H0560-7111H/KECKA

RECEIVED
FEB 14 2000
EDMC

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H056 is composed of a single liquid (water) sample designated under SAF No. B99-085 with a Project Designation of: 200 Area Source Characterization – 200-CW-1 OU – QC Sa.

The sample was received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Thermo Retec Sample Receipt Checklist. The results were transmitted to BHI via facsimile on November 29, 1999.

2.0 ANALYSIS NOTES

2.1 Gross Alpha/Gross Beta Analyses

No problems were encountered during the analyses.

JAN 2000
RECEIVED
Data
Log In

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0L60

SAMPLE SUMMARY

SDG [illegible]
Contact [illegible]

Client Hanford
Contract [illegible]
Case no [illegible]

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
FIWLM5	200 East B pond	WATER		N9L0049-01	999-085	999-085 6	10/05/99 07:00
Method Blank		WATER		N9L0049-06	999-085		
Lab Control Sample		WATER		N9L0049-05	999-085		
Duplicate (N9L0049-01)	200 East B pond	WATER		N9L0049-07	999-085		10/05/99 07:00

Lab Id TMANC
Protocol Hanford
Version Ver 1.0
Form LVP-CS
Version 3.06
Report date 11/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H9C60

QC SUMMARY

SDG 7230
Contact Kevin C. Gibson

Client Hanford
Contract DE-AC06-[illegible]
Case no H9C60

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7230	H99-185-6	H-WLM5	WATER				10/07/99	2	N910049-01	7230-001
		Method Blank	WATER						N910049-06	7230-006
		Lab Control Sample	WATER						N910049-05	7230-005
		Duplicate (N910049-01)	WATER				10/07/99	2	N910049-07	7230-007

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form IVD-QS
Version 3.06
Report date 11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP HF60

PREP BATCH SUMMARY

SDG 9130
Contract Kevin C. Johnson

Client Hanford
Contract TMF-SEP-107925
Case no SDG HF60

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	CLIENT	MORE	BLANKETS ANALYZED RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Gas Proportional Counting												
80A	WATER	Gross Alpha in Water	0904-073	10.0	1			1	1	1/1		
80B	WATER	Gross Beta in Water	0904-073	15.0	1			1	1	1/1		

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
Blank and LCS blankets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form TVD-FBS
Version 3.06
Report date 11/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H9160

WORK SUMMARY

SDG [illegible]
Contact [illegible]

Client Hanford
Contract [illegible]
Case no SDG H9160

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	BLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
FWIM5			N91149-01	[illegible]	88A/80	A1	11/24/99	11/29/99	NJV	Gross Alpha in Water
100 East Pond		WATER	10/19/99	[illegible]	88B/80	A1	11/24/99	11/29/99	NJV	Gross Beta in Water
H9-085 6	H9 085		10/07/99							
Method Blank			N0000149-06	[illegible]	88A/80		11/24/99	11/29/99	NJV	Gross Alpha in Water
		WATER		[illegible]	88B/80		11/24/99	11/29/99	NJV	Gross Beta in Water
	H9 085									
Lab Control Sample			N0000149-05	[illegible]	88A/80		11/24/99	11/29/99	NJV	Gross Alpha in Water
		WATER		[illegible]	88B/80		11/24/99	11/29/99	NJV	Gross Beta in Water
	H9 085									
Duplicate (N91149-01)			N91149-07	[illegible]	88A/80		11/24/99	11/29/99	NJV	Gross Alpha in Water
100 East Pond		WATER	10/19/99	[illegible]	88B/80		11/24/99	11/29/99	NJV	Gross Beta in Water
	H9 085		10/07/99							

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	MSP SPIKE	TOTAL
88A/80	H9 085	Gross Alpha in Water	EPA900.0	1			1	1	1	4
88B/80	H9 085	Gross Beta in Water	EPA900.0	1			1	1	1	4
TOTALS				2			2	2	2	8

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVP-CWS
Version 3.06
Report date 11/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0560

N910049 06

Method Blank

METHOD BLANK

SDG	7230	Client/Case no	Hanford SDG H9760
Contact	Kevin C. Johnson	Contract	TEP-SEP 207925
Lab sample id	N910049-06	Client sample id	Method Blank
Dept sample id	7230-006	Material/Matrix	WATER
		SAF No	H99-085

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALIFIERS	TEST
Gross Alpha	12587 46-1	-0.182	0.90	1.2	3.0	U	80A
Gross Beta	12587-47-2	-0.699	1.1	2.0	4.0	U	80B

200 Area Source ctzn-200-CW-1 GGQCSa

QC-BLANK 22466

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-FS
Version 3.06
Report date 11/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP B1F60

N910049-05

Lab Control Sample

LAB CONTROL SAMPLE

SDG 0530

Contact Kevin C. Johnson

Client/Case no Hanford SDG B1F60

Case no TSP SPP-2L0815

Lab sample id N910049-05

Client sample id Lab Control Sample

Test sample id 7230-LCS

Material/Matrix WATER

SAF No P99-085

ANALYTE	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALIFIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	76.4	5.4	1.1	3.0		8/A	67.0	2.7	114	63-137	60-120
Gross Beta	73.7	3.7	2.5	4.0		8/B	75.3	3.0	98	76-124	

1/4 Area Source ctrs 2/6 GW-1 10.0Pa

QC LCS 7246.5

LAB CONTROL SAMPLES

Page 1

SUMMARY DATA SECTION

Page 8

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form LV2-LCS

Version 3.06

Report date 11/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0160

N°10649-07 P0W1M5

DUPLICATE

PDE 3230		Client/Project Hanford	100 HR/EP
Contact Kevin C. Johnson		Case no. HHF-SDF-100615	
DUPLICATE	ORIGINAL		
Lab sample Id N0210649-07	Lab sample Id N0210649-01	Client sample Id P0W1M5	
Dept sample Id W36-067	Dept sample Id W36-061	Location/Matrix 100 East Pond	WATER
	Received 10/20/99	Collected 10/14/99 07:00	
		Custody/SAF No 100-185-6	100-185

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 %	2σ PRCT TOT LIMIT
Gross Alpha	-0.151	0.34	0.85	3.0	U	RCA	0.509	0.63	1.0	U	-	
Gross Beta	0.110	1.3	2.3	4.0	U	RCB	0.768	1.1	1.8	U	-	

110 Area Source ctrn 110-cW-1 (90%Pa

QC INTH1 32467

DUPLICATES

Page 1

SUMMARY DATA SECTION

Page 9

Lab Id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report Date	11/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0560

N910049 01 B0WLM5

DATA SHEET

MG	7230	Client/Case no	Hanford SDG H0560
Contact	Kevin C. Johnson	Contract	TBP DOE 107925
Lab sample id	N910049-01	Client sample id	B0WLM5
Dept sample id	7230-001	Location/Matrix	200 East B pond WATER
Received	10/07/99	Collected	10/05/99 07:00
		Custody/SAF No	B99-085-6 B99-085

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.509	0.63	1.0	3.0	U	80A
Gross Beta	12587-47-2	0.708	1.1	1.8	4.0	U	80B

200 Area Source ctrm-200-CW-1 GPCCSa

DATA SHEETS
Page 1
SUMMARY DATA SECTION
Page 10

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP [illegible]

METHOD SUMMARY

GROSS ALPHA IN WATER

GAS PROPORTIONAL COUNTING

Test [illegible] Matrix WATER
SDG [illegible]
Contact [illegible]

Client [illegible]
Contract [illegible]
Case no [illegible]

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	BLANCHET	Gross Alpha	
Preparation batch 6904 073						
[illegible]WLM5	N9[illegible]49-02	80	A1	7130 001	U	
BLK (QC ID-[illegible]466)	N9[illegible]49-06	80		7130-006	U	
LCS (QC ID-[illegible]465)	N9[illegible]49-05	80		7130 005	ok	
Duplicate (N9[illegible]49-03)	N9[illegible]49-07	80		7130 007	-	U

Nominal values and limits from method RDLs (pCi/L) 3.0
100 Area Source ctgn 100 CW-1 QUQCSa

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MEA 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 6904 073 2σ prep error 20.0 % Reference Lab Notebook 6904 pg. 034																
[illegible]WLM5	N9[illegible]49-02	80	A1	1.0	0.300			1		100			50	11/14/99	11/24	GBE-113
BLK (QC ID-[illegible]466)	N9[illegible]49-06	80		1.2	0.300			-6		100				11/14/99	11/24	GBE-111
LCS (QC ID-[illegible]465)	N9[illegible]49-05	80		1.1	0.300			-6		100				11/14/99	11/24	GBE-110
Duplicate (N9[illegible]49-03) (QC ID-[illegible]467)	N9[illegible]49-07	80		0.85	0.300			1		100			50	11/14/99	11/24	GBE-112
Nominal values and limits from method				3.0	0.300			5-15.0		100			180			

