

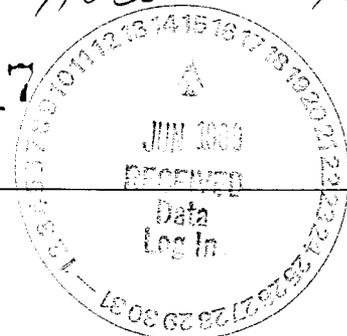
H0389-TMA/RECRA



a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere

0051617



Recra LabNet Philadelphia Analytical Report

Client : TNU-HANFORD B99-037

W.O #: 10985-001-001-9999-00

RFW#: 9904L738

Date Received: 04-22-99

SDG/SAF#: H0389/B99-037

GC SCAN

The set of samples consisted of two (2) water samples collected on 04-20-99.

The samples and their associated QC samples were prepared on 05-04-99 and analyzed by methodology based on EPA Method 8015B for Methanol and Butanol on 05-04,05-99.

1. The cooler temperature has been recorded on the chain-of-custody.
2. All required holding times for analysis were met.
3. All initial calibrations associated with this data set were within acceptance criteria.
4. Surrogates were not used in this analysis.
5. All blank spike recoveries were within acceptance criteria of 50%-150%.
6. All matrix spike recoveries were within acceptance criteria of 50%-150%.



J. Michael Taylor

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

5-17-99

Date

R:\SHARE\LC\GCSCAN\04-738a.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 18 pages.

001

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 Philadelphia Sample Discrepancy Report (SDR) SDR #:

99LC023

Initiator: C Schnell RFW Batch: 99046738
 Date: 5/6/99 Samples: 002,000
 Client: ~~INU Hartford~~ Method: SW846/MCAWW/ICLP/

Parameter: OGCSC
 Matrix: Water
 Prep Batch: 99UL065

INU Hartford

1. Reason for SDR

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

b. General Discrepancy

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

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

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

Final standard not analyzed after sample set.

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

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

Other Description:

Matrix spikes within run were good.
 All samples clean.
 Accept results or reanalyze?

4. Project Manager Instructions...signature/date: _____

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

[Handwritten signature]
 report results, do not reanalyze

5. Final Action...signature/date: _____

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

Other Explanation:

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
2	<input checked="" type="checkbox"/> Initiator	---	<input type="checkbox"/> Metals: Doughty
1	<input checked="" type="checkbox"/> Lab Manager: M. Taylor	---	<input type="checkbox"/> Inorganic: Perrone
1	<input checked="" type="checkbox"/> Project Mgr: Stone/Carey/Schranke/Johnson	---	<input type="checkbox"/> GC/LC: Schnell
4	<input checked="" type="checkbox"/> Section Mgr: Wesson/Daniels	---	<input type="checkbox"/> MS: LeMin/Taylor
3	<input checked="" type="checkbox"/> QA (file): Racioppi	---	<input type="checkbox"/> Log-in: Toder
---	<input type="checkbox"/> Data Management: Feldman	---	<input type="checkbox"/> Admin: Soos
---	<input type="checkbox"/> Sample Prep: Schnell/Doughty/Kauffman	---	<input type="checkbox"/> Other: _____

003

Recra LabNet - Lionville Laboratory

GC SCAN

Report Date: 05/17/99 14:04

RFW Batch Number: 9904L738

Client: TNU-HANFORD B99-037

Work Order: 10985-001-001-9999-00

Page: 1

	Cust ID:	B0V926	B0V926	B0V926	B0V927	BLK	BLK BS
Sample	RFW#:	002	002 MS	002 MSD	003	99LLC065-MB1	99LLC065-MB1
Information	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

	fl	fl	fl	fl	fl	fl	fl
Methanol	6.5 U	132 %	140 %	6.5 U	6.5 U	133 %	
Butanol	5.6 U	128 %	135 %	5.6 U	5.6 U	130 %	

el 5/17/99

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.

004

Recra LabNet - Lionville Laboratory
 GCSC ANALYTICAL DATA PACKAGE FOR
 TNU-HANFORD B99-037

DATE RECEIVED: 04/22/99

RFW LOT # :9904L738

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V926	002	W	99LLC065	04/20/99	05/04/99	05/04/99
B0V926	002 MS	W	99LLC065	04/20/99	05/04/99	05/04/99
B0V926	002 MSD	W	99LLC065	04/20/99	05/04/99	05/04/99
B0V927	003	W	99LLC065	04/20/99	05/04/99	05/05/99

LAB QC:

BLK	MB1	W	99LLC065	N/A	05/04/99	05/04/99
BLK	MB1 BS	W	99LLC065	N/A	05/04/99	05/04/99

2/21/99

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-037-05		Page 2 of 3			
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086		Project Coordinator WEISS, RL		Price Code		Data Turnaround 45 Days	
Project Designation ERDF Leachate Delisting Analysis		Sampling Location ERDF 200 west		SAF No. B99-037							
Ice Chest No.		Field Logbook No. <i>EL-1309-3</i>		Method of Shipment Fed Ex							
Shipped To MURECRA <i>4242099</i>		Offsite Property No. <i>A990116</i>		Bill of Lading/Air Bill No. <i>423579524916</i> <i>423579524927, 423579524905</i>							
				COA <i>TERDF4 K117</i>							

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	ZnAc+NaOH to pH >9 Cool	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C
	Type of Container	P	P	P	P	P	aG	aG	aG	aG	aG
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1	2	2	2	2	2
	Volume	500mL	500mL	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL
SAMPLE ANALYSIS	Ammonia - 350.3	See item (1) in Special Instructions	Sulfides - 9030	See item (2) in Special Instructions	Total Cyanide - 9010	See item (3) in Special Instructions	Chloro-Herbicides - EPA8151	See item (4) in Special Instructions	Pest/PCBs - 8081	See item (5) in Special Instructions	
Sample No.	Matrix *	Sample Date	Sample Time								
BOV925	Water										
BOV926	Water	<i>4-20-99</i>	<i>0915</i>	X	X	X	X	X	X	X	X
BOV927	Water	<i>4-20-99</i>	<i>0920</i>	X	X	X	X	X	X	X	X

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS ** TMA is requested to report all analytes found above their detection limits for GEA.				Matrix *	
Relinquished By	Date/Time	Received By	Date/Time	(1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Lead, Selenium, Silicon, Thallium, Tin) (2) Gamma Spectroscopy (Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155) (3) 8310_SVOA_HPLC (Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo[a,h]anthracene) (4) Nitrosamines - 8070 (N-Nitroso-di-n-dipropylamine, N-Nitrosodimethylamine) (5) Semi-VOA - 8270A (App IX); Semi-VOA -- 8270A (App IX Add-On) (1,2-Diphenylhydrazine, 1,4-Dinitrobenzene, 1-Acetyl-2-thiourea, 2,5-Diaminotoluene, 2-Cyclohexyl-4,6-dinitrophenol)				Soil Water Vapor Other Solid Other Liquid	
<i>SJ GALE</i>	<i>4/20/99 1425</i>	<i>REF 1-C</i>	<i>4/20/99 1425</i>						
Relinquished By	Date/Time	Received By	Date/Time						
<i>REF 1-C</i>	<i>4/21/99 0630</i>	<i>SJ GALE</i>	<i>4/21/99 0630</i>						
Relinquished By	Date/Time	Received By	Date/Time						
<i>SJ GALE</i>	<i>4/21/99 0800</i>	<i>FED EX</i>							
Relinquished By	Date/Time	Received By	Date/Time						
<i>Fred</i>									
LABORATORY SECTION	Received By	Title						Date/Time	
	<i>Jordan</i>	<i>Logan Unit Leader</i>						<i>4/22/99 0930</i>	
FINAL SAMPLE DISPOSITION	Disposal Method			Disposed By				Date/Time	

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-037-05		Page 3 of 3							
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086		Project Coordinator WEISS, RL		Price Code							
Project Designation ERDF Leachate Delisting Analysis		Sampling Location ERDF 200 west		SAF No. B99-037		Data Turnaround 45 Days		600							
Ice Chest No.		Field Logbook No. EL 1309-3		Method of Shipment Fed Ex											
Shipped To TMA/RECRA 42099		Offsite Property No. A990116		Bill of Lading/Air Bill No. 42357952 9916, 42357952 4927, 42357952 4905		COA TERDFY K117									
POSSIBLE SAMPLE HAZARDS/REMARKS				Preservation	HCL to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl Cool 4C							
				Type of Container	G	P	aGs*	aGs*							
Special Handling and/or Storage				No. of Container(s)	2	2	3	3							
				Volume	1000mL	1000mL	40mL	40mL							
SAMPLE ANALYSIS				oil & Grease - 9070	Gross Alpha, Gross Beta	See item (1) in Special Instructions	See item (2) in Special Instructions								
Sample No.	Matrix *	Sample Date	Sample Time												
BOV925	Water	4-20-99	0645				X								
BOV926	Water	4-20-99	0915	X		X	X								
BOV927	Water	4-20-99	0920	X		X	X								
CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *					
Relinquished By SJGALE SJ/Neil 42099 1425		Date/Time 4/22/99 1425		Received By REF 1-C 42099 1425		Date/Time 4/22/99 1425		(1) Alcohols, Glycols, & Ketones - 8015M (1-Butanol, Diethyl ether, Methanol) (2) VOA - 8260A (App IX); VOA - 8260A (App IX Add-On) (1,1,2-Trichloro-1,2,2-trifluoroethane, 1,3-Butadiene, 1-Butanol, 2-Chloroethyl vinyl ether, Allyl alcohol, cis-1,2-Dichloroethylene, Crotonaldehyde, Dichloropropanol, Diethyl ether, Ethyl acetate, Isoprop				Soil Water Vapor Other Solid Other Liquid			
Relinquished By REF 1-C 42199 0630		Date/Time 4/22/99 0630		Received By SJGALE SJ/Neil 42199 0630		Date/Time 4/22/99 0630									
Relinquished By SJGALE SJ/Neil 42199 0800		Date/Time 4/22/99 0800		Received By FED EX		Date/Time 4/22/99 0800									
Relinquished By Fed Ex		Date/Time 4/22/99 0800		Received By		Date/Time									
LABORATORY SECTION	Received By J. Miller	Title Loggin Unit Leader				Date/Time 4/22/99 0930									
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By				Date/Time									

WATER ORGANICS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Recra.LabNetContract: 0985-01-01Client : TNU-HANFORD B99-037RFW Lot No.: 9904L738-002MATRIX Spike - Sample No.: B0V926

COMPOUND	SPIKE	SAMPLE	MS	MS	QC
	ADDED	CONCENTRATION	CONCENTRATION	%	LIMITS
	mg/L	mg/L	mg/L	REC #	REC.
Methanol	26.0	0	34	132	50-150
Butanol	22.2	0	29	128	50-150

COMPOUND	SPIKE	MSD	MSD	%	QC LIMITS	
	ADDED	CONCENTRATION	%	%	RPD	REC
	mg/L	mg/L	REC #	RPD #		
Methanol	26.0	36	140	5	99	50-150
Butanol	22.2	30	135	5	99	50-150

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 2 outside limitsSpike Recovery: 0 out of 4 outside limits

COMMENTS: _____

Q2/1/02

3E
WATER ORGANICS BLANK SPIKE RECOVERY

Lab Name: Recra.LabNet

Contract: 0985-01-01

Client : TNU-HANFORD B99-037

RFW Lot No.: 99LLC065-MB1

BLANK Spike - Sample No.: BLK

COMPOUND	SPIKE ADDED mg/L	SAMPLE CONCENTRATION mg/L	BS CONCENTRATION mg/L	BS % REC #	QC LIMITS REC.
Methanol	26.0	0	35	133	50-150
Butanol	22.2	0	29	130	50-150

Column to be used to flag recovery value with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS: _____

02/14/99

4C
ORGANICS METHOD BLANK SUMMARY

CLIENT SAMPLE NO.
BLK

Lab Name: Recra.LabNet

Contract: 0985-01-01

Client: TNU-HANFORD B99-037

Lab Sample ID: 99LLC065-MB1

Lab File ID: 05049939.06

Matrix:(soil/water) WATER

Extraction:(SepF/Cont/Sonc) SONC

Sulfur Cleanup: (Y/N) _

Date Extracted: 05/04/99

Date Analyzed (1): 05/04/99

Date Analyzed (2): _____

Time Analyzed (1): 2049

Time Analyzed (2): _____

Instrument ID (1): 39

Instrument ID (2): _____

GC Column (1): SWAX ID: 0.53(mm)

GC Column (2): ID: _____(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	B0V926	9904L738-002	05/04/99	
02	B0V926MS	9904L738-002S	05/04/99	
03	B0V926MSD	9904L738-002T	05/04/99	
04	B0V927	9904L738-003	05/05/99	
05	BLKBS	99LLC065-MB1S	05/04/99	

COMMENTS: _____

Q2/5/99

1D
ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B0V926

Lab Name: Recra.LabNet Work Order: 10985-001-001-9999-00

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER Lab Sample ID: 9904L738-002

Sample wt/vol: 1.00 (g/mL) ML Lab File ID: 05049939.08

% Moisture: decanted: (Y/N) _ Date Received: 04/22/99

Extraction: (SepF/Cont/Sonc) N/A Date Extracted: 05/04/99

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 05/04/99

Injection Volume: 0.5 (uL) Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: <u>mg/L</u> Q	
67-56-1-----	Methanol	6.5	U
71-36-3-----	Butanol	5.6	U

Handwritten signature

1D
ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B0V927

Lab Name: Recra.LabNet Work Order: 10985-001-001-9999-00

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER Lab Sample ID: 9904L738-003

Sample wt/vol: 1.00 (g/mL) ML Lab File ID: 05049939.11

% Moisture: decanted: (Y/N) _ Date Received: 04/22/99

Extraction: (SepF/Cont/Sonc) N/A Date Extracted: 05/04/99

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 05/05/99

Injection Volume: 0.5 (uL) Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: <u>mg/L</u>	Q
67-56-1-----	Methanol	6.5	U
71-36-3-----	Butanol	5.6	U

Qest 4/99

1D
ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B0V926MS

Lab Name: Recra.LabNet Work Order: 10985-001-001-9999-00

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER Lab Sample ID: 9904L738-002 MS

Sample wt/vol: 1.00 (g/mL) ML Lab File ID: 05049939.09

% Moisture: decanted: (Y/N) _ Date Received: 04/22/99

Extraction: (SepF/Cont/Sonc) N/A Date Extracted: 05/04/99

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 05/04/99

Injection Volume: 0.5 (uL) Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: <u>mg/L</u>	Q
67-56-1-----	Methanol	34	
71-36-3-----	Butanol	29	

Q25/1/99

1D
ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B0V926MSD

Lab Name: Recra.LabNet Work Order: 10985-001-001-9999-00

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER

Lab Sample ID: 9904L738-002 MSD

Sample wt/vol: 1.00 (g/mL) ML

Lab File ID: 05049939.10

% Moisture: decanted: (Y/N) _

Date Received: 04/22/99

Extraction: (SepF/Cont/Sonc) N/A

Date Extracted: 05/04/99

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 05/04/99

Injection Volume: 0.5 (uL)

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION	
		UNITS: <u>mg/L</u>	Q
67-56-1-----	Methanol	36	
71-36-3-----	Butanol	30	

02/5/99

1D
ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BLKBS

Lab Name: Recra.LabNet Work Order: 10985-001-001-9999-00

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER Lab Sample ID: 99LLC065-MB1 BS

Sample wt/vol: 1.00 (g/mL) ML Lab File ID: 05049939.07

% Moisture: decanted: (Y/N) _ Date Received: 05/04/99

Extraction: (SepF/Cont/Sonc) N/A Date Extracted: 05/04/99

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 05/04/99

Injection Volume: 0.5 (uL) Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: <u>mg/L</u>	Q
67-56-1-----	Methanol	35	
71-36-3-----	Butanol	29	

Handwritten signature/initials

1D
ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BLK

Lab Name: Recra.LabNet Work Order: 10985-001-001-9999-00

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER Lab Sample ID: 99LLC065-MB1

Sample wt/vol: 1.00 (g/mL) ML Lab File ID: 05049939.06

% Moisture: decanted: (Y/N) Date Received: 05/04/99

Extraction: (SepF/Cont/Sonc) N/A Date Extracted: 05/04/99

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 05/04/99

Injection Volume: 0.5 (uL) Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION	
		UNITS: <u>mg/L</u>	<u>Q</u>
67-56-1-----	Methanol	6.5	U
71-36-3-----	Butanol	5.6	U

CPH

GLOSSARY OF HERBICIDE 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.
- I** = Interference.

SUFFIXES

- BS** = Indicates blank spike in which reagent grade water is spiked with the 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.

ABBREVIATIONS

- D** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Reported.
- SP** = Indicates spiked compound.

Recra LabNet - Lionville Laboratory

Herbicides, Special List

Report Date: 04/30/99 12:35

RFW Batch Number: 9904L738

Client: TNU-HANFORD B99-037

Work Order: 10985001001 Page: 1

Sample Information	Cust ID:	B0V926	B0V926	B0V926	B0V927	PBLKIT	PBLKIT BS
	RFW#:	002	002 MS	002 MSD	003	99LE0501-MB1	99LE0501-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:	DCAA	85 %	76 %	90 %	78 %	87 %	97 %
-----fl-----fl-----fl-----fl-----fl-----fl-----fl							
Dalapon		5.0 U	69 %	80 %	5.0 U	5.0 U	78 %
Dicamba		2.0 U	76 %	96 %	2.0 U	2.0 U	90 %
Dichloroprop		5.0 U	79 %	99 %	5.0 U	5.0 U	95 %
2,4-D		1.0 U	77 %	98 %	1.0 U	1.0 U	97 %
2,4,5-TP (Silvex)		0.50 U	78 %	100 %	0.50 U	0.50 U	89 %
2,4,5-T		0.50 U	88 %	112 %	0.50 U	0.50 U	109 %
2,4-DB		5.0 U	79 %	100 %	5.0 U	5.0 U	97 %
Dinoseb		0.50 U	68 %	86 %	0.50 U	0.50 U	81 %

003

04/30/99

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

Recra LabNet - Lionville Laboratory
HBGX ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-037

DATE RECEIVED: 04/22/99

RFW LOT # :9904L738

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V926	002	W	99LE0501	04/20/99	04/27/99	04/28/99
B0V926	002 MS	W	99LE0501	04/20/99	04/27/99	04/29/99
B0V926	002 MSD	W	99LE0501	04/20/99	04/27/99	04/29/99
B0V927	003	W	99LE0501	04/20/99	04/27/99	04/29/99

LAB QC:

PBLKIT	MB1	W	99LE0501	N/A	04/27/99	04/29/99
PBLKIT	MB1 BS	W	99LE0501	N/A	04/27/99	04/29/99

Checked 5/16/99

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-037-05		Page 1 of 3	
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086		Project Coordinator WEISS, RL		Price Code	
Project Designation ERDF Leachate Delisting Analysis		Sampling Location ERDF 200 west		SAF No. B99-037				Data Turnaround 45 Days	
Ice Chest No. <i>ERC 96-010, SML 427</i> <i>42199</i> <i>57MS4 ERC 96 065</i>		Field Logbook No. <i>EL-1309-3</i>		Method of Shipment Fed Ex		<i>27-2.3°C, 16-2.1°C, 05-2.4°C</i>			
Shipped To TMA/RECRA <i>SAD 42099</i>		Offsite Property No. <i>A990116</i>		Bill of Lading/Air Bill No. <i>423579524927</i> <i>423579524905, 423579524916</i> COA <i>TERDF4K117</i>					

900

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	HCl or H2SO4 to pH <2	Cool 4C	Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	Cool 4C
	Type of Container	P	P	aG	aG	aG	G	P	P	P	P
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
	Volume	20mL	100mL	250mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL

SAMPLE ANALYSIS	Activity Scan	pH (Water) - 9040	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	NonVOCs by EXT/TSM (Bendiocarb)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (1) in Special Instructions.	TDS - 160.1	TSS - 160.2
	<i>738</i>					<i>SAD 92099</i>				

Sample No.	Matrix *	Sample Date	Sample Time	Activity Scan	pH (Water) - 9040	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	NonVOCs by EXT/TSM (Bendiocarb)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (1) in Special Instructions.	TDS - 160.1	TSS - 160.2
BOV925	Water												
BOV926	Water	<i>4-20-99</i>	<i>0915</i>		X	X	X		X	X	X	X	X
BOV927	Water	<i>4-20-99</i>	<i>0920</i>		X	X	X		X	X	X	X	X

CHAIN OF POSSESSION	Sign/Print Names		SPECIAL INSTRUCTIONS						Matrix * Soil Water Vapor Other Solid Other Liquid		
	Relinquished By <i>SJ GALE</i> Date/Time <i>4/20/99 1425</i>		Received By <i>REF 1-C</i> Date/Time <i>4/20/99 1425</i>		** TMA is requested to report all analytes found above their detection limits for GEA.						
	Relinquished By <i>REF 1-C</i> Date/Time <i>4/21/99 0630</i>		Received By <i>SJ GALE</i> Date/Time <i>4/21/99 0630</i>		(1) IC Anions - 9056 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)						
	Relinquished By <i>SJ GALE</i> Date/Time <i>4/21/99 0800</i>		Received By <i>FED EX</i> Date/Time								

LABORATORY SECTION	Received By <i>[Signature]</i>	Title <i>Log in Unit Leader</i>	Date/Time <i>4/22/99 0930</i>
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-037-05	Page 2 of 3
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086	Project Coordinator WEISS, RL	Price Code	Data Turnaround 45 Days
Project Designation ERDF Leachate Delisting Analysis		Sampling Location ERDF 200 west			SAF No. B99-037		
Ice Chest No.		Field Logbook No. EL-1309-3			Method of Shipment Fed Ex		
Shipped To TMA/RECRA 42099		Offsite Property No. A990116			Bill of Lading/Air Bill No. 423579524916 423579524927, 423579524905 COA 'TERDF4 K117'		

200

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	ZnAc+NaOH to pH >9 Cool	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C
		Type of Container	P	P	P	P	P	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	2	2	2	2	2
Special Handling and/or Storage	Volume	500mL	500mL	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL
SAMPLE ANALYSIS		Ammonia - 350.3	See item (1) in Special Instructions.	Sulfides - 9030	See item (2) in Special Instructions.	Total Cyanide - 9010	See item (3) in Special Instructions.	Chloro-Herbicides - EPA8151	See item (4) in Special Instructions.	Pest/PCBs - 8081	See item (5) in Special Instructions.

CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By SJ GALE 4/20/99 1425		Received By REF 1-C 42099 1425		** TMA is requested to report all analytes found above their detection limits for GEA.						Soil	
Relinquished By REF 1-C 42199 0630		Received By SJ GALE 4/21/99 0630		(1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Lead, Selenium, Silicon, Thallium, Tin)						Water	
Relinquished By SJ GALE 4/21/99 0800		Received By FED EX		(2) Gamma Spectroscopy (Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)						Vapor	
Relinquished By Fed-Ex				(3) 8310_SVOA_HPLC (Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene)						Other Solid	
				(4) Nitrosamines - 8070 (N-Nitroso-di-n-dipropylamine, N-Nitrosodimethylamine)						Other Liquid	
				(5) Semi-VOA - 8270A (App IX); Semi-VOA - 8270A (App IX Add-On) (1,2-Diphenylhydrazine, 1,4-Dinitrobenzene, 1-Acetyl-2-thiourea, 2,5-Diaminotoluene, 2-Cyclohexyl-4,6-dinitrophenol)							
LABORATORY SECTION		Received By John		Title Log in Unit Leader				Date/Time 4/22/99 0930			
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time			

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			B99-037-05	Page 1 of 2
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086	Project Coordinator WEISS, RL	Price Code
Project Designation ERDF Leachate Delisting Analysis		Sampling Location ERDF 200 west		SAF No. B99-037	Data Turnaround 45 Days	
Ice Chest No.		Field Logbook No. EL 1309-3		Method of Shipment Fed Ex		
Shipped To TMA/RECRA 4242099		Offsite Property No. A990116		Bill of Lading/Air Bill No. 42357952 9916, 42357952 4927, 42357952 4905		
COA TERDFY K117						

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	HCL to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl Cool 4C						
	Type of Container	G	P	aGs*	aGs*						
	No. of Container(s)	2	2	3	3						
	Special Handling and/or Storage	Volume	1000mL	1000mL	40mL	40mL					
SAMPLE ANALYSIS				oil & Grease - 9070	Gross Alpha; Gross Beta	See item (1) in Special Instructions.	See item (2) in Special Instructions.				
Sample No.	Matrix *	Sample Date	Sample Time								
B0V925	Water	4-20-99	0645				X				
B0V926	Water	4-20-99	0915	X		X	X				
B0V927	Water	4-20-99	0920	X		X	X				

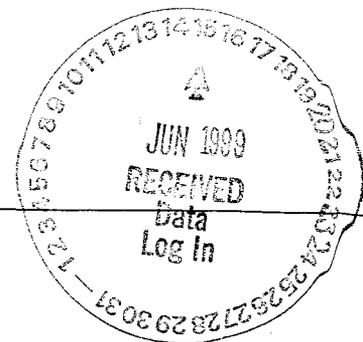
CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By		Received By		** TMA is requested to report all analytes found above their detection limits for GEA.				Soil	
Date/Time		Date/Time		(1) Alcohols, Glycols, & Ketones - 8015M (1-Butanol, Diethyl ether, Methanol)				Water	
SJGALE SJL 42099 1425		REF 1-C 42099 1425		(2) VOA - 8260A (App IX); VOA - 8260A (App IX Add-On) (1,1,2-Trichloro-1,2,2-trifluoroethane, 1,3-Butadiene, 1-Butanol, 2-Chloroethyl vinyl ether, Allyl alcohol, cis-1,2-Dichloroethylene, Crotonaldehyde, Dichloropropanol, Diethyl ether, Ethyl acetate, Isoprop				Vapor	
Relinquished By		Received By						Other Solid	
Date/Time		Date/Time						Other Liquid	
REF 1-C 42199 0630		SJGALE SJL 42199 0630							
Relinquished By		Received By							
Date/Time		Date/Time							
SJGALE SJL 42199 0800		FED EX							
Relinquished By		Received By							
Date/Time		Date/Time							
FED EX									
LABORATORY SECTION		Received By		Title				Date/Time	
Disposal Method		TMA		Loejin Unit Leader				4/22/99 0930	
FINAL SAMPLE DEPOSITION		Disposal Method		Disposed By				Date/Time	

800



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Virtual Laboratories Everywhere



Recra LabNet Philadelphia Analytical Report

Client : TNU-HANFORD
RFW# : 9904L738
SDG/SAF#: H0389/B99-037

W.O #: 10985-001-001-9999-00
Date Received: 04-22-99

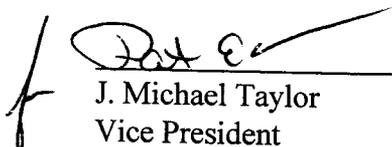
FORMALDEHYDE

The set of samples consisted of two (2) water samples collected 04-20-99.

The samples and their associated QC samples were prepared on 04-23-99 and analyzed by EPA Method 8315 for Aldehydes and Ketones on 04-26,27-99.

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

1. All required holding times for extraction and analysis were met.
2. All continuing calibration standards analyzed prior to the sample extracts were within acceptance criteria.
3. Surrogates were not used in this analysis.
4. All blank spike recoveries were within advisory limits (50%-150%).
5. All matrix recoveries were within advisory limits (50%-150%).



