

# SAF-B04-001 ERDF - Semiannual Leachate Analysis FINAL DATA PACKAGE

**COMPLETE COPY OF DATA PACKAGE TO:**

Jim Rugg	H9-03	____ NB 9/6/05 INITIAL/DATE
Rich Weiss	H9-01	____ NB 9/6/05 INITIAL/DATE
<b>Jeanette Duncan 2 copies clipped</b>		____ NB 9/6/05 INITIAL/DATE

**COMMENTS:**

SDG     H3213     SAF-B04-001

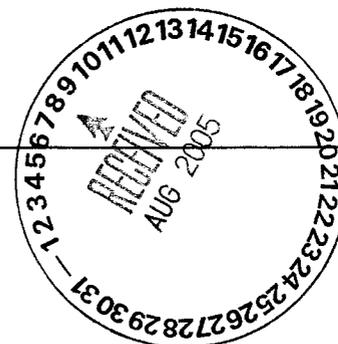
Rad only    Chem only    X Rad & Chem

X Complete                      Partial

**RECEIVED**  
SEP 21 2005  
**EDMC**



4 August 2005



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

**Subject: Contract No. 630  
Analytical Data Package**

Dear Ms. Kessner:

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

LvLI Batch #	0506L739
SDG #	H3213
SAF #	B04-001
Date Received	6-14-05
# Samples	2
Matrix	Water
Volatiles	
Semivolatiles	
Pest/PCB	
PAH	
DRO/KRO/GRO	
GC Alcohols	
Herbicides	
Metals	
Inorganics	X

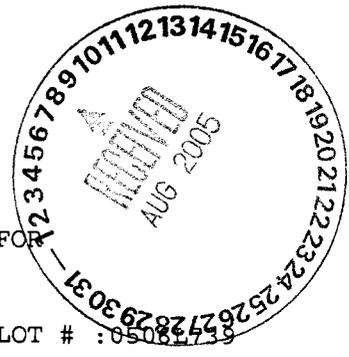
The electronic data deliverable (EDD) will be emailed shortly. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,  
Lionville Laboratory Incorporated

Orlette S. Johnson  
Project Manager

r:\group\pm\orlette\tnu-hanford\data\b\_ltrs.doc

Lionville Laboratory, Inc.  
 LCSC ANALYTICAL DATA PACKAGE FOR  
 TNUHANFORD B04-001 H3213



DATE RECEIVED: 06/14/05

LVL LOT # : 05081739

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J037M0	001	W	05LLC006	06/13/05	06/15/05	06/16/05
J037M0	001 MS	W	05LLC006	06/13/05	06/15/05	06/16/05
J037M0	001 MSD	W	05LLC006	06/13/05	06/15/05	06/16/05
J037M1	002	W	05LLC006	06/13/05	06/15/05	06/16/05

LAB QC:

BLK	MB1	W	05LLC006	N/A	06/15/05	06/16/05
BLK	MB1 BS	W	05LLC006	N/A	06/15/05	06/16/05
BLK	MB1 BSD	W	05LLC006	N/A	06/15/05	06/16/05

*Handwritten signature/initials*



Case Narrative

Client: TNU HANFORD B04-001  
LVL #: 0506L739  
SDG/SAF#: H3213/B04-001

W.O. #: 11343-606-001-9999-00  
Date Received: 06-14-2005

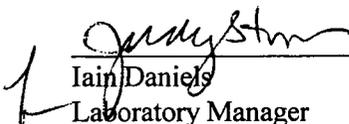
**FORMALDEHYDE**

Two (2) water samples were collected on 06-13-2005.

The samples and their associated QC samples were extracted on 06-15-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 06-16-2005. The extraction and analysis procedures were based on method 8315A.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. The method blank was below the reporting limits for all target compounds.
4. Surrogates are not currently employed in the methodology.
5. The blank spike recoveries were within acceptance criteria.
6. The matrix spike recoveries were within acceptance criteria.
7. All initial calibrations associated with this data set were within acceptance criteria.
8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.
10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

  
Iain Daniels  
Laboratory Manager  
Lionville Laboratory Incorporated

7/8/05  
Date

som\vr:\group\data\cls\tnu\0506-739.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 7 pages.



Lionville Laboratory, Inc.

HPLC scan

Report Date: 07/05/05 13:38

RFW Batch Number: 0506L739

Client: TNUHANFORD B04-001 H3213 Work Order: 11343606001 Page: 1

Sample Information	Cust ID:	RFW#:	Matrix:	D.F.:	Units:	J037M0	J037M0	J037M0	J037M1	BLK	BLK BS
	J037M0	001	WATER	1.00	ug/L	001 MS	001 MSD	002	05LLC006-MB1	05LLC006-MB1	
						WATER	WATER	WATER	WATER	WATER	
						1.00	1.00	1.00	1.00	1.00	1.00
						ug/L	ug/L	ug/L	ug/L	ug/L	ug/L

=====  
 Formaldehyde \_\_\_\_\_ 25.0 U 113 % 102 % 25.0 U 25.0 U 104 %  
 =====

Cust ID: BLK BSD

Sample Information  
 RFW#: 05LLC006-MB1  
 Matrix: WATER  
 D.F.: 1.00  
 Units: ug/L

=====  
 Formaldehyde \_\_\_\_\_ 103 %  
 =====

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

*11/11/05*



# Custody Transfer Record/Lab Work Request

Page 1 of 1

See SRC

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Lionville Laboratory Use Only  
05066739

Client ZNU-HANFORD SAFE4 B04-001  
 Est. Final Proj. Sampling Date  
 Project # 11343-606-001-9999-00  
 Project Contact/Phone #  
 Lionville Laboratory Project Manager DL  
 QC Spec Del Std TAT diff 30 days  
 Date Rec'd 6/14/05 Date Due 7/14/05

Refrigerator #	Liquid	Solid	INORG	Metal
# Type Container	Liquid	Solid	PCB	Herb
Volume	Liquid	Solid	BNA	VOA
Preservatives	ORGANIC			
ANALYSES REQUESTED	IONVILLE Laboratory Use Only			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen		Date Collected	Time Collected
			MS	MSD		
S - Soil	001	1037 MO			6-15-05	1100
SE - Sediment	002	L			J	1105
SO - Solid						
SL - Sludge						
W - Water						
O - Oil						
A - Air						
DS - Drum						
Solids						
DL - Drum						
Liquids						
L - EPTCLP						
Leachate						
WI - Wipe						
X - Other						
F - Fish						

DATE/REVISIONS:

1. OLCSCO
- 2.
- 3.
- 4.
- 5.
- 6.

Special Instructions:

RUN MATRIX OLC

Relinquished by <u>DeDee</u>	Received by <u>Handy</u>	Date <u>6/14/05</u>	Time <u>0930</u>
Relinquished by	Received by	Date	Time
Relinquished by	Received by	Date	Time
"COMPOSITE WASTE"	ORIGINAL		
	REWRITTEN		

05066739

<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>		B04-001-2	Page 1 of 1
<b>Bechtel Hanford Inc.</b> Collector GALE, SJ		Project Coordinator KESSNER, JH	Price Code 7N
Company Contact T LAZARSKI Telephone No. 372-9216		SAF No. B04-001	Air Quality <input type="checkbox"/>
Sampling Location ERDJF LEACHATE		Method of Shipment FED EX	
Field Logbook No. EL-1518-2		COA RERDF22560	
Offsite Property No. A050242		Bill of Lading/Air Bill No. SEE OSCP	
<b>SAMPLE ANALYSIS</b>			
Shipped To EBERLINE SERVICES (LIONVILLE)			
POSSIBLE SAMPLE HAZARDS/REMARKS HISTORICAL DATA INDICATES <2K pCi/g. NO ACTIVITY REPORT REQUIRED			
Special Handling and/or Storage Cool. 4°C			
Sample No.	Matrix *	Sample Date	Sample Time
J037M0	WATER	6-13-05	1100
J037M1	WATER	6-13-05	1105
J037M2	WATER	6-13-05	
J037M3	WATER	6-13-05	
J037M4	WATER	6-13-05	
<b>CHAIN OF POSSESSION</b>			
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
S. GALE	6-13-05 1155	J. LAZARSKI	6-13-05 1155
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
J. LAZARSKI	6-13-05	FED EX	6-13-05 1230
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
F. ED	6-14-05 0950	[Signature]	6-14-05 0950
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
LABORATORY SECTION	Received By	Title	
FINAL SAMPLE DISPOSITION	Disposal Method	Date/Time	

**SPECIAL INSTRUCTIONS**

(1) ICP Metals - 6010A (TAL) (Barium, Chromium, Vanadium, Zinc); ICP Metals - 6010A (Add-on) (Arsenic, Lead, Selenium, Tin)

(2) IC Anions - 300.0 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Sulfate)

**Matrix \***

S-Soil  
 SF-Sediment  
 SD-Solid  
 SF-Sledge  
 W - Water  
 O-Oil  
 A-Air  
 DS-Drum Sol  
 DL-Drum Lk  
 T-Tissue  
 WI-Wipe  
 L-Liquid  
 V-Vegetation  
 X-Other

**Lionville Laboratory Incorporated**  
**SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: *TNU-HANFORD*

Date: *6/14/05*

Purchase Order / Project# /  
 SAE# / SOW# / Release #: *B04-001*

LvLI Batch #: *0506L739*

Sample Custodian: *[Signature]*

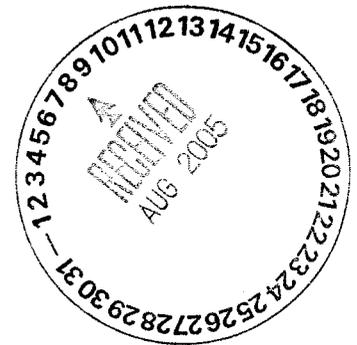
NOTE: EXPLAIN ALL DISCREPANCIES

- |   |   |  |
|---|---|--|
| 1. Samples Hand Delivered <u>or Shipped</u>   | Carrier <i>FEDEX</i>  | Airbill# <i>79230639 1742</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>3-2</i> °C  | Cooler # <i>AFS-04-018</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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> N/A                         |
| 14. QC stickers placed on bottles designated by client?   | <input type="checkbox"/> Yes <input checked="" 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 <input 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 |

SR-002-B



000000007



Lionville Laboratory, Inc.  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNUHANFORD B04-001 H3213

DATE RECEIVED: 06/14/05

LVL LOT # :0506L739

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	ANALYSIS TIME
---------------------	-------	-----	--------	------------	-----------	----------	---------------

J037M0

BROMIDE BY IC	001	W	05LIC044	06/13/05	06/14/05	06/14/05	
BROMIDE BY IC	001 REP	W	05LIC044	06/13/05	06/14/05	06/14/05	
BROMIDE BY IC	001 MS	W	05LIC044	06/13/05	06/14/05	06/14/05	
CHLORIDE BY IC	001	W	05LIC044	06/13/05	06/14/05	06/15/05	
CHLORIDE BY IC	001 REP	W	05LIC044	06/13/05	06/14/05	06/15/05	
CHLORIDE BY IC	001 MS	W	05LIC044	06/13/05	06/14/05	06/15/05	
FLUORIDE BY IC	001	W	05LIC044	06/13/05	06/14/05	06/14/05	
FLUORIDE BY IC	001 REP	W	05LIC044	06/13/05	06/14/05	06/14/05	
FLUORIDE BY IC	001 MS	W	05LIC044	06/13/05	06/14/05	06/14/05	
NITRITE BY IC	001	W	05LICA44	06/13/05	06/14/05	06/14/05	1753
NITRITE BY IC	001 REP	W	05LICA44	06/13/05	06/14/05	06/14/05	1824
NITRITE BY IC	001 MS	W	05LICA44	06/13/05	06/14/05	06/14/05	1855
NITRATE BY IC	001	W	05LICA44	06/13/05	06/14/05	06/15/05	0922
NITRATE BY IC	001 REP	W	05LICA44	06/13/05	06/14/05	06/15/05	0938
NITRATE BY IC	001 MS	W	05LICA44	06/13/05	06/14/05	06/15/05	0953
SULFATE BY IC	001	W	05LIC044	06/13/05	06/14/05	06/15/05	
SULFATE BY IC	001 REP	W	05LIC044	06/13/05	06/14/05	06/15/05	
SULFATE BY IC	001 MS	W	05LIC044	06/13/05	06/14/05	06/15/05	

J037M1

BROMIDE BY IC	002	W	05LIC044	06/13/05	06/14/05	06/14/05	
CHLORIDE BY IC	002	W	05LIC044	06/13/05	06/14/05	06/15/05	
FLUORIDE BY IC	002	W	05LIC044	06/13/05	06/14/05	06/14/05	
NITRITE BY IC	002	W	05LICA44	06/13/05	06/14/05	06/14/05	1925
NITRATE BY IC	002	W	05LICA44	06/13/05	06/14/05	06/15/05	1009
SULFATE BY IC	002	W	05LIC044	06/13/05	06/14/05	06/15/05	

LAB QC:

BROMIDE BY IC	MB1	W	05LIC044	N/A	06/14/05	06/14/05	
BROMIDE BY IC	MB1 BS	W	05LIC044	N/A	06/14/05	06/14/05	
CHLORIDE BY IC	MB1	W	05LIC044	N/A	06/14/05	06/14/05	
CHLORIDE BY IC	MB1 BS	W	05LIC044	N/A	06/14/05	06/14/05	
FLUORIDE BY IC	MB1	W	05LIC044	N/A	06/14/05	06/14/05	

Lionville Laboratory, Inc.  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNUHANFORD B04-001 H3213

DATE RECEIVED: 06/14/05

LVL LOT # :0506L739

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
FLUORIDE BY IC	MB1 BS	W	05LIC044	N/A	06/14/05	06/14/05
NITRITE BY IC	MB1	W	05LICA44	N/A	06/14/05	06/14/05
NITRITE BY IC	MB1 BS	W	05LICA44	N/A	06/14/05	06/14/05
NITRATE BY IC	MB1	W	05LICA44	N/A	06/14/05	06/14/05
NITRATE BY IC	MB1 BS	W	05LICA44	N/A	06/14/05	06/14/05
SULFATE BY IC	MB1	W	05LIC044	N/A	06/14/05	06/14/05
SULFATE BY IC	MB1 BS	W	05LIC044	N/A	06/14/05	06/14/05



## Analytical Report

Client: TNU-HANFORD B04-001 H3213  
LVL#: 0506L739

W.O.#: 11343-606-001-9999-00  
Date Received: 06-14-05

### INORGANIC NARRATIVE

1. This narrative covers the analyses of 2 water samples.
2. The samples were prepared and analyzed in accordance with the method checked on the attached glossary.

LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

Elevated reporting limits for Nitrite are the result of the necessity to dilute the samples to diminish co-elution effects.

3. Sample holding times as required by the method and/or contract were met (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.
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 and Sulfate were within the 75-125% control limits.
8. The replicate analyses for Bromide, Chloride, Fluoride, Nitrite and Nitrate were within the 20% Relative Percent Difference (RPD) control limit however replicate analysis for Sulfate was outside the control limits at 25.5%.
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

9/15/05  
Date

njpl06-739

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.

03

# 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-1 (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 07/13/05

CLIENT: TNUHANFORD B04-001 H3213  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0506L739

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-001	J037M0	Bromide by IC	0.90	MG/L	0.25	1.0
		Chloride by IC	288	MG/L	25.0	100
		Fluoride by IC	0.26	MG/L	0.25	1.0
		Nitrite by IC	2.50 u	MG/L	2.50	10.0
		Nitrate by IC	477	MG/L	25.0	100
		Sulfate by IC	632	MG/L	25.0	100
-002	J037M1	Bromide by IC	0.92	MG/L	0.25	1.0
		Chloride by IC	242	MG/L	25.0	100
		Fluoride by IC	0.25 u	MG/L	0.25	1.0
		Nitrite by IC	2.50 u	MG/L	2.50	10.0
		Nitrate by IC	458	MG/L	25.0	100
		Sulfate by IC	507	MG/L	25.0	100

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 07/13/05

CLIENT: TNUHANFORD B04-001 H3213  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0506L739

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
BLANK10	05LIC044-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
		Sulfate by IC	0.25 u	MG/L	0.25	1.0
BLANK10	05LICA44-MB1	Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/13/05

CLIENT: TNUHANFORD B04-001 H3213  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0506L739

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
=====	=====	=====	=====	=====	=====	=====	=====
-001	J037M0	Bromide by IC	10.2	0.90	10.0	93.0	2.0
		Chloride by IC	1330	288	1000	103.7	200
		Fluoride by IC	9.8	0.26	10.0	95.5	2.0
		Nitrite by IC	101	2.50u	100	101.3	20.0
		Nitrate by IC	1590	477	1000	111.2	200
		Sulfate by IC	1610	632	1000	97.3	200
BLANK10	05LIC044-MB1	Bromide by IC	4.9	0.25u	5.0	97.9	1.0
		Chloride by IC	4.6	0.25u	5.0	92.9	1.0
		Fluoride by IC	4.8	0.25u	5.0	96.4	1.0
		Sulfate by IC	4.9	0.25u	5.0	97.3	1.0
BLANK10	05LICA44-MB1	Nitrite by IC	4.86	0.25u	5.00	97.1	1.0
		Nitrate by IC	4.84	0.25u	5.00	96.8	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 07/13/05

CLIENT: TNUHANFORD B04-001 H3213  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0506L739

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE RPD		DILUTION FACTOR (REP)
=====	=====	=====	=====	=====	=====	=====
-001REP	J037M0	Bromide by IC	0.90	0.90	0.11	1.0
		Chloride by IC	288	245	16.1	100
		Fluoride by IC	0.26	0.25u	NC	1.0
		Nitrite by IC	2.50u	2.50u	NC	10.0
		Nitrate by IC	477	445	7.0	100
		Sulfate by IC	632	489	25.5	100



Lionville Laboratory Use Only  
05066739

# Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

See SRC

Client TNU-HANFORD SAFEH B04-001  
 Est. Final Proj. Sampling Date \_\_\_\_\_  
 Project # 11343-606-001-9999-00  
 Project Contact/Phone # \_\_\_\_\_  
 Lionville Laboratory Project Manager AT TAT 07/30/05  
 QC Spec Del Std Date Rec'd 6/14/05 Date Due 7/14/05

MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum DL - Drum L - Liquids L - EPTCLP WI - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Date Collected	Time Collected	Lionville Laboratory Use Only													
			MS	MSD			VOA	BNA	Pest	PCB	Herb	Metal								
	001	J037 M0			6-13-05	1100														
	002	L 1			J 1	1105														

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

Special Instructions:  
RUN MATRIX QC

Reinquished by	Received by	Date	Time	Reinquished by	Received by	Date	Time
<u>EOE</u>	<u>AT</u>	<u>6/14/05</u>	<u>0930</u>				
				"COMPOSITE WASTE"	ORIGINAL		
					REWRITTEN		



**Lionville Laboratory Incorporated  
SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: TNU-HANFORD

Date: 6/14/05

Purchase Order / Project# /  
SAF# / SOW# / Release #: B04-001

LvLI Batch #: 0506L739

Sample Custodian: [Signature]

NOTE: EXPLAIN ALL DISCREPANCIES

- |   |   |  |
|---|---|--|
| 1. Samples Hand Delivered or Shipped  | Carrier <u>FEDEX</u>  | Airbill# <u>792306391742</u>                         |
| 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 <u>3-2</u> °C  | Cooler # <u>AFS-04-018</u>                           |
| 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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> N/A                         |
| 14. QC stickers placed on bottles designated by client?   | <input type="checkbox"/> Yes <input checked="" 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 <input 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 |

SR-002-B





4 August 2005



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

**Subject: Contract No. 630  
Analytical Data Package**

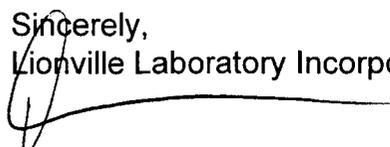
Dear Ms. Kessner:

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

LvLI Batch #	0506L740
SDG #	H3213
SAF #	B04-01
Date Received	6-14-05
# Samples	3
Matrix	Water
Volatiles	X
Semivolatiles	
Pest/PCB	
PAH	
DRO/KRO/GRO	
GC Alcohols	
Herbicides	
Metals	X
Inorganics	X

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

Sincerely,  
Lionville Laboratory Incorporated

  
Orlette S. Johnson  
Project Manager

r:\group\pm\orlette\tnu-hanford\data\b\_ltrs.doc

Lionville Laboratory, Inc.  
 VOA ANALYTICAL DATA PACKAGE FOR  
 TNUHANFORD B04-001 H3213



DATE RECEIVED: 06/14/05

LVL LOT # :0506

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J037M0	001	W	05LVX138	06/13/05	N/A	06/15/05
J037M0	001 MS	W	05LVX138	06/13/05	N/A	06/15/05
J037M0	001 MSD	W	05LVX138	06/13/05	N/A	06/15/05
J037M1	002	W	05LVX138	06/13/05	N/A	06/15/05
J037M4	004	W	05LVX138	06/06/05	N/A	06/15/05

LAB QC:

VBLKWG	MB1	W	05LVX138	N/A	N/A	06/15/05
VBLKWG	MB1 BS	W	05LVX138	N/A	N/A	06/15/05



## Case Narrative

Client: TNU-HANFORD B04-001  
LVL #: 0506L740  
SDG/SAF # H3213/B04-001

W.O. #: 11343-606-001-9999-00  
Date Received: 06-14-2005

### GC/MS VOLATILE

Three (3) water samples were collected on 06-06,13-2005.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8260B for client specified volatile target compound Carbon Tetrachloride on 06-15-2005.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were analyzed within required holding time.
3. A non-target, the Methylene Chloride was detected in the samples.
4. All surrogate recoveries were within acceptance criteria.
5. The matrix spike recoveries were within acceptance criteria.
6. The blank spike recovery was within acceptance criteria.
7. Internal standard area and retention time criteria were met.
8. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
9. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
10. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

  
Iain Daniels  
Laboratory Manager  
Lionville Laboratory Incorporated

  
Date

som\group\data\voa\tnu-hanford\0506-740.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 13 pages.

## GLOSSARY

### DATA QUALIFIERS

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

## GLOSSARY

### ABBREVIATIONS

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

sb\10-03\gloss.doc



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## TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

- MP - **Missed Peak:** Manually added peak not found by automatic quan program.
- PA - **Peak Assignment:** Quan report was changed to reflect correct peak assignment.
- RI - **Routine Integration:** Routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the Dichlorobenzene isomers on the VOA packed column and Benzo (b) fluoranthene /Benzo (k) fluoranthene which are poorly resolve on the BNA column.
- SP - **Split Peak:** The automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB - **Co-elution/ Background:** Peak was manually integrated to eliminate contribution from co-eluting compounds, background signal, or other interference.
- PI - **Proper Integration:** A peak with poor or inconsistent integration (i.e., excessive tail) was properly integrated manually.

LVL-21-21-035/A-08/93



00000005

00000000

Sample Information	Cust ID:	J037M0	J037M0	J037M0	J037M0	J037M1	J037M4	VBLKWG
Surrogate	RFW#:	001	001 MS	001 MSD	002	002	004	05LVX138-MB1
Recovery	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
1,2-Dichloroethane-d4		90 %	97 %	105 %	91 %	91 %	86 %	93 %
Toluene-d8		101 %	96 %	98 %	99 %	99 %	98 %	101 %
Bromofluorobenzene		99 %	100 %	106 %	98 %	98 %	96 %	102 %
Carbon Tetrachloride		5 U	106 %	107 %	5 U	5 U	5 U	5 U

Cust ID: VBLKWG BS

Sample Information	Cust ID:	J037M0	J037M0	J037M0	J037M1	J037M4	VBLKWG
Surrogate	RFW#:	05LVX138-MB1					
Recovery	Matrix:	WATER					
	D.F.:	1.00					
	Units:	UG/L					
1,2-Dichloroethane-d4		92 %					
Toluene-d8		96 %					
Bromofluorobenzene		99 %					
Carbon Tetrachloride		112 %					

\*= Outside of EPA CLP QC limits.

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

J037M0

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix: (soil/water) WATER Lab Sample ID: 0506L740-001

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: x061507

Level: (low/med) LOW Date Received: 06/14/05

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 06/15/05

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 1 CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75092	METHYLENE CHLORIDE	8.311	10	NJB

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

J037M1

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix: (soil/water) WATER

Lab Sample ID: 0506L740-002

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

Lab File ID: x061506

Level: (low/med) LOW

Date Received: 06/14/05

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 06/15/05

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75092	METHYLENE CHLORIDE	8.293	10	NJB

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

J037M4

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix: (soil/water) WATER

Lab Sample ID: 0506L740-004

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

Lab File ID: x061505

Level: (low/med) LOW

Date Received: 06/14/05

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 06/15/05

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 1

(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75092	METHYLENE CHLORIDE	8.293	9	NJB

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKWG

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix: (soil/water) WATER Lab Sample ID: 05LVX138-MB1

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: x061504

Level: (low/med) LOW Date Received: 06/15/05

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 06/15/05

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 1 CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75092	METHYLENE CHLORIDE	8.224	10	NJ



**Bechtel Hanford Inc.** **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** **B04-001-2** **Page 1 of 1**

Collector: **GALE, SJ** Telephone No: **372-9216** Project Coordinator: **KESSNER, JII** Price Code: **7N** Data Turnaround: **45 Days**

Project Designation: **ERDF - Semiannual Leachate Analysis** Sampling Location: **ERDF LEACHATE** SAF No.: **B04-001** Air Quality:

Ice Chest No.: **ERC 96 012** Field Logbook No.: **EL-1518-2** COA: **RERDF22560** Method of Shipment: **FED EX**

Shipped To: **EBERLINE SERVICES LIONVILLE** Offsite Property No.: **A050243** Bill of Lading/Air Bill No.: **SEE OSCP**

**POSSIBLE SAMPLE HAZARDS/REMARKS**  
**HISTORICAL DATA INDICATES <2K pCi/g. NO ACTIVITY REPORT REQUIRED**  
**SPH 2**  
**Special Handling and/or Storage**  
**NA**

Sample No.	Matrix *	Sample Date	Sample Time	Preservation		Cool 4C	HCl or H2SO4 to pH <2 Coo	HNO3 to pH <2	Cool 4C	Cool 4C	HNO3 to pH <2	HCl to pH <2	None
				Type of Container	No. of Container(s)								
J037M0	WATER	6/30/05	1100	aG	1	500mL	aGs*	1	G/P	P	G/P	G/P	G/P
J037M1	WATER	6/30/05	1105	aG	1	500mL	3	1	G/P	P	G/P	G/P	G/P
J037M2	WATER	6/30/05	1140	aG	1	500mL	40mL	500mL	G/P	P	G/P	G/P	G/P
J037M3	WATER	6-6-05	0715	aG	1	500mL	40mL	500mL	G/P	P	G/P	G/P	G/P

**SAMPLE ANALYSIS**

Carbonyls - 8315 (Formaldehyde)

VOA - 8260A (TCL) (Carbon tetrachloride)

See item (1) in Special Instructions.

