H0589-TMA/RECRA

RECEIVED
FEB 14 2000
EDMC

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H0587 is composed of one 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 January 3, 2000.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

JAN 2000
RECEIVED
Data
Log In

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0589

SAMPLE SUMMARY

SDG 2176
Contract Melissa C. Morales

Client Hanford
Contract CLP SMO 207925
Case no CSG H0589

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
H-WNX1	Hanford Site	WATER		N910193-01	B99-085	B99 085-12	10/21/99 07:15
Method Blank		WATER		N910193-03	B99-085		
Lab Control Sample		WATER		N910193-02	B99-085		
Duplicate (N910193-01)	Hanford Site	WATER		N910193-04	B99-085		10/21/99 07:15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 01/03/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0589

SDG 7256
Contact Melissa C. Martin

QC SUMMARY

Client Hanford
Contract [illegible]
Case no SDG H0589

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DATE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7256	F99-185-12	F9WNX1	WATER				10/25/99	4	N910193-01	7256-001
		Method Blank	WATER						N910193-03	7256-003
		Lab Control Sample	WATER						N910193-02	7256-002
		Duplicate (N910193-01)	WATER				10/25/99	4	N910193-04	7256-004

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 01/03/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP BC589

PREP BATCH SUMMARY

SDG BC16
Contact Milton C. Martin

Client Hanford
Contract DE-AC06-[illegible]
Case no SDG BC589

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	BLANKETS ANALYZED CLIENT	MORE	KE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Gas Proportional Counting												
PPA	WATER	Gross Alpha in Water	C904-170	20.0	1			1	1	1/1		
PPB	WATER	Gross Beta in Water	C904-170	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 PVD-IPS
Version 3.06
Report date 01/03/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H6189

WORK SUMMARY

SDG [illegible]
Contact Melissa C. Kaplan

Client Project id
Contract [illegible]
Case No [illegible]

CLIENT SAMPLE ID / LOCATION / CUSTODY	CAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	FLASKSET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
F-WNX1			N9H193-01	7156-001	FFA/80		12/15/99	12/30/99	NJV	Gross Alpha in Water
Hanford Site		WATER	10/21/99	7156-001	FFB/80		12/15/99	12/30/99	NJV	Gross Beta in Water
H99-085-12	H99-085		10/25/99							
Method Blank			N9H193-03	7156-003	FFA/80		12/14/99	12/30/99	NJV	Gross Alpha in Water
		WATER		7156-003	FFB/80		12/14/99	12/30/99	NJV	Gross Beta in Water
	H99-085									
Lab Control Sample			N9H193-02	7156-002	FFA/80		12/15/99	12/30/99	NJV	Gross Alpha in Water
		WATER		7156-002	FFB/80		12/15/99	12/30/99	NJV	Gross Beta in Water
	H99-085									
Duplicate N9H193-01)			N9H193-04	7156-004	FFA/80		12/16/99	12/30/99	NJV	Gross Alpha in Water
Hanford Site		WATER	10/21/99	7156-004	FFB/80		12/16/99	12/30/99	NJV	Gross Beta in Water
	H99-085		10/21/99							

COUNTS OF TESTS BY SAMPLE TYPE

TEST	CAF No	METHOD	REFERENCE	CLIENT	MOAE	RE	BLANK	LCS	DUP SPIKE	TOTAL
FFA/80	H99-085	Gross Alpha in Water	EPA900.0	1			1	1	1	4
FFB/80	H99-085	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 DVT.CWS
Version 3.06
Report Date 01/03/00

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0589

N910193-03 Method Blank

METHOD BLANK

SDG	3156	Client/Case no	Hanford
Contact	Melissa C. Mannion	Contract	TEB-SEP-960525
Lab sample id	N910193-03	Client sample id	Method Blank
Dept sample id	3156-003	Material/Matrix	WATER
		SAF No	199-085

SDG H0589

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	11587-46-1	0.069	0.45	0.94	3.0	U	80A
Gross Beta	11587-47-2	-0.770	1.4	2.5	4.0	U	80B

100 East, 200 Area Source Chara.

QC BLANK 32604

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 01/03/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0589

N°10193-02 Lab Control Sample

LAB CONTROL SAMPLE

SDG [illegible]6

Contact Melissa C. Marsden

Client/Site no Hanford STS H0589

Case no [illegible]

Lab sample id N°10193-02

Client sample id Lab Control Sample

Expt sample id [illegible] LC2

Material/Matrix WATER

SAF No [illegible]

ANALYTE	RESULT pCi/L	2σ ERR (COUNT) pCi/L	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	61.5	4.6	1.2	3.0		EPA	67.0	2.7	92	70-130	60-110
Gross Beta	80.2	3.7	1.9	4.0		EPA	75.0	3.0	107	74-126	

100 East, 200 Area Source Class.

QC-LCS 12693

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form LVP-LCS

Version 3.06

Report date 01/03/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP HC589

N910193 04

B0WNX1

DUPLICATE

SDG [illegible]		Client/Project to Hanford [illegible]
Analyst Melissa C. Manson		Case no [illegible]
DUPLICATE	ORIGINAL	
Lab sample id N910193-04	Lab sample id N910193-03	Client sample id B0WNX1
Dept sample id [illegible]	Dept sample id [illegible]	Location/Matrix Hanford Site WATER
	Received 11/19/99	Collected 11/11/99 17:35
		Custody/SAF No [illegible] [illegible]

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALIFIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALIFIERS	RPD %	3σ TOT	PROT LIMIT
Gross Alpha	0.134	0.27	0.75	3.0	U	RPA	-0.243	0.26	0.79	U	-		
Gross Beta	0.672	1.1	2.0	4.0	U	RPD	-0.417	1.2	2.1	U	-		

[illegible] Dect, [illegible] Area Counting.

QC [illegible] #1 [illegible]

DUPLICATES

Page 1

SUMMARY DATA SECTION

Page 9

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form SVD-DUP

Version 3.06

Report date 01/03/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0589

N910193 01 B0WNX1

DATA SHEET

SIG 9216 Client/Case no Hanford SDG H0589
Contact Melissa C. Manning Contract TAP-CEP-1379-5

Lab sample id N910193 01 Client sample id B0WNX1
Dept sample id 9216-001 Location/Matrix Hanford Site WATER
Received 10/25/99 Collected 10/21/99 07:15
Custody/COC No B99-085-12 B99-085

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	11587-46-1	-0.143	0.26	0.79	3.0	U	80A
Gross Beta	11587-47-2	-0.417	1.2	2.1	4.0	U	80B

100 Past, 100 Area Source Chara.

DATA SHEETS
Page 1
SUMMARY DATA SECTION
Page 10

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form PVD-DS
Version 3.06
Report date 01/03/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP EC189

METHOD SUMMARY

GROSS ALPHA IN WATER

GAS PROPORTIONAL COUNTING

Test: P/A Matrix: WT/DR
SDG: [illegible]
Project: Melinda [illegible]

Client: Hanford
Contract: [illegible]
Case No: [illegible]

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	BLANCHET	Gross Alpha
Preparation Batch 6904 170					
P-WBX1	N9810193-01	80		7116-001	U
BLK (QC II-2604)	N9810193-03	80		7116-003	U
LCS (QC II-2603)	N9810193-02	80		7116-002	ok
Duplicate (N9810193-03)	N9810193-04	80		7116-004	- U

Nominal values and limits from method — KOLs (pCi/L) 3.0
100 Bkgd, 100 Area Source Chara.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	RESID mg	LFF %	COUNT min	FWHM keV	DRIFT keV	DAYS BELD	PREPARED	ANAL-YZED	DETECTOR
Preparation Batch 6904 170 2σ prep error 20.0 % Reference Lab Notebook 6904 pg. 170																
P-WBX1	N9810193-01	80		0.39	0.300			0		100			53	[illegible]	[illegible]	[illegible] 134
BLK (QC II-2604)	N9810193-03	80		0.94	0.300			1.2		100				[illegible]	[illegible] 4	[illegible] 110
LCS (QC II-2603)	N9810193-02	80		1.2	0.300			11		100				[illegible]	[illegible]	[illegible] 115
Duplicate (N9810193-03) (QC II-2605)	N9810193-04	80		0.75	0.300			0		100			54	[illegible]	[illegible]	[illegible] 131
Nominal values and limits from method				3.0	0.300			5-150		100			180			

