

0054379

H1091



Recra LabNet - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNUHANFORD B00-068 H1091

DATE RECEIVED: 10/13/00

RFW LOT # :0010L948

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B105W6						
% SOLIDS	001	S	00L&S166	10/10/00	10/19/00	10/20/00
% SOLIDS	001 REP	S	00L&S166	10/10/00	10/19/00	10/20/00
NITRATE BY IC	001	S	00LBC070	10/10/00	11/13/00	11/13/00
NITRATE BY IC	001 REP	S	00LBC070	10/10/00	11/13/00	11/13/00
NITRATE BY IC	001 MS	S	00LBC071	10/10/00	11/14/00	11/14/00
TOTAL CYANIDE	001	S	00LC1C5	10/10/00	10/18/00	10/18/00
TOTAL CYANIDE	001 REP	S	00LC1C5	10/10/00	10/18/00	10/18/00
TOTAL CYANIDE	001 MS	S	00LC1C5	10/10/00	10/18/00	10/18/00
PH	001	S	00LPH086	10/10/00	10/17/00	10/17/00
PH	001 REP	S	00LPH086	10/10/00	10/17/00	10/17/00
SULFIDE	001	S	00LSD041	10/10/00	10/16/00	10/16/00
SULFIDE	001 REP	S	00LSD041	10/10/00	10/16/00	10/16/00
SULFIDE	001 MS	S	00LSD041	10/10/00	10/16/00	10/16/00

LAB QC:

NITRATE BY IC	MB1	S	00LBC070	N/A	11/13/00	11/13/00
NITRATE BY IC	MB1 BS	S	00LBC070	N/A	11/13/00	11/13/00
NITRATE BY IC	MB1	S	00LBC071	N/A	11/14/00	11/14/00
NITRATE BY IC	MB1 BS	S	00LBC071	N/A	11/14/00	11/14/00
TOTAL CYANIDE	LCS L	S	00LC1C5	N/A	10/18/00	10/18/00
TOTAL CYANIDE	LCS L	S	00LC1C5	N/A	10/18/00	10/18/00
TOTAL CYANIDE	MB1	S	00LC1C5	N/A	10/18/00	10/18/00
SULFIDE	MB1	W	00LSD041	N/A	10/16/00	10/16/00
SULFIDE	MB1 BS	W	00LSD041	N/A	10/16/00	10/16/00
SULFIDE	MB1 BSD	W	00LSD041	N/A	10/16/00	10/16/00

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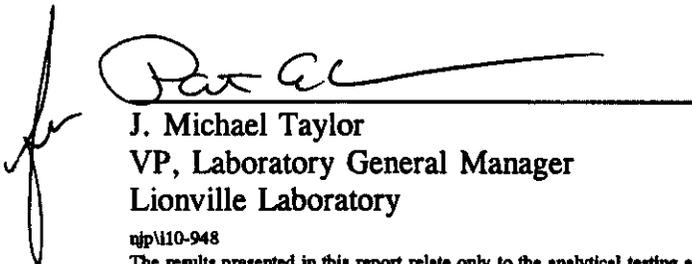
**Recra LabNet Philadelphia  
Analytical Report**

**Client : TNU-HANFORD B00-068 H1091  
RFW# : 0010L948**

**W.O. # : 10985-001-001-9999-00  
Date Received: 10-13-00**

**INORGANIC CASE NARRATIVE**

1. This narrative covers the analyses of 1 soil sample.
2. The sample was prepared and analyzed in accordance with the methods checked on the attached glossary.
3. Sample holding times as required by the method and/or contract were met.
4. The cooler temperature was recorded on the chain-of-custody.
5. The method blanks were within method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS for Sulfide was within the 20% Relative Percent Difference (RPD) control limit.
7. The matrix spike recoveries were within the 75-125% control limits.
8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.
9. The results for solid samples are reported on a dry weight basis.
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.

  
\_\_\_\_\_  
J. Michael Taylor  
VP, Laboratory General Manager  
Lionville Laboratory

11-16-00  
Date

ujp\110-948

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 12 pages. (includes 001A)

**WET CHEMISTRY**  
**METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS**

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
% Ash	___ D2216-80		
% Moisture	___ D2216-80		___ ILMO4.0 (e)
% Solids	✓ D2216-80		___ ILMO4.0 (e)
% Volatile Solids	___ D2216-80		
ASTM Extraction in Water	___ D3987-81/85		
BTU	___ D240-87		
CEC		___ 9081	___ c
Chromium VI		___ 3060A/7196A	
Corrosivity ___ by coupon ___ by pH		___ 1110(mod) ___ 9045C	
Cyanide, Total		✓ 9010B / 9014	___ ILMO4.0 (e)
Cyanide, Reactive		___ Section 7.3/9014	
Halides, Extractable Organic		___ 9020B	___ EPA 600/4/84-008
Halides, Total		___ 9020B	___ EPA 600/4/84-008
EP Toxicity		___ 1310A	
Flash Point		___ 1010	
Ignitability		___ 1010	
Oil & Grease		___ 9071A	
Carbon, Total Organic		___ 9060	___ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	___ D240-87(mod)	___ 5050	
Petroleum Hydrocarbons, Total Recoverable		___ 9071	___ EPA 418.1
pH, Soil		✓ 9045C	
Sulfide, Reactive		___ Section 7.3/9030B	
Sulfide		✓ 9030B(mod)	
Specific Gravity	___ D1429-76C/	___ D5057-90	
Sulfur, Total		___ 9056	
Synthetic Preparation Leach		___ 1312	
Paint Filter		9095A	
<b>Other:</b> <i>Asst</i>		<b>Method:</b> <i>EPA 300.0 (mod)</i>	
<b>Other:</b>		<b>Method:</b>	

**Recra LabNet Philadelphia**  
**METHOD REFERENCES AND DATA QUALIFIERS**

**DATA QUALIFIERS**

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- \* = Indicates that the original sample result is greater than 4x the spike amount added.

