sample Custodian:** JPerry

NOTE: EXPLAIN ALL DISCREPANCIES

1.	Samples Hand Delivered or Shipped	Carrier FedEX		Airbill# 791704164322	
2.	Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ No Seals	Comments
3.	Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No		
4.	All expected paperwork received (coc and other client specific information) sealed in plastic bag and easily accessible?	☑ Yes	☐ No		
5.	Samples received cooled or ambient?	Temp 0.8 °C		Cooler # BF+1	
6.	Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals	
7.	coc signed and dated?	☑ Yes	☐ No		
8.	Sample containers are intact?	☑ Yes	☐ No		
9.	All samples on coc received? All samples received on coc?	☑ Yes	☐ No		
10.	All sample label information matches coc?	☑ Yes	☐ No	001 B - no date or time on label. ID is present and matches. (is hand write on plastic bottle)	
11.	Samples properly preserved?	☑ Yes	☐ No		
12.	Samples received within hold times? Short holds taken to wet lab?	☐ Yes	☑ No	IC anions out of hold. NO_2, NO_3, PO_4	
13.	VOA, TOC, TOX free of headspace?	☐ Yes	☐ No	☑ N/A	
14.	QC stickers placed on bottles designated by client?	☐ Yes	☐ No	☑ N/A	
15.	Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles not within policy. See reverse side for policy)	☐ Yes	☑ No	see #12	
16.	Project Manager contacted concerning discrepancies? name/date (or samples outside criteria) OJ	☑ Yes	☐ No	☐ No Discrepancies	

SR-002-B

Lionville Laboratory, Inc.
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TNUHANFORD I03-041 H2416

DATE RECEIVED: 10/30/03 LVL LOT # :0310L972

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B17JN7						
SILVER, TOTAL	001	W	03L0677	10/27/03	11/10/03	11/11/03
SILVER, TOTAL	001 REP	W	03L0677	10/27/03	11/10/03	11/11/03
ALUMINUM, TOTAL	001	W	03L0677	10/27/03	11/10/03	11/12/03
ALUMINUM, TOTAL	001 REP	W	03L0677	10/27/03	11/10/03	11/12/03
BARIUM, TOTAL	001	W	03L0677	10/27/03	11/10/03	11/11/03
BARIUM, TOTAL	001 REP	W	03L0677	10/27/03	11/10/03	11/11/03
BERYLLIUM, TOTAL	001	W	03L0677	10/27/03	11/10/03	11/11/03
BERYLLIUM, TOTAL	001 REP	W	03L0677	10/27/03	11/10/03	11/11/03
CALCIUM, TOTAL	001	W	03L0677	10/27/03	11/10/03	11/11/03
CALCIUM, TOTAL	001 REP	W	03L0677	10/27/03	11/10/03	11/11/03
CADMIUM, TOTAL	001	W	03L0677	10/27/03	11/10/03	11/11/03
CADMIUM, TOTAL	001 REP	W	03L0677	10/27/03	11/10/03	11/11/03
COBALT, TOTAL	001	W	03L0677	10/27/03	11/10/03	11/11/03
COBALT, TOTAL	001 REP	W	03L0677	10/27/03	11/10/03	11/11/03
CHROMIUM, TOTAL	001	W	03L0677	10/27/03	11/10/03	11/11/03
CHROMIUM, TOTAL	001 REP	W	03L0677	10/27/03	11/10/03	11/11/03
COPPER, TOTAL	001	W	03L0677	10/27/03	11/10/03	11/12/03
COPPER, TOTAL	001 REP	W	03L0677	10/27/03	11/10/03	11/12/03
IRON, TOTAL	001	W	03L0677	10/27/03	11/10/03	11/11/03
IRON, TOTAL	001 REP	W	03L0677	10/27/03	11/10/03	11/11/03
POTASSIUM, TOTAL	001	W	03L0677	10/27/03	11/10/03	11/11/03
POTASSIUM, TOTAL	001 REP	W	03L0677	10/27/03	11/10/03	11/11/03
MAGNESIUM, TOTAL	001	W	03L0677	10/27/03	11/10/03	11/11/03
MAGNESIUM, TOTAL	001 REP	W	03L0677	10/27/03	11/10/03	11/11/03
MANGANESE, TOTAL	001	W	03L0677	10/27/03	11/10/03	11/11/03
MANGANESE, TOTAL	001 REP	W	03L0677	10/27/03	11/10/03	11/11/03
SODIUM, TOTAL	001	W	03L0677	10/27/03	11/10/03	11/11/03
SODIUM, TOTAL	001 REP	W	03L0677	10/27/03	11/10/03	11/11/03
NICKEL, TOTAL	001	W	03L0677	10/27/03	11/10/03	11/11/03
NICKEL, TOTAL	001 REP	W	03L0677	10/27/03	11/10/03	11/11/03
ANTIMONY, TOTAL	001	W	03L0677	10/27/03	11/10/03	11/11/03
ANTIMONY, TOTAL	001 REP	W	03L0677	10/27/03	11/10/03	11/11/03
STRONTIUM, TOTAL	001	W	03L0677	10/27/03	11/10/03	11/11/03
STRONTIUM, TOTAL	001 REP	W	03L0677	10/27/03	11/10/03	11/11/03
VANADIUM, TOTAL	001	W	03L0677	10/27/03	11/10/03	11/11/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD I03-041 H2416

