

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD I05-001 H2771

DATE RECEIVED: 10/14/04

LVL LOT # :0410L890

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	ANALYSIS TIME
B1B644							
BROMIDE BY IC	001	W	04LIC062	10/07/04	11/03/04	11/03/04	
BROMIDE BY IC	001 REP	W	04LIC062	10/07/04	11/03/04	11/03/04	
BROMIDE BY IC	001 MS	W	04LIC062	10/07/04	11/03/04	11/03/04	
CHLORIDE BY IC	001	W	04LIC062	10/07/04	11/03/04	11/03/04	
CHLORIDE BY IC	001 REP	W	04LIC062	10/07/04	11/03/04	11/03/04	
CHLORIDE BY IC	001 MS	W	04LIC062	10/07/04	11/03/04	11/03/04	
FLUORIDE BY IC	001	W	04LIC062	10/07/04	11/03/04	11/03/04	
FLUORIDE BY IC	001 REP	W	04LIC062	10/07/04	11/03/04	11/03/04	
FLUORIDE BY IC	001 MS	W	04LIC062	10/07/04	11/03/04	11/03/04	
NITRITE BY IC	001	W	04LIC062	10/07/04	11/03/04	11/03/04	1726
NITRITE BY IC	001 REP	W	04LIC062	10/07/04	11/03/04	11/03/04	1823
NITRITE BY IC	001 MS	W	04LIC062	10/07/04	11/03/04	11/03/04	1852
NITRATE BY IC	001	W	04LIC062	10/07/04	11/03/04	11/03/04	1809
NITRATE BY IC	001 REP	W	04LIC062	10/07/04	11/03/04	11/03/04	1838
NITRATE BY IC	001 MS	W	04LIC062	10/07/04	11/03/04	11/03/04	1907
PHOSPHATE BY IC	001	W	04LIC062	10/07/04	11/03/04	11/03/04	1726
PHOSPHATE BY IC	001 REP	W	04LIC062	10/07/04	11/03/04	11/03/04	1823
PHOSPHATE BY IC	001 MS	W	04LIC062	10/07/04	11/03/04	11/03/04	1852
SULFATE BY IC	001	W	04LIC062	10/07/04	11/03/04	11/03/04	
SULFATE BY IC	001 REP	W	04LIC062	10/07/04	11/03/04	11/03/04	
SULFATE BY IC	001 MS	W	04LIC062	10/07/04	11/03/04	11/03/04	

LAB QC:

BROMIDE BY IC	MB1	W	04LIC062	N/A	11/03/04	11/03/04	
BROMIDE BY IC	MB1 BS	W	04LIC062	N/A	11/03/04	11/03/04	
CHLORIDE BY IC	MB1	W	04LIC062	N/A	11/03/04	11/03/04	
CHLORIDE BY IC	MB1 BS	W	04LIC062	N/A	11/03/04	11/03/04	
FLUORIDE BY IC	MB1	W	04LIC062	N/A	11/03/04	11/03/04	
FLUORIDE BY IC	MB1 BS	W	04LIC062	N/A	11/03/04	11/03/04	
NITRITE BY IC	MB1	W	04LIC062	N/A	11/03/04	11/03/04	
NITRITE BY IC	MB1 BS	W	04LIC062	N/A	11/03/04	11/03/04	
NITRATE BY IC	MB1	W	04LIC062	N/A	11/03/04	11/03/04	
NITRATE BY IC	MB1 BS	W	04LIC062	N/A	11/03/04	11/03/04	
PHOSPHATE BY IC	MB1	W	04LIC062	N/A	11/03/04	11/03/04	

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD I05-001 H2771

DATE RECEIVED: 10/14/04

LVL LOT # :0410L890

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PHOSPHATE BY IC	MB1 BS	W	04LIC062	N/A	11/03/04	11/03/04
SULFATE BY IC	MB1	W	04LIC062	N/A	11/03/04	11/03/04
SULFATE BY IC	MB1 BS	W	04LIC062	N/A	11/03/04	11/03/04



Analytical Report

Client: TNU-HANFORD I05-001 H2771
LVL#: 0410L890

W.O.#: 11343-606-001-9999-00
Date Received: 10-14-04

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 Nitrate, Nitrite 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

11/16/04
Date

njpl10-890

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 WATER SAMPLE ANALYSIS

	<u>EPA /600</u>	<u>SW846</u>	<u>OTHER</u>
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	
Chlorine, 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 11/08/04

CLIENT: TNUHANFORD I05-001 H2771
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0410L890

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B1B644	Bromide by IC	0.25	u MG/L	0.25	1.0
		Chloride by IC	23.2	MG/L	2.5	10.0
		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	42.8	MG/L	2.50	10.0
		Phosphate by IC	0.25	u MG/L	0.25	1.0
		Sulfate by IC	89.9	MG/L	2.5	10.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/08/04

CLIENT: TNUHANFORD I05-001 H2771
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0410L890

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	04LIC062-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 11/08/04