**ABBREVIATIONS**

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

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

**ANALYTICAL WET CHEMISTRY METHODS**

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
  - a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).
  - b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).
  - c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).
  - d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
  - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
  - f. Code of Federal Regulations.

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INORGANICS DATA SUMMARY REPORT 11/16/00

CLIENT: TNUHANFORD B00-068 H1091  
 WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0010L948

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B105W6	% Solids	95.1	%	0.01	1.0
		Nitrate by IC	1.6	MG/KG	1.3	1.0
		Cyanide, Total	0.55 u	MG/KG	0.55	1.0
		pH	9.7	SOIL PH	0.01	1.0
		Sulfide	41.0 u	MG/KG	41.0	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/16/00

CLIENT: TNUHANFORD B00-068 H1091  
 WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0010L948

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	00LBC070-MB1	Nitrate by IC	1.2	u MG/KG	1.2	1.0
BLANK10	00LBC071-MB1	Nitrate by IC	1.2	u MG/KG	1.2	1.0
BLANK1	00LC1C5-MB1	Cyanide, Total	0.50	u MG/KG	0.50	1.0
BLANK10	00LSD041-MB1	Sulfide	40.0	u MG/KG	40.0	1.0

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INORGANICS ACCURACY REPORT 11/16/00

CLIENT: TNUHANFORD B00-068 H1091  
 WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0010L948

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	B105W6	Nitrate by IC	28	1.6	26	98.6	1.0
		Cyanide, Total	5.3	0.55u	5.1	104.8	1.0
		Sulfide	313	0.0	322	97.1	1.0
BLANK10	00LBC070-MB1	Nitrate by IC	25	1.2 u	25	99.3	1.0
BLANK10	00LBC071-MB1	Nitrate by IC	24	1.2 u	25	97.2	1.0
BLANK10	00LSD041-MB1	Sulfide	341	40.0 u	351	97.1	1.0
		Sulfide MSD	333	40.0 u	351	94.9	1.0

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INORGANICS DUPLICATE SPIKE REPORT 11/16/00

CLIENT: TNUHANFORD B00-068 H1091  
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0010L948

SAMPLE	SITE ID	ANALYTE	SPIKE#1		SPIKE#2	
			%RECOV	%RECOV	%RECOV	%DIFF
BLANK10	00LSD041-MB1	Sulfide	97.1	94.9	2.4	

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INORGANICS PRECISION REPORT 11/16/00

CLIENT: TNUHANFORD B00-068 H1091  
 WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0010L948

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION
			RESULT	REPLICATE RPD		
-----	-----	-----	-----	-----	-----	-----
-001REP	B105W6	% Solids	95.1	95.4	0.22	1.0
		Nitrate by IC	1.6	1.6	1.3	1.0
		Cyanide, Total	0.55u	0.50u	NC	1.0
		pH	9.7	9.6	0.2	1.0
		Sulfide	41.0 u	42.0 u	NC	1.0

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INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/16/00

CLIENT: TNUHANFORD B00-068 H1091  
 WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0010L948

SAMPLE	SITE ID	ANALYTE	SPIKED	SPIKED	UNITS	%RECOV
			SAMPLE	AMOUNT		
LCSS1	00LC1C5-LCS1	Cyanide, Total LCS	2.1	2.0	MG/KG	103.0
LCSS2	00LC1C5-LCS2	Cyanide, Total LCS	10	10	MG/KG	103.5



00102448

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					B00-068-70		Page 1 of 1		
Collector PATLBERG/ Thomas		Company Contact Dave Weeks		Telephone No. 372-9524		Project Coordinator TRENT, SJ		Price Code 8L Data Turnaround 21 Days			
Project Designation 200 Area Groundwater Well Drilling Waste Designation for		Sampling Location 200 West		SAF No. B00-068		Air Quality <input type="checkbox"/>					
Ice Chest No. SM1-188		Field Logbook No. EL-1516 EL 1518		COA JTRC R70-3200 -XEL0008LMHC (RF 9-27-00)		Method of Shipment Fed EX / Gov. Vehicle					
Shipped To TMA/RECRA		Offsite Property No. A000349 A		Bill of Lading/Air Bill No. 42357953 9735							
POSSIBLE SAMPLE HAZARDS/REMARKS potential radioactivity				Preservation		D None	B Cool 4C	C Cool 4C	E None		
				Type of Container		aG	aG	aG	aG	aG	
				No. of Container(s)		1	1	1	1	1	
				Special Handling and/or Storage		Volume	120mL	250mL	250mL	250mL	250mL
SAMPLE ANALYSIS				IC Anions - 300.0 (Nitrate); Sulfides - 9030; Total Cyanide - 9010	Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (m-Cresol)	VOA - 8260A (TCL)	ICP Metals - 6010A (Supertrace); Mercury - 7471 - (CV)	pH (Soil) - 9045			
Sample No.	Matrix *	Sample Date	Sample Time								
B105W6	SOIL	10/10/00	15:45	X	X	X	X	X			
CHAIN OF POSSESSION					SPECIAL INSTRUCTIONS						
Relinquished By Greg Thomas 10/10/00 16:50		Received By Stored in Refrig. 3C 10/10/00 16:50		TIE TO BOYUP9  Samples stored in Ref.# 3C at the 3728 Shipping Facility on 10/11/00. Collector not available to relinquish samples on 10/12/00 or shipment.					Matrix * S=Soil SE=Soil/men SO=Solid S=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Trame WI=Wipe L=Liquid V=Vegetation X=Other		
Relinquished By Removed from Ref. SC 10/12/00 0800		Received By R. J. R. Thoresen 10/12/00 0800									
Relinquished By R. J. R. Thoresen 10/12/00 0800		Received By FED EX									
Relinquished By Fed Ex 10/13/00 0915		Received By Paul Manning 10/13/00 0915									
Relinquished By		Received By									
LABORATORY SECTION	Received By	Title					Date/Time				
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By					Date/Time				



