0054390 H1099

DEC 2000 RECEIVED

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C00-036 H1099

DATE RECEIVED: 10/24/00 RFW LOT # :0010L018

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10462						
BROMIDE BY IC	002	W	00LAC065	10/19/00	10/25/00	10/25/00
BROMIDE BY IC	002 REP	W	00LAC065	10/19/00	10/25/00	10/25/00
BROMIDE BY IC	002 MS	W	00LAC065	10/19/00	10/25/00	10/25/00
CHLORIDE BY IC	002	W	00LIC065	10/19/00	10/25/00	10/25/00
CHLORIDE BY IC	002 REP	W	00LIC065	10/19/00	10/25/00	10/25/00
CHLORIDE BY IC	002 MS	W	00LIC065	10/19/00	10/25/00	10/25/00
FLUORIDE BY IC	002	W	00LAC065	10/19/00	10/25/00	10/25/00
FLUORIDE BY IC	002 REP	W	00LAC065	10/19/00	10/25/00	10/25/00
FLUORIDE BY IC	002 MS	W	00LAC065	10/19/00	10/25/00	10/25/00
NITRITE BY IC	002	W	00LAC065	10/19/00	10/25/00	10/25/00
NITRITE BY IC	002 REP	W	00LAC065	10/19/00	10/25/00	10/25/00
NITRITE BY IC	002 MS	W	00LAC065	10/19/00	10/25/00	10/25/00
NITRATE BY IC	002	W	00LAC065	10/19/00	10/25/00	10/25/00
NITRATE BY IC	002 REP	W	00LAC065	10/19/00	10/25/00	10/25/00
NITRATE BY IC	002 MS	W	00LAC065	10/19/00	10/25/00	10/25/00
PHOSPHATE BY IC	002	W	00LAC065	10/19/00	10/25/00	10/25/00
PHOSPHATE BY IC	002 REP	W	00LAC065	10/19/00	10/25/00	10/25/00
PHOSPHATE BY IC	002 MS	W	00LAC065	10/19/00	10/25/00	10/25/00
SULFATE BY IC	002	W	00LIC065	10/19/00	10/25/00	10/25/00
SULFATE BY IC	002 REP	W	00LIC065	10/19/00	10/25/00	10/25/00
SULFATE BY IC	002 MS	W	00LIC065	10/19/00	10/25/00	10/25/00
LAB QC:						
BROMIDE BY IC	MB1	W	00LAC065	N/A	10/25/00	10/25/00
BROMIDE BY IC	MB1 BS	W	00LAC065	N/A	10/25/00	10/25/00
CHLORIDE BY IC	MB1	W	00LIC065	N/A	10/25/00	10/25/00
CHLORIDE BY IC	MB1 BS	W	00LIC065	N/A	10/25/00	10/25/00
FLUORIDE BY IC	MB1	W	00LAC065	N/A	10/25/00	10/25/00
FLUORIDE BY IC	MB1 BS	W	00LAC065	N/A	10/25/00	10/25/00
NITRITE BY IC	MB1	W	00LAC065	N/A	10/25/00	10/25/00
NITRITE BY IC	MB1 BS	W	00LAC065	N/A	10/25/00	10/25/00
NITRATE BY IC	MB1	W	00LAC065	N/A	10/25/00	10/25/00
NITRATE BY IC	MB1 BS	W	00LAC065	N/A	10/25/00	10/25/00
PHOSPHATE BY IC	MB1	W	00LAC065	N/A	10/25/00	10/25/00

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Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C00-036 H1099

DATE RECEIVED: 10/24/00 RFW LOT # :0010L018

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PHOSPHATE BY IC	MB1 BS	W	00LAC065	N/A	10/25/00	10/25/00
SULFATE BY IC	MB1	W	00LIC065	N/A	10/25/00	10/25/00
SULFATE BY IC	MB1 BS	W	00LIC065	N/A	10/25/00	10/25/00

RECRA
ENVIRONMENTAL
INC.
Chemical and Environmental Measurement Information

DEC 2000
RECEIVED

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD C00-036 H1099
RFW# : 0010L018

W.O. # : 10985-001-001-9999-00
Date Received: 10-24-00

INORGANIC CASE NARRATIVE

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

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

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

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

5. The method blanks were within method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits.

7. The matrix spike recoveries were within the 75-125% control limits.

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

9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

12-14-00
Date

njp\il0-018

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

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

Recra LabNet Philadelphia

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	EPA /600	SW846	OTHER
Acidity	___ 305.1		
___Alkalinity ___Bicarbonate ___Carbonate	___ 310.1		
BOD	___ 405.1		___ 5210B (b)
Ion Chormatography:			
✓ Bromide ✓ Chloride ✓ Fluoride	✓ 300.0	___ 9056	
✓ Nitrate ✓ Nitrite ✓ Phosphate	✓ 300.0	___ 9056	
✓ Sulfate ___Formate ___Acetate ___Oxalate	✓ 300.0	___ 9056	
Chloride	___ 325.2	___ 9251	
Chorine, Residual	___ 330.5 (mod)		
Cyanide, Amenable to Chorination	___ 335.2	___ 9010B	
Cyanide, Total	___ 335.2	___ 9010B ___ 9014	___ ILMO4.0 (e)
Cyanide, Weak Acid Dissociable		___	___ 412 (a) ___ 4500CN-I (b
COD	___ 410.4(mod)		___ 5220C (b)
Color	___ 110.2		
Corrosivity by Coupon		___ 1110(mod)	
Chromium VI		___ 7196A	___ 3500Cr-D (b)
Fluoride	___ 340.2		___ 4500-FC
Hardness, Calcium	___ 215.2		
Hardness, Total	___ 130.2		
Iodide			___ ASTM D19P202 (1)
Surfactant	___ 425.1		
___Nitrate-Nitrite ___Nitrate ___Nitrite	___ 353.2		
Ammonia	___ 350.3		
Total___ Kjeldahl ___ Organic Nitrogen	___ 351.4		
Total___ Organic ___ Inorganic Carbon	___ 415.1	___ 9060	
Oil & Grease	___ 413.1	___ 9070	
___ pH ____ pH; paper	___ 150.1	___ 9040B ___ 9041A	
Petroleum Hydrocarbons, Total Recoverable	___ 418.1		
Phenol	___ 420.1 ___ 420.2	___ 9065 ___ 9066	
___Ortho ___Total Phosphate	___ 365.2		___ 4500-P B ___ C
Salinity			___ 210A (a) ___ 2520 (b)
Settleable Solids	___ 160.5		
Sulfide	___ 376.1 ___ 376.2	___ 9030B/9034 (acid soluble)	
Reactive ___Cyanide ___Sulfide		___ Section 7.3 (__9014__9030B)	
Silica	___ 370.1		
Sulfite	___ 377.1		
Sulfate	___ 375.4	___ 9038	
Specific Conductance	___ 120.1	___ 9050A	
Specific Gravity			___ D5057-90 ___ 213E (a)
Synthetic Precipitation Leach	___ 1312		
Total ___Dissolved __Suspended ___Solids	160 ___.1 ___.2 ___.3		
Total Organic Halides	___ 450.1	___ 9020B	
Turbidity	___ 180.1		
Volatile Solids:			
__Total __Dissolved __Suspended	___ 160.4		