DATE RECEIVED: 10/30/03 LVL LOT # :0310L972

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
VANADIUM, TOTAL	001 REP	W	03L0677	10/27/03	11/10/03	11/11/03
ZINC, TOTAL	001	W	03L0677	10/27/03	11/10/03	11/11/03
ZINC, TOTAL	001 REP	W	03L0677	10/27/03	11/10/03	11/11/03
B17JN8						
SILVER, SOLUBLE	002	W	03L0677	10/27/03	11/10/03	11/11/03
SILVER, SOLUBLE	002 MS	W	03L0677	10/27/03	11/10/03	11/11/03
ALUMINUM, SOLUBLE	002	W	03L0677	10/27/03	11/10/03	11/12/03
ALUMINUM, SOLUBLE	002 MS	W	03L0677	10/27/03	11/10/03	11/12/03
BARIUM, SOLUBLE	002	W	03L0677	10/27/03	11/10/03	11/11/03
BARIUM, SOLUBLE	002 MS	W	03L0677	10/27/03	11/10/03	11/11/03
BERYLLIUM, SOLUBLE	002	W	03L0677	10/27/03	11/10/03	11/11/03
BERYLLIUM, SOLUBLE	002 MS	W	03L0677	10/27/03	11/10/03	11/11/03
CALCIUM, SOLUBLE	002	W	03L0677	10/27/03	11/10/03	11/11/03
CALCIUM, SOLUBLE	002 MS	W	03L0677	10/27/03	11/10/03	11/11/03
CADMIUM, SOLUBLE	002	W	03L0677	10/27/03	11/10/03	11/11/03
CADMIUM, SOLUBLE	002 MS	W	03L0677	10/27/03	11/10/03	11/11/03
COBALT, SOLUBLE	002	W	03L0677	10/27/03	11/10/03	11/11/03
COBALT, SOLUBLE	002 MS	W	03L0677	10/27/03	11/10/03	11/11/03
CHROMIUM, SOLUBLE	002	W	03L0677	10/27/03	11/10/03	11/11/03
CHROMIUM, SOLUBLE	002 MS	W	03L0677	10/27/03	11/10/03	11/11/03
COPPER, SOLUBLE	002	W	03L0677	10/27/03	11/10/03	11/12/03
COPPER, SOLUBLE	002 MS	W	03L0677	10/27/03	11/10/03	11/12/03
IRON, SOLUBLE	002	W	03L0677	10/27/03	11/10/03	11/11/03
IRON, SOLUBLE	002 MS	W	03L0677	10/27/03	11/10/03	11/11/03
POTASSIUM, SOLUBLE	002	W	03L0677	10/27/03	11/10/03	11/11/03
POTASSIUM, SOLUBLE	002 MS	W	03L0677	10/27/03	11/10/03	11/11/03
MAGNESIUM, SOLUBLE	002	W	03L0677	10/27/03	11/10/03	11/11/03
MAGNESIUM, SOLUBLE	002 MS	W	03L0677	10/27/03	11/10/03	11/11/03
MANGANESE, SOLUBLE	002	W	03L0677	10/27/03	11/10/03	11/11/03
MANGANESE, SOLUBLE	002 MS	W	03L0677	10/27/03	11/10/03	11/11/03
SODIUM, SOLUBLE	002	W	03L0677	10/27/03	11/10/03	11/11/03
SODIUM, SOLUBLE	002 MS	W	03L0677	10/27/03	11/10/03	11/11/03
NICKEL, SOLUBLE	002	W	03L0677	10/27/03	11/10/03	11/11/03
NICKEL, SOLUBLE	002 MS	W	03L0677	10/27/03	11/10/03	11/11/03
ANTIMONY, SOLUBLE	002	W	03L0677	10/27/03	11/10/03	11/11/03
ANTIMONY, SOLUBLE	002 MS	W	03L0677	10/27/03	11/10/03	11/11/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD I03-041 H2416