PROCEDURES REFERENCE EPA-900.0
EP-12.0 Gross Alpha and Gross Beta in Environmental Water, rev 2

AVERAGES + 2 SD FOR 4 SAMPLES
MEA 1.0 ± 0.30
RESIDUE 28 ± 40

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP B0960

METHOD SUMMARY

GROSS BETA IN WATER

GAS PROPORTIONAL COUNTING

Test # R Matrix WATER
SDG B0960
Client Bevin C. Johnson

Client Hanford
Contract 24590-WO-H0-00025
Case no SDG B0960

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta
Preparation Batch 0904-073					
BKWMS	N910149-01	80	A1	7130-001	U
BLK (QC ID 3146)	N910149-06	80		7130-006	U
LCS (QC ID 3145)	N910149-05	80		7130-005	ok
Duplicate (N910149-01)	N910149-07	80		7130-007	- U

Nominal values and limits from method MDLs (pCi/L) 4.0
100 Area Source clean 200 CW 1 OUQCSa

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	PWEM keV	DRIFT EeV	DAYS HELD	DATE ANALYZED	ANAL-YZED	DETECTOR
Preparation Batch 0904-073 2σ prep error 15.0 % Reference lab Notebook 0904 pg. 034																
BKWMS	N910149-01	80	A1	1.8	0.300			1		100			50	11/24/99	11/24	GBP 113
BLK (QC ID 3146)	N910149-06	80		1.0	0.300			36		100				11/24/99	11/24	GBP 111
LCS (QC ID 3145)	N910149-05	80		2.5	0.300			36		100				11/24/99	11/24	GBP 110
Duplicate (N910149-01) (QC ID 3147)	N910149-07	80		2.3	0.300			1		100			50	11/24/99	11/24	GBP 112
Nominal values and limits from method				4.0	0.300			5 350		100			180			

PROCEDURES REFERENCE FIA900.0
EP-120 Gross Alpha and Gross Beta in Environmental Water, rev 2

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 2.2 ± 0.62
RESIDUE 18 ± 40

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVP-GMS
Version 3.06
Report date 11/29/99

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-085-6	Page 1 of 1

Collector Bowers/Trice	Company Contact C Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ
Price Code 7N	Data Turnaround 45 Days		
Project Designation 200 Area Source characterization - 200-CW-1 OU - QC Sa	Sampling Location 200 East B pond	SAF No. B99-085	
Ice Chest No. CRC96-0108	Field Logbook No. EL 1511	Method of Shipment Fed ex	
Shipped To TMA/~~RECRA~~ JP 10-5-99	Offsite Property No. A9902 86	Bill of Lading/Air Bill No.	
		COA B20CW1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	Zn Ac+NaOH to pH >9 Cool	Cool 4C	H2SO4 to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	HNO3 to pH <2	HCl or H2SO4 to pH <2 Coo			
	Type of Container	P	P	P	aG	P	P	aGs*			
	No. of Container(s)	1	1	1	2	2	2	3			
Special Handling and/or Storage	Volume	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	40mL			
SAMPLE ANALYSIS		Sulfides - 9030	See item (1) in Special Instructions	NO2/NO3 - 353.1, Ammonia - 350.3	Semi-VOA - 8270A (TCL)	Gross Alpha, Gross Beta	See item (2) in Special Instructions.	VOA - 8260A (TCL), VOA - 8260A (Add-On) (2-Propanol, Ethanol)			

Sample No.	Matrix *	Sample Date	Sample Time										
~~B0WLM4~~	~~Water~~	~~10-5-99~~	~~0515~~	N 10/6/99									
B0WLM5	Water	10-5-99	0700					X					

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
[signature]	10/5/99 1330	Ref #1 CA	10/5/99 1330
Relinquished By	Date/Time	Received By	Date/Time
Ref #1 A	10/6/99	CT 10/5/99	
Relinquished By	Date/Time	Received By	Date/Time
		Fed/Ex	10/6/99
Relinquished By	Date/Time	Received By	Date/Time
Fed Ex	10/7/99 10:00	TAD M. Goldenberg	10:00 10/7/99

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}, pH (Water) - 9040
(2) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Copper, Nickel, Vanadium, Zinc}

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc Date/Time received 10-7-99 10:00

CoC No. B99-085-6

Container I.D. No. ERC96-168 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: 1
7. Number of containers per sample: 2 (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: 10-7-99 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 _____

RECRA LabNet

a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-085
RFW# : 9910L304
SDG# : H0560
SAF# : B99-085

W.O. # : 10985-001-001-9999-00
Date Received: 10-07-99

INORGANIC CASE NARRATIVE

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

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

3. Sample holding times as required by the method and/or contract were met with the exception of pH, Nitrate, Nitrite and Phosphate which were received past hold.

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

5. The method blanks were within method criteria.

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

7. The matrix spike recoveries were within the 75-125% control limits. The matrix spike duplicates were within the 20% RPD control limit.

8. The replicate analyses were within the 20% RPD control limit.

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-16-99
Date

njp\i10-304

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:** _____

Recra LabNet Philadelphia
METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).

3. Test Methods for Evaluating Solid Waste (USEPA SW-846).

a. Standard Methods for the Examination of Water and Waste, 16 ed. (1983).

b. Standard Methods for the Examination of Water and Waste, 17 ed. (1989)/18ed (1992).

c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).

d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).

e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.

f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/16/99

CLIENT: TNU-HANFORD F99-085

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

RECRA LOT #: 9910L304

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	ECWLMS	Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.50 u	MG/L	0.50	1.0
		Nitrate Nitrite	0.02 u	MG-N/L	0.02	1.0
		Ammonia, as N	0.10 u	MG/L	0.10	1.0
		pH	5.9	PH UNITS	0.01	1.0
		Sulfide	2.0 u	MG/L	2.0	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/16/99

CLIENT: TNU-HANFORD E99-085 RECRA LOT #: 9910L204

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LICE84-MB1	Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.50 u	MG/L	0.50	1.0
BLANK10	99LICE84-MB1	Phosphate by IC	0.25 u	MG/L	0.25	1.0
BLANK10	99LNSA80-MB1	Nitrate Nitrite	0.02 u	MG-N/L	0.02	1.0
BLANK10	99LAMA41-MB1	Ammonia, as N	0.10 u	MG/L	0.10	1.0
BLANK10	99LSLC92-MB1	Sulfide	2.0 u	MG/L	2.0	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/16/99

CLIENT: TNU-HANFORD E99-085 RECRA LOT #: 9910L304

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	FCWLM5	Chloride by IC	4.8	0.18	5.0	92.1	1.0
		Chloride by IC MSD	5.1	0.18	5.0	98.0	1.0
		Fluoride by IC	10.3	0.00	10.0	103.5	1.0
		Fluoride by IC MSD	10.5	0.00	10.0	105.1	1.0
		Nitrite by IC	4.9	0.25u	5.0	98.0	1.0
		Nitrite by IC MSD	5.0	0.25u	5.0	99.7	1.0
		Nitrate by IC	4.8	0.25u	5.0	95.1	1.0
		Nitrate by IC MSD	4.8	0.25u	5.0	96.0	1.0
		Phosphate by IC	4.7	0.25u	5.0	94.0	1.0
		Phosphate by IC MSD	4.8	0.25u	5.0	95.3	1.0
		Sulfate by IC	4.8	0.50u	5.0	95.2	1.0
		Sulfate by IC MSD	4.8	0.50u	5.0	96.4	1.0
		Nitrate Nitrite	0.54	0.02u	0.50	107.0	1.0
		Ammonia, as N	1.0	0.10u	1.0	103.0	1.0
		Sulfide	9.9	0.00	10.0	99.0	1.0
		Sulfide MSD	9.9	0.00	10.0	99.0	1.0
BLANK10	99LICB84-MB1	Chloride by IC	4.7	0.25u	5.0	95.0	1.0
		Fluoride by IC	10.4	0.50u	10.0	104.1	1.0
		Nitrite by IC	4.9	0.25u	5.0	97.3	1.0
		Nitrate by IC	4.8	0.25u	5.0	96.5	1.0
		Sulfate by IC	4.8	0.50u	5.0	95.7	1.0
BLANK10	99LICL84-MB1	Phosphate by IC	4.9	0.25u	5.0	97.5	1.0
BLANK10	99LNBAE0-MB1	Nitrate Nitrite	0.50	0.02u	0.50	99.4	1.0
		Nitrate Nitrite MSD	0.53	0.02u	0.50	105.4	1.0
BLANK10	99LAMA41-MB1	Ammonia, as N	1.0	0.10u	1.0	103.0	1.0
		Ammonia, as N MSD	1.1	0.10u	1.0	108.0	1.0
BLANK10	99LSD052-MB1	Sulfide	10.0	2.0 u	10.0	100	1.0
		Sulfide MSD	10.0	2.0 u	10.0	100	1.0