Other: **Method:**

Recra LabNet Philadelphia
METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/13/00

CLIENT: TNUHANFORD C00-036 H1099 RECRA LOT #: 0010L018

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B10462	Bromide by IC	1.2	u	MG/L	1.2	5.0
		Chloride by IC	6.4		MG/L	1.2	5.0
		Fluoride by IC	2.5	u	MG/L	2.5	5.0
		Nitrite by IC	1.2	u	MG/L	1.2	5.0
		Nitrate by IC	20		MG/L	1.2	5.0
		Phosphate by IC	1.2	u	MG/L	1.2	5.0
		Sulfate by IC	81.8		MG/L	5.0	20.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/13/00

CLIENT: TNUHANFORD C00-036 H1099 RECRA LOT #: 0010L018

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	00LAC065-MB1	Bromide 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
BLANK10	00LIC065-MB1	Chloride by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/13/00

CLIENT: TNUHANFORD C00-036 H1099 RECRA LOT #: 0010L018

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	B10462	Bromide by IC	25.8	0.00	25.0	103.3	5.0
		Chloride by IC	32.7	6.4	25.0	105.3	5.0
		Fluoride by IC	56.8	0.00	50.0	113.6	5.0
		Nitrite by IC	27	1.2 u	25	106.3	5.0
		Nitrate by IC	49	20	25	113.8	5.0
		Phosphate by IC	26.4	1.2 u	25.0	105.5	5.0
		Sulfate by IC	344	81.8	250	105.1	50.0
BLANK10	00LAC065-MB1	Bromide by IC	5.0	0.25u	5.0	100.5	1.0
		Fluoride by IC	10.3	0.50u	10.0	102.8	1.0
		Nitrite by IC	5.0	0.25u	5.0	100.6	1.0
		Nitrate by IC	5.0	0.25u	5.0	99.7	1.0
		Phosphate by IC	5.1	0.25u	5.0	102.9	1.0
BLANK10	00LIC065-MB1	Chloride by IC	4.9	0.25u	5.0	98.4	1.0
		Sulfate by IC	4.9	0.25u	5.0	98.8	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/13/00

CLIENT: TNUHANFORD C00-036 H1099 RECRA LOT #: 0010L018

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	B10462	Bromide by IC	1.2 u	1.2 u	NC	5.0
		Chloride by IC	6.4	7.2	12.2	5.0
		Fluoride by IC	2.5 u	2.5 u	NC	5.0
		Nitrite by IC	1.2 u	1.2 u	NC	5.0
		Nitrate by IC	20	20	0.20	5.0
		Phosphate by IC	1.2 u	1.2 u	NC	5.0
		Sulfate by IC	81.8	82.2	0.57	20.0

RECRA LabNet Use Only
00101018

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TRU-Hanford COO-036

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 10-24-00 Date Due: 11-23-00

Account #:

		A	B	C
Refrigerator #		4	4	
#/Type Container	Liquid	1P	1P	
	Solid			
Volume	Liquid	500	500	
	Solid			
Preservatives		Hno3	-	
ANALYSES REQUESTED →	ORGANIC: VOA			
	ORGANIC: BNA			
	ORGANIC: Pest/PCB			
	ORGANIC: Herb			
	INORG: Metal	Met (1)	(1)	
	INORG: CN			
RECRA LabNet Use Only			IC (1)	

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	Met (1)	IC (1)
001	B104(1) (F)	✓	✓	GW	10-19-00	1043	✓	
002	B104(2	✓	✓	↓	↓	↓		✓

Special Instructions: SAF COO-036

Run Matrix QC

DATE/REVISIONS:

Met (1) 1. Al, Ag, Ba, Be, Ca, Cd, Cr, Co, Cu, Fe, K,
↓ 2. Mg, Mn, Ni, Na, Sb, Sr, V, Zn
IC (1) 3. Cl, Br, Fl, NO2, NO3, PO4, SO4
4.
5.
6.

RECRA LabNet Use Only

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

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec'd Y or N
Cooler Temp. 9.8 C

Relinquished by	Received by	Date	Time
FedEx	TKoppel	10-24-00	0920

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 8214 8983 0618

PNNL	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # C00-036-13
		Page 1 of 1

Collector D. R. BREWINGTON	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688 MSIN FAX
SAF No. C00-036	Sampling Origin HANFORD SITE	Purchase Order/Charge Code
Project Title 100-NR-2 IAM GW MONITORING, SEPTEMBER 2000	Logbook No. WM-SAWS H37	Ice Chest No. SM2440 605107 Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235 7953 9920
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
•• ••

SPECIAL INSTRUCTIONS Hold Time
Fax copies of TMA log-in to JH Kessner & DL Stewart

Total Activity Exemption: Yes ☑ No ☐

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B10461(F)		W	10/18/00	1143	1x500-mL G/P	ICP Metals - 6010A RCRA GW TO RECRA	HNO3 to pH <2
B10462		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10462		W			1x20-mL P	Activity Scan	None
B10462		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10462		W			1x1000-mL G/P	Gamma Spectroscopy	HNO3 to pH <2
B10462		W			1x250-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D. R. BREWINGTON			10/18/00 1150	SICKLE			10-18-00 1150
			10-18-00 1425	Fed Ex			10/19/00
FED-EXPRESS			10-20/00 9.45	E. SEGURO			10/20/00 9-45
Fed Ex			10-24-00 0920	Tkeppel			10-24-00 0920

Matrix *

S	= Soil	DS	= Drum Solid
SE	= Sediment	DL	= Drum Liqui
SO	= Solid	T	= Tissue
SL	= Sludge	WI	= Wipe
W	= Water	L	= Liquid
O	= Oil	V	= Vegetation
A	= Air	X	= Other

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process) — Disposed By — Date/Time

PAGE 1 Thermo NUtech CHAIN OF CUSTODY ORD # R0-10-139

10/20/00 14:28:46 WORK ID: SAF C00-036 SDG H1099

RCVD: 10/20/00 DUE: 12/04/00 KEEP: 12/04/01 DISP: S

DASH	SAMPLE IDENTIFICATION	STORED	TESTS
01A	B10461(F)	RECRA	DISPOS E011
01B	B10461(F) MS	RECRA	E011
01C	B10461(F) DUP	RECRA	E011
02A	B10462	RECRA	DISPOS E260
02B	B10462 MS	RECRA	E260
02C	B10462 DUP	RECRA	E260