TDS - 1601

Conductivity - 9030

See item (2) in Special Instructions.

Cool 4C

See item (2) in Special Instructions.

Gross Alpha, Gross Beta, Total Uranium, Total Radium

Technetium-99

Carbon-14 Medium Level, Iodine-129

**CHAIN OF POSSESSION**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
<i>[Signature]</i>	6/6/05 1320	REF 2A	6/6/05 1320
<i>[Signature]</i>	6/30/05 0715	<i>[Signature]</i>	6/30/05 0715
<i>[Signature]</i>	6/30/05 1300	FED EX	
<i>[Signature]</i>	6/14/05 0950	<i>[Signature]</i>	6/14/05 0950

**SPECIAL INSTRUCTIONS**

(1) ICP Metals - 6010A (TAL) (Barium, Chromium, Vanadium, Zinc); ICP Metals - 6010A (Add-on) (Arsenic, Lead, Selenium, Tin)

(2) IC Anions - 300.0 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Sulfate)

**NOTE: X\* = 1 EACH 1000 ml**

Relinquished By/Removed From: **LABORATORY SECTION** Received By: **Title**

Relinquished By/Removed From: **FINAL SAMPLE DISPOSITION** Disposal Method: **Disposed By**

Date/Time: **Date/Time**

**BHI-EE-011 (03/01/2002)**

**Lionville Laboratory Incorporated  
SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: *TNU - HANFORD*

Date: *6/14/05*

Purchase Order / Project# /

(SAF#) SOW# / Release #: *B04-001*

LvLI Batch #: *0506L740*

Sample Custodian: *Victor Hernandez*

NOTE: EXPLAIN ALL DISCREPANCIES

- |   |   |   |
|---|---|---|
| 1. Samples Hand Delivered or <u>Shipped</u>   | Carrier <i>FE Ex</i>  | Airbill# <i>7929 4774 5990</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>3-3</i> °C  | Cooler # <i>ERC-96-012</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 type="checkbox"/> Yes <input checked="" type="checkbox"/> No | <i>#003 D not Rec'd.</i>                      |
| 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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> N/A                  |
| 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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No |   |
| 16. Project Manager contacted concerning discrepancies? name/date (or samples outside criteria)                             | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Discrepancies     |

SR-002-B



888888813

Lionville Laboratory, Inc.  
 INORGANIC ANALYTICAL DATA PACKAGE FOR  
 TNUHANFORD B04-001 H3213



DATE RECEIVED: 06/14/05

LVL LOT # :0506L740

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J037M0						
ARSENIC, TOTAL	001	W	05L0341	06/13/05	06/20/05	06/21/05
ARSENIC, TOTAL	001 REP	W	05L0341	06/13/05	06/20/05	06/21/05
BARIUM, TOTAL	001	W	05L0341	06/13/05	06/20/05	06/21/05
BARIUM, TOTAL	001 REP	W	05L0341	06/13/05	06/20/05	06/21/05
CHROMIUM, TOTAL	001	W	05L0341	06/13/05	06/20/05	06/21/05
CHROMIUM, TOTAL	001 REP	W	05L0341	06/13/05	06/20/05	06/21/05
LEAD, TOTAL	001	W	05L0341	06/13/05	06/20/05	06/21/05
LEAD, TOTAL	001 REP	W	05L0341	06/13/05	06/20/05	06/21/05
SELENIUM, TOTAL	001	W	05L0341	06/13/05	06/20/05	06/21/05
SELENIUM, TOTAL	001 REP	W	05L0341	06/13/05	06/20/05	06/21/05
TIN, TOTAL	001	W	05L0341	06/13/05	06/20/05	06/21/05
TIN, TOTAL	001 REP	W	05L0341	06/13/05	06/20/05	06/21/05
VANADIUM, TOTAL	001	W	05L0341	06/13/05	06/20/05	06/21/05
VANADIUM, TOTAL	001 REP	W	05L0341	06/13/05	06/20/05	06/21/05
ZINC, TOTAL	001	W	05L0341	06/13/05	06/20/05	06/21/05
ZINC, TOTAL	001 REP	W	05L0341	06/13/05	06/20/05	06/21/05

J037M1

ARSENIC, TOTAL	002	W	05L0341	06/13/05	06/20/05	06/21/05
ARSENIC, TOTAL	002 MS	W	05L0341	06/13/05	06/20/05	06/21/05
BARIUM, TOTAL	002	W	05L0341	06/13/05	06/20/05	06/21/05
BARIUM, TOTAL	002 MS	W	05L0341	06/13/05	06/20/05	06/21/05
CHROMIUM, TOTAL	002	W	05L0341	06/13/05	06/20/05	06/21/05
CHROMIUM, TOTAL	002 MS	W	05L0341	06/13/05	06/20/05	06/21/05
LEAD, TOTAL	002	W	05L0341	06/13/05	06/20/05	06/21/05
LEAD, TOTAL	002 MS	W	05L0341	06/13/05	06/20/05	06/21/05
SELENIUM, TOTAL	002	W	05L0341	06/13/05	06/20/05	06/21/05
SELENIUM, TOTAL	002 MS	W	05L0341	06/13/05	06/20/05	06/21/05
TIN, TOTAL	002	W	05L0341	06/13/05	06/20/05	06/21/05
TIN, TOTAL	002 MS	W	05L0341	06/13/05	06/20/05	06/21/05
VANADIUM, TOTAL	002	W	05L0341	06/13/05	06/20/05	06/21/05
VANADIUM, TOTAL	002 MS	W	05L0341	06/13/05	06/20/05	06/21/05
ZINC, TOTAL	002	W	05L0341	06/13/05	06/20/05	06/21/05
ZINC, TOTAL	002 MS	W	05L0341	06/13/05	06/20/05	06/21/05

LAB QC:

00000001

Lionville Laboratory, Inc.  
 INORGANIC ANALYTICAL DATA PACKAGE FOR  
 TNUHANFORD B04-001 H3213

DATE RECEIVED: 06/14/05

LVL LOT # :0506L740

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC LABORATORY	LC1 BS	W	05L0341	N/A	06/20/05	06/21/05
ARSENIC, TOTAL	MB1	W	05L0341	N/A	06/20/05	06/21/05
BARIUM LABORATORY	LC1 BS	W	05L0341	N/A	06/20/05	06/21/05
BARIUM, TOTAL	MB1	W	05L0341	N/A	06/20/05	06/21/05
CHROMIUM LABORATORY	LC1 BS	W	05L0341	N/A	06/20/05	06/21/05
CHROMIUM, TOTAL	MB1	W	05L0341	N/A	06/20/05	06/21/05
LEAD LABORATORY	LC1 BS	W	05L0341	N/A	06/20/05	06/21/05
LEAD, TOTAL	MB1	W	05L0341	N/A	06/20/05	06/21/05
SELENIUM LABORATORY	LC1 BS	W	05L0341	N/A	06/20/05	06/21/05
SELENIUM, TOTAL	MB1	W	05L0341	N/A	06/20/05	06/21/05
TIN LABORATORY	LC1 BS	W	05L0341	N/A	06/20/05	06/21/05
TIN, TOTAL	MB1	W	05L0341	N/A	06/20/05	06/21/05
VANADIUM LABORATORY	LC1 BS	W	05L0341	N/A	06/20/05	06/21/05
VANADIUM, TOTAL	MB1	W	05L0341	N/A	06/20/05	06/21/05
ZINC LABORATORY	LC1 BS	W	05L0341	N/A	06/20/05	06/21/05
ZINC, TOTAL	MB1	W	05L0341	N/A	06/20/05	06/21/05



## Analytical Report

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**Client:** TNU-HANFORD B04-001  
**LVL#:** 0506L740  
**SDG/SAF#:** H3213/B04-001

**W.O.#:** 11343-606-001-9999-00  
**Date Received:** 06-14-05

### 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. All results presented in this report are derived from samples that met 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), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
  - a). The 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 15 pages.

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.

*12-* CDL  
Iain Daniels  
Laboratory Manager  
Lionville Laboratory Incorporated  
gmb/m06-740

Aug 1 2005  
Date



## METALS METHOD GLOSSARY

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

Lot#: 806 L740

Leaching Procedure:    1310    1311    1312    Other:                   

CLP Metals    Digestion and    Analysis Methods:    ILM03.0    ILM04.0

Metals Digestion Methods:  3005A    3010A    3015    3020A    3050B    3051    200.7    SS17  
   Other:                   

### Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	<u>  </u> 6010B	<u>  </u> 200.7			<u>  </u> 99
Antimony	<u>  </u> 6010B <u>  </u> 7041 <sup>s</sup>	<u>  </u> 200.7 <u>  </u> 204.2			<u>  </u> 99
Arsenic	<input checked="" type="checkbox"/> 6010B <u>  </u> 7060A <sup>s</sup>	<u>  </u> 200.7 <u>  </u> 206.2	<u>  </u> 3113B		<u>  </u> 99
Barium	<input checked="" type="checkbox"/> 6010B	<u>  </u> 200.7			<u>  </u> 99
Beryllium	<u>  </u> 6010B	<u>  </u> 200.7			<u>  </u> 99
Bismuth	<u>  </u> 6010B <sup>1</sup>	<u>  </u> 200.7 <sup>1</sup>		<u>  </u> 1620	<u>  </u> 99
Boron	<u>  </u> 6010B	<u>  </u> 200.7			<u>  </u> 99
Cadmium	<u>  </u> 6010B <u>  </u> 7131A <sup>s</sup>	<u>  </u> 200.7 <u>  </u> 213.2			<u>  </u> 99
Calcium	<input checked="" type="checkbox"/> 6010B	<u>  </u> 200.7			<u>  </u> 99
Chromium	<input checked="" type="checkbox"/> 6010B <u>  </u> 7191 <sup>s</sup>	<u>  </u> 200.7 <u>  </u> 218.2			<u>  </u> SS17
Cobalt	<u>  </u> 6010B	<u>  </u> 200.7			<u>  </u> 99
Copper	<u>  </u> 6010B <u>  </u> 7211 <sup>s</sup>	<u>  </u> 200.7 <u>  </u> 220.2			<u>  </u> 99
Iron	<u>  </u> 6010B	<u>  </u> 200.7			<u>  </u> 99
Lead	<input checked="" type="checkbox"/> 6010B <u>  </u> 7421 <sup>s</sup>	<u>  </u> 200.7 <u>  </u> 239.2	<u>  </u> 3113B		<u>  </u> 99
Lithium	<u>  </u> 6010B <u>  </u> 7430 <sup>4</sup>	<u>  </u> 200.7		<u>  </u> 1620	<u>  </u> 99
Magnesium	<u>  </u> 6010B	<u>  </u> 200.7			<u>  </u> 99
Manganese	<u>  </u> 6010B	<u>  </u> 200.7			<u>  </u> 99
Mercury	<u>  </u> 7470A <sup>3</sup> <u>  </u> 7471A <sup>3</sup>	<u>  </u> 245.1 <sup>2</sup> <u>  </u> 245.5 <sup>2</sup>			<u>  </u> 99
Molybdenum	<u>  </u> 6010B	<u>  </u> 200.7			<u>  </u> 99
Nickel	<u>  </u> 6010B	<u>  </u> 200.7			<u>  </u> 99
Potassium	<u>  </u> 6010B <u>  </u> 7610 <sup>4</sup>	<u>  </u> 200.7 <u>  </u> 258.1 <sup>4</sup>			<u>  </u> 99
Rare Earths	<u>  </u> 6010B <sup>1</sup>	<u>  </u> 200.7 <sup>1</sup>		<u>  </u> 1620	<u>  </u> 99
Selenium	<input checked="" type="checkbox"/> 6010B <u>  </u> 7740 <sup>s</sup>	<u>  </u> 200.7 <u>  </u> 270.2	<u>  </u> 3113B		<u>  </u> 99
Silicon	<u>  </u> 6010B <sup>1</sup>	<u>  </u> 200.7		<u>  </u> 1620	<u>  </u> 99
Silica	<u>  </u> 6010B	<u>  </u> 200.7		<u>  </u> 1620	<u>  </u> 99
Silver	<u>  </u> 6010B <u>  </u> 7761 <sup>s</sup>	<u>  </u> 200.7 <u>  </u> 272.2			<u>  </u> 99
Sodium	<u>  </u> 6010B <u>  </u> 7770 <sup>4</sup>	<u>  </u> 200.7 <u>  </u> 273.1 <sup>4</sup>			<u>  </u> 99
Strontium	<u>  </u> 6010B	<u>  </u> 200.7			<u>  </u> 99
Thallium	<u>  </u> 6010B <u>  </u> 7841 <sup>s</sup>	<u>  </u> 200.7 <u>  </u> 279.2 <u>  </u> 200.9			<u>  </u> 99
Tin	<input checked="" type="checkbox"/> 6010B	<u>  </u> 200.7			<u>  </u> 99
Titanium	<u>  </u> 6010B	<u>  </u> 200.7			<u>  </u> 99
Uranium	<u>  </u> 6010B <sup>1</sup>	<u>  </u> 200.7 <sup>1</sup>		<u>  </u> 1620	<u>  </u> 99
Vanadium	<input checked="" type="checkbox"/> 6010B	<u>  </u> 200.7			<u>  </u> 99
Zinc	<input checked="" type="checkbox"/> 6010B	<u>  </u> 200.7			<u>  </u> 99
Zirconium	<u>  </u> 6010B <sup>1</sup>	<u>  </u> 200.7 <sup>1</sup>		<u>  </u> 1620	<u>  </u> 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 07/28/05

