RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B00-017
RFW #: 0001L247
SDG/SAF #: H0714/B00-017

W.O. #: 10985-001-001-9999-00
Date Received: 01-18-2000

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APR 11 2000
EDMC

GC/MS VOLATILE

One (1) water and 1 oil (biphasic, oil phase has been analyzed as per client request). Samples were collected on 01-13-2000.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for the client specified Volatile target compounds on 01-24-2000.

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 required holding time for the analysis was met.

3. Non-target compounds were not detected in the samples.

4. Sample B0X9X7 and its associated matrix spike samples required a medium level analysis and an additional 5-fold dilution due to the sample matrix (oil).

5. One (1) of fifteen (15) surrogate recoveries was outside EPA QC limits. The analysis of associated matrix spike samples fulfills the reanalysis requirement of sample B0X9X8.

6. All matrix spike recoveries were within EPA QC limits.

7. All blank spike recoveries were within EPA QC limits.

8. The method blanks contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than 2x the CRQL. The method blank 00LVN033-MB1 also contained the target compounds Chlorobenzene and Xylene at levels less than the CRQL.

for Stt O Wessen
J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

03-07-00
Date

RECEIVED
Data
Log In

som\group\data\voa\tnu-hanford-01-247.doc

The results presented in this report relate only to the analytical testing and [illegible] 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 1 1 pages.

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

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.

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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.

mmz\10-94\gloss.voa

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 03/06/00 10:44

RFW Batch Number: **0001L247** Client: **TNU-HANFORD B00-017** Work Order: 10985001001 Page: 1a

	Cust ID:	B0X9X7		B0X9X7		B0X9X7		B0X9X8		B0X9X8		B0X9X8	
Sample Information	RFW#:	001		001 MS		001 MSD		002		002 MS		002 MSD	
	Matrix:	OIL		OIL		OIL		WATER		WATER		WATER	
	D.F.:	5.00		5.00		5.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/L		UG/L		UG/L	
	Level:	MED		MED		MED		LOW		LOW		LOW	
Surrogate Recovery	Toluene-d8	96	%	93	%	93	%	106	%	101	%	98	%
	Bromofluorobenzene	98	%	96	%	94	%	98	%	93	%	88	%
	1,2-Dichloroethane-d4	111	%	111	%	114	%	116 *	%	109	%	100	%
Chloromethane		6200	U	6200	U	6200	U	10	U	10	U	10	U
Bromomethane		6200	U	6200	U	6200	U	10	U	10	U	10	U
Vinyl Chloride		6200	U	6200	U	6200	U	10	U	10	U	10	U
Chloroethane		6200	U	6200	U	6200	U	10	U	10	U	10	U
Methylene Chloride		3400	B	2600	JB	2700	JB	4	JB	5	JB	5	B
Acetone		6200	U	6200	U	6200	U	22	B	18	B	17	B
Carbon Disulfide		3100	U	3100	U	3100	U	5	U	5	U	5	U
1,1-Dichloroethene		3100	U	86	%	85	%	5	U	85	%	85	%
1,1-Dichloroethane		3100	U	3100	U	3100	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		3100	U	3100	U	3100	U	5	U	5	U	5	U
Chloroform		3100	U	3100	U	3100	U	5	U	5	U	5	U
1,2-Dichloroethane		3100	U	3100	U	3100	U	5	U	5	U	5	U
2-Butanone		6200	U	6200	U	6200	U	10	U	10	U	10	U
1,1,1-Trichloroethane		3100	U	3100	U	3100	U	5	U	5	U	5	U
Carbon Tetrachloride		3100	U	3100	U	3100	U	5	U	5	U	5	U
Bromodichloromethane		3100	U	3100	U	3100	U	5	U	5	U	5	U
1,2-Dichloropropane		3100	U	3100	U	3100	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		3100	U	3100	U	3100	U	5	U	5	U	5	U
Trichloroethene		3100	U	101	%	100	%	5	U	103	%	102	%
Dibromochloromethane		3100	U	3100	U	3100	U	5	U	5	U	5	U
1,1,2-Trichloroethane		3100	U	3100	U	3100	U	5	U	5	U	5	U
Benzene		3100	U	99	%	98	%	5	U	102	%	102	%
Trans-1,3-Dichloropropene		3100	U	3100	U	3100	U	5	U	5	U	5	U
Bromoform		3100	U	3100	U	3100	U	5	U	5	U	5	U
4-Methyl-2-pentanone		6200	U	6200	U	6200	U	10	U	10	U	10	U
2-Hexanone		6200	U	6200	U	6200	U	10	U	10	U	10	U
Tetrachloroethene		3100	U	3100	U	3100	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		3100	U	3100	U	3100	U	5	U	5	U	5	U
Toluene		760	J	105	%	107	%	5	U	112	%	112	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0001L247** Client: **TNU-HANFORD B00-017** Work Order: 10985001001 Page: 1b

50

Cust ID:	B0X9X7		B0X9X7		B0X9X7		B0X9X8		B0X9X8		B0X9X8	
RFW#:	001		001 MS		001 MSD		002		002 MS		002 MSD	
Level:	MED		MED		MED		LOW		LOW		LOW	
Chlorobenzene	3100	U	102	%	103	%	5	U	107	%	108	%
Ethylbenzene	3100	U	3100	U	3100	U	5	U	5	U	5	U
Styrene	3100	U	3100	U	3100	U	5	U	5	U	5	U
Xylene (total)	3100	U	3100	U	3100	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: 03/06/00 10:44

RFW Batch Number: **0001L247** Client: **TNU-HANFORD B00-017** Work Order: 10985001001 Page: 2a

	Cust ID:	**VBLKOE**		**VBLKOE BS**		**VBLKLP**		**VBLKLP BS**	
Sample Information	RFW#:	**00LVN034-MB1**		**00LVN034-MB1**		**00LVN033-MB1**		**00LVN033-MB1**	
	Matrix:	SOIL		SOIL		WATER		WATER	
	D.F.:	4.00		4.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/L		UG/L	
	Level:	MED		MED		LOW		LOW	
Surrogate Recovery	Toluene-d8	101	%	98	%	106	%	95	%
	Bromofluorobenzene	100	%	98	%	105	%	92	%
	1,2-Dichloroethane-d4	114	%	108	%	110	%	112	%
Chloromethane		5000	U	5000	U	10	U	10	U
Bromomethane		5000	U	5000	U	10	U	10	U
Vinyl Chloride		5000	U	5000	U	10	U	10	U
Chloroethane		5000	U	5000	U	10	U	10	U
Methylene Chloride		3700		2500	B	6		5	JB
Acetone		3400	J	1900	JB	2	J	4	JB
Carbon Disulfide		2500	U	2500	U	5	U	5	U
1,1-Dichloroethene		2500	U	90	%	5	U	77	%
1,1-Dichloroethane		2500	U	2500	U	5	U	5	U
1,2-Dichloroethene (total)		2500	U	2500	U	5	U	5	U
Chloroform		2500	U	2500	U	5	U	5	U
1,2-Dichloroethane		2500	U	2500	U	5	U	5	U
2-Butanone		5000	U	5000	U	10	U	10	U
1,1,1-Trichloroethane		2500	U	2500	U	5	U	5	U
Carbon Tetrachloride		2500	U	2500	U	5	U	5	U
Bromodichloromethane		2500	U	2500	U	5	U	5	U
1,2-Dichloropropane		2500	U	2500	U	5	U	5	U
cis-1,3-Dichloropropene		2500	U	2500	U	5	U	5	U
Trichloroethene		2500	U	102	%	5	U	100	%
Dibromochloromethane		2500	U	2500	U	5	U	5	U
1,1,2-Trichloroethane		2500	U	2500	U	5	U	5	U
Benzene		2500	U	101	%	5	U	98	%
Trans-1,3-Dichloropropene		2500	U	2500	U	5	U	5	U
Bromoform		2500	U	2500	U	5	U	5	U
4-Methyl-2-pentanone		5000	U	5000	U	10	U	10	U
2-Hexanone		5000	U	5000	U	10	U	10	U
Tetrachloroethene		2500	U	2500	U	5	U	5	U
1,1,2,2-Tetrachloroethane		2500	U	2500	U	5	U	5	U
Toluene		2500	U	109	%	5	U	107	%

*= Outside of EPA CLP QC limits.

Cust ID:	**VBLKOE**		**VBLKOE BS**		**VBLKLP**		**VBLKLP BS**	
RFW#:	**00LVN034-MB1**		**00LVN034-MB1**		**00LVN033-MB1**		**00LVN033-MB1**	
Level:	MED		MED		LOW		LOW	
Chlorobenzene	2500	U	107	%	1	J	101	%
Ethylbenzene	2500	U	2500	U	5	U	5	U
Styrene	2500	U	2500	U	5	U	5	U
Xylene (total)	2500	U	2500	U	2	J	5	U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-017

DATE RECEIVED: 01/18/00 RFW LOT # :0001L247

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0X9X7	001 M1	OI	00LVN034	01/13/00	N/A	01/24/00
B0X9X7	001 MS M1	OI	00LVN034	01/13/00	N/A	01/24/00
B0X9X7	001 MSD M1	OI	00LVN034	01/13/00	N/A	01/24/00
B0X9X8	002	W	00LVN033	01/13/00	N/A	01/24/00
B0X9X8	002 MS	W	00LVN033	01/13/00	N/A	01/24/00
B0X9X8	002 MSD	W	00LVN033	01/13/00	N/A	01/24/00

LAB QC:

VBLKOE	MB1	S	00LVN034	N/A	N/A	01/24/00
VBLKOE	MB1 BS	S	00LVN034	N/A	N/A	01/24/00
VBLKLP	MB1	W	00LVN033	N/A	N/A	01/24/00
VBLKLP	MB1 BS	W	00LVN033	N/A	N/A	01/24/00

RECRA LabNet Use Only

00011247

Custody Transfer Record/Lab Work Request

Page 1 of 1

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) ~~8260 VOA~~ ~~BNA, PCB~~ metals ~~dig~~

RECRA LabNet

Client: TRU Hanford B00-017

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: OJ 1/18/00

QC: Spec Del: std TAT: 30 ~~15~~ day

Date Rec'd: 1-18-00 Date Due: 2/17/00

Account #:

Refrigerator #		1	4														
#/Type Container	Liquid											1P		1PG	2PG		
	Solid																
Volume	Liquid											1L		500	1L		
	Solid																
Preservatives												-		-	-		
ANALYSES REQUESTED		ORGANIC										INORG					
		VOA	BNA	Pest/PCB	Herb							Metal	CN	HG	OGGR		
		RECRA LabNet Use Only															
		7624H	8625H	8082B								Met①			1664GR		

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	7624H	8625H	8082B	Met①	CN	HG	1664GR
S - Soil	001	B0X9X7	X	X	~~Soil~~ 1/20/00	1-13-00	1015	✓ 1y/40	✓ 4y/40	✓ 1y/40	✓		✓	
SE - Sediment	002	B0X9X8	X	X	~~Soil~~ W	↓	0942	✓ 3y/40		✓ 3y/L	✓		✓	✓
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														

Met① = AG AL BA BE CA CD CO CR CU FE K- MG MN NA NI SB V- ZN

Special Instructions:

Acct # B00-017

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
1/20/00 2. 001 matrix changed to
3. soil per client COC
1/21/00 4. metals list revised per PM
5.
6.

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 4235719553380
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. 4.1 °C

Relinquished by	Received by	Date	Time
FedEx	TRoppel	1-18-00	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

NOTES:

10

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page

Collector: R. Fahlberg	Company Contact: Duane Jacques Telephone No.: 509-373-5299	Project Coordinator: TRENT, SJ	Price Code: 9N Data Turnaround: 45 Days
Project Designation: REDOX Air. Compressor Waste Water Sampling	Sampling Location: REDOX	SAF No.: BØØ-017	Air Quality ☐
Ice Chest No.: R 1.12.00 Sml 342	Field Logbook No.: EL 1424	COA: BREDOX2W28	Method of Shipment: Federal Express
Shipped To: ~~TMA~~/RECRA	Offsite Property No.: AØØØØ91		Bill of Lading/Air Bill No.: 42357953 3380

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage
Cool to 4 degrees C.