DATE RECEIVED: 10/30/03 LVL LOT # :0310L972

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
STRONTIUM, SOLUBLE	002	W	03L0677	10/27/03	11/10/03	11/11/03
STRONTIUM, SOLUBLE	002 MS	W	03L0677	10/27/03	11/10/03	11/11/03
VANADIUM, SOLUBLE	002	W	03L0677	10/27/03	11/10/03	11/11/03
VANADIUM, SOLUBLE	002 MS	W	03L0677	10/27/03	11/10/03	11/11/03
ZINC, SOLUBLE	002	W	03L0677	10/27/03	11/10/03	11/11/03
ZINC, SOLUBLE	002 MS	W	03L0677	10/27/03	11/10/03	11/11/03

LAB QC:

SILVER LABORATORY	LC1 BS	W	03L0677	N/A	11/10/03	11/11/03
SILVER, TOTAL	MB1	W	03L0677	N/A	11/10/03	11/11/03
ALUMINUM LABORTORY	LC1 BS	W	03L0677	N/A	11/10/03	11/12/03
ALUMINUM, TOTAL	MB1	W	03L0677	N/A	11/10/03	11/12/03
BARIUM LABORATORY	LC1 BS	W	03L0677	N/A	11/10/03	11/11/03
BARIUM, TOTAL	MB1	W	03L0677	N/A	11/10/03	11/11/03
BERYLLIUM LABORATORY	LC1 BS	W	03L0677	N/A	11/10/03	11/11/03
BERYLLIUM, TOTAL	MB1	W	03L0677	N/A	11/10/03	11/11/03
CALCIUM LABORATORY	LC1 BS	W	03L0677	N/A	11/10/03	11/11/03
CALCIUM, TOTAL	MB1	W	03L0677	N/A	11/10/03	11/11/03
CADMIUM LABORATORY	LC1 BS	W	03L0677	N/A	11/10/03	11/11/03
CADMIUM, TOTAL	MB1	W	03L0677	N/A	11/10/03	11/11/03
COBALT LABORATORY	LC1 BS	W	03L0677	N/A	11/10/03	11/11/03
COBALT, TOTAL	MB1	W	03L0677	N/A	11/10/03	11/11/03
CHROMIUM LABORATORY	LC1 BS	W	03L0677	N/A	11/10/03	11/11/03
CHROMIUM, TOTAL	MB1	W	03L0677	N/A	11/10/03	11/11/03
COPPER LABORATORY	LC1 BS	W	03L0677	N/A	11/10/03	11/12/03
COPPER, TOTAL	MB1	W	03L0677	N/A	11/10/03	11/12/03
IRON LABORATORY	LC1 BS	W	03L0677	N/A	11/10/03	11/11/03
IRON, TOTAL	MB1	W	03L0677	N/A	11/10/03	11/11/03
POTASSIUM LABORATORY	LC1 BS	W	03L0677	N/A	11/10/03	11/11/03
POTASSIUM, TOTAL	MB1	W	03L0677	N/A	11/10/03	11/11/03
MAGNESIUM LABORATORY	LC1 BS	W	03L0677	N/A	11/10/03	11/11/03
MAGNESIUM, TOTAL	MB1	W	03L0677	N/A	11/10/03	11/11/03
MANGANESE LABORATORY	LC1 BS	W	03L0677	N/A	11/10/03	11/11/03
MANGANESE, TOTAL	MB1	W	03L0677	N/A	11/10/03	11/11/03
SODIUM LABORATORY	LC1 BS	W	03L0677	N/A	11/10/03	11/11/03
SODIUM, TOTAL	MB1	W	03L0677	N/A	11/10/03	11/11/03
NICKEL LABORATORY	LC1 BS	W	03L0677	N/A	11/10/03	11/11/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD I03-041 H2416