RELEASED BY	DATE	TRANSFERRED TO	DATE	RECEIVED BY	DATE
FrdEf	10-24-00	Recra	10-24-00	TKeppel	10-24-00

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CHEM SDG H1099

C.O.C. # C00-036-13

Page 1 of 1

13

Collector: D. R. BREWINGTON	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C00-036	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100-NR-2 IAM GW MONITORING SEPTEMBER 2000	Logbook No.: WM-SAWF H37	Ice Chest No.: SM1440 6W5107 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Ladine/Air Bill No.: 4235 7953 9920
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Fax copies of TMA log-in to JH Kessner & DL Stewart

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B10461		W	10-18-00	1143	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10462		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10462		W			1x20-mL P	Activity Scan	None
B10462		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10462		W			1x1000-mL G/P	Gamma Spectroscopy	HNO3 to pH <2
B10462		W			1x250-mL P	Tritium - H3	None

TO RECRA

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	D. R. BREWINGTON	D.R. Brewington	10/18/00 1150		SICKLE		10-18-00 1150
			10-18-00 1425		Fed Ex		10/19/00
	FED-EXPRESS		10-20-00 9.45		E. SEGURO		10/20/00 9.45

Matrix *

S	= Soil	DS	= Drum Solid
SE	= Sediment	DL	= Drum Liqui
SO	= Solid	T	= Tissue
SL	= Sludge	WI	= Wipe
W	= Water	L	= Liquid
O	= Oil	V	= Vegetation
A	= Air	X	= Other

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

ThermoRetec Nuclear Services
2030 Wright Avenue
P.O. Box 4040
Richmond, CA 94804

ThermoRetec
Smart Solutions. Positive Outcomes.

(800) 841-5487 Phone
(510) 235-2633 Phone
(510) 235-0438 Fax
www.thermoretec.com

December 19, 2000

Ms. Joan Kessner
Bechtel Hanford Inc.
3190 George Washington Way
Richland, WA 99352
MSIN: H9-03

Reference: **P.O. #TRC-SBB-207925**
Thermo Retec R0-10-135-7534, SDG H1099

Dear Ms. Kessner:

Enclosed is the data report for one water sample designated under SAF No. C00-036 received at Thermo Retec on October 20, 2000. The sample was analyzed according to the accompanying chain-of-custody documents.

Please call if you have any questions concerning this report.

Sincerely,

Melissa Mannion

Melissa C. Mannion
Program Manager

MCM

Enclosure: Data Package

DEC 2000
RECEIVED

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1099 was composed of one water sample designated under SAF No. C00-036 with a Project Designation of: 100-NR-2 IAM GW Monitoring, September 2000.

The sample was received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Thermo Retec Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Gross Alpha Analyses

No problems were encountered during the course of the analyses.

2.2 Tritium Analyses

No problems were encountered during the course of the analyses.

2.3 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa Mannion
Melissa C. Mannion
Program Manager

12/19/00
Date

DEC 2000
RECEIVED

T M A / R I C H M O N D
SAMPLE DELIVERY GROUP H1099

SDG	7534
Contact	Melissa C. Mannion

Client	Hanford
Contract	TRC-SBB-207925
Case no	SDG H1099

S U M M A R Y D A T A S E C T I O N

T A B L E O F C O N T E N T S

About this section	1
Sample Summaries	3
Prep Batch Summary	5
Work Summary	6
Method Blanks	7
Lab Control Samples	8
Duplicates	9
Matrix Spikes	10
Data Sheets	11
Method Summaries	12
Report Guides	15
End of Section	29

Melissa Mannion
Prepared by

Melissa Mannion
Reviewed by

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	12/19/00

SDG 7534
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1099

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 12/19/00

SDG 7534
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG_H1099

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 12/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1099

SAMPLE SUMMARY

SDG 7534
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1099

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B10462	Hanford Site	WATER		R010135-01	C00-036	C00-036-13	10/19/00 10:43
Method Blank		WATER		R010135-03	C00-036		
Lab Control Sample		WATER		R010135-02	C00-036		
Duplicate (R010135-01)	Hanford Site	WATER		R010135-04	C00-036		10/19/00 10:43
Spike (R010135-01)	Hanford Site	WATER		R010135-05	C00-036		10/19/00 10:43

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 12/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1099

QC SUMMARY

SDG 7534
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1099

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7534	C00-036-13	B10462	WATER				10/20/00	1	R010135-01	7534-001
		Method Blank	WATER						R010135-03	7534-003
		Lab Control Sample	WATER						R010135-02	7534-002
		Duplicate (R010135-01)	WATER				10/20/00	1	R010135-04	7534-004
		Spike (R010135-01)	WATER				10/20/00	1	R010135-05	7534-005

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 12/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1099

SDG 7534
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1099

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Gas Proportional Counting												
88A	WATER	Gross Alpha in Water	6962-009	20.0	1			1	1	1/1		
Gamma Scan												
GAM	WATER	Gamma Emitters	6962-009	15.0	1			1	1	1/1		
Liquid Scintillation Counting												
H	WATER	Tritium in Water	6962-009	10.0	1			1	1	1/1	1/1	X

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 12/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1099

WORK SUMMARY

SDG 7534
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1099

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B10462			R010135-01	7534-001	88A/88		11/13/00	12/19/00	MCM	Gross Alpha in Water
Hanford Site		WATER	10/19/00	7534-001	GAM		11/13/00	12/19/00	MCM	Gamma Emitters
C00-036-13	C00-036		10/20/00	7534-001	H		12/05/00	12/19/00	MCM	Tritium in Water
Method Blank			R010135-03	7534-003	88A/88		11/13/00	12/19/00	MCM	Gross Alpha in Water
		WATER		7534-003	GAM		11/13/00	12/19/00	MCM	Gamma Emitters
	C00-036			7534-003	H		12/05/00	12/19/00	MCM	Tritium in Water
Lab Control Sample			R010135-02	7534-002	88A/88		11/13/00	12/19/00	MCM	Gross Alpha in Water
		WATER		7534-002	GAM		11/13/00	12/19/00	MCM	Gamma Emitters
	C00-036			7534-002	H		12/05/00	12/19/00	MCM	Tritium in Water
Duplicate (R010135-01)			R010135-04	7534-004	88A/88		11/13/00	12/19/00	MCM	Gross Alpha in Water
Hanford Site		WATER	10/19/00	7534-004	GAM		11/13/00	12/19/00	MCM	Gamma Emitters
	C00-036		10/20/00	7534-004	H		12/05/00	12/19/00	MCM	Tritium in Water
Spike (R010135-01)			R010135-05	7534-005	H		12/05/00	12/19/00	MCM	Tritium in Water
Hanford Site		WATER	10/19/00							
	C00-036		10/20/00							

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
88A/88	C00-036	Gross Alpha in Water	900.0_ALPHABETA_GPC	1			1	1	1		4
GAM	C00-036	Gamma Emitters	GAMMA_GS	1			1	1	1		4
H	C00-036	Tritium in Water	906.0_H3_LSC	1			1	1	1	1	5
TOTALS				3			3	3	3	1	13