J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

5-20-99
Date

r:\share\lc\gcscan\04-738f.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 17 pages.

GLOSSARY OF OLCSC 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

HPLC scan

Report Date: 05/17/99 14:10

RFW Batch Number: 9904L738

Client: TNU-HANFORD B99-037

Work Order: 10985-001-001-9999-00

Page: 1

	Cust ID:	B0V926	B0V927	B0V927	B0V927	BLK	BLK BS
Sample	RFW#:	002	003	003 MS	003 MSD	99LLC056-MB1	99LLC056-MB1
Information	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

003

	fl	fl	fl	fl	fl	fl
Formaldehyde	12 U	12 U	91 %	97 %	12 U	93 %

02/17/99

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
 LCSC ANALYTICAL DATA PACKAGE FOR
 TNU-HANFORD B99-037

DATE RECEIVED: 04/22/99

RFW LOT # :9904L738

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOV926	002	W	99LLC056	04/20/99	04/23/99	04/26/99
BOV927	003	W	99LLC056	04/20/99	04/23/99	04/27/99
BOV927	003 MS	W	99LLC056	04/20/99	04/23/99	04/27/99
BOV927	003 MSD	W	99LLC056	04/20/99	04/23/99	04/27/99

LAB QC:

BLK	MB1	W	99LLC056	N/A	04/23/99	04/26/99
BLK	MB1 BS	W	99LLC056	N/A	04/23/99	04/26/99

EL 5/17/99

Collector Gale, SJ/ Neilson RJ	Company Contact Fred Roeck	Telephone No. 372-9086	Project Coordinator WEISS, RL	Price Code	Data Turnaround 45 Days
Project Designation ERDF Leachate Delisting Analysis	Sampling Location ERDF 200 west	SAF No. B99-037			
Ice Chest No. <i>ERC 96-010, SML 427</i> <i>42199 SML 54 ERC 96 065</i>	Field Logbook No. <i>EL-1309-3</i>	Method of Shipment Fed Ex <i>27-2.3°C, 16-2.1°C, 05-2.4°C</i>			
Shipped To TMA/RECRA <i>SAB 42099</i>	Offsite Property No. <i>A990116</i>	Bill of Lading/Air Bill No. <i>423579524927,</i> <i>423579524905, 423579524916</i> COA <i>TERDF4K117</i>			

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	HCl or H2SO4 to pH <2 Cool	Cool 4C	Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	Cool 4C
	Type of Container	P	P	aG	aG	aG	G	P	P	P	P
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	20mL	100mL	250mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL

SAMPLE ANALYSIS				Activity Scan	pH (Water) - 9040	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	NonVOC by EXT/MS (Bendi carb)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (1) in Special Instructions.	TDS - 160.1	TSS - 160.2
738								<i>SAB 92099</i>					

Sample No.	Matrix *	Sample Date	Sample Time	Activity Scan	pH (Water) - 9040	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	NonVOC by EXT/MS (Bendi carb)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (1) in Special Instructions.	TDS - 160.1	TSS - 160.2
BOV925	Water												
BOV926	Water	<i>4-20-99</i>	<i>0915</i>		X	X	X		X	X	X	X	X
BOV927	Water	<i>4-20-99</i>	<i>0920</i>		X	X	X		X	X	X	X	X

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By <i>SJGALE</i>	Date/Time <i>42099 1425</i>	Received By <i>REF 1-C</i>	Date/Time <i>42099 1425</i>
Relinquished By <i>REF 1-C</i>	Date/Time <i>42199 0630</i>	Received By <i>SJGALE</i>	Date/Time <i>42199 0630</i>
Relinquished By <i>SJGALE</i>	Date/Time <i>42199 0800</i>	Received By <i>FED EX</i>	Date/Time
Relinquished By <i>Fed ex</i>	Date/Time	Received By	Date/Time
		** TMA is requested to report all analytes found above their detection limits for GEA. (1) IC Anions - 9056 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)	
		Soil Water Vapor Other Solid Other Liquid	

LABORATORY SECTION	Received By <i>J. Miller</i>	Title <i>Log in Unit Leader</i>	Date/Time <i>4/22/99 0930</i>
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-037-05	Page 2 of 3
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086	Project Coordinator WEISS, RL	Price Code	Data Turnaround 45 Days
Project Designation ERDF Leachate Detesting Analysis		Sampling Location ERDF 200 west		SAF No. B99-037			
Ice Chest No.		Field Logbook No. EL-1309-3		Method of Shipment Fed Ex			
Shipped To TMA/RECRA 42099		Offsite Property No. A990116		Bill of Lading/Air Bill No. 423579524916 423579524927, 423579524905 COA TERDF4 K117			

200

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	ZnAc+NaOH to pH >9 Cool	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	Cool 4C				
	Type of Container	P	P	P	P	P	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	2	2	2	2	2
Special Handling and/or Storage	Volume	500mL	500mL	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL

SAMPLE ANALYSIS				Ammonia - 3503	See item (1) in Special Instructions	Sulfides - 9030	See item (2) in Special Instructions	Total Cyanide - 9010	See item (3) in Special Instructions	Chloro-Herbicides - EPA8151	See item (4) in Special Instructions	Pest/PCBs - 8081	See item (5) in Special Instructions
Sample No.	Matrix *	Sample Date	Sample Time										
BOV925	Water												
BOV926	Water	4-20-99	0915	X	X	X		X	X	X		X	X
BOV927	Water	4-20-99	0920	X	X	X		X	X	X		X	X

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS ** TMA is requested to report all analytes found above their detection limits for GEA.				Matrix *	
Relinquished By	Date/Time	Received By	Date/Time	(1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Lead, Selenium, Silicon, Thallium, Tin) (2) Gamma Spectroscopy(Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155) (3) 8310_SVOA, HPLC (Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo[a,h]anthracene) (4) Nitrosamines - 8070 (N-Nitroso-di-n-dipropylamine, N-Nitrosodimethylamine) (5) Semi-VOA - 8270A (App IX); Semi-VOA -- 8270A (App IX Add-On) (1,2-Diphenylhydrazine, 1,4-Dinitrobenzene, 1-Acetyl-2-thiourea, 2,5-Diaminotoluene, 2-Cyclohexyl-4,6-dinitrophenol)				Soil Water Vapor Other Solid Other Liquid	
SJ GALE	4/20/99 1425	REF 1-C	4/20/99 1425						
Relinquished By	Date/Time	Received By	Date/Time						
REF 1-C	4/21/99 0630	SJ GALE	4/21/99 0630						
Relinquished By	Date/Time	Received By	Date/Time						
SJ GALE	4/21/99 0800	FED EX							
Relinquished By	Date/Time	Received By	Date/Time						
Jed									
LABORATORY SECTION	Received By	Title						Date/Time	
	Jed	Logan Unit Leader						4/22/99 0930	
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By						Date/Time	

Collector Gale, SJ/ Neilson RJ	Company Contact Fred Roeck	Telephone No. 372-9086	Project Coordinator WEISS, RL	Price Code	Data Turnaround 45 Days
Project Designation ERDF Leachate Delisting Analysis	Sampling Location ERDF 200 west	SAF No. B99-037			
Ice Chest No.	Field Logbook No. <i>EL 1309-3</i>	Method of Shipment Fed Ex			
Shipped To DWR RECRA <i>42099</i>	Offsite Property No. <i>A990116</i>	Bill of Lading/Air Bill No. <i>42357952 9916, 42357952 4927, 42357952 4905</i>			
		COA <i>TERDFY K117</i>			

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	HCL to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl Cool 4C						
		Type of Container	G	P	aGs*	aGs*					
Special Handling and/or Storage	No. of Container(s)	2	2	3	3						
	Volume	1000mL	1000mL	40mL	40mL						

SAMPLE ANALYSIS	oil & Grease - 9070	Gross Alpha, Gross Beta	See item (1) in Special Instructions	See item (2) in Special Instructions						

Sample No.	Matrix *	Sample Date	Sample Time								
BOV925	Water	<i>4-20-99</i>	<i>0645</i>					X			
BOV926	Water	<i>4-20-99</i>	<i>0915</i>	X		X	X				
BOV927	Water	<i>4-20-99</i>	<i>0920</i>	X		X	X				

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By <i>SJ GALE</i>	Date/Time <i>4/20/99 1425</i>	Received By <i>REF 1-C</i>	Date/Time <i>4/20/99 1425</i>
Relinquished By <i>REF 1-C</i>	Date/Time <i>4/21/99 0630</i>	Received By <i>SJ GALE</i>	Date/Time <i>4/21/99 0630</i>
Relinquished By <i>SJ GALE</i>	Date/Time <i>4/21/99 0800</i>	Received By <i>FED EX</i>	Date/Time
Relinquished By <i>Fed Ex</i>	Date/Time	Received By Date/Time	Date/Time
		SPECIAL INSTRUCTIONS ** TMA is requested to report all analytes found above their detection limits for GEA. (1) Alcohols, Glycols, & Ketones - 8015M (1-Butanol, Diethyl ether, Methanol) (2) VOA - 8260A (App IX); VOA - 8260A (App IX Add-On) (1,1,2-Trichloro-1,2,2-trifluoroethane, 1,3-Butadiene, 1-Butanol, 2-Chloroethyl vinyl ether, Allyl alcohol, cis-1,2-Dichloroethylene, Crotonaldehyde, Dichloropropanol, Diethyl ether, Ethyl acetate, Isoprop	Soil Water Vapor Other Solid Other Liquid

LABORATORY SECTION	Received By <i>J Miller</i>	Title <i>Loggin Unit Leader</i>	Date/Time <i>4/22/99 0930</i>
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

1D
ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B0V926

Lab Name: Recra.LabNet Work Order: 10985-001-001-9999-00

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER Lab Sample ID: 9904L738-002

Sample wt/vol: 100 (g/mL) ML Lab File ID: 04269924.10

% Moisture: decanted: (Y/N) _ Date Received: 04/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/23/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/26/99

Injection Volume: 20.0 (uL) Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: <u>ug/L</u>	Q
50-00-0-----	Formaldehyde	12	U

04/26/99

1D
ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B0V927

Lab Name: Recra.LabNet Work Order: 10985-001-001-9999-00

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER Lab Sample ID: 9904L738-003

Sample wt/vol: 100 (g/mL) ML Lab File ID: 04269924.11

% Moisture: decanted: (Y/N) _ Date Received: 04/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/23/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/27/99

Injection Volume: 20.0 (uL) Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: <u>ug/L</u>	Q
50-00-0-----	Formaldehyde	12	U

2/27/99

1D
ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B0V927MS

Lab Name: Recra.LabNet Work Order: 10985-001-001-9999-00

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER Lab Sample ID: 9904L738-003 MS

Sample wt/vol: 100 (g/mL) ML Lab File ID: 04269924.12

% Moisture: decanted: (Y/N) _ Date Received: 04/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/23/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/27/99

Injection Volume: 20.0 (uL) Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: <u>ug/L</u>	Q
50-00-0-----	Formaldehyde	450	

OK 5/27/99

1D
ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BOV927MSD

Lab Name: Recra.LabNet Work Order: 10985-001-001-9999-00

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER Lab Sample ID: 9904L738-003 MSD

Sample wt/vol: 100 (g/mL) ML Lab File ID: 04269924.15

% Moisture: decanted: (Y/N) _ Date Received: 04/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/23/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/27/99

Injection Volume: 20.0 (uL) Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: <u>ug/L</u>	Q
50-00-0-----	Formaldehyde	480	

Handwritten signature/initials

1D
ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BLK

Lab Name: Recra.LabNet Work Order: 10985-001-001-9999-00

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER Lab Sample ID: 99LLC056-MB1

Sample wt/vol: 100 (g/mL) ML Lab File ID: 04269924.03

% Moisture: decanted: (Y/N) _ Date Received: 04/23/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/23/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/26/99

Injection Volume: 20.0 (uL) Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: <u>ug/L</u>	Q
50-00-0-----	Formaldehyde	12	U

QA 5/17/99

1D
ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BLKBS

Lab Name: Recra.LabNet Work Order: 10985-001-001-9999-00

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER Lab Sample ID: 99LLC056-MB1 BS

Sample wt/vol: 100 (g/mL) ML Lab File ID: 04269924.04

% Moisture: decanted: (Y/N) _ Date Received: 04/23/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 04/23/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/26/99

Injection Volume: 20.0 (uL) Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: <u>ug/L</u>	Q
50-00-0-----	Formaldehyde	460	

Handwritten signature/initials
04/26/99

3E

WATER ORGANICS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Recra.LabNet

Contract: 0985-01-01

Client : TNU-HANFORD B99-037

RFW Lot No.: 9904L738-003

MATRIX Spike - Sample No.: B0V927

COMPOUND	SPIKE ADDED ug/L	SAMPLE CONCENTRATION ug/L	MS CONCENTRATION ug/L	MS % REC #	QC LIMITS REC.
Formaldehyde	500	0	450	91	0-200

COMPOUND	SPIKE ADDED ug/L	MSD CONCENTRATION ug/L	MSD % REC #	% RPD #	QC LIMITS RPD	REC
Formaldehyde	500	480	97	6	200	0-200

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 1 outside limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS: _____

EL 5/1/99

3E
WATER ORGANICS BLANK SPIKE RECOVERY

Lab Name: Recra.LabNet

Contract: 0985-01-01

Client : TNU-HANFORD B99-037

RFW Lot No.: 99LLC056-MB1

BLANK Spike - Sample No.: BLK

COMPOUND	SPIKE	SAMPLE	BS	BS	QC
	ADDED	CONCENTRATION	CONCENTRATION	%	LIMITS
	ug/L	ug/L	ug/L	REC #	REC.
Formaldehyde	500	0	460	93	0-200

Column to be used to flag recovery value with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 1 outside limits

COMMENTS: _____

Handwritten signature/initials

4C
ORGANICS METHOD BLANK SUMMARY

CLIENT SAMPLE NO.
BLK

Lab Name: Recra.LabNet

Contract: 0985-01-01

Client: TNU-HANFORD B99-037

Lab Sample ID: 99LLC056-MB1

Lab File ID: 04269924.03

Matrix:(soil/water) WATER

Extraction:(SepF/Cont/Sonc) SONC

Sulfur Cleanup: (Y/N) _

Date Extracted: 04/23/99

Date Analyzed (1): 04/26/99

Date Analyzed (2): _____

Time Analyzed (1): 1205

Time Analyzed (2): _____

Instrument ID (1): 24

Instrument ID (2): _____

GC Column (1): ODS, ID: 4.6 (mm)

GC Column (2): ID: _____ (mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	B0V926	9904L738-002	04/26/99	
02	B0V927	9904L738-003	04/27/99	
03	B0V927MS	9904L738-003S	04/27/99	
04	B0V927MSD	9904L738-003T	04/27/99	
05	BLKBS	99LLC056-MB1S	04/26/99	

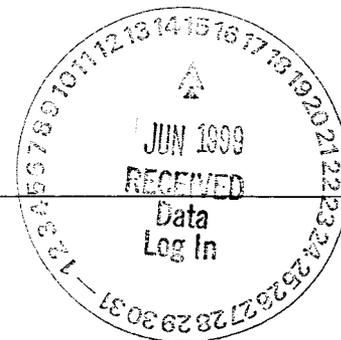
COMMENTS: _____

BLKBS



a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere



Recra LabNet Philadelphia Analytical Report

Client : TNU-HANFORD B99-037
RFW# : 9904L738
SDG/SAF#: H0389/B99-037

W.O #: 10985-001-001-9999-00
Date Received: 04-22-99

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC

The set of samples consisted of two (2) water samples collected on 04-20-99.

The samples and their associated QC samples were prepared on 04-27-99 and analyzed by criteria set forth in EPA Method 8310 for Polynuclear Aromatic Hydrocarbon target compounds on 04-30-99.

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 has been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis were met.
3. All initial calibrations associated with this data set were within acceptance criteria.
4. Continuing calibration criteria were met for all continuing calibration verification standards analyzed prior to the sample extracts.
5. All surrogate recoveries were within acceptance criteria.
6. Two (2) of thirty-two (32) blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed in the data package.
7. All matrix spike recoveries were within acceptance criteria



 J. Michael Taylor
 Vice President
 Philadelphia Analytical Laboratory

5-20-99
 Date

r:\share\lc\gcscan\04-738p.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 23 pages.

Recra LabNet Philadelphia Sample Discrepancy Report (SDR) SDR #:

99LC027

Initiator: C. Schnell
 Date: 5/17/99
 Client: TNU - Harford

RFW Batch: 9904L738
 Samples: 002, 003
 Method: SW846/MCAWW/CLP/

Parameter: 08310
 Matrix: Water
 Prep Batch: 99LE047

1. Reason for SDR

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

b. General Discrepancy

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

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

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

2 of 32 BS recoveries outside acceptance criteria (Benz(a) pyrene).

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

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

Other Description:

MS/MSD recoveries good.

[Signature]

4. Project Manager Instructions...signature/date:

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

5. Final Action...signature/date:

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

Other Explanation:

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
2	<input checked="" type="checkbox"/> Initiator	—	<input type="checkbox"/> Metals: Doughty
—	<input checked="" type="checkbox"/> Lab Manager: M. Taylor	—	<input type="checkbox"/> Inorganic: Perrone
1	<input checked="" type="checkbox"/> Project Mgr: Stone/Carey/Schrenkel/Johnson	—	<input type="checkbox"/> GC/LC: Schnell
—	<input checked="" type="checkbox"/> Section Mgr: Wesson/Daniels	—	<input type="checkbox"/> MS: LeMin/Taylor
4	<input checked="" type="checkbox"/> QA (file): Racioppi	—	<input type="checkbox"/> Log-in: Toder
3	<input type="checkbox"/> Data Management: Feldman	—	<input type="checkbox"/> Admin: Soos
—	<input type="checkbox"/> Sample Prep: Schnell/Doughty/Kauffman	—	<input type="checkbox"/> Other: _____

GLOSSARY OF PAH 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

PAH'S by HPLC / Method 8310

Report Date: 05/17/99 13:59

RFW Batch Number: 9904L738

Client: TNU-HANFORD B99-037

Work Order: 10985-001-001-9999-00

Page 1

Sample Information	Cust ID:	B0V926	B0V926	B0V926	B0V927	BLK	BLK BS
	RFW#:	002	002 MS	002 MSD	003	99LE0497-MB1	99LE0497-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:	Triphenylene	85 %	87 %	85 %	79 %	80 %	80 %
=====fl=====fl=====fl=====fl=====fl=====fl=====fl							
Naphthalene		18 U	85 %	81 %	18 U	18 U	74 %
Acenaphthylene		23 U	87 %	83 %	23 U	23 U	78 %
Acenaphthene		18 U	90 %	86 %	18 U	18 U	80 %
Fluorene		2.1 U	90 %	86 %	2.1 U	2.1 U	80 %
Phenanthrene		6.4 U	88 %	85 %	6.4 U	6.4 U	80 %
Anthracene		6.6 U	90 %	87 %	6.6 U	6.6 U	82 %
Fluoranthene		2.1 U	92 %	89 %	2.1 U	2.1 U	84 %
Pyrene		2.7 U	84 %	82 %	2.7 U	2.7 U	77 %
Benzo (a) anthracene		0.13 U	89 %	86 %	0.13 U	0.13 U	82 %
Chrysene		1.5 U	88 %	86 %	1.5 U	1.5 U	80 %
Benzo (b) fluoranthrene		0.18 U	88 %	84 %	0.18 U	0.18 U	80 %
Benzo (k) fluoranthrene		0.17 U	87 %	85 %	0.17 U	0.17 U	80 %
Benzo (a) pyrene		0.23 U	76 %	73 %	0.23 U	0.23 U	68 *
Dibenzo (a, h) anthracene		0.30 U	77 %	74 %	0.30 U	0.30 U	71 %
Benzo (ghi) perylene		0.76 U	78 %	76 %	0.76 U	0.76 U	68 %
Indeno (1, 2, 3-cd) pyrene		0.43 U	89 %	86 %	0.43 U	0.43 U	81 %

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.

05/17/99

Recra LabNet - Lionville Laboratory

PAH'S by HPLC / Method 8310

Report Date: 05/17/99 13:59

RFW Batch Number: 9904L738

Client: TNU-HANFORD B99-037

Work Order: 10985-001-001-9999-00

Page: 02

005

Cust ID: BLK BSD

Sample Information RFW#: 99LE0497-MB1
 Matrix: WATER
 D.F.: 1.00
 Units: ug/L

Surrogate:	Triphenylene	81	%
=====fl=====fl=====fl=====fl=====fl=====fl			
Naphthalene		71	%
Acenaphthylene		76	%
Acenaphthene		77	%
Fluorene		79	%
Phenanthrene		80	%
Anthracene		85	%
Fluoranthene		84	%
Pyrene		78	%
Benzo (a) anthracene		83	%
Chrysene		81	%
Benzo (b) fluoranthrene		82	%
Benzo (k) fluoranthrene		81	%
Benzo (a) pyrene		69 *	%
Dibenzo (a, h) anthracene		69	%
Benzo (ghi) perylene		68	%
Indeno (1, 2, 3-cd) pyrene		78	%

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
8310 ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-037

DATE RECEIVED: 04/22/99

RFW LOT # :9904L738

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V926	002	W	99LE0497	04/20/99	04/27/99	04/30/99
B0V926	002 MS	W	99LE0497	04/20/99	04/27/99	04/30/99
B0V926	002 MSD	W	99LE0497	04/20/99	04/27/99	04/30/99
B0V927	003	W	99LE0497	04/20/99	04/27/99	04/30/99

LAB QC:

BLK	MB1	W	99LE0497	N/A	04/27/99	04/30/99
BLK	MB1 BS	W	99LE0497	N/A	04/27/99	04/30/99
BLK	MB1 BSD	W	99LE0497	N/A	04/27/99	04/30/99

Estas

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-037-05	Page 1 of 3
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086	Project Coordinator WEISS, RL	Price Code	Data Turnaround 45 Days
Project Designation ERDF Leachate Delisting Analysis		Sampling Location ERDF 200 west		SAF No. B99-037			
Ice Chest No. <i>ERC 96-010, 5ML 427</i> <i>45119, 54 ERC 76 065</i>		Field Logbook No. <i>EL-1309-3</i>		Method of Shipment Fed Ex <i>27-2.30C, 16-2.10C, 05-2.40C</i>			
Shipped To JMA/RECRA <i>SAD 42099</i>		Offsite Property No. <i>A990116</i>		Bill of Lading/Air Bill No. <i>423579524927</i> <i>423579524905, 423579524916</i>			
				COA <i>TERDF4K117</i>			

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	HCl or H2SO4 to pH < 2 Cool	Cool 4C	Cool 4C	HNO3 to pH < 2	Cool 4C	Cool 4C	Cool 4C	Cool 4C
	Type of Container	P	P	aG	aG	aG	G	P	P	P	P
Special Handling and/or Storage	No. of Container(s)	1	1	1	1		1	1	1	1	1
	Volume	20mL	100mL	250mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL

SAMPLE ANALYSIS	Activity Scan	pH (Water) - 9640	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	NonVOCs by EXT/MS (Bendi-carb)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (I) in Special Instructions	TDS - 160 I	TSS - 160.2
					<i>AD 92099</i>					

Sample No.	Matrix *	Sample Date	Sample Time	Activity Scan	pH (Water) - 9640	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	NonVOCs by EXT/MS (Bendi-carb)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (I) in Special Instructions	TDS - 160 I	TSS - 160.2
B0V925	Water												
B0V926	Water	4-20-99	0915		X	X	X		X	X	X	X	X
B0V927	Water	4-20-99	0920		X	X	X		X	X	X	X	X

CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS ** TMA is requested to report all analytes found above their detection limits for GEA. (1) IC Anions - 9056 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)				Matrix * Soil Water Vapor Other Solid Other Liquid	
Relinquished By	Date/Time	Received By	Date/Time	Received By	Date/Time						
<i>SJ GALE</i>	<i>4/20/99 1425</i>	<i>REF 1-C</i>	<i>4/20/99 1425</i>	<i>SJ GALE</i>	<i>4/21/99 0630</i>						
Relinquished By	Date/Time	Received By	Date/Time	Received By	Date/Time						
<i>REF 1-C</i>	<i>4/21/99 0630</i>	<i>SJ GALE</i>	<i>4/21/99 0630</i>	<i>FED EX</i>							
Relinquished By	Date/Time	Received By	Date/Time	Received By	Date/Time						
<i>SJ GALE</i>	<i>4/21/99 0800</i>	<i>FED EX</i>									
Relinquished By	Date/Time	Received By	Date/Time	Received By	Date/Time						
<i>Fed Ex</i>											
LABORATORY SECTION	Received By	Title				Date/Time					
	<i>J. Galer</i>	<i>Log in Unit Leader</i>				<i>4/22/99 0930</i>					
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By				Date/Time					

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-037-05	Page 2 of 3	600	
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086		Project Coordinator WEISS, RL		Price Code	Data Turnaround 45 Days
Project Designation ERDF Leachate Delisting Analysis		Sampling Location ERDF 200 west		SAF No. B99-037					
Ice Chest No.		Field Logbook No. <i>EL-1309-3</i>		Method of Shipment Fed Ex					
Shipped To EMWRECREA <i>4/20/99</i>		Offsite Property No. <i>A990116</i>		Bill of Lading/Air Bill No. <i>423579524916</i> <i>423579524927, 423579524905</i>					
		COA <i>TERDF4 K117</i>							

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	ZnAc+NaOH to pH >9 Cool	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	Cool 4C				
		Type of Container	P	P	P	P	P	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	2	2	2	2	2
Special Handling and/or Storage	Volume	500mL	500mL	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL

SAMPLE ANALYSIS	Ammonia - 3503	See item (1) in Special Instructions	Sulfides - 9030	See item (2) in Special Instructions	Total Cyanide - 9010	See item (3) in Special Instructions	Chloro-Herbicides - EPA8151	See item (4) in Special Instructions	Pest/PCBs - 8081	See item (5) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time								
B0V925	Water										
B0V926	Water	<i>4-20-99</i>	<i>0915</i>	<i>X</i>							
B0V927	Water	<i>4-20-99</i>	<i>0920</i>	<i>X</i>							

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By <i>SJ GALE</i>	Date/Time <i>4/20/99 1425</i>	Received By <i>REF 1-C</i>	Date/Time <i>4/20/99 1425</i>
Relinquished By <i>REF 1-C</i>	Date/Time <i>4/21/99 0630</i>	Received By <i>SJ GALE</i>	Date/Time <i>4/21/99 0630</i>
Relinquished By <i>SJ GALE</i>	Date/Time <i>4/21/99 0800</i>	Received By <i>FED EX</i>	Date/Time
Relinquished By <i>Fed Ex</i>	Date/Time	Received By	Date/Time

LABORATORY SECTION	Received By <i>John</i>	Title <i>Loggin Unit Leader</i>	Date/Time <i>4/22/99 0930</i>
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Collector Gale, SJ/ Neilson RJ	Company Contact Fred Roeck	Telephone No. 372-9086	Project Coordinator WEISS, RL	Price Code	Data Turnaround 45 Days
Project Designation ERDF Leachate Delisting Analysis	Sampling Location ERDF 200 west	SAF No. B99-037			
Ice Chest No.	Field Logbook No. EL 1309-3	Method of Shipment Fed Ex			
Shipped To DNR/RECRA 4/21/99	Offsite Property No. A990116	Bill of Lading/Air Bill No. 42357952 9916, 42357952 4927, 42357952 4905			
		COA TERDFY K117			