DATE RECEIVED: 10/30/03 LVL LOT # :0310L972

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NICKEL, TOTAL	MB1	W	03L0677	N/A	11/10/03	11/11/03
ANTIMONY LABORATORY	LC1 BS	W	03L0677	N/A	11/10/03	11/11/03
ANTIMONY, TOTAL	MB1	W	03L0677	N/A	11/10/03	11/11/03
STRONTIUM LCS STANDA	LC1 BS	W	03L0677	N/A	11/10/03	11/11/03
STRONTIUM, TOTAL	MB1	W	03L0677	N/A	11/10/03	11/11/03
VANADIUM LABORATORY	LC1 BS	W	03L0677	N/A	11/10/03	11/11/03
VANADIUM, TOTAL	MB1	W	03L0677	N/A	11/10/03	11/11/03
ZINC LABORATORY	LC1 BS	W	03L0677	N/A	11/10/03	11/11/03
ZINC, TOTAL	MB1	W	03L0677	N/A	11/10/03	11/11/03

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD I03-041
LVL#: 0310L972
SDG/SAF#: H2416/I03-041

W.O.#: 11343-606-001-9999-00
Date Received: 10-30-03

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 water 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. Please refer to the Sample Receipt Check List for sample discrepancies in LvLI's sample acceptance policy.

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 blank for 1 analyte was outside method criteria. {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a). The MB result for Zinc was greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and all samples 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. All matrix spike (MS) recoveries were within 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.

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11. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

1-20-03
Date

jjw/m10-972

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#: 0310L972

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: X3005A __3010A __3015 __3020A __3050B __3051 __200.7 __SS17
__Other:_____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	X6010B		__200.7				__99
Antimony	X6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	__6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	X6010B		__200.7				__99
Beryllium	X6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	X6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	X6010B		__200.7				__99
Chromium	X6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	X6010B		__200.7				__99
Copper	X6010B	__7211 [5]	__200.7	__220.2			__99
Iron	X6010B		__200.7				__99
Lead	__6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	X6010B		__200.7				__99
Manganese	X6010B		__200.7				__99
Mercury	__7470A [3]	__7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	X6010B		__200.7				__99
Potassium	X6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	__6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	X6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	X6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	X6010B		__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	X6010B		__200.7				__99
Zinc	X6010B		__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, approximately 0.3 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Flame AA.

4. Graphite Furnace AA.

L-WI-033/N-04/98

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/20/03

CLIENT: TNUHANFORD I03-041 H2416 LVL LOT #: 0310L972

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B17JN7	Silver, Total	0.80 u	UG/L	0.80	1.0
		Aluminum, Total	29.2	UG/L	17.3	1.0
		Barium, Total	26.5	UG/L	0.20	1.0
		Beryllium, Total	0.40 u	UG/L	0.40	1.0
		Calcium, Total	17200	UG/L	31.0	1.0
		Cadmium, Total	0.40 u	UG/L	0.40	1.0
		Cobalt, Total	1.2 u	UG/L	1.2	1.0
		Chromium, Total	10.0	UG/L	1.0	1.0
		Copper, Total	1.8 u	UG/L	1.8	1.0
		Iron, Total	45.8	UG/L	19.8	1.0
		Potassium, Total	750	UG/L	23.5	1.0
		Magnesium, Total	3990	UG/L	7.0	1.0
		Manganese, Total	0.61	UG/L	0.30	1.0
		Sodium, Total	2250	UG/L	7.1	1.0
		Nickel, Total	2.0 u	UG/L	2.0	1.0
		Antimony, Total	2.9 u	UG/L	2.9	1.0
		Strontium, Total	95.4	UG/L	0.10	1.0
		Vanadium, Total	0.90 u	UG/L	0.90	1.0
		Zinc, Total	9.9	UG/L	2.6	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/20/03

