H0357 - TMA/Recra

RECRA LabNet

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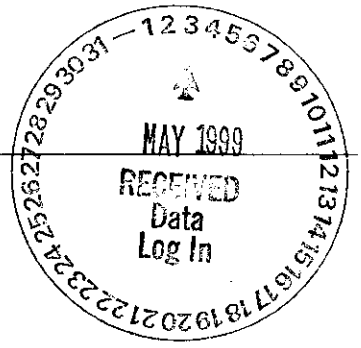
Virtual Laboratories Everywhere

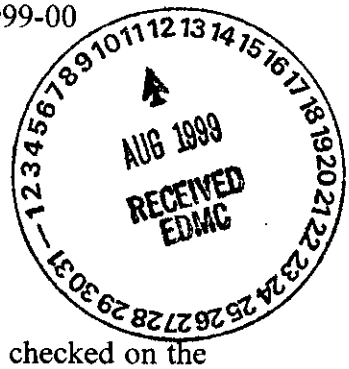
0051465



Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD C99-023
RFW# : 9903L481
SDG# : H0357
SAF# : C99-023

W.O. # : 10985-001-001-9999-00
Date Received: 03-18-99



INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 3 water samples.

2. The samples were prepared and analyzed in accordance with the method checked on the attached glossary.

3. Sample holding times as required by the method and/or contract were met with the exception of Nitrate and Nitrite sample B0TW84.

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% Relative Percent Difference (RPD) control limit.

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

1-27-99
Date

njp\i03-481

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 12 pages.

13 pgs 4/28/99

001

WET CHEMISTRY METHODS GLOSSARY FOR ANALYSIS OF WATER SAMPLES

	EPA 600	SW846	OTHER
Acidity	__305.1		
__Alkalinity __Bicarbonate __Carbonate	__310.1		
BOD	__405.1		__5210B (b)
Ion Chromatography:			
__Bromide ✓Chloride ✓Fluoride	__300.0	__9056	
✓Nitrite ✓Nitrate __Phosphate	__300.0	__9056	
✓Sulfate __Formate __Acetate __Oxalate	__300.0	__9056	
Chloride	__325.2	__9251	
Chlorine Residual	__330.5 (mod)		
Cyanide Amenable to Chlorination	__335.2	__9010A	
Cyanide (Total)	__335.2	__9010A __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	__350.3		
Total__Kjeldahl Nitrogen __Organic Nitrogen	__351.4		
Total __Organic __Inorganic Carbon	__415.1	__9060	
Oil and Grease	__413.1	__9070	
__pH __pH, Paper	__150.1	__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	__9030A	
Reactive __Cyanide __Sulfide		__Sec 7.3	
Silica	__370.1		
Sulfite	__377.1		
Sulfate	__375.4	__9038	
Specific Conductance	__120.1	__9050	
Specific Gravity			__213E (a)
__TCLP __TCLV		__1311	
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:_____		

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.

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INORGANICS DATA SUMMARY REPORT 03/25/99

CLIENT: TNU-HANFORD C99-023 RECRA LOT #: 9903L481

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B0TW86	Chloride by IC	12.6	MG/L	0.50	2.0
		Fluoride by IC	1.0 u	MG/L	1.0	2.0
		Nitrite by IC	0.50 u	MG/L	0.50	2.0
		Nitrate by IC	150	MG/L	12	50
		Sulfate by IC	117	MG/L	12.5	50.0
-004	B0TYN2	Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0
-006	B0TW84	Chloride by IC	44.9	MG/L	2.5	10.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	2.5 u	MG/L	2.5	10
		Nitrate by IC	27	MG/L	2.5	10
		Sulfate by IC	231	MG/L	12.5	50.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/25/99

CLIENT: TNU-HANFORD C99-023

RECRA LOT #: 9903L481

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LIC031-MB1	Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0
BLANK10	99LIC034-MB1	Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0

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INORGANICS ACCURACY REPORT 03/25/99

CLIENT: TNU-HANFORD C99-023 RECRA LOT #: 9903L481

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	B0TW86	Chloride by IC	23.7	12.6	10.0	111.0	2.0
		Fluoride by IC	22.5	0.00	20.0	112.3	2.0
		Nitrite by IC	10	0.50u	10	104.2	2.0
		Nitrate by IC	430	150	250	111.6	50
		Sulfate by IC	427	117	250	124.3	50.0
BLANK10	99LIC031-MB1	Chloride by IC	4.9	0.25u	5.0	99.0	1.0
		Fluoride by IC	10.6	0.50u	10.0	105.6	1.0
		Nitrite by IC	4.9	0.25u	5.0	98.0	1.0
		Nitrate by IC	5.1	0.25u	5.0	101.5	1.0
		Sulfate by IC	5.2	0.25u	5.0	104.9	1.0
BLANK10	99LIC034-MB1	Chloride by IC	5.0	0.25u	5.0	99.2	1.0
		Fluoride by IC	10.8	0.50u	10.0	107.9	1.0
		Nitrite by IC	5.1	0.25u	5.0	101.6	1.0
		Nitrate by IC	4.9	0.25u	5.0	98.9	1.0
		Sulfate by IC	4.9	0.25u	5.0	98.6	1.0

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INORGANICS PRECISION REPORT 03/25/99

CLIENT: TNU-HANFORD C99-023 RECRA LOT #: 9903L481

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-002REP	B0TW86	Chloride by IC	12.6	12.4	1.0	2.0
		Fluoride by IC	1.0 u	1.0 u	NC	2.0
		Nitrite by IC	0.50u	0.50u	NC	2.0
		Nitrate by IC	150	150	0.19	50
		Sulfate by IC	117	115	0.98	50.0

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD C99-023

DATE RECEIVED: 03/18/99 RFW LOT # :9903L481

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0TW86						
CHLORIDE BY IC	002	W	99LIC031	03/16/99	03/18/99	03/18/99
CHLORIDE BY IC	002 REP	W	99LIC031	03/16/99	03/18/99	03/18/99
CHLORIDE BY IC	002 MS	W	99LIC031	03/16/99	03/18/99	03/18/99
FLUORIDE BY IC	002	W	99LIC031	03/16/99	03/18/99	03/18/99
FLUORIDE BY IC	002 REP	W	99LIC031	03/16/99	03/18/99	03/18/99
FLUORIDE BY IC	002 MS	W	99LIC031	03/16/99	03/18/99	03/18/99
NITRITE BY IC	002	W	99LIC031	03/16/99	03/18/99	03/18/99
NITRITE BY IC	002 REP	W	99LIC031	03/16/99	03/18/99	03/18/99
NITRITE BY IC	002 MS	W	99LIC031	03/16/99	03/18/99	03/18/99
NITRATE BY IC	002	W	99LIC031	03/16/99	03/18/99	03/18/99
NITRATE BY IC	002 REP	W	99LIC031	03/16/99	03/18/99	03/18/99
NITRATE BY IC	002 MS	W	99LIC031	03/16/99	03/18/99	03/18/99
SULFATE BY IC	002	W	99LIC031	03/16/99	03/18/99	03/18/99
SULFATE BY IC	002 REP	W	99LIC031	03/16/99	03/18/99	03/18/99
SULFATE BY IC	002 MS	W	99LIC031	03/16/99	03/18/99	03/18/99
B0TYN2						
CHLORIDE BY IC	004	W	99LIC031	03/16/99	03/18/99	03/18/99
FLUORIDE BY IC	004	W	99LIC031	03/16/99	03/18/99	03/18/99
NITRITE BY IC	004	W	99LIC031	03/16/99	03/18/99	03/18/99
NITRATE BY IC	004	W	99LIC031	03/16/99	03/18/99	03/18/99
SULFATE BY IC	004	W	99LIC031	03/16/99	03/18/99	03/18/99
B0TW84						
CHLORIDE BY IC	006	W	99LIC034	03/19/99	03/23/99	03/23/99
FLUORIDE BY IC	006	W	99LIC034	03/19/99	03/23/99	03/23/99
NITRITE BY IC	006	W	99LIC034	03/19/99	03/23/99	03/23/99
NITRATE BY IC	006	W	99LIC034	03/19/99	03/23/99	03/23/99
SULFATE BY IC	006	W	99LIC034	03/19/99	03/23/99	03/23/99
LAB QC:						
CHLORIDE BY IC	MB1	W	99LIC031	N/A	03/18/99	03/18/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD C99-023

DATE RECEIVED: 03/18/99 RFW LOT # :9903L481

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	MB1 BS	W	99LIC031	N/A	03/18/99	03/18/99
FLUORIDE BY IC	MB1	W	99LIC031	N/A	03/18/99	03/18/99
FLUORIDE BY IC	MB1 BS	W	99LIC031	N/A	03/18/99	03/18/99
NITRITE BY IC	MB1	W	99LIC031	N/A	03/18/99	03/18/99
NITRITE BY IC	MB1 BS	W	99LIC031	N/A	03/18/99	03/18/99
NITRATE BY IC	MB1	W	99LIC031	N/A	03/18/99	03/18/99
NITRATE BY IC	MB1 BS	W	99LIC031	N/A	03/18/99	03/18/99
SULFATE BY IC	MB1	W	99LIC031	N/A	03/18/99	03/18/99
SULFATE BY IC	MB1 BS	W	99LIC031	N/A	03/18/99	03/18/99
CHLORIDE BY IC	MB1	W	99LIC034	N/A	03/23/99	03/23/99
CHLORIDE BY IC	MB1 BS	W	99LIC034	N/A	03/23/99	03/23/99
FLUORIDE BY IC	MB1	W	99LIC034	N/A	03/23/99	03/23/99
FLUORIDE BY IC	MB1 BS	W	99LIC034	N/A	03/23/99	03/23/99
NITRITE BY IC	MB1	W	99LIC034	N/A	03/23/99	03/23/99
NITRITE BY IC	MB1 BS	W	99LIC034	N/A	03/23/99	03/23/99
NITRATE BY IC	MB1	W	99LIC034	N/A	03/23/99	03/23/99
NITRATE BY IC	MB1 BS	W	99LIC034	N/A	03/23/99	03/23/99
SULFATE BY IC	MB1	W	99LIC034	N/A	03/23/99	03/23/99
SULFATE BY IC	MB1 BS	W	99LIC034	N/A	03/23/99	03/23/99