Recra LabNet - Lionville Laboratory  
 INORGANIC ANALYTICAL DATA PACKAGE FOR  
 TNUHANFORD B00-068 H1091

DATE RECEIVED: 10/13/00

RFW LOT # :0010L948

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B105W6						
SILVER, TOTAL	001	S	99L1690	10/10/00	11/07/00	11/07/00
SILVER, TOTAL	001 REP	S	99L1690	10/10/00	11/07/00	11/07/00
SILVER, TOTAL	001 MS	S	99L1690	10/10/00	11/07/00	11/07/00
ARSENIC, TOTAL	001	S	99L1690	10/10/00	11/07/00	11/07/00
ARSENIC, TOTAL	001 REP	S	99L1690	10/10/00	11/07/00	11/07/00
ARSENIC, TOTAL	001 MS	S	99L1690	10/10/00	11/07/00	11/07/00
BARIUM, TOTAL	001	S	99L1690	10/10/00	11/07/00	11/07/00
BARIUM, TOTAL	001 REP	S	99L1690	10/10/00	11/07/00	11/07/00
BARIUM, TOTAL	001 MS	S	99L1690	10/10/00	11/07/00	11/07/00
CADMIUM, TOTAL	001	S	99L1690	10/10/00	11/07/00	11/07/00
CADMIUM, TOTAL	001 REP	S	99L1690	10/10/00	11/07/00	11/07/00
CADMIUM, TOTAL	001 MS	S	99L1690	10/10/00	11/07/00	11/07/00
CHROMIUM, TOTAL	001	S	99L1690	10/10/00	11/07/00	11/07/00
CHROMIUM, TOTAL	001 REP	S	99L1690	10/10/00	11/07/00	11/07/00
CHROMIUM, TOTAL	001 MS	S	99L1690	10/10/00	11/07/00	11/07/00
MERCURY, TOTAL	001	S	00C0370	10/10/00	11/10/00	11/13/00
MERCURY, TOTAL	001 REP	S	00C0370	10/10/00	11/10/00	11/13/00
MERCURY, TOTAL	001 MS	S	00C0370	10/10/00	11/10/00	11/13/00
LEAD, TOTAL	001	S	99L1690	10/10/00	11/07/00	11/07/00
LEAD, TOTAL	001 REP	S	99L1690	10/10/00	11/07/00	11/07/00
LEAD, TOTAL	001 MS	S	99L1690	10/10/00	11/07/00	11/07/00
SELENIUM, TOTAL	001	S	99L1690	10/10/00	11/07/00	11/07/00
SELENIUM, TOTAL	001 REP	S	99L1690	10/10/00	11/07/00	11/07/00
SELENIUM, TOTAL	001 MS	S	99L1690	10/10/00	11/07/00	11/07/00

LAB QC:

SILVER LABORATORY	LC1 BS	S	99L1690	N/A	11/07/00	11/07/00
SILVER, TOTAL	MB1	S	99L1690	N/A	11/07/00	11/07/00
ARSENIC LABORATORY	LC1 BS	S	99L1690	N/A	11/07/00	11/07/00
ARSENIC, TOTAL	MB1	S	99L1690	N/A	11/07/00	11/07/00
BARIUM LABORATORY	LC1 BS	S	99L1690	N/A	11/07/00	11/07/00
BARIUM, TOTAL	MB1	S	99L1690	N/A	11/07/00	11/07/00
CADMIUM LABORATORY	LC1 BS	S	99L1690	N/A	11/07/00	11/07/00
CADMIUM, TOTAL	MB1	S	99L1690	N/A	11/07/00	11/07/00

Recra LabNet - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNUHANFORD B00-068 H1091

DATE RECEIVED: 10/13/00

RFW LOT # :0010L948

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM LABORATORY	LC1 BS	S	99L1690	N/A	11/07/00	11/07/00
CHROMIUM, TOTAL	MB1	S	99L1690	N/A	11/07/00	11/07/00
MERCURY LABORATORY	LC1 BS	S	00C0370	N/A	11/10/00	11/13/00
MERCURY, TOTAL	MB1	S	00C0370	N/A	11/10/00	11/13/00
LEAD LABORATORY	LC1 BS	S	99L1690	N/A	11/07/00	11/07/00
LEAD, TOTAL	MB1	S	99L1690	N/A	11/07/00	11/07/00
SELENIUM LABORATORY	LC1 BS	S	99L1690	N/A	11/07/00	11/07/00
SELENIUM, TOTAL	MB1	S	99L1690	N/A	11/07/00	11/07/00

**Recra LabNet Philadelphia  
Analytical Report**

**Client:** TNU-HANFORD B00-068  
**RFW#:** 0010L948  
**SDG/SAF#:** H1091/B00-068

**W.O.#:** 10985-001-001-9999-00  
**Date Received:** 10-13-00

**METALS CASE NARRATIVE**

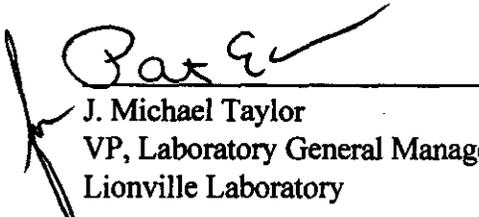
1. This narrative covers the analyses of 1 soil sample.
2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary.
3. The sample was analyzed past the required holding time for Mercury.
4. The cooler temperature has been recorded on the Chain of Custody.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
8. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to form 7.
10. The matrix spike (MS) recovery for 1 analyte was outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A serial dilution is performed for Mercury. A PDS was prepared at meaningful concentration levels, due to high concentrations of the following analytes:

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.  
*13 11/27/00*

<u>Sample ID</u>	<u>Element</u>	<u>PDS</u> <u>Concentration (ppb)</u>	<u>PDS</u> <u>% Recovery</u>
B105W6	Chromium	200	105.8

12. The duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
13. 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.
14. 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.