CLIENT: TNUHANFORD B04-001 H3213

LVL LOT #: 0506L740

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-001	J037M0	Arsenic, Total	30.5	u UG/L	30.5	1.0
		Barium, Total	100	UG/L	2.6	1.0
		Chromium, Total	30.8	UG/L	10.8	1.0
		Lead, Total	32.7	u UG/L	32.7	1.0
		Selenium, Total	30.7	u UG/L	30.7	1.0
		Tin, Total	16.0	u UG/L	16.0	1.0
		Vanadium, Total	24.5	UG/L	5.4	1.0
		Zinc, Total	19.8	UG/L	1.6	1.0
-002	J037M1	Arsenic, Total	30.5	u UG/L	30.5	1.0
		Barium, Total	94.5	UG/L	2.6	1.0
		Chromium, Total	34.8	UG/L	10.8	1.0
		Lead, Total	32.7	u UG/L	32.7	1.0
		Selenium, Total	30.7	u UG/L	30.7	1.0
		Tin, Total	16.0	u UG/L	16.0	1.0
		Vanadium, Total	24.0	UG/L	5.4	1.0
		Zinc, Total	15.4	UG/L	1.6	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 07/28/05

CLIENT: TNUHANFORD B04-001 H3213

LVL LOT #: 0506L740

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
BLANK1	05L0341-MB1	Arsenic, Total	30.5	u UG/L	30.5	1.0
		Barium, Total	2.6	u UG/L	2.6	1.0
		Chromium, Total	10.8	u UG/L	10.8	1.0
		Lead, Total	32.7	u UG/L	32.7	1.0
		Selenium, Total	30.7	u UG/L	30.7	1.0
		Tin, Total	16.0	u UG/L	16.0	1.0
		Vanadium, Total	5.4	u UG/L	5.4	1.0
		Zinc, Total	5.5	UG/L	1.6	1.0

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Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/28/05

CLIENT: TNUHANFORD B04-001 H3213

LVL LOT #: 0506L740

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

SAMPLE	SITE ID	ANALYTE	SPIKED	INITIAL	SPIKED	%RECOV	DILUTION
			SAMPLE	RESULT	AMOUNT		FACTOR (SPK)
=====	=====	=====	=====	=====	=====	=====	=====
-002	J037M1	Arsenic, Total	2190	30.5 u	2000	109.4	1.0
		Barium, Total	2190	94.5	2000	104.7	1.0
		Chromium, Total	250	34.8	200	107.6	1.0
		Lead, Total	535	32.7 u	500	107.0	1.0
		Selenium, Total	2160	30.7 u	2000	108.0	1.0
		Tin, Total	1100	16.0 u	1000	109.5	1.0
		Vanadium, Total	535	24.0	500	102.1	1.0
		Zinc, Total	530	15.4	500	103.0	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 07/28/05

CLIENT: TNUHANFORD B04-001 H3213

LVL LOT #: 0506L740

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

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR (REP)
			RESULT	REPLICATE	RPD	
-001REP	J037M0	Arsenic, Total	30.5 u	30.5 u	NC	1.0
		Barium, Total	100	104	3.1	1.0
		Chromium, Total	30.8	33.7	9.0	1.0
		Lead, Total	32.7 u	32.7 u	NC	1.0
		Selenium, Total	30.7 u	30.7 u	NC	1.0
		Tin, Total	16.0 u	16.0 u	NC	1.0
		Vanadium, Total	24.5	26.2	6.7	1.0
		Zinc, Total	19.8	7.1	94.4	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 07/28/05

CLIENT: TNUHANFORD B04-001 H3213

LVL LOT #: 0506L740

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

SAMPLE	SITE ID	ANALYTE	SPIKED		UNITS	%RECOV
			SAMPLE	AMOUNT		
LCS1	05L0341-LC1	Arsenic, LCS	9820	10000	UG/L	98.2
		Barium, LCS	4920	5000	UG/L	98.4
		Chromium, LCS	506	500	UG/L	101.2
		Lead, LCS	2460	2500	UG/L	98.3
		Selenium, LCS	9780	10000	UG/L	97.8
		Tin, LCS	4990	5000	UG/L	99.7
		Vanadium, LCS	2410	2500	UG/L	96.4
		Zinc, LCS	983	1000	UG/L	98.3



# Custody Transfer Record/Lab Work Request

Page 1 of 1

See SRC

Lionville Laboratory Use Only

0506 L740

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

P E F

Client TNU - HANFORD SAF# B04-001

Est. Final Proj. Sampling Date \_\_\_\_\_

Project # 11843-606-001-9999-00

Project Contact/Phone # \_\_\_\_\_

Lionville Laboratory Project Manager ON

QC Spec Del Std TAT 30 days

Date Rec'd 6/14/05 Date Due 7/14/05

Refrigerator #	#/Type Container	Volume	Preservatives	ORGANIC			Metal	INORG
				VOA	BNA	PCB		
	Liquid	40	Hel					
	Solid							
	Liquid	500						
	Solid							

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen		Date Collected	Time Collected	Matrix	Lionville Laboratory Use Only						
			MS	MSD				PCB	PCB	Heb				
S - Soil	001	I037 MO			6-15-05	1100	W							
SE - Sediment	002	I				1105	L							
SO - Solid	003	I 2				1140	L							
SL - Sludge	004	I 4			6-6-05	0705	L							
W - Water														
O - Oil														
A - Air														
DS - Drum Solids														
DL - Drum Liquids														
L - EP/TCLP Leachate														
WI - Wipe														
X - Other														
F - Fish														

DATE/REVISIONS:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Special Instructions: METALSO = Ba, Cr, V, Zn, AS, Pb, Se, Sn

RUN MATRIX QC

Refrigerator #	#/Type Container	Volume	Preservatives	VOA	BNA	PCB	PCB	Heb	Matrix	Date Collected	Time Collected	Matrix	Refrigerator #	#/Type Container	Volume	Preservatives	VOA	BNA	PCB	PCB	Heb	Matrix	Date Collected	Time Collected	Matrix

Refrigerator # \_\_\_\_\_

#/Type Container \_\_\_\_\_

Volume \_\_\_\_\_

Preservatives \_\_\_\_\_

VOA \_\_\_\_\_

BNA \_\_\_\_\_

PCB \_\_\_\_\_

PCB \_\_\_\_\_

Heb \_\_\_\_\_

Matrix \_\_\_\_\_

Date Collected \_\_\_\_\_

Time Collected \_\_\_\_\_

Matrix \_\_\_\_\_

Refrigerator # \_\_\_\_\_

#/Type Container \_\_\_\_\_

Volume \_\_\_\_\_

Preservatives \_\_\_\_\_

VOA \_\_\_\_\_

BNA \_\_\_\_\_

PCB \_\_\_\_\_

PCB \_\_\_\_\_

Heb \_\_\_\_\_

Matrix \_\_\_\_\_

Date Collected \_\_\_\_\_

Time Collected \_\_\_\_\_

Matrix \_\_\_\_\_

Refrigerator # \_\_\_\_\_

#/Type Container \_\_\_\_\_

Volume \_\_\_\_\_

Preservatives \_\_\_\_\_

VOA \_\_\_\_\_

BNA \_\_\_\_\_

PCB \_\_\_\_\_

PCB \_\_\_\_\_

Heb \_\_\_\_\_

Matrix \_\_\_\_\_

Date Collected \_\_\_\_\_

Time Collected \_\_\_\_\_

Matrix \_\_\_\_\_

Refrigerator # \_\_\_\_\_

#/Type Container \_\_\_\_\_

Volume \_\_\_\_\_

Preservatives \_\_\_\_\_

VOA \_\_\_\_\_

BNA \_\_\_\_\_

PCB \_\_\_\_\_

PCB \_\_\_\_\_

Heb \_\_\_\_\_

Matrix \_\_\_\_\_

Date Collected \_\_\_\_\_

Time Collected \_\_\_\_\_

Matrix \_\_\_\_\_

Refrigerator # \_\_\_\_\_

#/Type Container \_\_\_\_\_

Volume \_\_\_\_\_

Preservatives \_\_\_\_\_

VOA \_\_\_\_\_

BNA \_\_\_\_\_

PCB \_\_\_\_\_

PCB \_\_\_\_\_

Heb \_\_\_\_\_

Matrix \_\_\_\_\_

Date Collected \_\_\_\_\_

Time Collected \_\_\_\_\_

Matrix \_\_\_\_\_

Refrigerator # \_\_\_\_\_

#/Type Container \_\_\_\_\_

Volume \_\_\_\_\_

Preservatives \_\_\_\_\_

VOA \_\_\_\_\_

BNA \_\_\_\_\_

PCB \_\_\_\_\_

PCB \_\_\_\_\_

Heb \_\_\_\_\_

Matrix \_\_\_\_\_

Date Collected \_\_\_\_\_

Time Collected \_\_\_\_\_

Matrix \_\_\_\_\_

Refrigerator # \_\_\_\_\_

#/Type Container \_\_\_\_\_

Volume \_\_\_\_\_

Preservatives \_\_\_\_\_

VOA \_\_\_\_\_

BNA \_\_\_\_\_

PCB \_\_\_\_\_

PCB \_\_\_\_\_

Heb \_\_\_\_\_

Matrix \_\_\_\_\_

Date Collected \_\_\_\_\_

Time Collected \_\_\_\_\_

Matrix \_\_\_\_\_

Refrigerator # \_\_\_\_\_

#/Type Container \_\_\_\_\_

Volume \_\_\_\_\_

Preservatives \_\_\_\_\_

VOA \_\_\_\_\_

BNA \_\_\_\_\_

PCB \_\_\_\_\_

PCB \_\_\_\_\_

Heb \_\_\_\_\_

Matrix \_\_\_\_\_

Date Collected \_\_\_\_\_

Time Collected \_\_\_\_\_

Matrix \_\_\_\_\_

Refrigerator # \_\_\_\_\_

#/Type Container \_\_\_\_\_

Volume \_\_\_\_\_

Preservatives \_\_\_\_\_

VOA \_\_\_\_\_

BNA \_\_\_\_\_

PCB \_\_\_\_\_

PCB \_\_\_\_\_

Heb \_\_\_\_\_

Matrix \_\_\_\_\_

Date Collected \_\_\_\_\_

Time Collected \_\_\_\_\_

Matrix \_\_\_\_\_

**Bechtel Hanford Inc.** **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** **B04-001-2** **Page 1 of 1**

Collector: GALE, SJ  
 Telephone No.: 372-9216  
 Project Coordinator: KESSNER, JH  
 Price Code: 7N  
 Data Turnaround: 45 Days

Project Designation: ERDF - Semiannual Leachate Analysis  
 Sampling Location: ERDF LEACHATE  
 SAF No.: B04-001  
 Air Quality:

Ice Chest No.: ERC 96 012  
 Field Logbook No.: EL-1518-2  
 COA: KERDF22560  
 Method of Shipment: FED EX

Shipped To: EBERLINE SERVICES (LIONVILLE)  
 POSSIBLE SAMPLE HAZARDS/REMARKS: HISTORICAL DATA INDICATES <2K pCi/g. NO ACTIVITY REPORT REQUIRED  
 Special Handling and/or Storage: N/A