Preservation	Cool 4C	None	None	Cool 4C	Cool 4C	None					
Type of Container	aG	P	aG	aG	GS*	P					
No. of Container(s)	3	1	1	2	3	2					
Volume	1000mL	500mL	500mL	1000mL	40mL	1000mL					
SAMPLE ANALYSIS	PCBs-8082	ICP Metals-6010A (TAL)	Mercury 7471-(CV)	Oil & Grease-413.1	VOA-8260A (TCL)	Gross Alpha/Gross Beta					
Sample No.	Matrix *	Sample Date	Sample Time								
BØX9X8	Water	1.13.00	0942	X	X	X	X	X			BØX9 X9

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	1.13.00 1200	Ref 2-B	1.13.00 1200
Ref 2-B	1/17/00/0800	R. Thoren (Rikki Thoren)	1/17/00/0800
R. Thoren (Rikki Thoren)	1/17/00/1430	FED EX	
Fed Ex	1-18-00 0930	T Beppel	1-18-00 0930

SPECIAL INSTRUCTIONS

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)

Bec[redacted] Hanford Inc.	CHAIN OF CUSTODY/SA[redacted]LE ANALYSIS REQUEST		Page [redacted] -
Collector R. Fahlberg	Company Contact Duane Jacques Telephone No. 509-373-5299	Project Coordinator TRENT, SJ	Price Code 9N / Data Turnaround 45 Days
Project Designation REDOX Air Compressor Waste Water Sampling	Sampling Location REDOX	SAF No. BØØ-017	Air Quality ☐
Ice Chest No. RC 1.13.00 Sml 342	Field Logbook No. / COA BREDOX2W28	Method of Shipment Federal Express	
Shipped To ~~TMA~~/RECRA	Offsite Property No. AØØØØ91	Bill of Lading/Air Bill No. 42357953 3380	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage
Cool to 4 degrees C.

Preservation	Cool 4C	None	None	Cool 4C	Cool 4C	None					
Type of Container	aG	P	aG	aG	GS*	P					
No. of Container(s)	1	1	1	1	1	1					
Volume	60mL	500mL	500mL	60mL	40mL	500mL					
SAMPLE ANALYSIS	PCBs-8082	ICP Metals 6010A (TAL)	Mercury 7471-(CV)	Semi-VOA-8270A (TCL)	VOA-8260A (TCL)	Gross Alpha/Gross Beta					
Sample No.	Matrix *	Sample Date	Sample Time	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
BØX9X7	Oil	1.13.00	1015	X	X	X	X	X				Box 9x9

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By R.Fahlberg / R.Fahlberg Date/Time 1.13.00	Received By Bef Z.B Date/Time 1.13.00 1200	
Relinquished By Date/Time R.Fahlberg Z.B 1.17.00/0800	Received By Rikki Thoren R.Thoren Date/Time 1.17.00/0800	
Relinquished By Rikki Thoren R.Thoren Date/Time 1.17.00/1430	Received By FED EX Date/Time	
Relinquished By Fed Ex Date/Time 1.18.00 0930	Received By TBoppel Date/Time 1.18.00 0930	
Relinquished By Date/Time	Received By Date/Time	
Relinquished By Date/Time	Received By Date/Time	

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
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B00-017
RFW#: 0001L247
SDG/SAF #: H0714/ B00-017

W.O. #: 10985-001-001-9999-00
Date Received: 01-18-2000

SEMIVOLATILE

One (1) oil sample was collected on 01-13-2000.

The sample and its associated QC samples were extracted on 01-27-2000 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 02-01,10-2000.

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 sample.

4. The sample was prepared using Waste Dilution Protocol (1g diluted to 20mL with Methylene Chloride) and required an additional 10-fold instrument dilution due to high levels of non-target compounds.

5. One (1) of twenty-seven (27) obtainable surrogate recoveries was outside EPA QC limits. However, EPA CLP surrogate recovery criteria were met (i.e., no more than one outlier per fraction {acid and base neutral} and no recoveries less than 10%).

6. All obtainable matrix spike recoveries were within EPA QC limits.

7. Three (3) of eleven (11) blank spike recoveries were outside EPA QC limits.

MAR 2000
RECEIVED
Data
Log In

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

03-07-00
Date

som\group\data\bna\tnu-hanford-01w247.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.

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

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.

mmz\10-94\gloss.bna

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.

mmz\10-94\gloss.bna

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

RFW Batch Number: **0001L247** Client: **TNU-HANFORD B00-017** Work Order: 10985001001 Report Date: 02/16/00 15:47 Page: 1a

	Cust ID:	B0X9X7	B0X9X7	B0X9X7	SBLKKB	SBLKKB BS
Sample Information	RFW#:	001	001 MS	001 MSD	00LE0083-MB1	00LE0083-MB1
	Matrix:	OIL	OIL	OIL	SOIL	SOIL
	D.F.:	200	200	200	20.0	20.0
	~~Units:~~	~~UG/KG~~	~~UG/KG~~			
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Recovery	Nitrobenzene-d5	52 %	67 %	57 %	101 %	102 %
	2-Fluorobiphenyl	71 %	69 %	73 %	105 %	118 * %
	Terphenyl-d14	83 %	82 %	73 %	110 %	120 %
	Phenol-d5	52 %	78 %	64 %	84 %	89 %
	2-Fluorophenol	71 %	80 %	66 %	72 %	79 %
	2,4,6-Tribromophenol	D %	D %	D %	31 %	69 %
Phenol		1900000 U	73 %	58 %	200000 U	89 %
bis(2-Chloroethyl)ether		1900000 U	2000000 U	2000000 U	200000 U	200000 U
2-Chlorophenol		1900000 U	78 %	71 %	200000 U	86 %
1,3-Dichlorobenzene		1900000 U	2000000 U	2000000 U	200000 U	200000 U
1,4-Dichlorobenzene		1900000 U	88 %	84 %	200000 U	111 * %
1,2-Dichlorobenzene		1900000 U	2000000 U	2000000 U	200000 U	200000 U
2-Methylphenol		1900000 U	2000000 U	2000000 U	200000 U	200000 U
2,2'-oxybis(1-Chloropropane)		1900000 U	2000000 U	2000000 U	200000 U	200000 U
4-Methylphenol		1900000 U	2000000 U	2000000 U	200000 U	200000 U
N-Nitroso-di-n-propylamine		1900000 U	76 %	75 %	200000 U	116 %
Hexachloroethane		1900000 U	2000000 U	2000000 U	200000 U	200000 U
Nitrobenzene		1900000 U	2000000 U	2000000 U	200000 U	200000 U
Isophorone		1900000 U	2000000 U	2000000 U	200000 U	200000 U
2-Nitrophenol		1900000 U	2000000 U	2000000 U	200000 U	200000 U
2,4-Dimethylphenol		1900000 U	2000000 U	2000000 U	200000 U	200000 U
bis(2-Chloroethoxy)methane		1900000 U	2000000 U	2000000 U	200000 U	200000 U
2,4-Dichlorophenol		1900000 U	2000000 U	2000000 U	200000 U	200000 U
1,2,4-Trichlorobenzene		1900000 U	67 %	61 %	200000 U	111 * %
Naphthalene		1900000 U	2000000 U	2000000 U	200000 U	200000 U
4-Chloroaniline		1900000 U	2000000 U	2000000 U	200000 U	200000 U
Hexachlorobutadiene		1900000 U	2000000 U	2000000 U	200000 U	200000 U
4-Chloro-3-methylphenol		1900000 U	D %	D %	200000 U	69 %
2-Methylnaphthalene		1900000 U	2000000 U	2000000 U	200000 U	200000 U
Hexachlorocyclopentadiene		1900000 U	2000000 U	2000000 U	200000 U	200000 U
2,4,6-Trichlorophenol		1900000 U	2000000 U	2000000 U	200000 U	200000 U
2,4,5-Trichlorophenol		4800000 U	5000000 U	5000000 U	500000 U	500000 U

*= Outside of EPA CLP QC limits.

Cust ID:	B0X9X7	B0X9X7	B0X9X7	SBLKKB	SBLKKB BS
RFW#:	001	001 MS	001 MSD	00LE0083-MB1	00LE0083-MB1
2-Chloronaphthalene	1900000 U	2000000 U	2000000 U	200000 U	200000 U
2-Nitroaniline	4800000 U	5000000 U	5000000 U	500000 U	500000 U
Dimethylphthalate	1900000 U	2000000 U	2000000 U	200000 U	200000 U
Acenaphthylene	1900000 U	2000000 U	2000000 U	200000 U	200000 U
2,6-Dinitrotoluene	1900000 U	2000000 U	2000000 U	200000 U	200000 U
3-Nitroaniline	4800000 U	5000000 U	5000000 U	500000 U	500000 U
Acenaphthene	1900000 U	82 %	82 %	200000 U	119 %
2,4-Dinitrophenol	4800000 U	5000000 U	5000000 U	500000 U	500000 U
4-Nitrophenol	4800000 U	D %	D %	500000 U	39 %
Dibenzofuran	1900000 U	2000000 U	2000000 U	200000 U	200000 U
2,4-Dinitrotoluene	1900000 U	D %	D %	200000 U	91 * %
Diethylphthalate	1900000 U	2000000 U	2000000 U	200000 U	200000 U
4-Chlorophenyl-phenylether	1900000 U	2000000 U	2000000 U	200000 U	200000 U
Fluorene	1900000 U	2000000 U	2000000 U	200000 U	200000 U
4-Nitroaniline	4800000 U	5000000 U	5000000 U	500000 U	500000 U
4,6-Dinitro-2-methylphenol	4800000 U	5000000 U	5000000 U	500000 U	500000 U
N-Nitrosodiphenylamine (1)	1900000 U	2000000 U	2000000 U	200000 U	200000 U
4-Bromophenyl-phenylether	1900000 U	2000000 U	2000000 U	200000 U	200000 U
Hexachlorobenzene	1900000 U	2000000 U	2000000 U	200000 U	200000 U
Pentachlorophenol	4800000 U	D %	D %	500000 U	51 %
Phenanthrene	1900000 U	2000000 U	2000000 U	200000 U	200000 U
Anthracene	1900000 U	2000000 U	2000000 U	200000 U	200000 U
Carbazole	1900000 U	2000000 U	2000000 U	200000 U	200000 U
Di-n-butylphthalate	1900000 U	2000000 U	2000000 U	200000 U	200000 U
Fluoranthene	1900000 U	2000000 U	2000000 U	200000 U	200000 U
Pyrene	1900000 U	91 %	84 %	200000 U	125 %
Butylbenzylphthalate	1900000 U	2000000 U	2000000 U	200000 U	200000 U
3,3'-Dichlorobenzidine	1900000 U	2000000 U	2000000 U	200000 U	200000 U
Benzo(a)anthracene	1900000 U	2000000 U	2000000 U	200000 U	200000 U
Chrysene	1900000 U	2000000 U	2000000 U	200000 U	200000 U
bis(2-Ethylhexyl)phthalate	830000 J	840000 J	790000 J	200000 U	200000 U
Di-n-octyl phthalate	1900000 U	2000000 U	2000000 U	200000 U	200000 U
Benzo(b)fluoranthene	1900000 U	2000000 U	2000000 U	200000 U	200000 U
Benzo(k)fluoranthene	1900000 U	2000000 U	2000000 U	200000 U	200000 U
Benzo(a)pyrene	1900000 U	2000000 U	2000000 U	200000 U	200000 U
Indeno(1,2,3-cd)pyrene	1900000 U	2000000 U	2000000 U	200000 U	200000 U
Dibenz(a,h)anthracene	1900000 U	2000000 U	2000000 U	200000 U	200000 U
Benzo(g,h,i)perylene	1900000 U	2000000 U	2000000 U	200000 U	200000 U

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0X9X7

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B00-017

Matrix: (soil/water) OIL Lab Sample ID: 0001L247-001

Sample wt/vol: 1.04 (g/mL) G Lab File ID: A020114

Level: (low/med) LOW Date Received: 01/18/00

% Moisture: 0 decanted: (Y/N) Date Extracted: 01/27/00

Concentrated Extract Volume: 1000(uL) Date Analyzed: 02/01/00

Injection Volume: 2.0(uL) Dilution Factor: 200

GPC Cleanup: (Y/N) N pH:

Number TICs found: 7 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	20 TO 30 MINUTES			
2.	UNRESOLVED HYDROCARBONS			
3.	ALKANE	22.96	2000000	J
4.	ALKANE	23.52	2000000	J
5.	ALKANE	24.89	2000000	J
6.	ALKANE	25.75	1000000	J
7.	UNKNOWN	26.77	1000000	J
8. 26603-23-6	DIOCTYLDIPHENYLAMINE	28.00	5000000	JN
9.	UNKNOWN	35.33	1000000	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKKB

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B00-017

Matrix: (soil/water) SOIL Lab Sample ID: 00LE0083-MB1

Sample wt/vol: 1.00 (g/mL) G Lab File ID: A020915

Level: (low/med) LOW Date Received: 01/27/00

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 01/27/00

Concentrated Extract Volume: 500(uL) Date Analyzed: 02/10/00

Injection Volume: 2.0(uL) Dilution Factor: 20.0

GPC Cleanup: (Y/N) Y pH: _____

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

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

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-017

RFW LOT # :0001L247

CLIENT ID	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
B0X9X7	001	OI	00LE0083	01/13/00	01/18/00	01/27/00	02/01/00
B0X9X7	001 MS	OI	00LE0083	01/13/00	01/18/00	01/27/00	02/01/00
B0X9X7	001 MSD	OI	00LE0083	01/13/00	01/18/00	01/27/00	02/01/00
LAB QC:							
SBLKKB	MB1	S	00LE0083	N/A	N/A	01/27/00	02/10/00
SBLKKB	MB1 BS	S	00LE0083	N/A	N/A	01/27/00	02/10/00

RECRA LabNet Use Only

00011247

Custody Transfer Record/Lab Work Request

Page 1 of 1

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) qoms VOA metals BNA, PCB deg.