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	HCL to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl Cool 4C						
	Special Handling and/or Storage	Type of Container	G	P	aGs*	aGs*					
	No. of Container(s)	2	2	3	3						
	Volume	1000mL	1000mL	40mL	40mL						

SAMPLE ANALYSIS				oil & Grease - 9070	Gross Alpha, Gross Beta	See item (1) in Special Instructions	See item (2) in Special Instructions						

Sample No.	Matrix *	Sample Date	Sample Time										
80V925	Water	4-20-99	0645				X						
80V926	Water	4-20-99	0915	X		X	X						
80V927	Water	4-20-99	0920	X		X	X						

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS ** TMA is requested to report all analytes found above their detection limits for GEA. (1) Alcohols, Glycols, & Ketones - 8015M (1-Butanol, Diethyl ether, Methanol) (2) VOA - 8260A (App IX); VOA - 8260A (App IX Add-On) (1,1,2-Trichloro-1,2,2-trifluoroethane, 1,3-Butadiene, 1-Butanol, 2-Chloroethyl vinyl ether, Allyl alcohol, cis-1,2-Dichloroethylene, Crotonaldehyde, Dichloropropanol, Diethyl ether, Ethyl acetate, Isoprop	Matrix * Soil Water Vapor Other Solid Other Liquid
Relinquished By S. J. GALE 4/20/99 1425	Received By REF 1-C 4/20/99 1425		
Relinquished By REF 1-C 4/21/99 0630	Received By S. J. GALE 4/21/99 0630		
Relinquished By S. J. GALE 4/21/99 0800	Received By FED EX		
Relinquished By Fed Ex	Received By		

LABORATORY SECTION	Received By J. Miller	Title Loggin Unit Leader	Date/Time 4/22/99 0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

1D
ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B0V926

Lab Name: Recra.LabNet Work Order: 10985-001-001-9999-00

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER Lab Sample ID: 9904L738-002

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 04309923.16

% Moisture: decanted: (Y/N) _ Date Received: 04/22/99

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 04/27/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/30/99

Injection Volume: 25.0 (uL) Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: <u>ug/L</u>	Q
91-20-3	Naphthalene	18	U
208-96-8	Acenaphthylene	23	U
83-32-9	Acenaphthene	18	U
86-73-7	Fluorene	2.1	U
85-01-8	Phenanthrene	6.4	U
120-12-17	Anthracene	6.6	U
206-44-0	Fluoranthene	2.1	U
129-00-0	Pyrene	2.7	U
56-55-3	Benzo (a) anthracene	0.13	U
218-01-9	Chrysene	1.5	U
205-99-2	Benzo (b) fluoranthrene	0.18	U
207-08-9	Benzo (k) fluoranthrene	0.17	U
50-32-8	Benzo (a) pyrene	0.23	U
53-70-3	Dibenzo (a, h) anthracene	0.30	U
191-24-2	Benzo (ghi) perylene	0.76	U
193-39-5	Indeno (1, 2, 3-cd) pyrene	0.43	U

Qest

1D
ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B0V926MS

Lab Name: Recra.LabNet Work Order: 10985-001-001-9999-00

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER Lab Sample ID: 9904L738-002 MS

Sample wt/vol: 500 (g/mL) ML Lab File ID: 04309923.17

% Moisture: decanted: (Y/N) _ Date Received: 04/22/99

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 04/27/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/30/99

Injection Volume: 25.0 (uL) Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: <u>ug/L</u>	Q
91-20-3	Naphthalene	150	
208-96-8	Acenaphthylene	200	
83-32-9	Acenaphthene	160	
86-73-7	Fluorene	19	
85-01-8	Phenanthrene	56	
120-12-17	Anthracene	59	
206-44-0	Fluoranthene	19	
129-00-0	Pyrene	23	
56-55-3	Benzo(a)anthracene	1.2	
218-01-9	Chrysene	13	
205-99-2	Benzo(b)fluoranthrene	1.6	
207-08-9	Benzo(k)fluoranthrene	1.5	
50-32-8	Benzo(a)pyrene	1.8	
53-70-3	Dibenzo(a,h)anthracene	2.3	
191-24-2	Benzo(ghi)perylene	5.9	
193-39-5	Indeno(1,2,3-cd)pyrene	3.8	

Elstahs

1D
ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BOV926MSD

Lab Name: Recra.LabNet Work Order: 10985-001-001-9999-00

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER Lab Sample ID: 9904L738-002 MSD

Sample wt/vol: 500 (g/mL) ML Lab File ID: 04309923.18

% Moisture: decanted: (Y/N) Date Received: 04/22/99

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 04/27/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/30/99

Injection Volume: 25.0 (uL) Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION	
		UNITS: <u>ug/L</u>	<u>Q</u>
91-20-3	Naphthalene	140	
208-96-8	Acenaphthylene	190	
83-32-9	Acenaphthene	150	
86-73-7	Fluorene	18	
85-01-8	Phenanthrene	55	
120-12-17	Anthracene	58	
206-44-0	Fluoranthene	19	
129-00-0	Pyrene	22	
56-55-3	Benzo(a)anthracene	1.1	
218-01-9	Chrysene	13	
205-99-2	Benzo(b)fluoranthrene	1.5	
207-08-9	Benzo(k)fluoranthrene	1.4	
50-32-8	Benzo(a)pyrene	1.7	
53-70-3	Dibenzo(a,h)anthracene	2.2	
191-24-2	Benzo(ghi)perylene	5.8	
193-39-5	Indeno(1,2,3-cd)pyrene	3.7	

Handwritten signature/initials

1D
ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B0V927

Lab Name: Recra.LabNet Work Order: 10985-001-001-9999-00

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER Lab Sample ID: 9904L738-003

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 04309923.19

% Moisture: decanted: (Y/N) Date Received: 04/22/99

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 04/27/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/30/99

Injection Volume: 25.0 (uL) Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION	
		UNITS: <u>ug/L</u>	Q
91-20-3-----	Naphthalene	18	U
208-96-8-----	Acenaphthylene	23	U
83-32-9-----	Acenaphthene	18	U
86-73-7-----	Fluorene	2.1	U
85-01-8-----	Phenanthrene	6.4	U
120-12-17-----	Anthracene	6.6	U
206-44-0-----	Fluoranthene	2.1	U
129-00-0-----	Pyrene	2.7	U
56-55-3-----	Benzo (a) anthracene	0.13	U
218-01-9-----	Chrysene	1.5	U
205-99-2-----	Benzo (b) fluoranthrene	0.18	U
207-08-9-----	Benzo (k) fluoranthrene	0.17	U
50-32-8-----	Benzo (a) pyrene	0.23	U
53-70-3-----	Dibenzo (a, h) anthracene	0.30	U
191-24-2-----	Benzo (ghi) perylene	0.76	U
193-39-5-----	Indeno (1, 2, 3-cd) pyrene	0.43	U

C. Starks

1D
ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BLK

Lab Name: Recra.LabNet Work Order: 10985-001-001-9999-00

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER Lab Sample ID: 99LE0497-MB1

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 04309923.11

% Moisture: decanted: (Y/N) _ Date Received: 04/27/99

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 04/27/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/30/99

Injection Volume: 25.0 (uL) Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION	
		UNITS: <u>ug/L</u>	<u>Q</u>
91-20-3	Naphthalene	18	U
208-96-8	Acenaphthylene	23	U
83-32-9	Acenaphthene	18	U
86-73-7	Fluorene	2.1	U
85-01-8	Phenanthrene	6.4	U
120-12-17	Anthracene	6.6	U
206-44-0	Fluoranthene	2.1	U
129-00-0	Pyrene	2.7	U
56-55-3	Benzo (a) anthracene	0.13	U
218-01-9	Chrysene	1.5	U
205-99-2	Benzo (b) fluoranthrene	0.18	U
207-08-9	Benzo (k) fluoranthrene	0.17	U
50-32-8	Benzo (a) pyrene	0.23	U
53-70-3	Dibenzo (a, h) anthracene	0.30	U
191-24-2	Benzo (ghi) perylene	0.76	U
193-39-5	Indeno (1, 2, 3-cd) pyrene	0.43	U

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1D
ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BLKBS

Lab Name: Recra.LabNet Work Order: 10985-001-001-9999-00

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER Lab Sample ID: 99LE0497-MB1 BS

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 04309923.12

% Moisture: decanted: (Y/N) _ Date Received: 04/27/99

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 04/27/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/30/99

Injection Volume: 25.0 (uL) Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: <u>ug/L</u>	Q
91-20-3	Naphthalene	66	
208-96-8	Acenaphthylene	89	
83-32-9	Acenaphthene	72	
86-73-7	Fluorene	8.4	
85-01-8	Phenanthrene	26	
120-12-17	Anthracene	27	
206-44-0	Fluoranthene	8.8	
129-00-0	Pyrene	10	
56-55-3	Benzo (a) anthracene	0.53	
218-01-9	Chrysene	6.0	
205-99-2	Benzo (b) fluoranthrene	0.72	
207-08-9	Benzo (k) fluoranthrene	0.68	
50-32-8	Benzo (a) pyrene	0.80	
53-70-3	Dibenzo (a,h) anthracene	1.1	
191-24-2	Benzo (ghi) perylene	2.6	
193-39-5	Indeno (1,2,3-cd) pyrene	1.7	

2/15/99

1D
ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BLKBSD

Lab Name: Recra.LabNet Work Order: 10985-001-001-9999-00

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER Lab Sample ID: 99LE0497-MB1 BSD

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 04309923.13

% Moisture: decanted: (Y/N) _ Date Received: 04/27/99

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 04/27/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 04/30/99

Injection Volume: 25.0 (uL) Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: <u>ug/L</u>	Q
91-20-3	Naphthalene	64	
208-96-8	Acenaphthylene	87	
83-32-9	Acenaphthene	69	
86-73-7	Fluorene	8.3	
85-01-8	Phenanthrene	26	
120-12-17	Anthracene	28	
206-44-0	Fluoranthene	8.9	
129-00-0	Pyrene	10	
56-55-3	Benzo (a) anthracene	0.54	
218-01-9	Chrysene	6.1	
205-99-2	Benzo (b) fluoranthrene	0.74	
207-08-9	Benzo (k) fluoranthrene	0.69	
50-32-8	Benzo (a) pyrene	0.82	
53-70-3	Dibenzo (a, h) anthracene	1.0	
191-24-2	Benzo (ghi) perylene	2.6	
193-39-5	Indeno (1, 2, 3-cd) pyrene	1.7	

Handwritten signature

2E
WATER ORGANICS SURROGATE RECOVERY

Lab Name: Recra.LabNet

Contract: 0985-01-01

Case No.: TNU-HANFORD B99-037

RFW Lot No.: 9904L738

GC Column(1): HYPERS ID: 4.6 (mm)

GC Column(2): ID: _____ (mm)

CLIENT	1	2	1	2	1	2	TOT
SAMPLE NO.	%REC #	OUT					
01 B0V926	85						0
02 B0V926MS	87						0
03 B0V926MSD	85						0
04 B0V927	79						0
05 BLK	80						0
06 BLKBS	80						0
07 BLKBSD	81						0

= Triphenylene

ADVISORY
QC LIMITS
(65-115)

- # Column to be used to flag recovery values
- * Values outside of QC limits
- D Surrogate diluted out

ELSL/1799

WATER ORGANICS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Recra.LabNetContract: 0985-01-01Client : TNU-HANFORD B99-037RFW Lot No.: 9904L738-002MATRIX Spike - Sample No.: B0V926

COMPOUND	SPIKE ADDED ug/L	SAMPLE CONCENTRATION ug/L	MS CONCENTRATION ug/L	MS % REC #	QC LIMITS REC.
Naphthalene	180	0	150	85	35-105
Acenaphthylene	230	0	200	87	55-105
Acenaphthene	180	0	160	90	55-105
Fluorene	21.0	0	19	90	65-100
Phenanthrene	64.0	0	56	88	70-100
Anthracene	66.0	0	59	90	65-125
Fluoranthene	21.0	0	19	92	70-105
Pyrene	27.0	0	23	84	65-110
Benzo (a) anthracene	1.30	0	1.2	89	70-115
Chrysene	15.0	0	13	88	70-110
Benzo (b) fluoranthrene	1.80	0	1.6	88	70-120
Benzo (k) fluoranthrene	1.70	0	1.5	87	70-120
Benzo (a) pyrene	2.36	0	1.8	76	70-105
Dibenzo (a, h) anthracene	3.00	0	2.3	77	60-115
Benzo (ghi) perylene	7.60	0	5.9	78	55-115
Indeno (1, 2, 3-cd) pyrene	4.30	0	3.8	89	65-115

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Handwritten signature/initials

WATER ORGANICS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Recra.LabNetContract: 0985-01-01Client : TNU-HANFORD B99-037RFW Lot No.: 9904L738-002MATRIX Spike - Sample No.: BOV926

COMPOUND	SPIKE	MSD	MSD	%	%	QC LIMITS	
	ADDED	CONCENTRATION	CONCENTRATION			REC #	RPD #
	ug/L	ug/L	ug/L				
Naphthalene_____	180	140	81	4	88	35-105	
Acenaphthylene_____	230	190	83	4	113	55-105	
Acenaphthene_____	180	150	86	4	18	55-105	
Fluorene_____	21.0	18	86	4	52	65-100	
Phenanthrene_____	64.0	55	85	3	27	70-100	
Anthracene_____	66.0	58	87	3	52	65-125	
Fluoranthene_____	21.0	19	89	3	22	70-105	
Pyrene_____	27.0	22	82	2	56	65-110	
Benzo(a)anthracene_____	1.30	1.1	86	3	17	70-115	
Chrysene_____	15.0	13	86	2	29	70-110	
Benzo(b)fluoranthrene__	1.80	1.5	84	4	53	70-120	
Benzo(k)fluoranthrene__	1.70	1.4	85	2	17	70-120	
Benzo(a)pyrene_____	2.36	1.7	73	4	28	70-105	
Dibenzo(a,h)anthracene_	3.00	2.2	74	4	59	60-115	
Benzo(ghi)perylene_____	7.60	5.8	76	2	23	55-115	
Indeno(1,2,3-cd)pyrene_	4.30	3.7	86	3	21	65-115	

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 16 outside limitsSpike Recovery: 0 out of 32 outside limits

COMMENTS: _____

2/15/99

WATER ORGANICS BLANK SPIKE/BLANK SPIKE DUPLICATE RECOVERY

Lab Name: Recra.LabNetContract: 0985-01-01Client : TNU-HANFORD B99-037RFW Lot No.: 99LE0497-MB1BLANK Spike - Sample No.: BLK

COMPOUND	SPIKE ADDED ug/L	SAMPLE CONCENTRATION ug/L	BS CONCENTRATION ug/L	BS % REC #	QC LIMITS REC.
Naphthalene_____	90.0	0	66	74	35-105
Acenaphthylene_____	115	0	89	78	55-105
Acenaphthene_____	90.0	0	72	80	55-105
Fluorene_____	10.5	0	8.4	80	65-100
Phenanthrene_____	32.0	0	26	80	70-100
Anthracene_____	33.0	0	27	82	65-125
Fluoranthene_____	10.5	0	8.8	84	70-105
Pyrene_____	13.5	0	10	77	65-110
Benzo (a) anthracene_____	0.650	0	0.53	82	70-115
Chrysene_____	7.50	0	6.0	80	70-110
Benzo (b) fluoranthrene_____	0.900	0	0.72	80	70-120
Benzo (k) fluoranthrene_____	0.850	0	0.68	80	70-120
Benzo (a) pyrene_____	1.18	0	0.80	68 *	70-105
Dibenzo (a, h) anthracene_____	1.50	0	1.1	71	60-115
Benzo (ghi) perylene_____	3.80	0	2.6	68	55-115
Indeno (1,2,3-cd) pyrene_____	2.15	0	1.7	81	65-115

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Q1/1/85

WATER ORGANICS BLANK SPIKE/BLANK SPIKE DUPLICATE RECOVERY

Lab Name: Recra.LabNetContract: 0985-01-01Client : TNU-HANFORD B99-037RFW Lot No.: 99LE0497-MB1BLANK Spike - Sample No.: BLK

COMPOUND	SPIKE ADDED ug/L	BSD CONCENTRATION ug/L	BSD	% RPD #	QC LIMITS RPD REC
			% REC #		
Naphthalene_____	90.0	64	71	4	88 35-105
Acenaphthylene_____	115	87	76	2	113 55-105
Acenaphthene_____	90.0	69	77	3	18 55-105
Fluorene_____	10.5	8.3	79	1	52 65-100
Phenanthrene_____	32.0	26	80	0	27 70-100
Anthracene_____	33.0	28	85	3	52 65-125
Fluoranthene_____	10.5	8.9	84	0	22 70-105
Pyrene_____	13.5	10	78	1	56 65-110
Benzo (a) anthracene_____	0.650	0.54	83	1	17 70-115
Chrysene_____	7.50	6.1	81	1	29 70-110
Benzo (b) fluoranthrene_____	0.900	0.74	82	2	53 70-120
Benzo (k) fluoranthrene_____	0.850	0.69	81	1	17 70-120
Benzo (a) pyrene_____	1.18	0.82	69 *	1	28 70-105
Dibenzo (a, h) anthracene_____	1.50	1.0	69	2	59 60-115
Benzo (ghi) perylene_____	3.80	2.6	68	0	23 55-115
Indeno (1,2,3-cd) pyrene_____	2.15	1.7	78	3	21 65-115

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 16 outside limitsSpike Recovery: 2 out of 32 outside limits

COMMENTS: _____

01/17/99

4C
ORGANICS METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

Lab Name: Recra.LabNet

Contract: 0985-01-01

BLK

Client: TNU-HANFORD B99-037

Lab Sample ID: 99LE0497-MB1

Lab File ID: 04309923.11

Matrix: (soil/water) WATER

Extraction: (SepF/Cont/Sonc) CONT

Sulfur Cleanup: (Y/N)

Date Extracted: 04/27/99

Date Analyzed (1): 04/30/99

Date Analyzed (2):

Time Analyzed (1): 1136

Time Analyzed (2):

Instrument ID (1): 23

Instrument ID (2):

GC Column (1): HYPERS ID: 4.6 (mm)

GC Column (2): ID: (mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	B0V926	9904L738-002	04/30/99	
02	B0V926MS	9904L738-002S	04/30/99	
03	B0V926MSD	9904L738-002T	04/30/99	
04	B0V927	9904L738-003	04/30/99	
05	BLKBS	99LE0497-MB1S	04/30/99	
06	BLKBSD	99LE0497-MB1T	04/30/99	

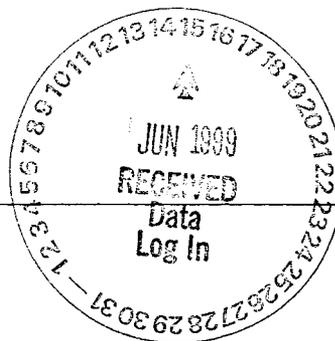
COMMENTS: _____

05/19/99



a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere



Recra LabNet Philadelphia Analytical Report

Client: TNU-HANFORD B99-037

RFW#: 9904L738

SDG/SAF#: H0389/B99-037

W.O.#: 10985-001-001-9999-00

Date Received: 04-22-99

PESTICIDE/PCB

The set of samples consisted of two (2) water samples collected on 04-20-99.

The samples and their associated QC samples were extracted on 04-27-99 and analyzed based on SW846, 3rd Edition on 04-28,29-99. The extraction procedure was based on method 3520 and the extracts were analyzed based on method 8081.

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

1. The cooler temperature has been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis have been met.
3. The method blank was below the reporting limits for all target compounds.
4. All surrogate recoveries were within acceptance criteria.
5. All blank spike recoveries were within acceptance criteria.
6. All matrix spike recoveries were within acceptance criteria.
7. All initial calibrations associated with this data set were within acceptance criteria.
8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.


J. Michael Taylor

Vice President
Philadelphia Analytical Laboratory

pefr:\group\data\pest\04L-738.pes

05-21-99
Date

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.

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP** = Indicates Spiked Compound.



GLOSSARY OF PESTICIDE/PCB DATA

- P** = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- D** = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C** = This flag applies to a compound that has been confirmed by GC/MS.



Recra LabNet - Lionville Laboratory
PEST/PCB ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-037

DATE RECEIVED: 04/22/99

RFW LOT # :9904L738

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V926	002	W	99LE0495	04/20/99	04/27/99	04/28/99
B0V927	003	W	99LE0495	04/20/99	04/27/99	04/28/99
B0V927	003 MS	W	99LE0495	04/20/99	04/27/99	04/28/99
B0V927	003 MSD	W	99LE0495	04/20/99	04/27/99	04/28/99

LAB QC:

PBLKIS	MB1	W	99LE0495	N/A	04/27/99	04/28/99
PBLKIS	MB1 BS	W	99LE0495	N/A	04/27/99	04/29/99

Checked

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-037-05	Page 1 of 3
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086		Project Coordinator WEISS, RL	
Project Designation ERDF Leachate Delisting Analysis		Sampling Location ERDF 200 west		SAF No. B99-037		Price Code Data Turnaround 45 Days	
Ice Chest No. <i>ERC 96-010, 50L 427</i> <i>W5M54 ERC 76 065</i>		Field Logbook No. <i>FL-1309-3</i>		Method of Shipment Fed Ex <i>27-2.3°C, 16-2.1°C, 05-2.4°C</i>			
Shipped To TMA/RECRA <i>SAD 42099</i>		Offsite Property No. <i>A990116</i>		Bill of Lading/Air Bill No. <i>423579524927</i> <i>423579524905, 423579524916</i>			
				COA <i>TERDF4K117</i>			

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	HCl or H2SO4 to pH <2	Cool 4C	Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	Cool 4C
	Type of Container	P	P	aG	aG	aG	G	P	P	P	P
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
	Volume	20mL	100mL	250mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL

SAMPLE ANALYSIS				Activity Scan	pH (Water) - 9040	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	NonVOCs by EXT/TS/MS (Benzocarb)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (1) in Special Instructions.	TDS - 160.1	TSS - 160.2
738								<i>AD</i>	<i>9209</i>				

Sample No.	Matrix *	Sample Date	Sample Time										
B0V925	Water												
B0V926	Water	<i>4-20-99</i>	<i>0915</i>		X	X	X		X	X	X	X	X
B0V927	Water	<i>4-20-99</i>	<i>0920</i>		X	X	X		X	X	X	X	X

CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS ** TMA is requested to report all analytes found above their detection limits for GEA. (1) IC Anions - 9056 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)						Matrix * Soil Water Vapor Other Solid Other Liquid	
Relinquished By	Date/Time	Received By	Date/Time										
<i>SJ GALE</i>	<i>4/20/99 1425</i>	<i>REF 1-C</i>	<i>4/20/99 1425</i>										
Relinquished By	Date/Time	Received By	Date/Time										
<i>REF 1-C</i>	<i>4/21/99 0630</i>	<i>SJ GALE</i>	<i>4/21/99 0630</i>										
Relinquished By	Date/Time	Received By	Date/Time										
<i>SJ GALE</i>	<i>4/21/99 0800</i>	<i>FED EX</i>											
Relinquished By	Date/Time	Received By	Date/Time										
<i>Fed ex</i>													
LABORATORY SECTION	Received By	Title						Date/Time					
	<i>J. GALE</i>	<i>Log in Unit Leader</i>						<i>4/22/99 0930</i>					
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By						Date/Time					

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-037-05	Page 2 of 3
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086		Project Coordinator WEISS, RL	
Project Designation ERDF Leachate Delisting Analysis		Sampling Location ERDF 200 west		SAF No. B99-037		Price Code Data Turnaround 45 Days	
Ice Chest No.		Field Logbook No. <i>EL-1309-3</i>		Method of Shipment Fed Ex			
Shipped To TMA/RECRA <i>4242099</i>		Offsite Property No. <i>A990116</i>		Bill of Lading/Air Bill No. <i>423579524916</i> <i>423579524927, 423579524905</i> COA <i>TERDF4 K117</i>			

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POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	ZnAc+NaOH to pH >9 Cool	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	Cool 4C				
	Special Handling and/or Storage	Type of Container	P	P	P	P	P	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	2	2	2	2	2
	Volume	500mL	500mL	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL

SAMPLE ANALYSIS				Ammonia - 350.3	See item (1) in Special Instructions	Sulfides - 9030	See item (2) in Special Instructions	Total Cyanide - 9010	See item (3) in Special Instructions	Chloro-Herbicides - EPA8151	See item (4) in Special Instructions	Pes/PCBs - 8081	See item (5) in Special Instructions
											<i>SP</i>		

Sample No.	Matrix *	Sample Date	Sample Time										
B0V925	Water												
B0V926	Water	<i>4-20-99</i>	<i>0915</i>	<i>X</i>	<i>X</i>	<i>X</i>		<i>X</i>	<i>X</i>	<i>X</i>		<i>X</i>	<i>X</i>
B0V927	Water	<i>4-20-99</i>	<i>0920</i>	<i>X</i>	<i>X</i>	<i>X</i>		<i>X</i>	<i>X</i>	<i>X</i>		<i>X</i>	<i>X</i>

CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS ** TMA is requested to report all analytes found above their detection limits for GEA. (1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Lead, Selenium, Silicon, Thallium, Tin) (2) Gamma Spectroscopy (Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155) (3) 8310_SVOA_HPLC (Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene) (4) Nitrosamines - 8070 (N-Nitroso-di-n-dipropylamine, N-Nitrosodimethylamine) (5) Semi-VOA - 8270A (App IX); Semi-VOA -- 8270A (App IX Add-On) (1,2-Diphenylhydrazine, 1,4-Dinitrobenzene, 1-Acetyl-2-thiourea, 2,5-Diaminotoluene, 2-Cyclohexyl-4,6-dinitrophenol)						Matrix * Soil Water Vapor Other Solid Other Liquid	
Relinquished By <i>SJ GALE</i>	Date/Time <i>4/20/99 1425</i>	Received By <i>REF 1-C</i>	Date/Time <i>4/20/99 1425</i>	Relinquished By <i>REF 1-C</i>	Date/Time <i>4/21/99 0630</i>	Received By <i>SJ GALE</i>	Date/Time <i>4/21/99 0630</i>	Relinquished By <i>SJ GALE</i>	Date/Time <i>4/21/99 0800</i>	Received By <i>FED EX</i>	Date/Time		

LABORATORY SECTION	Received By <i>Jordan</i>	Title <i>Logan Unit Leader</i>	Date/Time <i>4/22/99 0930</i>
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-037-05	Page 3 of 3
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086	Project Coordinator WEISS, RL	Price Code	Data Turnaround 45 Days
Project Designation ERDF Leachate Delisting Analysis		Sampling Location ERDF 200 west		SAF No. B99-037			
Ice Chest No.		Field Logbook No. <i>EL 1309-3</i>		Method of Shipment Fed Ex			
Shipped To TMA/RECRA <i>4/20/99</i>		Offsite Property No. <i>A990116</i>		Bill of Lading/Air Bill No. <i>42357952 9916,</i> <i>42357952 4927, 42357952 4905</i>			
				COA <i>TERDFY K117</i>			

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	HCL to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl Cool 4C						
	Type of Container	G	P	aGs*	aGs*						
Special Handling and/or Storage	No. of Container(s)	2	2	3	3						
	Volume	1000mL	1000mL	40mL	40mL						
SAMPLE ANALYSIS		oil & Grease - 9070	Gross Alpha, Gross Beta	See item (1) in Special Instructions	See item (2) in Special Instructions						
Sample No.	Matrix *	Sample Date	Sample Time								
B0V925	Water	<i>4-20-99</i>	<i>0645</i>				X				
B0V926	Water	<i>4-20-99</i>	<i>0915</i>	X		X	X				
B0V927	Water	<i>4-20-99</i>	<i>0920</i>	X		X	X				

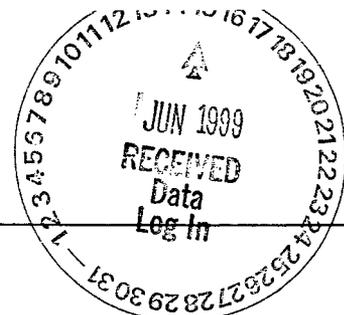
CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS ** TMA is requested to report all analytes found above their detection limits for GEA. (1) Alcohols, Glycols, & Ketones - 8015M (1-Butanol, Diethyl ether, Methanol) (2) VOA - 8260A (App IX); VOA - 8260A (App IX Add-On) (1,1,2-Trichloro-1,2,2-trifluoroethane, 1,3-Butadiene, 1-Butanol, 2-Chloroethyl vinyl ether, Allyl alcohol, cis-1,2-Dichloroethylene, Crotonaldehyde, Dichloropropanol, Diethyl ether, Ethyl acetate, Isoprop				Matrix * Soil Water Vapor Other Solid Other Liquid	
Relinquished By	Date/Time	Received By	Date/Time								
<i>SJ GALE</i>	<i>4/20/99 1425</i>	<i>REF 1-C</i>	<i>4/20/99 1425</i>								
Relinquished By	Date/Time	Received By	Date/Time								
<i>REF 1-C</i>	<i>4/21/99 0630</i>	<i>SJ GALE</i>	<i>4/21/99 0630</i>								
Relinquished By	Date/Time	Received By	Date/Time								
<i>SJ GALE</i>	<i>4/21/99 0800</i>	<i>FED EX</i>									
Relinquished By	Date/Time	Received By	Date/Time								
<i>Rec'd up</i>											
LABORATORY SECTION	Received By	Title			Date/Time						
	<i>J. Miller</i>	<i>Loggin Unit Leader</i>			<i>4/22/99 0930</i>						
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By			Date/Time						



a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere

**Recra LabNet Philadelphia
Analytical Report**



Client : TNU-HANFORD B99-037
RFW# : 9904L738
SDG/SAF #: H0389/B99-037

W.O. #: 10985-001-001-9999-00
Date Received: 04-22-99

SEMIVOLATILE

Two (2) water samples were collected on 04-20-99.