PROCEDURES REFERENCE EPA900.0
II 11.0 Gross Alpha and Gross Beta in Environmental Water, rev 2

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.92 ± 0.41
RESIDUE 11 ± 35

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form EVE-GMS
Version 3.06
Report date 01/03/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP [illegible]

Test [illegible] Matrix WATER

[illegible]

Client [illegible]

METHOD SUMMARY

GROSS BETA IN WATER

GAS PROPORTIONAL COUNTING

Client [illegible]

Contract [illegible]

[illegible]

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta
Preparation batch 0904-170					
[illegible]NXX1	N9[illegible]-01	80		[illegible]-001	U
BLK (C [illegible]-4)	N9[illegible]-03	80		[illegible]-003	U
LCS (C [illegible]-3)	N9[illegible]-02	80		[illegible]-002	ok
Duplicate ([illegible]-1)	N9[illegible]-04	80		[illegible]-004	- U

Nominal values and limits from method RELs (pCi/L) 4.0

100 Fast, 180 Area Source Chara.

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	DAYS ANALYZED	ANAL-YZED	DETECTOR
Preparation batch 0904-170 2σ prep error 15.0 % Reference Lab Notebook 0904 pg. 170																
[illegible]NXX1	N9[illegible]-01	80		2.1	0.300			0		100			13	11/[illegible]/99	11/13	GBP-114
BLK (C [illegible]-4)	N9[illegible]-03	80		2.5	0.300			12		100				11/[illegible]/99	11/14	GBP-110
LCS (C [illegible]-3)	N9[illegible]-02	80		1.9	0.300			11		100				11/[illegible]/99	11/13	GBP-115
Duplicate ([illegible]-1) (C [illegible]-4(5))	N9[illegible]-04	80		2.0	0.300			0		100			14	11/[illegible]/99	11/14	GBP-111
Nominal values and limits from method				4.0	0.300			5-150		100			180			

PROCEDURES REFERENCE FIA500.0

TP-110 Gross Alpha and Gross Beta in Environmental Water, rev 2

AVERAGES ± 2 SD MDA 2.1 ± 0.13

FOR 4 SAMPLES RESIDUE 11 ± 19

Lab id TMANC

Protocol Bulford

Version Ver 1.0

Form LVD-TMS

Version 3.06

Report date 01/03/00

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-085-12	Page 1 of 1

Collector Bowers/Trice	Company Contact C Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ
Project Designation 200 Area Source characterization - 200-CW-1 OU - QC Sa	Sampling Location 200 East		SAF No. B99-085
Ice Chest No. ERC 99-003	Field Logbook No. EL1511		Method of Shipment Fed EX
Shipped To TMA/RECRA 23 10-21-99	Offsite Property No. A 000007		Bill of Lading/Air Bill No. 4235 7953 0999
			COA B20CW1671C

Price Code 7N

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	ZnAc+NaOH to pH>9 Cool	Cool 4C	H2SO4 to pH<2 Cool 4C	Cool 4C	HNO3 to pH<2	HCL to pH<2 Cool 4C	HNO3 to pH<2			
Type of Container	P	P	P	aG	P	aGs*	P			
No. of Container(s)	1	1	1	2	2	3	1			
Volume	500mL	1000mL	1000mL	1000mL	1000mL	40mL	500mL			
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	VOA - 8260A (TCL), VOA - 8260A (Add-On) (1-Propanol, Ethanol)	See item (2) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0WNX0	Water	10-21-99	0515										
B0WNX1	Water	10-21-99	0715					X					

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers	Date/Time 10-21-99/1400	Received By R.F. 2A	Date/Time 10-21-99/1400
Relinquished By R.F. 2A	Date/Time 10/22/99 1100	Received By C Trice	Date/Time 10/22/99 1100
Relinquished By C Trice	Date/Time 10/22/99 1400	Received By FEDEX	Date/Time 10-22-99
Relinquished By Fed Ex	Date/Time 10-23-99 12:00	Received By [illegible]	Date/Time 10-25-99 [illegible]

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}

From non rad area
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 Date/Time received 10-23-99 12:00

CoC No. B99-085-12

Container I.D. No. ERC-99-003 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 [signature] Date: 10-25-99 Time: 9:00

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# : 9910L500
SDG# : H0589
SAF# : B99-085

W.O. # : 10985-001-001-9999-00
Date Received: 10-23-99

INORGANIC CASE NARRATIVE

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

2. The sample was prepared and analyzed in accordance with the methods indicated 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.

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

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

12-6-99
Date

njp&pefs10-500

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.

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 (c)
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:**

L-WI-034/A-06/99

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 12/01/99

CLIENT: TNU HANFORD E99-085 RECRA LOT #: 9910L500

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	ECWNX1	Chloride by IC	0.36	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	0.25 u	MG/L	0.25	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	6.2	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 12/02/99

CLIENT: TNU-HANFORD E99-085 RECRA LOT #: 9910L500

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LICC87-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	0.25 u	MG/L	0.25	1.0
BLANK10	99LICA87-MB1	Phosphate by IC	0.25 u	MG/L	0.25	1.0
BLANK10	99LANC15-MB1	Nitrate Nitrite	0.02 u	MG-N/L	0.02	1.0
BLANK10	99LAMA43-MB1	Ammonia, as N	0.10 u	MG/L	0.10	1.0
BLANK10	99LSDA62-MB1	Sulfide	2.0 u	MG/L	2.0	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/02/99

CLIENT: TNU-HANFORD E99-085

RECRA LOT #: 9910L500

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	ECWNX1	Chloride by IC	4.9	0.36	5.0	91.0	1.0
		Fluoride by IC	10.7	0.00	10.0	107.2	1.0
		Nitrite by IC	5.0	0.25u	5.0	100.8	1.0
		Nitrate by IC	4.9	0.25u	5.0	98.8	1.0
		Phosphate by IC	4.9	0.25u	5.0	97.5	1.0
		Sulfate by IC	4.9	0.25u	5.0	98.8	1.0
		Nitrate Nitrite	0.52	0.02u	0.50	103.2	1.0
		Ammonia, as N	0.96	0.10u	1.0	96.1	1.0
		Sulfide	9.4	0.00	10.0	94.0	1.0
BLANK10	99LIC087-MB1	Chloride by IC	4.7	0.25u	5.0	94.5	1.0
		Fluoride by IC	10.5	0.50u	10.0	104.6	1.0
		Nitrite by IC	4.9	0.25u	5.0	98.2	1.0
		Nitrate by IC	4.8	0.25u	5.0	96.5	1.0
		Sulfate by IC	4.8	0.25u	5.0	95.1	1.0
BLANK10	99LIC467-MB1	Phosphate by IC	5.0	0.25u	5.0	99.5	1.0
BLANK10	99LAN055-MB1	Nitrate Nitrite	0.49	0.02u	0.50	98.4	1.0
		Nitrate Nitrite MSD	0.50	0.02u	0.50	100.8	1.0
BLANK10	99LAMA43-MB1	Ammonia, as N	1.0	0.10u	1.0	104.0	1.0
		Ammonia, as N MSD	1.0	0.10u	1.0	103.0	1.0
BLANK10	99LSDA62-MB1	Sulfide	10.0	2.0 u	10.0	100	1.0

Recra LabNet - Lionville

INORGANICS DUPLICATE SPIKE REPORT 12/02/99

CLIENT: TNU-HANFORD B99-085 RECRA LOT #: 9910L500

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	99LAN055-MB1	Nitrate Nitrite	98.4	100.8	2.4
*BLANK10	99LAMA43-MB1	Ammonia, as N	104.0	103.0	0.97

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/02/99

CLIENT: TNU-HANFORD B99-085 RECRA LOT #: 9910L500

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	EGWNX1	Chloride by IC	0.36	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	0.25u	0.25u	NC	1.0
		Nitrate Nitrite	0.02u	0.02u	NC	1.0
		Ammonia, as N	0.10u	0.10u	NC	1.0
		pH	6.3	6.3	0.0	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: 10/23/99 RFW LOT # :9910L500