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INORGANICS DUPLICATE SPIKE REPORT 11/10/99

CLIENT: TNU-HANFORD E99-085 RECRA LOT #: 9910L204

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-002	EGWLM5	Chloride by IC	92.1	98.0	6.2
		Fluoride by IC	103.5	105.1	1.6
		Nitrite by IC	98.0	99.7	1.7
		Nitrate by IC	95.1	96.0	1.0
		Phosphate by IC	94.0	95.3	1.4
		Sulfate by IC	95.2	96.4	1.2
		Sulfide	99.0	99.0	0.00
BLANK10	99LN3A50-MB1	Nitrate Nitrite	99.4	105.4	5.9
BLANK10	99LAMA41-MB1	Ammonia, as N	103.0	108.0	4.7
BLANK10	99LSD052-MB1	Sulfide	100	100	0.00

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/16/99

CLIENT: TNU-HANFORD E99-085 RECRA LOT #: 9910L304

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
=======	==========	==========	========	=========	=======	==========
-002REP	ECWLM5	Chloride by IC	0.25u	0.25u	NC	1.0
		Fluoride by IC	0.50u	0.50u	NC	1.0
		Nitrite by IC	0.25u	0.25u	NC	1.0
		Nitrate by IC	0.25u	0.25u	NC	1.0
		Phosphate by IC	0.25u	0.25u	NC	1.0
		Sulfate by IC	0.50u	0.50u	NC	1.0
		Nitrate Nitrite	0.02u	0.02u	NC	1.0
		Ammonia, as N	0.10u	0.10u	NC	1.0
		pH	5.9	5.9	0.2	1.0
		Sulfide	2.0 u	2.0 u	NC	1.0

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 10/07/99 RFW LOT # :99101304

CLIENT ID /ANALYSIS	RFW #	MTX	TREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WLM5						
CHLORIDE BY IC	002	W	99LICB84	10/05/99	10/13/99	10/13/99
CHLORIDE BY IC	002 REP	W	99LICB84	10/05/99	10/13/99	10/13/99
CHLORIDE BY IC	002 MS	W	99LICB84	10/05/99	10/13/99	10/13/99
CHLORIDE BY IC	002 MSD	W	99LICB84	10/05/99	10/13/99	10/13/99
FLUORIDE BY IC	002	W	99LICB84	10/05/99	10/13/99	10/13/99
FLUORIDE BY IC	002 REP	W	99LICB84	10/05/99	10/13/99	10/13/99
FLUORIDE BY IC	002 MS	W	99LICB84	10/05/99	10/13/99	10/13/99
FLUORIDE BY IC	002 MSD	W	99LICB84	10/05/99	10/13/99	10/13/99
NITRITE BY IC	002	W	99LICB84	10/05/99	10/13/99	10/13/99
NITRITE BY IC	002 REP	W	99LICB84	10/05/99	10/13/99	10/13/99
NITRITE BY IC	002 MS	W	99LICB84	10/05/99	10/13/99	10/13/99
NITRITE BY IC	002 MSD	W	99LICB84	10/05/99	10/13/99	10/13/99
NITRATE BY IC	002	W	99LICB84	10/05/99	10/13/99	10/13/99
NITRATE BY IC	002 REP	W	99LICB84	10/05/99	10/13/99	10/13/99
NITRATE BY IC	002 MS	W	99LICB84	10/05/99	10/13/99	10/13/99
NITRATE BY IC	002 MSD	W	99LICB84	10/05/99	10/13/99	10/13/99
PHOSPHATE BY IC	002	W	99LICD84	10/05/99	10/13/99	10/13/99
PHOSPHATE BY IC	002 REP	W	99LICD84	10/05/99	10/13/99	10/13/99
PHOSPHATE BY IC	002 MS	W	99LICD84	10/05/99	10/13/99	10/13/99
PHOSPHATE BY IC	002 MSD	W	99LICD84	10/05/99	10/13/99	10/13/99
SULFATE BY IC	002	W	99LICB84	10/05/99	10/13/99	10/13/99
SULFATE BY IC	002 REP	W	99LICB84	10/05/99	10/13/99	10/13/99
SULFATE BY IC	002 MS	W	99LICB84	10/05/99	10/13/99	10/13/99
SULFATE BY IC	002 MSD	W	99LICB84	10/05/99	10/13/99	10/13/99
NITRATE NITRITE	002	W	99LN3A50	10/05/99	11/01/99	11/01/99
NITRATE NITRITE	002 REP	W	99LN3A50	10/05/99	11/01/99	11/01/99
NITRATE NITRITE	002 MS	W	99LN3A50	10/05/99	11/01/99	11/01/99
AMMONIA	002	W	99LAMA41	10/05/99	10/26/99	10/26/99
AMMONIA	002 REP	W	99LAMA41	10/05/99	10/26/99	10/26/99
AMMONIA	002 MS	W	99LAMA41	10/05/99	10/26/99	10/26/99
PH	002	W	99LPH110	10/05/99	10/13/99	10/13/99
PH	002 REP	W	99LPH110	10/05/99	10/13/99	10/13/99
SULFIDE	002	W	99LSD052	10/05/99	10/10/99	10/10/99
SULFIDE	002 REP	W	99LSD052	10/05/99	10/10/99	10/10/99
SULFIDE	002 MS	W	99LSD052	10/05/99	10/10/99	10/10/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 10/07/99 RFW LOT # :9910L304

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SULFIDE	002 MSD	W	99LSD052	10/05/99	10/10/99	10/10/99

LAB QC:

CHLORIDE BY IC	MB1	W	99LICB84	N/A	10/13/99	10/13/99
CHLORIDE BY IC	MB1 BS	W	99LICB84	N/A	10/13/99	10/13/99
FLUORIDE BY IC	MB1	W	99LICB84	N/A	10/13/99	10/13/99
FLUORIDE BY IC	MB1 BS	W	99LICB84	N/A	10/13/99	10/13/99
NITRITE BY IC	MB1	W	99LICB84	N/A	10/13/99	10/13/99
NITRITE BY IC	MB1 BS	W	99LICB84	N/A	10/13/99	10/13/99
NITRATE BY IC	MB1	W	99LICB84	N/A	10/13/99	10/13/99
NITRATE BY IC	MB1 BS	W	99LICB84	N/A	10/13/99	10/13/99
PHOSPHATE BY IC	MB1	W	99LICD84	N/A	10/13/99	10/13/99
PHOSPHATE BY IC	MB1 BS	W	99LICD84	N/A	10/13/99	10/13/99
SULFATE BY IC	MB1	W	99LICB84	N/A	10/13/99	10/13/99
SULFATE BY IC	MB1 BS	W	99LICB84	N/A	10/13/99	10/13/99
NITRATE NITRITE	MB1	W	99LN3A50	N/A	11/01/99	11/01/99
NITRATE NITRITE	MB1 BS	W	99LN3A50	N/A	11/01/99	11/01/99
NITRATE NITRITE	MB1 BSD	W	99LN3A50	N/A	11/01/99	11/01/99
AMMONIA	MB1	W	99LAMA41	N/A	10/26/99	10/26/99
AMMONIA	MB1 BS	W	99LAMA41	N/A	10/26/99	10/26/99
AMMONIA	MB1 BSD	W	99LAMA41	N/A	10/26/99	10/26/99
SULFIDE	MB1	W	99LSD052	N/A	10/10/99	10/10/99
SULFIDE	MB1 BS	W	99LSD052	N/A	10/10/99	10/10/99
SULFIDE	MB1 BSD	W	99LSD052	N/A	10/10/99	10/10/99

RECRA LabNet Use Only: 9910L304

A11

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

011

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMU-Hanford B99-085

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: Orlette Johnson

QC: Apel Del: Std TAT: 30 day

Date Rec'd: 10-7-99 Date Due: 11/6/99

Account #:

Refrigerator #		
#/Type Container	Liquid	3V 2BG; 1P; 1P 1P 1P
	Solid	
Volume	Liquid	40ml 1L; 1L; 500ml 1L 1L
	Solid	
Preservatives		–; HNO3; – H2SO4

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: Metal, CN, Sulfide, TC, anions, NO2/NO3, NH3

RECRA LabNet Use Only: C624H CGCSC, C625H, Met(1), ISFD, Ing(1), ICN3N2, INH3N

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	C624H CGCSC	C625H	Met(1)	ISFD	Ing(1)	ICN3N2
001	BOWLM4			W	10-5-99	0515	✓					
002	BOWLM5	X	X	⊥	⊥	0700	✓	✓	✓	✓	✓	✓

Special Instructions:
SAF # B99-085

COMPOSITE WASTE

DATE/REVISIONS:
1. Met(1) = As, Ba, Cd, Cr, Pb, Se, Ag, Cu,
2. Ni, V, Zn, Be
3. Ing(1) = ICCL, ICFL, ICNO3, ICNO2, ICPO4,
4. ICSO4, IPH
5.
6.