The samples and their associated QC samples were extracted on 04-27-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for Client Specified Semivolatile target compounds on 05-13-99.

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 temperatures upon receipt have been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis were met.
3. Non-target compounds were 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 Bis(2-ethylhexyl)phthalate at a level less than the CRQL.
8. A spectral search was conducted for the compounds 1,4-Dinitrobenzene, 1-Acetyl-2-thiourea, 2,5-Diaminotoluene and 2-Cyclohexyl-4,6-Dinitrophenol. These compounds were not identified in the samples.

J. Michael Taylor

J. Michael Taylor

Vice President
Philadelphia Analytical Laboratory

06-09-99

Date

som\gorup\data\bna\tnu04638.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 15 pages.

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.



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.



Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, Appendix IX List

Report Date: 05/25/99 13:53

RFW Batch Number: 9904L738

Client: TNU-HANFORD B99-037

Work Order: 10985001001

Page: 1a

04

Sample Information	Cust ID:	B0V926	B0V927	B0V927	B0V927	SBLKUX	SBLKUX BS
	RFW#:	002	003	003 MS	003 MSD	99LE0496-MB1	99LE0496-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	Nitrobenzene-d5	86 %	88 %	85 %	84 %	79 %	78 %
Recovery	2-Fluorobiphenyl	85 %	86 %	77 %	78 %	67 %	66 %
	p-Terphenyl-d14	87 %	96 %	51 %	89 %	75 %	83 %
	Phenol-d5	86 %	87 %	83 %	56 %	12 %	76 %
	2-Fluorophenol	86 %	94 %	74 %	82 %	73 %	73 %
	2,4,6-Tribromophenol	71 %	73 %	70 %	71 %	62 %	64 %
=====f1=====f1=====f1=====f1=====f1=====f1=====							
	Phenol	10 U	10 U	84 %	79 %	10 U	78 %
	bis(2-Chloroethyl) ether	10 U	10 U	20 U	20 U	10 U	10 U
	2-Chlorophenol	10 U	10 U	79 %	73 %	10 U	71 %
	1,3-Dichlorobenzene	10 U	10 U	20 U	20 U	10 U	10 U
	1,4-Dichlorobenzene	10 U	10 U	64 %	52 %	10 U	41 %
	Benzyl alcohol	10 U	10 U	20 U	20 U	10 U	10 U
	1,2-Dichlorobenzene	10 U	10 U	20 U	20 U	10 U	10 U
	2-Methylphenol	10 U	10 U	20 U	20 U	10 U	10 U
	bis(2-Chloroisopropyl) ether	10 U	10 U	20 U	20 U	10 U	10 U
	4-Methylphenol	10 U	10 U	20 U	20 U	10 U	10 U
	N-Nitroso-Di-n-propylamine	10 U	10 U	89 %	56 %	10 U	64 %
	Hexachloroethane	10 U	10 U	20 U	20 U	10 U	10 U
	Nitrobenzene	10 U	10 U	20 U	20 U	10 U	10 U
	Isophorone	10 U	10 U	20 U	20 U	10 U	10 U
	2-Nitrophenol	10 U	10 U	20 U	20 U	10 U	10 U
	2,4-Dimethylphenol	10 U	10 U	20 U	20 U	10 U	10 U
	Benzoic acid	2 J	3 J	50 U	50 U	25 U	25 U
	bis(2-Chloroethoxy) methane	10 U	10 U	20 U	20 U	10 U	10 U
	2,4-Dichlorophenol	10 U	10 U	20 U	20 U	10 U	10 U
	1,2,4-Trichlorobenzene	10 U	10 U	72 %	66 %	10 U	51 %
	Naphthalene	10 U	10 U	20 U	20 U	10 U	10 U
	4-Chloroaniline	10 U	10 U	20 U	20 U	10 U	10 U
	Hexachlorobutadiene	10 U	10 U	20 U	20 U	10 U	10 U
	4-Chloro-3-methylphenol	10 U	10 U	75 %	70 %	10 U	68 %
	2-Methylnaphthalene	10 U	10 U	20 U	20 U	10 U	10 U
	Hexachlorocyclopentadiene	10 U	10 U	20 U	20 U	10 U	10 U

*= Outside of EPA CLP QC limits.

	Cust ID: B0V926		B0V927		B0V927		B0V927		SBLKUX	SBLKUX BS
RFW#:	002	003	003 MS	003 MSD	99LE0496-MB1	99LE0496-MB1				
2,4,6-Trichlorophenol	10 U	10 U	20 U	20 U	10 U	10 U				
2,4,5-Trichlorophenol	25 U	25 U	50 U	50 U	25 U	25 U				
2-Chloronaphthalene	10 U	10 U	20 U	20 U	10 U	10 U				
2-Nitroaniline	25 U	25 U	50 U	50 U	25 U	25 U				
Dimethylphthalate	10 U	10 U	20 U	20 U	10 U	10 U				
Acenaphthylene	10 U	10 U	20 U	20 U	10 U	10 U				
2,6-Dinitrotoluene	10 U	10 U	20 U	20 U	10 U	10 U				
3-Nitroaniline	25 U	25 U	50 U	50 U	25 U	25 U				
Acenaphthene	10 U	10 U	80 %	74 %	10 U	69 %				
2,4-Dinitrophenol	25 U	25 U	50 U	50 U	25 U	25 U				
4-Nitrophenol	25 U	25 U	57 %	43 %	25 U	48 %				
Dibenzofuran	10 U	10 U	20 U	20 U	10 U	10 U				
2,4-Dinitrotoluene	10 U	10 U	79 %	65 %	10 U	67 %				
Diethylphthalate	10 U	10 U	20 U	20 U	10 U	10 U				
4-Chlorophenyl-phenylether	10 U	10 U	20 U	20 U	10 U	10 U				
Fluorene	10 U	10 U	20 U	20 U	10 U	10 U				
4-Nitroaniline	25 U	25 U	50 U	50 U	25 U	25 U				
4,6-Dinitro-2-methylphenol	25 U	25 U	50 U	50 U	25 U	25 U				
N-Nitrosodiphenylamine (1)	10 U	10 U	20 U	20 U	10 U	10 U				
4-Bromophenyl-phenylether	10 U	10 U	20 U	20 U	10 U	10 U				
Hexachlorobenzene	10 U	10 U	20 U	20 U	10 U	10 U				
Pentachlorophenol	25 U	25 U	70 %	80 %	25 U	71 %				
Phenanthrene	10 U	10 U	20 U	20 U	10 U	10 U				
Anthracene	10 U	10 U	20 U	20 U	10 U	10 U				
Di-n-Butylphthalate	10 U	10 U	20 U	20 U	10 U	10 U				
Fluoranthene	10 U	10 U	20 U	20 U	10 U	10 U				
Pyrene	10 U	10 U	88 %	87 %	10 U	85 %				
Butylbenzylphthalate	10 U	10 U	20 U	20 U	10 U	10 U				
3,3'-Dichlorobenzidine	10 U	10 U	20 U	20 U	10 U	10 U				
Benzo(a)anthracene	10 U	10 U	20 U	20 U	10 U	10 U				
Chrysene	10 U	10 U	20 U	20 U	10 U	10 U				
bis(2-Ethylhexyl)phthalate	10 U	10 U	2 JB	20 U	2 J	10 U				
Di-n-Octyl phthalate	10 U	10 U	20 U	20 U	10 U	10 U				
Benzo(b)fluoranthene	10 U	10 U	20 U	20 U	10 U	10 U				
Benzo(k)fluoranthene	10 U	10 U	20 U	20 U	10 U	10 U				
Benzo(a)pyrene	10 U	10 U	20 U	20 U	10 U	10 U				
Indeno(1,2,3-cd)pyrene	10 U	10 U	20 U	20 U	10 U	10 U				
Dibenzo(a,h)anthracene	10 U	10 U	20 U	20 U	10 U	10 U				
Benzo(g,h,i)perylene	10 U	10 U	20 U	20 U	10 U	10 U				
1,4-Dioxane	10 U	10 U	20 U	20 U	10 U	10 U				

*= Outside of EPA CLP QC limits.

	Cust ID: B0V926		B0V927		B0V927		B0V927		SBLKUX		SBLKUX BS	
RFW#:	002		003		003 MS		003 MSD		99LE0496-MB1		99LE0496-MB1	
Methyl methacrylate	10 U		10 U		20 U		20 U		10 U		10 U	
Pyridine	10 U		10 U		20 U		20 U		10 U		10 U	
N-Nitrosodimethylamine	10 U		10 U		20 U		20 U		10 U		10 U	
Ethyl methacrylate	10 U		10 U		20 U		20 U		10 U		10 U	
2-Picoline	10 U		10 U		20 U		20 U		10 U		10 U	
N-Nitrosomethylethylamine	10 U		10 U		20 U		20 U		10 U		10 U	
Methyl methanesulfonate	10 U		10 U		20 U		20 U		10 U		10 U	
N-Nitrosodiethylamine	10 U		10 U		20 U		20 U		10 U		10 U	
Ethyl methanesulfonate	10 U		10 U		20 U		20 U		10 U		10 U	
Aniline	10 U		10 U		20 U		20 U		10 U		10 U	
Pentachloroethane	10 U		10 U		20 U		20 U		10 U		10 U	
3-Methylphenol	10 U		10 U		20 U		20 U		10 U		10 U	
N-Nitrosopyrrolidine	10 U		10 U		20 U		20 U		10 U		10 U	
Acetophenone	10 U		10 U		20 U		20 U		10 U		10 U	
N-Nitrosomorpholine	10 U		10 U		20 U		20 U		10 U		10 U	
o-Toluidine	10 U		10 U		20 U		20 U		10 U		10 U	
N-Nitrosopiperidine	50 U		50 U		100 U		100 U		50 U		50 U	
a,a-Dimethylphenethylamine	10 U		10 U		20 U		20 U		10 U		10 U	
2,6-Dichlorophenol	10 U		10 U		20 U		20 U		10 U		10 U	
Hexachloropropene	10 U		10 U		20 U		20 U		10 U		10 U	
p-Phenylenediamine	10 U		10 U		20 U		20 U		10 U		10 U	
N-Nitroso-di-n-butylamine	10 U		10 U		20 U		20 U		10 U		10 U	
Safrole	10 U		10 U		20 U		20 U		10 U		10 U	
1,2,4,5-Tetrachlorobenzene	10 U		10 U		20 U		20 U		10 U		10 U	
Isosafrole	10 U		10 U		20 U		20 U		10 U		10 U	
1,4-Naphthoquinone	10 U		10 U		20 U		20 U		10 U		10 U	
1,3-Dinitrobenzene	10 U		10 U		20 U		20 U		10 U		10 U	
Pentachlorobenzene	10 U		10 U		20 U		20 U		10 U		10 U	
1-Naphthylamine	10 U		10 U		20 U		20 U		10 U		10 U	
2-Naphthylamine	10 U		10 U		20 U		20 U		10 U		10 U	
2,3,4,6-Tetrachlorophenol	10 U		10 U		20 U		20 U		10 U		10 U	
1,3,5-Trinitrobenzene	10 U		10 U		20 U		20 U		10 U		10 U	
Diallate	10 U		10 U		20 U		20 U		10 U		10 U	
Phenacetin	10 U		10 U		20 U		20 U		10 U		10 U	
Diphenylamine	10 U		10 U		20 U		20 U		10 U		10 U	
5-Nitro-o-toluidine	10 U		10 U		20 U		20 U		10 U		10 U	
4-Aminobiphenyl	10 U		10 U		20 U		20 U		10 U		10 U	
Pronamide	10 U		10 U		20 U		20 U		10 U		10 U	
2-sec-Butyl-4,6-dinitrophenol	50 U		50 U		100 U		100 U		50 U		50 U	
Pentachloronitrobenzene	50 U		50 U		100 U		100 U		50 U		50 U	

*= Outside of EPA CLP QC limits.

	Cust ID:	B0V926	B0V927	B0V927	B0V927	SBLKUX	SBLKUX BS
	RFW#:	002	003	003 MS	003 MSD	99LE0496-MB1	99LE0496-MB1
4-Nitroquinoline-1-oxide		20 U	20 U	40 U	40 U	20 U	20 U
Methapyrilene		10 U	10 U	20 U	20 U	10 U	10 U
Aramite		20 U	20 U	40 U	40 U	20 U	20 U
Chlorobenzilate		10 U	10 U	20 U	20 U	10 U	10 U
p-Dimethylaminoazobenzene		10 U	10 U	20 U	20 U	10 U	10 U
3,3'-Dimethylbenzidine		10 U	10 U	20 U	20 U	10 U	10 U
2-Acetylaminofluorene		10 U	10 U	20 U	20 U	10 U	10 U
7,12-Dimethylbenz (a) anthracene		10 U	10 U	20 U	20 U	10 U	10 U
Hexachlorophene		100 U	100 U	200 U	200 U	100 U	100 U
3-Methylcholanthrene		10 U	10 U	20 U	20 U	10 U	10 U
1,2-Diphenylhydrazine		10 U	10 U	20 U	20 U	10 U	10 U
1,4-Dinitrobenzene		10 U	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.

B0V926

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER

Lab Sample ID: 9904L738-002

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: A051308

Level: (low/med) LOW

Date Received: 04/22/99

% Moisture: _____ decanted: (Y/N)___

Date Extracted: 04/27/99

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 05/13/99

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

CONCENTRATION UNITS:

Number TICs found: 5

(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.92	4	JB
2.	UNKNOWN	8.39	4	JB
3.	UNKNOWN	8.55	3	JB
4.	UNKNOWN	18.05	3	J
5. 314-40-9	BROMACIL	21.45	20	JN

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

BOV927

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER Lab Sample ID: 9904L738-003

Sample wt/vol: 1000 (g/mL) ML Lab File ID: A051309

Level: (low/med) LOW Date Received: 04/22/99

% Moisture: decanted: (Y/N) Date Extracted: 04/27/99

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 05/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.00

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

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

Number TICs found: 5

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.85		6 JB
2.	UNKNOWN	7.93		5 JB
3.	UNKNOWN	8.39		4 JB
4.	UNKNOWN	18.05		3 J
5. 314-40-9	BROMACIL	21.46		20 JN

1F
 SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
 TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKUX

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER

Lab Sample ID: 99LE0496-MB1

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: A051307

Level: (low/med) LOW

Date Received: 04/27/99

% Moisture: _____ decanted: (Y/N) ___

Date Extracted: 04/27/99

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 05/13/99

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

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

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

Number TICs found: 5

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.87	3	J
2.	UNKNOWN	7.92	5	J
3.	UNKNOWN	8.16	4	J
4.	UNKNOWN	13.63	30	J
5.	UNKNOWN	14.40	40	J

Recra LabNet - Lionville Laboratory
 BNA ANALYTICAL DATA PACKAGE FOR
 TNU-HANFORD B99-037

DATE RECEIVED: 04/22/99

RFW LOT # :9904L738

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V926	002	W	99LE0496	04/20/99	04/27/99	05/13/99
B0V927	003	W	99LE0496	04/20/99	04/27/99	05/13/99
B0V927	003 MS	W	99LE0496	04/20/99	04/27/99	05/13/99
B0V927	003 MSD	W	99LE0496	04/20/99	04/27/99	05/13/99

LAB QC:

SBLKUX	MB1	W	99LE0496	N/A	04/27/99	05/13/99
SBLKUX	MB1 BS	W	99LE0496	N/A	04/27/99	05/13/99

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B99-037-05	Page 1 of 3		13				
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086		Project Coordinator WEISS, RL		Price Code		Data Turnaround 45 Days					
Project Designation ERDF Leachate Delisting Analysis		Sampling Location ERDF 200 west		SAF No. B99-037											
Ice Chest No. <i>ERC 96-010, SML 427</i> <i>4-21-99</i> <i>4-5-99-54 ERC 76 065</i>		Field Logbook No. <i>EL-1309-3</i>		Method of Shipment Fed Ex						<i>27-2.30C, 16-2.10C, 05-2.40C</i>					
Shipped To TMA/RECRA <i>SAD 42099</i>		Offsite Property No. <i>A990116</i>		Bill of Lading/Air Bill No. <i>423579524927,</i> <i>423579524905, 423579524916</i>											
										COA <i>TERDF4K117</i>					
POSSIBLE SAMPLE HAZARDS/REMARKS			Preservation		None	None	HCl or H2SO4 to pH <2 Cool	Cool 4C	Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
			Type of Container		P	P	aG	aG	aG	G	P	P	P	P	P
			No. of Container(s)		1	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage			Volume		20mL	100mL	250mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL	
SAMPLE ANALYSIS			Activity Scan	pH (Water) - 9040	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	NonVOCs by EXT/TS/MS (Benzocarb)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (1) in Special Instructions.	TDS - 160.1	TSS - 160.2			
			730												
SAMPLE ANALYSIS															
Sample No.	Matrix *	Sample Date	Sample Time												
B0V925	Water														
B0V926	Water	<i>4-20-99</i>	<i>0915</i>		X	X	X		X	X	X	X	X	X	
B0V927	Water	<i>4-20-99</i>	<i>0920</i>		X	X	X		X	X	X	X	X	X	
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *			
Relinquished By		Date/Time		Received By		Date/Time		** TMA is requested to report all analytes found above their detection limits for GEA. (1) IC Anions - 9056 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)				Soil Water Vapor Other Solid Other Liquid			
<i>SJ GALE</i>		<i>42099 1425</i>		<i>REF 1-C</i>		<i>42099 1425</i>									
<i>REF 1-C</i>		<i>42199 0630</i>		<i>SJ GALE</i>		<i>42199 0630</i>									
<i>SJ GALE</i>		<i>42199 0800</i>		<i>FED EX</i>											
Relinquished By		Date/Time		Received By		Date/Time									
<i>Jeel-ef</i>															
LABORATORY SECTION	Received By		Title		Date/Time										
	<i>J. GALE</i>		<i>Log in Unit Leader</i>		<i>4/22/99 0930</i>										
FINAL SAMPLE DISPOSITION	Disposal Method		Disposed By		Date/Time										

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-037-05	Page 3 of 3
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086	Project Coordinator WEISS, RL	Price Code	Data Turnaround 45 Days
Project Designation ERDF Leachate Delisting Analysis		Sampling Location ERDF 200 west		SAF No. B99-037			
Ice Chest No.		Field Logbook No. EL 1309-3		Method of Shipment Fed Ex			
Shipped To TMA/RECRA 4/20/99		Offsite Property No. A990116		Bill of Lading/Air Bill No. 42357952 9916, 42357952 4927, 42357952 4905			
				COA TERDFY K117			

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	HCL to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl Cool 4C						
	Type of Container	G	P	aGs*	aGs*						
	No. of Container(s)	2	2	3	3						
Special Handling and/or Storage	Volume	1000mL	1000mL	40mL	40mL						
SAMPLE ANALYSIS		oil & Grease - 9070	Gross Alpha, Gross Beta	See item (1) in Special Instructions.	See item (2) in Special Instructions.						
Sample No.	Matrix *	Sample Date	Sample Time								
BOV925	Water	4-20-99	0645				X				
BOV926	Water	4-20-99	0915	X		X	X				
BOV927	Water	4-20-99	0920	X		X	X				

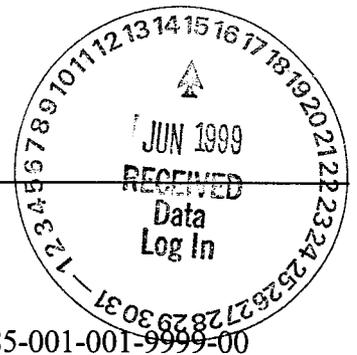
CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *			
Relinquished By		Date/Time		Received By		Date/Time		** TMA is requested to report all analytes found above their detection limits for GEA. (1) Alcohols, Glycols, & Ketones - 8015M (1-Butanol, Diethyl ether, Methanol) (2) VOA - 8260A (App IX); VOA - 8260A (App IX Add-On) {1,1,2-Trichloro-1,2,2-trifluoroethane, 1,3-Butadiene, 1-Butanol, 2-Chloroethyl vinyl ether, Allyl alcohol, cis-1,2-Dichloroethylene, Crotonaldehyde, Dichloropropanol, Diethyl ether, Ethyl acetate, Isoprop}				Soil Water Vapor Other Solid Other Liquid	
SJGALE SJG 42099 1425		4/20/99 1425		REF 1-C 42099 1425		4/20/99 1425							
Relinquished By		Date/Time		Received By		Date/Time							
REF 1-C 42199 0630		4/21/99 0630		SJGALE SJG 42199 0630		4/21/99 0630							
Relinquished By		Date/Time		Received By		Date/Time							
SJGALE SJG 42199 0800		4/21/99 0800		FED EX									
Relinquished By		Date/Time		Received By		Date/Time							
Deed-up													
LABORATORY SECTION		Received By		Title		Date/Time							
		SJG		Loejin Unit Leader		4/22/99 0930							
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time							



a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere

**Recra LabNet Philadelphia
Analytical Report**



Client : TNU-HANFORD B99-037
RFW# : 9904L738
SDG/SAF #: H0389/B99-037

W.O. #: 10985-001-001-9999-00
Date Received: 04-22-99

GC/MS VOLATILE

Three (3) water samples were collected on 04-20-99.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for Appendix IX plus Client Specified Volatile target compounds on 05-04-99.

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 temperatures upon receipt have been recorded on the chain-of-custody.
2. The required holding time for analysis was met.
3. Non-target compounds were 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 contaminants Methylene Chloride and Acetone at levels less than the CRQL.
8. A spectral search was conducted for the compounds 1,3-Butadiene, Allyl Alcohol, Crotonaldehyde, Dichloropropanol, Isopropanol and Tetrahydrofuran; these compounds were not identified in these samples.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

06-09-99

Date

som\group\data\voa\tnu05738.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 16 pages.

GLOSSARY OF VOA DATA

DATA QUALIFIERS

- U** = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** = Interference.
- NQ** = Result qualitatively confirmed but not able to quantify.
- N** = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X** = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y** = Additional qualifiers used as required are explained in the case narrative.



GLOSSARY OF VOA DATA

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Suffix added to sample number to indicate that results are from a diluted analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP, Z** = Indicates Spiked Compound.



Recra LabNet - Lionville Laboratory
 Volatiles by GC/MS, Appendix IX List

Report Date: 05/25/99 10:37

04

RFW Batch Number: 9904L738

Client: TNU-HANFORD B99-037

Work Order: 10985001001 Page: 1a

	Cust ID:	B0V925	B0V925	B0V925	B0V926	B0V927	VBLKBC
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	99LVN139-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
1,2-Dichloroethane-d4		106 %	109 %	111 %	110 %	108 %	110 %
Surrogate Toluene-d8		96 %	94 %	96 %	98 %	98 %	98 %
Recovery Bromofluorobenzene		95 %	97 %	97 %	98 %	100 %	103 %
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====							
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		1 JB	3 JB	6 B	5 U	4 JB	2 J
Acetone		2 JB	1 JB	2 JB	4 JB	2 JB	2 J
Carbon Disulfide		5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene		5 U	84 %	84 %	5 U	5 U	5 U
1,1-Dichloroethane		5 U	5 U	5 U	5 U	5 U	5 U
trans-1,2-Dichloroethene		5 U	5 U	5 U	5 U	5 U	5 U
cis-1,2-Dichloroethene		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
Vinyl Acetate		10 U	10 U	10 U	10 U	10 U	10 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	91 %	91 %	5 U	5 U	5 U
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	97 %	97 %	5 U	5 U	5 U
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

*= Outside of EPA CLP QC limits.

aw
05-25-99

Cust ID: B0V925 B0V925 B0V925 B0V926 B0V927 VBLKBC
 RFW#: 001 001 MS 001 MSD 002 003 99LVN139-MB1

1,1,2,2-Tetrachloroethane	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	5 U	94 %	98 %	5 U	5 U	5 U
Chlorobenzene	5 U	94 %	97 %	5 U	5 U	5 U
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
Acrolein	20 U					
Acrylonitrile	5 U	5 U	5 U	5 U	5 U	5 U
Trichlorofluoromethane	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorodifluoromethane	10 U					
Acetonitrile	20 U					
Iodomethane	5 U	5 U	5 U	5 U	5 U	5 U
Propionitrile (Ethyl Cyanide)	50 U					
3-Chloropropene	10 U					
Methacrylonitrile	10 U					
Dibromomethane	10 U					
Isobutyl alcohol	100 U					
1,2-Dibromoethane	10 U					
1,1,1,2-Tetrachloroethane	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane	10 U					
trans-1,4-Dichloro-2-butene	20 U					
1,2-Dibromo-3-chloropropane	10 U					
2-Chloro-1,3-Butadiene	5 U	5 U	5 U	5 U	5 U	5 U
2-Chloroethylvinylether	10 U					
1,1,2-Trichlorotrifluoroethane	10 U					
Ethyl acetate	10 U					
Diethylether	10 U					
N-Butanol	250 U					

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory
 Volatiles by GC/MS, Appendix IX List

Report Date: 05/25/99 10:30

RFW Batch Number: 9904L738

Client: TNU-HANFORD B99-037

Work Order: 10985001001 Page: 2a

Cust ID: VBLKBC BS

Sample RFW#: 99LVN139-MB1
 Information Matrix: WATER
 D.F.: 1.00
 Units: UG/L

1,2-Dichloroethane-d4	110	%
Surrogate Toluene-d8	99	%
Recovery Bromofluorobenzene	103	%
=====fl=====fl=====fl=====fl=====fl=====fl=====fl		
Chloromethane	10	U
Bromomethane	10	U
Vinyl Chloride	10	U
Chloroethane	10	U
Methylene Chloride	1	JB
Acetone	2	JB
Carbon Disulfide	5	U
1,1-Dichloroethene	88	%
1,1-Dichloroethane	5	U
trans-1,2-Dichloroethene	5	U
cis-1,2-Dichloroethene	5	U
Chloroform	5	U
1,2-Dichloroethane	5	U
2-Butanone	10	U
1,1,1-Trichloroethane	5	U
Carbon Tetrachloride	5	U
Vinyl Acetate	10	U
Bromodichloromethane	5	U
1,2-Dichloropropane	5	U
cis-1,3-Dichloropropene	5	U
Trichloroethene	94	%
Dibromochloromethane	5	U
1,1,2-Trichloroethane	5	U
Benzene	100	%
Trans-1,3-Dichloropropene	5	U
Bromoform	5	U
4-Methyl-2-pentanone	10	U
2-Hexanone	10	U
Tetrachloroethene	5	U

*= Outside of EPA CLP QC limits.