CLIENT: TNUHANFORD I03-041 H2416 LVL LOT #: 0310L972

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B17JN8	Silver, Soluble	0.80	u	UG/L	0.80	1.0
		Aluminum, Soluble	17.3	u	UG/L	17.3	1.0
		Barium, Soluble	29.7		UG/L	0.20	1.0
		Beryllium, Soluble	0.40	u	UG/L	0.40	1.0
		Calcium, Soluble	19500		UG/L	31.0	1.0
		Cadmium, Soluble	0.40	u	UG/L	0.40	1.0
		Cobalt, Soluble	1.2	u	UG/L	1.2	1.0
		Chromium, Soluble	11.3		UG/L	1.0	1.0
		Copper, Soluble	1.8	u	UG/L	1.8	1.0
		Iron, Soluble	19.8	u	UG/L	19.8	1.0
		Potassium, Soluble	838		UG/L	23.5	1.0
		Magnesium, Soluble	4450		UG/L	7.0	1.0
		Manganese, Soluble	0.30	u	UG/L	0.30	1.0
		Sodium, Soluble	2520		UG/L	7.1	1.0
		Nickel, Soluble	2.0	u	UG/L	2.0	1.0
		Antimony, Soluble	2.9	u	UG/L	2.9	1.0
		Strontium, Soluble	107		UG/L	0.10	1.0
		Vanadium, Soluble	0.97		UG/L	0.90	1.0
		Zinc, Soluble	9.3		UG/L	2.6	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/20/03

CLIENT: TNUHANFORD I03-041 H2416 LVL LOT #: 0310L972

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	03L0677-MB1	Silver, Total	0.80	u	UG/L	0.80	1.0
		Aluminum, Total	17.8		UG/L	17.3	1.0
		Barium, Total	0.25		UG/L	0.20	1.0
		Beryllium, Total	0.40	u	UG/L	0.40	1.0
		Calcium, Total	66.3		UG/L	31.0	1.0
		Cadmium, Total	0.40	u	UG/L	0.40	1.0
		Cobalt, Total	1.2	u	UG/L	1.2	1.0
		Chromium, Total	1.0	u	UG/L	1.0	1.0
		Copper, Total	1.8	u	UG/L	1.8	1.0
		Iron, Total	19.8	u	UG/L	19.8	1.0
		Potassium, Total	23.5	u	UG/L	23.5	1.0
		Magnesium, Total	16.9		UG/L	7.0	1.0
		Manganese, Total	0.30	u	UG/L	0.30	1.0
		Sodium, Total	70.4		UG/L	7.1	1.0
		Nickel, Total	2.0	u	UG/L	2.0	1.0
		Antimony, Total	2.9	u	UG/L	2.9	1.0
		Strontium, Total	0.18		UG/L	0.10	1.0
		Vanadium, Total	0.90	u	UG/L	0.90	1.0
		Zinc, Total	12.3		UG/L	2.6	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/20/03