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # 4235 7953 0131
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)
pH out of hold

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. 3.2 °C

Relinquished by	Received by	Date	Time
Fed Ex	T Murray	10-7-99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES: TC, NO3, NO2 ... [illegible]

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-085-6	Page 1 of 1

Collector: Bowers/Trice	Company Contact: C Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 7N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU - QC Sa	Sampling Location: 200 East B pond		SAF No.: B99-085
Ice Chest No.: ERC99-012	Field Logbook No.: EL 1511		Method of Shipment: Fed ex
Shipped To: ~~TMA~~/RECRA	Offsite Property No.: 446257		Bill of Lading/Air Bill No.: 4235795530130
10-5-99			COA: B20CW1 67/C

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	ZnAc+NaOH to pH >9 Cool	Cool 4C	H2SO4 to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	HNO3 to pH <2	HCl or H2SO4 to pH <2 Coo			
	Type of Container	P	P	P	aG	P	P	aGs*			
	No. of Container(s)	1	1	1	2	2	2	3			
Special Handling and/or Storage	Volume	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	40mL			
SAMPLE ANALYSIS		Sulfides - 9030	See item (1) in Special Instructions	NO2/NO3 - 353.1, Ammonia - 350.3	Semi-VOA - 8270A (TCL)	Gross Alpha, Gross Beta	See item (2) in Special Instructions	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)			

Sample No.	Matrix *	Sample Date	Sample Time										
B0WLM4	Water	10-5-99	0515							X			
B0WLM5	Water	10-5-99	0700	X	X	X	X		X	X			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Trice	Date/Time: 10/5/99 1330	Received By: Fed Ex #1 A	Date/Time: 10/5/99 1330
Relinquished By: Fed Ex #1 A	Date/Time: 10/6/99 0230	Received By: [illegible]	Date/Time: 1230 10/6/99
Relinquished By: [illegible]	Date/Time: 10/6/99	Received By: Fed Ex	Date/Time:
Relinquished By: Fed Ex	Date/Time: 10-7-99 0945	Received By: T Murray	Date/Time: 10-7-99 0945

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); pH (Water) - 9040
(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Copper, Nickel, Vanadium, Zinc)

Not from a Rad area

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

RECRA LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-085
RFW# : 9910L304
SDG/SAF# : H0560/B99-085

W.O.# : 10985-001-001-9999-00
Date Received: 10-07-99

METALS CASE NARRATIVE

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

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

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.

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

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

   a.) The MB result for Zinc was greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and the sample 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.

10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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

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

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-25-99
Date

mld/m10-304

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9910L304

Leaching Procedure: __1310 __1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: ✓3005A __3010A __3015 __3020A __3050A __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-03/98

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 10/24/99

CLIENT: TNU-HANFORD B99-085 RECRA LOT #: 9910L304

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	F0WLM5	Silver, Total	1.0	u	UG/L	1.0	1.0
		Arsenic, Total	3.3	u	UG/L	3.3	1.0
		Barium, Total	2.5		UG/L	0.30	1.0
		Beryllium, Total	0.10	u	UG/L	0.10	1.0
		Cadmium, Total	0.30	u	UG/L	0.30	1.0
		Chromium, Total	0.80	u	UG/L	0.80	1.0
		Copper, Total	1.2	u	UG/L	1.2	1.0
		Nickel, Total	1.2	u	UG/L	1.2	1.0
		Lead, Total	2.1	u	UG/L	2.1	1.0
		Selenium, Total	3.7	u	UG/L	3.7	1.0
		Vanadium, Total	0.60	u	UG/L	0.60	1.0
		Zinc, Total	3.4		UG/L	0.80	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/14/99

CLIENT: TNU-HANFORD E99-065 RECRA LOT #: 9910L304

WORK ORDER: 10965-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	9910697-MB1	Silver, Total	1.0 u	UG/L	1.0	1.0
		Arsenic, Total	3.3 u	UG/L	3.3	1.0
		Barium, Total	0.52	UG/L	0.30	1.0
		Beryllium, Total	0.10 u	UG/L	0.10	1.0
		Cadmium, Total	0.30 u	UG/L	0.30	1.0
		Chromium, Total	0.80 u	UG/L	0.80	1.0
		Copper, Total	1.2 u	UG/L	1.2	1.0
		Nickel, Total	1.5	UG/L	1.2	1.0
		Lead, Total	2.1 u	UG/L	2.1	1.0
		Selenium, Total	3.7 u	UG/L	3.7	1.0
		Vanadium, Total	0.60 u	UG/L	0.60	1.0
		Zinc, Total	4.9	UG/L	0.80	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 10/24/99

CLIENT: TNU-HANFORD E99-085 RECRA LOT #: 9910L304

WORK ORDER: 10565-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	HOWLM5	Silver, Total	50.9	1.0 u	50.0	101.8	1.0
		Arsenic, Total	2000	3.3 u	2000	100.2	1.0
		Barium, Total	1930	2.5	2000	96.6	1.0
		Beryllium, Total	50.0	0.10u	50.0	100	1.0
		Cadmium, Total	49.6	0.30u	50.0	99.2	1.0
		Chromium, Total	199	0.80u	200	99.5	1.0
		Copper, Total	245	1.2 u	250	98.1	1.0
		Nickel, Total	487	1.2 u	500	97.4	1.0
		Lead, Total	495	2.1 u	500	98.9	1.0
		Selenium, Total	2010	3.7 u	2000	100.4	1.0
		Vanadium, Total	508	0.60u	500	101.5	1.0
		Zinc, Total	504	3.4	500	100.1	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 10/24/99

CLIENT: TNU-HANFORD E99-085 RECRA LOT #: 9910L204

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE RPD		DILUTION FACTOR(REP)
-001REP	PCWLM5	Silver, Total	1.0 u	1.0 u	NC	1.0
		Arsenic, Total	3.3 u	3.3 u	NC	1.0
		Barium, Total	2.5	0.99	86.5	1.0
		Beryllium, Total	0.10u	0.10u	NC	1.0
		Cadmium, Total	0.30u	0.30u	NC	1.0
		Chromium, Total	0.60u	0.60u	NC	1.0
		Copper, Total	1.2 u	1.2 u	NC	1.0
		Nickel, Total	1.2 u	1.2 u	NC	1.0
		Lead, Total	2.1 u	2.1 u	NC	1.0
		Selenium, Total	3.7 u	3.7 u	NC	1.0
		Vanadium, Total	0.60u	0.60u	NC	1.0
		Zinc, Total	3.4	0.86	119.2	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/14/99

CLIENT: TNU-HANFORD E99-085 RECRA LOT #: 9910L304

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	9910697-LC1	Silver, LCS	493	500	UG/L	98.7
		Arsenic, LCS	9820	10000	UG/L	98.2
		Barium, LCS	4940	5000	UG/L	98.8
		Beryllium, LCS	248	250	UG/L	99.0
		Cadmium, LCS	246	250	UG/L	98.2
		Chromium, LCS	495	500	UG/L	99.0
		Copper, LCS	1230	1250	UG/L	98.7
		Nickel, LCS	1960	2000	UG/L	97.9
		Lead, LCS	2440	2500	UG/L	97.8
		Selenium, LCS	9880	10000	UG/L	98.8
		Vanadium, LCS	2530	2500	UG/L	101.0
		Zinc, LCS	987	1000	UG/L	98.7

Recra IalNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 10/07/99 RFW LOT # :9910L304