Offsite Property No.: A050243  
 Bill of Lading/Air Bill No.: SEE OSCP

Sample No.	Matrix *	Sample Date	Sample Time	Preservation		Cool 4C	HCl or H2SO4 to pH <2 Cool	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	HCl to pH <2	HNO3 to pH <2	Cool 4C	None
				Type of Container	No. of Container(s)										
J037M0	WATER	6/30/05	1100	aG	1	500mL	3	1	G/P	P	500mL	G/P	2	1	G/P
J037M1	WATER	6/30/05	1105	Carbonyls - 8315 (Formaldehyde)	1	500mL	40mL	500mL	G/P	P	500mL	G/P	1000mL	500mL	1000mL
J037M2	WATER	6/30/05	1140	Carbonyls - 8315 (Formaldehyde)	1	500mL	40mL	500mL	G/P	P	500mL	G/P	1000mL	500mL	1000mL
J037M3	WATER	6/30/05	0715	Carbonyls - 8315 (Formaldehyde)	1	500mL	40mL	500mL	G/P	P	500mL	G/P	1000mL	500mL	1000mL

**SPECIAL INSTRUCTIONS**

(1) ICP Metals - 6010A (TAL) (Barium, Chromium, Vanadium, Zinc); ICP Metals - 6010A (Add-on) (Arsenic, Lead, Selenium, Tin)  
 (2) IC Anions - 300.0 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Sulfate)

**NOTE: X\* = 1 EACH 1000 ML**

**CHAIN OF POSSESSION**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
SPALCASH	6/05/05 1320	REF ZA	6/05/05 1320
REF ZA	6/30/05 0715	WONG/SPALCASH	6/30/05 0715
SPALCASH	6/30/05 1300	FED EX	6/30/05 0950
REF ZA	6/14/05	WONG/SPALCASH	6/14/05 0950

**LABORATORY SECTION** Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

**FINAL SAMPLE DISPOSITION** Disposal Method: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Disposed By: \_\_\_\_\_

**Lionville Laboratory Incorporated**  
**SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: *TNU - HANFORD*

Date: *6/14/05*

Purchase Order / Project# /  
 (SAF#) SOW# / Release #: *B04-001*

LvLI Batch #: *05062740*

Sample Custodian: *Victor Hernandez*

NOTE: EXPLAIN ALL DISCREPANCIES

- |   |   |   |
|---|---|---|
| 1. Samples Hand Delivered <u>or Shipped</u>   | Carrier <i>FE Ex</i>  | Airbill# <i>7929 4774 5990</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>3-3</i> °C  | Cooler # <i>ERC-96-012</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 type="checkbox"/> Yes <input checked="" type="checkbox"/> No | <i>#003D not Rec'd.</i>                       |
| 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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> N/A                  |
| 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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No |   |
| 16. Project Manager contacted concerning discrepancies? name/date (or samples outside criteria)                             | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Discrepancies     |

SR-002-B





Lionville Laboratory, Inc.  
 INORGANIC ANALYTICAL DATA PACKAGE FOR  
 TNUHANFORD B04-001 H3213



DATE RECEIVED: 06/14/05

LVL LOT # : 05062240

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
---------------------	-------	-----	--------	------------	-----------	----------

J037M0

SPECIFIC CONDUCTANCE	001	W	05LSP014	06/13/05	06/15/05	06/15/05
SPECIFIC CONDUCTANCE	001 REP	W	05LSP014	06/13/05	06/15/05	06/15/05
TOTAL DISSOLVED SOLI	001	W	05LSSA64	06/13/05	06/17/05	06/17/05

J037M1

SPECIFIC CONDUCTANCE	002	W	05LSP014	06/13/05	06/15/05	06/15/05
TOTAL DISSOLVED SOLI	002	W	05LSSA64	06/13/05	06/17/05	06/17/05

LAB QC:

SPECIFIC CONDUCTANCE	MB1	W	05LSP014	N/A	06/15/05	06/15/05
SPECIFIC CONDUCTANCE	MB1 BS	W	05LSP014	N/A	06/15/05	06/15/05
TOTAL DISSOLVED SOLI	MB1	W	05LSSA64	N/A	06/17/05	06/17/05
TOTAL DISSOLVED SOLI	MB1 BS	W	05LSSA64	N/A	06/17/05	06/17/05
TOTAL DISSOLVED SOLI	MB1 BSD	W	05LSSA64	N/A	06/17/05	06/17/05



## Analytical Report

**Client:** TNU-HANFORD B04-001 H3213  
**LVL#:** 0506L740

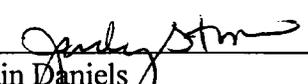
**W.O.#:** 11343-606-001-9999-00  
**Date Received:** 06-14-05

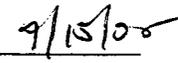
### INORGANIC NARRATIVE

1. This narrative covers the analyses of 2 water samples.
2. The samples were prepared and analyzed in accordance with the methods checked on the attached glossary.

LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

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 blanks were within the method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS for Total Dissolved Solids was within the 20% Relative Percent Difference (RPD) control limit.
7. The replicate analysis for Specific Conductance was within the 20% RPD control limit.
8. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

  
\_\_\_\_\_  
Iain Daniels  
Laboratory Manager  
Lionville Laboratory Incorporated

  
\_\_\_\_\_  
Date

njpl06-740

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	
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-1 (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 210A (a) 2520 (b)
Salinity			
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 07/13/05

CLIENT: TNUHANFORD B04-001 H3213  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0506L740

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J037M0	Specific Conductance	3120	US/CM	1.0	1.0
		Total Dissolved Solids	2200	MG/L	10.0	1.0
-002	J037M1	Specific Conductance	2980	US/CM	1.0	1.0
		Total Dissolved Solids	2120	MG/L	10.0	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 07/13/05

CLIENT: TNUHANFORD B04-001 H3213  
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0506L740

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	05LSP014-MB1	Specific Conductance	1.0	u US/CM	1.0	1.0
BLANK10	05LSSA64-MB1	Total Dissolved Solids	5.00	u MG/L	5.00	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/13/05

CLIENT: TNUHANFORD B04-001 H3213  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0506L740

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
BLANK10	05LSP014-MB1	Specific Conductance	727	1.0 u	718	101.3	1.0
BLANK10	05LSSA64-MB1	Total Dissolved Solids	98.0	5.00u	100	98.0	1.0
		Total Dissolved Solids	103	5.00u	100	103.0	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 07/13/05

CLIENT: TNUHANFORD B04-001 H3213  
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0506L740

SAMPLE	SITE ID	ANALYTE	SPIKE#1	SPIKE#2	%DIFF
			%RECOV	%RECOV	
BLANK10	05LSSA64-MB1	Total Dissolved Solids	98.0	103.0	5.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 07/13/05

CLIENT: TNUHANFORD B04-001 H3213  
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0506L740

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-001REP	J037M0	Specific Conductance	3120	3140	0.55	1.0



Company Contact: T LAZARSKI  
 Sampling Location: ERDJF LEACHATE  
 Field Logbook No. EL-1518-2  
 COA: RERDF22560  
 Method of Shipment: FED EX  
 Bill of Lading/Air Bill No. SEE OSCP

Shipped To: EBERLINE SERVICES (LIONVILLE)  
 POSSIBLE SAMPLE HAZARDS/REMARKS: HISTORICAL DATA INDICATES <2K pCi/g. NO ACTIVITY REPORT REQUIRED  
 Special Handling and/or Storage: *NA*

Sample No.	Matrix *	Sample Date	Sample Time	Preservation	Cool 4C	IICl or I125O4 to pH <2 Cool	IINO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	IINO3 to pH <2	IICl to pH <2	IINO3 to pH <2	None
J037M0	WATER	6/30/05	1100	aG	500mL	3	1	1	500mL	500mL	1	G/P	2	None
J037M1	WATER	6/30/05	1105	aG	500mL	3	1	1	500mL	500mL	1	G/P	2	G/P
J037M2	WATER	6/30/05	1140	aG	500mL	3	1	1	500mL	500mL	1	G/P	2	4
J037M3	WATER	6/30/05	0715	aG	500mL	3	1	1	500mL	500mL	1	G/P	2	1000mL

Sample No.	Matrix *	Sample Date	Sample Time	Preservation	Cool 4C	IICl or I125O4 to pH <2 Cool	IINO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	IINO3 to pH <2	IICl to pH <2	IINO3 to pH <2	None
J037M4	WATER	6-6-05	0715	aG	500mL	3	1	1	500mL	500mL	1	G/P	2	1000mL

Sample No.	Matrix *	Sample Date	Sample Time	Preservation	Cool 4C	IICl or I125O4 to pH <2 Cool	IINO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	IINO3 to pH <2	IICl to pH <2	IINO3 to pH <2	None
J037M4	WATER	6-6-05	0715	aG	500mL	3	1	1	500mL	500mL	1	G/P	2	1000mL

SPECIAL INSTRUCTIONS: (1) ICP Metals - 6010A (TAL) (Barium, Chromium, Vanadium, Zinc); ICP Metals - 6010A (Add-on) (Arsenic, Lead, Selenium, Tin); (2) IC Anions - 300.0 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Sulfate)  
 NOTE: X\* = 1 EACH 1000 ml

**Lionville Laboratory Incorporated  
SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: *TNU - HANFORD*

Date: *6/14/05*

Purchase Order / Project# /  
SAF# SOW# / Release #: *B04-001*

LvLI Batch #: *0506L740*

Sample Custodian: *Victor Heenan*

NOTE: EXPLAIN ALL DISCREPANCIES

- |   |   |   |
|---|---|---|
| 1. Samples Hand Delivered or <u>Shipped</u>   | Carrier <i>FE Ex</i>  | Airbill# <i>7929 4774 5990</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>3-3</i> °C  | Cooler # <i>ERC-96-012</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 type="checkbox"/> Yes <input checked="" type="checkbox"/> No | <i>#003D not Rec'd.</i>                       |
| 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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> N/A                  |
| 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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No |   |
| 16. Project Manager contacted concerning discrepancies? name/date (or samples outside criteria)                             | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Discrepancies     |

SR-002-B





**EBERLINE**  
SERVICES

August 31, 2005

Ms. Joan Kessner  
Bechtel Hanford Inc.  
3190 George Washington Way  
MSIN H9-02  
Richland, WA 99352

Reference: **P.O. #630**  
**Eberline Services R5-06-130-7281, SDG H3213**



Dear Ms. Kessner:

Enclosed is a data report for two water samples designated under SAF No. B04-001 received at Eberline Services on June 15, 2005. The samples were analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion  
Senior Program Manager

MCM/

Enclosure: Data Package

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

**1.0 GENERAL**

Bechtel Hanford Inc. (BHI) Sample Delivery Group H3213 was composed of two water samples designated under SAF No. B04-001 with a Project Designation of: ERDF – Semiannual Leachate Analysis.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-mail on August 16 and 31, 2005.

**2.0 ANALYSIS NOTES**

**2.1 Gross Alpha and Gross Beta Analysis**

No problems were encountered during the course of the analyses.

**2.2 Carbon-14 Analysis**

The C-14 samples were reanalyzed because the matrix spike (54%) failed. No problems were encountered during the course of the reanalyses.

**2.3 Iodine-129 Analysis**

No problems were encountered during the course of the analyses.

**2.4 Technetium-99 Analysis**

No problems were encountered during the course of the analyses.

**2.5 Total Radium Analysis**

No problems were encountered during the course of the analyses.