  
 \_\_\_\_\_  
 J. Michael Taylor  
 VP, Laboratory General Manager  
 Lionville Laboratory  
 gmb/m10-948

Date 12-7-00



# METALS METHOD GLOSSARY

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

Recra Lot#: 00106948

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>5</sup>	<u>  </u> 200.7 <u>  </u> 204.2			<u>  </u> 99
Arsenic	<input checked="" type="checkbox"/> 6010B <u>  </u> 7060A <sup>5</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	<input checked="" type="checkbox"/> 6010B <u>  </u> 7131A <sup>5</sup>	<u>  </u> 200.7 <u>  </u> 213.2			<u>  </u> 99
Calcium	<u>  </u> 6010B	<u>  </u> 200.7			<u>  </u> 99
Chromium	<input checked="" type="checkbox"/> 6010B <u>  </u> 7191 <sup>5</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>5</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>5</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> <input checked="" type="checkbox"/> 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	<input checked="" type="checkbox"/> 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>5</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	<input checked="" type="checkbox"/> 6010B <u>  </u> 7761 <sup>5</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>5</sup>	<u>  </u> 200.7 <u>  </u> 279.2 <u>  </u> 200.9			<u>  </u> 99
Tin	<u>  </u> 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	<u>  </u> 6010B	<u>  </u> 200.7			<u>  </u> 99
Zinc	<u>  </u> 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, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
4. Flame AA.
5. Graphite Furnace AA.

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

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/06/00

CLIENT: TNUHANFORD B00-068 H1091  
 WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0010L948

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B105W6	Silver, Total	0.11 u	MG/KG	0.11	1.0
		Arsenic, Total	1.3	MG/KG	0.34	1.0
		Barium, Total	83.5	MG/KG	0.02	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	26.9	MG/KG	0.09	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	3.0	MG/KG	0.21	1.0
		Selenium, Total	0.43 u	MG/KG	0.43	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/06/00

CLIENT: TNUHANFORD B00-068 H1091  
 WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0010L948

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
BLANK1	99L1690-MB1	Silver, Total	0.11 u	MG/KG	0.11	1.0
		Arsenic, Total	0.34 u	MG/KG	0.34	1.0
		Barium, Total	0.03	MG/KG	0.02	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.09 u	MG/KG	0.09	1.0
		Lead, Total	0.21 u	MG/KG	0.21	1.0
		Selenium, Total	0.43 u	MG/KG	0.43	1.0
BLANK1	00C0370-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/06/00

CLIENT: TNUHANFORD B00-068 H1091

RECRA LOT #: 0010L948

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	B105W6	Silver, Total	4.4	0.11u	5.0	88.0	1.0
		Arsenic, Total	175	1.3	198	87.6	1.0
		Barium, Total	246	83.5	198	82.0	1.0
		Cadmium, Total	4.4	0.03u	5.0	88.0	1.0
		Chromium, Total	34.2	26.9	19.8	36.9	1.0
		Mercury, Total	0.20	0.02u	0.18	116.0	1.0
		Lead, Total	46.8	3.0	49.6	88.3	1.0
		Selenium, Total	170	0.43u	198	85.6	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/06/00

CLIENT: TNUHANFORD B00-068 H1091  
 WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0010L948

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR (REP)
			RESULT	REPLICATE	RPD	
-001REP	B105W6	Silver, Total	0.11u	0.11u	NC	1.0
		Arsenic, Total	1.3	1.1	16.7	1.0
		Barium, Total	83.5	74.4	11.5	1.0
		Cadmium, Total	0.03u	0.03u	NC	1.0
		Chromium, Total	26.9	21.5	22.3	1.0
		Mercury, Total	0.02u	0.03	NC 200	1.0
		Lead, Total	3.0	2.6	14.3	1.0
		Selenium, Total	0.43u	0.43u	NC	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/06/00

CLIENT: TNUHANFORD B00-068 H1091

RECRA LOT #: 0010L948

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED		UNITS	%RECOV
			SAMPLE	AMOUNT		
LCS1	99L1690-LC1	Silver, LCS	47.1	50.0	MG/KG	94.2
		Arsenic, LCS	912	1000	MG/KG	91.2
		Barium, LCS	469	500	MG/KG	93.7
		Cadmium, LCS	23.8	25.0	MG/KG	95.2
		Chromium, LCS	48.2	50.0	MG/KG	96.4
		Lead, LCS	234	250	MG/KG	93.7
		Selenium, LCS	886	1000	MG/KG	88.6
LCS1	00C0370-LC1	Mercury, LCS	0.69	0.7	MG/KG	96.6



00102948

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			B00-068-70	Page 1 of 1
Collector <del>PAULBERG</del> Thomas	Company Contact Dave Weeks	Telephone No. 372-9524	Project Coordinator TRENT, SJ		Price Code 8L	Data Turnaround 21 Days
Project Designation 200 Area Groundwater Well Drilling Waste Designation for		Sampling Location 200 West	SAF No. B00-068	Air Quality <input type="checkbox"/>		
Ice Chest No. SM1188	Field Logbook No. EL-1516 EL 1518	COA JTRC RPO-300 -XEL-0008L4HC (RF 9.29)	Method of Shipment Fed EX / Gov. Vehicle			
Shipped To TMA/RECRA	Offsite Property No. A000349 A	Bill of Lading/Air Bill No. 42357953 9735				

POSSIBLE SAMPLE HAZARDS/REMARKS Potential radioactivity	Preservation	D None	B Cool 4C	C Cool 4C	E None
	Type of Container	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1
	Volume	120mL	250mL	250mL	250mL
Special Handling and/or Storage					

