H1058

RECEIVED
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EDMC

0054242

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B00-054 H1058

DATE RECEIVED: 09/27/00 RFW LOT # :0009L771

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10BM8						
TCLP	001	S	00LTO114	09/25/00	10/16/00	10/17/00
B10BM9						
TCLP	002	S	00LTO114	09/25/00	10/16/00	10/17/00
B10BM8						
SILVER, TCLP LEACHAT	003	W	99L1635	10/17/00	10/18/00	10/18/00
ARSENIC, TCLP LEACHA	003	W	99L1635	10/17/00	10/18/00	10/18/00
BARIUM, TCLP LEACHAT	003	W	99L1635	10/17/00	10/18/00	10/18/00
CADMIUM, TCLP LEACHA	003	W	99L1635	10/17/00	10/18/00	10/18/00
CHROMIUM, TCLP LEACH	003	W	99L1635	10/17/00	10/18/00	10/18/00
MERCURY, TCLP LEACHA	003	W	00C0339	10/17/00	10/17/00	10/18/00
MERCURY, TCLP LEACHA	003 REP	W	00C0339	10/17/00	10/17/00	10/18/00
MERCURY, TCLP LEACHA	003 MS	W	00C0339	10/17/00	10/17/00	10/18/00
LEAD, TCLP LEACHATE	003	W	99L1635	10/17/00	10/18/00	10/18/00
SELENIUM, TCLP LEACH	003	W	99L1635	10/17/00	10/18/00	10/18/00
B10BM9						
SILVER, TCLP LEACHAT	004	W	99L1635	10/17/00	10/18/00	10/18/00
SILVER, TCLP LEACHAT	004 REP	W	99L1635	10/17/00	10/18/00	10/18/00
SILVER, TCLP LEACHAT	004 MS	W	99L1635	10/17/00	10/18/00	10/18/00
ARSENIC, TCLP LEACHA	004	W	99L1635	10/17/00	10/18/00	10/18/00
ARSENIC, TCLP LEACHA	004 REP	W	99L1635	10/17/00	10/18/00	10/18/00
ARSENIC, TCLP LEACHA	004 MS	W	99L1635	10/17/00	10/18/00	10/18/00
BARIUM, TCLP LEACHAT	004	W	99L1635	10/17/00	10/18/00	10/18/00
BARIUM, TCLP LEACHAT	004 REP	W	99L1635	10/17/00	10/18/00	10/18/00
BARIUM, TCLP LEACHAT	004 MS	W	99L1635	10/17/00	10/18/00	10/18/00
CADMIUM, TCLP LEACHA	004	W	99L1635	10/17/00	10/18/00	10/18/00
CADMIUM, TCLP LEACHA	004 REP	W	99L1635	10/17/00	10/18/00	10/18/00
CADMIUM, TCLP LEACHA	004 MS	W	99L1635	10/17/00	10/18/00	10/18/00
CHROMIUM, TCLP LEACH	004	W	99L1635	10/17/00	10/18/00	10/18/00
CHROMIUM, TCLP LEACH	004 REP	W	99L1635	10/17/00	10/18/00	10/18/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B00-054 H1058

DATE RECEIVED: 09/27/00 RFW LOT # :0009L771

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM, TCLP LEACH	004 MS	W	99L1635	10/17/00	10/18/00	10/18/00
MERCURY, TCLP LEACHA	004	W	00C0339	10/17/00	10/17/00	10/18/00
LEAD, TCLP LEACHATE	004	W	99L1635	10/17/00	10/18/00	10/18/00
LEAD, TCLP LEACHATE	004 REP	W	99L1635	10/17/00	10/18/00	10/18/00
LEAD, TCLP LEACHATE	004 MS	W	99L1635	10/17/00	10/18/00	10/18/00
SELENIUM, TCLP LEACH	004	W	99L1635	10/17/00	10/18/00	10/18/00
SELENIUM, TCLP LEACH	004 REP	W	99L1635	10/17/00	10/18/00	10/18/00
SELENIUM, TCLP LEACH	004 MS	W	99L1635	10/17/00	10/18/00	10/18/00