RECRA LabNet Use Only
9903L481

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) metals dig. perrone wetlab

Client: TNU-Hanford. C99-023
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: CJ
QC: spec Del: std TAT: 30 day
Date Rec'd: 3/18/99 / 3/19/99 Date Due: 4/17/99 / 4/18/99
Account #:

Refrigerator #			3	3	
#/Type Container	Liquid		1p	1p	
	Solid				
Volume	Liquid		500	500	
	Solid				
Preservatives			HNO3	—	
ANALYSES REQUESTED	ORGANIC: VOA, BNA, Pest/PCB, Herb		INORG: TCLP Metal Metals	CN; IC- Anions	Cl, Fluo, NO2/NO3, Sulfate

RECRA LabNet Use Only: Met ③ 3/18/99; 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	MS	MSD	Matrix	Date Collected	Time Collected	Metals	IC- Anions
001	BOTW85	X	X	W	3/16/99	11:32	X	
002	BOTW86							X
003	BOTYN1					0948	X	
004	BOTYN2							X
005	BØTW83			W	3/16/99	1050	X	
006	BØTW84			W	3/16/99	1050		(X)

NO2+NO3 out of hold

Special Instructions:
saf # C99-023
SDG # H0357

COMPOSITE WASTE

DATE/REVISIONS:
1. ① ICCL, ICFL, ICNO2, ICNO3, ICSO4
2.
3. Run matrix QC
4. 3/19/99 samples 5+6 added to
5. Chain. Rec'd 3/19/99
6.

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

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (N) or N
Cooler Temp. 5. °C

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	3/18/99	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
*808247159207

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

H0357

C.O.C. # C99-023

Page 1 of 1

Collector: AG RIZZO	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-023	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100NR2/AM(1) GW MONITORING, MARCH 1999	Logbook No.: WHC-SMC H-21, PAGE 90	Ice Chest No.: SMC 591 Temp.: cw/4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT VEHICLE	Bill of Lading/Air Bill No.: 4235-7952-3438
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 QES & TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0TW85 (F)		W	3-16-99	1132	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B0TW86		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
B0TW86		W			1x20-mL P	Activity Scan	None
B0TW86		W			1x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B0TW86		W			1x1000-mL G/P	Gross Beta	HNO3 to pH <2
B0TW86		W			2x1000-mL G/P	Strontium-89,90 -- Sr-90	HNO3 to pH <2

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
AG RIZZO			1245 MAR 16 1999	K. YOUNG			1243 MAR 16 1999
K. YOUNG			1400 MAR 16 1999	Fed Ex			3-16-99
Fed Ex			3-17-99 10:45	JR Corso			3-17-99 10:45
[illegible]			3-18-99 / 0930	[illegible]			3-18-99 / 0930

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
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

H0357

C.O.C. # C99-023-16

Page 1 of 1

Collector: AG RIZZO	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-023	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100NR2IAM(1) GW MONITORING, MARCH 1999	Logbook No.: WIN-SHL H 21, PAGE 90	Ice Chest No.: SHL 591 Temp.: cool/4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235-7952-3435
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 QES & TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0TYN1 (F)		W	3-16-99	0948	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B0TYN2		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
B0TYN2		W			1x20-mL P	Activity Scan	None
B0TYN2		W			1x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B0TYN2		W			1x1000-mL G/P	Gross Beta	HNO3 to pH <2
B0TYN2		W			2x1000-mL G/P	Strontium-89,90 -- Sr-90	HNO3 to pH <2

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
AG RIZZO			1245 MAR 16 1999	K. Young			1245 MAR 16 1999
K. Young			1400 MAR 16 1999	FedEx			3-16-99
Fed Ex			3-17-99 10:45	[illegible] JA Cosby			3-17-99 10:45
[illegible]			3/18/99/0930	[illegible]			3/18/99/0930

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
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

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

H0357

C.O.C. # C99-023-3

Page 1 of 1

lector AG RIZZO	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688 MSIN FAX
No. 99-023	Sampling Origin HANFORD SITE	Purchase Order/Charge Code
lect Title 00NR2IAM(1) GW MONITORING MARCH 1999	Logbook No. WM-SML H-21, PAGE 91	Ice Chest No. SML 545 Temp. cool 4°C
ped To (Lab) MA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235-7952-3430
local ERCLA	Data Turnaround 45 Days	Offsite Property No.

SIBLE SAMPLE HAZARDS/REMARKS

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐

FAX copies of QES & TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9457)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
TW83 (F)		W	3-17-99	1250	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
TW84		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
TW84		W			1x20-mL P	Activity Scan	None
TW84		W			1x1000-mL G/P	Gross Beta	HNO3 to pH <2
TW84		W			2x1000-mL G/P	Strontium-89,90 -- Sr-90	HNO3 to pH <2
TW84		W			1x250-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
AG RIZZO	AG Rizzo		1310 MAR 17 1999	K. YOUNG	K. Young		1310 MAR 17 1999
K. YOUNG	K. Young		1440 MAR 17 1999	Fed Ex			3-17-99
Fed Ex			3-18-99 10:30	JR Lorsu			3-18-99 10:30

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liquid	
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

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

Recra LabNet Philadelphia
Analytical Report

Client : TNU HANFORD C99-023
RFW# : 9903L481
SDG/SAF# : H0357/C99-023

W.O.# : 10985-001-001-9999-00
Date Received: 03-18-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 3 water samples

2. Samples were prepared and analyzed in accordance with methods checked on the attached glossary.

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

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

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

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

7. The preparation/method blanks for 6 analytes were outside method criteria {less than the Practical Quantitation Limit (3X the IDL) or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a.) The MB results for Barium, Calcium, Copper, Potassium, Sodium, and Zinc were greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and all samples for Copper, sample B0TYN1 for Barium, Calcium, Potassium, and Sodium, and samples B0TW85, B0TYN1 for Zinc read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.

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

9. All laboratory control samples (LCS) were within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.

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

21 Bry 4/20/99

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

11. All MSs and MSDs were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Matrix Spike Duplicate Report.

12. The duplicate analyses for 5 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.

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

4-5-99
Date

mld/m03-481

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9903L481

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: ✓3005A __3010A __3015 __3020A __3050A __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

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

Other:_____ Method:_____

003

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.

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INORGANICS DATA SUMMARY REPORT 04/05/99

CLIENT: TNU-HANFORD C99-023 RECRA LOT #: 9903L481

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0TW85	Silver, Total	0.90 u	UG/L	0.90	1.0
		Aluminum, Total	17.8 u	UG/L	17.8	1.0
		Barium, Total	94.8	UG/L	0.10	1.0
		Beryllium, Total	0.10 u	UG/L	0.10	1.0
		Calcium, Total	94000	UG/L	6.8	1.0
		Cadmium, Total	0.40 u	UG/L	0.40	1.0
		Cobalt, Total	0.60 u	UG/L	0.60	1.0
		Chromium, Total	5.4	UG/L	0.60	1.0
		Copper, Total	4.0	UG/L	0.90	1.0
		Iron, Total	17.9 u	UG/L	17.9	1.0
		Potassium, Total	2710	UG/L	11.8	1.0
		Magnesium, Total	15400	UG/L	6.2	1.0
		Manganese, Total	0.20 u	UG/L	0.20	1.0
		Sodium, Total	4970	UG/L	3.3	1.0
		Nickel, Total	1.7	UG/L	1.1	1.0
		Antimony, Total	6.0	UG/L	2.3	1.0
		Strontium, Total	350	UG/L	0.10	1.0
		Vanadium, Total	1.9	UG/L	0.60	1.0
		Zinc, Total	6.1	UG/L	0.80	1.0

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INORGANICS DATA SUMMARY REPORT 04/05/99

CLIENT: TNU-HANFORD C99-023 RECRA LOT #: 9903L481

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0TYN1	Silver, Total	1.1	UG/L	0.90	1.0
		Aluminum, Total	31.6	UG/L	17.8	1.0
		Barium, Total	1.2	UG/L	0.10	1.0
		Beryllium, Total	0.10 u	UG/L	0.10	1.0
		Calcium, Total	39.7	UG/L	6.8	1.0
		Cadmium, Total	0.40 u	UG/L	0.40	1.0
		Cobalt, Total	0.60 u	UG/L	0.60	1.0
		Chromium, Total	1.2	UG/L	0.60	1.0
		Copper, Total	5.5	UG/L	0.90	1.0
		Iron, Total	17.9 u	UG/L	17.9	1.0
		Potassium, Total	149	UG/L	11.8	1.0
		Magnesium, Total	13.9	UG/L	6.2	1.0
		Manganese, Total	0.37	UG/L	0.20	1.0
		Sodium, Total	101	UG/L	3.3	1.0
		Nickel, Total	1.6	UG/L	1.1	1.0
		Antimony, Total	2.3 u	UG/L	2.3	1.0
		Strontium, Total	0.21	UG/L	0.10	1.0
		Vanadium, Total	0.60 u	UG/L	0.60	1.0
		Zinc, Total	16.9	UG/L	0.80	1.0