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WLM5						
SILVER, TOTAL	002	W	99L0697	10/05/99	10/14/99	10/18/99
SILVER, TOTAL	002 REP	W	99L0697	10/05/99	10/14/99	10/18/99
SILVER, TOTAL	002 MS	W	99L0697	10/05/99	10/14/99	10/18/99
ARSENIC, TOTAL	002	W	99L0697	10/05/99	10/14/99	10/18/99
ARSENIC, TOTAL	002 REP	W	99L0697	10/05/99	10/14/99	10/18/99
ARSENIC, TOTAL	002 MS	W	99L0697	10/05/99	10/14/99	10/18/99
BARIUM, TOTAL	002	W	99L0697	10/05/99	10/14/99	10/18/99
BARIUM, TOTAL	002 REP	W	99L0697	10/05/99	10/14/99	10/18/99
BARIUM, TOTAL	002 MS	W	99L0697	10/05/99	10/14/99	10/18/99
BERYLLIUM, TOTAL	002	W	99L0697	10/05/99	10/14/99	10/18/99
BERYLLIUM, TOTAL	002 REP	W	99L0697	10/05/99	10/14/99	10/18/99
BERYLLIUM, TOTAL	002 MS	W	99L0697	10/05/99	10/14/99	10/18/99
CADMIUM, TOTAL	002	W	99L0697	10/05/99	10/14/99	10/18/99
CADMIUM, TOTAL	002 REP	W	99L0697	10/05/99	10/14/99	10/18/99
CADMIUM, TOTAL	002 MS	W	99L0697	10/05/99	10/14/99	10/18/99
CHROMIUM, TOTAL	002	W	99L0697	10/05/99	10/14/99	10/18/99
CHROMIUM, TOTAL	002 REP	W	99L0697	10/05/99	10/14/99	10/18/99
CHROMIUM, TOTAL	002 MS	W	99L0697	10/05/99	10/14/99	10/18/99
COPPER, TOTAL	002	W	99L0697	10/05/99	10/14/99	10/18/99
COPPER, TOTAL	002 REP	W	99L0697	10/05/99	10/14/99	10/18/99
COPPER, TOTAL	002 MS	W	99L0697	10/05/99	10/14/99	10/18/99
NICKEL, TOTAL	002	W	99L0697	10/05/99	10/14/99	10/18/99
NICKEL, TOTAL	002 REP	W	99L0697	10/05/99	10/14/99	10/18/99
NICKEL, TOTAL	002 MS	W	99L0697	10/05/99	10/14/99	10/18/99
LEAD, TOTAL	002	W	99L0697	10/05/99	10/14/99	10/18/99
LEAD, TOTAL	002 REP	W	99L0697	10/05/99	10/14/99	10/18/99
LEAD, TOTAL	002 MS	W	99L0697	10/05/99	10/14/99	10/18/99
SELENIUM, TOTAL	002	W	99L0697	10/05/99	10/14/99	10/18/99
SELENIUM, TOTAL	002 REP	W	99L0697	10/05/99	10/14/99	10/18/99
SELENIUM, TOTAL	002 MS	W	99L0697	10/05/99	10/14/99	10/18/99
VANADIUM, TOTAL	002	W	99L0697	10/05/99	10/14/99	10/18/99
VANADIUM, TOTAL	002 REP	W	99L0697	10/05/99	10/14/99	10/18/99
VANADIUM, TOTAL	002 MS	W	99L0697	10/05/99	10/14/99	10/18/99
ZINC, TOTAL	002	W	99L0697	10/05/99	10/14/99	10/18/99
ZINC, TOTAL	002 REP	W	99L0697	10/05/99	10/14/99	10/18/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 10/07/99 RFW LOT # :9910L304

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ZINC, TOTAL	002 MS	W	99L0697	10/05/99	10/14/99	10/18/99

LAB QC:

SILVER LABORATORY	LC1 BS	W	99L0697	N/A	10/14/99	10/18/99
SILVER, TOTAL	MB1	W	99L0697	N/A	10/14/99	10/18/99
ARSENIC LABORATORY	LC1 BS	W	99L0697	N/A	10/14/99	10/18/99
ARSENIC, TOTAL	MB1	W	99L0697	N/A	10/14/99	10/18/99
BARIUM LABORATORY	LC1 BS	W	99L0697	N/A	10/14/99	10/18/99
BARIUM, TOTAL	MB1	W	99L0697	N/A	10/14/99	10/18/99
BERYLLIUM LABORATORY	LC1 BS	W	99L0697	N/A	10/14/99	10/18/99
BERYLLIUM, TOTAL	MB1	W	99L0697	N/A	10/14/99	10/18/99
CADMIUM LABORATORY	LC1 BS	W	99L0697	N/A	10/14/99	10/18/99
CADMIUM, TOTAL	MB1	W	99L0697	N/A	10/14/99	10/18/99
CHROMIUM LABORATORY	LC1 BS	W	99L0697	N/A	10/14/99	10/18/99
CHROMIUM, TOTAL	MB1	W	99L0697	N/A	10/14/99	10/18/99
COPPER LABORATORY	LC1 BS	W	99L0697	N/A	10/14/99	10/18/99
COPPER, TOTAL	MB1	W	99L0697	N/A	10/14/99	10/18/99
NICKEL LABORATORY	LC1 BS	W	99L0697	N/A	10/14/99	10/18/99
NICKEL, TOTAL	MB1	W	99L0697	N/A	10/14/99	10/18/99
LEAD LABORATORY	LC1 BS	W	99L0697	N/A	10/14/99	10/18/99
LEAD, TOTAL	MB1	W	99L0697	N/A	10/14/99	10/18/99
SELENIUM LABORATORY	LC1 BS	W	99L0697	N/A	10/14/99	10/18/99
SELENIUM, TOTAL	MB1	W	99L0697	N/A	10/14/99	10/18/99
VANADIUM LABORATORY	LC1 BS	W	99L0697	N/A	10/14/99	10/18/99
VANADIUM, TOTAL	MB1	W	99L0697	N/A	10/14/99	10/18/99
ZINC LABORATORY	LC1 BS	W	99L0697	N/A	10/14/99	10/18/99
ZINC, TOTAL	MB1	W	99L0697	N/A	10/14/99	10/18/99

RECRA LabNet Use Only
9910L304

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMU-Hanford B99-085
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: Odette Johnson
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 10-7-99 Date Due: 11/6/99
Account #:

Refrigerator #		1	2									
#/Type Container	Liquid	3V	BAG			1P		1P	1P	1P		
	Solid											
Volume	Liquid	40ml	1L			1L		500ml	1L	1L		
	Solid											
Preservatives			–			HNO3		–		H2SO4		
ANALYSES REQUESTED		ORGANIC: VOA	BNA	Pest/PCB	Herb	INORG: Metal	CN	Sulfide	IC anions	Cond/TDS	NO2/NO3	

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	8D24H O6CSC	0725H				Met①	ISFD	Ang①	INSN2	INH3N
001	BOWLM4			W	10-5-99	0515	✓									
002	BOWLM5	X	X	⊥	⊥	0700	✓	✓				✓	✓	✓	✓	

RECRA LabNet Use Only

Special Instructions:
SAF# B99-085

COMPOSITE WASTE

DATE/REVISIONS:
1. Met① = As, Ba, Cd, Cr, Pb, Se, Ag, Cu,
2. Ni, V, Zn, Be
3. Ang① = ICCL, ICFL, ICNO3, ICNO2, ICPO4,
4. ICSO4, IPH
5.
6.

RECRA LabNet Use Only
Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 4235795301.31
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. 3.2 °C

Relinquished by	Received by	Date	Time
Fed Ex	TMurray	10-7-99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
IC out of hold
pH out of hold

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-085-6	Page 1 of 1

Collector: Bowers/Trice	Company Contact: C Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 7N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU - QC Sa	Sampling Location: 200 East B pond		SAF No.: B99-085
Ice Chest No.: ERC99-012	Field Logbook No.: EL 1511		Method of Shipment: Fed ex
Shipped To: ~~TMA~~/RECRA	Offsite Property No.: AG10257		Bill of Lading/Air Bill No.: 4235795530135
10-5-99			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	Zn Ac+NaOH to pH >9 Cool	Cool 4C	H2SO4 to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	HNO3 to pH <2	HCl or H2SO4 to pH <2 Coo			
	Type of Container	P	P	P	aG	P	P	aGs*			
	No. of Container(s)	1	1	1	2	2	2	3			
Special Handling and/or Storage	Volume	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	40mL			
SAMPLE ANALYSIS		Sulfides - 9030	See item (1) in Special Instructions.	NO2/NO3 - 353.1, Ammonia - 350.3	Semi-VOA - 8270A (TCL)	Gross Alpha, Gross Beta	See item (2) in Special Instructions.	VOA - 8260A (TCL), VOA - 8260A (Add-On) (1-Propanol, Ethanol)			
Sample No.	Matrix *	Sample Date	Sample Time								
B0WLM4	Water	10-5-99	0515					X			
B0WLM5	Water	10-5-99	0700	X	X	X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Trice	Date/Time: 10/5/99 1330	Received By: Bel #1A	Date/Time: 10/5/99 1330
Relinquished By: Bel #1A	Date/Time: 10/6/99 1230	Received By: [illegible]	Date/Time: 1230
Relinquished By: [illegible]	Date/Time: 1430	Received By: Fed Ex	Date/Time:
Relinquished By: Fed Ex	Date/Time: 10-7-99 0945	Received By: TT Murray	Date/Time: 10-7-99 0945

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); pH (Water) - 9040

(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Copper, Nickel, Vanadium, Zinc)

Not from a Rad area

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

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

013

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU HANFORD B99-085
RFW #: 9910L304
SDG/SAF#: H0560/B99-085

W.O. #: #: 10985-001-001-9999-00
Date Received: 10-07-99

GC SCAN

The set of samples consisted of two (2) water samples collected on 10-05-99.