LAB QC:

SILVER LABORATORY	LC1 BS	W	99L1635	N/A	10/18/00	10/18/00
SILVER, TCLP LEACHAT	MB1	W	99L1635	N/A	10/18/00	10/18/00
SILVER, TCLP LEACHAT	MB2	W	99L1635	N/A	10/18/00	10/18/00
ARSENIC LABORATORY	LC1 BS	W	99L1635	N/A	10/18/00	10/18/00
ARSENIC, TCLP LEACHA	MB1	W	99L1635	N/A	10/18/00	10/18/00
ARSENIC, TCLP LEACHA	MB2	W	99L1635	N/A	10/18/00	10/18/00
BARIUM LABORATORY	LC1 BS	W	99L1635	N/A	10/18/00	10/18/00
BARIUM, TCLP LEACHAT	MB1	W	99L1635	N/A	10/18/00	10/18/00
BARIUM, TCLP LEACHAT	MB2	W	99L1635	N/A	10/18/00	10/18/00
CADMIUM LABORATORY	LC1 BS	W	99L1635	N/A	10/18/00	10/18/00
CADMIUM, TCLP LEACHA	MB1	W	99L1635	N/A	10/18/00	10/18/00
CADMIUM, TCLP LEACHA	MB2	W	99L1635	N/A	10/18/00	10/18/00
CHROMIUM LABORATORY	LC1 BS	W	99L1635	N/A	10/18/00	10/18/00
CHROMIUM, TCLP LEACH	MB1	W	99L1635	N/A	10/18/00	10/18/00
CHROMIUM, TCLP LEACH	MB2	W	99L1635	N/A	10/18/00	10/18/00
MERCURY LABORATORY	LC1 BS	W	00C0339	N/A	10/17/00	10/18/00
MERCURY, TOTAL	MB1	W	00C0339	N/A	10/17/00	10/18/00
MERCURY, TCLP LEACHA	MB2	W	00C0339	N/A	10/17/00	10/18/00
LEAD LABORATORY	LC1 BS	W	99L1635	N/A	10/18/00	10/18/00
LEAD, TCLP LEACHATE	MB1	W	99L1635	N/A	10/18/00	10/18/00
LEAD, TCLP LEACHATE	MB2	W	99L1635	N/A	10/18/00	10/18/00
SELENIUM LABORATORY	LC1 BS	W	99L1635	N/A	10/18/00	10/18/00
SELENIUM, TCLP LEACH	MB1	W	99L1635	N/A	10/18/00	10/18/00
SELENIUM, TCLP LEACH	MB2	W	99L1635	N/A	10/18/00	10/18/00

RECRA
ENVIRONMENTAL
INC.
Chemical and Environmental Measurement Information

NOV 2000
RECEIVED

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B00-054
RFW#: 0009L771
SDG/SAF#: H1058/B00-054

W.O.#: 10985-001-001-9999-00
Date Received: 09-27-00

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 TCLP leachates.

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 cooler temperatures have 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 the Inorganics Laboratory Control Standards Report.

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

11. The TCLP extract from sample B10BM8 for Mercury and sample B10BM9 for ICP metals were selected for the matrix spikes (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria.