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INORGANICS DATA SUMMARY REPORT 04/05/99

CLIENT: TNU-HANFORD C99-023 RECRA LOT #: 9903L481

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B0TW83	Silver, Total	0.90 u	UG/L	0.90	1.0
		Aluminum, Total	50.4	UG/L	17.8	1.0
		Barium, Total	152	UG/L	0.10	1.0
		Beryllium, Total	0.10 u	UG/L	0.10	1.0
		Calcium, Total	158000	UG/L	6.8	1.0
		Cadmium, Total	0.40 u	UG/L	0.40	1.0
		Cobalt, Total	0.60 u	UG/L	0.60	1.0
		Chromium, Total	1.6	UG/L	0.60	1.0
		Copper, Total	8.7	UG/L	0.90	1.0
		Iron, Total	32.4	UG/L	17.9	1.0
		Potassium, Total	4600	UG/L	11.8	1.0
		Magnesium, Total	27200	UG/L	6.2	1.0
		Manganese, Total	25.3	UG/L	0.20	1.0
		Sodium, Total	20300	UG/L	3.3	1.0
		Nickel, Total	11.3	UG/L	1.1	1.0
		Antimony, Total	2.3 u	UG/L	2.3	1.0
		Strontium, Total	624	UG/L	0.10	1.0
		Vanadium, Total	1.3	UG/L	0.60	1.0
		Zinc, Total	781	UG/L	0.80	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/05/99

CLIENT: TNU-HANFORD C99-023 RECRA LOT #: 9903L481

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0194-MB1	Silver, Total	0.90 u	UG/L	0.90	1.0
		Aluminum, Total	21.1	UG/L	17.8	1.0
		Barium, Total	1.2	UG/L	0.10	1.0
		Beryllium, Total	0.10 u	UG/L	0.10	1.0
		Calcium, Total	27.0	UG/L	6.8	1.0
		Cadmium, Total	0.40 u	UG/L	0.40	1.0
		Cobalt, Total	0.60 u	UG/L	0.60	1.0
		Chromium, Total	0.63	UG/L	0.60	1.0
		Copper, Total	3.8	UG/L	0.90	1.0
		Iron, Total	17.9 u	UG/L	17.9	1.0
		Potassium, Total	128	UG/L	11.8	1.0
		Magnesium, Total	8.9	UG/L	6.2	1.0
		Manganese, Total	0.30	UG/L	0.20	1.0
		Sodium, Total	88.7	UG/L	3.3	1.0
		Nickel, Total	1.1 u	UG/L	1.1	1.0
		Antimony, Total	3.2	UG/L	2.3	1.0
		Strontium, Total	0.10 u	UG/L	0.10	1.0
		Vanadium, Total	0.60 u	UG/L	0.60	1.0
		Zinc, Total	10.9	UG/L	0.80	1.0

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INORGANICS ACCURACY REPORT 04/05/99

CLIENT: TNU-HANFORD C99-023 RECRA LOT #: 9903L481

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0TW85	Silver, Total	49.0	0.90u	50.0	98.0	1.0
		Silver, Total MSD	49.2	0.90u	50.0	98.4	1.0
		Aluminum, Total	2000	17.8 u	2000	99.8	1.0
		Aluminum, Total MSD	2020	17.8 u	2000	101.1	1.0
		Barium, Total	2030	94.8	2000	96.6	1.0
		Barium, Total MSD	2010	94.8	2000	95.6	1.0
		Beryllium, Total	48.8	0.10u	50.0	97.6	1.0
		Beryllium, Total MSD	48.2	0.10u	50.0	96.4	1.0
		Calcium, Total	113000	94000	25000	76.2	1.0
		Calcium, Total MSD	114000	94000	25000	78.0	1.0
		Cadmium, Total	47.9	0.40u	50.0	95.8	1.0
		Cadmium, Total MSD	46.9	0.40u	50.0	93.8	1.0
		Cobalt, Total	480	0.60u	500	96.0	1.0
		Cobalt, Total MSD	475	0.60u	500	95.1	1.0
		Chromium, Total	199	5.4	200	96.7	1.0
		Chromium, Total MSD	198	5.4	200	96.0	1.0
		Copper, Total	249	4.0	250	98.1	1.0
		Copper, Total MSD	248	4.0	250	97.8	1.0
		Iron, Total	977	17.9 u	1000	97.7	1.0
		Iron, Total MSD	978	17.9 u	1000	97.8	1.0
		Potassium, Total	28600	2710	25000	103.4	1.0
		Potassium, Total MSD	28400	2710	25000	102.7	1.0
		Magnesium, Total	39300	15400	25000	95.6	1.0
		Magnesium, Total MSD	39100	15400	25000	94.8	1.0
		Manganese, Total	494	0.20u	500	98.7	1.0
		Manganese, Total MSD	489	0.20u	500	97.7	1.0
		Sodium, Total	29100	4970	25000	96.6	1.0
		Sodium, Total MSD	28900	4970	25000	95.6	1.0
		Nickel, Total	474	1.7	500	94.4	1.0
		Nickel, Total MSD	468	1.7	500	93.3	1.0
		Antimony, Total	503	6.0	500	99.4	1.0
		Antimony, Total MSD	493	6.0	500	97.3	1.0
		Strontium, Total	1290	350	1000	94.2	1.0
		Strontium, Total MSD	1280	350	1000	93.1	1.0
		Vanadium, Total	496	1.9	500	98.8	1.0
		Vanadium, Total MSD	492	1.9	500	98.0	1.0
		Zinc, Total	479	6.1	500	94.6	1.0
		Zinc, Total MSD	483	6.1	500	95.3	1.0

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INORGANICS DUPLICATE SPIKE REPORT 04/05/99

CLIENT: TNU-HANFORD C99-023 RECRA LOT #: 9903L481

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-001	B0TW85	Silver, Total	98.0	98.4	0.41
		Aluminum, Total	99.8	101.1	1.3
		Barium, Total	96.6	95.6	1.1
		Beryllium, Total	97.6	96.4	1.2
		Calcium, Total	76.2	78.0	2.4
		Cadmium, Total	95.8	93.8	2.1
		Cobalt, Total	96.0	95.1	0.94
		Chromium, Total	96.7	96.0	0.67
		Copper, Total	98.1	97.8	0.33
		Iron, Total	97.7	97.8	0.13
		Potassium, Total	103.4	102.7	0.75
		Magnesium, Total	95.6	94.8	0.75
		Manganese, Total	98.7	97.7	1.0
		Sodium, Total	96.6	95.6	1.1
		Nickel, Total	94.4	93.3	1.1
		Antimony, Total	99.4	97.3	2.1
		Strontium, Total	94.2	93.1	1.2
		Vanadium, Total	98.8	98.0	0.77
		Zinc, Total	94.6	95.3	0.82

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INORGANICS PRECISION REPORT 04/05/99

CLIENT: TNU-HANFORD C99-023 RECRA LOT #: 9903L481

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0TW85	Silver, Total	0.90u	0.98	~~NC~~ 200	1.0
		Aluminum, Total	17.8 u	22.8	~~NC~~ 200	1.0
		Barium, Total	94.8	93.2	1.7	1.0
		Beryllium, Total	0.10u	0.10u	NC	1.0
		Calcium, Total	94000	93300	0.84	1.0
		Cadmium, Total	0.40u	0.40u	NC	1.0
		Cobalt, Total	0.60u	0.60u	NC	1.0
		Chromium, Total	5.4	4.9	9.7	1.0
		Copper, Total	4.0	3.2	22.2	1.0
		Iron, Total	17.9 u	17.9 u	NC	1.0
		Potassium, Total	2710	2900	6.5	1.0
		Magnesium, Total	15400	15400	0.18	1.0
		Manganese, Total	0.20u	0.20u	NC	1.0
		Sodium, Total	4970	5030	1.2	1.0
		Nickel, Total	1.7	1.1 u	~~NC~~ 200	1.0
		Antimony, Total	6.0	2.3 u	~~NC~~ 200	1.0
		Strontium, Total	350	345	1.6	1.0
		Vanadium, Total	1.9	1.6	17.1	1.0
		Zinc, Total	6.1	6.9	12.3	1.0

Corrections MRO 4/5/99

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/05/99

CLIENT: TNU-HANFORD C99-023 RECRA LOT #: 9903L481

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0194-LC1	Silver, LCS	517	500	UG/L	103.4
		Aluminum, LCS	5340	5000	UG/L	106.9
		Barium, LCS	5180	5000	UG/L	103.6
		Beryllium, LCS	255	250	UG/L	101.9
		Calcium, LCS	25800	25000	UG/L	103.2
		Cadmium, LCS	253	250	UG/L	101.2
		Cobalt, LCS	2550	2500	UG/L	102.1
		Chromium, LCS	516	500	UG/L	103.3
		Copper, LCS	1310	1250	UG/L	104.9
		Iron, LCS	5150	5000	UG/L	102.9
		Potassium, LCS	27100	25000	UG/L	108.3
		Magnesium, LCS	25800	25000	UG/L	103.4
		Manganese, LCS	785	750	UG/L	104.7
		Sodium, LCS	25900	25000	UG/L	103.8
		Nickel, LCS	2020	2000	UG/L	101.2
		Antimony, LCS	3070	3000	UG/L	102.2
		Strontium, LCS	5100	5000	UG/L	102.0
		Vanadium, LCS	2640	2500	UG/L	105.6
		Zinc, LCS	1010	1000	UG/L	101.1