CLIENT: TNUHANFORD I05-001 H2771
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0410L890

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	B1B644	Bromide by IC	9.7	0.16	10.0	95.0	2.0
		Chloride by IC	128	23.2	100	104.4	20.0
		Fluoride by IC	9.6	0.090	10.0	94.9	2.0
		Nitrite by IC	9.71	0.25u	10.0	97.1	2.0
		Nitrate by IC	144	42.8	100	100.8	20.0
		Phosphate by IC	9.2	0.25u	10.0	92.3	2.0
		Sulfate by IC	192	89.9	100	101.8	20.0
BLANK10	04LIC062-MB1	Bromide by IC	5.0	0.25u	5.0	99.0	1.0
		Chloride by IC	4.8	0.25u	5.0	95.2	1.0
		Fluoride by IC	4.8	0.25u	5.0	96.1	1.0
		Nitrite by IC	4.98	0.25u	5.00	99.7	1.0
		Nitrate by IC	4.94	0.25u	5.00	98.7	1.0
		Phosphate by IC	4.8	0.25u	5.0	96.6	1.0
		Sulfate by IC	4.9	0.25u	5.0	97.4	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/08/04

CLIENT: TNUHANFORD I05-001 H2771
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0410L890

SAMPLE	SITE ID	ANALYTE	INITIAL	REPLICATE RPD		DILUTION
			RESULT			FACTOR (REP)
-001REP	B1B644	Bromide by IC	0.25u	0.25u	NC	1.0
		Chloride by IC	23.2	27.5	17.1	10.0
		Fluoride by IC	0.25u	0.25u	NC	1.0
		Nitrite by IC	0.25u	0.25u	NC	1.0
		Nitrate by IC	42.8	44.0	2.7	10.0
		Phosphate by IC	0.25u	0.25u	NC	1.0
		Sulfate by IC	89.9	91.9	2.2	10.0

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

105-001-7

Page 1 of 1

Collector: *L. D. Wall 10/7/04* DURATEK L. D. WALL
 Contact/Requester: Dot Stewart Telephone No. 509-376-5056 MSIN FAX
 SAF No. ~~105-001~~ OCT 07 2004 Sampling Origin: *Ham level site* Purchase Order/Charge Code
 Project Title: CERCLA 100HR3IAM(1&2) OCTOBER FY05 Ice Chest No. *SAWS-121* Temp.
 Shipped To (Lab): TMA/RECRA Method of Shipment: Govt Truck Bill of Lading/Air Bill No. *79195096 4535*
 Protocol: CERCLA Priority: 45 Days Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes No
SD Gal H2771

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B1B644		W	10-7-04	0902	1x500-mL P	IC Anions - 300.0	
B1B644		W	b	t	1x20-mL P	Activity Scan	None <i>cooled to 4°C</i>

Relinquished By: <i>DURATEK L. D. WALL</i> <i>L. D. Wall</i> <i>10/7/04 1400</i>	Received By: <i>Fed Ex</i>	Matrix * S = Soil DS = Drum Solid SF = Sediment DI = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wine W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other	
Relinquished By: <i>Fed Ex</i> <i>10/8/04</i>	Received By: <i>Yamanoto</i> <i>10/8/04 10:30</i>		
Relinquished By: <i>Yamanoto</i> <i>10/13/04</i>	Received By: _____		
Relinquished By: <i>Fed Ex</i> <i>10-14-04 0955</i>	Received By: <i>P. Neerandy</i> <i>10-14-04 0955</i>		
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By: _____	Date/Time: _____

Lionville Laboratory Incorporated
SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU- HANFORD

Date: 10-14-04

Purchase Order / Project# /
SAF# / SOW# / Release #: I05-001

LvLI Batch #: 0410L 890

Sample Custodian: *V. Hernandez*

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | |
|---|---|---|
| 1. Samples Hand Delivered or <u>Shipped</u> | Carrier <i>Fed Ex</i> | Airbill# <i>7913 6164 7546</i> |
| 2. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals Comments |
| 3. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 4. All expected paperwork received (coc and other client specific information) sealed in plastic bag and easily accessible? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 5. Samples received cooled or ambient? | Temp <i>1.9</i> °C | Cooler # <i>SPWS-121</i> |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 7. coc signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 8. Sample containers are intact? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 9. All samples on coc received? All samples received on coc? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 10. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 11. Samples properly preserved? | <input checked="" type="checkbox"/> Yes | |
| 12. Samples received within hold times? Short holds taken to wet lab? | <input checked="" type="checkbox"/> Yes <i>11-14-04</i> | <input checked="" type="checkbox"/> No <i>NO3, NO2, PO4 rec'd past hold</i> |
| 13. VOA, TOC, TOX free of headspace? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 14. QC stickers placed on bottles designated by client? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes <i>11-14-04</i> | <input checked="" type="checkbox"/> No <i>see #12</i> |
| 16. Project Manager contacted concerning discrepancies? name/date (or samples outside criteria) | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> No Discrepancies |