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 12/19/00

R010135-03

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1099

Method Blank

METHOD BLANK

SDG	7534	Client/Case no	Hanford	SDG H1099	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R010135-03	Client sample id	Method Blank		
Dept sample id	7534-003	Material/Matrix		WATER	
		SAF No	C00-036		

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.725	0.71	1.9	3.0	U	88A
Tritium	10028-17-8	33.3	180	300	400	U	H
Potassium 40	13966-00-2	U		140		U	GAM
Cobalt 60	10198-40-0	U		12	25	U	GAM
Cesium 137	10045-97-3	U		11	15	U	GAM
Radium 226	13982-63-3	U		18		U	GAM
Radium 228	15262-20-1	U		37		U	GAM
Europium 152	14683-23-9	U		23	50	U	GAM
Europium 154	15585-10-1	U		30	50	U	GAM
Europium 155	14391-16-3	U		23	50	U	GAM
Thorium 228	14274-82-9	U		13		U	GAM
Thorium 232	TH-232	U		37		U	GAM
Uranium 235	15117-96-1	U		35		U	GAM
Uranium 238	U-238	U		1300		U	GAM
Americium 241	14596-10-2	U		32		U	GAM

100-NR-2 IAM GW MONITORING, SEPT.00

QC-BLANK 36506

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1099

R010135-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7534
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1099
Case no TRC-SBB-207925

Lab sample id R010135-02
Dept sample id 7534-002

Client sample id Lab Control Sample
Material/Matrix WATER
SAF No C00-036

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	120	7.9	1.8	3.0		88A	108	4.3	111	64-136	70-130
Tritium	8860	400	300	400		H	9940	400	89	84-116	80-120
Cobalt 60	490	61	37	25		GAM	474	19	103	69-131	80-120
Cesium 137	587	51	39	15		GAM	554	22	106	72-128	80-120

100-NR-2 IAM GW MONITORING, SEPT.00

QC-LCS 36505

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 12/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1099

R010135-04

B10462

DUPLICATE

SDG	7534			Client/Case no	Hanford SDG H1099
Contact	Melissa C. Mannion			Case no	TRC-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	R010135-04	Lab sample id	R010135-01	Client sample id	B10462
Dept sample id	7534-004	Dept sample id	7534-001	Location/Matrix	Hanford Site WATER
		Received	10/20/00	Collected	10/19/00 10:43
				Custody/SAF No	C00-036-13 C00-036

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Gross Alpha	1.46	1.2	1.8	3.0	U	88A	0.193	1.4	2.6	U	-		
Tritium	22400	420	150	400		H	22000	410	150		2	22	
Potassium 40	U		330		U	GAM	U		350	U	-		
Cobalt 60	U		20	25	U	GAM	U		29	U	-		
Cesium 137	U		20	15	U	GAM	U		23	U	-		
Radium 226	U		33		U	GAM	U		39	U	-		
Radium 228	U		73		U	GAM	U		91	U	-		
Europium 152	U		47	50	U	GAM	U		52	U	-		
Europium 154	U		55	50	U	GAM	U		62	U	-		
Europium 155	U		53	50	U	GAM	U		54	U	-		
Thorium 228	U		26		U	GAM	U		28	U	-		
Thorium 232	U		73		U	GAM	U		91	U	-		
Uranium 235	U		70		U	GAM	U		86	U	-		
Uranium 238	U		2300		U	GAM	U		2500	U	-		
Americium 241	U		120		U	GAM	U		72	U	-		

100-NR-2 IAM GW MONITORING, SEPT.00

QC-DUP#1 36507

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	12/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1099

R010135-05 B10462

MATRIX SPIKE

SDG 7534		Client/Case no Hanford	SDG H1099
Contact Melissa C. Mannion		Case no TRC-SBB-207925	
MATRIX SPIKE	ORIGINAL		
Lab sample id R010135-05	Lab sample id R010135-01	Client sample id B10462	
Dept sample id 7534-005	Dept sample id 7534-001	Location/Matrix Hanford Site	WATER
	Received 10/20/00	Collected 10/19/00 10:43	
		Custody/SAF No C00-036-13	C00-036

ANALYTE	SPIKE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	ORIGINAL pCi/L	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	38700	570	170	400	X	H	18000	720	22000	410	93	62-138	60-140

100-NR-2 IAM GW MONITORING, SEPT.00

QC-MS#1 36508

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-MS
Version 3.06
Report date 12/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1099

R010135-01 B10462

DATA SHEET

SDG	7534	Client/Case no	Hanford SDG H1099
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R010135-01	Client sample id	B10462
Dept sample id	7534-001	Location/Matrix	Hanford Site WATER
Received	10/20/00	Collected	10/19/00 10:43
		Custody/SAF No	C00-036-13 C00-036

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.193	1.4	2.6	3.0	U	88A
Tritium	10028-17-8	22000	410	150	400		H
Potassium 40	13966-00-2	U		350		U	GAM
Cobalt 60	10198-40-0	U		29	25	U	GAM
Cesium 137	10045-97-3	U		23	15	U	GAM
Radium 226	13982-63-3	U		39		U	GAM
Radium 228	15262-20-1	U		91		U	GAM
Europium 152	14683-23-9	U		52	50	U	GAM
Europium 154	15585-10-1	U		62	50	U	GAM
Europium 155	14391-16-3	U		54	50	U	GAM
Thorium 228	14274-82-9	U		28		U	GAM
Thorium 232	TH-232	U		91		U	GAM
Uranium 235	15117-96-1	U		86		U	GAM
Uranium 238	U-238	U		2500		U	GAM
Americium 241	14596-10-2	U		72		U	GAM

100-NR-2 IAM GW MONITORING, SEPT.00

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1099

Test 88A	Matrix WATER
SDG 7534	
Contact Melissa C. Mannion	

METHOD SUMMARY

GROSS ALPHA IN WATER

GAS PROPORTIONAL COUNTING

Client Hanford	
Contract TRC-SBB-207925	
Contract SDG H1099	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha	
Preparation batch 6962-009						
B10462	R010135-01	88		7534-001	U	
BLK (QC ID=36506)	R010135-03	88		7534-003	U	
LCS (QC ID=36505)	R010135-02	88		7534-002	ok	
Duplicate (R010135-01)	R010135-04	88		7534-004	-	U
Nominal values and limits from method 100-NR-2 IAM GW MONITORING, SEPT.00				RDLs (pCi/L)	3.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6962-009 2σ prep error 20.0 % Reference Lab Notebook 6962 pg. 009																
B10462	R010135-01	88		2.6	0.200			42		100			25	11/11/00	11/13	GRB-113
BLK (QC ID=36506)	R010135-03	88		1.9	0.200			25		100				11/11/00	11/13	GRB-115
LCS (QC ID=36505)	R010135-02	88		1.8	0.200			24		100				11/11/00	11/13	GRB-114
Duplicate (R010135-01) (QC ID=36507)	R010135-04	88		1.8	0.200			41		100			25	11/11/00	11/13	GRB-116
Nominal values and limits from method				3.0	0.200			5-250		100			180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	CP-120	Gross Alpha and Gross Beta in Water, rev 3