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD C99-023

DATE RECEIVED: 03/18/99 RFW LOT # :9903L481

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0TW85						
SILVER, TOTAL	001	W	99L0194	03/16/99	03/30/99	03/31/99
SILVER, TOTAL	001 REP	W	99L0194	03/16/99	03/30/99	03/31/99
SILVER, TOTAL	001 MS	W	99L0194	03/16/99	03/30/99	03/31/99
SILVER, TOTAL	001 MSD	W	99L0194	03/16/99	03/30/99	03/31/99
ALUMINUM, TOTAL	001	W	99L0194	03/16/99	03/30/99	03/31/99
ALUMINUM, TOTAL	001 REP	W	99L0194	03/16/99	03/30/99	03/31/99
ALUMINUM, TOTAL	001 MS	W	99L0194	03/16/99	03/30/99	03/31/99
ALUMINUM, TOTAL	001 MSD	W	99L0194	03/16/99	03/30/99	03/31/99
BARIUM, TOTAL	001	W	99L0194	03/16/99	03/30/99	03/31/99
BARIUM, TOTAL	001 REP	W	99L0194	03/16/99	03/30/99	03/31/99
BARIUM, TOTAL	001 MS	W	99L0194	03/16/99	03/30/99	03/31/99
BARIUM, TOTAL	001 MSD	W	99L0194	03/16/99	03/30/99	03/31/99
BERYLLIUM, TOTAL	001	W	99L0194	03/16/99	03/30/99	03/31/99
BERYLLIUM, TOTAL	001 REP	W	99L0194	03/16/99	03/30/99	03/31/99
BERYLLIUM, TOTAL	001 MS	W	99L0194	03/16/99	03/30/99	03/31/99
BERYLLIUM, TOTAL	001 MSD	W	99L0194	03/16/99	03/30/99	03/31/99
CALCIUM, TOTAL	001	W	99L0194	03/16/99	03/30/99	03/31/99
CALCIUM, TOTAL	001 REP	W	99L0194	03/16/99	03/30/99	03/31/99
CALCIUM, TOTAL	001 MS	W	99L0194	03/16/99	03/30/99	03/31/99
CALCIUM, TOTAL	001 MSD	W	99L0194	03/16/99	03/30/99	03/31/99
CADMIUM, TOTAL	001	W	99L0194	03/16/99	03/30/99	03/31/99
CADMIUM, TOTAL	001 REP	W	99L0194	03/16/99	03/30/99	03/31/99
CADMIUM, TOTAL	001 MS	W	99L0194	03/16/99	03/30/99	03/31/99
CADMIUM, TOTAL	001 MSD	W	99L0194	03/16/99	03/30/99	03/31/99
COBALT, TOTAL	001	W	99L0194	03/16/99	03/30/99	03/31/99
COBALT, TOTAL	001 REP	W	99L0194	03/16/99	03/30/99	03/31/99
COBALT, TOTAL	001 MS	W	99L0194	03/16/99	03/30/99	03/31/99
COBALT, TOTAL	001 MSD	W	99L0194	03/16/99	03/30/99	03/31/99
CHROMIUM, TOTAL	001	W	99L0194	03/16/99	03/30/99	03/31/99
CHROMIUM, TOTAL	001 REP	W	99L0194	03/16/99	03/30/99	03/31/99
CHROMIUM, TOTAL	001 MS	W	99L0194	03/16/99	03/30/99	03/31/99
CHROMIUM, TOTAL	001 MSD	W	99L0194	03/16/99	03/30/99	03/31/99
COPPER, TOTAL	001	W	99L0194	03/16/99	03/30/99	03/31/99
COPPER, TOTAL	001 REP	W	99L0194	03/16/99	03/30/99	03/31/99
COPPER, TOTAL	001 MS	W	99L0194	03/16/99	03/30/99	03/31/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD C99-023

DATE RECEIVED: 03/18/99 RFW LOT # :9903L481

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
COPPER, TOTAL	001 MSD	W	99L0194	03/16/99	03/30/99	03/31/99
IRON, TOTAL	001	W	99L0194	03/16/99	03/30/99	03/31/99
IRON, TOTAL	001 REP	W	99L0194	03/16/99	03/30/99	03/31/99
IRON, TOTAL	001 MS	W	99L0194	03/16/99	03/30/99	03/31/99
IRON, TOTAL	001 MSD	W	99L0194	03/16/99	03/30/99	03/31/99
POTASSIUM, TOTAL	001	W	99L0194	03/16/99	03/30/99	03/31/99
POTASSIUM, TOTAL	001 REP	W	99L0194	03/16/99	03/30/99	03/31/99
POTASSIUM, TOTAL	001 MS	W	99L0194	03/16/99	03/30/99	03/31/99
POTASSIUM, TOTAL	001 MSD	W	99L0194	03/16/99	03/30/99	03/31/99
MAGNESIUM, TOTAL	001	W	99L0194	03/16/99	03/30/99	03/31/99
MAGNESIUM, TOTAL	001 REP	W	99L0194	03/16/99	03/30/99	03/31/99
MAGNESIUM, TOTAL	001 MS	W	99L0194	03/16/99	03/30/99	03/31/99
MAGNESIUM, TOTAL	001 MSD	W	99L0194	03/16/99	03/30/99	03/31/99
MANGANESE, TOTAL	001	W	99L0194	03/16/99	03/30/99	03/31/99
MANGANESE, TOTAL	001 REP	W	99L0194	03/16/99	03/30/99	03/31/99
MANGANESE, TOTAL	001 MS	W	99L0194	03/16/99	03/30/99	03/31/99
MANGANESE, TOTAL	001 MSD	W	99L0194	03/16/99	03/30/99	03/31/99
SODIUM, TOTAL	001	W	99L0194	03/16/99	03/30/99	03/31/99
SODIUM, TOTAL	001 REP	W	99L0194	03/16/99	03/30/99	03/31/99
SODIUM, TOTAL	001 MS	W	99L0194	03/16/99	03/30/99	03/31/99
SODIUM, TOTAL	001 MSD	W	99L0194	03/16/99	03/30/99	03/31/99
NICKEL, TOTAL	001	W	99L0194	03/16/99	03/30/99	03/31/99
NICKEL, TOTAL	001 REP	W	99L0194	03/16/99	03/30/99	03/31/99
NICKEL, TOTAL	001 MS	W	99L0194	03/16/99	03/30/99	03/31/99
NICKEL, TOTAL	001 MSD	W	99L0194	03/16/99	03/30/99	03/31/99
ANTIMONY, TOTAL	001	W	99L0194	03/16/99	03/30/99	03/31/99
ANTIMONY, TOTAL	001 REP	W	99L0194	03/16/99	03/30/99	03/31/99
ANTIMONY, TOTAL	001 MS	W	99L0194	03/16/99	03/30/99	03/31/99
ANTIMONY, TOTAL	001 MSD	W	99L0194	03/16/99	03/30/99	03/31/99
STRONTIUM, TOTAL	001	W	99L0194	03/16/99	03/30/99	03/31/99
STRONTIUM, TOTAL	001 REP	W	99L0194	03/16/99	03/30/99	03/31/99
STRONTIUM, TOTAL	001 MS	W	99L0194	03/16/99	03/30/99	03/31/99
STRONTIUM, TOTAL	001 MSD	W	99L0194	03/16/99	03/30/99	03/31/99
VANADIUM, TOTAL	001	W	99L0194	03/16/99	03/30/99	03/31/99
VANADIUM, TOTAL	001 REP	W	99L0194	03/16/99	03/30/99	03/31/99
VANADIUM, TOTAL	001 MS	W	99L0194	03/16/99	03/30/99	03/31/99
VANADIUM, TOTAL	001 MSD	W	99L0194	03/16/99	03/30/99	03/31/99
ZINC, TOTAL	001	W	99L0194	03/16/99	03/30/99	03/31/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD C99-023