CLIENT ID /ANALYSIS	RFW #	MTX	TREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOWNX1						
CHLORIDE BY IC	002	W	99LIC087	10/21/99	10/26/99	10/26/99
CHLORIDE BY IC	002 REP	W	99LIC087	10/21/99	10/26/99	10/26/99
CHLORIDE BY IC	002 MS	W	99LIC087	10/21/99	10/26/99	10/26/99
FLUORIDE BY IC	002	W	99LIC087	10/21/99	10/26/99	10/26/99
FLUORIDE BY IC	002 REP	W	99LIC087	10/21/99	10/26/99	10/26/99
FLUORIDE BY IC	002 MS	W	99LIC087	10/21/99	10/26/99	10/26/99
NITRITE BY IC	002	W	99LIC087	10/21/99	10/26/99	10/26/99
NITRITE BY IC	002 REP	W	99LIC087	10/21/99	10/26/99	10/26/99
NITRITE BY IC	002 MS	W	99LIC087	10/21/99	10/26/99	10/26/99
NITRATE BY IC	002	W	99LIC087	10/21/99	10/26/99	10/26/99
NITRATE BY IC	002 REP	W	99LIC087	10/21/99	10/26/99	10/26/99
NITRATE BY IC	002 MS	W	99LIC087	10/21/99	10/26/99	10/26/99
PHOSPHATE BY IC	002	W	99LICA87	10/21/99	10/26/99	10/26/99
PHOSPHATE BY IC	002 REP	W	99LICA87	10/21/99	10/26/99	10/26/99
PHOSPHATE BY IC	002 MS	W	99LICA87	10/21/99	10/26/99	10/26/99
SULFATE BY IC	002	W	99LIC087	10/21/99	10/26/99	10/26/99
SULFATE BY IC	002 REP	W	99LIC087	10/21/99	10/26/99	10/26/99
SULFATE BY IC	002 MS	W	99LIC087	10/21/99	10/26/99	10/26/99
NITRATE NITRITE	002	W	99LAN055	10/21/99	11/18/99	11/18/99
NITRATE NITRITE	002 REP	W	99LAN055	10/21/99	11/18/99	11/18/99
NITRATE NITRITE	002 MS	W	99LAN055	10/21/99	11/18/99	11/18/99
AMMONIA	002	W	99LAMA43	10/21/99	11/08/99	11/08/99
AMMONIA	002 REP	W	99LAMA43	10/21/99	11/08/99	11/08/99
AMMONIA	002 MS	W	99LAMA43	10/21/99	11/08/99	11/08/99
PH	002	W	99LPH115	10/21/99	10/24/99	10/24/99
PH	002 REP	W	99LPH115	10/21/99	10/24/99	10/24/99
SULFIDE	002	W	99LSDA62	10/21/99	10/26/99	10/26/99
SULFIDE	002 REP	W	99LSDA62	10/21/99	10/26/99	10/26/99
SULFIDE	002 MS	W	99LSDA62	10/21/99	10/26/99	10/26/99

LAB QC:

CHLORIDE BY IC	MB1	W	99LIC087	N/A	10/26/99	10/26/99
CHLORIDE BY IC	MB1 BS	W	99LIC087	N/A	10/26/99	10/26/99
FLUORIDE BY IC	MB1	W	99LIC087	N/A	10/26/99	10/26/99

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

DATE RECEIVED: 10/23/99 RFW LOT # :9910L500

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
FLUORIDE BY IC	MB1 BS	W	99LIC087	N/A	10/26/99	10/26/99
NITRITE BY IC	MB1	W	99LIC087	N/A	10/26/99	10/26/99
NITRITE BY IC	MB1 BS	W	99LIC087	N/A	10/26/99	10/26/99
NITRATE BY IC	MB1	W	99LIC087	N/A	10/26/99	10/26/99
NITRATE BY IC	MB1 BS	W	99LIC087	N/A	10/26/99	10/26/99
PHOSPHATE BY IC	MB1	W	99LICA87	N/A	10/26/99	10/26/99
PHOSPHATE BY IC	MB1 BS	W	99LICA87	N/A	10/26/99	10/26/99
SULFATE BY IC	MB1	W	99LIC087	N/A	10/26/99	10/26/99
SULFATE BY IC	MB1 BS	W	99LIC087	N/A	10/26/99	10/26/99
NITRATE NITRITE	MB1	W	99LAN055	N/A	11/18/99	11/18/99
NITRATE NITRITE	MB1 BS	W	99LAN055	N/A	11/18/99	11/18/99
NITRATE NITRITE	MB1 BSD	W	99LAN055	N/A	11/18/99	11/18/99
AMMONIA	MB1	W	99LAMA43	N/A	11/08/99	11/08/99
AMMONIA	MB1 BS	W	99LAMA43	N/A	11/08/99	11/08/99
AMMONIA	MB1 BSD	W	99LAMA43	N/A	11/08/99	11/08/99
SULFIDE	MB1	W	99LSDA62	N/A	10/26/99	10/26/99
SULFIDE	MB1 BS	W	99LSDA62	N/A	10/26/99	10/26/99

RECRA LabNet Use Only: 99101500

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

011

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford B99-085
Est. Final Proj. Sampling Date:
Project #: 1U985-OUL-OOI-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: Apec Del: Atl TAT: 30 days
Date Rec'd: 10-23-99 Date Due: 11/22/99
Account #:

Refrigerator #		1	2									2							
#/Type Container	Liquid	3AG	2AG									3PL		1PL	1PL	1PL			
	Solid																		
Volume	Liquid	40	1L									500ml		500 ml	1L	1L			
	Solid																		
Preservatives		HCL	—									HNO_3		ZnAc/NaOH	—	H_2SO_4			
ANALYSES REQUESTED		ORGANIC										INORG							
		VOA	BNA	Pest/PCB	Herb							ICP Metal	CN	Sulfide	IC Anions	NO2 NO3 Ammonia			

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	RECRA LabNet Use Only: 624	8270	625	Met(B)	ISFD	AnC(D)	NO2 NO3 NH3N
001	BOWNX0			W	10/21/99	0515	X						
002	BOWNX1	X	X	⊥	⊥	0715	X	X		X	X	X	X

Special Instructions:
Saf # B99-085
Run Matrix QC

COMPOSITE WASTE

DATE/REVISIONS:
→ 1. Sample #002 (IC Anions) rec'd Short hold
2. out of hold.
Met(B) = As, Ba, Cd, Cr, Pb, Se, Ag, Cu,
4. Ni, V, Zn, Be
AnC(D) = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
6. ICSO4, IPH

RECRA LabNet Use Only

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

COC Tape was: 1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec'd Y or N
Cooler Temp. 2.3 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
✱4235795310 02

Relinquished by	Received by	Date	Time
Fed Ex	[signature]	10/23/99	10:00

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

✱ NO_2, NO_3, SO_4, pH rec'd past hold

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-085-12	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		SAF No.: B99-085
Ice Chest No.: SML 421	Field Logbook No.: EL1511		Method of Shipment: Fed EX
Shipped To: LMA/RECRA 10-21-99	Offsite Property No.: A 000006		Bill of Lading/Air Bill No.: 4235 7953 1002
			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	HCl to pH <2 Cool 4C	HNO3 to pH <2			
	Type of Container	P	P	P	aG	P	aGs*	P			
	No. of Container(s)	1	1	1	2	2	3	3			
Special Handling and/or Storage	Volume	500mL	1000mL	1000mL	1000mL	1000mL	40mL	500mL			
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	VOA - 8260A (TCL), VOA - 8260A (Add-On) (1-Propanol, Ethanol)	See item (2) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time											
B0WNX0	Water	10-21-99	0515						X					
B0WNX1	Water	10-21-99	0715	X	X	X	X		X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 10-21-99/1400	Received By: Ref 2A	Date/Time: 10-21-99/1400
Relinquished By: Ref 2A	Date/Time: 10-22-99/1100	Received By: Cathie	Date/Time: 10-22-99 1100
Relinquished By: Cathie	Date/Time: 10-22-99 1400	Received By: FEDEX	Date/Time:
Relinquished By: FedEx	Date/Time: 10-23-99 10:00	Received By: [illegible]	Date/Time: 10-23-99

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
		99104500	

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-085-12	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		SAF No.: B99-085
Ice Chest No.: SML 421	Field Logbook No.: EL1511		Method of Shipment: Fed EX
Shipped To: TMA/RECRA 10-21-99	Offsite Property No.: A 000006		Bill of Lading/Air Bill No.: 4235 7953 1002
			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	HCl to pH <2 Cool 4C	HNO3 to pH <2			
	Type of Container	P	P	P	aG	P	aGs*	P			
	No. of Container(s)	1	1	1	2	2	3	3			
Special Handling and/or Storage	Volume	500mL	1000mL	1000mL	1000mL	1000mL	40mL	500mL			
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	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	See item (2) in Special Instructions			

Sample No.	Matrix *	Sample Date	Sample Time											
B0WNX0	Water	10-21-99	0515						X					
B0WNX1	Water	10-21-99	0715	X	X	X	X		X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Bowers/Trice	Date/Time: 10-21-99/1400	Received By: Bef 2A	Date/Time: 10-21-99/1400
Relinquished By: Bef 2A	Date/Time: 10-22-99/1100	Received By: Chris	Date/Time: 10-22-99 1100
Relinquished By: Chris	Date/Time: 10-22-99 1400	Received By: FEDEX	Date/Time:
Relinquished By: FEDEX	Date/Time: 10-23-99 10:00	Received By: [illegible]	Date/Time: 10-23-99
LABORATORY SECTION: Received By		Title	Date/Time: 9910L500
FINAL SAMPLE DISPOSITION: Disposal Method		Disposed By	Date/Time

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

013

RECRA ENVIRONMENTAL INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-085
RFW# : 9910L500
SDG/SAF# : H0589/B99-085

W.O.# : 10985-001-001-9999-00
Date Received: 10-23-99

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 (80-120% for Mercury).