AVERAGES ± 2 SD	MDA	2.0	± 0.77
FOR 4 SAMPLES	RESIDUE	33	± 20

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/19/00

Test GAM Matrix WATER
SDG 7534
Contact Melissa C. Mannion

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1099

METHOD SUMMARY

GAMMA EMITTERS

GAMMA SCAN

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1099

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 6962-009								
B10462	R010135-01			7534-001	U		U	
BLK (QC ID=36506)	R010135-03			7534-003	U		U	
LCS (QC ID=36505)	R010135-02			7534-002	ok		ok	
Duplicate (R010135-01)	R010135-04			7534-004	-	U	-	U
Nominal values and limits from method 100-NR-2 IAM GW MONITORING, SEPT.00				RDLs (pCi/L)	25		15	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6962-009 2σ prep error 15.0 % Reference Lab Notebook 6962 pg. 009																
B10462	R010135-01			23	0.500					217			25	11/13/00	11/13.	01,03,00
BLK (QC ID=36506)	R010135-03			11	0.500					201				11/13/00	11/13	01,04,00
LCS (QC ID=36505)	R010135-02			39	0.500					201				11/13/00	11/13	01,03,00
Duplicate (R010135-01) (QC ID=36507)	R010135-04			20	0.500					201			25	11/13/00	11/13	MB,05,00
Nominal values and limits from method				15	0.500					100			180			

PROCEDURES	REFERENCE	GAMMA_GS
	CP-100	Ge(Li) Preparation for Commercial Samples, rev 2

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	23	±	23
	YIELD		±	

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1099

Test H	Matrix WATER
SDG 7534	
Contact Melissa C. Mannion	

METHOD SUMMARY

TRITIUM IN WATER

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract TRC-SBB-207925	
Contract SDG H1099	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6962-009						
B10462	R010135-01			7534-001	22000	
BLK (QC ID=36506)	R010135-03			7534-003	U	
LCS (QC ID=36505)	R010135-02			7534-002	ok	
Duplicate (R010135-01)	R010135-04			7534-004	ok	
Spike (R010135-01)	R010135-05			7534-005	ok	X
Nominal values and limits from method				RDLs (pCi/L)	400	
100-NR-2 IAM GW MONITORING, SEPT.00						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6962-009	2σ prep error 10.0 %			Reference Lab Notebook 6962 pg. 009												
B10462	R010135-01			150	0.0500			20		100			47	11/28/00	12/05	LSC-007
BLK (QC ID=36506)	R010135-03			300	0.0500			10		100				11/28/00	12/05	LSC-007
LCS (QC ID=36505)	R010135-02			300	0.0500			10		100				11/28/00	12/05	LSC-007
Duplicate (R010135-01) (QC ID=36507)	R010135-04			150	0.0500			20		100			47	11/28/00	12/05	LSC-007
Spike (R010135-01) (QC ID=36508)	R010135-05			170	0.0500			18		100			47	11/28/00	12/05	LSC-007
Nominal values and limits from method				400	0.0500					25			180			

PROCEDURES	REFERENCE	906.0_H3_LSC
	CP-210	Tritium in Water Samples by Distillation, rev 3

AVERAGES ± 2 SD	MDA 210	±	160
FOR 5 SAMPLES	YIELD 16	±	10

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/19/00

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C00-036-13

Page 1 of 1

Collector: D. R. BREWINGTON	Contact/Requester: JH KESSNER H1099 (7534)	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C00-036	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100-NR-2 IAM GW MONITORING, SEPTEMBER 2000	Logbook No.: WM-SAWS-H37	Ice Chest No.: SM2440 ~~BW5107~~ Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235 7953 9920
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Fax copies of TMA log-in to JH Kessner & DL Stewart

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B10461		W	10-19-00	1143	1x500-mL G/P	ICP Metals - 6010A RCRA GW TO RECRA	HNO3 to pH <2
B10462		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10462		W			1x20-mL P	Activity Scan	None
B10462		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10462		W			1x1000-mL G/P	Gamma Spectroscopy	HNO3 to pH <2
B10462		W			1x250-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	D. R. BREWINGTON	D. R. Brewington	10/18/00 1150		SICKLE		10-18-00 1150
Relinquished By			Date/Time	Received By			Date/Time
			10-18-00 1425		Fed Ex		10/19/00
Relinquished By			Date/Time	Received By			Date/Time
	FED-EXPRESS		10-20-00 9:45		E. SEGURO		10/20/00 9:45
Relinquished By			Date/Time	Received By			Date/Time

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

ThermoRetec
Richmond Laboratory

Analytical Services

ICE CHEST RECEIPT LOG

Use one form per shipment. Refer to Thermometer Correction Log for correction factor.

Customer: Waste Management Tech. Support (Bechtel Hanford) Date:

Ice chest # or description	SML-440					
Thermometer: time in	10:20					
Thermometer: time out	11:15					
Thermometer reading	4°c					
Thermometer number	2132					
Correction factor						
Actual temperature*						
Custody seals on ice chest intact?						
Custody seals dated ?	—					
Custody seals signed?	—					
Custody seals on samples?	Yes					
Ice chest scanned for activity?	Yes					

* Temperature is in degrees centigrade.

Technician:

Comments:

ThermoRetec
Richmond Laboratory

Analytical Services

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: WMTS (PNNL) BECHTEL HANFORD Date/Time received 10-20/00 9:45 AM

CoC No. COO-036-13

Container I.D. No. SML 440 Requested TAT (Days) 45 P.O. Received Yes [ ] No [✓]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [✓] Dry [ ]
6. Number of samples in shipping container: 1
7. Number of containers per sample: PLS CHECK ON (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 E. SECURO Date: 10/20/00 Time: 9:45 AM