DATE RECEIVED: 03/18/99 RFW LOT # :9903L481

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ZINC, TOTAL	001 REP	W	99L0194	03/16/99	03/30/99	03/31/99
ZINC, TOTAL	001 MS	W	99L0194	03/16/99	03/30/99	03/31/99
ZINC, TOTAL	001 MSD	W	99L0194	03/16/99	03/30/99	03/31/99
B0TYN1						
SILVER, TOTAL	003	W	99L0194	03/16/99	03/30/99	03/31/99
ALUMINUM, TOTAL	003	W	99L0194	03/16/99	03/30/99	03/31/99
BARIUM, TOTAL	003	W	99L0194	03/16/99	03/30/99	03/31/99
BERYLLIUM, TOTAL	003	W	99L0194	03/16/99	03/30/99	03/31/99
CALCIUM, TOTAL	003	W	99L0194	03/16/99	03/30/99	03/31/99
CADMIUM, TOTAL	003	W	99L0194	03/16/99	03/30/99	03/31/99
COBALT, TOTAL	003	W	99L0194	03/16/99	03/30/99	03/31/99
CHROMIUM, TOTAL	003	W	99L0194	03/16/99	03/30/99	03/31/99
COPPER, TOTAL	003	W	99L0194	03/16/99	03/30/99	03/31/99
IRON, TOTAL	003	W	99L0194	03/16/99	03/30/99	03/31/99
POTASSIUM, TOTAL	003	W	99L0194	03/16/99	03/30/99	03/31/99
MAGNESIUM, TOTAL	003	W	99L0194	03/16/99	03/30/99	03/31/99
MANGANESE, TOTAL	003	W	99L0194	03/16/99	03/30/99	03/31/99
SODIUM, TOTAL	003	W	99L0194	03/16/99	03/30/99	03/31/99
NICKEL, TOTAL	003	W	99L0194	03/16/99	03/30/99	03/31/99
ANTIMONY, TOTAL	003	W	99L0194	03/16/99	03/30/99	03/31/99
STRONTIUM, TOTAL	003	W	99L0194	03/16/99	03/30/99	03/31/99
VANADIUM, TOTAL	003	W	99L0194	03/16/99	03/30/99	03/31/99
ZINC, TOTAL	003	W	99L0194	03/16/99	03/30/99	03/31/99
B0TW83						
SILVER, TOTAL	005	W	99L0194	03/17/99	03/30/99	03/31/99
ALUMINUM, TOTAL	005	W	99L0194	03/17/99	03/30/99	03/31/99
BARIUM, TOTAL	005	W	99L0194	03/17/99	03/30/99	03/31/99
BERYLLIUM, TOTAL	005	W	99L0194	03/17/99	03/30/99	03/31/99
CALCIUM, TOTAL	005	W	99L0194	03/17/99	03/30/99	03/31/99
CADMIUM, TOTAL	005	W	99L0194	03/17/99	03/30/99	03/31/99
COBALT, TOTAL	005	W	99L0194	03/17/99	03/30/99	03/31/99
CHROMIUM, TOTAL	005	W	99L0194	03/17/99	03/30/99	03/31/99
COPPER, TOTAL	005	W	99L0194	03/17/99	03/30/99	03/31/99
IRON, TOTAL	005	W	99L0194	03/17/99	03/30/99	03/31/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD C99-023

DATE RECEIVED: 03/18/99 RFW LOT # :9903L481

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
POTASSIUM, TOTAL	005	W	99L0194	03/17/99	03/30/99	03/31/99
MAGNESIUM, TOTAL	005	W	99L0194	03/17/99	03/30/99	03/31/99
MANGANESE, TOTAL	005	W	99L0194	03/17/99	03/30/99	03/31/99
SODIUM, TOTAL	005	W	99L0194	03/17/99	03/30/99	03/31/99
NICKEL, TOTAL	005	W	99L0194	03/17/99	03/30/99	03/31/99
ANTIMONY, TOTAL	005	W	99L0194	03/17/99	03/30/99	03/31/99
STRONTIUM, TOTAL	005	W	99L0194	03/17/99	03/30/99	03/31/99
VANADIUM, TOTAL	005	W	99L0194	03/17/99	03/30/99	03/31/99
ZINC, TOTAL	005	W	99L0194	03/17/99	03/30/99	03/31/99

LAB QC:

SILVER LABORATORY	LC1 BS	W	99L0194	N/A	03/30/99	03/31/99
SILVER, TOTAL	MB1	W	99L0194	N/A	03/30/99	03/31/99
ALUMINUM LABORTORY	LC1 BS	W	99L0194	N/A	03/30/99	03/31/99
ALUMINUM, TOTAL	MB1	W	99L0194	N/A	03/30/99	03/31/99
BARIUM LABORATORY	LC1 BS	W	99L0194	N/A	03/30/99	03/31/99
BARIUM, TOTAL	MB1	W	99L0194	N/A	03/30/99	03/31/99
BERYLLIUM LABORATORY	LC1 BS	W	99L0194	N/A	03/30/99	03/31/99
BERYLLIUM, TOTAL	MB1	W	99L0194	N/A	03/30/99	03/31/99
CALCIUM LABORATORY	LC1 BS	W	99L0194	N/A	03/30/99	03/31/99
CALCIUM, TOTAL	MB1	W	99L0194	N/A	03/30/99	03/31/99
CADMIUM LABORATORY	LC1 BS	W	99L0194	N/A	03/30/99	03/31/99
CADMIUM, TOTAL	MB1	W	99L0194	N/A	03/30/99	03/31/99
COBALT LABORATORY	LC1 BS	W	99L0194	N/A	03/30/99	03/31/99
COBALT, TOTAL	MB1	W	99L0194	N/A	03/30/99	03/31/99
CHROMIUM LABORATORY	LC1 BS	W	99L0194	N/A	03/30/99	03/31/99
CHROMIUM, TOTAL	MB1	W	99L0194	N/A	03/30/99	03/31/99
COPPER LABORATORY	LC1 BS	W	99L0194	N/A	03/30/99	03/31/99
COPPER, TOTAL	MB1	W	99L0194	N/A	03/30/99	03/31/99
IRON LABORATORY	LC1 BS	W	99L0194	N/A	03/30/99	03/31/99
IRON, TOTAL	MB1	W	99L0194	N/A	03/30/99	03/31/99
POTASSIUM LABORATORY	LC1 BS	W	99L0194	N/A	03/30/99	03/31/99
POTASSIUM, TOTAL	MB1	W	99L0194	N/A	03/30/99	03/31/99
MAGNESIUM LABORATORY	LC1 BS	W	99L0194	N/A	03/30/99	03/31/99
MAGNESIUM, TOTAL	MB1	W	99L0194	N/A	03/30/99	03/31/99
MANGANESE LABORATORY	LC1 BS	W	99L0194	N/A	03/30/99	03/31/99
MANGANESE, TOTAL	MB1	W	99L0194	N/A	03/30/99	03/31/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD C99-023

DATE RECEIVED: 03/18/99 RFW LOT # :9903L481

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SODIUM LABORATORY	LC1 BS	W	99L0194	N/A	03/30/99	03/31/99
SODIUM, TOTAL	MB1	W	99L0194	N/A	03/30/99	03/31/99
NICKEL LABORATORY	LC1 BS	W	99L0194	N/A	03/30/99	03/31/99
NICKEL, TOTAL	MB1	W	99L0194	N/A	03/30/99	03/31/99
ANTIMONY LABORATORY	LC1 BS	W	99L0194	N/A	03/30/99	03/31/99
ANTIMONY, TOTAL	MB1	W	99L0194	N/A	03/30/99	03/31/99
STRONTIUM LCS STANDA	LC1 BS	W	99L0194	N/A	03/30/99	03/31/99
STRONTIUM, TOTAL	MB1	W	99L0194	N/A	03/30/99	03/31/99
VANADIUM LABORATORY	LC1 BS	W	99L0194	N/A	03/30/99	03/31/99
VANADIUM, TOTAL	MB1	W	99L0194	N/A	03/30/99	03/31/99
ZINC LABORATORY	LC1 BS	W	99L0194	N/A	03/30/99	03/31/99
ZINC, TOTAL	MB1	W	99L0194	N/A	03/30/99	03/31/99

RECRA LabNet Use Only
9903L481

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) metals dig. perrone wetlab

Client TNU-Hanford. C99-023
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 3/18/99 / 3/19/99 Date Due 4/17/99 / 4/18/99
Account #

Refrigerator #		3 / 3
#/Type Container	Liquid	1P / 1P H
	Solid	
Volume	Liquid	500 / 500 H
	Solid	
Preservatives		HNO3 / —

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: ICP Metal, CN, IC-Br Anions, Cl, Fl, NO2/NO3 Sulfate

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

RECRA LabNet Use Only: Metals (mot 3/18/99); (1)

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	ICP Metal	IC Anions
001	BOTW85	X	X	W	3/16/99	11:32	X	
002	BOTW86			↓	↓	↓		X
003	BOTYN1			↓	↓	0948	X	
004	BOTYN2			↓	↓	↓		X
005	BØTW83			W	3/16/99	1250	X	
006	BØTW84			W	3/16/99	1250		(X)

NO2+NO3 out of hold

Special Instructions:
saf # C99-023
SDG # H0357
018
COMPOSITE WASTE

DATE/REVISIONS:
1. (1) = ICCL, ICFL, ICNO2, ICNO3, ICSO4
2.
3. Run matrix QC
4. 3/19/99 samples 5+6 added to
5. Chain. Rec'd 3/19/99
6.