SAMPLE ANALYSIS				IC Anions - 300.0 (Nitrate); Sulfides - 9030; Total Cyanide - 9010	Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (m-Cresol)	VOA - 8260A (TCL)	ICP Metals - 6010A (Supertrace); Mercury - 7471 - (CV)	pH (Soil) - 9045
-----------------	--	--	--	--	--	-------------------	--	------------------

Sample No.	Matrix *	Sample Date	Sample Time	D	B	C	E
B105W6	SOIL	10/10/00	15:45	X	X	X	X

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By Greg Thomas	Date/Time 10/10/00 16:50	Received By Shard in	Date/Time 10/11/00 16:50
Relinquished By R. Thomas	Date/Time 10/12/00 0800	Received By R. Thomas	Date/Time 10/12/00 0800
Relinquished By Fed Ex	Date/Time 10/13/00 0915	Received By Fed Ex	Date/Time 10/13/00 0915
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

TIE TO BOYUP9

Samples stored in Ref. # 302 at the 3728 Shipping Facility on 10/11/00. Collector not available to relinquish samples on 10/12/00 for shipment.

RT 10/12/00

- Matrix \*
- S=Soil
  - SE=Soilment
  - SO=Solid
  - S=Sludge
  - W=Water
  - O=Oil
  - A=Air
  - DS=Drum Solids
  - DL=Drum Liquids
  - T=Time
  - WI=Wipe
  - L=Liquid
  - V=Vegetation
  - X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

13

Recra LabNet - Lionville Laboratory  
BNA ANALYTICAL DATA PACKAGE FOR  
TNUHANFORD B00-068 H1091

DATE RECEIVED: 10/13/00

RFW LOT # :0010L948

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B105W6	001	S	00LE1323	10/10/00	10/16/00	11/10/00
B105W6	001 MS	S	00LE1323	10/10/00	10/16/00	11/10/00
B105W6	001 MSD	S	00LE1323	10/10/00	10/16/00	11/10/00

LAB QC:

SBLKDM	MB1	S	00LE1323	N/A	10/16/00	11/10/00
SBLKDM	MB1 BS	S	00LE1323	N/A	10/16/00	11/10/00



**Recra LabNet Philadelphia  
Analytical Report**

**Client:** TNU-HANFORD B00-068  
**RFW #:** 0010L948  
**SDG/SAF #:** H1091/B00-068

**W.O. #:** 10985-001-001-9999-00  
**Date Received:** 10-13-00

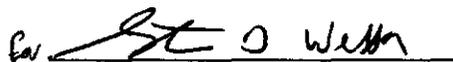
**SEMIVOLATILE**

One (1) soil sample was collected on 10-10-00.

The sample and its associated QC samples were extracted on 10-16-00 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 11-10-00.

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

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The sample was extracted and analyzed within required holding times.
3. Non-target compounds were detected in the samples.
4. All surrogate recoveries were within EPA QC limits.
5. One (1) of twenty-two (22) matrix spike recoveries was outside EPA QC limits.
6. The blank spike recoveries were within EPA QC limits.
7. The method blank contained the target compound 4-chloro-3-methylphenol at a level less than the CRQL.
8. Manual integrations are performed according to OP L-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 Section III ("Technical Flags For Manual Integration"); hard copies of the integrations have been included with the quantitation data.
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."

  
/ J. Michael Taylor  
VP, Laboratory General Manager  
Lionville Laboratory

11-27-00  
Date

pef\group\data\bna\tnu-hanford-10-948.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 11 pages.

## GLOSSARY OF BNA DATA

### 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.



## GLOSSARY OF BNA DATA

### 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.
- A** = Indicates that a TIC is a suspected aldol-condensation product.
- 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.



## 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 resolved 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** - **Coelution/Background:** peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI** - **Proper Integration:** a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.



	Cust ID: B105W6		B105W6		B105W6		SBLKDM		SBLKDM BS	
RFW#:	001		001 MS		001 MSD		00LE1323-MB1		00LE1323-MB1	
2-Chloronaphthalene	350	U	350	U	340	U	330	U	330	U
2-Nitroaniline	880	U	870	U	860	U	830	U	830	U
Dimethylphthalate	350	U	350	U	340	U	330	U	330	U
Acenaphthylene	350	U	350	U	340	U	330	U	330	U
2,6-Dinitrotoluene	350	U	350	U	340	U	330	U	330	U
3-Nitroaniline	880	U	870	U	860	U	830	U	830	U
Acenaphthene	350	U	81	%	78	%	330	U	71	%
2,4-Dinitrophenol	880	U	870	U	860	U	830	U	830	U
4-Nitrophenol	880	U	93	%	68	%	830	U	72	%
Dibenzofuran	350	U	350	U	340	U	330	U	330	U
2,4-Dinitrotoluene	350	U	98	* %	83	%	330	U	86	%
Diethylphthalate	350	U	350	U	340	U	330	U	330	U
4-Chlorophenyl-phenylether	350	U	350	U	340	U	330	U	330	U
Fluorene	350	U	350	U	340	U	330	U	330	U
4-Nitroaniline	880	U	870	U	860	U	830	U	830	U
4,6-Dinitro-2-methylphenol	880	U	870	U	860	U	830	U	830	U
N-Nitrosodiphenylamine (1)	350	U	350	U	340	U	330	U	330	U
4-Bromophenyl-phenylether	350	U	350	U	340	U	330	U	330	U
Hexachlorobenzene	350	U	350	U	340	U	330	U	330	U
Pentachlorophenol	880	U	52	%	20	%	830	U	19	%
Phenanthrene	350	U	350	U	340	U	330	U	330	U
Anthracene	350	U	350	U	340	U	330	U	330	U
Carbazole	350	U	350	U	340	U	330	U	330	U
Di-n-butylphthalate	350	U	350	U	340	U	330	U	330	U
Fluoranthene	350	U	350	U	340	U	330	U	330	U
Pyrene	350	U	102	%	88	%	330	U	89	%
Butylbenzylphthalate	350	U	350	U	340	U	330	U	330	U
3,3'-Dichlorobenzidine	350	U	350	U	340	U	330	U	330	U
Benzo (a) anthracene	350	U	350	U	340	U	330	U	330	U
Chrysene	350	U	350	U	340	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	350	U	60	J	90	J	330	U	57	J
Di-n-octyl phthalate	350	U	350	U	340	U	330	U	330	U
Benzo (b) fluoranthene	350	U	350	U	340	U	330	U	330	U
Benzo (k) fluoranthene	350	U	350	U	340	U	330	U	330	U
Benzo (a) pyrene	350	U	350	U	340	U	330	U	330	U
Indeno (1,2,3-cd) pyrene	350	U	350	U	340	U	330	U	330	U
Dibenz (a,h) anthracene	350	U	350	U	340	U	330	U	330	U
Benzo (g,h,i) perylene	350	U	350	U	340	U	330	U	330	U