06

Cust ID: VBLKBC BS

RFW#: 99LVN139-MB1

1,1,2,2-Tetrachloroethane	5	U
Toluene	102	%
Chlorobenzene	101	%
Ethylbenzene	5	U
Styrene	5	U
Xylene (total)	5	U
Acrolein	20	U
Acrylonitrile	5	U
Trichlorofluoromethane	5	U
Dichlorodifluoromethane	10	U
Acetonitrile	20	U
Iodomethane	5	U
Propionitrile (Ethyl Cyanide)	50	U
3-Chloropropene	10	U
Methacrylonitrile	10	U
Dibromomethane	10	U
Isobutyl alcohol	100	U
1,2-Dibromoethane	10	U
1,1,1,2-Tetrachloroethane	5	U
1,2,3-Trichloropropane	10	U
trans-1,4-Dichloro-2-butene	20	U
1,2-Dibromo-3-chloropropane	10	U
2-Chloro-1,3-Butadiene	5	U
2-Chloroethylvinylether	10	U
1,1,2-Trichlorotrifluoroethane	10	U
Ethyl acetate	10	U
Diethylether	10	U
N-Butanol	250	U

*= Outside of EPA CLP QC limits.

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0V925

Lab Name: Recra.LabNet

Contract: 10985001001

Lab Code: Recra Case No.: _____

SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER

Lab Sample ID: 9904L738-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: n050407

Level: (low/med) LOW

Date Received: 04/22/99

% Moisture: not dec. _____

Date Analyzed: 05/04/99

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

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

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0V926

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 9904L738-002

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: n050408

Level: (low/med) LOW Date Received: 04/22/99

% Moisture: not dec. _____ Date Analyzed: 05/04/99

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

Number TICs found: 2 CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILANE	9.036	8	J
2.	SILANOL	11.387	20	J

1E
 VOLATILE ORGANICS ANALYSIS SHEET
 TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0V927

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 9904L738-003

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: n050409

Level: (low/med) LOW Date Received: 04/22/99

% Moisture: not dec. _____ Date Analyzed: 05/04/99

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

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILANOL	11.390	6	J

1E
 VOLATILE ORGANICS ANALYSIS SHEET
 TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKBC

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 99LVN139-MB1

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: n050405

Level: (low/med) LOW Date Received: 05/04/99

% Moisture: not dec. _____ Date Analyzed: 05/04/99

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

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

Number TICs found: 0

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

Recra LabNet - Lionville Laboratory
 VOA ANALYTICAL DATA PACKAGE FOR
 TNU-HANFORD B99-037

DATE RECEIVED: 04/22/99

RFW LOT # :9904L738

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V925	001	W	99LVN139	04/20/99	N/A	05/04/99
B0V925	001 MS	W	99LVN139	04/20/99	N/A	05/04/99
B0V925	001 MSD	W	99LVN139	04/20/99	N/A	05/04/99
B0V926	002	W	99LVN139	04/20/99	N/A	05/04/99
B0V927	003	W	99LVN139	04/20/99	N/A	05/04/99
 LAB QC:						
VBLKBC	MB1	W	99LVN139	N/A	N/A	05/04/99
VBLKBC	MB1 BS	W	99LVN139	N/A	N/A	05/04/99

gw
05-25-99

VOA Metals list corrected
 (8) ~~add wet lab~~

RECRA LabNet Use Only
 9904L738

Custody Transfer Record/Lab Work Request

Client <u>TNU - Hanford 699-037</u>	Refrigerator #	
Est. Final Proj. Sampling Date	#/Type Container	Liquid
Project # <u>10985-001-001-9999-00</u>		Solid
Project Contact/Phone #	Volume	Liquid
RECRA Project Manager <u>AS</u>		Solid
QC <u>APR</u> Del <u>std</u> TAT <u>30 day</u>	Preservatives	
Date Rec'd <u>4/22/99</u> Date Due <u>5/22/99</u>	ANALYSES REQUESTED	
Account #	ORGANIC	INORG
	VOA, Metals, PCB, Herb	Metal, CN

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 (✓)		Matrix	Date Collected	Time Collected	RECRA LabNet Use Only																
			MS	MSD				VOA	Metals	PCB	Herb	Metal	CN											
	001	BOV925			W	4/20/99	01045	✓																
	↓ 2	↓ 6			↓	↓	0915	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	↓ 3	↓ 7			↓	↓	0920	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

4/29/99 corrected VOA test codes per RM (25 ml purge)
 5/5/99 VOA test code changed back to "N"
 Met ① = HSL+OA, Pb, Se(Si) & Sn

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
 Saf # 699-037
 4/27/99 metals list corrected
 1CPO4, 1CSO4, 1SPCD added
COMPOSITE WASTE to 002+003
 1755 added to 002

- DATE/REVISIONS:
- See attachments for
 - test definitions and
 - see original chain for
 - bottle sizes
 - * 423579524927 - 2.30C
 - * 423579524905 - 2.40C

RECRA LabNet Use Only

Samples were:
 1) Shipped or Hand Delivered
 Airbill #

2) Ambient or Chilled
 3) Received in Good Condition or N
 4) Labels Indicate Properly Preserved or N
 5) Received Within Holding Times or N

COC Tape was:
 1) Present on Outer Package or N
 2) Unbroken on Outer Package or N
 3) Present on Sample or N
 4) Unbroken on Sample or N
 COC Record Present Upon Sample Rec't or N

Relinquished by	Received by	Date	Time
Jedee	Joder	4/22/99	0930

Relinquished by: [Signature]
 Received by: [Signature]
 Date: [Date] Time: [Time]

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:
 * 423579524916 - 2.10C

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-037-05	Page 2 of 3 ST
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086	Project Coordinator WEISS, RL	Price Code	Data Turnaround 45 Days
Project Designation ERDF Leachate Delisting Analysis		Sampling Location ERDF 200 west		SAF No. B99-037			
Ice Chest No.		Field Logbook No. EL-1309-3		Method of Shipment Fed Ex			
Shipped To TMA/RECRA 42042099		Offsite Property No. A990116		Bill of Lading/Air Bill No. 423579524916 423579524927, 423579524905			
				COA TERDF4 K117			

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	ZnAc+NaOH to pH >9 Cool	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	Cool 4C				
		Type of Container	P	P	P	P	P	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	2	2	2	2	2
Special Handling and/or Storage	Volume	500mL	500mL	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL

SAMPLE ANALYSIS	Ammonia - 350.3	See item (1) in Special Instructions.	Sulfides - 9030	See item (2) in Special Instructions.	Total Cyanide - 9010	See item (3) in Special Instructions.	Chloro-Herbicides - EPA8151	See item (4) in Special Instructions.	Pest/PCBs - 8081	See item (5) in Special Instructions.
									420	

Sample No.	Matrix *	Sample Date	Sample Time								
BOV925	Water										
BOV926	Water	4-20-99	0915	X	X	X	X	X	X	X	X
BOV927	Water	4-20-99	0920	X	X	X	X	X	X	X	X

CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS ** TMA is requested to report all analytes found above their detection limits for GEA.				Matrix *	
Relinquished By <i>SJ GALE</i>	Date/Time 4/20/99 1425	Received By <i>REF 1-C</i>	Date/Time 4/20/99 1425	(1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Lead, Selenium, Silicon, Thallium, Tin) (2) Gamma Spectroscopy(Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155) (3) 8310_SVOA_HPLC (Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz[a,h]anthracene) (4) Nitrosamines - 8070 (N-Nitroso-di-n-dipropylamine, N-Nitrosodimethylamine) (5) Semi-VOA - 8270A (App IX); Semi-VOA -- 8270A (App IX Add-On) {1,2-Diphenylhydrazine, 1,4-Dinitrobenzene, 1-Acetyl-2-thiourea, 2,5-Diaminotoluene, 2-Cyclohexyl-4,6-dinitrophenol}				Soil Water Vapor Other Solid Other Liquid			
Relinquished By <i>REF 1-C</i>	Date/Time 4/21/99 0630	Received By <i>SJ GALE</i>	Date/Time 4/21/99 0630								
Relinquished By <i>SJ GALE</i>	Date/Time 4/21/99 0800	Received By <i>FED EX</i>	Date/Time								
Relinquished By <i>Fed Ex</i>	Date/Time	Received By	Date/Time								

LABORATORY SECTION	Received By <i>John</i>	Title <i>Logan Unit Leader</i>	Date/Time 4/22/99 0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-037-05	Page 3 of 3	16	
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086		Project Coordinator WEISS, RL		Price Code	Data Turnaround 45 Days
Project Designation ERDF Leachate Delisting Analysis		Sampling Location ERDF 200 west		SAF No. B99-037					
Ice Chest No.		Field Logbook No. <i>EL 1309-3</i>		Method of Shipment Fed Ex					
Shipped To TMA/RECREA <i>4242099</i>		Offsite Property No. <i>A990116</i>		Bill of Lading/Air Bill No. <i>42357952 9916,</i> <i>42357952 4927, 42357952 4905</i>		COA <i>TERDFY K117</i>			

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	HCL to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl Cool 4C								
	Type of Container	G	P	aGs*	aGs*								
	No. of Container(s)	2	2	3	3								
Special Handling and/or Storage	Volume	1000mL	1000mL	40mL	40mL								

SAMPLE ANALYSIS				oil & Grease - 9070	Gross Alpha; Gross Beta	See item (1) in Special Instructions.	See item (2) in Special Instructions.						
-----------------	--	--	--	---------------------	-------------------------	---------------------------------------	---------------------------------------	--	--	--	--	--	--

Sample No.	Matrix *	Sample Date	Sample Time										
BOV925	Water	<i>4-20-99</i>	<i>0645</i>				X						
BOV926	Water	<i>4-20-99</i>	<i>0915</i>	X		X	X						
BOV927	Water	<i>4-20-99</i>	<i>0920</i>	X		X	X						

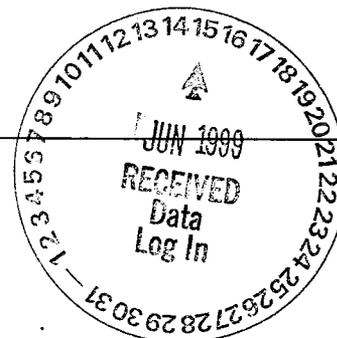
CHAIN OF POSSESSION	Sign/Print Names		SPECIAL INSTRUCTIONS					Matrix * Soil Water Vapor Other Solid Other Liquid		
	Relinquished By <i>SJ GALE</i>	Date/Time <i>4/20/99 1425</i>	Received By <i>REF 1-C</i>	Date/Time <i>4/20/99 1425</i>	** TMA is requested to report all analytes found above their detection limits for GEA.					
	Relinquished By <i>REF 1-C</i>	Date/Time <i>4/21/99 0630</i>	Received By <i>SJ GALE</i>	Date/Time <i>4/21/99 0630</i>	(1) Alcohols, Glycols, & Ketones - 8015M (1-Butanol, Diethyl ether, Methanol)					
	Relinquished By <i>SJ GALE</i>	Date/Time <i>4/21/99 0800</i>	Received By <i>FED EX</i>	Date/Time	(2) VOA - 8260A (App IX); VOA - 8260A (App IX Add-On) (1,1,2-Trichloro-1,2,2-trifluoroethane, 1,3-Butadiene, 1-Butanol, 2-Chloroethyl vinyl ether, Allyl alcohol, cis-1,2-Dichloroethylene, Crotonaldehyde, Dichloropropanol, Diethyl ether, Ethyl acetate, Isoprop					

LABORATORY SECTION	Received By <i>J Miller</i>	Title <i>Loejin Unit Leader</i>	Date/Time <i>4/22/99 0930</i>
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time



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Virtual Laboratories Everywhere



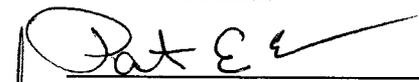
**Recra LabNet Philadelphia
Analytical Report**

Client : TNU-HANFORD B99-037
RFW# : 9904L738
SDG# : H0389
SAF# : B99-037

W.O. # : 10985-001-001-9999-00
Date Received: 04-22-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 2 water samples.
2. The samples were prepared and analyzed in accordance with the methods checked on the attached glossary. For NPDES samples: Ammonia distillations for method 350.3 were not performed as specified in 40 CFR part 136.
3. Sample holding times as required by the method and/or contract were met with the exception of Total Suspended Solids, Total Organic Carbon replicate and spike samples which were analyzed past hold and pH which were received past hold.
4. The cooler temperature was recorded on the chain-of-custody.
5. The method blanks were within method criteria with the exception of 99LOG009-MB1 for Oil and Grease which was above the reporting limit.
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 with the exception of Bromide.



J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

5-28-99
Date

njpl04-738

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 19 pages.

WET-CHEMISTRY METHODS GLOSSARY FOR ANALYSIS OF WATER SAMPLES

	<u>EPA 600</u>	<u>SW846</u>	<u>OTHER</u>
Acidity	_ 305.1		
_ Alkalinity _ Bicarbonate _ Carbonate	_ 310.1		
BOD	_ 405.1		_ 5210B (b)
Ion Chromatography:			
<input checked="" type="checkbox"/> Bromide <input checked="" type="checkbox"/> Chloride <input checked="" type="checkbox"/> Fluoride	_ 300.0	<input checked="" type="checkbox"/> 9056	
<input checked="" type="checkbox"/> Nitrite <input checked="" type="checkbox"/> Nitrate <input checked="" type="checkbox"/> Phosphate	_ 300.0	<input checked="" type="checkbox"/> 9056	
<input checked="" type="checkbox"/> Sulfate _ Formate _ Acetate _ Oxalate	_ 300.0	<input checked="" type="checkbox"/> 9056	
Chloride	_ 325.2	_ 9251	
Chlorine Residual	_ 330.5 (mod)		
Cyanide Amenable to Chlorination	_ 335.2	_ 9010A	
Cyanide (Total)	_ 335.2	<input checked="" type="checkbox"/> 9010A <i>B</i> <i>MJP 5-25-79</i> _ 9012	_ ILM04.0 (e)
Cyanide, Weak Acid Dissociable			_ 412 (a) _ 4500CN-I (b)
COD	_ 410.4 (mod)		_ 5220 C (b)
Color	_ 110.2		
Corrosivity (by Coupon)		_ 1110 (mod)	
Chromium VI		_ 7196A	_ 3500Cr-D (b)
Fluoride	_ 340.2		
Hardness, Calcium	_ 215.2		
Hardness, Total	_ 130.2		
Iodide			_ ASTM D19P202 (1)
Surfactant	_ 425.1		
_ Nitrate-Nitrite _ Nitrate _ Nitrite	_ 353.2		
Ammonia	<input checked="" type="checkbox"/> 350.3		
Total _ Kjeldahl Nitrogen _ Organic Nitrogen	_ 351.4		
Total <input checked="" type="checkbox"/> Organic _ Inorganic Carbon	_ 415.1	<input checked="" type="checkbox"/> 9060	
Oil and Grease	_ 413.1	<input checked="" type="checkbox"/> 9070	
<input checked="" type="checkbox"/> pH _ pH, Paper	_ 150.1	<input checked="" type="checkbox"/> 9040A _ 9041A	
Petroleum Hydrocarbons, Total Recoverable	_ 418.1		
Phenol	_ 420.1 _ 420.2	_ 9065 _ 9066	
_ Ortho Phosphate _ Total Phosphate	_ 365.2		_ 4500-P B _ C
Salinity			_ 210A (a) _ 2520B (b)
Settleable Solids	_ 160.5		
Sulfide	_ 376.2 _ 376.1	<input checked="" type="checkbox"/> 9030A	
Reactive _ Cyanide _ Sulfide		_ Sec 7.3	
Silica	_ 370.1		
Sulfite	_ 377.1		
Sulfate	_ 375.4	_ 9038	
Specific Conductance	_ 120.1	<input checked="" type="checkbox"/> 9050A	
Specific Gravity			_ 213E (a)
_ TCLP _ TCLV		_ 1311	
Synthetic Precipitation/Leach		_ 1312	
Total <input checked="" type="checkbox"/> Dissolved <input checked="" type="checkbox"/> Suspended _ Solids	160 <input checked="" type="checkbox"/> .1 <input checked="" type="checkbox"/> .2 _ .3		
Total Organic Halides	_ 450.1	_ 9020B	
Turbidity	_ 180.1		
Volatile Solids _ Total _ Dissolved _ Suspended	_ 160.4		
Other: _____		Method: _____	

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
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., (1989).
 - b. Standard Methods for the Examination of Water and Waste, 17 ed., (1983)
 - 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.

RFW 21-21L-034/D-06/96

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 05/28/99

CLIENT: TNU-HANFORD B99-037
 WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 9904L738

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING	DILUTION
					LIMIT	FACTOR
-002	B0V926	Bromide by IC	4.7	MG/L	2.5	10.0
		Chloride by IC	335	MG/L	25.0	100
		Fluoride by IC	2.0	MG/L	0.50	1.0
		Nitrite by IC	2.5	u MG/L	2.5	10
		Nitrate by IC	150	MG/L	25	100
		Cyanide, Total	10	u UG/L	10	1.0
		Phosphate by IC	0.25	u MG/L	0.25	1.0
		Sulfate by IC	336	MG/L	25.0	100
		Ammonia, as N	0.10	u MG/L	0.10	1.0
		Total Organic Carbon	12.1	MG/L	0.50	1.0
		Oil & Grease Gravimetri	3.0	MG/L	1.0	1.0
		pH	7.6	PH UNITS	0.01	1.0
		Sulfide	1.0	u MG/L	1.0	1.0
		Specific Conductance	2230	UMHOS/CM	1.0	1.0
		Total Dissolved Solids	1700	MG/L	5.0	1.0
		Total Suspended Solids	5.0	u MG/L	5.0	1.0
-003	B0V927	Bromide by IC	2.5	u MG/L	2.5	10.0
		Chloride by IC	362	MG/L	25.0	100
		Fluoride by IC	2.1	MG/L	0.50	1.0
		Nitrite by IC	2.5	u MG/L	2.5	10
		Nitrate by IC	150	MG/L	25	100
		Cyanide, Total	5.0	u UG/L	5.0	1.0
		Phosphate by IC	0.25	u MG/L	0.25	1.0
		Sulfate by IC	343	MG/L	25.0	100
		Ammonia, as N	0.10	u MG/L	0.10	1.0
		Total Organic Carbon	11.1	MG/L	0.50	1.0
		Oil & Grease Gravimetri	2.8	MG/L	1.0	1.0
		pH	7.8	PH UNITS	0.01	1.0
		Sulfide	1.0	u MG/L	1.0	1.0
		Specific Conductance	2060	UMHOS/CM	1.0	1.0
		Total Dissolved Solids	1800	MG/L	5.0	1.0
		Total Suspended Solids	5.0	u MG/L	5.0	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/28/99

CLIENT: TNU-HANFORD B99-037
 WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 9904L738

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
BLANK10	99LIC046-MB1	Bromide by IC	0.25 u	MG/L	0.25	1.0
		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	0.25 u	MG/L	0.25	1.0
BLANK1	99LC055-MB1	Cyanide, Total	5.0 u	UG/L	5.0	1.0
BLANK10	99LAM021-MB1	Ammonia, as N	0.10 u	MG/L	0.10	1.0
BLANK10	99LTC017-MB1	Total Organic Carbon	0.50 u	MG/L	0.50	1.0
BLANK10	99LOG009-MB1	Oil & Grease Gravimetri	1.6	MG/L	1.0	1.0
BLANK10	99LSD024-MB1	Sulfide	1.0 u	MG/L	1.0	1.0
BLANK10	99LSP016-MB1	Specific Conductance	1.0 u	UMHOS/CM	1.0	1.0
BLANK10	99LSS037-MB1	Total Dissolved Solids	5.0 u	MG/L	5.0	1.0
BLANK10	99LSSA39-MB1	Total Suspended Solids	5.0 u	MG/L	5.0	1.0
BLANK10	99LTC021-MB1	Total Organic Carbon	0.50 u	MG/L	0.50	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/28/99

CLIENT: TNU-HANFORD B99-037
 WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 9904L738

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LSSA37-MB1	Total Suspended Solids	5.0	u MG/L	5.0	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 05/28/99

CLIENT: TNU-HANFORD B99-037
 WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 9904L738

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-002	B0V926	Bromide by IC	46.8	4.7	50.0	84.2	10.0
		Chloride by IC	840	335	500	101.2	100
		Fluoride by IC	12.2	2.0	10.0	101.6	1.0
		Nitrite by IC	510	2.5 u	500	102.7	100
		Nitrate by IC	650	150	500	98.9	100
		Cyanide, Total	77	10 u	100	77.2	1.0
		Phosphate by IC	42.6	0.25u	50.0	85.2	10.0
		Sulfate by IC	875	336	500	107.8	100
-003	B0V927	Ammonia, as N	0.94	0.10u	1.0	94.1	1.0
		Total Organic Carbon	20.9	11.1	10.0	98.0	2.0
		Total Organic Carbon	21.1	11.1	10.0	99.7	2.0
		Sulfide	39.3	0.00	40.0	98.2	1.0
		Sulfide MSD	39.3	0.00	40.0	98.2	1.0
BLANK10	99LIC046-MB1	Bromide by IC	4.9	0.25u	5.0	98.2	1.0
		Chloride by IC	4.7	0.25u	5.0	94.4	1.0
		Fluoride by IC	10.7	0.50u	10.0	106.7	1.0
		Nitrite by IC	4.9	0.25u	5.0	97.1	1.0
		Nitrate by IC	4.8	0.25u	5.0	95.5	1.0
		Phosphate by IC	5.0	0.25u	5.0	99.4	1.0
		Sulfate by IC	4.8	0.25u	5.0	96.0	1.0
BLANK10	99LAM021-MB1	Ammonia, as N	1.0	0.10u	1.0	105.0	1.0
		Ammonia, as N MSD	1.0	0.10u	1.0	99.9	1.0
BLANK10	99LTC017-MB1	Total Organic Carbon	4.8	0.50u	5.0	96.8	1.0
		Total Organic Carbon	4.8	0.50u	5.0	95.9	1.0
BLANK10	99LOG009-MB1	Oil & Grease Gravimetr	33.0	1.6	35.4	88.8	1.0
		Oil & Grease - Grav M	36.6	1.6	36.1	97.0	1.0
BLANK10	99LSD024-MB1	Sulfide	9.9	1.0 u	10.0	99.0	1.0
		Sulfide MSD	10.0	1.0 u	10.0	100	1.0
BLANK10	99LSP016-MB1	Specific Conductance	136	1.0 u	147	92.5	1.0
		Spec Conductance MSD	136	1.0 u	147	92.7	1.0
BLANK10	99LSS037-MB1	Total Dissolved Solids	100	5.0 u	100	102.0	1.0
		Total Dissolved Solids	100	5.0 u	100	101.0	1.0
BLANK10	99LSSA39-MB1	Total Suspended Solids	99	5.0 u	100	98.7	1.0
		Total Suspended Solids	97	5.0 u	100	97.1	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 05/28/99

CLIENT: TNU-HANFORD B99-037

RECRA LOT #: 9904L738

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
BLANK10	99LTC021-MB1	Total Organic Carbon	5.1	0.50u	5.0	101.9	1.0
		Total Organic Carbon	5.1	0.50u	5.0	101.3	1.0
BLANK10	99LSSA37-MB1	Total Suspended Solids	99	5.0 u	100	99.0	1.0
		Total Suspended Solids	94	5.0 u	100	94.4	1.0

Recra LabNet - Lionville

INORGANICS DUPLICATE SPIKE REPORT 05/28/99

CLIENT: TNU-HANFORD B99-037

RECRA LOT #: 9904L738

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1	SPIKE#2	%DIFF
			%RECOV	%RECOV	
-003	B0V927	Total Organic Carbon	98.0	99.7	1.7
		Sulfide	98.2	98.2	0.00
BLANK10	99LAM021-MB1	Ammonia, as N	105.0	99.9	5.0
BLANK10	99LTC017-MB1	Total Organic Carbon	96.8	95.9	0.91
BLANK10	99LOG009-MB1	Oil & Grease - Grav	88.8	97.0	8.9
BLANK10	99LSD024-MB1	Sulfide	99.0	100	1.0
BLANK10	99LSP016-MB1	Specific Conductance	92.5	92.7	0.15
BLANK10	99LSS037-MB1	Total Dissolved Solids	102.0	101.0	0.99
BLANK10	99LSSA39-MB1	Total Suspended Solids	98.7	97.1	1.6
BLANK10	99LTC021-MB1	Total Organic Carbon	101.9	101.3	0.59

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INORGANICS DUPLICATE SPIKE REPORT 05/28/99

CLIENT: TNU-HANFORD B99-037

RECRA LOT #: 9904L738

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1	SPIKE#2	%DIFF
			%RECOV	%RECOV	
BLANK10	99LSSA37-MB1	Total Suspended Solids	99.0	94.4	4.8

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 05/28/99

CLIENT: TNU-HANFORD B99-037

RECRA LOT #: 9904L738

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

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR (REP)
			RESULT	REPLICATE RPD		
-002REP	BOV926	Bromide by IC	4.7	2.6	58.1	10.0
		Chloride by IC	335	325	3.0	100
		Fluoride by IC	2.0	2.1	3.4	1.0
		Nitrite by IC	2.5 u	2.5 u	NC	10
		Nitrate by IC	150	150	1.2	100
		Cyanide, Total	10 u	10 u	NC	1.0
		Phosphate by IC	0.25u	0.25u	NC	1.0
		Sulfate by IC	336	335	0.19	100
-003REP	BOV927	Ammonia, as N	0.10u	0.10u	NC	1.0
		Total Organic Carbon	11.1	11.3	2.1	1.0
		pH	7.8	7.9	0.3	1.0
		Sulfide	1.0 u	1.0 u	NC	1.0
		Total Dissolved Solids	1800	1700	3.8	1.0
		Total Suspended Solids	5.0 u	5.0 u	NC	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 05/28/99