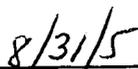
**2.6 Total Uranium Analysis**

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 C. Mannion  
Senior Program Manager

  
\_\_\_\_\_  
Date

EBERLINE SERVICES / RICHMOND  
SAMPLE DELIVERY GROUP H3213

SDG 7281  
Contact Melissa C. Mannion

Client Hanford  
Contract No. 630  
Case no SDG\_H3213

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

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Prepared by

*Melissa C. Mannion*

*Melissa C. Mannion*

Reviewed by

Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-TOC  
Version 3.06  
Report date 08/31/05

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3213

SDG 7281

Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford

Contract No. 630

Case no SDG\_H3213

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-RG

Version 3.06

Report date 08/31/05

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3213

SDG 7281  
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford  
Contract No. 630  
Case no SDG\_H3213

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

REPORT GUIDES

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SUMMARY DATA SECTION

Page 2

Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 08/31/05

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H3213

SDG 7281  
 Contact Melissa C. Mannion

**SAMPLE SUMMARY**

Client Hanford  
 Contract No. 630  
 Case no SDG H3213

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
J037M0	ERDF LEACHATE	WATER		R506130-01	B04-001	B04-001-2	06/13/05 11:00
J037M1	ERDF LEACHATE	WATER		R506130-02	B04-001	B04-001-2	06/13/05 11:05
Method Blank		WATER		R506130-04	B04-001		
Method Blank		WATER		R506130-08	B04-001		
Lab Control Sample		WATER		R506130-03	B04-001		
Lab Control Sample		WATER		R506130-07	B04-001		
Duplicate (R506130-01)	ERDF LEACHATE	WATER		R506130-05	B04-001		06/13/05 11:00
Duplicate (R506130-01)	ERDF LEACHATE	WATER		R506130-09	B04-001		06/13/05 11:00
Spike (R506130-01)	ERDF LEACHATE	WATER		R506130-10	B04-001		06/13/05 11:00

SAMPLE SUMMARY

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Lab id EBRLNE  
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**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H3213

SDG 7281  
 Contact Melissa C. Mannion

**QC SUMMARY**

Client Hanford  
 Contract No. 630  
 Case no SDG H3213

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7281	B04-001-2	J037M0	WATER		7.0 L		06/15/05	2	R506130-01	7281-001
		J037M1	WATER		7.0 L		06/15/05	2	R506130-02	7281-002
		Method Blank	WATER						R506130-04	7281-004
		Method Blank	WATER						R506130-08	7281-008
		Lab Control Sample	WATER						R506130-03	7281-003
		Lab Control Sample	WATER						R506130-07	7281-007
		Duplicate (R506130-01)	WATER		7.0 L		06/15/05	2	R506130-05	7281-005
		Duplicate (R506130-01)	WATER		7.0 L		06/15/05	2	R506130-09	7281-009
		Spike (R506130-01)	WATER		7.0 L		06/15/05	2	R506130-10	7281-010

QC SUMMARY

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 Protocol Hanford  
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 Form DVD-QS  
 Version 3.06  
 Report date 08/31/05

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H3213

SDG 7281  
 Contact Melissa C. Mannion

**PREP BATCH SUMMARY**

Client Hanford  
 Contract No. 630  
 Case no SDG H3213

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED				QUALI- FIERS	
			BATCH	2σ %	CLIENT	MORE	RE	BLANK		LCS
<b>Beta Counting</b>										
TC	WATER	Technetium 99 in Water	7132-182	10.0	2			1	1	1/1
<b>Gas Proportional Counting</b>										
RAT	WATER	Total Alpha Radium in Water	7132-182	5.0	2			1	1	1/1
<b>Gas Proportional Counting</b>										
93A	WATER	Gross Alpha in Water	7132-182	20.0	2			1	1	1/1
93B	WATER	Gross Beta in Water	7132-182	15.0	2			1	1	1/1
<b>Gamma Spectroscopy</b>										
I	WATER	Iodine 129 in Water	7132-182	5.0	2			1	1	1/1
<b>Kinetic Phosphorimetry (KPA)</b>										
U_T	WATER	Uranium, Total in Water	7132-182	9.0	2			1	1	1/1
<b>Liquid Scintillation Counting</b>										
C	WATER	Carbon 14 in Water	7132-182B	10.0	2			1	1	1/1 1/1 X

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.

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**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H3213

SDG 7281  
 Contact Melissa C. Mannion

Client Hanford  
 Contract No. 630  
 Case no SDG H3213

**WORK SUMMARY**

CLIENT SAMPLE ID	LAB SAMPLE ID	LOCATION	MATRIX	COLLECTED	PLANCHET	TEST	SUF-	FIX	ANALYZED	REVIEWED	BY	METHOD
CUSTODY	SAF No	RECEIVED										
J037M0		R506130-01		7281-001		93A/93			07/26/05	07/28/05	MWT	Gross Alpha in Water
ERDF LEACHATE		06/13/05	WATER	7281-001		93B/93			07/26/05	07/28/05	MWT	Gross Beta in Water
B04-001-2	B04-001	06/15/05		7281-001		C	A1		08/24/05	08/30/05	MWT	Carbon 14 in Water
				7281-001		I			08/05/05	08/11/05	MWT	Iodine 129 in Water
				7281-001		RAT			07/20/05	07/22/05	MWT	Total Alpha Radium in Water
				7281-001		TC			08/02/05	08/04/05	MWT	Technetium 99 in Water
				7281-001		U_T			07/08/05	07/08/05	MWT	Uranium, Total in Water
J037M1		R506130-02		7281-002		93A/93			07/25/05	07/28/05	MWT	Gross Alpha in Water
ERDF LEACHATE		06/13/05	WATER	7281-002		93B/93			07/25/05	07/28/05	MWT	Gross Beta in Water
B04-001-2	B04-001	06/15/05		7281-002		C	A1		08/24/05	08/30/05	MWT	Carbon 14 in Water
				7281-002		I			08/09/05	08/11/05	MWT	Iodine 129 in Water
				7281-002		RAT			07/20/05	07/22/05	MWT	Total Alpha Radium in Water
				7281-002		TC			08/01/05	08/04/05	MWT	Technetium 99 in Water
				7281-002		U_T			07/08/05	07/08/05	MWT	Uranium, Total in Water
Method Blank		R506130-04		7281-004		93A/93			07/26/05	07/28/05	MWT	Gross Alpha in Water
			WATER	7281-004		93B/93			07/26/05	07/28/05	MWT	Gross Beta in Water
	B04-001			7281-004		I			08/10/05	08/11/05	MWT	Iodine 129 in Water
				7281-004		RAT			07/18/05	07/22/05	MWT	Total Alpha Radium in Water
				7281-004		TC			08/02/05	08/04/05	MWT	Technetium 99 in Water
				7281-004		U_T			07/08/05	07/08/05	MWT	Uranium, Total in Water
Method Blank		R506130-08		7281-008		C			08/24/05	08/30/05	MWT	Carbon 14 in Water
			WATER									
	B04-001											
Lab Control Sample		R506130-03		7281-003		93A/93			07/25/05	07/28/05	MWT	Gross Alpha in Water
			WATER	7281-003		93B/93			07/25/05	07/28/05	MWT	Gross Beta in Water
	B04-001			7281-003		I			08/10/05	08/11/05	MWT	Iodine 129 in Water
				7281-003		RAT			07/18/05	07/22/05	MWT	Total Alpha Radium in Water
				7281-003		TC			08/01/05	08/04/05	MWT	Technetium 99 in Water
				7281-003		U_T			07/08/05	07/08/05	MWT	Uranium, Total in Water
Lab Control Sample		R506130-07		7281-007		C			08/24/05	08/30/05	MWT	Carbon 14 in Water
			WATER									
	B04-001											

WORK SUMMARY

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Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
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**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H3213

SDG 7281  
Contact Melissa C. Mannion

**WORK SUMMARY, cont.**

Client Hanford  
Contract No. 630  
Case no SDG H3213

CLIENT SAMPLE ID	LAB SAMPLE ID									
LOCATION	MATRIX	COLLECTED	PLANCHET	TEST	SUF-	ANALYZED	REVIEWED	BY	METHOD	
CUSTODY	SAF No	RECEIVED			FIX					
Duplicate (R506130-01)		R506130-05	7281-005	93A/93		07/27/05	07/28/05	MWT	Gross Alpha in Water	
ERDF LEACHATE	WATER	06/13/05	7281-005	93B/93		07/27/05	07/28/05	MWT	Gross Beta in Water	
	B04-001	06/15/05	7281-005	I		08/11/05	08/11/05	MWT	Iodine 129 in Water	
			7281-005	RAT		07/20/05	07/22/05	MWT	Total Alpha Radium in Water	
			7281-005	TC		08/01/05	08/04/05	MWT	Technetium 99 in Water	
			7281-005	U_T		07/08/05	07/08/05	MWT	Uranium, Total in Water	
Duplicate (R506130-01)		R506130-09	7281-009	C		08/24/05	08/30/05	MWT	Carbon 14 in Water	
ERDF LEACHATE	WATER	06/13/05								
	B04-001	06/15/05								
Spike (R506130-01)		R506130-10	7281-010	C		08/24/05	08/30/05	MWT	Carbon 14 in Water	
ERDF LEACHATE	WATER	06/13/05								
	B04-001	06/15/05								

**COUNTS OF TESTS BY SAMPLE TYPE**

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
93A/93	B04-001	Gross Alpha in Water	900.0_ALPHABETA_GPC	2			1	1	1		5
93B/93	B04-001	Gross Beta in Water	900.0_ALPHABETA_GPC	2			1	1	1		5
C	B04-001	Carbon 14 in Water	C14_CHEM_LSC	2			1	1	1	1	6
I	B04-001	Iodine 129 in Water	I129_SEP_LEPS_GS	2			1	1	1		5
RAT	B04-001	Total Alpha Radium in Water	RATOT_GPC	2			1	1	1		5
TC	B04-001	Technetium 99 in Water	TC99_TR_SEP_LSC	2			1	1	1		5
U_T	B04-001	Uranium, Total in Water	UTOT_KPA	2			1	1	1		5
<b>TOTALS</b>				<b>14</b>			<b>7</b>	<b>7</b>	<b>7</b>	<b>1</b>	<b>36</b>

WORK SUMMARY

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Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-CWS  
Version 3.06  
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EBERLINE SERVICES / RICHMOND  
SAMPLE DELIVERY GROUP H3213

R506130-08

Method Blank

METHOD BLANK

SDG <u>7281</u>	Client/Case no <u>Hanford</u>	SDG <u>H3213</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R506130-08</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7281-008</u>	Material/Matrix <u>WATER</u>	
	SAF No <u>B04-001</u>	

ANALYTE	CAS NO	RESULT pCi/L	2 $\sigma$ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Carbon 14	14762-75-5	6.54	73	120	200	U	C

ERDF-Semiannual Leachate Analysis

QC-BLANK 54108
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Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>08/31/05</u>

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H3213

R506130-03

Lab Control Sample

**LAB CONTROL SAMPLE**

SDG <u>7281</u> Contact <u>Melissa C. Mannion</u>	Client/Case no <u>Hanford</u> SDG <u>H3213</u> Contract No. <u>630</u>
Lab sample id <u>R506130-03</u> Dept sample id <u>7281-003</u>	Client sample id <u>Lab Control Sample</u> Material/Matrix <u>WATER</u> SAF No <u>B04-001</u>

ANALYTE	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS    TEST	ADDED pCi/L	2σ ERR pCi/L	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	99.7	13	<u>4.8</u>	3.0	93A	128	5.1	78	71-129	70-130
Gross Beta	123	9.2	<u>7.0</u>	4.0	93B	125	5.0	98	75-125	80-120
Technetium 99	1090	26	5.1	15	TC	1090	44	100	83-117	80-120
Total Uranium (ug/L)	72.5	8.6	<u>0.22</u>	0.10	U_T	82.5	3.3	88	79-121	80-120
Total Radium	42.6	2.1	0.62	1.0	RAT	56.0	2.2	<u>76</u>	90-110	80-120
Iodine 129	383	7.9	<u>14</u>	5.0	I	464	19	<u>83</u>	91-109	80-120

ERDF-Semiannual Leachate Analysis

QC-LCS 53521
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Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>08/31/05</u>

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H3213

R506130-07

Lab Control Sample

**LAB CONTROL SAMPLE**

SDG <u>7281</u> Contact <u>Melissa C. Mannion</u>	Client/Case no <u>Hanford</u> <u>SDG H3213</u> Contract <u>No. 630</u>
Lab sample id <u>R506130-07</u> Dept sample id <u>7281-007</u>	Client sample id <u>Lab Control Sample</u> Material/Matrix _____ <u>WATER</u> SAF No <u>B04-001</u>

ANALYTE	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS TEST	ADDED pCi/L	2σ ERR pCi/L	REC %	3σ LMIS (TOTAL)	PROTOCOL LIMITS
Carbon 14	15500	540	<u>280</u>	200	C	15900	640	97	83-117	80-120

ERDF-Semiannual Leachate Analysis

QC-LCS 54107

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-LCS  
 Version 3.06  
 Report date 08/31/05

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H3213

R506130-05

J037M0

**DUPLICATE**

SDG <u>7281</u>		Client/Case no <u>Hanford</u>	SDG <u>H3213</u>
Contact <u>Melissa C. Mannion</u>		Contract No. <u>630</u>	
<b>DUPLICATE</b>	<b>ORIGINAL</b>		
Lab sample id <u>R506130-05</u>	Lab sample id <u>R506130-01</u>	Client sample id <u>J037M0</u>	
Dept sample id <u>7281-005</u>	Dept sample id <u>7281-001</u>	Location/Matrix <u>ERDF LEACHATE</u>	<u>WATER</u>
	Received <u>06/15/05</u>	Collected/Volume <u>06/13/05 11:00</u>	<u>7.0 L</u>
		Custody/SAF No <u>B04-001-2</u>	<u>B04-001</u>

ANALYTE	DUPLICATE		MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST	ORIGINAL		MDA pCi/L	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
	pCi/L	2σ ERR (COUNT)					pCi/L	2σ ERR (COUNT)					
Gross Alpha	386	37	<u>11</u>	3.0		93A	414	39	<u>8.0</u>		7	47	
Gross Beta	698	21	<u>7.8</u>	4.0		93B	736	21	<u>6.7</u>		5	32	
Technetium 99	799	34	6.5	15		TC	808	15	3.5		1	22	
Total Uranium (ug/L)	1100	140	<u>2.2</u>	0.10		U_T	1090	140	<u>2.2</u>		1	33	
Total Radium	0.047	0.097	0.30	1.0	U	RAT	0.054	0.18	0.31	U	-	-	
Iodine 129	-0.487	1.8	4.1	5.0	U	I	-0.366	1.5	3.3	U	-	-	