Customer Sample No.	cpm	mr/hr	Customer Sample No.	Cpm	mr/hr

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

DEC 2000
RECEIVED

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C00-036 H1099

DATE RECEIVED: 10/24/00 RFW LOT # :0010L018

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10461 (F)						
SILVER, TOTAL	001	W	99L1705	10/19/00	11/10/00	11/10/00
SILVER, TOTAL	001 REP	W	99L1705	10/19/00	11/10/00	11/10/00
SILVER, TOTAL	001 MS	W	99L1705	10/19/00	11/10/00	11/10/00
ALUMINUM, TOTAL	001	W	99L1705	10/19/00	11/10/00	11/10/00
ALUMINUM, TOTAL	001 REP	W	99L1705	10/19/00	11/10/00	11/10/00
ALUMINUM, TOTAL	001 MS	W	99L1705	10/19/00	11/10/00	11/10/00
BARIUM, TOTAL	001	W	99L1705	10/19/00	11/10/00	11/10/00
BARIUM, TOTAL	001 REP	W	99L1705	10/19/00	11/10/00	11/10/00
BARIUM, TOTAL	001 MS	W	99L1705	10/19/00	11/10/00	11/10/00
BERYLLIUM, TOTAL	001	W	99L1705	10/19/00	11/10/00	11/10/00
BERYLLIUM, TOTAL	001 REP	W	99L1705	10/19/00	11/10/00	11/10/00
BERYLLIUM, TOTAL	001 MS	W	99L1705	10/19/00	11/10/00	11/10/00
CALCIUM, TOTAL	001	W	99L1705	10/19/00	11/10/00	11/10/00
CALCIUM, TOTAL	001 REP	W	99L1705	10/19/00	11/10/00	11/10/00
CALCIUM, TOTAL	001 MS	W	99L1705	10/19/00	11/10/00	11/10/00
CADMIUM, TOTAL	001	W	99L1705	10/19/00	11/10/00	11/10/00
CADMIUM, TOTAL	001 REP	W	99L1705	10/19/00	11/10/00	11/10/00
CADMIUM, TOTAL	001 MS	W	99L1705	10/19/00	11/10/00	11/10/00
COBALT, TOTAL	001	W	99L1705	10/19/00	11/10/00	11/10/00
COBALT, TOTAL	001 REP	W	99L1705	10/19/00	11/10/00	11/10/00
COBALT, TOTAL	001 MS	W	99L1705	10/19/00	11/10/00	11/10/00
CHROMIUM, TOTAL	001	W	99L1705	10/19/00	11/10/00	11/10/00
CHROMIUM, TOTAL	001 REP	W	99L1705	10/19/00	11/10/00	11/10/00
CHROMIUM, TOTAL	001 MS	W	99L1705	10/19/00	11/10/00	11/10/00
COPPER, TOTAL	001	W	99L1705	10/19/00	11/10/00	11/10/00
COPPER, TOTAL	001 REP	W	99L1705	10/19/00	11/10/00	11/10/00
COPPER, TOTAL	001 MS	W	99L1705	10/19/00	11/10/00	11/10/00
IRON, TOTAL	001	W	99L1705	10/19/00	11/10/00	11/10/00
IRON, TOTAL	001 REP	W	99L1705	10/19/00	11/10/00	11/10/00
IRON, TOTAL	001 MS	W	99L1705	10/19/00	11/10/00	11/10/00
POTASSIUM, TOTAL	001	W	99L1705	10/19/00	11/10/00	11/10/00
POTASSIUM, TOTAL	001 REP	W	99L1705	10/19/00	11/10/00	11/10/00
POTASSIUM, TOTAL	001 MS	W	99L1705	10/19/00	11/10/00	11/10/00
MAGNESIUM, TOTAL	001	W	99L1705	10/19/00	11/10/00	11/10/00
MAGNESIUM, TOTAL	001 REP	W	99L1705	10/19/00	11/10/00	11/10/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C00-036 H1099

DATE RECEIVED: 10/24/00 RFW LOT # :0010L018

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MAGNESIUM, TOTAL	001 MS	W	99L1705	10/19/00	11/10/00	11/10/00
MANGANESE, TOTAL	001	W	99L1705	10/19/00	11/10/00	11/10/00
MANGANESE, TOTAL	001 REP	W	99L1705	10/19/00	11/10/00	11/10/00
MANGANESE, TOTAL	001 MS	W	99L1705	10/19/00	11/10/00	11/10/00
SODIUM, TOTAL	001	W	99L1705	10/19/00	11/10/00	11/10/00
SODIUM, TOTAL	001 REP	W	99L1705	10/19/00	11/10/00	11/10/00
SODIUM, TOTAL	001 MS	W	99L1705	10/19/00	11/10/00	11/10/00
NICKEL, TOTAL	001	W	99L1705	10/19/00	11/10/00	11/10/00
NICKEL, TOTAL	001 REP	W	99L1705	10/19/00	11/10/00	11/10/00
NICKEL, TOTAL	001 MS	W	99L1705	10/19/00	11/10/00	11/10/00
ANTIMONY, TOTAL	001	W	99L1705	10/19/00	11/10/00	11/10/00
ANTIMONY, TOTAL	001 REP	W	99L1705	10/19/00	11/10/00	11/10/00
ANTIMONY, TOTAL	001 MS	W	99L1705	10/19/00	11/10/00	11/10/00
STRONTIUM, TOTAL	001	W	99L1705	10/19/00	11/10/00	11/10/00
STRONTIUM, TOTAL	001 REP	W	99L1705	10/19/00	11/10/00	11/10/00
STRONTIUM, TOTAL	001 MS	W	99L1705	10/19/00	11/10/00	11/10/00
VANADIUM, TOTAL	001	W	99L1705	10/19/00	11/10/00	11/10/00
VANADIUM, TOTAL	001 REP	W	99L1705	10/19/00	11/10/00	11/10/00
VANADIUM, TOTAL	001 MS	W	99L1705	10/19/00	11/10/00	11/10/00
ZINC, TOTAL	001	W	99L1705	10/19/00	11/10/00	11/10/00
ZINC, TOTAL	001 REP	W	99L1705	10/19/00	11/10/00	11/10/00
ZINC, TOTAL	001 MS	W	99L1705	10/19/00	11/10/00	11/10/00

LAB QC:

SILVER LABORATORY	LC1 BS	W	99L1705	N/A	11/10/00	11/10/00
SILVER, TOTAL	MB1	W	99L1705	N/A	11/10/00	11/10/00
ALUMINUM LABORTORY	LC1 BS	W	99L1705	N/A	11/10/00	11/10/00
ALUMINUM, TOTAL	MB1	W	99L1705	N/A	11/10/00	11/10/00
BARIUM LABORATORY	LC1 BS	W	99L1705	N/A	11/10/00	11/10/00
BARIUM, TOTAL	MB1	W	99L1705	N/A	11/10/00	11/10/00
BERYLLIUM LABORATORY	LC1 BS	W	99L1705	N/A	11/10/00	11/10/00
BERYLLIUM, TOTAL	MB1	W	99L1705	N/A	11/10/00	11/10/00
CALCIUM LABORATORY	LC1 BS	W	99L1705	N/A	11/10/00	11/10/00
CALCIUM, TOTAL	MB1	W	99L1705	N/A	11/10/00	11/10/00
CADMIUM LABORATORY	LC1 BS	W	99L1705	N/A	11/10/00	11/10/00
CADMIUM, TOTAL	MB1	W	99L1705	N/A	11/10/00	11/10/00
COBALT LABORATORY	LC1 BS	W	99L1705	N/A	11/10/00	11/10/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C00-036 H1099