RECRA LabNet

Client TRU Hanford B00-017

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ 1/18/00

QC Spec Del std TAT 30 ~~15~~ day

Date Rec'd 1-18-00 Date Due 2/17/00

Account #

Refrigerator #		1	4									1				
#/Type Container	Liquid									1P		1PG	2PG			
	Solid															
Volume	Liquid									1L		500	1L			
	Solid															
Preservatives										-		-	-			
ANALYSES REQUESTED		ORGANIC								INORG						
		VOA	BNA	Pest/PCB	Herb					Metal	CN	TS	OGGR			
RECRA LabNet Use Only		0624H	0625H	0PCB						MHSLTO			1055R			

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	0624H	0625H	0PCB					MHSLTO			1055R			
001	B0X9X7		X	QO	1-13-00	1015	✓ 1/40	✓ 1/40	✓ 1/40					✓		✓				
002	B0X9X8	X	X	W		0942	✓ 3/40		✓ 3/2					✓		✓	✓			

Special Instructions:

Proj # B00-017

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
1/20/00 2. 001 matrix changed to
3. ord per client COC
4.
5.
6.

Relinquished by	Received by	Date	Time
FedEx	TRoppel	1-18-00	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 4235719533380
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 4.1 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

10

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		Page
Collector: R. Fahlberg	Company Contact: Duane Jacques; Telephone No.: 509-373-5299	Project Coordinator: TRENT, SJ	Price Code: 9N; Data Turnaround: 45 Days
Project Designation: REDOX Air Compressor Waste Water Sampling	Sampling Location: REDOX	SAF No.: B00-017	Air Quality ☐
Ice Chest No.: R 1-13-00 Sml 342	Field Logbook No.: FL 1424	COA: BREDOX2W28	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A000091		Bill of Lading/Air Bill No.: 42357953 3380

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage: Cool to 4 degrees C.

Preservation	Cool 4C	None	None	Cool 4C	Cool 4C	None					
Type of Container	aG	P	aG	aG	Gs*	P					
No. of Container(s)	3	1	1	2	3	2					
Volume	1000mL	500mL	500mL	1000mL	40mL	1000mL					
SAMPLE ANALYSIS	PCBs-8082	ICP Metals-6010A (TAL)	Mercury 7471-(CV)	Oil & Grease-413.1	VOA-8260A (TCL)	Gross Alpha/Gross Beta					
Sample No.	Matrix *	Sample Date	Sample Time								
B0X9X8	Water	1-13-00	0942	X	X	X	X	X			B0X9 X9

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By: R. Fahlberg / R. Fahlberg; Date/Time: 1:13:00 1200	Received By: Ref 2-B; Date/Time: 1:13:00 1200	
Relinquished By: Ref 2-B; Date/Time: 1/17/00/0800	Received By: Rikki Thoren / R. Thoren; Date/Time: 1/17/00/0800	
Relinquished By: Rikki Thoren / R. Thoren; Date/Time: 1/17/00/1430	Received By: FEDEX; Date/Time:	
Relinquished By: Fed Ex; Date/Time: 1-18-00 0930	Received By: TRoppel; Date/Time: 1-18-00 0930	
Relinquished By: ; Date/Time:	Received By: ; Date/Time:	
Relinquished By: ; Date/Time:	Received By: ; Date/Time:	

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)

Bec[illegible] Hanford Inc.	CHAIN OF CUSTODY/SA[illegible]LE ANALYSIS REQUEST		Page [illegible] -
Collector: R. Fahlberg	Company Contact: Duane Jacques Telephone No.: 509-373-5299	Project Coordinator: TRENT, SJ	Price Code: 9N Data Turnaround: 45 Days
Project Designation: REDOX Air. Compressor Waste Water Sampling	Sampling Location: REDOX	SAF No.: BØØ-017	Air Quality ☐
Ice Chest No.: RC 1.13.00 Sml 342	Field Logbook No.: COA BREDOX2W28		Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: AØØØØ91		Bill of Lading/Air Bill No.: 42357953 3380

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage
Cool to 4 degrees C.

Preservation	Cool 4C	None	None	Cool 4C	Cool 4C	None					
Type of Container	aG	P	aG	aG	Gs*	P					
No. of Container(s)	1	1	1	1	1	1					
Volume	60mL	500mL	500mL	60mL	40mL	500mL					
SAMPLE ANALYSIS	PCBs-8082	ICP Metals 6010A (TAL)	Mercury 7471-(CV)	Semi-VOA-8270A (TCL)	VOA-8260A (TCL)	Gross Alpha/Gross Beta					

Sample No.	Matrix *	Sample Date	Sample Time	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BØX9X7	Oil	1.13.00	1015	X	X	X	X	X				Box	9x9

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	1.13.00 1200	Bof 2.B	1.13.00 1200
R. Fahlberg 2.B	1.17.00/0800	Rikki Thoren R. Thoren	1.17.00/0800
Rikki Thoren R. Thoren	1.17.00/1430	FED EX	
Fed Ex	1.18.00 0930	Thoppel	1.18.00 0930

SPECIAL INSTRUCTIONS

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
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B00-017
RFW#: 0001L247
SDG/SAF#: H0714/B00-017

W.O.#: 10985-001-001-9999-00
Date Received: 01-18-00

PCB

The set of samples consisted of one (1) water sample and one (1) oil sample collected on 01-13-00.

The samples and their associated QC samples were extracted on 01-20,27-00 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 01-30,31-00. The extraction procedures were based on methods 3520 and 3580A (Waste dilution, 1g into 10 mLs hexane) and the extracts were analyzed based on method 8082 for Aroclors only.

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 has been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis have been met.
3. The samples and their associated QC samples received a sulfuric acid cleanup.
4. All method blanks were below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. All blank spike recoveries were within acceptance criteria.
7. Two (2) of four (4) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

MAR 2000
RECEIVED
Data
Log In

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

02-22-00
Date

pcf:c:\group\data\pest\011L-247.pcb

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 9 pages.

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

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification 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.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking 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 = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".

D = This flag identifies all compounds identified in an analysis at a secondary dilution factor.

C = This flag applies to a compound that has been confirmed by GC/MS.

Recra LabNet Philadelphia **Sample Discrepancy Report (SDR)** SDR #: 00GC049

Initiator: B/Ashton RFW Batch: 0001L247 Parameter: OPCB
Date: 2/16/00 Samples: 002, ms, msd Matrix: water
Client: TNU Method: SW846/MCAWW/CLP/ Prep Batch: 00LE0059
#107714

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C
__ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. QC Problem (Include all relevant specific results; attach data if necessary)

Sample 002 contained AR1254 @ the Reporting Limit. The ms/msd recovery for 1254 were low at 37% + 35%. The BS were OK as were all of the surrogates.

2. Known or Probable Causes(s)

The ms/msd were extracted using 1/2 the initial volume due to limited vol. This could effect the ms/msd recovery since AR1254 was in the sample.

3. Discussion and Proposed Action Other Description: report + flag

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

4. Project Manager Instructions...signature/date: [signature] 2/16/00

__ Concur with Proposed Action
✓ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: [signature] 03-2/00 Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Doughty
__	X Lab Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Carey/Schrenkel/Johnson	__	__ GC/LC: Schnell
__	X Section Mgr: Wesson/Daniels	__	__ MS: Taylor
__	X QA (file): Racioppi	__	__ Log-in: Janson
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Doughty/Kauffman	__	__ Other: _____

L-WI-006/E-03/99

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 02/16/00 10:11

RFW Batch Number: **0001L247** Client: **TNU-HANFORD B00-017** Work Order: 10985001001 Page: 1

	Cust ID:	B0X9X7	B0X9X7	B0X9X7	B0X9X8	B0X9X8	B0X9X8
Sample Information	RFW#:	001	001 MS	001 MSD	002	002 MS	002 MSD
	Matrix:	OIL	OIL	OIL	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/L	UG/L	UG/L
Surrogate:	Tetrachloro-m-xylene	75 %	80 %	78 %	48 %	50 %	48 %
	Decachlorobiphenyl	83 %	88 %	84 %	51 %	37 %	40 %
Aroclor-1016		990 U	970 U	1000 U	1.1 U	2.0 U	2.1 U
Aroclor-1221		2000 U	1900 U	2000 U	2.2 U	4.1 U	4.2 U
Aroclor-1232		990 U	970 U	1000 U	1.1 U	2.0 U	2.1 U
Aroclor-1242		990 U	970 U	1000 U	1.1 U	2.0 U	2.1 U
Aroclor-1248		990 U	970 U	1000 U	1.1 U	2.0 U	2.1 U
Aroclor-1254		710 J	67 %	64 %	1.1	37 * %	35 * %
Aroclor-1260		990 U	970 U	1000 U	1.1 U	2.0 U	2.1 U

	Cust ID:	PBLKEP	PBLKEP BS	PBLKEN	PBLKEN BS
Sample Information	RFW#:	00LE0082-MB1	00LE0082-MB1	00LE0059-MB1	00LE0059-MB1
	Matrix:	OIL	OIL	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/L	UG/L
Surrogate:	Tetrachloro-m-xylene	98 %	100 %	42 %	58 %
	Decachlorobiphenyl	97 %	105 %	86 %	81 %
Aroclor-1016		1000 U	1000 U	1.0 U	1.0 U
Aroclor-1221		2000 U	2000 U	2.0 U	2.0 U
Aroclor-1232		1000 U	1000 U	1.0 U	1.0 U
Aroclor-1242		1000 U	1000 U	1.0 U	1.0 U
Aroclor-1248		1000 U	1000 U	1.0 U	1.0 U
Aroclor-1254		1000 U	87 %	1.0 U	79 %
Aroclor-1260		1000 U	1000 U	1.0 U	1.0 U

gw 02-21-00

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

Recra LabNet - Lionville Laboratory
PCB ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-017

RFW LOT # :0001L247

CLIENT ID	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
B0X9X7	001	OI	00LE0082	01/13/00	01/18/00	01/27/00	01/31/00
B0X9X7	001 MS	OI	00LE0082	01/13/00	01/18/00	01/27/00	01/31/00
B0X9X7	001 MSD	OI	00LE0082	01/13/00	01/18/00	01/27/00	01/31/00
B0X9X8	002	W	00LE0059	01/13/00	01/18/00	01/20/00	01/30/00
B0X9X8	002 MS	W	00LE0059	01/13/00	01/18/00	01/20/00	01/30/00
B0X9X8	002 MSD	W	00LE0059	01/13/00	01/18/00	01/20/00	01/30/00
LAB QC:							
PBLKEP	MB1	OI	00LE0082	N/A	N/A	01/27/00	01/30/00
PBLKEP	MB1 BS	OI	00LE0082	N/A	N/A	01/27/00	01/30/00
PBLKEN	MB1	W	00LE0059	N/A	N/A	01/20/00	01/30/00
PBLKEN	MB1 BS	W	00LE0059	N/A	N/A	01/20/00	01/30/00

RECRA LabNet Use Only

CCC1L247

Custody Transfer Record/Lab Work Request

Page 1 of 1

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) ~~Acons VOA~~ ~~BNA, PCB~~ metals ~~dig~~

RECRA LabNet

Client: TMU Hanford B00-017

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: OJ 1/18/00

QC: Spec Del: std TAT: 30 ~~45~~ day

Date Rec'd: 1-18-00 Date Due: 2/17/00

Account #:

Refrigerator #		1	4									1					
#/Type Container	Liquid										1P		1PG	2PG			
	Solid																
Volume	Liquid										1L		500	1L			
	Solid																
Preservatives											-		-	-			
ANALYSES REQUESTED		ORGANIC									INORG						
		VOA	BNA	Pest/PCB	Herb						Metal	CN	TSS	OGGR			
RECRA LabNet Use Only		0624H	0625H	0608							Metal			1005P			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected														
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	C01	B0X9X7	X	X	SO 1/20/00	1-13-00	1015	✓ 1y/40	✓ 1y/40	✓ 1y/40			✓		✓						
	C02	B0X9X8	X	X	W	↓	0942	✓ 3/40		✓ 3y/L			✓		✓	✓					

Met ① = AG AL BA BE CA CD CD CR CU FE K- MG MN NA NI SB V- ZN

Special Instructions:

Acct # B00-017

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
1/20/00 2. C01 matrix changed to
3. soil per client COC
1/21/00 4. metals list revised per PM
5.
6.