RECRA LabNet Use Only
Samples were: 1) Shipped ✓ or Hand Delivered
Airbill # *
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N
COC Tape was: 1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 5 °C

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	3/18/99	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
*808247159207

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

H0357

C.O.C. # C99-

Page 1 of 1

Collector: AG RIZZO	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-023	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100NR2IAM(1) GW MONITORING, MARCH 1999	Logbook No.: WIH-SML H-21, PAGE 90	Ice Chest No.: SML 591 Temp.: cw/4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4735-7952-3438
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 QES & TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0TW85-(F)		W	3-16-99	1132	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B0TW86		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
B0TW86		W			1x20-mL P	Activity Scan	None
B0TW86		W			1x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B0TW86		W			1x1000-mL G/P	Gross Beta	HNO3 to pH <2
B0TW86		W			2x1000-mL G/P	Strontium-89,90 -- Sr-90	HNO3 to pH <2

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
AG RIZZO			1245 MAR 16 1999	K. Young			1243 MAR 16 1999
K. YOUNG			1400 MAR 16 1999	Fed Ex			3-16-99
Fed Ex			3-17-99 10:45	JR Cavco			3-17-99 10:45
			3.18.99 / 0930				3.18.99 / 0930

Matrix *

S = Soil	DS = Drum Solid		
SE = Sediment	DL = Drum Liqui		
SO = Solid	T = Tissue		
SL = Sludge	WI = Wine		
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

H0357

C.O.C. # C99-02

Page 1 of 1

Collector: AG RIZZO	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-023	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100NR2IAM(1) GW MONITORING, MARCH 1999	Logbook No.: WHS-SHL H 21, PAGE 90	Ice Chest No.: SHL 591 Temp.: COOL/4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT VEHICLE	Bill of Lading/Air Bill No.: 4735-7952-3435
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 QES & TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0TYN1 (F)		W	3-16-99	0948	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B0TYN2		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
B0TYN2		W			1x20-mL P	Activity Scan	None
B0TYN2		W			1x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B0TYN2		W			1x1000-mL G/P	Gross Beta	HNO3 to pH <2
B0TYN2		W			2x1000-mL G/P	Strontium-89,90 -- Sr-90	HNO3 to pH <2

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
AG RIZZO			1245 MAR 16 1999	K. YOUNG			1243 MAR 16 1999
K. YOUNG			1400 MAR 16 1999	FedEx			3-16-99
FedEx			3-17-99 10:45				

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
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

NNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

H0857

C.O.C. # C99-023-3

Collector: AG RIZZO	Contact/Requester: JH KESSNER	Telephone No. (509) 375-4688 MSIN FAX
Project No. 99-023	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 00NR2IAM(1) GW MONITORING MARCH 1999	Logbook No. WM-SML H 21, PAGE 91	Ice Chest No. SML 545 Temp. cool 4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235-7952-3450
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 QES & TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487)

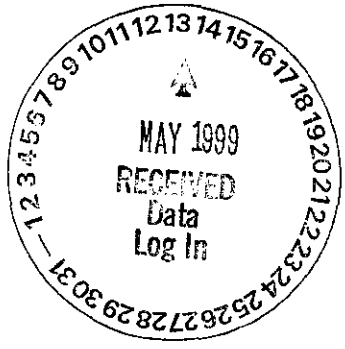
Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
TW83 (F)		W	3-17-99	1250	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
TW84		W	↓	↓	1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
TW84		W	↓	↓	1x20-mL P	Activity Scan	None
TW84		W	↓	↓	1x1000-mL G/P	Gross Beta	HNO3 to pH <2
TW84		W	↓	↓	2x1000-mL G/P	Strontium-89,90 -- Sr-90	HNO3 to pH <2
TW84		W	↓	↓	1x250-mL P	Tritium - H3	None

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
AG RIZZO [signature]	1310 MAR 17 1999	K. YOUNG [signature]	1310 MAR 17 1999
K. YOUNG [signature]	1440 MAR 17 1999	Fed Ex	3-17-99
Fed Ex	3-18-99 10:30	[signature] JR Corso	3-18-99 10:30

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

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

Thermo NUtech
2030 Wright Avenue
P.O. Box 4040
Richmond, CA 94804-0040
(510) 235-2633 • FAX (510) 235-0438



May 10, 1999

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

Reference: P.O. #TRB-SBB-207925
Thermo Nutech N9-03-075-7097, SDG H0357

Dear Ms. Kessner:

Enclosed is the data report for three water samples designated under SAF No. C99-023 received at Thermo Nutech on March 17, 1999. The samples were analyzed according to the accompanying chain-of-custody documents.

Please call if you have any questions concerning this report.

Sincerely,

Terrie A. Higgins
Program Manager

TAH/kcj

Enclosure: Data Package

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0357 is comprised of three water samples designated under SAF No. C99-023 with a Project Designation of: 100NR2IAM(1) GW MONITORING, MARCH 1999.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the TNU Sample Receipt Checklist. Results for Strontium-90, Gross Alpha and Beta were transmitted to Bechtel Hanford via fascimillie on April 14, 1999 while the completed data package for this SDG was sent to Bechtel Hanford via fascimillie on April 20, 1999.

2.0 ANALYSIS NOTES

2.1 Gross Alpha/Beta Analyses

No problems were encountered during the processing of the samples.

2.2 Yttrium Analyses

No problems were encountered during the processing of the samples.

2.3 Tritium Analyses

No problems were encountered during the processing of the samples.

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0357

SAMPLE SUMMARY

SDG 7097
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0357

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0TW84	HANFORD SITE	WATER		N903075-03	C99-023	C99-023-03	03/17/99 12:50
B0TW86	HANFORD SITE	WATER		N903075-01	C99-023	C99-023-7	03/16/99 11:32
B0TYN2	HANFORD SITE	WATER		N903075-02	C99-023	C99-023-14	03/16/99 09:48
Method Blank		WATER		N903075-05	C99-023		
Lab Control Sample		WATER		N903075-04	C99-023		
Duplicate (N903075-01)	HANFORD SITE	WATER		N903075-06	C99-023		03/16/99 11:32
Duplicate (N903075-03)	HANFORD SITE	WATER		N903075-07	C99-023		03/17/99 12:50

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0357

QC SUMMARY

SDG 7097
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0357

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
7097	C99-023-03	B0TW84	WATER				03/18/99	1	N903075-03	7097-003
	C99-023-14	B0TYN2	WATER				03/17/99	1	N903075-02	7097-002
	C99-023-7	B0TW86	WATER				03/17/99	1	N903075-01	7097-001
		Method Blank	WATER						N903075-05	7097-005
		Lab Control Sample	WATER						N903075-04	7097-004
		Duplicate (N903075-01)	WATER				03/17/99	1	N903075-06	7097-006
		Duplicate (N903075-03)	WATER				03/18/99	1	N903075-07	7097-007

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0357

PREP BATCH SUMMARY

SDG 7097
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0357

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Beta Counting												
Y	WATER	Strontium 90 in Water	2857-186	10.0	3			1	1	1/1		
Gas Proportional Counting												
80A	WATER	Gross Alpha in Water	2857-186	20.0	3			1	1	1/1		
80B	WATER	Gross Beta in Water	2857-186	15.0	3			1	1	1/1		
Liquid Scintillation Counting												
H	WATER	Tritium in Water	2857-186	10.0	1			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 04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0357

WORK SUMMARY

SDG 7097
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0357

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0TW84			N903075-03	7097-003	80A/80		04/09/99	04/14/99	TAH	Gross Alpha in Water
HANFORD SITE		WATER	03/17/99	7097-003	80B/80		04/05/99	04/14/99	TAH	Gross Beta in Water
C99-023-03	C99-023		03/18/99	7097-003	H		04/05/99	04/20/99	TAH	Tritium in Water
				7097-003	Y		04/05/99	04/14/99	TAH	Strontium 90 in Water
B0TW86			N903075-01	7097-001	80A/80		04/09/99	04/14/99	TAH	Gross Alpha in Water
HANFORD SITE		WATER	03/16/99	7097-001	80B/80		04/05/99	04/14/99	TAH	Gross Beta in Water
C99-023-7	C99-023		03/17/99	7097-001	Y		04/05/99	04/14/99	TAH	Strontium 90 in Water
B0TYN2			N903075-02	7097-002	80A/80		04/05/99	04/14/99	TAH	Gross Alpha in Water
HANFORD SITE		WATER	03/16/99	7097-002	80B/80		04/05/99	04/14/99	TAH	Gross Beta in Water
C99-023-14	C99-023		03/17/99	7097-002	Y		04/06/99	04/14/99	TAH	Strontium 90 in Water
Method Blank			N903075-05	7097-005	80A/80		04/05/99	04/14/99	TAH	Gross Alpha in Water
		WATER		7097-005	80B/80		04/05/99	04/14/99	TAH	Gross Beta in Water
	C99-023			7097-005	H		04/05/99	04/20/99	TAH	Tritium in Water
				7097-005	Y		04/05/99	04/14/99	TAH	Strontium 90 in Water
Lab Control Sample			N903075-04	7097-004	80A/80		04/05/99	04/14/99	TAH	Gross Alpha in Water
		WATER		7097-004	80B/80		04/05/99	04/14/99	TAH	Gross Beta in Water
	C99-023			7097-004	H		04/05/99	04/20/99	TAH	Tritium in Water
				7097-004	Y		04/06/99	04/14/99	TAH	Strontium 90 in Water
Duplicate (N903075-01)			N903075-06	7097-006	80A/80		04/09/99	04/14/99	TAH	Gross Alpha in Water
HANFORD SITE		WATER	03/16/99	7097-006	80B/80		04/06/99	04/14/99	TAH	Gross Beta in Water
	C99-023		03/17/99	7097-006	Y		04/05/99	04/14/99	TAH	Strontium 90 in Water
Duplicate (N903075-03)			N903075-07	7097-007	H		04/05/99	04/20/99	TAH	Tritium in Water
HANFORD SITE		WATER	03/17/99							
	C99-023		03/18/99							