CLIENT: TNU-HANFORD B99-037

RECRA LOT #: 9904L738

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99LC055-LC1	Cyanide, Total LCS	18	20	UG/L	88.5
LCS2	99LC055-LC2	Cyanide, Total LCS	91	100	UG/L	90.9

Recra LabNet - Lionville Laboratory
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNU-HANFORD B99-037

DATE RECEIVED: 04/22/99

RFW LOT # :9904L738

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOV926						
BROMIDE BY IC	002	W	99LIC046	04/20/99	04/22/99	04/22/99
BROMIDE BY IC	002 REP	W	99LIC046	04/20/99	04/22/99	04/22/99
BROMIDE BY IC	002 MS	W	99LIC046	04/20/99	04/22/99	04/22/99
CHLORIDE BY IC	002	W	99LIC046	04/20/99	04/22/99	04/22/99
CHLORIDE BY IC	002 REP	W	99LIC046	04/20/99	04/22/99	04/22/99
CHLORIDE BY IC	002 MS	W	99LIC046	04/20/99	04/22/99	04/22/99
FLUORIDE BY IC	002	W	99LIC046	04/20/99	04/22/99	04/22/99
FLUORIDE BY IC	002 REP	W	99LIC046	04/20/99	04/22/99	04/22/99
FLUORIDE BY IC	002 MS	W	99LIC046	04/20/99	04/22/99	04/22/99
NITRITE BY IC	002	W	99LIC046	04/20/99	04/22/99	04/22/99
NITRITE BY IC	002 REP	W	99LIC046	04/20/99	04/22/99	04/22/99
NITRITE BY IC	002 MS	W	99LIC046	04/20/99	04/22/99	04/22/99
NITRATE BY IC	002	W	99LIC046	04/20/99	04/22/99	04/22/99
NITRATE BY IC	002 REP	W	99LIC046	04/20/99	04/22/99	04/22/99
NITRATE BY IC	002 MS	W	99LIC046	04/20/99	04/22/99	04/22/99
TOTAL CYANIDE	002	W	99LC055	04/20/99	04/27/99	04/27/99
TOTAL CYANIDE	002 REP	W	99LC055	04/20/99	04/27/99	04/27/99
TOTAL CYANIDE	002 MS	W	99LC055	04/20/99	04/27/99	04/27/99
PHOSPHATE BY IC	002	W	99LIC046	04/20/99	04/22/99	04/22/99
PHOSPHATE BY IC	002 REP	W	99LIC046	04/20/99	04/22/99	04/22/99
PHOSPHATE BY IC	002 MS	W	99LIC046	04/20/99	04/22/99	04/22/99
SULFATE BY IC	002	W	99LIC046	04/20/99	04/22/99	04/22/99
SULFATE BY IC	002 REP	W	99LIC046	04/20/99	04/22/99	04/22/99
SULFATE BY IC	002 MS	W	99LIC046	04/20/99	04/22/99	04/22/99
AMMONIA	002	W	99LAM021	04/20/99	05/04/99	05/04/99
TOTAL ORGANIC CARBON	002	W	99LTC017	04/20/99	04/29/99	04/29/99
OIL & GREASE BY GRAV	002	W	99LOG009	04/20/99	04/30/99	05/03/99
PH	002	W	99LPH043	04/20/99	04/22/99	04/22/99
SULFIDE	002	W	99LSD024	04/20/99	04/27/99	04/27/99
SPECIFIC CONDUCTANCE	002	W	99LSP016	04/20/99	04/29/99	04/29/99
TOTAL DISSOLVED SOLI	002	W	99LSS037	04/20/99	04/26/99	04/27/99
TOTAL SUSPENDED SOLI	002	W	99LSSA39	04/20/99	04/29/99	04/30/99

BOV927

BROMIDE BY IC	003	W	99LIC046	04/20/99	04/22/99	04/22/99
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Recra LabNet - Lionville Laboratory
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNU-HANFORD B99-037

DATE RECEIVED: 04/22/99

RFW LOT # :9904L738

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	003	W	99LIC046	04/20/99	04/22/99	04/22/99
FLUORIDE BY IC	003	W	99LIC046	04/20/99	04/22/99	04/22/99
NITRITE BY IC	003	W	99LIC046	04/20/99	04/22/99	04/22/99
NITRATE BY IC	003	W	99LIC046	04/20/99	04/22/99	04/22/99
TOTAL CYANIDE	003	W	99LC055	04/20/99	04/27/99	04/27/99
PHOSPHATE BY IC	003	W	99LIC046	04/20/99	04/22/99	04/22/99
SULFATE BY IC	003	W	99LIC046	04/20/99	04/22/99	04/22/99
AMMONIA	003	W	99LAM021	04/20/99	05/04/99	05/04/99
AMMONIA	003 REP	W	99LAM021	04/20/99	05/04/99	05/04/99
AMMONIA	003 MS	W	99LAM021	04/20/99	05/04/99	05/04/99
TOTAL ORGANIC CARBON	003	W	99LTC017	04/20/99	04/29/99	04/29/99
TOTAL ORGANIC CARBON	003 REP	W	99LTC021	04/20/99	05/26/99	05/26/99
TOTAL ORGANIC CARBON	003 MS	W	99LTC021	04/20/99	05/26/99	05/26/99
TOTAL ORGANIC CARBON	003 MSD	W	99LTC021	04/20/99	05/26/99	05/26/99
OIL & GREASE BY GRAV	003	W	99LOG009	04/20/99	04/30/99	05/03/99
PH	003	W	99LPH043	04/20/99	04/22/99	04/22/99
PH	003 REP	W	99LPH043	04/20/99	04/22/99	04/22/99
SULFIDE	003	W	99LSD024	04/20/99	04/27/99	04/27/99
SULFIDE	003 REP	W	99LSD024	04/20/99	04/27/99	04/27/99
SULFIDE	003 MS	W	99LSD024	04/20/99	04/27/99	04/27/99
SULFIDE	003 MSD	W	99LSD024	04/20/99	04/27/99	04/27/99
SPECIFIC CONDUCTANCE	003	W	99LSP016	04/20/99	04/29/99	04/29/99
TOTAL DISSOLVED SOLI	003	W	99LSS037	04/20/99	04/26/99	04/27/99
TOTAL DISSOLVED SOLI	003 REP	W	99LSS037	04/20/99	04/26/99	04/27/99
TOTAL SUSPENDED SOLI	003	W	99LSSA37	04/20/99	04/26/99	04/27/99
TOTAL SUSPENDED SOLI	003 REP	W	99LSSA37	04/20/99	04/26/99	04/27/99

LAB QC:

BROMIDE BY IC	MB1	W	99LIC046	N/A	04/22/99	04/22/99
BROMIDE BY IC	MB1 BS	W	99LIC046	N/A	04/22/99	04/22/99
CHLORIDE BY IC	MB1	W	99LIC046	N/A	04/22/99	04/22/99
CHLORIDE BY IC	MB1 BS	W	99LIC046	N/A	04/22/99	04/22/99
FLUORIDE BY IC	MB1	W	99LIC046	N/A	04/22/99	04/22/99
FLUORIDE BY IC	MB1 BS	W	99LIC046	N/A	04/22/99	04/22/99
NITRITE BY IC	MB1	W	99LIC046	N/A	04/22/99	04/22/99
NITRITE BY IC	MB1 BS	W	99LIC046	N/A	04/22/99	04/22/99
NITRATE BY IC	MB1	W	99LIC046	N/A	04/22/99	04/22/99

Recra LabNet - Lionville Laboratory
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNU-HANFORD B99-037

DATE RECEIVED: 04/22/99

RFW LOT # :9904L738

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRATE BY IC	MB1 BS	W	99LIC046	N/A	04/22/99	04/22/99
TOTAL CYANIDE	LC1 L	W	99LC055	N/A	04/27/99	04/27/99
TOTAL CYANIDE	LC2 L	W	99LC055	N/A	04/27/99	04/27/99
TOTAL CYANIDE	MB1	W	99LC055	N/A	04/27/99	04/27/99
PHOSPHATE BY IC	MB1	W	99LIC046	N/A	04/22/99	04/22/99
PHOSPHATE BY IC	MB1 BS	W	99LIC046	N/A	04/22/99	04/22/99
SULFATE BY IC	MB1	W	99LIC046	N/A	04/22/99	04/22/99
SULFATE BY IC	MB1 BS	W	99LIC046	N/A	04/22/99	04/22/99
AMMONIA	MB1	W	99LAM021	N/A	05/04/99	05/04/99
AMMONIA	MB1 BS	W	99LAM021	N/A	05/04/99	05/04/99
AMMONIA	MB1 BSD	W	99LAM021	N/A	05/04/99	05/04/99
TOTAL ORGANIC CARBON	MB1	W	99LTC017	N/A	04/29/99	04/29/99
TOTAL ORGANIC CARBON	MB1 BS	W	99LTC017	N/A	04/29/99	04/29/99
TOTAL ORGANIC CARBON	MB1 BSD	W	99LTC017	N/A	04/29/99	04/29/99
OIL & GREASE BY GRAV	MB1	W	99LOG009	N/A	04/30/99	05/03/99
OIL AND GREASE BY GR	MB1 BS	W	99LOG009	N/A	04/30/99	05/03/99
OIL AND GREASE BY GR	MB1 BSD	W	99LOG009	N/A	04/30/99	05/03/99
SULFIDE	MB1	W	99LSD024	N/A	04/27/99	04/27/99
SULFIDE	MB1 BS	W	99LSD024	N/A	04/27/99	04/27/99
SULFIDE	MB1 BSD	W	99LSD024	N/A	04/27/99	04/27/99
SPECIFIC CONDUCTANCE	MB1	W	99LSP016	N/A	04/29/99	04/29/99
SPECIFIC CONDUCTANCE	MB1 BS	W	99LSP016	N/A	04/29/99	04/29/99
SPECIFIC CONDUCTANCE	MB1 BSD	W	99LSP016	N/A	04/29/99	04/29/99
TOTAL DISSOLVED SOLI	MB1	W	99LSS037	N/A	04/26/99	04/27/99
TOTAL DISSOLVED SOLI	MB1 BS	W	99LSS037	N/A	04/26/99	04/27/99
TOTAL DISSOLVED SOLI	MB1 BSD	W	99LSS037	N/A	04/26/99	04/27/99
TOTAL SUSPENDED SOLI	MB1	W	99LSSA39	N/A	04/29/99	04/30/99
TOTAL SUSPENDED SOLI	MB1 BS	W	99LSSA39	N/A	04/29/99	04/30/99
TOTAL SUSPENDED SOLI	MB1 BSD	W	99LSSA39	N/A	04/29/99	04/30/99
TOTAL ORGANIC CARBON	MB1	W	99LTC021	N/A	05/26/99	05/26/99
TOTAL ORGANIC CARBON	MB1 BS	W	99LTC021	N/A	05/26/99	05/26/99
TOTAL ORGANIC CARBON	MB1 BSD	W	99LTC021	N/A	05/26/99	05/26/99
TOTAL SUSPENDED SOLI	MB1	W	99LSSA37	N/A	04/26/99	04/27/99
TOTAL SUSPENDED SOLI	MB1 BS	W	99LSSA37	N/A	04/26/99	04/27/99
TOTAL SUSPENDED SOLI	MB1 BSD	W	99LSSA37	N/A	04/26/99	04/27/99

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-037-05		Page 1 of 3	
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086		Project Coordinator WEISS, RL		Price Code	
Project Designation ERDF Leachate Delisting Analysis		Sampling Location ERDF 200 west		SAF No. B99-037		Data Turnaround 45 Days			
Ice Chest No. <i>ERC 96-010, SML 427</i> <i>42199</i> <i>45 SML 54 ERC 96 065</i>		Field Logbook No. <i>EL-1309-3</i>		Method of Shipment Fed Ex		<i>27-2.3°C, 16-2.1°C, 05-2.4°C</i>			
Shipped To TMA/RECRA <i>SAD 42099</i>		Offsite Property No. <i>A990116</i>		Bill of Lading/Air Bill No. <i>423579524927</i> <i>423579524905, 423579524916</i>		COA <i>TERDF4K117</i>			

017

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	HCl or H2SO4 to pH <2 Cool	Cool 4C	Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	Cool 4C
	Type of Container	P	P	aG	aG	aG	G	P	P	P	P
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
	Volume	20mL	100mL	250mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL

SAMPLE ANALYSIS	Activity Scan	pH (Water) - 9640	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	NonVOC A by EXT/TS/MS (Benzidcarb)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (1) in Special Instructions	TDS - 160.1	TSS - 160.2
	<i>738</i>									

Sample No.	Matrix *	Sample Date	Sample Time	Activity Scan	pH (Water) - 9640	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	NonVOC A by EXT/TS/MS (Benzidcarb)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (1) in Special Instructions	TDS - 160.1	TSS - 160.2
B0V925	Water												
B0V926	Water	<i>4-20-99</i>	<i>0915</i>		X	X	X		X	X	X	X	X
B0V927	Water	<i>4-20-99</i>	<i>0920</i>		X	X	X		X	X	X	X	X

CHAIN OF POSSESSION	Sign/Print Names		SPECIAL INSTRUCTIONS						Matrix * Soil Water Vapor Other Solid Other Liquid		
	Relinquished By	Date/Time	Received By	Date/Time	** TMA is requested to report all analytes found above their detection limits for GEA.						
	<i>SJ GALE</i>	<i>4/20/99 1425</i>	<i>REF 1-C</i>	<i>4/20/99 1425</i>	(1) IC Anions - 9056 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)						
	<i>REF 1-C</i>	<i>4/21/99 0630</i>	<i>SJ GALE</i>	<i>4/21/99 0630</i>							
Relinquished By	Date/Time	Received By	Date/Time								
<i>SJ GALE</i>	<i>4/21/99 0800</i>	<i>FED EX</i>									
Relinquished By	Date/Time	Received By	Date/Time								
<i>Fed Ex</i>											

LABORATORY SECTION	Received By	Title	Date/Time
	<i>J. Roeck</i>	<i>Logistics Unit Leader</i>	<i>4/22/99 0930</i>
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-037-05	Page 2 of 3
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086	Project Coordinator WEISS, RL	Price Code	Data Turnaround 45 Days
Project Designation ERDF Leachate Delisting Analysis		Sampling Location ERDF 200 west		SAF No. B99-037			
Ice Chest No.		Field Logbook No. <i>EL-1309-3</i>		Method of Shipment Fed Ex			
Shipped To MURECRA <i>4242099</i>		Offsite Property No. <i>A990116</i>		Bill of Lading/Air Bill No. <i>423579524916</i> <i>423579524927, 423579524905</i>			
COA <i>TERDF4 K117</i>							

018

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	ZnAc+NaOH to pH >9 Cool	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C
	Type of Container	P	P	P	P	P	aG	aG	aG	aG	aG
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1	2	2	2	2	2
	Volume	500mL	500mL	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL
SAMPLE ANALYSIS	Ammonia - 350.3	See item (1) in Special Instructions.	Sulfides - 9030	See item (2) in Special Instructions.	Total Cyanide - 9010	See item (3) in Special Instructions.	Chloro-Herbicides - EPA8151	See item (4) in Special Instructions.	Pest/PCBs - 8081	See item (5) in Special Instructions.	
Sample No.	Matrix *	Sample Date	Sample Time								
BOV925	Water										
BOV926	Water	<i>4-20-99</i>	<i>0915</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>
BOV927	Water	<i>4-20-99</i>	<i>0920</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>

CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *			
Relinquished By <i>SJ GALE</i>		Date/Time <i>4/20/99 1425</i>		Received By <i>REF 1-C</i>		Date/Time <i>4/20/99 1425</i>		** TMA is requested to report all analytes found above their detection limits for GEA. (1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Lead, Selenium, Silicon, Thallium, Tin) (2) Gamma Spectroscopy (Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155) (3) 8310_SVOA_HPLC (Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene) (4) Nitrosamines - 8070 (N-Nitroso-di-n-dipropylamine, N-Nitrosodimethylamine) (5) Semi-VOA - 8270A (App IX); Semi-VOA -- 8270A (App IX Add-On) (1,2-Diphenylhydrazine, 1,4-Dinitrobenzene, 1-Acetyl-2-thiourea, 2,5-Diaminotoluene, 2-Cyclohexyl-4,6-dinitrophenol)				Soil Water Vapor Other Solid Other Liquid	
Relinquished By <i>REF 1-C</i>		Date/Time <i>4/21/99 0630</i>		Received By <i>SJ GALE</i>		Date/Time <i>4/21/99 0630</i>							
Relinquished By <i>SJ GALE</i>		Date/Time <i>4/21/99 0800</i>		Received By <i>FED EX</i>		Date/Time							
Relinquished By <i>Jedup</i>		Date/Time		Received By		Date/Time							
LABORATORY SECTION		Received By <i>Jedup</i>		Title <i>Logan Unit Leader</i>				Date/Time <i>4/22/99 0930</i>					
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time					

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			B99-037-05	Page 3 of 3
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086	Project Coordinator WEISS, RL	Price Code
Project Designation ERDF Leachate Delisting Analysis		Sampling Location ERDF 200 west		SAF No. B99-037	Data Turnaround 45 Days	
Ice Chest No.		Field Logbook No. <i>EL 1309-3</i>		Method of Shipment Fed Ex		
Shipped To DWA/RECRA SP 42099		Offsite Property No. <i>A990116</i>		Bill of Lading/Air Bill No. <i>42357952 9916,</i> <i>42357952 4927, 42357952 4905</i>		
				COA <i>TERDFY K117</i>		

019

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	HCL to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl Cool 4C					
	Type of Container	G	P	aGs*	aGs*					
	No. of Container(s)	2	2	3	3					
	Special Handling and/or Storage	Volume	1000mL	1000mL	40mL	40mL				

SAMPLE ANALYSIS		oil & Grease - 9070	Gross Alpha; Gross Beta	See item (1) in Special Instructions	See item (2) in Special Instructions						
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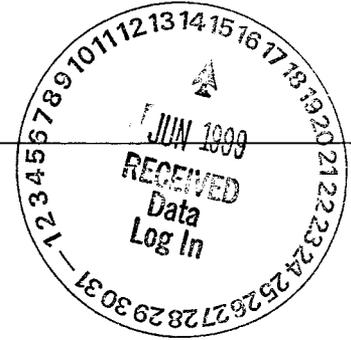
Sample No.	Matrix *	Sample Date	Sample Time								
BOV925	Water	4-20-99	0645				X				
BOV926	Water	4-20-99	0915	X		X	X				
BOV927	Water	4-20-99	0920	X		X	X				

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By	Date/Time	Received By	Date/Time	** TMA is requested to report all analytes found above their detection limits for GEA. (1) Alcohols, Glycols, & Ketones - 8015M (1-Butanol, Diethyl ether, Methanol) (2) VOA - 8260A (App IX); VOA - 8260A (App IX Add-On) (1,1,2-Trichloro-1,2,2-trifluoroethane, 1,3-Butadiene, 1-Butanol, 2-Chloroethyl vinyl ether, Allyl alcohol, cis-1,2-Dichloroethylene, Crotonaldehyde, Dichloropropanol, Diethyl ether, Ethyl acetate, Isoprop				Soil Water Vapor Other Solid Other Liquid	
<i>SJ GALE</i>	<i>4/20/99 1425</i>	<i>REF 1-C</i>	<i>4/20/99 1425</i>						
Relinquished By	Date/Time	Received By	Date/Time						
<i>REF 1-C</i>	<i>4/21/99 0630</i>	<i>SJ GALE</i>	<i>4/21/99 0630</i>						
Relinquished By	Date/Time	Received By	Date/Time						
<i>SJ GALE</i>	<i>4/21/99 0800</i>	<i>FED EX</i>							
Relinquished By	Date/Time	Received By	Date/Time						
<i>Deliver</i>									
LABORATORY SECTION	Received By	Title						Date/Time	
	<i>Joller</i>	<i>Logan Unit Leader</i>						<i>4/22/99 0930</i>	
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By						Date/Time	



a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

**Recra LabNet Philadelphia
Analytical Report**



Client : TNU-HANFORD B99-037
RFW# : 9904L738
SDG/SAF# : H0389/B99-037

W.O.# : 10985-001-001-9999-00
Date Received: 04-22-99

METALS CASE NARRATIVE

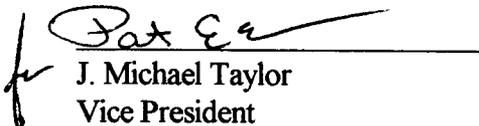
1. This narrative covers the analyses of 2 water samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. Both samples were received with a pH of approximately 4. Aliquots were preserved prior to digestion and analysis. Due to high concentrations of Sodium, ten fold dilutions were reported for this analyte.
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. 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. The matrix spike (MS) recoveries for 2 analytes were outside 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 19 pages.

11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration levels for the following analytes:

<u>Sample ID</u>	<u>Element</u>	<u>PDS</u> <u>Concentration (ppb)</u>	<u>PDS</u> <u>% Recovery</u>
B0V926	Potassium	20,000	128.6
	Silicon	5,000	99.2

12. The duplicate analyses for 3 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.


J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

mld/m04-738

5-20-99
Date



METALS METHOD GLOSSARY

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

Recra Lot#: 9904L738

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 (TRACE)
 Other: _____

Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	<input checked="" type="checkbox"/> 6010B	<u> </u> 200.7			<u> </u> 99
Antimony	<input checked="" type="checkbox"/> 6010B <u> </u> 7041 ⁵	<u> </u> 200.7 <u> </u> 204.2			<u> </u> 99
Arsenic	<input checked="" type="checkbox"/> 6010B <u> </u> 7060A ⁵	<u> </u> 200.7 <u> </u> 206.2	<u> </u> 3113B		<u> </u> 99
Barium	<input checked="" type="checkbox"/> 6010B	<u> </u> 200.7			<u> </u> 99
Beryllium	<input checked="" type="checkbox"/> 6010B	<u> </u> 200.7			<u> </u> 99
Bismuth	<u> </u> 6010B ¹	<u> </u> 200.7 ¹		<u> </u> 1620	<u> </u> 99
Boron	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Cadmium	<input checked="" type="checkbox"/> 6010B <u> </u> 7131A ⁵	<u> </u> 200.7 <u> </u> 213.2			<u> </u> 99
Calcium	<input checked="" type="checkbox"/> 6010B	<u> </u> 200.7			<u> </u> 99
Chromium	<input checked="" type="checkbox"/> 6010B <u> </u> 7191 ⁵	<u> </u> 200.7 <u> </u> 218.2			<u> </u> SS17
Cobalt	<input checked="" type="checkbox"/> 6010B	<u> </u> 200.7			<u> </u> 99
Copper	<input checked="" type="checkbox"/> 6010B <u> </u> 7211 ⁵	<u> </u> 200.7 <u> </u> 220.2			<u> </u> 99
Iron	<input checked="" type="checkbox"/> 6010B	<u> </u> 200.7			<u> </u> 99
Lead	<input checked="" type="checkbox"/> 6010B <u> </u> 7421 ⁵	<u> </u> 200.7 <u> </u> 239.2	<u> </u> 3113B		<u> </u> 99
Lithium	<u> </u> 6010B <u> </u> 7430 ⁴	<u> </u> 200.7		<u> </u> 1620	<u> </u> 99
Magnesium	<input checked="" type="checkbox"/> 6010B	<u> </u> 200.7			<u> </u> 99
Manganese	<input checked="" type="checkbox"/> 6010B	<u> </u> 200.7			<u> </u> 99
Mercury	<input checked="" type="checkbox"/> 7470A ³ <u> </u> 7471A ³	<u> </u> 245.1 ² <u> </u> 245.5 ²			<u> </u> 99
Molybdenum	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Nickel	<input checked="" type="checkbox"/> 6010B	<u> </u> 200.7			<u> </u> 99
Potassium	<input checked="" type="checkbox"/> 6010B <u> </u> 7610 ⁴	<u> </u> 200.7 <u> </u> 258.1 ⁴			<u> </u> 99
Rare Earths	<u> </u> 6010B ¹	<u> </u> 200.7 ¹		<u> </u> 1620	<u> </u> 99
Selenium	<input checked="" type="checkbox"/> 6010B <u> </u> 7740 ⁵	<u> </u> 200.7 <u> </u> 270.2	<u> </u> 3113B		<u> </u> 99
Silicon	<input checked="" type="checkbox"/> 6010B ¹	<u> </u> 200.7		<u> </u> 1620	<u> </u> 99
Silica	<u> </u> 6010B	<u> </u> 200.7		<u> </u> 1620	<u> </u> 99
Silver	<input checked="" type="checkbox"/> 6010B <u> </u> 7761 ⁵	<u> </u> 200.7 <u> </u> 272.2			<u> </u> 99
Sodium	<input checked="" type="checkbox"/> 6010B <u> </u> 7770 ⁴	<u> </u> 200.7 <u> </u> 273.1 ⁴			<u> </u> 99
Strontium	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Thallium	<input checked="" type="checkbox"/> 6010B <u> </u> 7841 ⁵	<u> </u> 200.7 <u> </u> 279.2 <u> </u> 200.9			<u> </u> 99
Tin	<input checked="" type="checkbox"/> 6010B	<u> </u> 200.7			<u> </u> 99
Titanium	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Uranium	<u> </u> 6010B ¹	<u> </u> 200.7 ¹		<u> </u> 1620	<u> </u> 99
Vanadium	<input checked="" type="checkbox"/> 6010B	<u> </u> 200.7			<u> </u> 99
Zinc	<input checked="" type="checkbox"/> 6010B	<u> </u> 200.7			<u> </u> 99
Zirconium	<u> </u> 6010B ¹	<u> </u> 200.7 ¹		<u> </u> 1620	<u> </u> 99

Other: _____

Method: _____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LCS = Laboratory Control Sample.

NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.
2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
4. Flame AA.
5. Graphite Furnace AA.