DATE RECEIVED: 10/24/00 RFW LOT # :0010L018

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
COBALT, TOTAL	MB1	W	99L1705	N/A	11/10/00	11/10/00
CHROMIUM LABORATORY	LC1 BS	W	99L1705	N/A	11/10/00	11/10/00
CHROMIUM, TOTAL	MB1	W	99L1705	N/A	11/10/00	11/10/00
COPPER LABORATORY	LC1 BS	W	99L1705	N/A	11/10/00	11/10/00
COPPER, TOTAL	MB1	W	99L1705	N/A	11/10/00	11/10/00
IRON LABORATORY	LC1 BS	W	99L1705	N/A	11/10/00	11/10/00
IRON, TOTAL	MB1	W	99L1705	N/A	11/10/00	11/10/00
POTASSIUM LABORATORY	LC1 BS	W	99L1705	N/A	11/10/00	11/10/00
POTASSIUM, TOTAL	MB1	W	99L1705	N/A	11/10/00	11/10/00
MAGNESIUM LABORATORY	LC1 BS	W	99L1705	N/A	11/10/00	11/10/00
MAGNESIUM, TOTAL	MB1	W	99L1705	N/A	11/10/00	11/10/00
MANGANESE LABORATORY	LC1 BS	W	99L1705	N/A	11/10/00	11/10/00
MANGANESE, TOTAL	MB1	W	99L1705	N/A	11/10/00	11/10/00
SODIUM LABORATORY	LC1 BS	W	99L1705	N/A	11/10/00	11/10/00
SODIUM, TOTAL	MB1	W	99L1705	N/A	11/10/00	11/10/00
NICKEL LABORATORY	LC1 BS	W	99L1705	N/A	11/10/00	11/10/00
NICKEL, TOTAL	MB1	W	99L1705	N/A	11/10/00	11/10/00
ANTIMONY LABORATORY	LC1 BS	W	99L1705	N/A	11/10/00	11/10/00
ANTIMONY, TOTAL	MB1	W	99L1705	N/A	11/10/00	11/10/00
STRONTIUM LCS STANDA	LC1 BS	W	99L1705	N/A	11/10/00	11/10/00
STRONTIUM, TOTAL	MB1	W	99L1705	N/A	11/10/00	11/10/00
VANADIUM LABORATORY	LC1 BS	W	99L1705	N/A	11/10/00	11/10/00
VANADIUM, TOTAL	MB1	W	99L1705	N/A	11/10/00	11/10/00
ZINC LABORATORY	LC1 BS	W	99L1705	N/A	11/10/00	11/10/00
ZINC, TOTAL	MB1	W	99L1705	N/A	11/10/00	11/10/00

RECRA
ENVIRONMENTAL
INC.
Chemical and Environmental Measurement Information

DEC 2000
RECEIVED

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD C00-036
RFW#: 0010L018
SDG/SAF#: H1099/C00-036

W.O.#: 10985-001-001-9999-00
Date Received: 10-24-00

METALS CASE NARRATIVE

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

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

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

4. The cooler temperature has been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).

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

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

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

9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to form 7.

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

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

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 15 pages.

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

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

13. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

12-6-00
Date

gmb/m10-018

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 00L018

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: ✓3005A __3010A __3015 __3020A __3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	✓6010B		__200.7				__99
Antimony	✓6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	__6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010B		__200.7				__99
Beryllium	✓6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	✓6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	✓6010B		__200.7				__99
Copper	✓6010B	__7211 [5]	__200.7	__220.2			__99
Iron	✓6010B		__200.7				__99
Lead	__6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	✓6010B		__200.7				__99
Manganese	✓6010B		__200.7				__99
Mercury	__7470A [3]	__7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	✓6010B		__200.7				__99
Nickel	✓6010B		__200.7				__99
Potassium	✓6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	__6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	✓6010B		__200.7			__1620	__99
Silver	✓6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	✓6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	✓6010B		__200.7				__99
Thallium	__6010B	__7841 [5]	__200.7	__279.2	__200.9		__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	✓6010B		__200.7				__99
Zinc	✓6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

L-WI-033/M-11/99

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).

4. Flame AA.

5. Graphite Furnace AA.

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

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/06/00

CLIENT: TNUHANFORD C00-036 H1099

RECRA LOT #: 0010L018

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B10461 (F)	Silver, Total	1.1	u	UG/L	1.1	1.0
		Aluminum, Total	10.6	u	UG/L	10.6	1.0
		Barium, Total	30.0		UG/L	0.20	1.0
		Beryllium, Total	0.10	u	UG/L	0.10	1.0
		Calcium, Total	47100		UG/L	8.9	1.0
		Cadmium, Total	0.30	u	UG/L	0.30	1.0
		Cobalt, Total	0.80	u	UG/L	0.80	1.0
		Chromium, Total	8.9		UG/L	0.90	1.0
		Copper, Total	0.80	u	UG/L	0.80	1.0
		Iron, Total	221		UG/L	16.4	1.0
		Potassium, Total	3690		UG/L	29.9	1.0
		Magnesium, Total	10400		UG/L	7.8	1.0
		Manganese, Total	3.7		UG/L	0.20	1.0
		Sodium, Total	8810		UG/L	3.8	1.0
		Nickel, Total	1.5		UG/L	1.2	1.0
		Antimony, Total	2.1	u	UG/L	2.1	1.0
		Strontium, Total	250		UG/L	0.10	1.0
		Vanadium, Total	8.6		UG/L	0.90	1.0
		Zinc, Total	1.8		UG/L	0.40	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/06/00

CLIENT: TNUHANFORD C00-036 H1099

RECRA LOT #: 0010L018

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L1705-MB1	Silver, Total	1.1	u	UG/L	1.1	1.0
		Aluminum, Total	10.6	u	UG/L	10.6	1.0
		Barium, Total	0.24		UG/L	0.20	1.0
		Beryllium, Total	0.10	u	UG/L	0.10	1.0
		Calcium, Total	8.9	u	UG/L	8.9	1.0
		Cadmium, Total	0.30	u	UG/L	0.30	1.0
		Cobalt, Total	0.80	u	UG/L	0.80	1.0
		Chromium, Total	0.90	u	UG/L	0.90	1.0
		Copper, Total	0.80	u	UG/L	0.80	1.0
		Iron, Total	16.4	u	UG/L	16.4	1.0
		Potassium, Total	29.9	u	UG/L	29.9	1.0
		Magnesium, Total	7.8	u	UG/L	7.8	1.0
		Manganese, Total	0.20	u	UG/L	0.20	1.0
		Sodium, Total	37.7		UG/L	3.8	1.0
		Nickel, Total	1.2	u	UG/L	1.2	1.0
		Antimony, Total	2.1	u	UG/L	2.1	1.0
		Strontium, Total	0.10	u	UG/L	0.10	1.0
		Vanadium, Total	0.90	u	UG/L	0.90	1.0
		Zinc, Total	0.40	u	UG/L	0.40	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/06/00