Relinquished by	Received by	Date	Time
FedEx	TBoppel	1-18-00	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

NOTES:

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered
Airbill # 4835195353580
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. 4.1 °C

Bechtel Hanford Inc. | **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** | Page

Collector: R. Fahlberg	Company Contact: Duane Jacques	Telephone No.: 509-373-5299	Project Coordinator: TRENT, SJ
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: REDOX Air Compressor Waste Water Sampling	Sampling Location: REDOX	SAF No.: BØØ-017	
Ice Chest No.: RE 1.12.00 Sml 342	Field Logbook No.: EL 1424	COA: BREDOX2W28	Method of Shipment: Federal Express
Shipped To: ~~FMA~~/RECRA	Offsite Property No.: AØØØØ91		Bill of Lading/Air Bill No.: 42357953 3380

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage: Cool to 4 degrees C.

Preservation	Cool 4C	None	None	Cool 4C	Cool 4C	None					
Type of Container	aG	P	aG	aG	Gs*	P					
No. of Container(s)	3	1	1	2	3	2					
Volume	1000mL	500mL	500mL	1000mL	40mL	1000mL					
SAMPLE ANALYSIS	PCBs-8082	ICP Metals-6010A (TAL)	Mercury 7471-(CV)	Oil & Grease-413.1	VOA-8260A (TCL)	Gross Alpha/Gross Beta					
Sample No.	Matrix *	Sample Date	Sample Time								
BØX9X8	Water	1.13.00	0942	X	X	X	X	X			BØX9 X9

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By: R. Fahlberg / R. Fahlberg 1.17.00 1200	Received By: Ref 2-B 1.17.00 1200	
Relinquished By: Ref 2-B 1/17/00/0800	Received By: Rikki Thoren R. Thoren 1/17/00/0800	
Relinquished By: Rikki Thoren R. Thoren 1/17/00/1430	Received By: FED EX	
Relinquished By: Fed Ex 1-18-00 0930	Received By: T. Beppel 1-18-00 0930	
Relinquished By: Date/Time	Received By: Date/Time	
Relinquished By: Date/Time	Received By: Date/Time	

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)

Bec[illegible] Hanford Inc.	CHAIN OF CUSTODY/SA[illegible]LE ANALYSIS REQUEST		Page [illegible] -
Collector: R. Fahlberg	Company Contact: Duane Jacques Telephone No.: 509-373-5299	Project Coordinator: TRENT, SJ	Price Code: 9N / Data Turnaround: 45 Days
Project Designation: REDOX Air. Compressor Waste Water Sampling	Sampling Location: REDOX	SAF No.: BØØ-017	Air Quality ☐
Ice Chest No.: Rec 1.13.00 Sml 342	Field Logbook No.:	COA: BREDOX2W28	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: AØØØØ91		Bill of Lading/Air Bill No.: 42357953 3380

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage
Cool to 4 degrees C.

Preservation	Cool 4C	None	None	Cool 4C	Cool 4C	None				
Type of Container	aG	P	aG	aG	Gs*	P				
No. of Container(s)	1	1	1	1	1	1				
Volume	60mL	500mL	500mL	60mL	40mL	500mL				
SAMPLE ANALYSIS	PCBs-8082	ICP Metals 6010A (TAL)	Mercury 7471-(CV)	Semi-VOA-8270A (TCL)	VOA-8260A (TCL)	Gross Alpha/Gross Beta				

Sample No.	Matrix *	Sample Date	Sample Time										
BØX9X7	Oil	1.13.00	1015	X	X	X	X	X				Box	9x9

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By: R. Fahlberg / R. Fahlberg Date/Time: 1.13.00 1200	Received By: Ref Z.B Date/Time: 1.13.00 1200	
Relinquished By: R. Fahlberg Z.B Date/Time: 1.17.00/0800	Received By: Rikki Thoren R. Thoren Date/Time: 1.17.00/0800	
Relinquished By: Rikki Thoren R. Thoren Date/Time: 1.17.00/1430	Received By: FED EX Date/Time:	
Relinquished By: Fed Ex Date/Time: 1.18.00 0930	Received By: T Boppel Date/Time: 1.18.00 0930	
Relinquished By: Date/Time:	Received By: Date/Time:	
Relinquished By: Date/Time:	Received By: Date/Time:	

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
ENVIRONMENTAL
INC.
Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B00-017
RFW# : 0001L247
SDG/SAF# : H0714/B00-017

W.O.# : 10985-001-001-9999-00
Date Received: 01-18-00

METALS CASE NARRATIVE

1. This narrative covers the analyses of 1 oil sample and 1 water sample.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. Sample B0X9X8 was received with a pH of approximately 7. An aliquot was preserved prior to digestion and analysis.

3. All analyses were performed within the required holding times.

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. For each preparation/method blank, 1 analyte was outside method criteria. {less than the Practical Quantitation Limit (3X the IDL) or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a.) The results for Sodium in both MBs were greater than the Practical Quantitation Limit (PQL) {3X the (IDL) Instrument Detection Level} and the 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 laboratory control limits. Refer to the Inorganics Laboratory Control Standards 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 21 pages.

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

10. The matrix spike (MS) recoveries for 3 analytes were 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 the following concentration levels:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B0X9X8	Copper	100	93.5
	Iron	10,000	93.6

12. The duplicate analyses for 6 analytes for sample B0X9X7 and 2 analytes for B0X9X8 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.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

2-11-00
Date

mld/m01-247

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 0001L247

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	✓6010B		__200.7				__99
Antimony	✓6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	__6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010B		__200.7				__99
Beryllium	✓6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	✓6010B		__200.7				__99
Chromium	✓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	__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	✓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	__6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	✓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.

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

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 02/11/00

CLIENT: TNU-HANFORD B00-017 RECRA LOT #: 0001L247

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0X9X7	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Aluminum, Total	1.0 u	MG/KG	1.0	1.0
		Barium, Total	0.28	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Calcium, Total	23.9	MG/KG	0.85	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Cobalt, Total	0.07 u	MG/KG	0.07	1.0
		Chromium, Total	0.18	MG/KG	0.07	1.0
		Copper, Total	0.68	MG/KG	0.05	1.0
		Iron, Total	2.1	MG/KG	1.3	1.0
		Mercury, Total	0.11	MG/KG	0.02	1.0
		Potassium, Total	2.1	MG/KG	1.8	1.0
		Magnesium, Total	2.6	MG/KG	0.62	1.0
		Manganese, Total	0.05	MG/KG	0.02	1.0
		Sodium, Total	32.4	MG/KG	0.48	1.0
		Nickel, Total	0.11	MG/KG	0.1	1.0
		Antimony, Total	0.21 u	MG/KG	0.21	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	56.0	MG/KG	0.05	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 02/11/00

CLIENT: TNU-HANFORD B00-017

RECRA LOT #: 0001L247

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B0X9X8	Silver, Total	0.80 u	UG/L	0.80	1.0
		Aluminum, Total	187	UG/L	10.1	1.0
		Barium, Total	93.0	UG/L	0.20	1.0
		Beryllium, Total	0.10 u	UG/L	0.10	1.0
		Calcium, Total	526	UG/L	8.6	1.0
		Cadmium, Total	30.7	UG/L	0.40	1.0
		Cobalt, Total	14.7	UG/L	0.70	1.0
		Chromium, Total	26.0	UG/L	0.70	1.0
		Copper, Total	5460	UG/L	0.50	1.0
		Iron, Total	67300	UG/L	13.6	1.0
		Mercury, Total	15.4	UG/L	0.50	5.0
		Potassium, Total	26.4	UG/L	17.8	1.0
		Magnesium, Total	59.1	UG/L	6.3	1.0
		Manganese, Total	450	UG/L	0.20	1.0
		Sodium, Total	208	UG/L	4.8	1.0
		Nickel, Total	43.4	UG/L	1.0	1.0
		Antimony, Total	2.1 u	UG/L	2.1	1.0
		Vanadium, Total	2.0	UG/L	0.60	1.0
		Zinc, Total	670	UG/L	0.50	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/11/00

CLIENT: TNU-HANFORD B00-017 RECRA LOT #: 0001L247

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0968-MB1	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Aluminum, Total	1.7	MG/KG	1.0	1.0
		Barium, Total	0.12	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Calcium, Total	1.3	MG/KG	0.86	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Cobalt, Total	0.07 u	MG/KG	0.07	1.0
		Chromium, Total	0.20	MG/KG	0.07	1.0
		Copper, Total	0.05 u	MG/KG	0.05	1.0
		Iron, Total	4.1	MG/KG	1.4	1.0
		Potassium, Total	2.7	MG/KG	1.8	1.0
		Magnesium, Total	0.63 u	MG/KG	0.63	1.0
		Manganese, Total	0.03	MG/KG	0.02	1.0
		Sodium, Total	5.3	MG/KG	0.48	1.0
		Nickel, Total	0.10 u	MG/KG	0.10	1.0
		Antimony, Total	0.21 u	MG/KG	0.21	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	0.05 u	MG/KG	0.05	1.0
BLANK1	00C0023-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0
BLANK1	99L0965-MB1	Silver, Total	0.80 u	UG/L	0.80	1.0
		Aluminum, Total	10.1 u	UG/L	10.1	1.0
		Barium, Total	0.90	UG/L	0.20	1.0
		Beryllium, Total	0.10 u	UG/L	0.10	1.0
		Calcium, Total	17.1	UG/L	8.6	1.0
		Cadmium, Total	0.40 u	UG/L	0.40	1.0
		Cobalt, Total	0.70 u	UG/L	0.70	1.0
		Chromium, Total	1.2	UG/L	0.70	1.0
		Copper, Total	0.50 u	UG/L	0.50	1.0
		Iron, Total	13.6 u	UG/L	13.6	1.0
		Potassium, Total	17.8 u	UG/L	17.8	1.0
		Magnesium, Total	6.3 u	UG/L	6.3	1.0
		Manganese, Total	0.20 u	UG/L	0.20	1.0
		Sodium, Total	43.7	UG/L	4.8	1.0
		Nickel, Total	1.0 u	UG/L	1.0	1.0
		Antimony, Total	2.1 u	UG/L	2.1	1.0
		Vanadium, Total	0.60 u	UG/L	0.60	1.0
		Zinc, Total	2.3	UG/L	0.50	1.0
BLANK1	00C0026-MB1	Mercury, Total	0.10 u	UG/L	0.10	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 02/11/00

CLIENT: TNU-HANFORD B00-017

RECRA LOT #: 0001L247

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0X9X7	Silver, Total	4.6	0.08u	4.9	93.9	1.0
		Aluminum, Total	182	1.0 u	196	92.6	1.0
		Barium, Total	182	0.28	196	92.7	1.0
		Beryllium, Total	4.5	0.01u	4.9	91.8	1.0
		Calcium, Total	2320	23.9	2450	93.5	1.0
		Cadmium, Total	4.5	0.04u	4.9	91.8	1.0
		Cobalt, Total	46.2	0.07u	49.0	94.3	1.0
		Chromium, Total	19.0	0.18	19.6	96.0	1.0
		Copper, Total	23.6	0.68	24.5	93.6	1.0
		Iron, Total	97.7	2.1	98.0	97.6	1.0
		Mercury, Total	0.23	0.11	0.16	78.8	1.0
		Potassium, Total	2280	2.1	2450	93.0	1.0
		Magnesium, Total	2220	2.6	2450	90.5	1.0
		Manganese, Total	47.9	0.05	49.0	97.6	1.0
		Sodium, Total	2210	32.4	2450	88.9	1.0
		Nickel, Total	45.5	0.11	49.0	92.6	1.0
		Antimony, Total	45.7	0.21u	49.0	93.3	1.0
		Vanadium, Total	47.2	0.06u	49.0	96.3	1.0
		Zinc, Total	105	56.0	49.0	99.2	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 02/11/00

