

Lionville Laboratory, Inc.  
 INORGANIC ANALYTICAL DATA PACKAGE FOR  
 TNUHANFORD S04-010 H2474

DATE RECEIVED: 01/02/04

LVL LOT # :0401L464

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B18509						
TOTAL ORGANIC CARBON	001	W	04LTC001	12/29/03	01/26/04	01/26/04
B18510						
TOTAL ORGANIC CARBON	002	W	04LTC001	12/29/03	01/26/04	01/26/04
B18511						
TOTAL ORGANIC CARBON	003	W	04LTC001	12/29/03	01/26/04	01/26/04
B18512						
TOTAL ORGANIC CARBON	004	W	04LTC001	12/29/03	01/26/04	01/26/04
TOTAL ORGANIC CARBON	004 REP	W	04LTC001	12/29/03	01/26/04	01/26/04
TOTAL ORGANIC CARBON	004 MS	W	04LTC001	12/29/03	01/26/04	01/26/04

LAB QC:

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TOTAL ORGANIC CARBON	MB1	W	04LTC001	N/A	01/26/04	01/26/04
TOTAL ORGANIC CARBON	MB1 BS	W	04LTC001	N/A	01/26/04	01/26/04



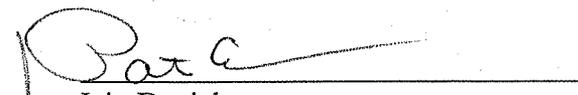
## Analytical Report

Client: TNU-HANFORD S04-010 H2474  
LVL#: 0401L464

W.O.#: 11343-606-001-9999-00  
Date Received: 01-02-04

### INORGANIC NARRATIVE

1. This narrative covers the analysis of 4 water samples.
2. The samples were 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.
4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.
5. The method blank was within the method criteria.
6. The Laboratory Control Sample (LCS) was within the laboratory control limits.
7. The matrix spike recovery was within the 75-125% control limits.
8. The replicate analysis was 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  
njpl01-464

01-30-04  
Date

# 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 <input checked="" type="checkbox"/> Organic ___Inorganic Carbon	415.1	<input checked="" type="checkbox"/> 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		
<b>Other:</b>		<b>Method:</b>	

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# 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.

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INORGANICS DATA SUMMARY REPORT 01/28/04

CLIENT: TNUHANFORD S04-010 H2474  
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0401L464

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B18509	Total Organic Carbon	3.0	MG/L	0.50	1.0
-002	B18510	Total Organic Carbon	3.0	MG/L	0.50	1.0
-003	B18511	Total Organic Carbon	2.7	MG/L	0.50	1.0
-004	B18512	Total Organic Carbon	2.8	MG/L	0.50	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/28/04

CLIENT: TNUHANFORD S04-010 H2474  
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0401L464

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	04LTC001-MB1	Total Organic Carbon	0.50 u	MG/L	0.50	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 01/28/04

CLIENT: TNUHANFORD S04-010 H2474  
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0401L464

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
=====	=====	=====	=====	=====	=====	=====	=====
-004	B18512	Total Organic Carbon	7.6	2.8	5.0	96.8	1.0
BLANK10	04LTC001-MB1	Total Organic Carbon	4.9	0.50u	5.0	97.8	1.0

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INORGANICS PRECISION REPORT 01/28/04

CLIENT: TNUHANFORD S04-010 H2474  
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0401L464

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-004REP	B18512	Total Organic Carbon	2.8	2.8	1.7	1.0



PNNL

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

S04-010-252

Page 1 of 1

Collector: <b>D.E. PARCHEN</b>		Contact/Requester DL STEWART	Telephone No. 509-376-5056	MSIN FAX
SAF No. S04-010	Sampling Origin HANFORD SITE	Purchase Order/Charge Code 900-1347-6275		
Project Title SURV/TMC GW MONITORING, OCTOBER 2003	Logbook No. CAWS-H75	Ice Chest No. <b>EMC-466</b> Temp.		
Shipped To (Lab) EBERLINE SERVICES (Formerly TMA)	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No.		
Protocol SURV	Data Turnaround 45 Days	Offsite Property No.		

**POSSIBLE SAMPLE HAZARDS/REMARKS**  
\*\* \*\*

SDG H2474

**SPECIAL INSTRUCTIONS**      **Hold Time**      Total Activity Exemption: Yes  No

Total Activity Exemption applies unless otherwise stated.  
Batch all PNNL GW samples submitted under "W04-", "S04-", and "A04-" SAF's into one SDG, not to exceed SDG closure of 14 days.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B18509		W	12/29/03	1130	1x20-mL P	Activity Scan ✓	None
B18509		W	↓	↓	1x250-mL aGs*	TOC - 9060 ✓	HCl or H2SO4 to pH <2 Cool 4C
B18510		W	↓	↓	1x250-mL aGs*	TOC - 9060 ✓	HCl or H2SO4 to pH <2 Cool 4C
B18511		W	↓	↓	1x250-mL aGs*	TOC - 9060 ✓	HCl or H2SO4 to pH <2 Cool 4C
B18512		W	↓	↓	1x250-mL aGs*	TOC - 9060 ✓	HCl or H2SO4 to pH <2 Cool 4C

Relinquished By <b>D.E. PARCHEN</b>	Print <i>D E P</i>	Sign <i>D E P</i>	Date/Time 12-29-03 1400	Received By <i>Fed Ex</i>	Print <i>Fed Ex</i>	Sign <i>Fed Ex</i>	Date/Time	<b>Matrix *</b> S = Soil                      DS = Drum Solids SE = Sediment              DL = Drum Liouir SO = Solid                    T = Tissue SL = Sludge                  WI = Wire W = Water                    L = Liquid O = Oil                        V = Vegetation A = Air                        X = Other
Relinquished By <i>Fed ex</i>			Date/Time	Received By <i>[Signature]</i>			Date/Time	
Relinquished By <i>[Signature]</i>			Date/Time 1230 1600	Received By			Date/Time	
Relinquished By <i>Fed Ex</i>			Date/Time 12-04 0950	Received By <i>[Signature]</i>			Date/Time 1-2-04 0950	
<b>FINAL SAMPLE DISPOSITION</b>	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: *1-2-04*

Purchase Order / Project# /  
 SAF# / SOW# / Release #: *504-010*

LvLI Batch #: *0401L 464*

Sample Custodian: *[Signature]*

NOTE: EXPLAIN ALL DISCREPANCIES

- |   |   |  |  |
|---|---|--|--|
| 1. Samples Hand Delivered or Shipped  | Carrier                                 | <i>Fed Ex</i>                          | Airbill# <i>79001504 3735</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>1.8</i> °C                          | Cooler # <i>SANA-466</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 | <input type="checkbox"/> No            |  |
| 12. Samples received within hold times? Short holds taken to wet lab?   | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            |  |
| 13. VOA, TOC, TOX free of headspace?  | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | <input type="checkbox"/> N/A <i>Headspace</i>        |
| 14. QC stickers placed on bottles designated by client?   | <input type="checkbox"/> Yes            | <input type="checkbox"/> No            | <input checked="" type="checkbox"/> N/A              |
| 15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles not within policy. See reverse side for policy)     | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |  |
| 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 |