CLIENT: TNUHANFORD I03-041 H2416 LVL LOT #: 0310L972

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	B17JN8	Silver, Soluble	50.0	0.80u	50.0	100	1.0
		Aluminum, Soluble	1980	17.3 u	2000	99.2	1.0
		Barium, Soluble	2130	29.7	2000	105.2	1.0
		Beryllium, Soluble	51.9	0.40u	50.0	103.8	1.0
		Calcium, Soluble	46100	19500	25000	106.6	1.0
		Cadmium, Soluble	50.7	0.40u	50.0	101.4	1.0
		Cobalt, Soluble	498	1.2 u	500	99.6	1.0
		Chromium, Soluble	210	11.3	200	99.6	1.0
		Copper, Soluble	249	1.8 u	250	99.7	1.0
		Iron, Soluble	1060	19.8 u	1000	105.6	1.0
		Potassium, Soluble	27400	838	25000	106.4	1.0
		Magnesium, Soluble	30000	4450	25000	102.2	1.0
		Manganese, Soluble	518	0.30u	500	103.7	1.0
		Sodium, Soluble	27700	2520	25000	100.9	1.0
		Nickel, Soluble	512	2.0 u	500	102.4	1.0
		Antimony, Soluble	527	2.9 u	500	105.5	1.0
		Strontium, Soluble	1130	107	1000	102.5	1.0
		Vanadium, Soluble	492	0.97	500	98.1	1.0
		Zinc, Soluble	526	9.3	500	103.4	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/20/03

CLIENT: TNUHANFORD I03-041 H2416 LVL LOT #: 0310L972

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B17JN7	Silver, Total	0.80u	0.80u	NC	1.0
		Aluminum, Total	29.2	26.3	10.5	1.0
		Barium, Total	26.5	27.7	4.4	1.0
		Beryllium, Total	0.40u	0.40u	NC	1.0
		Calcium, Total	17200	18200	5.3	1.0
		Cadmium, Total	0.40u	0.40u	NC	1.0
		Cobalt, Total	1.2 u	1.2 u	NC	1.0
		Chromium, Total	10.0	10.5	4.9	1.0
		Copper, Total	1.8 u	1.8 u	NC	1.0
		Iron, Total	45.8	48.9	6.5	1.0
		Potassium, Total	750	798	6.2	1.0
		Magnesium, Total	3990	4150	3.9	1.0
		Manganese, Total	0.61	0.49	21.8	1.0
		Sodium, Total	2250	2410	6.7	1.0
		Nickel, Total	2.0 u	2.0 u	NC	1.0
		Antimony, Total	2.9 u	2.9 u	NC	1.0
		Strontium, Total	95.4	100	4.7	1.0
		Vanadium, Total	0.90u	0.90u	NC	1.0
		Zinc, Total	9.9	9.2	7.3	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/20/03

CLIENT: TNUHANFORD I03-041 H2416 LVL LOT #: 0310L972

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	03L0677-LC1	Silver, LCS	500	500	UG/L	100.0
		Aluminum, LCS	5050	5000	UG/L	101.0
		Barium, LCS	5020	5000	UG/L	100.4
		Beryllium, LCS	246	250	UG/L	98.4
		Calcium, LCS	25400	25000	UG/L	101.4
		Cadmium, LCS	247	250	UG/L	98.8
		Cobalt, LCS	2470	2500	UG/L	98.8
		Chromium, LCS	491	500	UG/L	98.1
		Copper, LCS	1250	1250	UG/L	100.1
		Iron, LCS	4900	5000	UG/L	97.9
		Potassium, LCS	26000	25000	UG/L	104.0
		Magnesium, LCS	24700	25000	UG/L	98.9
		Manganese, LCS	760	750	UG/L	101.3
		Sodium, LCS	24900	25000	UG/L	99.6
		Nickel, LCS	2000	2000	UG/L	100.2
		Antimony, LCS	3070	3000	UG/L	102.4
		Strontium, LCS	4920	5000	UG/L	98.5
		Vanadium, LCS	2410	2500	UG/L	96.5
		Zinc, LCS	1000	1000	UG/L	100.5

Lionville Laboratory Use Only
0310L972

Custody Transfer Record/Lab Work Request

LIONVILLE LABORATORY INC.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford, I03-041
Est. Final Proj. Sampling Date:
Project #: 11343-606-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: SPEC Del: STD TAT: 30 days