(1) - Cannot be separated from Diphenylamine. \* = Outside of EPA CLP QC limits.

10

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B105W6

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNUHANFORD B00-068 H1091

Matrix: (soil/water) SOIL

Lab Sample ID: 0010L948-001

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: A111006

Level: (low/med) LOW

Date Received: 10/13/00

% Moisture: 5 decanted: (Y/N)

Date Extracted: 10/16/00

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 11/10/00

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH:       

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

Number TICs found: 4

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	8.22	300	J
2.	UNKNOWN	9.43	200	J
3.	UNKNOWN	20.27	400	JB
4.	ALKANE	27.44	70	J

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKDM

Lab Name: Recra.LabNet                      Work Order: 10985001001

Client: TNUHANFORD B00-068 H1091

Matrix: (soil/water) SOIL    Lab Sample ID: 00LE1323-MB1

Sample wt/vol: 30.0                      (g/mL) G    Lab File ID: A111004

Level:        (low/med) LOW    Date Received: 10/16/00

% Moisture:                             decanted: (Y/N)        Date Extracted: 10/16/00

Concentrated Extract Volume: 1000 (uL)    Date Analyzed: 11/10/00

Injection Volume: 2.0 (uL)    Dilution Factor: 1.00

GPC Cleanup: (Y/N) N    pH:       

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

Number TICs found: 6

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	12.74	1000	J
2.	UNKNOWN	16.64	3000	J
3.	UNKNOWN	19.71	3000	J
4.	UNKNOWN	20.28	300	J
5.	UNKNOWN	21.66	1000	J
6.	UNKNOWN	23.21	600	J



00106748

11/11

Bechtel Hanford Inc.		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>				B00-068-70	Page 1 of 1			
Collector <del>PHILIP RECU</del> Thomas		Company Contact Dave Weeks		Telephone No. 372-9524		Project Coordinator TRENT, SJ				
Project Designation 200 Area Groundwater Well Drilling Waste Designation for		Sampling Location 200 West		SAF No. B00-068		Price Code 8L Data Turnaround 21 Days				
Ice Chest No. SMI-188 <del>ERG-PT-10/12/00</del> <del>ERG-PT-067 (LOFI)</del>		Field Logbook No. EL-1516 EL 1518		COA JRC RPO-3200 X1-00081MHC REF 9-27-00		Method of Shipment Fed EX <u>1600 Vehicle</u>				
Shipped To TMA RECRA		Offsite Property No. <u>A000349 A</u>		Bill of Lading/Air Bill No. <u>42357953 9735</u>						
POSSIBLE SAMPLE HAZARDS/REMARKS <u>Potential radioactivity</u>				Preservation		D None	B Cool 4C	C Cool 4C	E None	
				Type of Container		aG	aG	aG	aG	aG
				No. of Container(s)		1	1	1	1	1
				Volume		120mL	250mL	250mL	250mL	250mL
Special Handling and/or Storage				IC Anions - 300.0 (Nitrate), Sulfides - 9030, Total Cyanide - 9010		Semi-VOA - 8270A (TC1), Semi-VOA - 8270A (Add-On) (m-Cresol)		VOA - 8260A (TC1)		
SAMPLE ANALYSIS				ICP Metals - 6010A (Supertrace), Mercury - 7471 - (CV)		pH (Soil) - 9045				
Sample No.	Matrix *	Sample Date	Sample Time	D	B	C	E			
B105WB	SOIL	10/10/00	15:45	X	X	X	X	X		
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *		
Relinquished By <u>Phil Thomas</u>		Date/Time <u>10/10/00</u>		Received By <u>Stored in Refrig 3C</u>		Date/Time <u>10/10/00 16:50</u>		<p style="font-size: 2em; text-align: center;">TIE TO BOYUP9</p> <p>Samples stored in Ref.# <u>3C</u> at the 3728 Shipping Facility on <u>10/11/00</u>. Collector not available to relinquish samples on <u>10/12/00</u> for shipment.</p> <p style="text-align: right; font-size: 1.5em;">R.T. 10/12/00</p>		
Relinquished By <u>Mrs Thomas</u>		Date/Time <u>10/10/00 16:50</u>		Received By <u>R. Thomas</u>		Date/Time <u>10/12/00 0800</u>				
Relinquished By <u>Raf SF</u>		Date/Time <u>10/12/00 0800</u>		Received By <u>FED EX</u>		Date/Time <u>10/12/00</u>				
Relinquished By <u>R. Thomas</u>		Date/Time <u>10/12/00 0800</u>		Received By <u>Phil Thomas</u>		Date/Time <u>10/13/00 0915</u>				
Relinquished By <u>Fed Ex</u>		Date/Time <u>10/13/00 0915</u>		Received By		Date/Time				
Relinquished By		Date/Time		Received By		Date/Time				
Relinquished By		Date/Time		Received By		Date/Time				
LABORATORY SECTION		Received By		Title		Date/Time				
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time				