The samples and their associated QC samples were prepared on 10-15-99 and analyzed by methodology based on EPA Method 8015B for Ethanol and Butanol on 10-16-99.

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 samples were packaged and stored as specified in the method protocol; the cooler temperature upon receipt has been recorded on the chain-of-custody.

2. The required holding time for analysis was met.

3. All initial calibrations associated with this data set were within acceptance criteria.

4. All continuing calibration standards analyzed prior to the sample extracts were within acceptance criteria.

5. Surrogates were not used for this analysis.

6. The blank spike recovery was within advisory control limits of 50%-150%.

7. All matrix spike recoveries were within advisory control limits of 50%-150%.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-5-99
Date

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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 6 pages.

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

GLOSSARY OF OGCSC 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.

Recra LabNet - Lionville Laboratory

GC/MS/AI

Report Date: 11/03/99 13:07

RFW Batch Number: 9910L304 Client: TNU-HANFORD B99-085 Work Order: 10985-001-001-9999-00 Page: 1

003

	Cust ID:	B0WLM4	B0WLM5	B0WLM5	B0WLM5	BLK	BLK BS
Sample Information	RFW#:	001	002	002 MS	002 MSD	99LLC157-MB1	99LLC157-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
n-Propyl Alcohol		5.0 U	5.0 U	109 %	112 %	5.0 U	104 %
Ethanol		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

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

Recra LabNet - Lionville Laboratory
GCSC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD E99-085

DATE RECEIVED: 10/07/99 RFW LOT # :99LC304

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BCWIM4	001	W	99LLC157	10/05/99	10/15/99	10/16/99
BCWIM5	002	W	99LLC157	10/05/99	10/15/99	10/16/99
BCWIM5	002 MS	W	99LLC157	10/05/99	10/15/99	10/16/99
BCWIM5	002 MSD	W	99LLC157	10/05/99	10/15/99	10/16/99

LAB QC:

BLK	MB1	W	99LLC157	N/A	10/15/99	10/16/99
BLK	MB1 BS	W	99LLC157	N/A	10/15/99	10/16/99

RECRA LabNet Use Only

9910L304

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMu-Hanford B99-085

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: Orlette Johnson

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 10-7-99 Date Due: 11/6/99

Account #:

Refrigerator #		1	2														
#/Type Container	Liquid	3V	2AG							RP		1P	1P	1P			
	Solid																
Volume	Liquid	40mL	1L							1L		500mL	1L	1L			
	Solid																
Preservatives			–							HNO3			–	H2SO4			
ANALYSES REQUESTED		ORGANIC								INORG							
		VOA	BNA	Pest/PCB	Herb					Metal	CN	Sulfide	Chloride	Sulfate	Sulfite		
		RECRA LabNet Use Only															
		CLP 24H	CLP 25H							Met(1)		ISFD	Ang(1)	INSNZ	INHSN		

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	CLP 24H	CLP 25H					Met(1)		ISFD	Ang(1)	INSNZ	INHSN		
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	001	BOWLM4			W	10-5-99	0515	✓													
	002	BOWLM5	X	X	⊥	⊥	0700	✓	✓					✓		✓	✓	✓			

Special Instructions:

Saf # B99-085

COMPOSITE WASTE

DATE/REVISIONS:

1. Met(1) = As, Ba, Cd, Cr, Pb, Se, Ag, Cu,
2. Ni, V, Zn, Be
3. Ang(1) = ICCL, ICFL, ICNO3, ICNO2, ICPO4,
4. ICSO4, IPH
5.
6.

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 423579530131
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)
IC out of hold
pH out of hold

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. 3.2 °C

Relinquished by	Received by	Date	Time
Fed Ex	T Murray	10-7-99	0945

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	B99-085-6	Page 1 of 1

Collector: Bowers/Trice	Company Contact: C Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 7N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU - QC Sa	Sampling Location: 200 East B pond		SAF No.: B99-085
Ice Chest No.: EKC99-012	Field Logbook No.: EL 1511		Method of Shipment: Fed ex
Shipped To: ~~TMA~~/RECRA	Offsite Property No.: AC1C2S7		Bill of Lading/Air Bill No.: 4235795530130
10-5-99			COA: B20CW1 67IC

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	ZnAc+NaOH to pH >9 Cool	Cool 4C	H2SO4 to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	HNO3 to pH <2	HCl or H2SO4 to pH <2 Coo			
	Type of Container	P	P	P	aG	P	P	aGs*			
	No. of Container(s)	1	1	1	2	2	2	3			
Special Handling and/or Storage	Volume	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	40mL			
SAMPLE ANALYSIS		Sulfides - 9030	See item (1) in Special Instructions	NO2/NO3 - 353.1, Ammonia - 350.3	Semi-VOA - 8270A (TCL)	Gross Alpha, Gross Beta	See item (2) in Special Instructions	VOA - 8260A (TCL), VOA - 8260A (Add-On) (1-Propanol, Ethanol)			

Sample No.	Matrix *	Sample Date	Sample Time										
B0WLM4	Water	10-5-99	0515							X			
B0WLM5	Water	10-5-99	0700	X	X	X	X		X	X			

CHAIN OF POSSESSION	Sign/Print Names	Date/Time		Date/Time
Relinquished By	Trice	10/5/99 1330	Received By	10/5/99 1330
Relinquished By		10/6/99 0230	Received By	10/6/99 1230
Relinquished By		10/6/99 1130	Received By	Fed Ex
Relinquished By	Fed Ex	10-7-99 0945	Received By	10-7-99 0945

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); pH (Water) - 9040
(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver), ICP Metals - 6010A (Supertrace Add-On) (Copper, Nickel, Vanadium, Zinc)

Not from a Red area

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-085
RFW# : 9910L304
SDG/SAF #: H0560 B99-085

W.O. #: 10985-001-001-9992-00
Date Received: 10-07-99

GC/MS VOLATILE

Two (2) water samples were collected on 10-05-99.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 10-15-99.

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 analysis was met.

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

4. All surrogate recoveries were within EPA QC limits.

5. One (1) of ten (10) matrix spike recoveries was outside EPA QC limits.

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

7. The method blank contained the common laboratory contaminants Methylene Chloride, Acetone and the target compound 2-Butanone at levels less than the CRQL.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-11-99
Date

som\group\data\voa\tnu10304.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 8 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.

mmz\10-94\gloss.voa

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: 11/07/99 00:19

RFW Batch Number: 9910L304 Client: TNU-HANFORD B99-085 Work Order: 10985001001 Page: 1a

04

	Cust ID:	B0WLM4		B0WLM5		B0WLM5		B0WLM5		VBLKWK		VBLKWK BS	
Sample Information	RFW#:	001		002		002 MS		002 MSD		99LVH412-MB1		99LVH412-MB1	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
Surrogate Recovery	Toluene-d8	94	%	96	%	96	%	92	%	94	%	92	%
	Bromofluorobenzene	89	%	91	%	95	%	87	%	95	%	88	%
	1,2-Dichloroethane-d4	84	%	86	%	80	%	85	%	96	%	85	%
Chloromethane		10	U	10	U	10	U	10	U	10	U	10	U
Bromomethane		10	U	10	U	10	U	10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U	10	U	10	U	10	U
Chloroethane		10	U	10	U	10	U	10	U	10	U	10	U
Methylene Chloride		4	JB	11	B	10	B	3	JB	4	J	6	B
Acetone		3	JB	6	JB	4	JB	3	JB	4	J	4	JB
Carbon Disulfide		5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	5	U	100	%	95	%	5	U	95	%
1,1-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	5	U	5	U	5	U	5	U
Chloroform		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
2-Butanone		10	U	2	JB	10	U	10	U	2	J	2	JB
1,1,1-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Carbon Tetrachloride		5	U	5	U	5	U	5	U	5	U	5	U
Bromodichloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Trichloroethene		5	U	5	U	93	%	96	%	5	U	95	%
Dibromochloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Benzene		5	U	5	U	96	%	102	%	5	U	101	%
Trans-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Bromoform		5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	10	U	10	U	10	U	10	U	10	U
2-Hexanone		10	U	10	U	10	U	10	U	10	U	10	U
Tetrachloroethene		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Toluene		5	U	5	U	60 *	%	100	%	5	U	98	%

* = Outside of EPA CLP QC limits.