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.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

12. For the purpose 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.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-13-00
Date

jjw/m09-771

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 0009L771

Leaching Procedure: __1310 X 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	__6010B		__200.7				__99
Antimony	__6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	X 6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	X 6010B		__200.7				__99
Beryllium	__6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	X 6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	X 6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	__6010B	__7211 [5]	__200.7	__220.2			__99
Iron	__6010B		__200.7				__99
Lead	X 6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	__6010B		__200.7				__99
Manganese	__6010B		__200.7				__99
Mercury	X 7470A [3]	__7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	__6010B		__200.7				__99
Potassium	__6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	X 6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	X 6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	__6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	__6010B	__7841 [5]	__200.7	__279.2__200.9			__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	__6010B		__200.7				__99
Zinc	__6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

L-WI-033/M-11/99

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.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/13/00

CLIENT: TNUHANFORD B00-054 H1058 RECRA LOT #: 0009L771

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B10BM8	Silver, TCLP Leachate	2.6	u	UG/L	2.6	1.0
		Arsenic, TCLP Leachate	29.2	u	UG/L	29.2	1.0
		Barium, TCLP Leachate	141		UG/L	2.5	1.0
		Cadmium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Chromium, TCLP Leachate	5.9		UG/L	3.5	1.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Lead, TCLP Leachate	22.1	u	UG/L	22.1	1.0
		Selenium, TCLP Leachate	51.8	u	UG/L	51.8	1.0
-004	B10BM9	Silver, TCLP Leachate	2.6	u	UG/L	2.6	1.0
		Arsenic, TCLP Leachate	29.2	u	UG/L	29.2	1.0
		Barium, TCLP Leachate	189		UG/L	2.5	1.0
		Cadmium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Chromium, TCLP Leachate	3.7		UG/L	3.5	1.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Lead, TCLP Leachate	22.1	u	UG/L	22.1	1.0
		Selenium, TCLP Leachate	51.8	u	UG/L	51.8	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/13/00

CLIENT: TNUHANFORD B00-054 H1058 RECRA LOT #: 0009L771

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L1635-MB1	Silver, TCLP Leachate	2.6	u	UG/L	2.6	1.0
		Arsenic, TCLP Leachate	29.2	u	UG/L	29.2	1.0
		Barium, TCLP Leachate	2.5	u	UG/L	2.5	1.0
		Cadmium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Chromium, TCLP Leachate	3.5	u	UG/L	3.5	1.0
		Lead, TCLP Leachate	22.1	u	UG/L	22.1	1.0
		Selenium, TCLP Leachate	51.8	u	UG/L	51.8	1.0
BLANK2	99L1635-MB2	Silver, TCLP Leachate	2.6	u	UG/L	2.6	1.0
		Arsenic, TCLP Leachate	29.2	u	UG/L	29.2	1.0
		Barium, TCLP Leachate	2.5	u	UG/L	2.5	1.0
		Cadmium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Chromium, TCLP Leachate	3.5	u	UG/L	3.5	1.0
		Lead, TCLP Leachate	22.1	u	UG/L	22.1	1.0
		Selenium, TCLP Leachate	51.8	u	UG/L	51.8	1.0
BLANK1	00C0339-MB1	Mercury, Total	0.10	u	UG/L	0.10	1.0
BLANK2	00C0339-MB2	Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/13/00

CLIENT: TNUHANFORD B00-054 H1058 RECRA LOT #: 0009L771

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-003	B10BM8	Mercury, TCLP Leachate	204	0.10u	200	101.9	50.0
-004	B10BM9	Silver, TCLP Leachate	4370	2.6 u	5000	87.5	1.0
		Arsenic, TCLP Leachate	4730	29.2 u	5000	94.5	1.0
		Barium, TCLP Leachate	93300	189	100000	93.1	1.0
		Cadmium, TCLP Leachate	894	4.8 u	1000	89.4	1.0
		Chromium, TCLP Leachat	4360	3.7	5000	87.2	1.0
		Lead, TCLP Leachate	4520	22.1 u	5000	90.3	1.0
		Selenium, TCLP Leachat	992	51.8 u	1000	99.2	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/13/00