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

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 05/19/99

CLIENT: TNU-HANFORD B99-037

RECRA LOT #: 9904L738

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-002	BOV926	Silver, Total	1.4	u UG/L	1.4	1.0
		Aluminum, Total	37.4	UG/L	20.1	1.0
		Arsenic, Total	15.8	UG/L	2.3	1.0
		Barium, Total	75.6	UG/L	0.20	1.0
		Beryllium, Total	0.17	UG/L	0.10	1.0
		Calcium, Total	173000	UG/L	16.4	1.0
		Cadmium, Total	0.30	u UG/L	0.30	1.0
		Cobalt, Total	0.70	u UG/L	0.70	1.0
		Chromium, Total	14.8	UG/L	0.60	1.0
		Copper, Total	5.2	UG/L	1.0	1.0
		Iron, Total	19.4	u UG/L	19.4	1.0
		Mercury, Total	0.10	u UG/L	0.10	1.0
		Potassium, Total	26300	UG/L	27.9	1.0
		Magnesium, Total	53700	UG/L	2.8	1.0
		Manganese, Total	0.20	u UG/L	0.20	1.0
		Sodium, Total	271000	UG/L	41.0	10.0
		Nickel, Total	5.1	UG/L	1.2	1.0
		Lead, Total	2.9	u UG/L	2.9	1.0
		Antimony, Total	1.9	u UG/L	1.9	1.0
		Selenium, Total	4.7	u UG/L	4.7	1.0
		Silicon, Total	18100	UG/L	4.2	1.0
		Tin, Total	2.7	u UG/L	2.7	1.0
		Thallium, Total	3.9	UG/L	3.5	1.0
		Vanadium, Total	27.1	UG/L	0.80	1.0
		Zinc, Total	0.50	u UG/L	0.50	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 05/19/99

CLIENT: TNU-HANFORD B99-037

RECRA LOT #: 9904L738

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-003	B0V927	Silver, Total	1.4	u UG/L	1.4	1.0
		Aluminum, Total	62.8	UG/L	20.1	1.0
		Arsenic, Total	14.1	UG/L	2.3	1.0
		Barium, Total	78.1	UG/L	0.20	1.0
		Beryllium, Total	0.24	UG/L	0.10	1.0
		Calcium, Total	176000	UG/L	16.4	1.0
		Cadmium, Total	0.30	u UG/L	0.30	1.0
		Cobalt, Total	0.70	u UG/L	0.70	1.0
		Chromium, Total	14.1	UG/L	0.60	1.0
		Copper, Total	5.3	UG/L	1.0	1.0
		Iron, Total	51.6	UG/L	19.4	1.0
		Mercury, Total	0.10	u UG/L	0.10	1.0
		Potassium, Total	27200	UG/L	27.9	1.0
		Magnesium, Total	54400	UG/L	2.8	1.0
		Manganese, Total	0.20	u UG/L	0.20	1.0
		Sodium, Total	275000	UG/L	41.0	10.0
		Nickel, Total	4.9	UG/L	1.2	1.0
		Lead, Total	2.9	u UG/L	2.9	1.0
		Antimony, Total	1.9	u UG/L	1.9	1.0
		Selenium, Total	4.7	u UG/L	4.7	1.0
		Silicon, Total	18400	UG/L	4.2	1.0
		Tin, Total	2.7	u UG/L	2.7	1.0
		Thallium, Total	3.9	UG/L	3.5	1.0
		Vanadium, Total	27.0	UG/L	0.80	1.0
		Zinc, Total	0.50	u UG/L	0.50	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/19/99

CLIENT: TNU-HANFORD B99-037

RECRA LOT #: 9904L738

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
BLANK1	99L0306-MB1	Silver, Total	1.4	u UG/L	1.4	1.0
		Aluminum, Total	20.1	u UG/L	20.1	1.0
		Arsenic, Total	2.3	u UG/L	2.3	1.0
		Barium, Total	0.31	UG/L	0.20	1.0
		Beryllium, Total	0.10	u UG/L	0.10	1.0
		Calcium, Total	24.6	UG/L	16.4	1.0
		Cadmium, Total	0.30	u UG/L	0.30	1.0
		Cobalt, Total	0.70	u UG/L	0.70	1.0
		Chromium, Total	0.60	u UG/L	0.60	1.0
		Copper, Total	1.0	u UG/L	1.0	1.0
		Iron, Total	19.4	u UG/L	19.4	1.0
		Potassium, Total	27.9	u UG/L	27.9	1.0
		Magnesium, Total	6.5	UG/L	2.8	1.0
		Manganese, Total	0.20	u UG/L	0.20	1.0
		Sodium, Total	12.0	UG/L	4.1	1.0
		Nickel, Total	1.2	u UG/L	1.2	1.0
		Lead, Total	2.9	u UG/L	2.9	1.0
		Antimony, Total	1.9	u UG/L	1.9	1.0
		Selenium, Total	4.7	u UG/L	4.7	1.0
		Silicon, Total	4.2	u UG/L	4.2	1.0
		Tin, Total	2.7	u UG/L	2.7	1.0
		Thallium, Total	3.5	u UG/L	3.5	1.0
		Vanadium, Total	0.80	u UG/L	0.80	1.0
		Zinc, Total	0.99	UG/L	0.50	1.0
BLANK1	99C0131-MB1	Mercury, Total	0.10	u UG/L	0.10	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 05/19/99

CLIENT: TNU-HANFORD B99-037

RECRA LOT #: 9904L738

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-002	BOV926	Silver, Total	51.5	1.4 u	50.0	103.0	1.0
		Aluminum, Total	2170	37.4	2000	106.7	1.0
		Arsenic, Total	2110	15.8	2000	104.6	1.0
		Barium, Total	2090	75.6	2000	100.6	1.0
		Beryllium, Total	50.3	0.17	50.0	100.3	1.0
		Calcium, Total	200000	173000	25000	109.0*	1.0
		Cadmium, Total	48.4	0.30u	50.0	96.8	1.0
		Cobalt, Total	481	0.70u	500	96.2	1.0
		Chromium, Total	211	14.8	200	98.2	1.0
		Copper, Total	259	5.2	250	101.6	1.0
		Iron, Total	1010	19.4 u	1000	101.0	1.0
		Mercury, Total	0.99	0.10u	1.0	99.1	1.0
		Potassium, Total	60400	26300	25000	136.3	1.0
		Magnesium, Total	79700	53700	25000	104.1	1.0
		Manganese, Total	503	0.20u	500	100.7	1.0
		Sodium, Total	296000	271000	25000	98.8*	10.0
		Nickel, Total	485	5.1	500	96.1	1.0
		Lead, Total	486	2.9 u	500	97.3	1.0
		Antimony, Total	518	1.9 u	500	103.6	1.0
		Selenium, Total	2100	4.7 u	2000	105.1	1.0
		Silicon, Total	19600	18100	1000	151.3*	1.0
		Tin, Total	1030	2.7 u	1000	102.8	1.0
		Thallium, Total	2020	3.9	2000	100.7	1.0
		Vanadium, Total	529	27.1	500	100.5	1.0
		Zinc, Total	502	0.50u	500	100.4	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 05/19/99

CLIENT: TNU-HANFORD B99-037

RECRA LOT #: 9904L738

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

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION
			RESULT	REPLICATE	RPD	
-002REP	B0V926	Silver, Total	1.4 u	1.4 u	NC	1.0
		Aluminum, Total	37.4	46.6	21.9	1.0
		Arsenic, Total	15.8	15.4	2.6	1.0
		Barium, Total	75.6	75.9	0.40	1.0
		Beryllium, Total	0.17	0.22	25.6	1.0
		Calcium, Total	173000	174000	0.76	1.0
		Cadmium, Total	0.30u	0.30u	NC	1.0
		Cobalt, Total	0.70u	0.70u	NC	1.0
		Chromium, Total	14.8	14.7	0.68	1.0
		Copper, Total	5.2	4.6	12.2	1.0
		Iron, Total	19.4 u	19.4 u	NC	1.0
		Mercury, Total	0.10u	0.10u	NC	1.0
		Potassium, Total	26300	26800	1.9	1.0
		Magnesium, Total	53700	54000	0.63	1.0
		Manganese, Total	0.20u	0.20u	NC	1.0
		Sodium, Total	271000	269000	0.64	10.0
		Nickel, Total	5.1	4.9	4.0	1.0
		Lead, Total	2.9 u	2.9 u	NC	1.0
		Antimony, Total	1.9 u	1.9 u	NC	1.0
		Selenium, Total	4.7 u	4.7 u	NC	1.0
		Silicon, Total	18100	18300	1.1	1.0
		Tin, Total	2.7 u	2.7 u	NC	1.0
		Thallium, Total	3.9	3.5 u	NC 2.60	1.0
		Vanadium, Total	27.1	26.6	1.9	1.0
		Zinc, Total	0.50u	0.50u	NC	1.0

Correction
MS 5/19/99

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 05/19/99

CLIENT: TNU-HANFORD B99-037

RECRA LOT #: 9904L738

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

SAMPLE	SITE ID	ANALYTE	SPIKED	SPIKED	UNITS	%RECOV
			SAMPLE	AMOUNT		
-----	-----	-----	-----	-----	-----	-----
LCS1	99L0306-LC1	Silver, LCS	496	500	UG/L	99.1
		Aluminum, LCS	5140	5000	UG/L	102.8
		Arsenic, LCS	9760	10000	UG/L	97.6
		Barium, LCS	4980	5000	UG/L	99.5
		Beryllium, LCS	249	250	UG/L	99.7
		Calcium, LCS	25000	25000	UG/L	99.8
		Cadmium, LCS	246	250	UG/L	98.4
		Cobalt, LCS	2450	2500	UG/L	98.1
		Chromium, LCS	498	500	UG/L	99.6
		Copper, LCS	1240	1250	UG/L	99.5
		Iron, LCS	4980	5000	UG/L	99.7
		Potassium, LCS	25800	25000	UG/L	103.1
		Magnesium, LCS	24700	25000	UG/L	98.9
		Manganese, LCS	765	750	UG/L	102.0
		Sodium, LCS	24400	25000	UG/L	97.7
		Nickel, LCS	1960	2000	UG/L	98.0
		Lead, LCS	2450	2500	UG/L	98.0
		Antimony, LCS	2970	3000	UG/L	99.0
		Selenium, LCS	9580	10000	UG/L	95.8
		Silicon, LCS	5120	5000	UG/L	102.3
		Tin, LCS	4960	5000	UG/L	99.2
		Thallium, LCS	9930	10000	UG/L	99.3
		Vanadium, LCS	2520	2500	UG/L	100.9
		Zinc, LCS	970	1000	UG/L	97.0
LCS1	99C0131-LC1	Mercury, LCS	5.2	5.0	UG/L	104.1

Recra LabNet - Lionville Laboratory
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNU-HANFORD B99-037

DATE RECEIVED: 04/22/99

RFW LOT # :9904L738

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOV926						
SILVER, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/16/99
SILVER, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/16/99
SILVER, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/16/99
ALUMINUM, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/16/99
ALUMINUM, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/16/99
ALUMINUM, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/16/99
ARSENIC, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/16/99
ARSENIC, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/16/99
ARSENIC, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/16/99
BARIUM, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/16/99
BARIUM, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/16/99
BARIUM, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/16/99
BERYLLIUM, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/16/99
BERYLLIUM, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/16/99
BERYLLIUM, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/16/99
CALCIUM, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/16/99
CALCIUM, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/16/99
CALCIUM, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/16/99
CADMIUM, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/16/99
CADMIUM, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/16/99
CADMIUM, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/16/99
COBALT, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/16/99
COBALT, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/16/99
COBALT, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/16/99
CHROMIUM, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/16/99
CHROMIUM, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/16/99
CHROMIUM, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/16/99
COPPER, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/16/99
COPPER, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/16/99
COPPER, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/16/99
IRON, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/16/99
IRON, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/16/99
IRON, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/16/99
MERCURY, TOTAL	002	W	99C0131	04/20/99	05/06/99	05/07/99
MERCURY, TOTAL	002 REP	W	99C0131	04/20/99	05/06/99	05/07/99

Recra LabNet - Lionville Laboratory
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNU-HANFORD B99-037

DATE RECEIVED: 04/22/99

RFW LOT # :9904L738

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	002 MS	W	99C0131	04/20/99	05/06/99	05/07/99
POTASSIUM, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/16/99
POTASSIUM, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/16/99
POTASSIUM, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/16/99
MAGNESIUM, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/16/99
MAGNESIUM, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/16/99
MAGNESIUM, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/16/99
MANGANESE, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/16/99
MANGANESE, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/16/99
MANGANESE, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/16/99
SODIUM, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/17/99
SODIUM, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/17/99
SODIUM, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/17/99
NICKEL, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/16/99
NICKEL, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/16/99
NICKEL, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/16/99
LEAD, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/16/99
LEAD, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/16/99
LEAD, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/16/99
ANTIMONY, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/16/99
ANTIMONY, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/16/99
ANTIMONY, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/16/99
SELENIUM, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/16/99
SELENIUM, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/16/99
SELENIUM, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/16/99
SILICON, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/16/99
SILICON, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/16/99
SILICON, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/16/99
TIN, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/16/99
TIN, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/16/99
TIN, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/16/99
THALLIUM, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/16/99
THALLIUM, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/16/99
THALLIUM, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/16/99
VANADIUM, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/16/99
VANADIUM, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/16/99
VANADIUM, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/16/99
ZINC, TOTAL	002	W	99L0306	04/20/99	05/15/99	05/16/99

Recra LabNet - Lionville Laboratory
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNU-HANFORD B99-037

DATE RECEIVED: 04/22/99

RFW LOT # :9904L738

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ZINC, TOTAL	002 REP	W	99L0306	04/20/99	05/15/99	05/16/99
ZINC, TOTAL	002 MS	W	99L0306	04/20/99	05/15/99	05/16/99
B0V927						
SILVER, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/16/99
ALUMINUM, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/16/99
ARSENIC, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/16/99
BARIUM, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/16/99
BERYLLIUM, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/16/99
CALCIUM, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/16/99
CADMIUM, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/16/99
COBALT, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/16/99
CHROMIUM, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/16/99
COPPER, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/16/99
IRON, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/16/99
MERCURY, TOTAL	003	W	99C0131	04/20/99	05/06/99	05/07/99
POTASSIUM, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/16/99
MAGNESIUM, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/16/99
MANGANESE, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/16/99
SODIUM, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/17/99
NICKEL, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/16/99
LEAD, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/16/99
ANTIMONY, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/16/99
SELENIUM, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/16/99
SILICON, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/16/99
TIN, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/16/99
THALLIUM, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/16/99
VANADIUM, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/16/99
ZINC, TOTAL	003	W	99L0306	04/20/99	05/15/99	05/16/99

LAB QC:

SILVER LABORATORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99
SILVER, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99
ALUMINUM LABORTORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99
ALUMINUM, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99
ARSENIC LABORATORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99

Recra LabNet - Lionville Laboratory
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNU-HANFORD B99-037

DATE RECEIVED: 04/22/99

RFW LOT # :9904L738

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99
BARIUM LABORATORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99
BARIUM, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99
BERYLLIUM LABORATORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99
BERYLLIUM, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99
CALCIUM LABORATORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99
CALCIUM, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99
CADMIUM LABORATORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99
CADMIUM, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99
COBALT LABORATORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99
COBALT, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99
CHROMIUM LABORATORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99
CHROMIUM, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99
COPPER LABORATORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99
COPPER, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99
IRON LABORATORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99
IRON, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99
MERCURY LABORATORY	LC1 BS	W	99C0131	N/A	05/06/99	05/07/99
MERCURY, TOTAL	MB1	W	99C0131	N/A	05/06/99	05/07/99
POTASSIUM LABORATORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99
POTASSIUM, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99
MAGNESIUM LABORATORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99
MAGNESIUM, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99
MANGANESE LABORATORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99
MANGANESE, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99
SODIUM LABORATORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99
SODIUM, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99
NICKEL LABORATORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99
NICKEL, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99
LEAD LABORATORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99
LEAD, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99
ANTIMONY LABORATORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99
ANTIMONY, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99
SELENIUM LABORATORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99
SELENIUM, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99
SILICON LABORATORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99
SILICON, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99
TIN LABORATORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-037

DATE RECEIVED: 04/22/99

RFW LOT # :9904L738

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TIN, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99
THALLIUM LABORATORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99
THALLIUM, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99
VANADIUM LABORATORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99
VANADIUM, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99
ZINC LABORATORY	LC1 BS	W	99L0306	N/A	05/15/99	05/16/99
ZINC, TOTAL	MB1	W	99L0306	N/A	05/15/99	05/16/99

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-037-05		Page 1 of 3	
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086		Project Coordinator WEISS, RL		Price Code	
Project Designation ERDF Leachate Delisting Analysis		Sampling Location ERDF 200 west		SAF No. B99-037		Data Turnaround 45 Days			
Ice Chest No. <i>ERC 96-010, SML 427</i> <i>42199 SML 54 ERC 96 065</i>		Field Logbook No. <i>EL-1309-3</i>		Method of Shipment Fed Ex <i>27-2.30C, 16-2.10C, 05-2.40C</i>		Bill of Lading/Air Bill No. <i>423579524927,</i> <i>423579524905, 423579524916</i>			
Shipped To TMA/RECRA <i>SAD 42089</i>		Offsite Property No. <i>A990116</i>		COA <i>TERDF4K117</i>					

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	HCl or H2SO4 to pH <2 Cool	Cool 4C	Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	Cool 4C
	Type of Container	P	P	aG	aG	aG	G	P	P	P	P
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	20mL	100mL	250mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL

SAMPLE ANALYSIS	Activity Scan	pH (Water) - 9040	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	NonVOCs by EXT/TS/MS (Benzocarb)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (1) in Special Instructions.	TDS - 160.1	TSS - 160.2
	<i>738</i>									

Sample No.	Matrix *	Sample Date	Sample Time	Activity Scan	pH (Water) - 9040	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	NonVOCs by EXT/TS/MS (Benzocarb)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (1) in Special Instructions.	TDS - 160.1	TSS - 160.2
B0V925	Water												
B0V926	Water	<i>4-20-99</i>	<i>0915</i>		X	X	X		X	X	X	X	X
B0V927	Water	<i>4-20-99</i>	<i>0920</i>		X	X	X		X	X	X	X	X

CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS ** TMA is requested to report all analytes found above their detection limits for GEA. (1) IC Anions - 9056 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)				Matrix * Soil Water Vapor Other Solid Other Liquid	
Relinquished By	Date/Time	Received By	Date/Time	Received By	Date/Time						
<i>SJGALE</i>	<i>42099 1425</i>	<i>REF 1-C</i>	<i>42099 1425</i>								
Relinquished By	Date/Time	Received By	Date/Time	Received By	Date/Time						
<i>REF 1-C</i>	<i>42199 0630</i>	<i>SJGALE</i>	<i>42199 0630</i>								
Relinquished By	Date/Time	Received By	Date/Time	Received By	Date/Time						
<i>SJGALE</i>	<i>42199 0800</i>	<i>FED EX</i>									
Relinquished By	Date/Time	Received By	Date/Time	Title		Date/Time				Date/Time	
<i>Fred</i>				<i>Log in Unit Leader</i>		<i>4/22/99</i>				<i>0930</i>	
LABORATORY SECTION	Received By	Disposal Method				Disposed By				Date/Time	
	<i>Fred</i>										

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-037-05	Page 2 of 3
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086	Project Coordinator WEISS, RL	Price Code	Data Turnaround
Project Designation ERDF Leachate Delisting Analysis		Sampling Location ERDF 200 west		SAF No. B99-037	45 Days		
Ice Chest No.		Field Logbook No. EL-1309-3		Method of Shipment Fed Ex			
Shipped To TMA/RECRA 4/20/99		Offsite Property No. A990116		Bill of Lading/Air Bill No. 423579524927, 423579524905 COA TERDF4 K117			

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	ZnAc+NaOH to pH >9 Cool	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	Cool 4C				
	Special Handling and/or Storage	Type of Container	P	P	P	P	P	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	2	2	2	2	2
	Volume	500mL	500mL	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL

SAMPLE ANALYSIS				Ammonia - 3503	See item (1) in Special Instructions.	Sulfides - 9030	See item (2) in Special Instructions.	Total Cyanide - 9010	See item (3) in Special Instructions.	Chloro-Herbicides - EPA8151	See item (4) in Special Instructions.	Pest/PCBs - 8081	See item (5) in Special Instructions.
Sample No.	Matrix *	Sample Date	Sample Time										
B0V925	Water												
B0V926	Water	4-20-99	0915	X	X	X		X	X	X		X	X
B0V927	Water	4-20-99	0920	X	X	X		X	X	X		X	X

CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS					Matrix *			
Relinquished By SJ GALE		Date/Time 4/20/99 1425		Received By REF 1-C		Date/Time 4/20/99 1425		** TMA is requested to report all analytes found above their detection limits for GEA. (1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Lead, Selenium, Silicon, Thallium, Tin) (2) Gamma Spectroscopy (Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155) (3) 8310_SVOA_HPLC (Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene) (4) Nitrosamines - 8070 (N-Nitroso-di-n-dipropylamine, N-Nitrosodimethylamine) (5) Semi-VOA - 8270A (App IX); Semi-VOA -- 8270A (App IX Add-On) (1,2-Diphenylhydrazine, 1,4-Dinitrobenzene, 1-Acetyl-2-thiourea, 2,5-Diaminotoluene, 2-Cyclohexyl-4,6-dinitrophenol)					Soil Water Vapor Other Solid Other Liquid	
Relinquished By REF 1-C		Date/Time 4/21/99 0630		Received By SJ GALE		Date/Time 4/21/99 0630								
Relinquished By SJ GALE		Date/Time 4/21/99 0800		Received By FED EX		Date/Time								
Relinquished By Fed Ex		Date/Time		Received By		Date/Time								
LABORATORY SECTION		Received By Jorlin		Title Loggin Unit Leader		Date/Time 4/22/99 0930					Date/Time			
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By					Date/Time					

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Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-037-05	Page 3 of 3
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086	Project Coordinator WEISS, RL	Price Code	Data Turnaround 45 Days
Project Designation ERDF Leachate Delisting Analysis		Sampling Location ERDF 200 west		SAF No. B99-037			
Ice Chest No.		Field Logbook No. EL 1309-3		Method of Shipment Fed Ex			
Shipped To TMA/RECRA 424099		Offsite Property No. A990116		Bill of Lading/Air Bill No. 42357952 9916, 42357952 4927, 42357952 4905			
				COA TERDFY K117			

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	HCL to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl Cool 4C							
	Type of Container	G	P	aGs*	aGs*							
	No. of Container(s)	2	2	3	3							
Special Handling and/or Storage	Volume	1000mL	1000mL	40mL	40mL							

SAMPLE ANALYSIS				oil & Grease - 9070	Gross Alpha; Gross Beta	See item (1) in Special Instructions.	See item (2) in Special Instructions.								
Sample No.	Matrix *	Sample Date	Sample Time												
B0V925	Water	4-20-99	0645				X								
B0V926	Water	4-20-99	0915	X		X	X								
B0V927	Water	4-20-99	0920	X		X	X								

CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS					Matrix *			
Relinquished By		Date/Time		Received By		Date/Time		** TMA is requested to report all analytes found above their detection limits for GEA. (1) Alcohols, Glycols, & Ketones - 8015M (1-Butanol, Diethyl ether, Methanol) (2) VOA - 8260A (App IX): VOA - 8260A (App IX Add-On) (1,1,2-Trichloro-1,2,2-trifluoroethane, 1,3-Butadiene, 1-Butanol, 2-Chloroethyl vinyl ether, Allyl alcohol, cis-1,2-Dichloroethylene, Crotonaldehyde, Dichloropropanol, Diethyl ether, Ethyl acetate, Isopropyl)					Soil Water Vapor Other Solid Other Liquid	
S. J. GALE S. J. GALE 42099 1425		4/20/99 1425		REF 1-C 42099 1425		4/20/99 1425								
Relinquished By		Date/Time		Received By		Date/Time								
REF 1-C 42199 0630		4/21/99 0630		S. J. GALE S. J. GALE 42199 0630		4/21/99 0630								
Relinquished By		Date/Time		Received By		Date/Time								
S. J. GALE S. J. GALE 42199 0800		4/21/99 0800		FED EX		4/21/99 0800								
Relinquished By		Date/Time		Received By		Date/Time								
Deliver		4/22/99 0930		L. J. GALE L. J. GALE 42199 0800		4/22/99 0930								
LABORATORY SECTION		Received By		Title		Date/Time								
FINAL SAMPLE POSITION		Disposal Method		Disposed By		Date/Time								

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0389 is comprised of two water samples designated under SAF No. B99-037 with a Project Designation of: ERDF Leachate Delisting Analysis.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the TNU Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Gamma Scan Analyses

No problems were encountered with the analyses.

2.2 Gross Alpha and Beta Analyses

No problems were encountered with the analyses.