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 04/20/99

SDG 7097
Contact L.A. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0357

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
80A/80	C99-023	Gross Alpha in Water	EPA900.0	3			1	1	1	6
80B/80	C99-023	Gross Beta in Water	EPA900.0	3			1	1	1	6
H	C99-023	Tritium in Water	EPA906.0	1			1	1	1	4
Y	C99-023	Strontium 90 in Water	SR90Y90	3			1	1	1	6
TOTALS				10			4	4	4	22

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0357

N903075-05 Method Blank

METHOD BLANK

SDG 7097	Client/Case no Hanford	SDG-H0357	
Contact L.A. Johnson	Case no TRB-SBB-207925		
Lab sample id N903075-05	Client sample id Method Blank		
Dept sample id 7097-005	Material/Matrix	WATER	
	SAF No C99-023		

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.029	0.66	1.3	3.0	U	80A
Gross Beta	12587-47-2	-0.545	1.1	2.0	4.0	U	80B
Tritium	10028-17-8	-89.8	110	200	400	U	H
Strontium 90	10098-97-2	-0.029	0.98	0.16	2.0	U	Y

100NR21AM(1)GW MONITORING,MARCH 1999

QC-BLANK 30354

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0357

N903075-04 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7097 Client/Case no Hanford SDG-H0357

Contact L.A. Johnson Case no TRB-SBB-207925

Lab sample id N903075-04 Client sample id Lab Control Sample

Dept sample id 7097-004 Material/Matrix WATER

SAF No C99-023

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	58.8	4.8	1.0	3.0		80A	67.0	2.7	88	71-129	80-120
Gross Beta	73.2	3.7	2.0	4.0		80B	76.3	3.1	96	76-124	80-120
Tritium	8410	310	200	400		H	8480	340	99	83-117	80-120
Strontium 90	11.8	0.76	0.28	2.0		Y	11.5	0.46	103	81-119	80-120

100NR21AM(1)GW MONITORING,MARCH 1999

QC-LCS 30353

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0357

N903075-06 B0TW86

DUPLICATE

SDG 7097 Client/Case no Hanford SDG-H0357

Contact L.A. Johnson Case no TRB-SBB-207925

DUPLICATE		ORIGINAL			
Lab sample id	N903075-06	Lab sample id	N903075-01	Client sample id	B0TW86
Dept sample id	7097-006	Dept sample id	7097-001	Location/Matrix	HANFORD SITE WATER
		Received	03/17/99	Collected	03/16/99 11:32
				Custody/SAF No	C99-023-7 C99-023

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	0.419	0.77	1.4	3.0	U	80A	1.67	1.2	1.6	J	120	211
Gross Beta	35300	73	2.6	4.0		80B	36300	76	2.8		3	32
Strontium 90	19300	370	13	2.0		Y	18200	630	6.6		6	22

100NR21AM(1)GW MONITORING,MARCH 1999

QC-DUP#1 30355

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0357

N903075-07 B0TW84

DUPLICATE

SDG 7097		Client/Case no Hanford	SDG-H0357
Contact L.A. Johnson		Case no TRB-SBB-207925	
DUPLICATE	ORIGINAL		
Lab sample id N903075-07	Lab sample id N903075-03	Client sample id B0TW84	
Dept sample id 7097-007	Dept sample id 7097-003	Location/Matrix HANFORD SITE	WATER
	Received 03/18/99	Collected 03/17/99 12:50	
		Custody/SAF No C99-023-03	C99-023

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
Tritium	5240	250	200	400		H	5010	250	190		4	24

100NR21AM(1)GW MONITORING,MARCH 1999

QC-DUP#3 30356

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 04/20/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0357

N903075-03 B0TW84

DATA SHEET

SDG 7097	Client/Case no Hanford	SDG-H0357	
Contact L.A. Johnson	Case no TRB-SBB-207925		
Lab sample id N903075-03	Client sample id B0TW84		
Dept sample id 7097-003	Location/Matrix HANFORD SITE	WATER	
Received 03/18/99	Collected 03/17/99 12:50		
	Custody/SAF No C99-023-03	C99-023	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	3.99	2.4	2.8	3.0		80A
Gross Beta	12587-47-2	1980	22	4.1	4.0		80B
Tritium	10028-17-8	5010	250	190	400		H
Strontium 90	10098-97-2	1020	21	6.8	2.0		Y

100NR21AM(1)GW MONITORING,MARCH 1999

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/20/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0357

N903075-01 B0TW86

DATA SHEET

SDG	7097	Client/Case no	Hanford SDG-H0357
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N903075-01	Client sample id	B0TW86
Dept sample id	7097-001	Location/Matrix	HANFORD SITE WATER
Received	03/17/99	Collected	03/16/99 11:32
		Custody/SAF No	C99-023-7 C99-023

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	1.67	1.2	1.6	3.0	J	80A
Gross Beta	12587-47-2	36300	76	2.8	4.0		80B
Strontium 90	10098-97-2	18200	630	6.6	2.0		Y

100NR21AM(1)GW MONITORING,MARCH 1999

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/20/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0357

N903075-02 B0TYN2

DATA SHEET

SDG 7097 Client/Case no Hanford SDG-H0357
Contact L.A. Johnson Case no TRB-SBB-207925

Lab sample id N903075-02 Client sample id B0TYN2
Dept sample id 7097-002 Location/Matrix HANFORD SITE WATER
Received 03/17/99 Collected 03/16/99 09:48
Custody/SAF No C99-023-14 C99-023

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.048	0.40	0.85	3.0	U	80A
Gross Beta	12587-47-2	0.454	1.3	2.1	4.0	U	80B
Strontium 90	10098-97-2	3.27	0.92	2.0	2.0		Y

100NR21AM(1)GW MONITORING,MARCH 1999

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0357

METHOD SUMMARY

STRONTIUM 90 IN WATER

BETA COUNTING

Test Y Matrix WATER
SDG 7097
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0357

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Strontium 90
Preparation batch 2857-186					
B0TW84	N903075-03			7097-003	1020
B0TW86	N903075-01			7097-001	18200
B0TYN2	N903075-02			7097-002	3.27
BLK (QC ID=30354)	N903075-05			7097-005	U
LCS (QC ID=30353)	N903075-04			7097-004	ok
Duplicate (N903075-01)	N903075-06			7097-006	ok
Nominal values and limits from method				RDLs (pCi/L)	2.0
100NR21AM(1)GW MONITORING,MARCH 1999					

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 2857-186	2σ prep error 10.0 %			Reference Lab		Notebook #2857 pg. 186										
B0TW84	N903075-03			6.8	0.100			84		29			19	04/05/99	04/05	GRB-207
B0TW86	N903075-01			6.6	0.100			83		29			20	04/05/99	04/05	GRB-205
B0TYN2	N903075-02			2.0	0.100			80		400			21	04/05/99	04/06	GRB-206
BLK (QC ID=30354)	N903075-05			0.16	1.00			82		400				04/05/99	04/05	GRB-217
LCS (QC ID=30353)	N903075-04			0.28	1.00			83		200				04/05/99	04/06	GRB-205
Duplicate (N903075-01) (QC ID=30355)	N903075-06			13	0.100			84		10			20	04/05/99	04/05	GRB-218
Nominal values and limits from method				2.0	1.00			20-105		25			180			

PROCEDURES	REFERENCE	SR90Y90
	EP-040	Environmental Water Dissolution, rev 1
	EP-520	Yttrium Purification for Strontium-90 Analysis, rev 0

AVERAGES ± 2 SD FOR 6 SAMPLES				
	MDA	4.8	±	10
	YIELD	83	±	3

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0357

Test 80A Matrix WATER
SDG 7097
Contact L.A. Johnson

METHOD SUMMARY

GROSS ALPHA IN WATER
GAS PROPORTIONAL COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0357

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha	
Preparation batch 2857-186						
B0TW84	N903075-03	80		7097-003	3.99	
B0TW86	N903075-01	80		7097-001	1.67	J
B0TYN2	N903075-02	80		7097-002	U	
BLK (QC ID=30354)	N903075-05	80		7097-005	U	
LCS (QC ID=30353)	N903075-04	80		7097-004	ok	
Duplicate (N903075-01)	N903075-06	80		7097-006	ok	U
Nominal values and limits from method				RDLs (pCi/L)	3.0	
100NR21AM(1)GW MONITORING,MARCH 1999						

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 2857-186	2σ prep error 20.0 %			Reference Lab		Notebook #2857 pg. 186										
B0TW84	N903075-03	80		2.8	0.200			124	100				23	03/30/99	04/09	GRB-111
B0TW86	N903075-01	80		1.6	0.300			100	100				24	03/30/99	04/09	GRB-110
B0TYN2	N903075-02	80		0.85	0.300			7	96				20	03/30/99	04/05	GRB-111
BLK (QC ID=30354)	N903075-05	80		1.3	0.300			34	96					03/30/99	04/05	GRB-115
LCS (QC ID=30353)	N903075-04	80		1.0	0.300			32	96					03/30/99	04/05	GRB-113
Duplicate (N903075-01) (QC ID=30355)	N903075-06	80		1.4	0.300			94	100				24	03/30/99	04/09	GRB-112
Nominal values and limits from method				3.0	0.300			5-150	100				180			

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

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 1.5 ± 1.4
RESIDUE 65 ± 94

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0357

METHOD SUMMARY

GROSS BETA IN WATER

GAS PROPORTIONAL COUNTING

Test 80B Matrix WATER
SDG 7097
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0357