CLIENT: TNUHANFORD B00-054 H1058 RECRA LOT #: 0009L771

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-003REP	B10BM8	Mercury, TCLP Leachate	0.10u	0.10u	NC	1.0
-004REP	B10BM9	Silver, TCLP Leachate	2.6 u	2.6 u	NC	1.0
		Arsenic, TCLP Leachate	29.2 u	29.2 u	NC	1.0
		Barium, TCLP Leachate	189	179	5.7	1.0
		Cadmium, TCLP Leachate	4.8 u	4.8 u	NC	1.0
		Chromium, TCLP Leachate	3.7	3.5 u	~~NC~~ zero correction	1.0
		Lead, TCLP Leachate	22.1 u	22.1 u	NC MW 11/13/00	1.0
		Selenium, TCLP Leachate	51.8 u	51.8 u	NC	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/13/00

CLIENT: TNUHANFORD B00-054 H1058 RECRA LOT #: 0009L771

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L1635-LC1	Silver, LCS	467	500	UG/L	93.4
		Arsenic, LCS	9710	10000	UG/L	97.1
		Barium, LCS	4730	5000	UG/L	94.5
		Cadmium, LCS	245	250	UG/L	98.1
		Chromium, LCS	474	500	UG/L	94.8
		Lead, LCS	2380	2500	UG/L	95.0
		Selenium, LCS	9570	10000	UG/L	95.7
LCS1	00C0339-LC1	Mercury, LCS	5.5	5.0	UG/L	109.4

RECRA LabNet Use Only

0009L771

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: Tnu-Hanford B00-054

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: Spec Del: Std TAT: 15 day

Date Rec'd: 9.27.00 Date Due: 10-12-00

Account #:

Refrigerator #:

#/Type Container: Liquid / Solid

Volume: Liquid / Solid

Preservatives

ANALYSES REQUESTED →

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb	RCRA Tc	ITCLP		ICP03 ICP02	ICSM	ID3N2	IPH
											4						
											1gal						
											120						
											1						
001	B10BM8			S	9/25/00	1115						X		✓	✓	✓	
002	B10BM9			L	L	1130						X		✓	✓	✓	
003	B10BM8 tcp of 001			L	*	-					✓						
004	L 9 L 002			L	L	-					✓						

ORGANIC: VOA, BNA, Pest/PCB, Herb

INORG: Metal, CN

RECRA LabNet Use Only

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

Special Instructions: Saf B00-054

DATE/REVISIONS:
1. * See labchron
2. Run matrix QC
3.
4.
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___

Airbill #

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Labels Indicate Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

COC Tape was: 1) Present on Outer Package (Y) or N

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 2.8 °C

Relinquished by	Received by	Date	Time
Teresa	D. Jones	9/27/00	0930

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES: 4235 7953 9334

30°C

4235 7953 9345

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-054-056	Page 1 of 1

Collector: RB Kerkow	Company Contact: RB Kerkow	Telephone No.: 372-2187	Project Coordinator: TRENT, SJ
Price Code: RT 9/26/00 8J8K	Data Turnaround: 15DAY ~~7 days~~ RT 9/26/00		
Project Designation: 100-NR-1 TSD Sites R. A. Sampling - Soil	Sampling Location: 120 sites - piping (interior scale)		SAF No.: B00-054
Air Quality ☐			
Ice Chest No.: ERC 99/041 (1 of 2)	Field Logbook No.: EL-1524	COA: R120N22600	Method of Shipment: FEDERAL EXPRESS
Shipped To: ~~TMA~~/RECRA RK 9/25/00	Offsite Property No.: A00343		Bill of Lading/Air Bill No.: 4235 7453 9334

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C											
Type of Container	G											
No. of Container(s)	1											
Volume	120mL											

SAMPLE ANALYSIS — See Item (1) in Special Instructions.