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

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL) or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the 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.

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

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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.

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-17-99
Date

mld m10-500

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9910L500

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 11/17/99

CLIENT: TNU-HANFORD F99-085

RECRA LOT #: 9910L500

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	RCWNX1	Silver, Total	0.80 u	UG/L	0.80	1.0
		Arsenic, Total	2.7 u	UG/L	2.7	1.0
		Barium, Total	0.58	UG/L	0.20	1.0
		Beryllium, Total	0.45	UG/L	0.10	1.0
		Cadmium, Total	0.40 u	UG/L	0.40	1.0
		Chromium, Total	0.70 u	UG/L	0.70	1.0
		Copper, Total	0.50 u	UG/L	0.50	1.0
		Nickel, Total	1.0 u	UG/L	1.0	1.0
		Lead, Total	2.1 u	UG/L	2.1	1.0
		Selenium, Total	4.1 u	UG/L	4.1	1.0
		Vanadium, Total	0.60 u	UG/L	0.60	1.0
		Zinc, Total	1.5	UG/L	0.50	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/17/99

CLIENT: TNU-HANFORD 899-085 RECRA LOT #: 99101500

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	9910736-MB1	Silver, Total	0.80 u	UG/L	0.80	1.0
		Arsenic, Total	2.7 u	UG/L	2.7	1.0
		Barium, Total	0.20 u	UG/L	0.20	1.0
		Beryllium, Total	0.14	UG/L	0.10	1.0
		Cadmium, Total	0.40 u	UG/L	0.40	1.0
		Chromium, Total	0.70 u	UG/L	0.70	1.0
		Copper, Total	0.50 u	UG/L	0.50	1.0
		Nickel, Total	1.0 u	UG/L	1.0	1.0
		Lead, Total	2.1 u	UG/L	2.1	1.0
		Selenium, Total	4.1 u	UG/L	4.1	1.0
		Vanadium, Total	0.60 u	UG/L	0.60	1.0
		Zinc, Total	0.50 u	UG/L	0.50	1.0

Pecra Lab Net - Lionville

INORGANICS ACCURACY REPORT 11/17/99

CLIENT: TNU-HANFORD E99-085

WORK ORDER: 20585-001-001-9999-00

PECRA LOT #: 99101500

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	FCWNX1	Silver, Total	50.9	0.80u	50.0	101.8	1.0
		Arsenic, Total	2100	2.7 u	2000	105.0	1.0
		Barium, Total	2020	0.58	2000	101.0	1.0
		Beryllium, Total	53.1	0.45	50.0	105.3	1.0
		Cadmium, Total	51.7	0.40u	50.0	103.4	1.0
		Chromium, Total	206	0.70u	200	103.1	1.0
		Copper, Total	250	0.50u	250	100.0	1.0
		Nickel, Total	525	1.0 u	500	105.0	1.0
		Lead, Total	523	2.1 u	500	104.6	1.0
		Selenium, Total	2100	4.1 u	2000	105.0	1.0
		Vanadium, Total	511	0.60u	500	102.2	1.0
		Zinc, Total	510	1.5	500	101.8	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/17/99

CLIENT: TNU-HANFORD E99-085 RECRA LOT #: 9910L500

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	FCWNX1	Silver, Total	0.80u	0.80u	NC	1.0
		Arsenic, Total	2.7 u	2.7 u	NC	1.0
		Barium, Total	0.58	0.94	47.4	1.0
		Beryllium, Total	0.45	0.45	0.00	1.0
		Cadmium, Total	0.40u	0.40u	NC	1.0
		Chromium, Total	0.70u	0.70u	NC	1.0
		Copper, Total	0.50u	0.50u	NC	1.0
		Nickel, Total	1.0 u	1.0 u	NC	1.0
		Lead, Total	2.1 u	2.1 u	NC	1.0
		Selenium, Total	4.1 u	4.1 u	NC	1.0
		Vanadium, Total	0.60u	0.60u	NC	1.0
		Zinc, Total	1.5	1.2	22.2	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/17/99

CLIENT: TNU-HANFORD F99-085

RECRA LOT #: 99102500

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	9910738-LC1	Silver, LCS	501	500	UG/L	100.2
		Arsenic, LCS	10200	10000	UG/L	101.9
		Barium, LCS	5000	5000	UG/L	99.9
		Beryllium, LCS	257	250	UG/L	103.0
		Cadmium, LCS	254	250	UG/L	101.6
		Chromium, LCS	505	500	UG/L	101.0
		Copper, LCS	1240	1250	UG/L	99.5
		Nickel, LCS	2030	2000	UG/L	101.6
		Lead, LCS	2530	2500	UG/L	101.3
		Selenium, LCS	10300	10000	UG/L	102.7
		Vanadium, LCS	2550	2500	UG/L	101.8
		Zinc, LCS	1010	1000	UG/L	100.8

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

DATE RECEIVED: 10/23/99 RFW LOT # :9910L500

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOWNX1						
SILVER, TOTAL	002	W	99L0738	10/21/99	10/29/99	10/29/99
SILVER, TOTAL	002 REP	W	99L0738	10/21/99	10/29/99	10/29/99
SILVER, TOTAL	002 MS	W	99L0738	10/21/99	10/29/99	10/29/99
ARSENIC, TOTAL	002	W	99L0738	10/21/99	10/29/99	10/29/99
ARSENIC, TOTAL	002 REP	W	99L0738	10/21/99	10/29/99	10/29/99
ARSENIC, TOTAL	002 MS	W	99L0738	10/21/99	10/29/99	10/29/99
BARIUM, TOTAL	002	W	99L0738	10/21/99	10/29/99	10/29/99
BARIUM, TOTAL	002 REP	W	99L0738	10/21/99	10/29/99	10/29/99
BARIUM, TOTAL	002 MS	W	99L0738	10/21/99	10/29/99	10/29/99
BERYLLIUM, TOTAL	002	W	99L0738	10/21/99	10/29/99	10/29/99
BERYLLIUM, TOTAL	002 REP	W	99L0738	10/21/99	10/29/99	10/29/99
BERYLLIUM, TOTAL	002 MS	W	99L0738	10/21/99	10/29/99	10/29/99
CADMIUM, TOTAL	002	W	99L0738	10/21/99	10/29/99	10/29/99
CADMIUM, TOTAL	002 REP	W	99L0738	10/21/99	10/29/99	10/29/99
CADMIUM, TOTAL	002 MS	W	99L0738	10/21/99	10/29/99	10/29/99
CHROMIUM, TOTAL	002	W	99L0738	10/21/99	10/29/99	10/29/99
CHROMIUM, TOTAL	002 REP	W	99L0738	10/21/99	10/29/99	10/29/99
CHROMIUM, TOTAL	002 MS	W	99L0738	10/21/99	10/29/99	10/29/99
COPPER, TOTAL	002	W	99L0738	10/21/99	10/29/99	10/29/99
COPPER, TOTAL	002 REP	W	99L0738	10/21/99	10/29/99	10/29/99
COPPER, TOTAL	002 MS	W	99L0738	10/21/99	10/29/99	10/29/99
NICKEL, TOTAL	002	W	99L0738	10/21/99	10/29/99	10/29/99
NICKEL, TOTAL	002 REP	W	99L0738	10/21/99	10/29/99	10/29/99
NICKEL, TOTAL	002 MS	W	99L0738	10/21/99	10/29/99	10/29/99
LEAD, TOTAL	002	W	99L0738	10/21/99	10/29/99	10/29/99
LEAD, TOTAL	002 REP	W	99L0738	10/21/99	10/29/99	10/29/99
LEAD, TOTAL	002 MS	W	99L0738	10/21/99	10/29/99	10/29/99
SELENIUM, TOTAL	002	W	99L0738	10/21/99	10/29/99	10/29/99
SELENIUM, TOTAL	002 REP	W	99L0738	10/21/99	10/29/99	10/29/99
SELENIUM, TOTAL	002 MS	W	99L0738	10/21/99	10/29/99	10/29/99
VANADIUM, TOTAL	002	W	99L0738	10/21/99	10/29/99	10/29/99
VANADIUM, TOTAL	002 REP	W	99L0738	10/21/99	10/29/99	10/29/99
VANADIUM, TOTAL	002 MS	W	99L0738	10/21/99	10/29/99	10/29/99
ZINC, TOTAL	002	W	99L0738	10/21/99	10/29/99	10/29/99
ZINC, TOTAL	002 REP	W	99L0738	10/21/99	10/29/99	10/29/99