11-08-99

RFW Batch Number: 9910L304 Client: TNU-HANFORD B99-085 Work Order: 10985001001 Page: 1b

Cust ID:	B0WLM4	B0WLM5	B0WLM5	B0WLM5	VBLKWK	VBLKWK BS
RFW#:	001	002	002 MS	002 MSD	99LVH412-MB1	99LVH412-MB1
Chlorobenzene	5 U	5 U	99 %	97 %	5 U	96 %
Ethylbenzene	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

05

Recra LabNet - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 10/07/99 RFW LOT # :9910L304

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WLM4	001	W	99LVH412	10/05/99	N/A	10/15/99
B0WLM5	002	W	99LVH412	10/05/99	N/A	10/15/99
B0WLM5	002 MS	W	99LVH412	10/05/99	N/A	10/15/99
B0WLM5	002 MSD	W	99LVH412	10/05/99	N/A	10/15/99

LAB QC:

VBLKWK	MB1	W	99LVH412	N/A	N/A	10/15/99
VBLKWK	MB1 BS	W	99LVH412	N/A	N/A	10/15/99

11-08-99

RECRA LabNet Use Only

9910L304

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-085

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: Orlette Johnson

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 10-7-99 Date Due: 11/6/99

Account #:

Refrigerator #		1	2															
#/Type Container	Liquid	3V	2AG							RP		1P	1P	1P				
	Solid																	
Volume	Liquid	40ml	1L							1L		500ml	1L	1L				
	Solid																	
Preservatives			–							HNO3			–	H2SO4				
ANALYSES REQUESTED →		ORGANIC								INORG								
		VOA	BNA	Pest/PCB	Herb					Metal	CN	Sulfide	IC anions	Sulfate				
		RECRA LabNet Use Only																
		CA24H CGCSC	CE25H							Met(1)		15-D	Ang(1)	NH3N2 NH3N				

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	CA24H CGCSC	CE25H	Met(1)	15-D	Ang(1)	NH3N2 NH3N
001	BOWLM4			W	10-5-99	0515	✓					
002	BOWLM5	X	X	⊥	⊥	0700	✓	✓	✓	✓	✓	✓

Special instructions:

Saf# B99-085

COMPOSITE WASTE

DATE/REVISIONS:

Met(1) = As, Ba, Cd, Cr, Pb, Se, Ag, Cu,
2. Ni, V, Zn, Be
Ang(1) = ICCL, ICFL, ICNO3, ICNO2, ICPO4,
4. ICSO4, IPH
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___
AirBill # 423579530131
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)
IC out of hold
pH out of hold

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. 3.2 °C

Relinquished by	Received by	Date	Time
Fed Ex	TMurray	10-7-99	0945

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

B99-085-6

Collector: Bowers/Trice	Company Contact: C Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 7N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU - QC Sa	Sampling Location: 200 East B pond		SAF No.: B99-085
Ice Chest No.: ERC99-012	Field Logbook No.: EL 1511		Method of Shipment: Fed ex
Shipped To: TMA/RECRA	Offsite Property No.: A96102S7		Bill of Lading/Air Bill No.: 4235795530130
528 10-5-99			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	ZnAc+NaOH to pH >9 Cool	Cool 4C	H2SO4 to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	HNO3 to pH <2	HCl or H2SO4 to pH <2 Coo			
	Type of Container	P	P	P	aG	P	P	aGs*			
	No. of Container(s)	1	1	1	2	2	2	3			
Special Handling and/or Storage	Volume	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	40mL			
SAMPLE ANALYSIS		Sulfides - 9030	See item (1) in Special Instructions.	NO2/NO3 - 353.1; Ammonia - 350.3	Semi-VOA - 8270A (TCL)	Gross Alpha; Gross Beta	See item (2) in Special Instructions.	VOA - 8260A (TCL); VOA - 8260A (Add-On) {i-Propanol, Ethanol}			

Sample No.	Matrix *	Sample Date	Sample Time										
B0WLM4	Water	10-5-99	0515							X			
B0WLM5	Water	10-5-99	0700	X	X	X	X		X	X			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Trice	Date/Time: 10/5/99 1330	Received By: Rel #1 A	Date/Time: 10/5/99 1330
Relinquished By: Rel #1A	Date/Time: 10/6/99 1230	Received By: R. Nielson	Date/Time: 1230 10/6/99
Relinquished By: R. Nielson	Date/Time: 1232 10/6/99	Received By: Fed Ex	Date/Time:
Relinquished By: Fed Ex	Date/Time: 10-7-99 0945	Received By: T Murray	Date/Time: 10-7-99 0945

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; pH (Water) - 9040
(2) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Copper, Nickel, Vanadium, Zinc}

Not from a Rad area

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

RECRA LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-085
RFW# : 9910L304
SDG/SAF #: H0560/B99-085

W.O. #: 10985-001-001-9999-00
Date Received: 10-07-99

SEMIVOLATILE

One (1) water sample was collected on 10-05-99.

The sample and its associated QC samples were extracted on 10-12-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 10-20-99.

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 required holding times for extraction and analysis were met.

3. Non-target compounds were detected in the sample.

4. All surrogate recoveries were within EPA QC limits.

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

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

7. The method blank contained the common laboratory contaminant Di-n-butylphthalate at a level less than the CRQL.

8. The sample was spectrally searched for Butylated Hydroxytoluene; however, it was not identified in the sample.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-15-99
Date

som\gorup\data\bna\tnu10304.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 10 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: **9910L304** Client: **TNU-HANFORD B99-085** Work Order: 10985001001 Report Date: 11/02/99 11:19 Page: 1a

	Cust ID:	B0WLM5		B0WLM5		B0WLM5		SBLKER		SBLKER BS	
Sample Information	RFW#:	002		002 MS		002 MSD		99LE1240-MB1		99LE1240-MB1	
	Matrix:	WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00	
	Units:	UG/L		UG/L		UG/L		UG/L		UG/L	
Surrogate Recovery	Nitrobenzene-d5	88	%	82	%	77	%	85	%	76	%
	2-Fluorobiphenyl	80	%	80	%	78	%	78	%	80	%
	Terphenyl-d14	83	%	84	%	79	%	92	%	74	%
	Phenol-d5	84	%	60	%	58	%	79	%	36	%
	2-Fluorophenol	75	%	87	%	78	%	80	%	76	%
	2,4,6-Tribromophenol	69	%	72	%	79	%	86	%	75	%
Phenol		10	U	85	%	80	%	10	U	73	%
bis(2-Chloroethyl)ether		10	U	20	U	20	U	10	U	10	U
2-Chlorophenol		10	U	85	%	79	%	10	U	76	%
1,3-Dichlorobenzene		10	U	20	U	20	U	10	U	10	U
1,4-Dichlorobenzene		10	U	87	%	74	%	10	U	62	%
1,2-Dichlorobenzene		10	U	20	U	20	U	10	U	10	U
2-Methylphenol		10	U	20	U	20	U	10	U	10	U
2,2'-oxybis(1-Chloropropane)		10	U	20	U	20	U	10	U	10	U
4-Methylphenol		10	U	20	U	20	U	10	U	10	U
N-Nitroso-di-n-propylamine		10	U	91	%	81	%	10	U	77	%
Hexachloroethane		10	U	20	U	20	U	10	U	10	U
Nitrobenzene		10	U	20	U	20	U	10	U	10	U
Isophorone		10	U	20	U	20	U	10	U	10	U
2-Nitrophenol		10	U	20	U	20	U	10	U	10	U
2,4-Dimethylphenol		10	U	20	U	20	U	10	U	10	U
bis(2-Chloroethoxy)methane		10	U	20	U	20	U	10	U	10	U
2,4-Dichlorophenol		10	U	20	U	20	U	10	U	10	U
1,2,4-Trichlorobenzene		10	U	78	%	74	%	10	U	64	%
Naphthalene		10	U	20	U	20	U	10	U	10	U
4-Chloroaniline		10	U	20	U	20	U	10	U	10	U
Hexachlorobutadiene		10	U	20	U	20	U	10	U	10	U
4-Chloro-3-methylphenol		10	U	72	%	69	%	10	U	64	%
2-Methylnaphthalene		10	U	20	U	20	U	10	U	10	U
Hexachlorocyclopentadiene		10	U	20	U	20	U	10	U	10	U
2,4,6-Trichlorophenol		10	U	20	U	20	U	10	U	10	U
2,4,5-Trichlorophenol		25	U	50	U	50	U	25	U	25	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 9910L304 Client: TNU-HANFORD B99-085 Work Order: 10985001001 Page: 1b