CLIENT: TNU-HANFORD B00-017 RECRA LOT #: 0001L247

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	B0X9X8	Silver, Total	49.0	0.80u	50.0	98.0	1.0
		Aluminum, Total	2180	187	2000	99.8	1.0
		Barium, Total	2050	93.0	2000	98.0	1.0
		Beryllium, Total	49.3	0.10u	50.0	98.6	1.0
		Calcium, Total	25300	526	25000	99.3	1.0
		Cadmium, Total	79.4	30.7	50.0	97.4	1.0
		Cobalt, Total	513	14.7	500	99.6	1.0
		Chromium, Total	226	26.0	200	99.9	1.0
		Copper, Total	5940	5460	250	190.2*	1.0
		Iron, Total	76200	67300	1000	885.8*	1.0
		Mercury, Total	25.7	15.4	1.0	1025 *	5.0
		Potassium, Total	25000	26.4	25000	99.8	1.0
		Magnesium, Total	24300	59.1	25000	96.9	1.0
		Manganese, Total	969	450	500	103.7	1.0
		Sodium, Total	24000	208	25000	95.3	1.0
		Nickel, Total	541	43.4	500	99.5	1.0
		Antimony, Total	503	2.1 u	500	100.6	1.0
		Vanadium, Total	508	2.0	500	101.1	1.0
		Zinc, Total	1200	670	500	105.9	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 02/11/00

CLIENT: TNU-HANFORD B00-017 RECRA LOT #: 0001L247

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0X9X7	Silver, Total	0.08u	0.08u	NC	1.0
		Aluminum, Total	1.0 u	1.0 u	NC	1.0
		Barium, Total	0.28	0.35	20.9	1.0
		Beryllium, Total	0.01u	0.01u	NC	1.0
		Calcium, Total	23.9	33.2	32.6	1.0
		Cadmium, Total	0.04u	0.04u	NC	1.0
		Cobalt, Total	0.07u	0.07u	NC	1.0
		Chromium, Total	0.18	0.18	2.6	1.0
		Copper, Total	0.68	0.89	27.0	1.0
		Iron, Total	2.1	2.5	17.4	1.0
		Mercury, Total	0.11	0.12	14.6	1.0
		Potassium, Total	2.1	2.7	25.0	1.0
		Magnesium, Total	2.6	2.4	8.0	1.0
		Manganese, Total	0.05	0.06	6.3	1.0
		Sodium, Total	32.4	31.3	3.5	1.0
		Nickel, Total	0.11	0.10u	~~NC~~ 200	1.0
		Antimony, Total	0.21u	0.21u	NC	1.0
		Vanadium, Total	0.06u	0.06u	NC	1.0
		Zinc, Total	56.0	83.5	39.4	1.0

Correction D 2/11/00

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 02/11/00

CLIENT: TNU-HANFORD B00-017 RECRA LOT #: 0001L247

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	B0X9X8	Silver, Total	0.80u	0.80u	NC	1.0
		Aluminum, Total	187	177	5.6	1.0
		Barium, Total	93.0	92.0	1.1	1.0
		Beryllium, Total	0.10u	0.10u	NC	1.0
		Calcium, Total	526	511	2.8	1.0
		Cadmium, Total	30.7	31.6	2.9	1.0
		Cobalt, Total	14.7	14.9	1.4	1.0
		Chromium, Total	26.0	25.8	0.77	1.0
		Copper, Total	5460	5590	2.3	1.0
		Iron, Total	67300	73500	8.8	1.0
		Mercury, Total	15.4	17.6	13.1	5.0
		Potassium, Total	26.4	17.8 u	~~NC~~ 200	1.0
		Magnesium, Total	59.1	51.8	13.2	1.0
		Manganese, Total	450	457	1.5	1.0
		Sodium, Total	208	172	18.5	1.0
		Nickel, Total	43.4	43.3	0.23	1.0
		Antimony, Total	2.1 u	2.1 u	NC	1.0
		Vanadium, Total	2.0	1.6	22.2	1.0
		Zinc, Total	670	694	3.4	1.0

Correction 2/11/00

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 02/11/00

CLIENT: TNU-HANFORD B00-017 RECRA LOT #: 0001L247

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0968-LC1	Silver, LCS	49.1	50.0	MG/KG	98.2
		Aluminum, LCS	477	500	MG/KG	95.5
		Barium, LCS	482	500	MG/KG	96.5
		Beryllium, LCS	23.7	25.0	MG/KG	94.8
		Calcium, LCS	2530	2500	MG/KG	101.0
		Cadmium, LCS	24.5	25.0	MG/KG	98.0
		Cobalt, LCS	248	250	MG/KG	99.2
		Chromium, LCS	50.7	50.0	MG/KG	101.4
		Copper, LCS	121	125	MG/KG	97.0
		Iron, LCS	503	500	MG/KG	100.6
		Potassium, LCS	2490	2500	MG/KG	99.5
		Magnesium, LCS	2380	2500	MG/KG	95.1
		Manganese, LCS	77.2	75.0	MG/KG	102.9
		Sodium, LCS	2360	2500	MG/KG	94.4
		Nickel, LCS	197	200	MG/KG	98.3
		Antimony, LCS	292	300	MG/KG	97.3
		Vanadium, LCS	255	250	MG/KG	102.0
		Zinc, LCS	95.9	100	MG/KG	95.9
LCS1	00C0023-LC1	Mercury, LCS	0.97	1.0	MG/KG	97.1
LCS1	99L0965-LC1	Silver, LCS	491	500	UG/L	98.2
		Aluminum, LCS	4910	5000	UG/L	98.1
		Barium, LCS	4860	5000	UG/L	97.2
		Beryllium, LCS	244	250	UG/L	97.8
		Calcium, LCS	25100	25000	UG/L	100.3
		Cadmium, LCS	246	250	UG/L	98.4
		Cobalt, LCS	2460	2500	UG/L	98.4
		Chromium, LCS	498	500	UG/L	99.5
		Copper, LCS	1210	1250	UG/L	96.7
		Iron, LCS	4990	5000	UG/L	99.8
		Potassium, LCS	25100	25000	UG/L	100.2
		Magnesium, LCS	24400	25000	UG/L	97.6
		Manganese, LCS	765	750	UG/L	102.0
		Sodium, LCS	24200	25000	UG/L	96.6
		Nickel, LCS	1970	2000	UG/L	98.3
		Antimony, LCS	2970	3000	UG/L	99.1
		Vanadium, LCS	2520	2500	UG/L	100.6
		Zinc, LCS	979	1000	UG/L	97.9
LCS1	00C0026-LC1	Mercury, LCS	4.9	5.0	UG/L	97.1

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-017

RFW LOT # :0001L247

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
B0X9X7							
SILVER, TOTAL	001	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
SILVER, TOTAL	001 REP	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
SILVER, TOTAL	001 MS	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
ALUMINUM, TOTAL	001	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
ALUMINUM, TOTAL	001 REP	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
ALUMINUM, TOTAL	001 MS	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
BARIUM, TOTAL	001	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
BARIUM, TOTAL	001 REP	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
BARIUM, TOTAL	001 MS	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
BERYLLIUM, TOTAL	001	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
BERYLLIUM, TOTAL	001 REP	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
BERYLLIUM, TOTAL	001 MS	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
CALCIUM, TOTAL	001	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
CALCIUM, TOTAL	001 REP	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
CALCIUM, TOTAL	001 MS	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
CADMIUM, TOTAL	001	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
CADMIUM, TOTAL	001 REP	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
CADMIUM, TOTAL	001 MS	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
COBALT, TOTAL	001	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
COBALT, TOTAL	001 REP	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
COBALT, TOTAL	001 MS	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
CHROMIUM, TOTAL	001	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
CHROMIUM, TOTAL	001 REP	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
CHROMIUM, TOTAL	001 MS	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
COPPER, TOTAL	001	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
COPPER, TOTAL	001 REP	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
COPPER, TOTAL	001 MS	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
IRON, TOTAL	001	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
IRON, TOTAL	001 REP	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
IRON, TOTAL	001 MS	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
MERCURY, TOTAL	001	OI	00C0023	01/13/00	01/18/00	01/24/00	01/25/00
MERCURY, TOTAL	001 REP	OI	00C0023	01/13/00	01/18/00	01/24/00	01/25/00
MERCURY, TOTAL	001 MS	OI	00C0023	01/13/00	01/18/00	01/24/00	01/25/00
POTASSIUM, TOTAL	001	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
POTASSIUM, TOTAL	001 REP	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
POTASSIUM, TOTAL	001 MS	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
MAGNESIUM, TOTAL	001	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-017

RFW LOT # :0001L247

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
MAGNESIUM, TOTAL	001 REP	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
MAGNESIUM, TOTAL	001 MS	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
MANGANESE, TOTAL	001	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
MANGANESE, TOTAL	001 REP	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
MANGANESE, TOTAL	001 MS	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
SODIUM, TOTAL	001	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
SODIUM, TOTAL	001 REP	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
SODIUM, TOTAL	001 MS	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
NICKEL, TOTAL	001	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
NICKEL, TOTAL	001 REP	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
NICKEL, TOTAL	001 MS	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
ANTIMONY, TOTAL	001	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
ANTIMONY, TOTAL	001 REP	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
ANTIMONY, TOTAL	001 MS	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
VANADIUM, TOTAL	001	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
VANADIUM, TOTAL	001 REP	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
VANADIUM, TOTAL	001 MS	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
ZINC, TOTAL	001	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
ZINC, TOTAL	001 REP	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
ZINC, TOTAL	001 MS	OI	99L0968	01/13/00	01/18/00	02/07/00	02/07/00
B0X9X8							
SILVER, TOTAL	002	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
SILVER, TOTAL	002 REP	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
SILVER, TOTAL	002 MS	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
ALUMINUM, TOTAL	002	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
ALUMINUM, TOTAL	002 REP	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
ALUMINUM, TOTAL	002 MS	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
BARIUM, TOTAL	002	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
BARIUM, TOTAL	002 REP	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
BARIUM, TOTAL	002 MS	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
BERYLLIUM, TOTAL	002	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
BERYLLIUM, TOTAL	002 REP	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
BERYLLIUM, TOTAL	002 MS	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
CALCIUM, TOTAL	002	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
CALCIUM, TOTAL	002 REP	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
CALCIUM, TOTAL	002 MS	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
CADMIUM, TOTAL	002	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
CADMIUM, TOTAL	002 REP	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-017

RFW LOT # :0001L247

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
CADMIUM, TOTAL	002 MS	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
COBALT, TOTAL	002	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
COBALT, TOTAL	002 REP	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
COBALT, TOTAL	002 MS	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
CHROMIUM, TOTAL	002	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
CHROMIUM, TOTAL	002 REP	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
CHROMIUM, TOTAL	002 MS	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
COPPER, TOTAL	002	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
COPPER, TOTAL	002 REP	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
COPPER, TOTAL	002 MS	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
IRON, TOTAL	002	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
IRON, TOTAL	002 REP	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
IRON, TOTAL	002 MS	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
MERCURY, TOTAL	002	W	00C0026	01/13/00	01/18/00	01/25/00	01/26/00
MERCURY, TOTAL	002 REP	W	00C0026	01/13/00	01/18/00	01/25/00	01/26/00
MERCURY, TOTAL	002 MS	W	00C0026	01/13/00	01/18/00	01/25/00	01/26/00
POTASSIUM, TOTAL	002	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
POTASSIUM, TOTAL	002 REP	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
POTASSIUM, TOTAL	002 MS	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
MAGNESIUM, TOTAL	002	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
MAGNESIUM, TOTAL	002 REP	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
MAGNESIUM, TOTAL	002 MS	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
MANGANESE, TOTAL	002	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
MANGANESE, TOTAL	002 REP	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
MANGANESE, TOTAL	002 MS	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
SODIUM, TOTAL	002	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
SODIUM, TOTAL	002 REP	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
SODIUM, TOTAL	002 MS	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
NICKEL, TOTAL	002	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
NICKEL, TOTAL	002 REP	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
NICKEL, TOTAL	002 MS	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
ANTIMONY, TOTAL	002	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
ANTIMONY, TOTAL	002 REP	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
ANTIMONY, TOTAL	002 MS	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
VANADIUM, TOTAL	002	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
VANADIUM, TOTAL	002 REP	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
VANADIUM, TOTAL	002 MS	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
ZINC, TOTAL	002	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
ZINC, TOTAL	002 REP	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00
ZINC, TOTAL	002 MS	W	99L0965	01/13/00	01/18/00	02/07/00	02/07/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-017