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 9/25/00. Collector not available to relinquish samples on 9/26/00 for shipment. RT 9/26/00

Sample No.	Matrix *	Sample Date	Sample Time											
B10BM8	SOIL	9/25/00	1115	X										1
B10BM9	SOIL	9/25/00	1130	X										2

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
RB Kerkow	9/25/00 1630	RT 9/25/00 Stored in Ref 2C 3728	9/25/00 1630
RT 9/26/00 Removed from Ref. 2C 3728	9/26/00 0800	R. Thoren	9/26/00 0800
R. Thoren	9/26/00 0800	FED EX	
FED EX	9.27.00 / 0930		9/27/00 / 0930

SPECIAL INSTRUCTIONS

Lab COA: R120N2 2F00 + Delete ICP Metals and ICP ADD-ON RK 9/25/00

(1) ~~ICP Metals - 6010A (TAL) (Barium, Chromium, Silver); ICP Metals - 6010A (Add-on) (Arsenic, Lead, Selenium)~~; Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; IC Anions - 300.0 (Nitrate, Nitrite, Sulfate); NO2/NO3 - 353.1; pH (Soil) - 9045; ~~Cr~~ Delete Hex Cr RK 9/25/00

NOTE: SAMPLES ORIGINATED IN A NON-RAD CONTROLLED AREA. (<2000 pCi/g). NO TOTAL ACTIVITY REQUIRED RK 9/25/00

0009L771

Matrix *: S=Soil; SE=Sediment; SO=Solid; S=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; WI=Wipe; L=Liquid; V=Vegetation; X=Other

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

BHI-EE-011 (10/99)

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B00-054 H1058

DATE RECEIVED: 09/27/00 RFW LOT # :0009L771

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10BM8						
% SOLIDS	001	S	00L%S160	09/25/00	10/10/00	10/11/00
% SOLIDS	001 REP	S	00L%S160	09/25/00	10/10/00	10/11/00
NITRITE BY IC	001	S	00LBC061	09/25/00	10/13/00	10/13/00
NITRITE BY IC	001 REP	S	00LBC061	09/25/00	10/13/00	10/13/00
NITRITE BY IC	001 MS	S	00LBC061	09/25/00	10/13/00	10/13/00
NITRATE BY IC	001	S	00LBC061	09/25/00	10/13/00	10/13/00
NITRATE BY IC	001 REP	S	00LBC061	09/25/00	10/13/00	10/13/00
NITRATE BY IC	001 MS	S	00LBC061	09/25/00	10/13/00	10/13/00
SULFATE BY IC	001	S	00LBC061	09/25/00	10/13/00	10/13/00
SULFATE BY IC	001 REP	S	00LBC061	09/25/00	10/13/00	10/13/00
SULFATE BY IC	001 MS	S	00LBC061	09/25/00	10/13/00	10/13/00
NITRATE NITRITE	001	S	00LN3A53	09/25/00	10/19/00	10/19/00
NITRATE NITRITE	001 REP	S	00LN3A53	09/25/00	10/19/00	10/19/00
NITRATE NITRITE	001 MS	S	00LN3A53	09/25/00	10/19/00	10/19/00
PH	001	S	00LPH083	09/25/00	10/10/00	10/10/00
PH	001 REP	S	00LPH083	09/25/00	10/10/00	10/10/00
TCLP	001	S	00LTO114	09/25/00	10/16/00	10/17/00
B10BM9						
% SOLIDS	002	S	00L%S160	09/25/00	10/10/00	10/11/00
NITRITE BY IC	002	S	00LBC061	09/25/00	10/13/00	10/13/00
NITRATE BY IC	002	S	00LBC061	09/25/00	10/13/00	10/13/00
SULFATE BY IC	002	S	00LBC061	09/25/00	10/13/00	10/13/00
NITRATE NITRITE	002	S	00LN3A53	09/25/00	10/19/00	10/19/00
PH	002	S	00LPH083	09/25/00	10/10/00	10/10/00
TCLP	002	S	00LTO114	09/25/00	10/16/00	10/17/00

LAB QC:

NITRITE BY IC	MB1	S	00LBC061	N/A	10/13/00	10/13/00
NITRITE BY IC	MB1 BS	S	00LBC061	N/A	10/13/00	10/13/00
NITRATE BY IC	MB1	S	00LBC061	N/A	10/13/00	10/13/00
NITRATE BY IC	MB1 BS	S	00LBC061	N/A	10/13/00	10/13/00
SULFATE BY IC	MB1	S	00LBC061	N/A	10/13/00	10/13/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B00-054 H1058