ERDF-Semiannual Leachate Analysis

QC-DUP#1 53523

DUPLICATES

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
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Version <u>3.06</u>
Report date <u>08/31/05</u>

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H3213

R506130-09

J037M0

**DUPLICATE**

SDG <u>7281</u>	Client/Case no <u>Hanford</u>	SDG <u>H3213</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
<b>DUPLICATE</b>	<b>ORIGINAL</b>	
Lab sample id <u>R506130-09</u>	Lab sample id <u>R506130-01</u>	Client sample id <u>J037M0</u>
Dept sample id <u>7281-009</u>	Dept sample id <u>7281-001</u>	Location/Matrix <u>ERDF LEACHATE</u> <u>WATER</u>
	Received <u>06/15/05</u>	Collected/Volume <u>06/13/05 11:00</u> <u>7.0 L</u>
		Custody/SAF No <u>B04-001-2</u> <u>B04-001</u>

ANALYTE	DUPLICATE	2σ ERR	MDA	RDL	QUALI-	ORIGINAL	2σ ERR	MDA	QUALI-	RPD	3σ	PROT
	pCi/L	(COUNT)	pCi/L	pCi/L	FIERS TEST	pCi/L	(COUNT)	pCi/L	FIERS	%	TOT	LIMIT
Carbon 14	89.4	75	120	200	U C	75.8	72	120	U	-		

ERDF-Semiannual Leachate Analysis

DUPLICATES

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SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
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**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H3213

R506130-10

J037M0

**MATRIX SPIKE**

SDG <u>7281</u>	Client/Case no <u>Hanford</u>	<u>SDG H3213</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
<b>MATRIX SPIKE</b>	<b>ORIGINAL</b>	
Lab sample id <u>R506130-10</u>	Lab sample id <u>R506130-01</u>	Client sample id <u>J037M0</u>
Dept sample id <u>7281-010</u>	Dept sample id <u>7281-001</u>	Location/Matrix <u>ERDF LEACHATE</u> <u>WATER</u>
	Received <u>06/15/05</u>	Collected/Volume <u>06/13/05 11:00</u> <u>7.0 L</u>
		Custody/SAF No <u>B04-001-2</u> <u>B04-001</u>

ANALYTE	SPIKE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS TEST	ADDED pCi/L	2σ ERR pCi/L	ORIGINAL pCi/L	2σ ERR (COUNT)	REC % (TOTAL)	3σ LIMITS	PROTOCOL LIMITS
Carbon 14	25200	860	<u>350</u>	200	X C	31900	1300	75.8	72	<u>79</u>	86-114	60-140

ERDF-Semiannual Leachate Analysis

MATRIX SPIKES

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Report date <u>08/31/05</u>

EBERLINE SERVICES / RICHMOND  
SAMPLE DELIVERY GROUP H3213

R506130-01

J037M0

DATA SHEET

SDG <u>7281</u>	Client/Case no <u>Hanford</u>	SDG <u>H3213</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R506130-01</u>	Client sample id <u>J037M0</u>	
Dept sample id <u>7281-001</u>	Location/Matrix <u>ERDF LEACHATE</u>	<u>WATER</u>
Received <u>06/15/05</u>	Collected/Volume <u>06/13/05 11:00</u>	<u>7.0 L</u>
	Custody/SAF No <u>B04-001-2</u>	<u>B04-001</u>

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	414	39	<u>8.0</u>	3.0		93A
Gross Beta	12587-47-2	736	21	<u>6.7</u>	4.0		93B
Carbon 14	14762-75-5	75.8	72	120	200	U	C
Technetium 99	14133-76-7	808	15	3.5	15		TC
Total Uranium (ug/L)	7440-61-1	1090	140	<u>2.2</u>	0.10		U_T
Total Radium	ALPHA-RA	0.054	0.18	0.31	1.0	U	RAT
Iodine 129	15046-84-1	-0.366	1.5	3.3	5.0	U	I

ERDF-Semiannual Leachate Analysis

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>08/31/05</u>

EBERLINE SERVICES / RICHMOND  
SAMPLE DELIVERY GROUP H3213

R506130-02

J037M1

DATA SHEET

SDG <u>7281</u>	Client/Case no <u>Hanford</u>	SDG <u>H3213</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R506130-02</u>	Client sample id <u>J037M1</u>	
Dept sample id <u>7281-002</u>	Location/Matrix <u>ERDF LEACHATE</u>	<u>WATER</u>
Received <u>06/15/05</u>	Collected/Volume <u>06/13/05 11:05</u>	<u>7.0 L</u>
	Custody/SAF No <u>B04-001-2</u>	<u>B04-001</u>

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	445	40	<u>10</u>	3.0		93A
Gross Beta	12587-47-2	704	21	<u>7.7</u>	4.0		93B
Carbon 14	14762-75-5	67.7	73	120	200	U	C
Technetium 99	14133-76-7	814	22	6.2	15		TC
Total Uranium (ug/L)	7440-61-1	1030	130	<u>2.2</u>	0.10		U_T
Total Radium	ALPHA-RA	0.060	0.10	0.31	1.0	U	RAT
Iodine 129	15046-84-1	0.410	1.5	3.4	5.0	U	I

ERDF-Semiannual Leachate Analysis

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>08/31/05</u>

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H3213

**METHOD SUMMARY**

TECHNETIUM 99 IN WATER

BETA COUNTING

Test TC Matrix WATER  
 SDG 7281  
 Contact Melissa C. Mannion

Client Hanford  
 Contract No. 630  
 Contract SDG H3213

**RESULTS**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Technetium 99
Preparation batch 7132-182					
J037M0	R506130-01			7281-001	808
J037M1	R506130-02			7281-002	814
BLK (QC ID=53522)	R506130-04			7281-004	U
LCS (QC ID=53521)	R506130-03			7281-003	ok
Duplicate (R506130-01)	R506130-05			7281-005	ok

Nominal values and limits from method RDLs (pCi/L) 15  
 ERDF-Semiannual Leachate Analysis

**METHOD PERFORMANCE**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 7132-182 2σ prep error 10.0 % Reference Lab Notebook 7132 pg. 182																
J037M0	R506130-01			3.5	0.100			88		120			50	07/29/05	08/02	GRB-228
J037M1	R506130-02			6.2	0.100			85		50			49	07/29/05	08/01	GRB-218
BLK (QC ID=53522)	R506130-04			5.5	0.100			94		50				07/29/05	08/02	GRB-202
LCS (QC ID=53521)	R506130-03			5.1	0.100			98		50				07/29/05	08/01	GRB-222
Duplicate (R506130-01)	R506130-05			6.5	0.100			84		50			49	07/29/05	08/01	GRB-201
	(QC ID=53523)															
Nominal values and limits from method				15	0.100			20-105		50			180			

PROCEDURES REFERENCE TC99\_TR\_SEP\_LSC  
 CP-431 Technetium-99 Purification of Soil or Resin by Extraction Chromatography, rev 2  
 CP-008 Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD MDA 5.4 ± 2.4  
 FOR 5 SAMPLES YIELD 90 ± 12

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-CMS  
 Version 3.06  
 Report date 08/31/05

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H3213

Test RAT Matrix WATER  
 SDG 7281  
 Contact Melissa C. Mannion

Client Hanford  
 Contract No. 630  
 Contract SDG H3213

**METHOD SUMMARY**  
 TOTAL ALPHA RADIUM IN WATER  
 GAS PROPORTIONAL COUNTING

**RESULTS**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Total Radium
Preparation batch 7132-182				
J037M0	R506130-01		7281-001	U
J037M1	R506130-02		7281-002	U
BLK (QC ID=53522)	R506130-04		7281-004	U
LCS (QC ID=53521)	R506130-03		7281-003	<u>LOW</u>
Duplicate (R506130-01)	R506130-05		7281-005	- U

Nominal values and limits from method RDLs (pCi/L) 1.0  
 ERDF-Semiannual Leachate Analysis

**METHOD PERFORMANCE**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/L	MDA	ALIQ L	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 7132-182 2σ prep error 5.0 % Reference Lab Notebook 7132 pg. 182																
J037M0	R506130-01		0.31	0.200				97	100				37	07/13/05	07/20	GAW-216
J037M1	R506130-02		0.31	0.200				96	100				37	07/13/05	07/20	GAW-216
BLK (QC ID=53522)	R506130-04		0.47	0.200				95	100					07/13/05	07/18	GAW-216
LCS (QC ID=53521)	R506130-03		0.62	0.200				95	<u>67</u>					07/13/05	07/18	GAW-216
Duplicate (R506130-01) (QC ID=53523)	R506130-05		0.30	0.200				97	100				37	07/13/05	07/20	GAW-216

Nominal values and limits from method 1.0 0.200 20-105 100 180

PROCEDURES REFERENCE RATOT\_GPC  
 DWP-880 Total Radium in Drinking Water, rev 0

AVERAGES ± 2 SD MDA 0.40 ± 0.28  
 FOR 5 SAMPLES YIELD 96 ± 2

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-CMS  
 Version 3.06  
 Report date 08/31/05

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H3213

Test 93A Matrix WATER  
 SDG 7281  
 Contact Melissa C. Mannion

**METHOD SUMMARY**

GROSS ALPHA IN WATER  
 GAS PROPORTIONAL COUNTING

Client Hanford  
 Contract No. 630  
 Contract SDG H3213

**RESULTS**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Gross Alpha
Preparation batch 7132-182					
J037M0	R506130-01	93		7281-001	414
J037M1	R506130-02	93		7281-002	445
BLK (QC ID=53522)	R506130-04	93		7281-004	U
LCS (QC ID=53521)	R506130-03	93		7281-003	ok
Duplicate (R506130-01)	R506130-05	93		7281-005	ok

Nominal values and limits from method RDLs (pCi/L) 3.0  
 ERDF-Semiannual Leachate Analysis

**METHOD PERFORMANCE**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 7132-182 2σ prep error 20.0 % Reference Lab Notebook 7132 pg. 182																
J037M0	R506130-01	93		<u>8.0</u>	0.0900			190	100			43	07/22/05	07/26	GRB-109	
J037M1	R506130-02	93		<u>10</u>	0.0850			184	100			42	07/22/05	07/25	GRB-210	
BLK (QC ID=53522)	R506130-04	93		<u>3.5</u>	0.0800			60	100				07/22/05	07/26	GRB-112	
LCS (QC ID=53521)	R506130-03	93		<u>4.8</u>	0.0800			61	100				07/22/05	07/25	GRB-211	
Duplicate (R506130-01) (QC ID=53523)	R506130-05	93		<u>11</u>	0.0900			188	100			44	07/22/05	07/27	GRB-115	

Nominal values and limits from method 3.0 0.0800 5-250 100 180

PROCEDURES REFERENCE 900.0\_ALPHABETA\_GPC  
 CP-120 Gross Alpha and Gross Beta in Water, rev 6

AVERAGES ± 2 SD MDA 7.5 ± 6.5  
 FOR 5 SAMPLES RESIDUE 137 ± 139

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-CMS  
 Version 3.06  
 Report date 08/31/05

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H3213

**METHOD SUMMARY**

GROSS BETA IN WATER

GAS PROPORTIONAL COUNTING

Test 93B Matrix WATER  
 SDG 7281  
 Contact Melissa C. Mannion

Client Hanford  
 Contract No. 630  
 Contract SDG H3213

**RESULTS**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Gross Beta
Preparation batch 7132-182					
J037M0	R506130-01	93		7281-001	736
J037M1	R506130-02	93		7281-002	704
BLK (QC ID=53522)	R506130-04	93		7281-004	U
LCS (QC ID=53521)	R506130-03	93		7281-003	ok
Duplicate (R506130-01)	R506130-05	93		7281-005	ok

Nominal values and limits from method RDLs (pCi/L) 4.0  
 ERDF-Semiannual Leachate Analysis

**METHOD PERFORMANCE**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 7132-182 2σ prep error 15.0 % Reference Lab Notebook 7132 pg. 182																
J037M0	R506130-01	93		<u>6.7</u>	0.0900			190	100			43	07/22/05	07/26	GRB-109	
J037M1	R506130-02	93		<u>7.7</u>	0.0850			184	100			42	07/22/05	07/25	GRB-210	
BLK (QC ID=53522)	R506130-04	93		<u>7.0</u>	0.0800			60	100				07/22/05	07/26	GRB-112	
LCS (QC ID=53521)	R506130-03	93		<u>7.0</u>	0.0800			61	100				07/22/05	07/25	GRB-211	
Duplicate (R506130-01)	R506130-05	93		<u>7.8</u>	0.0900			188	100			44	07/22/05	07/27	GRB-115	
	(QC ID=53523)															

Nominal values and limits from method 4.0 0.0800 5-250 100 180

PROCEDURES REFERENCE 900.0\_ALPHABETA\_GPC  
 CP-120 Gross Alpha and Gross Beta in Water, rev 6