Recra LabNet - Lionville Laboratory  
 VOA ANALYTICAL DATA PACKAGE FOR  
 TNUHANFORD B00-068 H1091

DATE RECEIVED: 10/13/00

RFW LOT # :0010L948

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B105W6	001	S	00LVH448	10/10/00	N/A	10/17/00
B105W6	001 MS	S	00LVH448	10/10/00	N/A	10/17/00
B105W6	001 MSD	S	00LVH451	10/10/00	N/A	10/19/00

LAB QC:

VBLKXP	MB1	S	00LVH448	N/A	N/A	10/17/00
VBLKXP	MB1 BS	S	00LVH448	N/A	N/A	10/17/00
VBLKXQ	MB1	S	00LVH451	N/A	N/A	10/19/00
VBLKXQ	MB1 BS	S	00LVH451	N/A	N/A	10/19/00



**Recra LabNet Philadelphia  
Analytical Report**

**Client:** TNU-HANFORD B00-068  
**RFW #:** 0010L948  
**SDG/SAF #:** H1091/B00-068

**W.O. #:** 10985-001-001-9999-00  
**Date Received:** 10-13-00

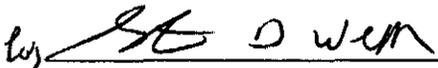
**GC/MS VOLATILE**

One (1) soil sample was collected on 10-10-00.

The sample and its associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260B for TCL Volatile target compounds on 10-17,19-00.

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

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The sample was analyzed within required holding time.
3. Non-target compounds were detected in the sample.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blanks, 00LVH448-MB1 and 00LVH451-MB1, contained the common laboratory contaminant Methylene Chloride at levels less than 2x the CRQL and 00LVH451-MB1 contained Acetone at levels less than the CRQL.
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 data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

  
\_\_\_\_\_  
J. Michael Taylor  
Vice President  
Philadelphia Analytical Laboratory

11/17/00  
Date

pef\group\data\voa\tnu-hanford-10-948.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 OF VOA DATA

### 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 OF VOA DATA

### 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.



Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 11/15/00 10:16

RFW Batch Number: 0010L948

Client: TNUHANFORD B00-068 H1091 Work Order: 10985001001 Page: 1a

50

Sample Information	Cust ID:	B105W6	B105W6	B105W6	VBLKXP	VBLKXP BS	VBLKXQ
	RFW#:	001	001 MS	001 MSD	00LVH448-MB1	00LVH448-MB1	00LVH451-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.02	1.06	1.02	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate	Toluene-d8	102 %	101 %	100 %	95 %	94 %	102 %
Recovery	Bromofluorobenzene	75 %	78 %	80 %	76 %	75 %	84 %
	1,2-Dichloroethane-d4	83 %	90 %	92 %	84 %	81 %	84 %
-----fl-----fl-----fl-----fl-----fl-----fl-----fl-----							
Chloromethane		11 U	11 U	11 U	10 U	10 U	10 U
Bromomethane		11 U	11 U	11 U	10 U	10 U	10 U
Vinyl Chloride		11 U	11 U	11 U	10 U	10 U	10 U
Chloroethane		11 U	11 U	11 U	10 U	10 U	10 U
Methylene Chloride		8 B	10 B	27 B	3	5 U	6
Acetone		11 U	11 U	11 U	10 U	10 U	3 J
Carbon Disulfide		6 U	6 U	6 U	5 U	5 U	5 U
1,1-Dichloroethene		6 U	79 %	84 %	5 U	76 %	5 U
1,1-Dichloroethane		6 U	6 U	6 U	5 U	5 U	5 U
1,2-Dichloroethene (total)		6 U	6 U	6 U	5 U	5 U	5 U
Chloroform		6 U	6 U	6 U	5 U	5 U	5 U
1,2-Dichloroethane		6 U	6 U	6 U	5 U	5 U	5 U
2-Butanone		11 U	11 U	11 U	10 U	10 U	10 U
1,1,1-Trichloroethane		6 U	6 U	6 U	5 U	5 U	5 U
Carbon Tetrachloride		6 U	6 U	6 U	5 U	5 U	5 U
Bromodichloromethane		6 U	6 U	6 U	5 U	5 U	5 U
1,2-Dichloropropane		6 U	6 U	6 U	5 U	5 U	5 U
cis-1,3-Dichloropropene		6 U	6 U	6 U	5 U	5 U	5 U
Trichloroethene		6 U	77 %	81 %	5 U	74 %	5 U
Dibromochloromethane		6 U	6 U	6 U	5 U	5 U	5 U
1,1,2-Trichloroethane		6 U	6 U	6 U	5 U	5 U	5 U
Benzene		6 U	92 %	89 %	5 U	89 %	5 U
Trans-1,3-Dichloropropene		6 U	6 U	6 U	5 U	5 U	5 U
Bromoform		6 U	6 U	6 U	5 U	5 U	5 U
4-Methyl-2-pentanone		11 U	11 U	11 U	10 U	10 U	10 U
2-Hexanone		11 U	11 U	11 U	10 U	10 U	10 U
Tetrachloroethene		6 U	6 U	6 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane		6 U	6 U	6 U	5 U	5 U	5 U
Toluene		6 U	104 %	103 %	5 U	97 %	5 U

\*= Outside of EPA CLP QC limits.