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

DATE RECEIVED: 10/23/99 RFW LOT # :9910L500

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ZINC, TOTAL	002 MS	W	99L0738	10/21/99	10/29/99	10/29/99

LAB QC:

SILVER LABORATORY	LC1 BS	W	99L0738	N/A	10/29/99	10/29/99
SILVER, TOTAL	MB1	W	99L0738	N/A	10/29/99	10/29/99
ARSENIC LABORATORY	LC1 BS	W	99L0738	N/A	10/29/99	10/29/99
ARSENIC, TOTAL	MB1	W	99L0738	N/A	10/29/99	10/29/99
BARIUM LABORATORY	LC1 BS	W	99L0738	N/A	10/29/99	10/29/99
BARIUM, TOTAL	MB1	W	99L0738	N/A	10/29/99	10/29/99
BERYLLIUM LABORATORY	LC1 BS	W	99L0738	N/A	10/29/99	10/29/99
BERYLLIUM, TOTAL	MB1	W	99L0738	N/A	10/29/99	10/29/99
CADMIUM LABORATORY	LC1 BS	W	99L0738	N/A	10/29/99	10/29/99
CADMIUM, TOTAL	MB1	W	99L0738	N/A	10/29/99	10/29/99
CHROMIUM LABORATORY	LC1 BS	W	99L0738	N/A	10/29/99	10/29/99
CHROMIUM, TOTAL	MB1	W	99L0738	N/A	10/29/99	10/29/99
COPPER LABORATORY	LC1 BS	W	99L0738	N/A	10/29/99	10/29/99
COPPER, TOTAL	MB1	W	99L0738	N/A	10/29/99	10/29/99
NICKEL LABORATORY	LC1 BS	W	99L0738	N/A	10/29/99	10/29/99
NICKEL, TOTAL	MB1	W	99L0738	N/A	10/29/99	10/29/99
LEAD LABORATORY	LC1 BS	W	99L0738	N/A	10/29/99	10/29/99
LEAD, TOTAL	MB1	W	99L0738	N/A	10/29/99	10/29/99
SELENIUM LABORATORY	LC1 BS	W	99L0738	N/A	10/29/99	10/29/99
SELENIUM, TOTAL	MB1	W	99L0738	N/A	10/29/99	10/29/99
VANADIUM LABORATORY	LC1 BS	W	99L0738	N/A	10/29/99	10/29/99
VANADIUM, TOTAL	MB1	W	99L0738	N/A	10/29/99	10/29/99
ZINC LABORATORY	LC1 BS	W	99L0738	N/A	10/29/99	10/29/99
ZINC, TOTAL	MB1	W	99L0738	N/A	10/29/99	10/29/99

RECRA LabNet Use Only: 9910L500

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: OJ
QC: Spec Del: Std TAT: 30 days
Date Rec'd: 10.23.99 Date Due: 11/22/99
Account #:

Refrigerator #		1	2															2					1
#/Type Container	Liquid	3AG	2AG															3PL		1PL	1PL	1PL	
	Solid																						
Volume	Liquid	40	1L															500ml		500 ml	1L	1L	
	Solid																						
Preservatives		HCL	—															HNO_3		2mL NaOH	—	H_2SO_4	
ANALYSES REQUESTED		ORGANIC																INORG					
		VOA	BNA	Pest/PCR	Herb													ICP Metal	CN	Sulfide	IC Anions	NO2 NO3	Ammonia

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	03234H	03235H	Met (13)	15FD	Ang (1)	1N3N2	1N4N3
001	BOWNX0			W	10/21/99	0515	X						
002	BOWNX1	X	X	⊥	⊥	0715	X	X	X	X	X	X	X

RECRA LabNet Use Only

Special Instructions:
Saf# B99-085
Run Matrix QC

COMPOSITE WASTE

DATE/REVISIONS:
1. Sample #002 (IC Anions) rec'd Short hold
2. out of hold.
3. Met (13) = As, Ba, Cd, Cr, Pb, Se, Ag, Cu,
4. Ni, V, Zn, Be
5. Ang (1) = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
6. ICSO4, IPH

RECRA LabNet Use Only

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

COC Tape was 1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec'd Y or N
Cooler Temp. 2.3 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
*4235795310 02

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	10/23/99	10:00

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-085-12	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		SAF No.: B99-085
Ice Chest No.: SML 421	Field Logbook No.: EL1511		Method of Shipment: Fed EX
Shipped To: TMA/RECRA 10-21-99	Offsite Property No.: A 000006		Bill of Lading/Air Bill No.: 4235 7953 1002
			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	HCL to pH <2 Cool 4C	HNO3 to pH <2			
	Type of Container	P	P	P	aG	P	aGs*	P			
Special Handling and/or Storage	No. of Container(s)	1	1	1	2	2	3	3			
	Volume	500mL	1000mL	1000mL	1000mL	1000mL	40mL	500mL			
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	VOA - 8260A (TCL), VOA - 8260A (Add-On) (1-Propanol, Ethanol)	See item (2) in Special Instructions			

Sample No.	Matrix *	Sample Date	Sample Time										
B0WNX0	Water	10-21-99	0515						X				
B0WNX1	Water	10-21-99	0715	X	X	X	X		X	X			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 10-21-99/1400	Received By: Ref 2A	Date/Time: 10-21-99/1400
Relinquished By: Ref 2A	Date/Time: 10-22-99/1100	Received By: Cathie	Date/Time: 10-22-99 1100
Relinquished By: Cathie	Date/Time: 10-22-99 1400	Received By: FEDEX	Date/Time:
Relinquished By: FedEx	Date/Time: 10-23-99 10:00	Received By: [signature]	Date/Time: 10-23-99

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
			9910L500
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date Time

C13

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-085-12	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		SAF No.: B99-085
Ice Chest No.: SML 421	Field Logbook No.: EL1511		Method of Shipment: Fed EX
Shipped To: TMA/RECRA DZ 10-21-99	Offsite Property No.: A 000006		Bill of Lading/Air Bill No.: 4235 7953 1002
			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	HCL to pH <2 Cool 4C	HNO3 to pH <2			
	Type of Container	P	P	P	aG	P	aGs*	P			
	No. of Container(s)	1	1	1	2	2	3	3			
Special Handling and/or Storage	Volume	500mL	1000mL	1000mL	1000mL	1000mL	40mL	500mL			
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	VOA - 8260A (TCL), VOA - 8260A (Add-On) (1-Propanol, Ethanol)	See item (2) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0WNX0	Water	10-21-99	0515						X				
B0WNX1	Water	10-21-99	0715	X	X	X	X		X	X			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 10-21-99/1400	Received By: Ref 2A	Date/Time: 10-21-99/1400
Relinquished By: Ref 2A	Date/Time: 10-22-99/1100	Received By: Chris	Date/Time: 10-22-99 1100
Relinquished By: Chris	Date/Time: 10-22-99 1400	Received By: FEDEX	Date/Time:
Relinquished By: FedEx	Date/Time: 10-23-99 10:00	Received By: [illegible]	Date/Time: 10-23-99

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
		9910L500	

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

G14

RECRA LabNet

a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere

Recra LabNet Philadelphia
Analytical Report

Client: FNU HANFORD B99-085
RFW #: 9910L500
SDG/SAF#: H0589/B99-085

W.O. #: #: 10985-001-001-9999-00
Date Received: 10-23-99

GC SCAN

The set of samples consisted of two (2) water samples collected on 10-21-99.