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta
Preparation batch 2857-186					
B0TW84	N903075-03	80		7097-003	1980
B0TW86	N903075-01	80		7097-001	36300
B0TYN2	N903075-02	80		7097-002	U
BLK (QC ID=30354)	N903075-05	80		7097-005	U
LCS (QC ID=30353)	N903075-04	80		7097-004	ok
Duplicate (N903075-01)	N903075-06	80		7097-006	ok
Nominal values and limits from method				RDLs (pCi/L)	4.0
100NR21AM(1)GW MONITORING,MARCH 1999					

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 2857-186	2σ prep error 15.0 %			Reference Lab		Notebook #2857 pg. 186										
B0TW84	N903075-03	80		4.1	0.200			124	96				19	03/30/99	04/05	GRB-112
B0TW86	N903075-01	80		2.8	0.300			100	96				20	03/30/99	04/05	GRB-110
B0TYN2	N903075-02	80		2.1	0.300			7	96				20	03/30/99	04/05	GRB-111
BLK (QC ID=30354)	N903075-05	80		2.0	0.300			34	96					03/30/99	04/05	GRB-115
LCS (QC ID=30353)	N903075-04	80		2.0	0.300			32	96					03/30/99	04/05	GRB-113
Duplicate (N903075-01) (QC ID=30355)	N903075-06	80		2.6	0.300			94	100				21	03/30/99	04/06	GRB-112
Nominal values and limits from method				4.0	0.300			5-150	100				180			

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

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 2.6 ± 1.6
RESIDUE 65 ± 94

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/20/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0357

METHOD SUMMARY

TRITIUM IN WATER

LIQUID SCINTILLATION COUNTING

Test H Matrix WATER
SDG 7097
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0357

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium
Preparation batch 2857-186					
B0TW84	N903075-03			7097-003	5010
BLK (QC ID=30354)	N903075-05			7097-005	U
LCS (QC ID=30353)	N903075-04			7097-004	ok
Duplicate (N903075-03)	N903075-07			7097-007	ok
Nominal values and limits from method				RDLs (pCi/L)	400
100NR21AM(1)GW MONITORING,MARCH 1999					

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 2857-186	2σ prep error 10.0 %			Reference Lab	Notebook #2857 pg. 186											
B0TW84	N903075-03			190	0.0100					100			19	04/02/99	04/05	LSC-005
BLK (QC ID=30354)	N903075-05			200	0.0100					100				04/02/99	04/05	LSC-005
LCS (QC ID=30353)	N903075-04			200	0.0100					100				04/02/99	04/05	LSC-005
Duplicate (N903075-03) (QC ID=30356)	N903075-07			200	0.0100					100			19	04/02/99	04/05	LSC-005
Nominal values and limits from method				400	0.0100					25			180			

PROCEDURES REFERENCE EPA906.0
EP-210 Tritium in Water by Distillation, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 200 ± 10
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/20/99

SDG 7097
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0357

SAMPLE SUMMARY

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.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/20/99

SDG 7097
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0357

PREPARATION BATCH SUMMARY

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.

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Version 3.06
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SDG 7097
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0357

WORK SUMMARY

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.

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REPORT GUIDE

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DATA SHEET

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).

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SDG 7097
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GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0357

DATA SHEET

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.

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SDG 7097
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GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0357

DATA SHEET

* 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.

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/20/99

SDG 7097
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
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LAB CONTROL SAMPLE

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.

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Form DVD-RG
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SDG 7097
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
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DUPLICATE

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.

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DUPLICATE

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.

SDG 7097
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
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Case no SDG-H0357

MATRIX SPIKE

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

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SDG 7097
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0357

MATRIX SPIKE

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.

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Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
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METHOD SUMMARY

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'

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METHOD SUMMARY

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.

* Prepareation 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.

SDG 7097
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
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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

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Form DVD-RG
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SDG 7097
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0357

METHOD SUMMARY

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.

Lab id TMANC
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PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-023-7

Page 1 of 1

Collector AG RIZZO	**Contact/Requester** JH KESSNER	**Telephone No.** (509) 375-4688 **MSIN** **FAX**
SAF No. C99-023	**Sampling Origin** HANFORD SITE	**Purchase Order/Charge Code**
Project Title 100NR2IAM(1) GW MONITORING, MARCH 1999	**Logbook No.** WM-SML H-21, PAGE 90	**Ice Chest No.** SML 591 **Temp.** cool/4°C
Shipped To (Lab) TMA/RECRA	**Method of Shipment** GOVT. VEHICLE	**Bill of Lading/Air Bill No.** 4235-7952-3438
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 QES & TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0TW85 (F)		W	3-16-99	1132	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B0TW86		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
[redacted]		W			1x20-mL P	[redacted]	None
[redacted]		W			1x1000-mL G/P	[redacted]	HNO3 to pH <2
[redacted]		W			1x1000-mL G/P	[redacted]	HNO3 to pH <2
[redacted]		W			2x1000-mL G/P	[redacted]	HNO3 to pH <2

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
AG RIZZO		1245	MAR 16 1999	K. YOUNG		1245	MAR 16 1999
K. YOUNG		1400	MAR 16 1999	Fed Ex			3-16-99
Fed Ex			3-17-99 10:45	J.R. Corso			3-17-99 10:45

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
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	C.O.C. # C99-023-14
		Page 1 of 1

Collector AG RIZZO	**Contact/Requester** JH KESSNER	**Telephone No.** (509) 375-4688 **MSIN** **FAX**
SAF No. C99-023	**Sampling Origin** HANFORD SITE	**Purchase Order/Charge Code**
Project Title 100NR2IAM(1) GW MONITORING, MARCH 1999	**Logbook No.** WHS-SHL H 21, PAGE 90	**Ice Chest No.** SHL 591 **Temp.** COOL/4°C
Shipped To (Lab) TMA/RECRA	**Method of Shipment** GOVT. VEHICLE	**Bill of Lading/Air Bill No.** 4735-7952-3438
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 QES & TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0TYN1 (F)		W	3-16-99	0948	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B0TYN2		W	↓	↓	1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
[redacted]		W			1x20-mL P	[redacted]	None
[redacted]		W			1x1000-mL G/P	[redacted]	HNO3 to pH <2
[redacted]		W			1x1000-mL G/P	[redacted]	HNO3 to pH <2
[redacted]		W			2x1000-mL G/P	[redacted]	HNO3 to pH <2

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
AG RIZZO			1245 MAR 16 1999	K. YOUNG			1243 MAR 16 1999
K. YOUNG			14:00 MAR 16 1999	FedEx			3-16-99
Fed Ex			3-17-99 10:45				
Relinquished By			Date/Time	Received By			Date/Time

Matrix *

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

C.O.C. # C99-023-3

Page 1 of 1

Collector: AG RIZZO	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-023	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: 100NR2IAM(1) GW MONITORING, MARCH 1999	Logbook No.: WM-SML H21, PAGE 91	Ice Chest No.: SML 545 Temp.: cool 4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235-7952-3450
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 QES & TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0TW83 (F)		W	3-17-99	1250	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B0TW84		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
[redacted]		W			1x20-mL P	[redacted]	None
[redacted]		W			1x1000-mL G/P	[redacted]	HNO3 to pH <2
[redacted]		W			2x1000-mL G/P	[redacted]	HNO3 to pH <2
[redacted]		W			1x250-mL P	[redacted]	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
AG RIZZO	[illegible]	[illegible]	1310 MAR 17 1999	K. YOUNG	[illegible]	[illegible]	1310 MAR 17 1999
K. YOUNG	[illegible]	[illegible]	1440 MAR 17 1999	Fed Ex			3-17-99
Fed Ex			3-18-99 10:30	[illegible] JR Corso			3-18-99 10:30

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
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

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT)
Waste Management		W99D0155

PART I - TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
Hanford Technical Services	Environmental Operations	Sampling & Mobile Labs

The following items are to be shipped from ☑ Contractor ☐ Vendor

Routing Fed Ex 473579523450 ☑ Prepaid ☐ Collect

Shipped to TMA Company 2030 Wright Ave Address Richmond CA 94804 City State Zip Code Country	Off-site Custodian Att: Delores Sanchez On-site Custodian Payroll No.

Qty.	Property No.	Description (*include Manufacture Name, Model, Serial No.*)	Acquisition Cost
1	Cooler	Samples double bagged and packed on wet ice. Cooler # SMC-545 Weight 42 lbs C.O.C #	

☐ Classified ☑ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the off-site use of this property

☐ Required for Project Work. List Project No. _____

☐ Business Trip

☐ Off-site Assignment

☐ Shipment to Subcontractor. List Subcontract No. _____

☑ Other (*Please specify*) Samples require Analysis that are not available on site.

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
NA	NA	N/A

Location of and Contact for Property (*Name/Phone No./Bldg./Area*)
K.J. Young / 372-0060 / 345 Hills

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
3-17-99	08000	N/A

Originated By	Date	Authorized By	Date
K.J. Young	3-17-99	D.A. Young	3-17-99
Property Representative Signature	Date	Property Management Approval	Date
			3/17/99

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford [PNNL] Date/Time received 3-18-99 10:30

CoC No. C99-023-3

Container I.D. No. SML-545 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: 4			
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: The sample containers were in the ice and the labels are wet			
13.	Was P.M. notified of any anomalies? Yes [✓]	No [ ]	Date 3-18-99	
14.	Received by JC Barnes	Date: 3-18-99	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 _____