Cust ID:	B0WLM5		B0WLM5		B0WLM5		SBLKER		SBLKER BS	
RFW#:	002		002 MS		002 MSD		99LE1240-MB1		99LE1240-MB1	
2-Chloronaphthalene	10	U	20	U	20	U	10	U	10	U
2-Nitroaniline	25	U	50	U	50	U	25	U	25	U
Dimethylphthalate	10	U	20	U	20	U	10	U	10	U
Acenaphthylene	10	U	20	U	20	U	10	U	10	U
2,6-Dinitrotoluene	10	U	20	U	20	U	10	U	10	U
3-Nitroaniline	25	U	50	U	50	U	25	U	25	U
Acenaphthene	10	U	84	%	84	%	10	U	79	%
2,4-Dinitrophenol	25	U	50	U	50	U	25	U	25	U
4-Nitrophenol	25	U	70	%	59	%	25	U	59	%
Dibenzofuran	10	U	20	U	20	U	10	U	10	U
2,4-Dinitrotoluene	10	U	81	%	80	%	10	U	72	%
Diethylphthalate	0.7	J	20	U	20	U	10	U	10	U
4-Chlorophenyl-phenylether	10	U	20	U	20	U	10	U	10	U
Fluorene	10	U	20	U	20	U	10	U	10	U
4-Nitroaniline	25	U	50	U	50	U	25	U	25	U
4,6-Dinitro-2-methylphenol	25	U	50	U	50	U	25	U	25	U
N-Nitrosodiphenylamine (1)	10	U	20	U	20	U	10	U	10	U
4-Bromophenyl-phenylether	10	U	20	U	20	U	10	U	10	U
Hexachlorobenzene	10	U	20	U	20	U	10	U	10	U
Pentachlorophenol	25	U	72	%	74	%	25	U	68	%
Phenanthrene	10	U	20	U	20	U	10	U	10	U
Anthracene	10	U	20	U	20	U	10	U	10	U
Carbazole	10	U	20	U	20	U	10	U	10	U
Di-n-butylphthalate	1	JB	20	U	1	JB	0.8	J	10	U
Fluoranthene	10	U	20	U	20	U	10	U	10	U
Pyrene	10	U	85	%	79	%	10	U	72	%
Butylbenzylphthalate	10	U	20	U	20	U	10	U	10	U
3,3'-Dichlorobenzidine	10	U	20	U	20	U	10	U	10	U
Benzo(a)anthracene	10	U	20	U	20	U	10	U	10	U
Chrysene	10	U	20	U	20	U	10	U	10	U
bis(2-Ethylhexyl)phthalate	10	U	20	U	20	U	10	U	10	U
Di-n-octyl phthalate	10	U	20	U	20	U	10	U	10	U
Benzo(b)fluoranthene	10	U	20	U	20	U	10	U	10	U
Benzo(k)fluoranthene	10	U	20	U	20	U	10	U	10	U
Benzo(a)pyrene	10	U	20	U	20	U	10	U	10	U
Indeno(1,2,3-cd)pyrene	10	U	20	U	20	U	10	U	10	U
Dibenz(a,h)anthracene	10	U	20	U	20	U	10	U	10	U
Benzo(g,h,i)perylene	10	U	20	U	20	U	10	U	10	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.

B0WLM5

Lab Name: Severn.LabNet Work Order: 10985001001

Client: TNU-HANFORD F99-085

Matrix: (soil/water) WATER Lab Sample ID: 9910L304-002

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A102032

Level: (low/med) LOW Date Received: 10/07/99

% Moisture: ____ decanted: (Y/N)__ Date Extracted: 10/12/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/20/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	6.89	3	JB
2.	UNKNOWN	7.15	4	JB
3.	UNKNOWN	7.51	6	JB
4.	UNKNOWN	22.79	9	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKER

Lab Name: Recra LabNet Work Order: 10985001001

Client: TNU-HANFORD F99-085

Matrix: (soil/water) WATER Lab Sample ID: 991F1240 MB1

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A102011

Level: (low/med) LOW Date Received: 10/12/99

% Moisture: ____ decanted: (Y/N) __ Date Extracted: 10/12/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/20/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 8 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	6.11	3	J
2.	UNKNOWN	6.19	4	J
3.	UNKNOWN	6.89	5	J
4.	UNKNOWN	7.44	3	J
5.	UNKNOWN	7.51	7	J
6.	UNKNOWN	11.51	3	J
7.	UNKNOWN	12.55	9	J
8.	UNKNOWN	13.32	30	J

Recra LabNet - Lionville Laboratory
ENA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 10/07/99 RFW LOT # :9910L304

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BCWLM5	002	W	99LE1240	10/05/99	10/12/99	10/20/99
BCWLM5	002 MS	W	99LE1240	10/05/99	10/12/99	10/20/99
BCWLM5	002 MSD	W	99LE1240	10/05/99	10/12/99	10/20/99

LAB QC:

SELKER	MB1	W	99LE1240	N/A	10/12/99	10/20/99
SELKER	MB1 BS	W	99LE1240	N/A	10/12/99	10/20/99

RECRA LabNet Use Only

9910L304

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMU-Hanford B99-085

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: Orlette Johnson

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 10-7-99 Date Due: 11/6/99

Account #:

Refrigerator #		1	2													
#/Type Container	Liquid	3V	2PG							RP		1P	1P	1P		
	Solid															
Volume	Liquid	40mL	1L							1L		500mL	1L	1L		
	Solid															
Preservatives			–							HNO3			–	H2SO4		
ANALYSES REQUESTED		ORGANIC								INORG						
		VOA	BNA	Pest/PCB	Herb					Metal	CN	Sulfide	IC anions	NO2/NO3	STU	
		RECRA LabNet Use Only														
		0624H 0624SC	0625H							Met①		15FD	Ang①	1N3N2 1NH3N		

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 0624SC	0625H						Met①		15FD	Ang①	1N3N2 1NH3N			
001	BOWLM4			W	10-5-99	0515	✓														
002	BOWLM5	X	X	⊥	⊥	0700	✓	✓						✓		✓	✓	✓			

Special Instructions:

SAF# B99-085

COMPOSITE WASTE

DATE/REVISIONS:

Met① = As, Ba, Cd, Cr, Pb, Se, Ag, Cu,
2. Ni, V, Zn, Be
Ang① = ICCL, ICFL, ICNO3, ICNO2, ICPO4,
4. ICSO4, IPH
5.
6.

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 423579530131
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. 3.2 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
IC out of hold
pH out of hold

Relinquished by	Received by	Date	Time
Fed Ex	TMurray	10-7-99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-085-6	Page 1 of 1

Collector: Bowers/Trice	Company Contact: C Clearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 7N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU - QC Sa	Sampling Location: 200 East B pond		SAF No.: B99-085
Ice Chest No.: EKC99-012	Field Logbook No.: EL 1511		Method of Shipment: Fed ex
Shipped To: ~~TMA~~/RECRA	Offsite Property No.: AC1610257		Bill of Lading/Air Bill No.: 4235795301 3D
10-5-99			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	ZnAc+NaOH to pH >9 Cool	Cool 4C	H2SO4 to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	HNO3 to pH <2	HCl or H2SO4 to pH <2 Coo			
	Type of Container	P	P	P	aG	P	P	aGs*			
	No. of Container(s)	1	1	1	2	2	2	3			
Special Handling and/or Storage	Volume	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	40mL			
SAMPLE ANALYSIS		Sulfides - 9030	See item (1) in Special Instructions	NO2/NO3 - 353.1; Ammonia - 350.3	Semi-VOA - 8270A (TCL)	Gross Alpha; Gross Beta	See item (2) in Special Instructions	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)			

Sample No.	Matrix *	Sample Date	Sample Time										
B0WLM4	Water	10-5-99	0515							X			
B0WLM5	Water	10-5-99	0700	X	X	X	X		X	X			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
Trice	10/5/99 1330	Bel A	10/5/99 1330
Relinquished By	Date/Time	Received By	Date/Time
[illegible]	10/6/99 1230	[illegible]/R.Nelson	10/6/99 1230
Relinquished By	Date/Time	Received By	Date/Time
[illegible]/R.Nelson	10/6/99 1230	Fed Ex	
Relinquished By	Date/Time	Received By	Date/Time
Fed Ex	10-7-99 0945	J Murray	10-7-99 0945

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); pH (Water) - 9040
(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Copper, Nickel, Vanadium, Zinc)

Not from a Rad area

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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