Date Rec'd: 10/30/03 Date Due: 11-29-03

		A		B	C
Refrigerator #		5		5	5
#/Type Container	Liquid	1PL		1PL	1PL
	Solid				
Volume	Liquid	500		500	500
	Solid				
Preservatives		HNO3		—	HNO3
ANALYSES REQUESTED →	ORGANIC: VOA, BNA, Pest/PCB, Herb	INORG: Metal (1)	CN	IC anions	Metals (2)
Lionville Laboratory Use Only		TOT MET (1)		IC (1)	SOL MET (1)

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	TOT MET (1)	IC (1)	SOL MET (1)
001	B17JN7			W	10/27/03	1100	1	1	
002	B17JN8 (F)			⊥	⊥	⊥			1

Special Instructions: SAF # I03-041
Run Matrix QC

MET (1): Al, Ag, Ba, Be, Ca, Cd, Cr, Co, Cu, Fe, K, Mg, Mn, Ni, Na, Sb, Sr, V, Zn

IC (1): Br, Cl, F, NO_3, NO_2, PO_4, SO_4

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
FedEx	J Perry	10/30/03	0920

Relinquished by	Received by	Date	Time
"COMPOSITE WASTE"	ORIGINAL REWRITTEN		

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

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

PNNL SDG# H2416

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # I03-041-1

Page 1 of 1

Collector: Merrill	Contact/Requester: DL STEWART	Telephone No.: 509-376-5056 MSIN FAX
SAF No.: I03-041	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code: F43953
Project Title: CERCLA SEEPS, SEPTEMBER 2003	Logbook No.	Ice Chest No. Temp.
Shipped To (Lab): EBERLINE SERVICES (Formerly TMA)	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SDG # H2416

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Batch all samples submitted under "I" SAFs into one SDG, not to exceed SDG closure of 14 days.FAX copies of log-ins and submit invoices & deliverables to DL Stewart (372-1704).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B17JN7		W	10-27-03	11:00	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B17JN7		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B17JN7		W			1x20-mL P	Activity Scan	None
B17JN7		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B17JN7		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B17JN7		W			1x125-mL P	Tritium - H3	None
B17JN8 (F)		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
DL Merrill	D. L. Merrill		10-27-03 1500	Locked Storage	Gw Patton		10/27/03 1500
Locked storage	Gw Patton		10/28/03 1145	FedEx #7909 4463 0776			10/27/03 1145
FED EX							
				1000			10.29.03
1600			10.29.03	FED EX			

Matrix *

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

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

Rel by FedEx Rec. by JPerry (LVLI) 10/30/03 0920

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU Hanford **Date:** 10/30/03

Purchase Order / Project# / I03-041
SAF# / SOW# / Release #:

LvLI Batch # : 03L0972 **Sample Custodian:** JPerry

NOTE: EXPLAIN ALL DISCREPANCIES

1.	Samples Hand Delivered or Shipped	Carrier FedEX		Airbill# 791704164322	
2.	Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ No Seals	Comments
3.	Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No		
4.	All expected paperwork received (coc and other client specific information) sealed in plastic bag and easily accessible?	☑ Yes	☐ No		
5.	Samples received cooled or ambient?	**Temp** 0.8 °C		Cooler # BF+1	
6.	Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals	
7.	coc signed and dated?	☑ Yes	☐ No		
8.	Sample containers are intact?	☑ Yes	☐ No		
9.	All samples on coc received? All samples received on coc?	☑ Yes	☐ No		
10.	All sample label information matches coc?	☑ Yes	☐ No	001B - no date or time on label. ID is present and matches. (is hand written on plastic bottle)	
11.	Samples properly preserved?	☑ Yes	☐ No		
12.	Samples received within hold times? Short holds taken to wet lab?	☐ Yes	☑ No	IC anions out of hold.	
13.	VOA, TOC, TOX free of headspace?	☐ Yes	☐ No	☑ N/A	
14.	QC stickers placed on bottles designated by client?	☐ Yes	☐ No	☑ N/A	
15.	Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles not within policy. See reverse side for policy)	☐ Yes	☑ No	see #12	
16.	Project Manager contacted concerning discrepancies? name/date (or samples outside criteria) OJ	☑ Yes	☐ No	☐ No Discrepancies	

SR-002-B