RFW LOT # :0001L247

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
LAB QC:							
SILVER LABORATORY	LC1 BS	S	99L0968	N/A	N/A	02/07/00	02/07/00
ALUMINUM LABORTORY	LC1 BS	S	99L0968	N/A	N/A	02/07/00	02/07/00
BARIUM LABORATORY	LC1 BS	S	99L0968	N/A	N/A	02/07/00	02/07/00
BERYLLIUM LABORATORY	LC1 BS	S	99L0968	N/A	N/A	02/07/00	02/07/00
CALCIUM LABORATORY	LC1 BS	S	99L0968	N/A	N/A	02/07/00	02/07/00
CADMIUM LABORATORY	LC1 BS	S	99L0968	N/A	N/A	02/07/00	02/07/00
COBALT LABORATORY	LC1 BS	S	99L0968	N/A	N/A	02/07/00	02/07/00
CHROMIUM LABORATORY	LC1 BS	S	99L0968	N/A	N/A	02/07/00	02/07/00
COPPER LABORATORY	LC1 BS	S	99L0968	N/A	N/A	02/07/00	02/07/00
IRON LABORATORY	LC1 BS	S	99L0968	N/A	N/A	02/07/00	02/07/00
POTASSIUM LABORATORY	LC1 BS	S	99L0968	N/A	N/A	02/07/00	02/07/00
MAGNESIUM LABORATORY	LC1 BS	S	99L0968	N/A	N/A	02/07/00	02/07/00
MANGANESE LABORATORY	LC1 BS	S	99L0968	N/A	N/A	02/07/00	02/07/00
SODIUM LABORATORY	LC1 BS	S	99L0968	N/A	N/A	02/07/00	02/07/00
NICKEL LABORATORY	LC1 BS	S	99L0968	N/A	N/A	02/07/00	02/07/00
ANTIMONY LABORATORY	LC1 BS	S	99L0968	N/A	N/A	02/07/00	02/07/00
VANADIUM LABORATORY	LC1 BS	S	99L0968	N/A	N/A	02/07/00	02/07/00
ZINC LABORATORY	LC1 BS	S	99L0968	N/A	N/A	02/07/00	02/07/00
SILVER, TOTAL	MB1	S	99L0968	N/A	N/A	02/07/00	02/07/00
ALUMINUM, TOTAL	MB1	S	99L0968	N/A	N/A	02/07/00	02/07/00
BARIUM, TOTAL	MB1	S	99L0968	N/A	N/A	02/07/00	02/07/00
BERYLLIUM, TOTAL	MB1	S	99L0968	N/A	N/A	02/07/00	02/07/00
CALCIUM, TOTAL	MB1	S	99L0968	N/A	N/A	02/07/00	02/07/00
CADMIUM, TOTAL	MB1	S	99L0968	N/A	N/A	02/07/00	02/07/00
COBALT, TOTAL	MB1	S	99L0968	N/A	N/A	02/07/00	02/07/00
CHROMIUM, TOTAL	MB1	S	99L0968	N/A	N/A	02/07/00	02/07/00
COPPER, TOTAL	MB1	S	99L0968	N/A	N/A	02/07/00	02/07/00
IRON, TOTAL	MB1	S	99L0968	N/A	N/A	02/07/00	02/07/00
POTASSIUM, TOTAL	MB1	S	99L0968	N/A	N/A	02/07/00	02/07/00
MAGNESIUM, TOTAL	MB1	S	99L0968	N/A	N/A	02/07/00	02/07/00
MANGANESE, TOTAL	MB1	S	99L0968	N/A	N/A	02/07/00	02/07/00
SODIUM, TOTAL	MB1	S	99L0968	N/A	N/A	02/07/00	02/07/00
NICKEL, TOTAL	MB1	S	99L0968	N/A	N/A	02/07/00	02/07/00
ANTIMONY, TOTAL	MB1	S	99L0968	N/A	N/A	02/07/00	02/07/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-017

RFW LOT # :0001L247

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
VANADIUM, TOTAL	MB1	S	99L0968	N/A	N/A	02/07/00	02/07/00
ZINC, TOTAL	MB1	S	99L0968	N/A	N/A	02/07/00	02/07/00
MERCURY LABORATORY	LC1 BS	S	00C0023	N/A	N/A	01/24/00	01/25/00
MERCURY, TOTAL	MB1	S	00C0023	N/A	N/A	01/24/00	01/25/00
SILVER LABORATORY	LC1 BS	W	99L0965	N/A	N/A	02/07/00	02/07/00
ALUMINUM LABORTORY	LC1 BS	W	99L0965	N/A	N/A	02/07/00	02/07/00
BARIUM LABORATORY	LC1 BS	W	99L0965	N/A	N/A	02/07/00	02/07/00
BERYLLIUM LABORATORY	LC1 BS	W	99L0965	N/A	N/A	02/07/00	02/07/00
CALCIUM LABORATORY	LC1 BS	W	99L0965	N/A	N/A	02/07/00	02/07/00
CADMIUM LABORATORY	LC1 BS	W	99L0965	N/A	N/A	02/07/00	02/07/00
COBALT LABORATORY	LC1 BS	W	99L0965	N/A	N/A	02/07/00	02/07/00
CHROMIUM LABORATORY	LC1 BS	W	99L0965	N/A	N/A	02/07/00	02/07/00
COPPER LABORATORY	LC1 BS	W	99L0965	N/A	N/A	02/07/00	02/07/00
IRON LABORATORY	LC1 BS	W	99L0965	N/A	N/A	02/07/00	02/07/00
POTASSIUM LABORATORY	LC1 BS	W	99L0965	N/A	N/A	02/07/00	02/07/00
MAGNESIUM LABORATORY	LC1 BS	W	99L0965	N/A	N/A	02/07/00	02/07/00
MANGANESE LABORATORY	LC1 BS	W	99L0965	N/A	N/A	02/07/00	02/07/00
SODIUM LABORATORY	LC1 BS	W	99L0965	N/A	N/A	02/07/00	02/07/00
NICKEL LABORATORY	LC1 BS	W	99L0965	N/A	N/A	02/07/00	02/07/00
ANTIMONY LABORATORY	LC1 BS	W	99L0965	N/A	N/A	02/07/00	02/07/00
VANADIUM LABORATORY	LC1 BS	W	99L0965	N/A	N/A	02/07/00	02/07/00
ZINC LABORATORY	LC1 BS	W	99L0965	N/A	N/A	02/07/00	02/07/00
SILVER, TOTAL	MB1	W	99L0965	N/A	N/A	02/07/00	02/07/00
ALUMINUM, TOTAL	MB1	W	99L0965	N/A	N/A	02/07/00	02/07/00
BARIUM, TOTAL	MB1	W	99L0965	N/A	N/A	02/07/00	02/07/00
BERYLLIUM, TOTAL	MB1	W	99L0965	N/A	N/A	02/07/00	02/07/00
CALCIUM, TOTAL	MB1	W	99L0965	N/A	N/A	02/07/00	02/07/00
CADMIUM, TOTAL	MB1	W	99L0965	N/A	N/A	02/07/00	02/07/00
COBALT, TOTAL	MB1	W	99L0965	N/A	N/A	02/07/00	02/07/00
CHROMIUM, TOTAL	MB1	W	99L0965	N/A	N/A	02/07/00	02/07/00
COPPER, TOTAL	MB1	W	99L0965	N/A	N/A	02/07/00	02/07/00
IRON, TOTAL	MB1	W	99L0965	N/A	N/A	02/07/00	02/07/00
POTASSIUM, TOTAL	MB1	W	99L0965	N/A	N/A	02/07/00	02/07/00
MAGNESIUM, TOTAL	MB1	W	99L0965	N/A	N/A	02/07/00	02/07/00
MANGANESE, TOTAL	MB1	W	99L0965	N/A	N/A	02/07/00	02/07/00
SODIUM, TOTAL	MB1	W	99L0965	N/A	N/A	02/07/00	02/07/00
NICKEL, TOTAL	MB1	W	99L0965	N/A	N/A	02/07/00	02/07/00
ANTIMONY, TOTAL	MB1	W	99L0965	N/A	N/A	02/07/00	02/07/00
VANADIUM, TOTAL	MB1	W	99L0965	N/A	N/A	02/07/00	02/07/00
ZINC, TOTAL	MB1	W	99L0965	N/A	N/A	02/07/00	02/07/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-017

RFW LOT # :0001L247

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
MERCURY LABORATORY	LC1 BS	W	00C0026	N/A	N/A	01/25/00	01/26/00
MERCURY, TOTAL	MB1	W	00C0026	N/A	N/A	01/25/00	01/26/00

RECRA LabNet Use Only

CCC1L247

Custody Transfer Record/Lab Work Request

Page 1 of 1

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) ~~gcms VOA~~ ~~BNA, PCB~~ metals ~~dig~~

RECRA LabNet

Client: TRU Hanford B00-017

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: OJ 1/18/00

QC: Spec Del: std TAT: 30 ~~15~~ day

Date Rec'd: 1-18-00 Date Due: 2/17/00

Account #:

Refrigerator #		1	4									1				
#/Type Container	Liquid									1P		1AG	2AG			
	Solid															
Volume	Liquid									1L		500	1L			
	Solid															
Preservatives										-		-	-			
ANALYSES REQUESTED		ORGANIC								INORG						
		VOA	BNA	Pest/PCB	Herb					Metal	CN	TSS	OGGR			
RECRA LabNet Use Only		0624H	0625H	0808						MOD			1675R			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625H	0808					MOD			1675R			
S - Soil	001	B0X9X7	X	X	QO	1-13-00	1015	✓ 1/40	✓ 1/40	✓ 1/40					✓		✓				
SE - Sediment	002	B0X9X8	X	X	W		0942	✓ 3/40		✓ 3/40					✓		✓	✓			
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																					

Met ① = AG AL BA BE CA CD CD CR CU FE K- MG MN NA NI SB V- ZN

Special Instructions:

Acct # B00-017

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
1/20/00 2. 001 matrix changed to
3. oil per client COC
1/21/00 4. metals list revised per PM
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # 4035195535580

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'd (Y) or N

Cooler Temp 4.1 C

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

NOTES:

Relinquished by	Received by	Date	Time
FedEx	TRoppel	1-18-00	0930

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		Page
Collector: R. Fahlberg	Company Contact: Duane Jacques; Telephone No.: 509-373-5299	Project Coordinator: TRENT, SJ	Price Code: 9N; Data Turnaround: 45 Days
Project Designation: REDOX Air. Compressor Waste Water Sampling	Sampling Location: REDOX	SAF No.: BØØ-017; Air Quality: ☐	
Ice Chest No.: R 1-13-00 Sml 342	Field Logbook No.: EL 1424; COA: BREDOX2W28	Method of Shipment: Federal Express	
Shipped To: FMA/RECRA	Offsite Property No.: AØØØØ91	Bill of Lading/Air Bill No.: 4235795 3380	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage
Cool to 4 degrees C.

Preservation	Cool 4C	None	None	Cool 4C	Cool 4C	None					
Type of Container	aG	P	aG	aG	GS*	P					
No. of Container(s)	3	1	1	2	3	2					
Volume	1000mL	500mL	500mL	1000mL	40mL	1000mL					
SAMPLE ANALYSIS	PCBs-8082	ICP Metals-6010A (TAL)	Mercury 7471-(CV)	Oil & Grease-413.1	VOA-8260A (TCL)	Gross Alpha/Gross Beta					
Sample No.	Matrix *	Sample Date	Sample Time								
BØX9X8	Water	1-13-00	0942	X	X	X	X	X			BØX9 X9

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By: R. Fahlberg / R. Fahlberg; Date/Time: 1200 1-17-00	Received By: Ref 2-B; Date/Time: 1200 1-13-00	
Relinquished By: Ref 2-B; Date/Time: 1/17/00/0800	Received By: Rikki Thoren / R. Thoren; Date/Time: 1/17/00/0800	
Relinquished By: Rikki Thoren / R. Thoren; Date/Time: 1/17/00/1430	Received By: FEDEX; Date/Time:	
Relinquished By: Fed Ex; Date/Time: 1-18-00 0930	Received By: TBeppel; Date/Time: 1-18-00 0930	
Relinquished By: Date/Time:	Received By: Date/Time:	
Relinquished By: Date/Time:	Received By: Date/Time:	

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)

020

Bec[illegible] Hanford Inc.	CHAIN OF CUSTODY/SA[illegible]LE ANALYSIS REQUEST		Page [illegible] -
Collector: R. Fahlberg	Company Contact: Duane Jacques Telephone No.: 509-373-5299	Project Coordinator: TRENT, SJ	Price Code: 9N / Data Turnaround: 45 Days
Project Designation: REDOX Air Compressor Waste Water Sampling	Sampling Location: REDOX	SAF No.: BØØ-017	Air Quality ☐
Ice Chest No.: RC 1.13.00 Sml 342	Field Logbook No.:	COA: BREDOX2W28	Method of Shipment: Federal Express
Shipped To: ~~TMA~~/RECRA	Offsite Property No.: AØØØØ91		Bill of Lading/Air Bill No.: 42357953 3380

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	Cool 4C	None	None	Cool 4C	Cool 4C	None				
	Type of Container	aG	P	aG	aG	Gs*	P				
	No. of Container(s)	1	1	1	1	1	1				
Special Handling and/or Storage: Cool to 4 degrees C.	Volume	60mL	500mL	500mL	60mL	40mL	500mL				
SAMPLE ANALYSIS		PCBs-8082	ICP Metals 6010A (TAL)	Mercury 7471-(CV)	Semi-VOA-8270A (TCL)	VOA-8260A (TCL)	Gross Alpha/Gross Beta				
Sample No.	Matrix * / Sample Date / Sample Time	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BØX9X7	Oil / 1.13.00 / 1015	X	X	X	X	X				Box	9x9

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By: R. Fahlberg / R. Fahlberg 1.13.00 Date/Time 12[illegible]	Received By: Ref Z-B 1.13.00 Date/Time 12[illegible]	
Relinquished By: R. Fahlberg Z-B 1.17.00/0800 Date/Time	Received By: Kikki Thoren R. Thoren 1.17.00/0800 Date/Time	
Relinquished By: Kikki Thoren R. Thoren 1.17.00/1430 Date/Time	Received By: FED EX Date/Time	
Relinquished By: Fed Ex 1.18.00 0930 Date/Time	Received By: T Boppel 1.18.00 0930 Date/Time	
Relinquished By: Date/Time	Received By: Date/Time	
Relinquished By: Date/Time	Received By: Date/Time	

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)

021

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B00-017
RFW# : 0001L247
SDG# : H0714
SAF# : B00-017

W.O. # : 10985-001-001-9999-00
Date Received: 01-18-00

INORGANIC CASE NARRATIVE

1. This narrative covers the analysis of 1 water sample.

2. The sample was prepared and analyzed in accordance with the method checked on the attached glossary.

3. Sample holding time as required by the method and/or contract was met.

4. The cooler temperature was recorded on the chain-of-custody.

5. The method blank was above the reporting limit, however the sample result was greater than 10 times the reporting limit.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS was within the 20% Relative Percent Difference (RPD) control limit.