TMA/RICHMOND
 SAMPLE DELIVERY GROUP H0389

SAMPLE SUMMARY

SDG 7116
 Contact L.A. Johnson

Client Hanford
 Contract TRB-SBB-207925
 Case no SDG-H0389

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB		CHAIN OF	
				SAMPLE ID	SAF NO	CUSTODY	COLLECTED
B0V926		LIQUID		N904123-01	B99-037	B99-037-05	04/20/99 09:15
B0V927		LIQUID		N904123-02	B99-037	B99-037-05	04/20/99 09:20
Method Blank		LIQUID		N904123-04	B99-037		
Lab Control Sample		LIQUID		N904123-03	B99-037		
Duplicate (N904123-01)		LIQUID		N904123-05	B99-037		04/20/99 09:15

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-CS
 Version 3.06
 Report date 06/16/99

TMA/RICHMOND
 SAMPLE DELIVERY GROUP H0389

SDG 7116
 Contact L.A. Johnson

Client Hanford
 Contract TRB-SBB-207925
 Case no SDG-H0389

QC SUMMARY

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7116	B99-037-05	B0V926	LIQUID				04/22/99	2	N904123-01	7116-001
		B0V927	LIQUID				04/22/99	2	N904123-02	7116-002
		Method Blank	LIQUID						N904123-04	7116-004
		Lab Control Sample	LIQUID						N904123-03	7116-003
		Duplicate (N904123-01)	LIQUID				04/22/99	2	N904123-05	7116-005

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-QS
 Version 3.06
 Report date 06/16/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0389

SDG 7116
 Contact L.A. Johnson

PREP BATCH SUMMARY

Client Hanford
 Contract TRB-SBB-207925
 Case no SDG-H0389

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED				QUALI-	
			BATCH	2σ %	CLIENT	MORE	RE	BLANK		LCS
Gas Proportional Counting										
80A	LIQUID	Gross Alpha in Liquid Samples	6880-052	20.0	2			1	1	1/1
80B	LIQUID	Gross Beta in Liquid Samples	6880-052	15.0	2			1	1	1/1
Gamma Spectroscopy										
GAM	LIQUID	Gamma Scan in Liquid	6880-052	10.0	2			1	1	1/1

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

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-PBS
 Version 3.06
 Report date 06/16/99

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0389

SDG 7116
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0389

WORK SUMMARY

CLIENT SAMPLE ID		LAB SAMPLE ID								
LOCATION	MATRIX	COLLECTED		SUF-						
CUSTODY	SAF No	RECEIVED	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD	
B0V926		N904123-01	7116-001	80A/80		05/18/99	06/16/99	TAH	Gross Alpha in Liquid Samples	
	LIQUID	04/20/99	7116-001	80B/80		05/18/99	06/16/99	TAH	Gross Beta in Liquid Samples	
B99-037-05	B99-037	04/22/99	7116-001	GAM		06/14/99	06/16/99	TAH	Gamma Scan in Liquid	
B0V927		N904123-02	7116-002	80A/80		05/18/99	06/16/99	TAH	Gross Alpha in Liquid Samples	
	LIQUID	04/20/99	7116-002	80B/80		05/18/99	06/16/99	TAH	Gross Beta in Liquid Samples	
B99-037-05	B99-037	04/22/99	7116-002	GAM		06/15/99	06/16/99	TAH	Gamma Scan in Liquid	
Method Blank		N904123-04	7116-004	80A/80		05/18/99	06/16/99	TAH	Gross Alpha in Liquid Samples	
	LIQUID		7116-004	80B/80		05/18/99	06/16/99	TAH	Gross Beta in Liquid Samples	
	B99-037		7116-004	GAM		06/15/99	06/16/99	TAH	Gamma Scan in Liquid	
Lab Control Sample		N904123-03	7116-003	80A/80		05/18/99	06/16/99	TAH	Gross Alpha in Liquid Samples	
	LIQUID		7116-003	80B/80		05/18/99	06/16/99	TAH	Gross Beta in Liquid Samples	
	B99-037		7116-003	GAM		06/15/99	06/16/99	TAH	Gamma Scan in Liquid	
Duplicate (N904123-01)		N904123-05	7116-005	80A/80		05/18/99	06/16/99	TAH	Gross Alpha in Liquid Samples	
	LIQUID	04/20/99	7116-005	80B/80		05/18/99	06/16/99	TAH	Gross Beta in Liquid Samples	
	B99-037	04/22/99	7116-005	GAM		06/15/99	06/16/99	TAH	Gamma Scan in Liquid	

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
80A/80	B99-037	Gross Alpha in Liquid Samples	EPA900.0	2			1	1	1		5
80B/80	B99-037	Gross Beta in Liquid Samples	EPA900.0	2			1	1	1		5
GAM	B99-037	Gamma Scan in Liquid	GAMMAHI	2			1	1	1		5
TOTALS				6			3	3	3		15

WORK SUMMARY

Page 1

SUMMARY DATA SECTION

Page 6

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 06/16/99

T M A / R I C H M O N D
 SAMPLE DELIVERY GROUP H0389

N904123-04

Method Blank

M E T H O D B L A N K

SDG <u>7116</u>	Client/Case no <u>Hanford</u>	SDG- <u>H0389</u>
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N904123-04</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7116-004</u>	Material/Matrix _____	<u>LIQUID</u>
	SAF No <u>B99-037</u>	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	1.20	2.3	<u>4.0</u>	3.0	U	80A
Gross Beta	12587-47-2	-1.75	3.3	<u>5.8</u>	4.0	U	80B
Potassium 40	13966-00-2	U		160		U	GAM
Cobalt 60	10198-40-0	U		6.9	25	U	GAM
Cesium 137	10045-97-3	U		5.9	15	U	GAM
Europium 152	14683-23-9	U		16	50	U	GAM
Europium 154	15585-10-1	U		19	50	U	GAM
Europium 155	14391-16-3	U		15	50	U	GAM
Radium 226	13982-63-3	U		11		U	GAM
Radium 228	15262-20-1	U		26		U	GAM
Thorium 228	14274-82-9	U		10		U	GAM
Thorium 232	TH-232	U		26		U	GAM
Americium 241	14596-10-2	U		14		U	GAM
Uranium 238	U-238	U		810		U	GAM
Uranium 235	15117-96-1	U		23		U	GAM

ERDF Leachate Delisting Analysis

QC-BLANK 30591

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0389

N904123-03

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7116</u>	Client/Case no <u>Hanford</u>	<u>SDG-H0389</u>
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N904123-03</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7116-003</u>	Material/Matrix <u>LIQUID</u>	
	SAF No <u>B99-037</u>	

ANALYTE	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	153	14	<u>3.2</u>	3.0		80A					80-120
Gross Beta	166	9.6	<u>5.7</u>	4.0		80B	171	6.8	97	76-124	80-120
Potassium 40	U		230		U	GAM					
Cobalt 60	535	36	17	25		GAM	522	21	102	81-119	80-120
Cesium 137	550	31	<u>23</u>	15		GAM	518	21	106	81-119	80-120
Europium 152	U		48	50	U	GAM					
Europium 154	U		<u>51</u>	50	U	GAM					
Europium 155	U		40	50	U	GAM					
Radium 226	U		36		U	GAM					
Radium 228	U		95		U	GAM					
Thorium 228	U		25		U	GAM					
Thorium 232	U		95		U	GAM					
Americium 241	U		52		U	GAM					
Uranium 238	U		2800		U	GAM					
Uranium 235	U		60		U	GAM					

ERDF Leachate Delisting Analysis

QC-LCS 30590

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 06/16/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0389

N904123-05

B0V926

DUPLICATE

SDG <u>7116</u>	Client/Case no <u>Hanford</u>	<u>SDG-H0389</u>
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>N904123-05</u>	Lab sample id <u>N904123-01</u>	Client sample id <u>B0V926</u>
Dept sample id <u>7116-005</u>	Dept sample id <u>7116-001</u>	Location/Matrix <u>LIQUID</u>
	Received <u>04/22/99</u>	Collected <u>04/20/99 09:15</u>
		Custody/SAF No <u>B99-037-05</u> <u>B99-037</u>

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI- FIERS	RPD %	3σ PROT TOT LIMIT
Gross Alpha	49.5	8.1	2.9	3.0		80A	38.4	7.0	<u>3.5</u>		25	56
Gross Beta	67.1	3.8	2.8	4.0		80B	76.3	3.9	2.4		13	34
Potassium 40	U		200		U	GAM	U		180	U	-	
Cobalt 60	U		7.5	25	U	GAM	U		11	U	-	
Cesium 137	U		6.9	15	U	GAM	U		9.8	U	-	
Europium 152	U		20	50	U	GAM	U		28	U	-	
Europium 154	U		21	50	U	GAM	U		29	U	-	
Europium 155	U		19	50	U	GAM	U		26	U	-	
Radium 226	U		13		U	GAM	U		18	U	-	
Radium 228	U		30		U	GAM	U		44	U	-	
Thorium 228	U		12		U	GAM	U		16	U	-	
Thorium 232	U		30		U	GAM	U		44	U	-	
Americium 241	U		17		U	GAM	U		35	U	-	
Uranium 238	U		890		U	GAM	U		1200	U	-	
Uranium 235	U		25		U	GAM	U		37	U	-	

ERDF Leachate Delisting Analysis

QC-DUP#1 30592

DUPLICATES

Page 1

SUMMARY DATA SECTION

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>06/16/99</u>

T M A / R I C H M O N D
S A M P L E D E L I V E R Y G R O U P H 0 3 8 9

N904123-01

B0V926

D A T A S H E E T

SDG <u>7116</u>	Client/Case no <u>Hanford</u>	SDG- <u>H0389</u>
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N904123-01</u>	Client sample id <u>B0V926</u>	
Dept sample id <u>7116-001</u>	Location/Matrix <u>LIQUID</u>	
Received <u>04/22/99</u>	Collected <u>04/20/99 09:15</u>	
	Custody/SAF No <u>B99-037-05</u>	<u>B99-037</u>

ANALYTE	CAS NO	RESULT pCi/L	2 σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	38.4	7.0	3.5	3.0		80A
Gross Beta	12587-47-2	76.3	3.9	2.4	4.0		80B
Potassium 40	13966-00-2	U		180		U	GAM
Cobalt 60	10198-40-0	U		11	25	U	GAM
Cesium 137	10045-97-3	U		9.8	15	U	GAM
Europium 152	14683-23-9	U		28	50	U	GAM
Europium 154	15585-10-1	U		29	50	U	GAM
Europium 155	14391-16-3	U		26	50	U	GAM
Radium 226	13982-63-3	U		18		U	GAM
Radium 228	15262-20-1	U		44		U	GAM
Thorium 228	14274-82-9	U		16		U	GAM
Thorium 232	TH-232	U		44		U	GAM
Americium 241	14596-10-2	U		35		U	GAM
Uranium 238	U-238	U		1200		U	GAM
Uranium 235	15117-96-1	U		37		U	GAM

ERDF Leachate Delisting Analysis

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>06/16/99</u>

T M A / R I C H M O N D
S A M P L E D E L I V E R Y G R O U P H 0 3 8 9

N904123-02

BOV927

D A T A S H E E T

SDG <u>7116</u>	Client/Case no <u>Hanford</u>	SDG-H0389
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N904123-02</u>	Client sample id <u>BOV927</u>	
Dept sample id <u>7116-002</u>	Location/Matrix _____	<u>LIQUID</u>
Received <u>04/22/99</u>	Collected <u>04/20/99 09:20</u>	
	Custody/SAF No <u>B99-037-05</u>	<u>B99-037</u>

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	38.4	6.6	2.8	3.0		80A
Gross Beta	12587-47-2	65.8	3.7	2.7	4.0		80B
Potassium 40	13966-00-2	U		170		U	GAM
Cobalt 60	10198-40-0	U		18	25	U	GAM
Cesium 137	10045-97-3	U		14	15	U	GAM
Europium 152	14683-23-9	U		35	50	U	GAM
Europium 154	15585-10-1	U		47	50	U	GAM
Europium 155	14391-16-3	U		21	50	U	GAM
Radium 226	13982-63-3	U		25		U	GAM
Radium 228	15262-20-1	U		58		U	GAM
Thorium 228	14274-82-9	U		16		U	GAM
Thorium 232	TH-232	U		58		U	GAM
Americium 241	14596-10-2	U		10		U	GAM
Uranium 238	U-238	U		1700		U	GAM
Uranium 235	15117-96-1	U		35		U	GAM

ERDF Leachate Delisting Analysis

DATA SHEETS

Page 2

SUMMARY DATA SECTION

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>06/16/99</u>

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0389

METHOD SUMMARY
GROSS ALPHA IN LIQUID SAMPLES
GAS PROPORTIONAL COUNTING

Test 80A Matrix LIQUID
SDG 7116
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0389

RESULTS

CLIENT SAMPLE ID	LAB	RAW	SUF-	1: Gross	2: Sum, Alpha	RESULT RATIO (%)	
	SAMPLE ID	TEST	FIX	Alpha	Emitters	2+1	2σ
Preparation batch 6880-052							
B0V926	N904123-01	80		7116-001	38.4		
B0V927	N904123-02	80		7116-002	38.4		
BLK (QC ID=30591)	N904123-04	80		7116-004	U		
LCS (QC ID=30590)	N904123-03	80		7116-003	No data		
Duplicate (N904123-01)	N904123-05	80		7116-005	ok		
Nominal values and limits from method				RDLs (pCi/L)	3.0	Average	
ERDF Leachate Delisting Analysis							

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	RESID	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
	SAMPLE ID	TEST	FIX	pCi/L	L	FAC	TION	mg	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 6880-052 2σ prep error 20.0 % Reference Lab Notebook 6880 pg.52																
B0V926	N904123-01	80		<u>3.5</u>	0.300			<u>222</u>		100			28	05/13/99	05/18	GRB-111
B0V927	N904123-02	80		<u>2.8</u>	0.300			<u>201</u>		100			28	05/13/99	05/18	GRB-112
BLK (QC ID=30591)	N904123-04	80		<u>4.0</u>	0.100			<u>38</u>		100				05/13/99	05/18	GRB-115
LCS (QC ID=30590)	N904123-03	80		<u>3.2</u>	0.100			<u>40</u>		100				05/13/99	05/18	GRB-113
Duplicate (N904123-01)	N904123-05	80		<u>2.9</u>	0.300			<u>240</u>		100			28	05/13/99	05/18	GRB-116
(QC ID=30592)																
Nominal values and limits from method				3.0	0.100			5-150		100			180			

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

AVERAGES ± 2 SD MDA 3.3 ± 0.97
FOR 5 SAMPLES RESIDUE 148 ± 201

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 06/16/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0389

Test 80B Matrix LIQUID
 SDG 7116
 Contact L.A. Johnson

METHOD SUMMARY

GROSS BETA IN LIQUID SAMPLES

GAS PROPORTIONAL COUNTING

Client Hanford
 Contract TRB-SBB-207925
 Case no SDG-H0389

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	1: Gross	2: Sum, Beta	RESULT RATIO (%)	
					Beta	Emitters	2+1	2σ
Preparation batch 6880-052								
B0V926	N904123-01	80		7116-001	76.3			
B0V927	N904123-02	80		7116-002	65.8			
BLK (QC ID=30591)	N904123-04	80		7116-004	U			
LCS (QC ID=30590)	N904123-03	80		7116-003	ok			
Duplicate (N904123-01)	N904123-05	80		7116-005	ok			

Nominal values and limits from method RDLs (pCi/L) 4.0
 ERDF Leachate Delisting Analysis Average

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL-		
														PREPARED	YZED	DETECTOR
Preparation batch 6880-052 2σ prep error 15.0 % Reference Lab Notebook 6880 pg.52																
B0V926	N904123-01	80		2.4	0.300			<u>222</u>	100				28	05/13/99	05/18	GRB-111
B0V927	N904123-02	80		2.7	0.300			<u>201</u>	100				28	05/13/99	05/18	GRB-112
BLK (QC ID=30591)	N904123-04	80		<u>5.8</u>	0.100			38	100					05/13/99	05/18	GRB-115
LCS (QC ID=30590)	N904123-03	80		<u>5.7</u>	0.100			40	100					05/13/99	05/18	GRB-113
Duplicate (N904123-01)	N904123-05	80		2.8	0.300			<u>240</u>	100				28	05/13/99	05/18	GRB-116
(QC ID=30592)																

Nominal values and limits from method 4.0 0.100 5-150 100 180

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

AVERAGES ± 2 SD MDA 3.9 ± 3.4
 FOR 5 SAMPLES RESIDUE 148 ± 201

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-CMS
 Version 3.06
 Report date 06/16/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0389

METHOD SUMMARY

GAMMA SCAN IN LIQUID
GAMMA SPECTROSCOPY

Test GAM Matrix LIQUID
SDG 7116
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0389

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST TEST FIX	SUF- PLANCHET	Cobalt 60	Cesium 137
Preparation batch 6880-052					
BOV926	N904123-01	7116-001		U	U
BOV927	N904123-02	7116-002		U	U
BLK (QC ID=30591)	N904123-04	7116-004		U	U
LCS (QC ID=30590)	N904123-03	7116-003		ok	ok
Duplicate (N904123-01)	N904123-05	7116-005		- U	- U

Nominal values and limits from method RDLs (pCi/L) 25 15
ERDF Leachate Delisting Analysis

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST TEST FIX	SUF- pCi/L	MAX MDA L	ALIQ L	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6880-052 2σ prep error 10.0 % Reference Lab Notebook 6880 pg.52																
BOV926	N904123-01		9.8	0.500						863		55	06/14/99	01,03,00		
BOV927	N904123-02		14	0.500						523		56	06/15/99	01,01,00		
BLK (QC ID=30591)	N904123-04		5.9	0.500						524			06/15/99	01,04,00		
LCS (QC ID=30590)	N904123-03		<u>23</u>	0.500						524			06/15/99	01,03,00		
Duplicate (N904123-01) (QC ID=30592)	N904123-05		6.9	0.500						411		56	06/15/99	01,04,00		

Nominal values and limits from method 15 0.500 5 180

PROCEDURES REFERENCE GAMMAHI
RP-070 Sample Dissolution - HF Method, rev 0
RP-100 Ge(Li) Preparation for Reactor Waste Samples, rev 0

AVERAGES ± 2 SD MDA 12 ± 14
FOR 5 SAMPLES YIELD _____ ± _____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 06/16/99

T M A / R I C H M O N D
SAMPLE DELIVERY GROUP H0389

SDG 7116
Contact L.A. Johnson

R E P O R T G U I D E

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0389

S A M P L E S U M M A R Y

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- * LAB SAMPLE ID is the lab's primary identification for a sample.
- * DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- * CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- * QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

- * All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

REPORT GUIDES

Page 1

SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/16/99

T M A / R I C H M O N D
S A M P L E D E L I V E R Y G R O U P H 0 3 8 9

SDG 7116
Contact L.A. Johnson

R E P O R T G U I D E

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0389

P R E P A R A T I O N B A T C H S U M M A R Y

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- * The preparation batches are shown in the same order as the Method Summary Reports are printed.
- * Only analyses of planchets relevant to the SDG are included.
- * Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- * The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified. Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

REPORT GUIDES

Page 2

SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/16/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0389

SDG 7116
Contact L.A. Johnson

R E P O R T G U I D E

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0389

W O R K S U M M A R Y

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- * TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- * SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- * The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- * PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- * For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- * The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

T M A / R I C H M O N D
SAMPLE DELIVERY GROUP H0389

SDG 7116
Contact L.A. Johnson

R E P O R T G U I D E

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0389

D A T A S H E E T

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

- * TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- * The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

- * ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- * A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- * When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

REPORT GUIDES

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SUMMARY DATA SECTION

Page 18

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/16/99

T M A / R I C H M O N D
SAMPLE DELIVERY GROUP H0389

SDG 7116
Contact L.A. Johnson

G U I D E , c o n t .

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0389

D A T A S H E E T

If the MDA is blank, the ERROR is used as the limit.

J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/16/99

T M A / R I C H M O N D
SAMPLE DELIVERY GROUP H0389

SDG 7116
Contact L.A. Johnson

G U I D E , c o n t .

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0389

D A T A S H E E T

- * An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- * A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- * When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

REPORT GUIDES

Page 6

SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/16/99

T M A / R I C H M O N D
SAMPLE DELIVERY GROUP H0389

SDG 7116
Contact L.A. Johnson

R E P O R T G U I D E

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0389

L A B C O N T R O L S A M P L E

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- * An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- * The first, computed limits for the recovery reflect:
 1. The error of RESULT, including that introduced by rounding the result prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
 2. The error of ADDED.
 3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- * The second limits are protocol defined upper and lower QC limits for the recovery.
- * The recovery is underlined if it is outside either of these ranges.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/16/99

T M A / R I C H M O N D
SAMPLE DELIVERY GROUP H0389

SDG 7116
Contact L.A. Johnson

R E P O R T G U I D E

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0389

D U P L I C A T E

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTS divided by their average expressed as a percent.

If both RESULTS are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

- * The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTS prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTS. If labeled CNT, it does not.

This value reported for this limit is at most 999.

- * The second limit for the RPD is the larger of:

1. A fixed percentage specified in the protocol.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/16/99

T M A / R I C H M O N D
SAMPLE DELIVERY GROUP H0389

SDG 7116
Contact L.A. Johnson

G U I D E , c o n t .

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0389

D U P L I C A T E

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

- * The RPD is underlined if it is greater than either limit.
- * If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

- * The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/16/99

T M A / R I C H M O N D
SAMPLE DELIVERY GROUP H0389

SDG 7116
Contact L.A. Johnson

R E P O R T G U I D E

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0389

M A T R I X S P I K E

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

- * The first, computed limits for the recovery reflect:

1. The errors of the two RESULTS, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

2. The error of ADDED.

3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

- * The second limits are protocol defined upper and lower QC limits

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
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T M A / R I C H M O N D
S A M P L E D E L I V E R Y G R O U P H 0 3 8 9

SDG 7116
Contact L.A. Johnson

G U I D E , c o n t .

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0389

M A T R I X S P I K E

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

- * The recovery is underlined (out of spec) if it is outside either of these ranges.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/16/99

T M A / R I C H M O N D
SAMPLE DELIVERY GROUP H0389

SDG 7116
Contact L.A. Johnson

R E P O R T G U I D E

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0389

M E T H O D S U M M A R Y

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

- * Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

- * The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

- * If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- * Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- * Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/16/99

T M A / R I C H M O N D
SAMPLE DELIVERY GROUP H0389

SDG 7116
Contact L.A. Johnson

G U I D E , c o n t .

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0389

M E T H O D S U M M A R Y

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

- * Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
- * If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

MDAs are underlined if greater than the printed RDL.

- * Aliquots are underlined if less than the nominal value specified for the method.
- * Preparation factors are underlined if greater than the nominal value specified for the method.
- * Dilution factors are underlined if greater than the nominal value specified for the method.
- * Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
- * Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
- * Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

REPORT GUIDES

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SUMMARY DATA SECTION

Page 27

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/16/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0389

SDG 7116
Contact L.A. Johnson

GUIDE , c o n t .

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0389

METHOD SUMMARY

- * Count times are underlined if less than the nominal value specified for the method.
- * Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- * Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- * Days Held are underlined if greater than the holding time specified in the protocol.
- * Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/16/99

T M A / R I C H M O N D
SAMPLE DELIVERY GROUP H0389

SDG 7116
Contact L.A. Johnson

G U I D E , c o n t .

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0389

M E T H O D S U M M A R Y

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

REPORT GUIDES

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SUMMARY DATA SECTION

Page 29

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/16/99

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-037-05		Page 1 of 3			
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086		Project Coordinator WEISS, RL		Price Code		Data Turnaround 45 Days	
Project Designation ERDF Leachate Delisting Analysis		Sampling Location ERDF 200 west		SAF No. B99-037							
Ice Chest No. ERC 96 050		Field Logbook No. EL-1309-3		Method of Shipment Fed Ex							
Shipped To TMA/RECRE 420 99		Offsite Property No. A990115		Bill of Lading/Air Bill No. 423579524880							
				COA TERDF4K117							

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	HCl or H2SO4 to pH <2 Con	Cool 4C	Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	Cool 4C
	Type of Container	P	P	aG	aG	aG	G	P	P	P	P
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	20mL	100mL	250mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL

SAMPLE ANALYSIS				Activity Scan	pH (Water) - 9040	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	NonVOA by EXT/TSMS (Benzocarb)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (1) in Special Instructions	TDS - 100	TSS - 100
Sample No.	Matrix *	Sample Date	Sample Time										
B0V925	Water												
B0V926	Water	4-20-99	0915	X									
B0V927	Water	4-20-99	0920	X									

CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *			
Relinquished By		Date/Time		Received By		Date/Time		** TMA is requested to report all analytes found above their detection limits for GEA. (1) IC Anions - 9056 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate);				Soil Water Vapor Other Solid Other Liquid	
S. J. GALE		4/20/99 1425		REF 1-C		4/20/99 1425							
Relinquished By		Date/Time		Received By		Date/Time							
REF 1-C		4/21/99 0630		S. J. GALE		4/21/99 0630							
Relinquished By		Date/Time		Received By		Date/Time							
S. J. GALE		4/21/99 0800		FED EX		4-21-99							
Relinquished By		Date/Time		Received By		Date/Time							
Fred Ex		4-22-99 10:30		Fred Ex		4-22-99 10:30							
LABORATORY SECTION		Received By				Title				Date/Time			
FINAL SAMPLE DISPOSITION		Disposal Method				Disposed By				Date/Time			

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-037-05	Page 2 of 2	
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086		Project Coordinator WEISS, RL	Price Code	Data Turnaround
Project Designation ERDF Leachate Delisting Analysis		Sampling Location ERDF 200 west		SAF No. B99-037				45 Days
Ice Chest No.		Field Logbook No. EL 1309-3		Method of Shipment Fed Ex				
Shipped To TMA/RECRA <i>AP 4 20 99</i>		Offsite Property No. A990115		Bill of Lading/Air Bill No. 423579524880				
								COA <i>TERDF4 K117</i>

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	ZnAc+NaOH to pH >9 Cool	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	Cool 4C				
	Type of Container	P	P	P	P	P	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	2	2	2	2	2
Special Handling and/or Storage	Volume	500ml.	500ml.	500ml.	1000ml.	1000ml.	1000ml.	1000ml.	1000ml.	1000ml.	1000ml.

SAMPLE ANALYSIS		Ammonia - 350.3	See item (1) in Special Instructions.	Sulfides - 9030	See item (2) in Special Instructions.	Total Cyanide - 9010	See item (3) in Special Instructions.	Chloro-herbicides - EPA8151	See item (4) in Special Instructions.	Pest/PCBs - 8081	See item (5) in Special Instructions.
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Sample No.	Matrix *	Sample Date	Sample Time								
B0V925	Water										
✓ B0V926	Water	4-20-99	0915				X				
✓ B0V927	Water	4-20-99	0920				X				

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By <i>SJGALE</i>		Date/Time 4/20/99 1425		Received By <i>REF 1-C</i>		Date/Time 4/20/99 1425		** TMA is requested to report all analytes found above their detection limits for GEA. (1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) [Arsenic, Lead, Selenium, Silicon, Thallium, Tin] (2) Gamma Spectroscopy (Water) [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155] (3) 8310_SVOA, HPLC [Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo[a,h]anthracene] (4) Nitrosamines - 8070 [N-Nitroso-di-n-dipropylamine, N-Nitrosodimethylamine] (5) Semi-VOA - 8270A (App IX); Semi-VOA - 8270A (App IX Add-On) [1,2-Diphenylhydrazine, 1,4-Dinitrobenzene, 1-Acetyl-2-thiourea, 2,5-Diaminotoluene, 2-Cyclohexyl-4,6-dinitrophenol]	
Relinquished By <i>REF 1-C</i>		Date/Time 4/21/99 0630		Received By <i>SJGALE</i>		Date/Time 4/21/99 0630			
Relinquished By <i>SJGALE</i>		Date/Time 4/21/99 0800		Received By <i>FED EX</i>		Date/Time 4-21-99			
Relinquished By <i>Fed Ex</i>		Date/Time 4-22-99 10:30		Received By <i>[Signature]</i>		Date/Time 4-22-99 10:30			

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

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-037-05	Page 3 of 3	
Collector Gale, SJ/ Neilson RJ		Company Contact Fred Roeck		Telephone No. 372-9086		Project Coordinator WEISS, RL	Price Code	Data Turnaround 45 Days
Project Designation ERDF Leachate Delisting Analysis		Sampling Location ERDF 200 west		SAF No. B99-037				
Ice Chest No.		Field Logbook No. EL1309-3		Method of Shipment Fed Ex				
Shipped To TMA/REERA 42099		Offsite Property No. A990115		Bill of Lading/Air Bill No. 42357952 4880				
		COA TERDF4 K117						

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	HCL to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl Cool 4C						
	Type of Container	G	P	aGs*	aGs*						
	No. of Container(s)	2	2	1	1						
Special Handling and/or Storage	Volume	1000mL	1000mL	40mL	40mL						

SAMPLE ANALYSIS				oil & Grease - 9070	Gross Alpha: Gross Beta	See item (1) in Special Instructions.	See item (2) in Special Instructions.						
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Sample No.	Matrix *	Sample Date	Sample Time										
BOV925	Water												
✓ BOV926	Water	4-20-99	0915			X							
✓ BOV927	Water	4-20-99	0920			X							

CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *			
Relinquished By <i>SJ GALE</i>		Date/Time 4/20/99 1425		Received By <i>REF 1-C</i>		Date/Time 4/20/99 1425		** TMA is requested to report all analytes found above their detection limits for GEA. (1) Alcohols, Glycols, & Ketones - 8015M (1-Butanol, Diethyl ether, Methanol) (2) VOA - 8260A (App IX); VOA - 8260A (App IX Add-On) (1,1,2-Trichloro-1,2,2-trifluoroethane, 1,3-Butadiene, 1-Butanol, 2-Chloroethyl vinyl ether, Allyl alcohol, cis-1,2-Dichloroethylene, Crotonaldehyde, Dichloropropanol, Diethyl ether, Ethyl acetate, Isoprop Date Time				Soil Water Vapor Other Solid Other Liquid	
Relinquished By <i>REF 1-C</i>		Date/Time 4/21/99 0630		Received By <i>SJ GALE</i>		Date/Time 4/21/99 0630							
Relinquished By <i>SJ GALE</i>		Date/Time 4/21/99 0800		Received By <i>FED EX</i>		Date/Time 4-21-99							
Relinquished By <i>Fed Ex</i>		Date/Time 4-22-99 10:30		Received By <i>JL CORNO</i>		Date/Time 4-22-99 10:30							
LABORATORY SECTION		Received By		Title		Disposed By				Date Time			
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date Time					

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Beechtel Hanford Date/Time received 4-22-99 10:30

CoC No. B99-087-05

Container I.D. No. ERC 96-050 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: 3
- 7. Number of containers per sample: _____ (Or see CoC ✓)
- 8. Paperwork agrees with samples? Yes [] No []
- 9. Samples have: Tape [] Hazard labels [] Rad labels [] Appropriate sample labels []
- 10. Samples are: In good condition [] Leaking [] Broken Container [] Missing []
- 11. Describe any anomalies: _____

- 13. Was P.M. notified of any anomalies? Yes [] No [] Date _____
- 14. Received by AP Corso Date: 4-22-99 Time: 10:30

LOGIN

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

PROGRAM MANAGER

Sample holding times exceeded? Yes [] No []

Client Notified: Name _____ Date/time _____