Cust ID: B105W6 B105W6 B105W6 VBLKXP VBLKXP BS VBLKXQ

RFW#: 001 001 MS 001 MSD 00LVH448-MB1 00LVH448-MB1 00LVH451-MB1

Chlorobenzene	6 U	95 %	96 %	5 U	90 %	5 U
Ethylbenzene	6 U	6 U	6 U	5 U	5 U	5 U
Styrene	6 U	6 U	6 U	5 U	5 U	5 U
Xylene (total)	6 U	6 U	6 U	5 U	5 U	5 U

\*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 11/15/00 10:16

RFW Batch Number: 0010L948

Client: TNUHANFORD B00-068 H1091 Work Order: 10985001001 Page: 2a

20

Cust ID: VBLKXQ BS

Sample RFW#: 00LVH451-MB1  
 Information Matrix: SOIL  
 D.F.: 1.00  
 Units: UG/KG

Surrogate	Recovery	Compound	Concentration	Unit
		Toluene-d8	98	%
		Bromofluorobenzene	82	%
		1,2-Dichloroethane-d4	85	%
-----fl-----fl-----fl-----fl-----fl-----fl-----fl				
		Chloromethane	10	U
		Bromomethane	10	U
		Vinyl Chloride	10	U
		Chloroethane	10	U
		Methylene Chloride	8	B
		Acetone	10	U
		Carbon Disulfide	5	U
		1,1-Dichloroethene	103	%
		1,1-Dichloroethane	5	U
		1,2-Dichloroethene (total)	5	U
		Chloroform	5	U
		1,2-Dichloroethane	5	U
		2-Butanone	10	U
		1,1,1-Trichloroethane	5	U
		Carbon Tetrachloride	5	U
		Bromodichloromethane	5	U
		1,2-Dichloropropane	5	U
		cis-1,3-Dichloropropene	5	U
		Trichloroethene	82	%
		Dibromochloromethane	5	U
		1,1,2-Trichloroethane	5	U
		Benzene	87	%
		Trans-1,3-Dichloropropene	5	U
		Bromoform	5	U
		4-Methyl-2-pentanone	10	U
		2-Hexanone	10	U
		Tetrachloroethene	5	U
		1,1,2,2-Tetrachloroethane	5	U
		Toluene	100	%

\*= Outside of EPA CLP QC limits.

Cust ID: VBLKXQ BS

RFW#: 00LVH451-MB1

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Chlorobenzene	94	%
Ethylbenzene	5	U
Styrene	5	U
Xylene (total)	5	U

\*= Outside of EPA CLP QC limits.

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B105W6

Lab Name: Recra.LabNet                      Work Order: 10985001001

Client: TNUHANFORD B00-068 H1091

Matrix:                      SOIL                                      Lab Sample ID: 0010L948-001

Sample wt/vol:            4.90 (g/mL) G                                      Lab File ID:    h101714

Level:            (low/med) LOW                                      Date Received: 10/13/00

% Moisture: not dec. 5                                      Date Analyzed: 10/17/00

Column: (pack/cap) CAP                                      Dilution Factor: 1.02

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	2.431	1000	J

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLKXP

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNUHANFORD B00-068 H1091

Matrix: SOIL Lab Sample ID: 00LVH448-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: h101704

Level: (low/med) LOW Date Received: 10/17/00

% Moisture: not dec. 0 Date Analyzed: 10/17/00

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

Number TICs found: 0 CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLKXQ

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNUHANFORD B00-068 H1091

Matrix: SOIL Lab Sample ID: 00LVH451-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: h101905

Level: (low/med) LOW Date Received: 10/19/00

% Moisture: not dec. 0 Date Analyzed: 10/19/00

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

Number TICs found: 0 CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				



00102448

13

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					B00-068-70		Page 1 of 1		
Collector PATRICK/ Thomas		Company Contact Dave Weeks		Telephone No. 372-9524		Project Coordinator TRENT, SJ		Price Code 8L		Data Turnaround 21 Days	
Project Designation 200 Arca Groundwater Well Drilling Waste Designation for		Sampling Location 200 West		SAF No. B00-068		Air Quality <input type="checkbox"/>					
Ice Chest No. SMI-188 ERG-97-067 (LIDF)		Field Logbook No. EL-154 EL 151A		COA JRCRPO-3200 -X1-0008LMMHC (RF 9.29-00)		Method of Shipment Fed EX / Gov. Vehicle					
Shipped To TMA/RECRA		Offsite Property No. A000349 A			Bill of Lading/Air Bill No. 4235753 9735						
POSSIBLE SAMPLE HAZARDS/REMARKS potential radioactivity				Preservation		Type of Container		No. of Container(s)		Volume	
				D None		B Cool 4C		C Cool 4C		E None	
				aG		aG		aG		aG	
				1		1		1		1	
Special Handling and/or Storage				120mL		250mL		250mL		250mL	
SAMPLE ANALYSIS				IC Anions - 3000 (Nitrate); Sulfides - 9030; Total Cyanide - 9010		Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (m-Cresol)		VOA - 8260A (TCL)		ICP Metals - 6010A (Supernatant); Mercury - 7471 - (CV)	
				pH (Soil) - 9045							
Sample No.		Matrix *	Sample Date	Sample Time	D	B	C	E			
B105W6		SOIL	10/10/00	15:45	X	X	X	X	X		
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *			
Relinquished By Greg Thomas		Date/Time 10/10/00		Received By Stored in		Date/Time 10/10/00		TIE TO BOYUP9  Samples stored in Ref.# JC at the 3728 Shipping Facility on 10/11/00. Collector not available to relinquish samples on 10/12/00 or shipment.  RET 10/12/00			
Relinquished By Greg Thomas		Date/Time 10/10/00 16:50		Received By Refrig. 3C		Date/Time 10/10/00 16:50					
Relinquished By Removed from		Date/Time		Received By R. J. Thomas		Date/Time 0800					
Relinquished By R. J. Thomas		Date/Time 10/12/00 0800		Received By FED EX		Date/Time 10/12/00					
Relinquished By FED EX		Date/Time 10/13/00 0915		Received By Paul Harvey		Date/Time 10/13/00 0915					
Relinquished By		Date/Time		Received By		Date/Time					
Relinquished By		Date/Time		Received By		Date/Time					
LABORATORY SECTION		Received By		Title				Date/Time			
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time			