AVERAGES ± 2 SD MDA 7.2 ± 0.97  
 FOR 5 SAMPLES RESIDUE 137 ± 139

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE  
 Protocol Hanford  
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**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H3213

Test I Matrix WATER  
 SDG 7281  
 Contact Melissa C. Mannion

**METHOD SUMMARY**

IODINE 129 IN WATER  
 GAMMA SPECTROSCOPY

Client Hanford  
 Contract No. 630  
 Contract SDG H3213

**RESULTS**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Iodine 129
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Preparation batch 7132-182

J037M0	R506130-01	7281-001	U
J037M1	R506130-02	7281-002	U
BLK (QC ID=53522)	R506130-04	7281-004	U
LCS (QC ID=53521)	R506130-03	7281-003	<u>LOW</u>
Duplicate (R506130-01)	R506130-05	7281-005	- U

Nominal values and limits from method RDLs (pCi/L) 5.0  
 ERDF-Semiannual Leachate Analysis

**METHOD PERFORMANCE**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/L	MDA L	ALIQ FAC	PREP TION	DILU- %	YIELD %	EFF COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
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Preparation batch 7132-182 2σ prep error 5.0 % Reference Lab Notebook 7132 pg. 182

J037M0	R506130-01		3.3	0.250				78	930			53	08/03/05	08/05	XSPEC-004
J037M1	R506130-02		3.4	0.250				82	643			57	08/03/05	08/09	XSPEC-004
BLK (QC ID=53522)	R506130-04		2.8	0.250				85	858				08/03/05	08/10	XSPEC-004
LCS (QC ID=53521)	R506130-03		<u>14</u>	0.250				80	624				08/03/05	08/10	XSPEC-004
Duplicate (R506130-01)	R506130-05		4.1	0.250				79	600			59	08/03/05	08/11	XSPEC-004
	(QC ID=53523)														

Nominal values and limits from method 5.0 0.250 20-105 300 100 180

PROCEDURES	REFERENCE	I129_SEP_LEPS_GS
	CP-024	Iodine-129, Sample Dissolution, rev 5
	CP-530	Iodine-129 Purification, rev 1

AVERAGES ± 2 SD	MDA	<u>5.5</u> ± <u>9.5</u>
FOR 5 SAMPLES	YIELD	<u>81</u> ± <u>6</u>

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-CMS  
 Version 3.06  
 Report date 08/31/05

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H3213

Test U T Matrix WATER  
 SDG 7281  
 Contact Melissa C. Mannion

**METHOD SUMMARY**

URANIUM, TOTAL IN WATER  
 KINETIC PHOSPHORIMETRY (KPA)

Client Hanford  
 Contract No. 630  
 Contract SDG H3213

**RESULTS**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Total Uranium
Preparation batch 7132-182					
J037M0	R506130-01			7281-001	1090
J037M1	R506130-02			7281-002	1030
BLK (QC ID=53522)	R506130-04			7281-004	U
LCS (QC ID=53521)	R506130-03			7281-003	ok
Duplicate (R506130-01)	R506130-05			7281-005	ok

Nominal values and limits from method RDLs (ug/L) 0.10  
 ERDF-Semiannual Leachate Analysis

**METHOD PERFORMANCE**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA ug/L	ALIQ L	PREP FAC	DILU TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
Preparation batch 7132-182 2σ prep error 9.0 % Reference Lab Notebook 7132 pg. 182															
J037M0	R506130-01			<u>2.2</u>	0.0200								25	07/08/05	07/08 KPA-001
J037M1	R506130-02			<u>2.2</u>	0.0200								25	07/08/05	07/08 KPA-001
BLK (QC ID=53522)	R506130-04			0.022	0.0200									07/08/05	07/08 KPA-001
LCS (QC ID=53521)	R506130-03			<u>0.22</u>	0.0200									07/08/05	07/08 KPA-001
Duplicate (R506130-01) (QC ID=53523)	R506130-05			<u>2.2</u>	0.0200								25	07/08/05	07/08 KPA-001

Nominal values and limits from method 0.10 0.0200 180

PROCEDURES	REFERENCE	UTOT_KPA
CP-044		Sample Preparation for Total Uranium by Kinetic Phosphorimetry, rev 6
CP-929		Calibration of the Kinetic Phosphorimeter, rev 9

AVERAGES ± 2 SD	MDA	<u>1.4</u>	±	<u>2.3</u>
FOR 5 SAMPLES	YIELD	_____	±	_____

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP H3213

**METHOD SUMMARY**

CARBON 14 IN WATER

LIQUID SCINTILLATION COUNTING

Test C        Matrix WATER  
 SDG 7281  
 Contact Melissa C. Mannion

Client Hanford  
 Contract No. 630  
 Contract SDG H3213

**RESULTS**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Carbon 14
Preparation batch 7132-182B					
J037M0	R506130-01	A1		7281-001	U
J037M1	R506130-02	A1		7281-002	U
BLK (QC ID=53522)	R506130-08			7281-008	U
LCS (QC ID=53521)	R506130-07			7281-007	ok
Duplicate (R506130-01)	R506130-09			7281-009	- U
Spike (R506130-01)	R506130-10			7281-010	<u>LOW</u> X

Nominal values and limits from method RDLs (pCi/L) 200  
 ERDF-Semiannual Leachate Analysis

**METHOD PERFORMANCE**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
Preparation batch 7132-182B 2σ prep error 10.0 % Reference Lab Notebook 7132 pg. 182															
J037M0	R506130-01	A1		120	0.0150			100		50			72	08/23/05	08/24 LSC-004
J037M1	R506130-02	A1		120	0.0150			100		50			72	08/23/05	08/24 LSC-004
BLK (QC ID=53522)	R506130-08			120	0.0150			100		50				08/23/05	08/24 LSC-004
LCS (QC ID=53521)	R506130-07			<u>280</u>	0.0150			100		<u>10</u>				08/23/05	08/24 LSC-004
Duplicate (R506130-01)	R506130-09			120	0.0150			100		50			72	08/23/05	08/24 LSC-004
(QC ID=53523)															
Spike (R506130-01)	R506130-10			<u>350</u>	0.0150			100		<u>6</u>			72	08/23/05	08/24 LSC-004
(QC ID=53524)															

Nominal values and limits from method 200 0.0150 50 180

PROCEDURES REFERENCE C14\_CHEM\_LSC  
 CP-241 Carbon-14 in Aqueous Samples, rev 6

AVERAGES ± 2 SD MDA 180 ± 210  
 FOR 6 SAMPLES YIELD 100 ± 0

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3213

SDG 7281  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
Contract No. 630  
Case no SDG H3213

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- \* LAB SAMPLE ID is the lab's primary identification for a sample.
- \* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- \* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- \* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

- \* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

REPORT GUIDES

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SUMMARY DATA SECTION

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3213

SDG 7281  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
Contract No. 630  
Case no SDG H3213

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- \* The preparation batches are shown in the same order as the Method Summary Reports are printed.
- \* Only analyses of planchets relevant to the SDG are included.
- \* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- \* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified. Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

REPORT GUIDES

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SUMMARY DATA SECTION

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3213

SDG 7281  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
Contract No. 630  
Case no SDG\_H3213

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- \* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- \* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- \* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- \* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- \* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- \* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

REPORT GUIDES

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SUMMARY DATA SECTION

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3213

SDG 7281  
 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
 Contract No. 630  
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DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

- \* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- \* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

- \* ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- \* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- \* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

- U The RESULT is less than the MDA (Minimum Detectable Activity).

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If the MDA is blank, the ERROR is used as the limit.

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
- B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.  
  
Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.  
  
For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.
- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
- H Similar to 'L' except the recovery was high.
- P The RESULT is 'preliminary'.
- X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
- 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

- \* An MDA is underlined if it is bigger than its RDL.

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- \* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- \* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- \* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- \* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- \* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- \* REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- \* The first, computed limits for the recovery reflect:
  1. The error of RESULT, including that introduced by rounding the result prior to printing.
 

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
  2. The error of ADDED.
  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- \* The second limits are protocol defined upper and lower QC limits for the recovery.
- \* The recovery is underlined if it is outside either of these ranges.

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DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

- \* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- \* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTS divided by their average expressed as a percent.

If both RESULTS are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

- \* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTS prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTS. If labeled CNT, it does not.

This value reported for this limit is at most 999.

- \* The second limit for the RPD is the larger of:
  1. A fixed percentage specified in the protocol.

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2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

- \* The RPD is underlined if it is greater than either limit.
- \* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

- \* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

- \* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- \* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- \* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

- \* The first, computed limits for the recovery reflect:

1. The errors of the two RESULTS, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

2. The error of ADDED.

3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

- \* The second limits are protocol defined upper and lower QC limits

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for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

- \* The recovery is underlined (out of spec) if it is outside either of these ranges.

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METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

- \* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

- \* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

- \* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- \* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- \* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

- \* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
- \* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

MDAs are underlined if greater than the printed RDL.

- \* Aliquots are underlined if less than the nominal value specified for the method.
- \* Preparation factors are underlined if greater than the nominal value specified for the method.
- \* Dilution factors are underlined if greater than the nominal value specified for the method.
- \* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
- \* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
- \* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

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- \* Count times are underlined if less than the nominal value specified for the method.
- \* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- \* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- \* Days Held are underlined if greater than the holding time specified in the protocol.
- \* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1+3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

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results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

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**Bechtel Hanford Inc.**  
 Collector GALE, SJ  
 Project Designation ERDF - Semiannual Leachate Analysis  
 Ice Chest No. **EXC 03 103**  
 Shipped To **EBERLINE SERVICES LIONVILLE**  
**POSSIBLE SAMPLE HAZARDS/REMARKS**  
**HISTORICAL DATA INDICATES <2K pCi/g. NO ACTIVITY REPORT REQUIRED <3H2**  
**Special Handling and/or Storage**

**CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST**  
 Project Coordinator KESSNER, JH  
 Telephone No. 372-9216  
 Company Contact T LAZARSKI  
 Sampling Location ERDF LEACHATE  
 Field Logbook No. EL-1518-2  
 Offsite Property No. **A050255**  
 Bill of Lading/Air Bill No. SEE OSCP

Sample No.	Matrix *	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	COOL 4C	HCl to pH <2	H2SO4 to pH <2	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	HNO3 to pH <2	HCl to pH <2	None	
J037M0	WATER	6-13-05	1100		aG	1	500mL		3		1	1	P	P	G/P	G/P	G/P	None
J037M1	WATER	6-13-05	1105		aGs*	3	40mL											G/P
J037M2	WATER																	4
J037M3	WATER																	1000mL

**SPECIAL INSTRUCTIONS**

(1) ICP Metals - 6010A (TAL) (Barium, Chromium, Vanadium, Zinc); ICP Metals - 6010A (Add-on) (Arsenic, Lead, Selenium, Tin)  
 (2) IC Anions - 300.0 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Sulfate)

Sign/Print Names	Date/Time
Received By/Stored In <b>FED EX</b>	
Received By/Removed From <b>FED EX</b>	06/15/05 09:50
Received By/Stored In <b>FEU</b>	
Received By/Removed From	
Received By/Stored In	
Received By/Removed From	
Received By/Stored In	
Received By/Removed From	
Received By/Stored In	
Received By/Removed From	
Received By/Stored In	

**CHAIN OF POSSESSION**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
<b>NOVA/EBERLINE</b>	6/3/05 1300	<b>FED EX</b>	
<b>FED EX</b>	06/15/05		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

**LABORATORY SECTION** Received By  
**FINAL SAMPLE DISPOSITION** Disposal Method

Disposed By  
 Date/Time



# RICHMOND, CA LABORATORY

## SAMPLE RECEIPT CHECKLIST

Client: BECHTEL HANFORD City RICHLAND State WA  
 Date/Time received 06/15/05 CoC No. B04-001-2  
 Container I.D. No. ERC 03-103 Requested TAT (Days) 45 P.O. Received Yes [ ] No [ ]

### INSPECTION

1. Custody seals on shipping container intact? Yes  No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes  No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes  No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes  No [ ] N/A [ ]
5. Packing material is: Wet [ ] Dry
6. Number of samples in shipping container: 2 Sample Matrix W
7. Number of containers per sample: 7 (Or see CoC \_\_\_\_\_)
8. Samples are in correct container Yes  No [ ]
9. Paperwork agrees with samples? Yes  No [ ]
10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels
11. Samples are: In good condition  Leaking [ ] Broken Container [ ] Missing [ ]
12. Samples are: Preserved  Not preserved  pH 1/7 Preservative \_\_\_\_\_
13. Describe any anomalies:  
ONE (1) LITER SAMPLE OF J037M2 WAS INCLUDED  
IN THE SHIPMENT BUT NOT INCLUDED ON THE CHECKLIST  
ON CoC FOR REQUIRED ANALYSIS.
14. Was P.M. notified of any anomalies? Yes  No [ ] Date 06/15/05
15. Inspected by MFW Date: 06/15/05 Time: 10:00

Customer Sample No.	cpm	mR/hr	Wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_