The samples and their associated QC samples were prepared on 10-25-99 and analyzed by methodology based on EPA Method 8015B for Ethanol and 1-Propanol on 10-30,31-99.

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

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

DEC 1999

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-15-99
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

Report Date: 11/02/99 18:13

RFW Batch Number: 9910L500 Client: TNU-HANFORD B99-085 Work Order: 10985-001-001-9999-00 Page: 1

	Cust ID:	BOWNX0	BOWNX1	BOWNX1	BOWNX1	BLK	BLK BS
Sample Information	RFW#:	001	002	002 MS	002 MSD	99LLC164-MB1	99LLC164-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	100 %	97 %	5.0 U	92 %
Ethanol		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

11/3/99

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 B99-085

DATE RECEIVED: 10/23/99 RFW LOT # :9910L500

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BCWNX0	001	W	99LLC164	10/21/99	10/25/99	10/31/99
BCWNX1	002	W	99LLC164	10/21/99	10/25/99	10/31/99
BCWNX1	002 MS	W	99LLC164	10/21/99	10/25/99	10/31/99
BCWNX1	002 MSD	W	99LLC164	10/21/99	10/25/99	10/31/99

LAB QC:

BLK	MB1	W	99LLC164	N/A	10/25/99	10/30/99
BLK	MB1 BS	W	99LLC164	N/A	10/25/99	10/30/99

11/3/99

RECRA LabNet Use Only

9910L500

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: OJ

QC: Appr Del: Atl TAT: 30 days

Date Rec'd: 10-23-99 Date Due: 11/22/99

Account #:

Refrigerator #		1	2					2			1
#/Type Container	Liquid	3AG	2AG					3PL	1PL	1PL	1PL
	Solid										
Volume	Liquid	40	1L					500ml	500ml	1L	1L
	Solid										
Preservatives		HCL	—					HNO_3	2NaOH NaOH	—	H_2SO_4

ANALYSES REQUESTED →

ORGANIC					INORG					
VOA	BNA	Pest/PCB	Herb		ICP Metal	CN	Sulfide	IC Anions	NO2 NO3	Ammonia

RECRA LabNet Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	624	625	8270				Met(1)		15FD	Ang(2)	IC Anions	NH3N
S - Soil	001	BOWNX0			W	10/21/99	0515	X											
SE - Sediment	002	BOWNX1	X	X	⊥	⊥	0715	X	X					X		X	X	X	
SO - Solid																			
SL - Sludge																			
W - Water																			
O - Oil																			
A - Air																			
DS - Drum Solids																			
DL - Drum Liquids																			
L - EP/TCLP Leachate																			
WI - Wipe																			
X - Other																			
F - Fish																			

Special Instructions:

Saf# B99-085

Run Matrix QC

COMPOSITE WASTE

DATE/REVISIONS:

1. Sample #002 (IC Anions) rec'd out of Hold.
2. Met(1) = As, Ba, Cd, Cr, Pb, Se, Ag, Cu, Ni, V, Zn, Be
4. Ang(2) = ICCL, ICFL, ICNO2, ICNO3, ICPO4, ICSO4, IPH
6.

RECRA LabNet Use Only

Samples were: 1) Shipped — or Hand Delivered —

Airbill # *

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Labels Indicate Properly Preserved (Y) or N

5) Received Within Holding Times Y or (N)

COC Tape was: 1) Present on Outer Package (Y) or N; 2) Unbroken on Outer Package (Y) or N; 3) Present on Sample (Y) or N; 4) Unbroken on Sample (Y) or N

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

Cooler Temp. 2.3 °C

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

NOTES: *42357953 1002

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	10/23/99	10:00

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-085-12	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		SAF No.: B99-085
Ice Chest No.: SML 421	Field Logbook No.: EL1511		Method of Shipment: Fed EX
Shipped To: TMA/RECRA EZ 10-21-99	Offsite Property No.: A 000006		Bill of Lading/Air Bill No.: 4235 7953 1002
			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	HCl to pH <2 Cool 4C	HNO3 to pH <2			
	Type of Container	P	P	P	aG	P	aGs*	P			
	No. of Container(s)	1	1	1	2	2	3	3			
Special Handling and/or Storage	Volume	500mL	1000mL	1000mL	1000mL	1000mL	40mL	500mL			
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	VOA - 8260A (TCL), VOA - 8260A (Add-On) (1-Propanol, Ethanol)	See item (2) in Special Instructions			

Sample No.	Matrix *	Sample Date	Sample Time										
B0WNX0	Water	10-21-99	0515						X				
B0WNX1	Water	10-21-99	0715	X	X	X	X		X	X			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 10-21-99/1400	Received By: Ref 2A	Date/Time: 10-21-99/1400
Relinquished By: Ref 2A	Date/Time: 10-22-99/1100	Received By: Chris	Date/Time: 10-22-99 1100
Relinquished By: Chris	Date/Time: 10-22-99 1400	Received By: FEDEX	Date/Time:
Relinquished By: FedEx	Date/Time: 10-23-99 10:00	Received By: [illegible]	Date/Time: 10-23-99

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
		9910L500	

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 # : 9910L500
SDG/SAF #: H0589.B99-085

W.O. #: 10985-001-001-9999-00
Date Received: 10-23-99

SEMIVOLATILE

One (1) water sample was collected on 10-21-99.

The sample and its associated QC samples were extracted on 10-26-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 11-01-99.

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. Two (2) of twenty-two (22) matrix spike recoveries were outside EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. 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

11-29-99
Date

som\group\data\bna\tnu10500.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 — Report Date: 11/23/99 18:31

RFW Batch Number: 9910L500 — Client: TNU-HANFORD B99-085 — Work Order: 10985001001 — Page: 1a

	Cust ID:	BOWNX1		BOWNX1		BOWNX1		SBLKFG		SBLKFG BS	
Sample Information	RFW#:	002		002 MS		002 MSD		99LE1299-MB1		99LE1299-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	75	%	83	%	88	%	79	%	79	%
	2-Fluorobiphenyl	76	%	77	%	87	%	79	%	76	%
	Terphenyl-d14	79	%	83	%	82	%	84	%	79	%
	Phenol-d5	56	%	56	%	54	%	62	%	66	%
	2-Fluorophenol	75	%	85	%	89	%	79	%	79	%
	2,4,6-Tribromophenol	68	%	76	%	88	%	84	%	83	%
Phenol		11	U	69	%	73	%	10	U	67	%
bis(2-Chloroethyl)ether		11	U	24	U	24	U	10	U	10	U
2-Chlorophenol		11	U	80	%	84	%	10	U	76	%
1,3-Dichlorobenzene		11	U	24	U	24	U	10	U	10	U
1,4-Dichlorobenzene		11	U	50	%	48	%	10	U	46	%
1,2-Dichlorobenzene		11	U	24	U	24	U	10	U	10	U
2-Methylphenol		11	U	24	U	24	U	10	U	10	U
2,2'-oxybis(1-Chloropropane)		11	U	24	U	24	U	10	U	10	U
4-Methylphenol		11	U	24	U	24	U	10	U	10	U
N-Nitroso-di-n-propylamine		11	U	62	%	60	%	10	U	62	%
Hexachloroethane		11	U	24	U	24	U	10	U	10	U
Nitrobenzene		11	U	24	U	24	U	10	U	10	U
Isophorone		11	U	24	U	24	U	10	U	10	U
2-Nitrophenol		11	U	24	U	24	U	10	U	10	U
2,4-Dimethylphenol		11	U	24	U	24	U	10	U	10	U
bis(2-Chloroethoxy)methane		11	U	24	U	24	U	10	U	10	U
2,4-Dichlorophenol		11	U	24	U	24	U	10	U	10	U
1,2,4-Trichlorobenzene		11	U	67	%	64	%	10	U	59	%
Naphthalene		11	U	24	U	24	U	10	U	10	U
4-Chloroaniline		11	U	24	U	24	U	10	U	10	U
Hexachlorobutadiene		11	U	24	U	24	U	10	U	10	U
4-Chloro-3-methylphenol		11	U	69	%	75	%	10	U	66	%
2-Methylnaphthalene		11	U	24	U	24	U	10	U	10	U
Hexachlorocyclopentadiene		11	U	24	U	24	U	10	U	10	U
2,4,6-Trichlorophenol		11	U	24	U	24	U	10	U	10	U
2,4,5-Trichlorophenol		28	U	60	U	60	U	25	U	25	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 9910L500 Client: TNU-HANFORD B99-085 Work Order: 10985001001 Page: 1b