7. The replicate analysis was above the 20% RPD control limit; re-analysis was not performed as the sample volume was depleted.

MAR 2000
RECEIVED
Data
Log In

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

2-11-00
Date

njp\i01-247

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.

Recra LabNet Philadelphia

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	EPA /600	SW846	OTHER
Acidity	___ 305.1		
___Alkalinity ___Bicarbonate ___Carbonate	___ 310.1		
BOD	___ 405.1		___ 5210B (b)
Ion Chormatography:			
___Bromide ___Chloride ___Fluoride	___ 300.0	___ 9056	
___Nitrite ___Nitrite ___Phosphate	___ 300.0	___ 9056	
___Sulfate ___Formate ___Acetate ___Oxalate	___ 300.0	___ 9056	
Chloride	___ 325.2	___ 9251	
Chorine, Residual	___ 330.5 (mod)		
Cyanide, Amenable to Chorination	___ 335.2	___ 9010B	
Cyanide, Total	___ 335.2	___ 9010B ___ 9014	___ ILMO4.0 (e)
Cyanide, Weak Acid Dissociable		___	___ 412 (a) ___ 4500CN-I (b
COD	___ 410.4(mod)		___ 5220C (b)
Color	___ 110.2		
Corrosivity by Coupon		___ 1110(mod)	
Chromium VI		___ 7196A	___ 3500Cr-D (b)
Fluoride	___ 340.2		___ 4500-FC
Hardness, Calcium	___ 215.2		
Hardness, Total	___ 130.2		
Iodide			___ ASTM D19P202 (1)
Surfactant	___ 425.1		
___Nitrate-Nitrite ___Nitrate ___Nitrite	___ 353.2		
Ammonia	___ 350.3		
Total___ Kjeldahl ___ Organic Nitrogen	___ 351.4		
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 ___ 376.2	___ 9030B/9034 (acid soluble)	
Reactive ___Cyanide ___Sulfide		___ Section 7.3	
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:**

002

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 02/03/00

CLIENT: TNU-HANFORD B00-017

RECRA LOT #: 0001L247

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B0X9X8	Oil & Grease Gravimetri	583	MG/L	1.0	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/03/00

CLIENT: TNU-HANFORD B00-017 RECRA LOT #: 0001L247

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	00LOG002-MB1	Oil & Grease Gravimetri	7.8	MG/L	1.0	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 02/03/00

CLIENT: TNU-HANFORD B00-017

RECRA LOT #: 0001L247

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
BLANK10	00LOG002-MB1	Oil & Grease Gravimetr	42.2	7.8	40.0	86.0	1.0
		Oil & Grease - Grav M	41.6	7.8	33.1	102.3	1.0

Recra LabNet - Lionville

INORGANICS DUPLICATE SPIKE REPORT 02/03/00

CLIENT: TNU-HANFORD B00-017 RECRA LOT #: 0001L247

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	00LOG002-MB1	Oil & Grease - Grav	86.0	102.3	17.3

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 02/03/00

CLIENT: TNU-HANFORD B00-017 RECRA LOT #: 0001L247

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	B0X9X8	Oil & Grease Gravimetri	583	423	31.8	1.0

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-017

DATE RECEIVED: 01/18/00 RFW LOT # :0001L247

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0X9X8						
OIL & GREASE BY GRAV	002	W	00LOG002	01/13/00	01/23/00	01/23/00
OIL AND GREASE BY GR	002 REP	W	00LOG002	01/13/00	01/23/00	01/23/00
LAB QC:						
OIL & GREASE BY GRAV	MB1	W	00LOG002	N/A	01/23/00	01/23/00
OIL AND GREASE BY GR	MB1 BS	W	00LOG002	N/A	01/23/00	01/23/00
OIL AND GREASE BY GR	MB1 BSD	W	00LOG002	N/A	01/23/00	01/23/00

RECRA LabNet Use Only
00011247

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TRU Hanford B00-017
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ 1/18/00
QC: Appl Del: std TAT: 30 ~~15~~ day
Date Rec'd: 1-18-00 Date Due: 2/17/00
Account #:

Refrigerator #		1	4								1				
#/Type Container	Liquid								1P		1PG	2PG			
	Solid														
Volume	Liquid								1L		500	1L			
	Solid														
Preservatives									-		-	-			
ANALYSES REQUESTED		ORGANIC							INORG						
		VOA	BNA	Pest/PCB	Herb				Metal	CN	HS	OGGR			
		RECRA LabNet Use Only													
		0624H	0625H	OPCB					MHSLTO			1055R			

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	0624H	0625H	OPCB					MHSLTO			1055R			
001	B0X9X7			W	1-13-00	1015	✓ 14/40	✓ 14/40	✓ 14/40					✓		✓				
002	B0X9X8			↓	↓	0942	✓ 3/40		✓ 3/3					✓		✓	✓			

Special Instructions:
saf # B00-017

COMPOSITE WASTE

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

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 423619533380
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. 4.1 °C

Relinquished by	Received by	Date	Time
FedEx	TRoppel	1-18-00	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		Page
Collector: R. Fahlberg	Company Contact: Duane Jacques Telephone No.: 509-373-5299	Project Coordinator: TRENT, SJ	Price Code: 9N Data Turnaround: 45 Days
Project Designation: REDOX Air. Compressor Waste Water Sampling	Sampling Location: REDOX	SAF No.: BØØ-017	Air Quality ☐
Ice Chest No.: R 1.13.00 Sml 342	Field Logbook No.: EL 1424	COA: BREDOX2W28	Method of Shipment: Federal Express
Shipped To: ~~TMA~~/RECRA	Offsite Property No.: AØØØØ91		Bill of Lading/Air Bill No.: 42357953 3380

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	Cool 4C	None	None	Cool 4C	Cool 4C	None				
	Type of Container	aG	P	aG	aG	Gs*	P				
	No. of Container(s)	3	1	1	2	3	2				
Special Handling and/or Storage: Cool to 4 degrees C.	Volume	1000mL	500mL	500mL	1000mL	40mL	1000mL				
SAMPLE ANALYSIS		PCBs-8082	ICP Metals-6010A (TAL)	Mercury 7471-(CV)	Oil & Grease-413.1	VOA-8260A (TCL)	Gross Alpha/Gross Beta				
Sample No.	Matrix *	Sample Date	Sample Time								
BØX9X8	Water	1.13.00	0942	X	X	X	X	X			BØX9 X9

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By: R. Fahlberg / R. Fahlberg Date/Time: 1200 1.13.00	Received By: Ref 2-13 Date/Time: 1200 1.13.00	
Relinquished By: Ref 2-B Date/Time: 1/17/00/0800	Received By: RIKKI Thoren Date/Time: R. Thoren 1/17/00/0800	
Relinquished By: RIKKI Thoren Date/Time: R. Thoren 1/17/00/1430	Received By: FEDEX Date/Time:	
Relinquished By: Fed Ex Date/Time: 1-18-00 0930	Received By: TRoppi Date/Time: 1-18-00 0930	
Relinquished By: Date/Time:	Received By: Date/Time:	
Relinquished By: Date/Time:	Received By: Date/Time:	

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)

014

Bec[illegible] Hanford Inc.	CHAIN OF CUSTODY/SA[illegible]LE ANALYSIS REQUEST		Page [illegible] -
Collector R. Fahlberg	Company Contact Duane Jacques Telephone No. 509-373-5299	Project Coordinator TRENT, SJ	Price Code 9N / Data Turnaround 45 Days
Project Designation REDOX Air Compressor Waste Water Sampling	Sampling Location REDOX	SAF No. BØØ-017	Air Quality ☐
Ice Chest No. RC 1.13.00 Sml 342	Field Logbook No. / COA BREDOX2W28	Method of Shipment Federal Express	
Shipped To TMA/RECRA	Offsite Property No. AØØØØ91	Bill of Lading/Air Bill No. 42357953 3380	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage
Cool to 4 degrees C.

Preservation	Cool 4C	None	None	Cool 4C	Cool 4C	None				
Type of Container	aG	P	aG	aG	Gs*	P				
No. of Container(s)	1	1	1	1	1	1				
Volume	60mL	500mL	500mL	60mL	40mL	500mL				
SAMPLE ANALYSIS	PCBs-8082	ICP Metals 6010A (TAL)	Mercury 7471-(CV)	Semi-VOA-8270A (TCL)	VOA-8260A (TCL)	Gross Alpha/Gross Beta				
Sample No.	Matrix *	Sample Date	Sample Time								
BØX9X7	Oil	1.13.00	1015	X	X	X	X	X				Box 9x9

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By R. Fahlberg / R. Fahlberg Date/Time 1.13.00 1200	Received By Ref Z.B 1.13.00 Date/Time 1200	
Relinquished By Ref Z.B 1.17.00/0800	Received By Kikki Thoren R. Thoren 1.17.00/0800	
Relinquished By Kikki Thoren R. Thoren 1.17.00/1430	Received By FED EX	
Relinquished By Fed Ex 1.18.00 0930	Received By TBoppel 1.18.00 0930	
Relinquished By	Received By	
Relinquished By	Received By	

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)

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H0714 is composed of three liquid (oil and oil/water) samples designated under SAF No. B00-017 with a Project Designation of: REDOX Air Compressor Waste Water Sampling.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the TNU Sample Receipt Checklist. The results were transmitted to BHI via facsimile on February 29, 2000.

2.0 ANALYSIS NOTES

2.2 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses. The MDAs are high due to the nature of the matrix; small aliquots had to be used for the analyses.