CLIENT: TNUHANFORD C00-036 H1099

RECRA LOT #: 0010L018

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B10461 (F)	Silver, Total	49.8	1.1 u	50.0	99.6	1.0
		Aluminum, Total	2020	10.6 u	2000	101.2	1.0
		Barium, Total	1980	30.0	2000	97.6	1.0
		Beryllium, Total	50.3	0.10u	50.0	100.6	1.0
		Calcium, Total	72400	47100	25000	101.1	1.0
		Cadmium, Total	49.6	0.30u	50.0	99.2	1.0
		Cobalt, Total	498	0.80u	500	99.7	1.0
		Chromium, Total	209	8.9	200	100.1	1.0
		Copper, Total	243	0.80u	250	97.2	1.0
		Iron, Total	1200	221	1000	98.4	1.0
		Potassium, Total	29000	3690	25000	101.3	1.0
		Magnesium, Total	35700	10400	25000	101.4	1.0
		Manganese, Total	517	3.7	500	102.7	1.0
		Sodium, Total	32800	8810	25000	96.0	1.0
		Nickel, Total	492	1.5	500	98.1	1.0
		Antimony, Total	510	2.1 u	500	102.0	1.0
		Strontium, Total	1230	250	1000	97.6	1.0
		Vanadium, Total	517	8.6	500	101.7	1.0
		Zinc, Total	498	1.8	500	99.2	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/06/00

CLIENT: TNUHANFORD C00-036 H1099 RECRA LOT #: 0010L018

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B10461 (F)	Silver, Total	1.1 u	1.1 u	NC	1.0
		Aluminum, Total	10.6 u	26.9	NC 200	1.0
		Barium, Total	30.0	30.5	1.7	1.0
		Beryllium, Total	0.10u	0.10u	NC	1.0
		Calcium, Total	47100	48100	2.1	1.0
		Cadmium, Total	0.30u	0.30u	NC	1.0
		Cobalt, Total	0.80u	0.80u	NC	1.0
		Chromium, Total	8.9	9.1	2.2	1.0
		Copper, Total	0.80u	0.80u	NC	1.0
		Iron, Total	221	210	5.3	1.0
		Potassium, Total	3690	3740	1.5	1.0
		Magnesium, Total	10400	10500	1.9	1.0
		Manganese, Total	3.7	3.3	11.4	1.0
		Sodium, Total	8810	8970	1.7	1.0
		Nickel, Total	1.5	1.4	6.9	1.0
		Antimony, Total	2.1 u	2.1 u	NC	1.0
		Strontium, Total	250	254	1.9	1.0
		Vanadium, Total	8.6	8.7	1.2	1.0
		Zinc, Total	1.8	1.5	18.2	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/06/00

CLIENT: TNUHANFORD C00-036 H1099 RECRA LOT #: 0010L018

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L1705-LC1	Silver, LCS	498	500	UG/L	99.5
		Aluminum, LCS	5070	5000	UG/L	101.5
		Barium, LCS	4880	5000	UG/L	97.6
		Beryllium, LCS	248	250	UG/L	99.3
		Calcium, LCS	24600	25000	UG/L	98.4
		Cadmium, LCS	248	250	UG/L	99.0
		Cobalt, LCS	2490	2500	UG/L	99.5
		Chromium, LCS	495	500	UG/L	99.0
		Copper, LCS	1220	1250	UG/L	97.8
		Iron, LCS	4980	5000	UG/L	99.5
		Potassium, LCS	25600	25000	UG/L	102.5
		Magnesium, LCS	25600	25000	UG/L	102.4
		Manganese, LCS	766	750	UG/L	102.1
		Sodium, LCS	24800	25000	UG/L	99.2
		Nickel, LCS	1960	2000	UG/L	98.1
		Antimony, LCS	2990	3000	UG/L	99.8
		Strontium, LCS	4880	5000	UG/L	97.7
		Vanadium, LCS	2530	2500	UG/L	101.4
		Zinc, LCS	995	1000	UG/L	99.5

RECRA LabNet Use Only
00101018

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TRU-Hanford COO-036
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 10-24-00 Date Due: 11-23-00
Account #:

		A	B
Refrigerator #			
#/Type Container	Liquid	4	4
	Solid	1P	1P
Volume	Liquid	500	500
	Solid		
Preservatives		HNO3	-

ANALYSES REQUESTED →

ORGANIC				INORG	
VOA	BNA	Pest/PCB	Herb	Metal	CN

RECRA LabNet Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	Metal (1)	ICP (1)
001	B104(e1 (F)	✓	✓	W	10-19-00	1043	✓	
002	B104(e2	✓	✓	↓	↓	↓		✓

Special Instructions: SAF COO-036

Run Matrix QC

DATE/REVISIONS:

Met (1) 1. Al, Ag, Ba, Be, Ca, Cd, Cr, Co, Cu, Fe, K,
↓ 2. Mg, Mn, Ni, Na, Sb, Se, V, Zn
IC (1) 3. Cl, Br, Fl, NO2, NO3, PO4, SO4
4.
5.
6.

RECRA LabNet Use Only

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

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 9.8 °C

Relinquished by	Received by	Date	Time
FedEx	TRoppel	10-24-00	0920

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
8214 8983 0161 8

ORIGINAL REWRITTEN

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C00-036-13

Page 1 of 1

Collector: D. R. BREWINGTON	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C00-036	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100-NR-2 IAM GW MONITORING, SEPTEMBER 2000	Logbook No.: WM-SAWS-H37	Ice Chest No.: SM2440 CW5107 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235 7953 9920
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time
Fax copies of TMA log-in to JH Kessner & DL Stewart

Total Activity Exemption: Yes ☑ No ☐

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B10461		W	10-19-00	1043	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10462		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10462		W			1x20-mL P	Activity Scan	None
B10462		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10462		W			1x1000-mL G/P	Gamma Spectroscopy	HNO3 to pH <2
B10462		W			1x250-mL P	Tritium - H3	None

TO RECKLE

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	D. R. BREWINGTON		10/18/00 1150		SACKLE		10-18-00 1150
			10-18-00 1425		Fed Ex		10/19/00
	FED-EXPRESS		10-20-00 9:45		E. SEGURO		10/20/00 9:45
	Fed Ex		10-24-00 0920		Tkeppel		10-24-00 0920

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CHEM SDG H1099

C.O.C. # C00-036-13

Page 1 of 1

Collector: D. R. BREWINGTON	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C00-036	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100-NR-2 IAM GW MONITORING, SEPTEMBER 2000	Logbook No.: WM-SAWF H37	Ice Chest No.: SM2440 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235 7953 9920
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Fax copies of TMA log-in to JH Kessner & DL Stewart

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B10461		W	10-19-00	1043	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10462		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10462		W			1x20-mL P	Activity Scan	None
B10462		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10462		W			1x1000-mL G/P	Gamma Spectroscopy	HNO3 to pH <2
B10462		W			1x250-mL P	Tritium - H3	None

TO RECRA

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	D. R. BREWINGTON		10/18/00 1150		SICHLE		10-18-00 1150
			10-18-00 1425		Fed Ex		10/19/00
FED-EXPRESS			10-20/00 9:40		E. SEGURO		10/20/00 9:40

Matrix *

S	= Soil	DS	= Drum Solid
SE	= Sediment	DL	= Drum Liqui
SO	= Solid	T	= Tissue
SL	= Sludge	WI	= Wipe
W	= Water	L	= Liquid
O	= Oil	V	= Vegetation
A	= Air	X	= Other

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time