Cust ID:	BOWNX1		BOWNX1		BOWNX1		SBLKFG		SBLKFG BS	
RFW#:	002		002 MS		002 MSD		99LE1299-MB1		99LE1299-MB1	
2-Chloronaphthalene	11	U	24	U	24	U	10	U	10	U
2-Nitroaniline	28	U	60	U	60	U	25	U	25	U
Dimethylphthalate	11	U	24	U	24	U	10	U	10	U
Acenaphthylene	11	U	24	U	24	U	10	U	10	U
2,6-Dinitrotoluene	11	U	24	U	24	U	10	U	10	U
3-Nitroaniline	28	U	60	U	60	U	25	U	25	U
Acenaphthene	11	U	77	%	83	%	10	U	74	%
2,4-Dinitrophenol	28	U	60	U	60	U	25	U	25	U
4-Nitrophenol	28	U	81 *	%	84 *	%	25	U	74	%
Dibenzofuran	11	U	24	U	24	U	10	U	10	U
2,4-Dinitrotoluene	11	U	81	%	85	%	10	U	77	%
Diethylphthalate	11	U	24	U	24	U	10	U	10	U
4-Chlorophenyl-phenylether	11	U	24	U	24	U	10	U	10	U
Fluorene	11	U	24	U	24	U	10	U	10	U
4-Nitroaniline	28	U	60	U	60	U	25	U	25	U
4,6-Dinitro-2-methylphenol	28	U	60	U	60	U	25	U	25	U
N-Nitrosodiphenylamine (1)	11	U	24	U	24	U	10	U	10	U
4-Bromophenyl-phenylether	11	U	24	U	24	U	10	U	10	U
Hexachlorobenzene	11	U	24	U	24	U	10	U	10	U
Pentachlorophenol	28	U	76	%	91	%	25	U	89	%
Phenanthrene	11	U	24	U	24	U	10	U	10	U
Anthracene	11	U	24	U	24	U	10	U	10	U
Carbazole	11	U	24	U	24	U	10	U	10	U
Di-n-butylphthalate	11	U	24	U	24	U	10	U	10	U
Fluoranthene	11	U	24	U	24	U	10	U	10	U
Pyrene	11	U	80	%	76	%	10	U	80	%
Butylbenzylphthalate	11	U	24	U	24	U	10	U	10	U
3,3'-Dichlorobenzidine	11	U	24	U	24	U	10	U	10	U
Benzo(a)anthracene	11	U	24	U	24	U	10	U	10	U
Chrysene	11	U	24	U	24	U	10	U	10	U
bis(2-Ethylhexyl)phthalate	11	U	24	U	24	U	10	U	10	U
Di n-octyl phthalate	11	U	24	U	24	U	10	U	10	U
Benzo(b)fluoranthene	11	U	24	U	24	U	10	U	10	U
Benzo(k)fluoranthene	11	U	24	U	24	U	10	U	10	U
Benzo(a)pyrene	11	U	24	U	24	U	10	U	10	U
Indeno(1,2,3-cd)pyrene	11	U	24	U	24	U	10	U	10	U
Dibenz(a,h)anthracene	11	U	24	U	24	U	10	U	10	U
Benzo(g,h,i)perylene	11	U	24	U	24	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.

BCWNX1

Lab Name: Recra LabNet Work Order: 10985001001

Client: TNU-HANFORD F99-085

Matrix: (soil/water) WATER Lab Sample ID: 99101800-002

Sample wt/vol: 880 (g/mL) ML Lab File ID: D110112

Level: (low/med) LOW Date Received: 10/23/99

% Moisture: ____ decanted: (Y/N) __ Date Extracted: 10/26/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 11/01/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 10 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.22	6	JB
2.	UNKNOWN	7.32	10	J
3.	UNKNOWN	7.60	3	J
4.	UNKNOWN	8.02	10	JB
5.	UNKNOWN	8.08	7	JB
6.	UNKNOWN	8.29	6	JB
7.	UNKNOWN	8.55	9	JB
8.	UNKNOWN	8.65	20	JB
9.	UNKNOWN	8.71	2	J
10.	UNKNOWN	14.45	2	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKFG

Lab Name: Recra LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-085

Matrix: (soil/water) WATER Lab Sample ID: 99LE1299-MB1

Sample wt/vol: 1000 (g/mL) ML Lab File ID: D110103

Level: (low/med) LOW Date Received: 10/26/99

% Moisture: _____ decanted: (Y/N) __ Date Extracted: 10/26/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 11/01/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 10 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.22	4	J
2.	UNKNOWN	7.29	3	J
3.	UNKNOWN	8.01	6	J
4.	UNKNOWN	8.07	2	J
5.	UNKNOWN	8.28	2	J
6.	UNKNOWN	8.52	2	J
7.	UNKNOWN	8.55	3	J
8.	UNKNOWN	8.64	9	J
9.	UNKNOWN	14.45	4	J
10.	UNKNOWN	27.44	2	J

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

DATE RECEIVED: 10/23/99 RFW LOT # :99101500

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
RCWNX1	002	W	99LE1299	10/21/99	10/26/99	11/01/99
RCWNX1	002 MS	W	99LE1299	10/21/99	10/26/99	11/01/99
RCWNX1	002 MSD	W	99LE1299	10/21/99	10/26/99	11/01/99

LAB QC:

SPLKFG	MB1	W	99LE1299	N/A	10/26/99	11/01/99
SPLKFG	MB1 BS	W	99LE1299	N/A	10/26/99	11/01/99

RECRA LabNet Use Only: 9910L500

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: OJ
QC: Spec Del: Std TAT: 30 days
Date Rec'd: 10-23-99 Date Due: 11/22/99
Account #:

Refrigerator #		1	2						2				1		
#/Type Container	Liquid	3AG	2AG						3PL		1PL	1PL	1PL		
	Solid														
Volume	Liquid	40	1L						500ml		500ml	1L	1L		
	Solid														
Preservatives		HCL	—						HNO_3		2NaOH NaOH	—	H_2SO_4		
ANALYSES REQUESTED →		ORGANIC							INORG						
		VOA	BNA	Pest/PCB	Herb				ICP Metal	CN	Sulfide	IC Anions	NO2 NO3 Ammonia		

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	OC 24H OC25C	OC 25H					Metal		ISFD	BNQ	IC3N2 ICH2N
001	BOWNX0			W	10/21/99	0515	X										
002	BOWNX1	X	X	⊥	⊥	0715	X	X					X		X	X	X

Special Instructions:
Daf# B99-085
Run Matrix QC

COMPOSITE WASTE

DATE/REVISIONS:
1. Short hold
2. Sample #002 (IC Anions) rec'd out of hold.
3. Met(1) = As, Ba, Cd, Cr, Pb, Se, Ag, Cu,
4. Ni, V, Zn, Be
5. Ang(2) = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
6. ICSO4, IPH

RECRA LabNet Use Only

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

COC Tape was: 1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 23 °C

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	10/23/99	10:00

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
*4235 7953 1002

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-085-12	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		SAF No.: B99-085
Ice Chest No.: SML 421	Field Logbook No.: EL1511		Method of Shipment: Fed EX
Shipped To: TMA/RECRA 10-21-99	Offsite Property No.: A 000006		Bill of Lading/Air Bill No.: 4235 7953 1002
			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	HCl to pH <2 Cool 4C	HNO3 to pH <2			
	Type of Container	P	P	P	aG	P	aGs*	P			
	No. of Container(s)	1	1	1	2	2	3	3			
Special Handling and/or Storage	Volume	500mL	1000mL	1000mL	1000mL	1000mL	40mL	500mL			
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	VOA - 8260A (TCL), VOA - 8260A (Add-On) (1-Propanol, Ethanol)	See item (2) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0WNX0	Water	10-21-99	0515						X				
B0WNX1	Water	10-21-99	0715	X	X	X	X		X	X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	10-21-99/1400	Ref 2A	10-21-99/1400
Ref 2A	10-22-99/1100	Cathie	10-22-99 1100
Cathie	10-22-99 1400	FEDEX	
FedEx	10-23-99 10:00		10-23-99