DATE RECEIVED: 09/27/00 RFW LOT # :0009L771

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SULFATE BY IC	MB1 BS	S	00LBC061	N/A	10/13/00	10/13/00
NITRATE NITRITE	MB1	S	00LN3A53	N/A	10/19/00	10/19/00
NITRATE NITRITE	MB1 BS	S	00LN3A53	N/A	10/19/00	10/19/00

RECRA
ENVIRONMENTAL
INC.
Chemical and Environmental Measurement Information

NOV 2000
RECEIVED

Recra LabNet Philadelphia
Analytical Report

Client : TNU HANFORD B00-054 H1058
RFW# : 0009L771

W.O. # : 10985-001-001-9999-00
Date Received: 09-27-00

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 2 samples.

2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.

3. Sample holding times as required by the method and/or contract were met.

4. The cooler temperatures were 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.

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. 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.

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

11-13-00
Date

njp\\09-771

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.
11 11/13/00

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

Recra LabNet Philadelphia

WET CHEMISTRY
METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% 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	__ 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	

Other: Nitrate, Nitrite and Sulfate **Method:** EPA 300.0 (m)

Other: Nitrate Nitrite **Method** EPA 353.3 (m)

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.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/13/00

CLIENT: TNUHANFORD B00-054 H1058 RECRA LOT #: 0009L771

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B10BM8	% Solids	97.2		%	0.01	1.0
		Nitrite by IC	13	u	MG/KG	13	10
		Nitrate by IC	150		MG/KG	13	10
		Sulfate by IC	4540		MG/KG	129	100
		Nitrate Nitrite	39.3		MG/KG	2.6	5.0
		pH	8.8		SOIL PH	0.01	1.0
-002	B10BM9	% Solids	98.8		%	0.01	1.0
		Nitrite by IC	13	u	MG/KG	13	10
		Nitrate by IC	170		MG/KG	13	10
		Sulfate by IC	4490		MG/KG	127	100
		Nitrate Nitrite	38.8		MG/KG	2.5	5.0
		pH	8.6		SOIL PH	0.01	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/13/00

CLIENT: TNUHANFORD B00-054 H1058 RECRA LOT #: 0009L771

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	00LBC061-MB1	Nitrite by IC	1.2	u	MG/KG	1.2	1.0
		Nitrate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK10	00LN3A53-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/13/00

CLIENT: TNUHANFORD B00-054 H1058 RECRA LOT #: 0009L771

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B10BM8	Nitrite by IC	250	13 u	260	96.8	10
		Nitrate by IC	420	150	260	103.3	10
		Sulfate by IC	9650	4540	5150	99.2	200
		Nitrate Nitrite	53.3	39.3	12.9	108.3	5.0
BLANK10	00LBC061-MB1	Nitrite by IC	24	1.2 u	25	95.5	1.0
		Nitrate by IC	25	1.2 u	25	98.3	1.0
		Sulfate by IC	24.5	1.2 u	25.0	97.9	1.0
BLANK10	00LN3A53-MB1	Nitrate Nitrite	5.2	0.20u	5.0	103.2	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/13/00

CLIENT: TNUHANFORD B00-054 H1058 RECRA LOT #: 0009L771

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B10BM8	% Solids	97.2	97.6	0.49	1.0
		Nitrite by IC	13 u	13 u	NC	10
		Nitrate by IC	150	160	4.1	10
		Sulfate by IC	4540	4730	4.1	100
		Nitrate Nitrite	39.3	38.9	1.2	5.0
		pH	8.8	8.9	2.0	1.0