MAR 2000
RECEIVED
Data
Log In

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0714

SDG 7336
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0714

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0X9X7	REDOX	LIQUID		R001097-01	B00-017	B00-017	01/13/00 10:15
B0X9X8	REDOX	LIQUID		R001097-02	B00-017	B00-017	01/13/00 09:42
Method Blank		LIQUID		R001097-04	B00-017		
Lab Control Sample		LIQUID		R001097-03	B00-017		
Duplicate (R001097-01)	REDOX	LIQUID		R001097-05	B00-017		01/13/00 10:15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 02/29/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0714

QC SUMMARY

SDG 7336
Contact Melissa C. Mannion

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0714

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% MOIST	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7336	B00-017	B0X9X7	LIQUID				01/18/00	5	R001097-01	7336-001
		B0X9X8	LIQUID				01/18/00	5	R001097-02	7336-002
		Method Blank	LIQUID						R001097-04	7336-004
		Lab Control Sample	LIQUID						R001097-03	7336-003
		Duplicate (R001097-01)	LIQUID				01/18/00	5	R001097-05	7336-005

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 02/29/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0714

SDG 7336
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0714

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Gas Proportional Counting												
80A	LIQUID	Gross Alpha in Liquid Samples	6914-048	20.0	2			1	1	1/1		
80B	LIQUID	Gross Beta in Liquid Samples	6914-048	15.0	2			1	1	1/1		

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.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 02/29/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0714

WORK SUMMARY

SDG 7336
Contact Melissa C. Mannion

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0714

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0X9X7			R001097-01	7336-001	80A/80		01/31/00	02/29/00	MCM	Gross Alpha in Liquid Samples
REDOX		LIQUID	01/13/00	7336-001	80B/80		01/31/00	02/29/00	MCM	Gross Beta in Liquid Samples
B00-017	B00-017		01/18/00							
B0X9X8			R001097-02	7336-002	80A/80		01/31/00	02/29/00	MCM	Gross Alpha in Liquid Samples
REDOX		LIQUID	01/13/00	7336-002	80B/80		01/31/00	02/29/00	MCM	Gross Beta in Liquid Samples
B00-017	B00-017		01/18/00							
Method Blank			R001097-04	7336-004	80A/80		01/31/00	02/29/00	MCM	Gross Alpha in Liquid Samples
		LIQUID		7336-004	80B/80		01/31/00	02/29/00	MCM	Gross Beta in Liquid Samples
	B00-017									
Lab Control Sample			R001097-03	7336-003	80A/80		01/31/00	02/29/00	MCM	Gross Alpha in Liquid Samples
		LIQUID		7336-003	80B/80		01/31/00	02/29/00	MCM	Gross Beta in Liquid Samples
	B00-017									
Duplicate (R001097-01)			R001097-05	7336-005	80A/80		01/31/00	02/29/00	MCM	Gross Alpha in Liquid Samples
REDOX		LIQUID	01/13/00	7336-005	80B/80		01/31/00	02/29/00	MCM	Gross Beta in Liquid Samples
	B00-017		01/18/00							

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
80A/80	B00-017	Gross Alpha in Liquid Samples	EPA900.0	2			1	1	1	5
80B/80	B00-017	Gross Beta in Liquid Samples	EPA900.0	2			1	1	1	5
TOTALS				4			2	2	2	10

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 02/29/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0714

R001097-04 Method Blank

METHOD BLANK

SDG	7336	Client/Case no	Hanford	SDG H0714	
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925		
Lab sample id	R001097-04	Client sample id	Method Blank		
Dept sample id	7336-004	Material/Matrix		LIQUID	
		SAF No	B00-017		

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-71	120	300	3	U	80A
Gross Beta	12587-47-2	740	460	700	4		80B

REDOX Air Compressor Waste Water Smp

QC-BLANK 33204

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/29/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0714

R001097-03

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7336

Contact Melissa C. Mannion

Client/Case no Hanford SDG H0714

Case no TRB-SBB-207925

Lab sample id R001097-03

Dept sample id 7336-003

Client sample id Lab Control Sample

Material/Matrix LIQUID

SAF No B00-017

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	25000	1800	400	3		80A	23900	960	105	66-134	80-120
Gross Beta	29000	1300	700	4	B	80B	27400	1100	106	74-126	80-120

REDOX Air Compressor Waste Water Smp

QC-LCS 33203

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 02/29/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0714

R001097-05 B0X9X7

DUPLICATE

SDG	7336	Client/Case no	Hanford SDG H0714
Contact	Melissa C. Mannion	Case no	TRB-SBB-207925
DUPLICATE		ORIGINAL	
Lab sample id	R001097-05	Lab sample id	R001097-01
Dept sample id	7336-005	Dept sample id	7336-001
		Received	01/18/00
		Client sample id	B0X9X7
		Location/Matrix	REDOX LIQUID
		Collected	01/13/00 10:15
		Custody/SAF No	B00-017 B00-017

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Gross Alpha	13	140	300	3	U	80A	-47	88	200	U	-		
Gross Beta	210	310	500	4	U	80B	-180	360	600	U	-		

REDOX Air Compressor Waste Water Smp

QC-DUP#1 33205

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	02/29/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0714

R001097-01 B0X9X7

DATA SHEET

SDG	7336	Client/Case no	Hanford	SDG H0714	
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925		
Lab sample id	R001097-01	Client sample id	B0X9X7		
Dept sample id	7336-001	Location/Matrix	REDOX	LIQUID	
Received	01/18/00	Collected	01/13/00 10:15		
		Custody/SAF No	B00-017	B00-017	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-47	88	200	3	U	80A
Gross Beta	12587-47-2	-180	360	600	4	U	80B

REDOX Air Compressor Waste Water Smp

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/29/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0714

R001097-02 B0X9X8

DATA SHEET

SDG	7336	Client/Case no	Hanford	SDG H0714	
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925		
Lab sample id	R001097-02	Client sample id	B0X9X8		
Dept sample id	7336-002	Location/Matrix	REDOX	LIQUID	
Received	01/18/00	Collected	01/13/00 09:42		
		Custody/SAF No	B00-017	B00-017	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-6.1	36	90	3	U	80A
Gross Beta	12587-47-2	-37	160	300	4	U	80B

REDOX Air Compressor Waste Water Smp

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/29/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0714

Test 80A Matrix LIQUID
SDG 7336
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS ALPHA IN LIQUID SAMPLES
GAS PROPORTIONAL COUNTING

Client Hanford
Contract TRB-SBB-207925
Contract SDG H0714

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Gross Alpha	2: Sum, Alpha Emitters	RESULT RATIO (%) 2+1	2σ
Preparation batch 6914-048								
B0X9X7	R001097-01	80		7336-001	U			
B0X9X8	R001097-02	80		7336-002	U			
BLK (QC ID=33204)	R001097-04	80		7336-004	U			
LCS (QC ID=33203)	R001097-03	80		7336-003	ok			
Duplicate (R001097-01)	R001097-05	80		7336-005	-	U		
Nominal values and limits from method			RDLs (pCi/L)		3			
REDOX Air Compressor Waste Water Smp							Average	

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	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6914-048	2σ prep error 20.0 % Reference Lab Notebook 6914 pg. 48															
B0X9X7	R001097-01	80		200	9.5E-4			0		100			18	01/27/00	01/31	GRB-111
B0X9X8	R001097-02	80		90	0.0025			0		100			18	01/27/00	01/31	GRB-112
BLK (QC ID=33204)	R001097-04	80		300	9.0E-4			35		100				01/27/00	01/31	GRB-114
LCS (QC ID=33203)	R001097-03	80		400	9.0E-4			35		100				01/27/00	01/31	GRB-113
Duplicate (R001097-01) (QC ID=33205)	R001097-05	80		300	0.0011			3		100			18	01/27/00	01/31	GRB-115
Nominal values and limits from method				3	9.0E-4			5-150		100			180			

PROCEDURES REFERENCE EPA900.0
EP-120 Gross Alpha and Gross Beta in Environmental Water, rev 2

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 300 ± 200
RESIDUE 15 ± 37

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/29/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0714

Test 80B Matrix LIQUID
SDG 7336
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS BETA IN LIQUID SAMPLES
GAS PROPORTIONAL COUNTING

Client Hanford
Contract TRB-SBB-207925
Contract SDG H0714

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Gross Beta	2: Sum, Beta Emitters	RESULT RATIO (%) 2÷1	2σ
Preparation batch 6914-048								
B0X9X7	R001097-01	80		7336-001	U			
B0X9X8	R001097-02	80		7336-002	U			
BLK (QC ID=33204)	R001097-04	80		7336-004	740			
LCS (QC ID=33203)	R001097-03	80		7336-003	ok			
Duplicate (R001097-01)	R001097-05	80		7336-005	-	U		
Nominal values and limits from method				RDLs (pCi/L)	4			
REDOX Air Compressor Waste Water Smp							Average	

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	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6914-048	2σ prep error 15.0 %				Reference Lab Notebook 6914 pg. 48											
B0X9X7	R001097-01	80		600	9.5E-4			0		100			18	01/27/00	01/31	GRB-111
B0X9X8	R001097-02	80		300	0.0025			0		100			18	01/27/00	01/31	GRB-112
BLK (QC ID=33204)	R001097-04	80		700	9.0E-4			35		100				01/27/00	01/31	GRB-114
LCS (QC ID=33203)	R001097-03	80		700	9.0E-4			35		100				01/27/00	01/31	GRB-113
Duplicate (R001097-01) (QC ID=33205)	R001097-05	80		500	0.0011			3		100			18	01/27/00	01/31	GRB-115
Nominal values and limits from method				4	9.0E-4			5-150		100			180			

PROCEDURES REFERENCE EPA900.0
EP-120 Gross Alpha and Gross Beta in Environmental Water, rev 2

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 600 ± 300
RESIDUE 15 ± 37

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/29/00

1524 " 117

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		Page _ of _
Collector: R. Fahlberg	Company Contact: Duane Jacques; Telephone No.: 509-373-5299	Project Coordinator: TRENT, SJ	Price Code: 9N; Data Turnaround: 45 Days
Project Designation: REDOX Air Compressor Waste Water Sampling	Sampling Location: REDOX H0714 (7336)	SAF No.: B00-017	Air Quality ☐
Ice Chest No.: RC 1.13.00 ERC99016	Field Logbook No.: COA BREDOX2W28	Method of Shipment: Federal Express	
Shipped To: ~~TMA/RECRA~~ TMA	Offsite Property No.: A000092	Bill of Lading/Air Bill No.: 4857953 3391	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage
Cool to 4 degrees C.

Preservation	Cool 4C	None	None	Cool 4C	Cool 4C	None				
Type of Container	aG	P	aG	aG	Gs*	P				
No. of Container(s)	1	1	1	1	1	1				
Volume	60mL	500mL	500mL	60mL	40mL	500mL				
SAMPLE ANALYSIS	PCBs-8082	ICP Metals 6010A (TAL)	Mercury 7471-(CV)	Semi-VOA-8270A (TCL)	VOA-8260A (TCL)	Gross Alpha/Gross Beta				

Sample No.	Matrix *	Sample Date	Sample Time									
B0X9X7	Oil	1.13.00	1015	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	X			B0X9X9
					RF 1.13.00							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
RFahlberg / RFahlberg	1.13.00 1200	Ref 2.B	1.13.00 1200
Ref 2B	1/17/00/0800	R. Moran / R. Moran	1.17.00/0800
R. Moran / R. Moran	1/17/00/1400	FEDEX	1-17-00
FedEx	1-18-00 10:00	TNU M. Goldenberg	1-18-00 10:00

SPECIAL INSTRUCTIONS

FAXED 1/20/00

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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		Page _ of _
Collector: R. Fahlberg	Company Contact: Duane Jacques; Telephone No.: 509-373-5299	Project Coordinator: TRENT, SJ	Price Code: 9N; Data Turnaround: 45 Days
Project Designation: REDOX Air Compressor Waste Water Sampling	Sampling Location: REDOX H0714 (7336)	SAF No.: B00-017	Air Quality ☐
Ice Chest No.: ERC99-016	Field Logbook No.: EL1424; COA: BREDOX2W28	Method of Shipment: Federal Express	
Shipped To: TMA/~~REERA~~ Ref 1-13-00	Offsite Property No.: A000092	Bill of Lading/Air Bill No.: 42357953 3391	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage
Cool to 4 degrees C.

Preservation	Cool 4C	None	None	Cool 4C	Cool 4C	None				
Type of Container	aG	P	aG	aG	aG	P				
No. of Container(s)	3	1	1	1	3	2				
Volume	1000mL	500mL	500mL	1000mL	40mL	1000mL				
SAMPLE ANALYSIS	PCBs-8082	ICP Metals-6010A (TAL)	Mercury 7471-(CV)	Oil & Grease-413.1	VOA-8260A (TCL)	Gross Alpha/Gross Beta				

Sample No.	Matrix *	Sample Date	Sample Time										
✓ B0X9X8	Water	1-13-00	0942						X			B0X9X9	

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By: R. Fahlberg / R. Fahlberg; Date/Time: 1:17-00 1200	Received By: Ref; Date/Time: 1-13 1:13-00 1200	
Relinquished By: Ruf 2B; Date/Time: 1/17/00 0800	Received By: R. Thoren; Date/Time: 1/17/00 0800	
Relinquished By: R. Thoren; Date/Time: 1/17/00 1430	Received By: FEDEX; Date/Time: 1-17-00	
Relinquished By: FedEX 1-18-00; Date/Time: 10:00	Received By: TNV M. Goldenberg; Date/Time: 1-18-00 10:00	FAXED 1/20/00
Relinquished By:	Received By:	
Relinquished By:	Received By:	

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)

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc Date/Time received 1-18-00 10:00

CoC No. _____

Container I.D. No. _____ 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. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [ ]
6. Number of samples in shipping container: 2
7. Number of containers per sample: _____ (Or see CoC ✓)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by M. Goldenberg Date: 1-18-00 Time: 10:00

LOGIN

TNU W.O. No. _____ Group No. _____ Client W.O. No. _____

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____