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
			99104500
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-085-12	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	SAF No.: B99-085	
Ice Chest No.: SML 421	Field Logbook No.: EL1511	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA [illegible] 10-21-99	Offsite Property No.: A 000006	Bill of Lading/Air Bill No.: 4235 7953 1002	
		COA: B20CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	ZnAc+NaOH to pH >9 Cool	Cool 4C	H2SO4 to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	HCl to pH <2 Cool 4C	HNO3 to pH <2			
Type of Container	P	P	P	aG	P	aGs*	P			
No. of Container(s)	1	1	1	2	2	3	3			
Volume	500mL	1000mL	1000mL	1000mL	1000mL	40mL	500mL			
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	VOA - 8260A (TCL), VOA - 8260A (Add-On) (1-Propanol, Ethanol)	See item (2) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
B0WNX0	Water	10-21-99	0515					X			
B0WNX1	Water	10-21-99	0715	X	X	X	X	X	X		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 10-21-99/1400	Received By: Bef 2A	Date/Time: 10-21-99/1400
Relinquished By: Bef 2A	Date/Time: 10.22.99/1100	Received By: Cathie	Date/Time: 10-22-99 1100
Relinquished By: Cathie	Date/Time: 10.22.99 1400	Received By: FEDEX	Date/Time:
Relinquished By: FedEx	Date/Time: 10.23.99 10:00	Received By: [illegible]	Date/Time: 10.23.99

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
		99IOL500	
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 # : 9910L500
SDG/SAF #: H0589/B99-085

W.O. #: 10985-001-001-9999-00
Date Received: 10-23-99

GC/MS VOLATILE

Two (2) water samples were collected on 10-21-99.

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 10-31-99.

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. 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 Methylene Chloride at a level less than 2x the CRQL and the target compound 2-Hexanone at a level less than the CRQL.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

12-05-99
Date

sum group data vol/tnu10500.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 9 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: 12/06/99 19:59

RFW Batch Number: **9910L500** Client: **TNU-HANFORD B99-085** Work Order: 10985001001 Page: 1a

	Cust ID:	BOWNX0		BOWNX1		BOWNX1		BOWNX1		VBLKAJ		VBLKAJ BS	
Sample Information	RFW#:	001		002		002 MS		002 MSD		99LVH502-MB1		99LVH502-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	100	%	100	%	98	%	99	%	98	%	97	%
	Bromofluorobenzene	93	%	94	%	94	%	96	%	94	%	96	%
	1,2-Dichloroethane-d4	90	%	92	%	94	%	95	%	94	%	96	%
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	BJ	4	BJ	5	B	5	B	5		7	B
Acetone		10	U	10	U	10	U	10	U	10	U	10	U
Carbon Disulfide		5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	5	U	94	%	97	%	5	U	89	%
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	10	U	10	U	10	U	10	U	10	U
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	92	%	94	%	5	U	93	%
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	%	100	%	5	U	97	%
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	2	J	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	97	%	101	%	5	U	100	%

*= Outside of EPA CLP QC limits.

pw 17-07-99

RFW Batch Number: 9910L500 Client: TNU-HANFORD B99-085 Work Order: 10985001001 Page: 1b

Cust ID:	BOWNX0	BOWNX1	BOWNX1	BOWNX1	VBLKAJ	VBLKAJ BS
RFW#:	001	002	002 MS	002 MSD	99LVH502-MB1	99LVH502-MB1
Chlorobenzene	5 U	5 U	98 %	101 %	5 U	100 %
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.

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

DATE RECEIVED: 10/23/99 RFW LOT # :9910L500

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOWNX0	001	W	99LVH502	10/21/99	N/A	10/31/99
BOWNX1	002	W	99LVH502	10/21/99	N/A	10/31/99
BOWNX1	002 MS	W	99LVH502	10/21/99	N/A	10/31/99
BOWNX1	002 MSD	W	99LVH502	10/21/99	N/A	10/31/99

LAB QC:

VELKAJ	MB1	W	99LVH502	N/A	N/A	10/31/99
VELKAJ	MB1 BS	W	99LVH502	N/A	N/A	10/31/99

gd 12-07-99

RECRA LabNet Use Only
9911OL500

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All 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: OJ
QC: Spec Del: Std TAT: 30 days
Date Rec'd: 10-23-99 Date Due: 11/22/99
Account #:

Refrigerator #		1	2							2				1			
#/Type Container	Liquid	3AG	2AG							3PL		1PL	1PL	1PL			
	Solid																
Volume	Liquid	40	1L							500ml		500ml	1L	1L			
	Solid																
Preservatives		HCL	—							HNO_3		ZnAc NaOH	—	H_2SO_4			
ANALYSES REQUESTED		ORGANIC								INORG							
		VOA	BNA	Pest/PCB	Herb					ICP Metal	CN	Sulfide	IC Anions	NO_2 NO_3 Anions			

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	VOA 24H	BNA 14D/SC	Pest/PCB 14D	Herb			Met (1)		15FD	Ang (2)	1/13N2 1/HS(N)		
001	BOWNX0			W	10/21/99	0515	X												
002	BOWNX1	X	X	⊥	⊥	0715	X	X					X		X	X	X		

Special Instructions:
Daf # B99-085
Run Matrix QC

COMPOSITE WASTE

DATE/REVISIONS:
1. Sample #002 (IC Anions) rec'd Short hold
2. out of hold.
Met (1) = As, Ba, Cd, Cr, Pb, Se, Ag, Cu,
4. Ni, V, Zn, Be
Ang (2) = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
6. ICSO4, IPH

RECRA LabNet Use Only

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

COC Tape was: 1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 2.3 °C

Relinquished by	Received by	Date	Time
TCW Ex	D. Johnson	10/23/99	10:00

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
*4235 7953 1002

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

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		SAF No.: B99-085
Ice Chest No.: SML 421	Field Logbook No.: EL1511		Method of Shipment: Fed EX
Shipped To: IMA/RECRA 10-21-99	Offsite Property No.: A 000006		Bill of Lading/Air Bill No.: 4235 7953 1002
			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	ZnAc+NaOH to pH >9 Cool	Cool 4C	H2SO4 to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	HCl to pH <2 Cool 4C	HNO3 to pH <2			
Type of Container	P	P	P	aG	P	aG*	P			
No. of Container(s)	1	1	1	2	2	3	3			
Volume	500mL	1000mL	1000mL	1000mL	1000mL	40mL	500mL			
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	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	See item (2) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0WNX0	Water	10-21-99	0515						X				
B0WNX1	Water	10-21-99	0715	X	X	X	X		X	X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	10-21-99/1400	Ref 2A	10-21-99/1400
Ref 2A	10-22-99/1100	Cline	10-22-99 1100
Cline	10-22-99 1400	FEDEX	
FedEx	10-23-99 10:00	D Smith	10-23-99

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

9910L500

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-085-12

Collector Bowers/Trice	Company Contact C Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ
Project Designation 200 Area Source characterization - 200-CW-1 OU - QC Sa	Sampling Location 200 East		SAF No. B99-085
Ice Chest No. SML 421	Field Logbook No. EL1511		Method of Shipment Fed EX
Shipped To TMA/RECRA 270 10-21-99	Offsite Property No. A 000006		Bill of Lading/Air Bill No. 4235 7953 1002

Price Code 7N

Data Turnaround 45 Days

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	HCl to pH <2 Cool 4C	HNO3 to pH <2			
	Type of Container	P	P	P	aG	P	aGs*	P			
	No. of Container(s)	1	1	1	2	2	3	3			
Special Handling and/or Storage	Volume	500mL	1000mL	1000mL	1000mL	1000mL	40mL	500mL			
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	VOA - 8260A (TCL), VOA - 8260A (Add-On) [1-Propanol, Ethanol]	See item (2) in Special Instructions			

Sample No.	Matrix *	Sample Date	Sample Time										
B0WNX0	Water	10-21-99	0515						X				
B0WNX1	Water	10-21-99	0715	X	X	X	X		X	X			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	10-21-99/1400	Bef 2A	10-21-99/1400
Relinquished By	Date/Time	Received By	Date/Time
Bef 2A	10-22-99/1100	Chris	10-22-99 1100
Relinquished By	Date/Time	Received By	Date/Time
Chris	10-22-99 1400	FEDEX	
Relinquished By	Date/Time	Received By	Date/Time
FEDEX	10-23-99 10:00	[illegible]	10-23-99

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
		9910L500	

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time