RECRA LabNet Use Only

00091771

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TNU-Hanford B00-054

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: DJ

QC: Spec Del: Std TAT: 15 day

Date Rec'd: 9.27.00 Date Due: 10-12-00

Account #:

Refrigerator #: 4

#/Type Container: Liquid 1qt; Solid

Volume: Liquid 0; Solid 120

Preservatives: 1

ANALYSES REQUESTED: VOA, BNA, Pest/PCB, Herb; ORGANIC; INORG: Metal, CN; RECRA LabNet Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	RCRA Tcl	TTCLP		ICN03 ICN02	ICSO4 IN3N2	IPH
001	B10BM8			S	9/25/00	1115		X		✓	✓	✓
002	B10BM9			⊥	⊥	1130		X		✓	✓	✓
003	B10BM8 tcp of 001			L	*	-	✓					
004	⊥ 9 ⊥ 002			⊥	⊥	-	✓					

Special Instructions: SAF B00-054

DATE/REVISIONS:
* 1. See labchron
2. Run Matrix QC
3.
4.
5.
6.

RECRA LabNet Use Only

Samples were: ✓
1) Shipped ___ or Hand Delivered ___
Airbill #
2) Ambient or Chilled
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 2.8 °C

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	9/27/00	0930

Relinquished by	Received by	Date	Time
COMPOSITE	ORIGINAL		

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES: 4235 7953 9334

30°C

4235 7953 9345

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-054-056	Page 1 of 1

Collector: RB Kerkow	Company Contact: RB Kerkow; Telephone No.: 372-2187	Project Coordinator: TRENT, SJ
Price Code: RT 9/26/00 8JSK	Data Turnaround: 15DAY ~~7 days~~ RT 9/26/00	Air Quality ☐
Project Designation: 100-NR-1 TSD Sites R. A. Sampling - Soil	Sampling Location: 120 sites - piping (interior scale)	SAF No.: B00-054
Ice Chest No.: ERC 99 1041 (1 OF 2)	Field Logbook No.: EL-1524; COA: R120N22600	Method of Shipment: FEDERAL EXPRESS
Shipped To: ~~TMA~~/RECRA RK 9/25/00	Offsite Property No.: A00343	Bill of Lading/Air Bill No.: 4235745 3 9334

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C										
Type of Container	G										
No. of Container(s)	1										
Volume	120mL										

SAMPLE ANALYSIS — See Item (1) in Special Instructions.

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 9/25/00. Collector not available to relinquish samples on 9/26/00 for shipment. RT 9/26/00

Sample No.	Matrix *	Sample Date	Sample Time											
B10BM8	SOIL	9/25/00	1115	X										1
B10BM9	SOIL	9/25/00	1130	X										2

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
RB Kerkow	9/25/00 1630	~~Received By~~ STORED IN Ref 2C 3728	9/25/00 1630
RT 9/26/00 Removed from Ref 2C 3728	9/26/00 0800	R. Thoren	9/26/00 0800
R. Thoren	9/26/00 0800	FED EX	
FED EX	9.27.00 0930		9.27.00 0930

SPECIAL INSTRUCTIONS

Lab COA: R120N2 2F00

+ Delete ICP Metals and ICP ADD-ON RK 9/25/00

(1) ~~ICP Metals - 6010A (TAL) (Barium, Chromium, Silver); ICP Metals - 6010A (Add-on) (Arsenic, Lead, Selenium);~~ Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; IC Anions - 300.0 (Nitrate, Nitrite, Sulfate); NO2/NO3 - 353.1; pH (Soil) - 9045; ~~Cr~~ Delete Hex Cr RK 9/25/00

NOTE: SAMPLES ORIGINATED IN A NON-RAD CONTROLLED AREA. (<2000 pCi/g). NO TOTAL ACTIVITY REQUIRED RK 9/25/00

0007771

Matrix *: S=Soil; SD=Sediment; SO=Solid; S=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; WI=Wipe; L=Liquid; V=Vegetation; X=Other

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

BHI-EE-011 (10/99)