H0604-TMA/RECRA

RECRA LabNet

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EDMC

Recra LabNet Philadelphia
Analytical Report
****REVISION****

Client : TNU-HANFORD B99-078
RFW# : 9911L582
SDG# : H0604
SAF# : B99-078

W.O. # : 10985-001-001-9999-00
Date Received: 11-02-99

INORGANIC CASE NARRATIVE

This revision to the data package narrative is to specify exceeded holding times for Hydrazine analysis.

1. This narrative covers the analyses of 12 soil samples.

2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.

3. Sample holding times as required by the method and/or contract were met with the exception of Hydrazine which exceed the contract specified holding time of 28 days.

4. The cooler temperatures were recorded on the chain-of-custody.

5. The method blanks were within method criteria.

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

7. The matrix spike recoveries were within the 75-125% control limits with the exception of Hydrazine which was below the control limit and may be contributed to matrix interference.

8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.

9. Results for solid samples are reported on a dry weight basis.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

2-1-00
Date

njp\i11-582r

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 35 pages.

001

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

Recra LabNet Philadelphia

WET CHEMISTRY
METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	✓ D2216-80		__ ILMO4.0 (e)
% Volatile Soilids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Chromium VI		✓ 3060A/7196A	
Corrosivity __ by coupon __ by pH		__ 1110(mod) __ 9045C	
Cyanide, Total		✓ 9010B	__ ILMO4.0 (e)
Cyanide, Reactive		__ Section 7.3	
Halides, Extractable Organic		__ 9020B	__ EPA 600/4/84-008
Halides, Total		__ 9020B	__ EPA 600/4/84-008
EP Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Oil & Grease		__ 9071A	
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygne Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1
pH, Soil		✓ 9045C	
Sulfide, Reactive		__ Section 7.3	
Sulfide		✓ 9030B(mod)	
Specific Gravity	__ D1429-76C/	__ D5057-90	
Sulfur, Total		__ 9056	
Synthetic Prpearation Leach		__ 1312	
Paint Filter		9095A	

Other: Nitrate Nitrite **Method:** EPA 353.2

Other: Ammonia **Method** EPA 350.3

Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate } EPA 300.0

Hydrazine **Method:** USAF F33615-84-D-4400/0016

L-WI-034/B-06/99

002

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METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/04/00

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9911L582

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WMJ1	% Solids	94.0		%	0.01	1.0
		Chloride by IC	2.6		MG/KG	1.3	1.0
		Fluoride by IC	2.7	u	MG/KG	2.7	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	58		MG/KG	2.7	2.0
		Cyanide, Total	0.53	u	MG/KG	0.53	1.0
		Phosphate by IC	5.4		MG/KG	1.3	1.0
		Chromium VI	0.43	u	MG/KG	0.43	1.0
		Sulfate by IC	49.7		MG/KG	1.3	1.0
		Nitrate Nitrite	12.8		MG/KG	1.0	5.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.7		SOIL PH	0.01	1.0
		Sulfide	4.0		MG/KG	2.1	1.0
-002	B0WMJ2	% Solids	86.1		%	0.01	1.0
		Chloride by IC	44.2		MG/KG	1.5	1.0
		Fluoride by IC	2.9	u	MG/KG	2.9	1.0
		Nitrite by IC	1.5	u	MG/KG	1.5	1.0
		Nitrate by IC	100		MG/KG	7.3	5.0
		Cyanide, Total	0.58	u	MG/KG	0.58	1.0
		Phosphate by IC	1.5	u	MG/KG	1.5	1.0
		Chromium VI	0.46	u	MG/KG	0.46	1.0
		Sulfate by IC	286		MG/KG	7.3	5.0
		Nitrate Nitrite	23.7		MG/KG	1.1	5.0
		Ammonia, as N	1.4	u	MG/KG	1.4	1.0
		pH	7.9		SOIL PH	0.01	1.0
		Sulfide	4.6		MG/KG	2.3	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/04/00

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9911L582

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0WMJ3	% Solids	96.5		%	0.01	1.0
		Chloride by IC	7.8		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	11		MG/KG	1.3	1.0
		Cyanide, Total	0.52	u	MG/KG	0.52	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	28.4		MG/KG	1.3	1.0
		Nitrate Nitrite	2.3		MG/KG	0.20	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.4		SOIL PH	0.01	1.0
		Sulfide	2.1	u	MG/KG	2.1	1.0
-004	B0WMJ6	% Solids	96.9		%	0.01	1.0
		Chloride by IC	9.3		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	13		MG/KG	1.3	1.0
		Cyanide, Total	0.52	u	MG/KG	0.52	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.43		MG/KG	0.41	1.0
		Sulfate by IC	19.2		MG/KG	1.3	1.0
		Nitrate Nitrite	3.4		MG/KG	0.20	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.4		SOIL PH	0.01	1.0
		Sulfide	2.1	u	MG/KG	2.1	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/04/00

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9911L582

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	BOWN01	% Solids	88.6		%	0.01	1.0
		Chloride by IC	3.5		MG/KG	1.4	1.0
		Fluoride by IC	2.8	u	MG/KG	2.8	1.0
		Nitrite by IC	1.4	u	MG/KG	1.4	1.0
		Nitrate by IC	140		MG/KG	7.1	5.0
		Cyanide, Total	0.56	u	MG/KG	0.56	1.0
		Phosphate by IC	4.2		MG/KG	1.4	1.0
		Chromium VI	0.45	u	MG/KG	0.45	1.0
		Sulfate by IC	48.6		MG/KG	1.4	1.0
		Hydrazine	1.0	u	MG/KG	1.0	1.0
		Nitrate Nitrite	29.9		MG/KG	1.1	5.0
		Ammonia, as N	3.2		MG/KG	1.4	1.0
		pH	8.1		SOIL PH	0.01	1.0
		Sulfide	2.3	u	MG/KG	2.3	1.0
-006	BOWN02	% Solids	92.7		%	0.01	1.0
		Chloride by IC	3.0		MG/KG	1.3	1.0
		Fluoride by IC	2.7	u	MG/KG	2.7	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	89		MG/KG	6.7	5.0
		Cyanide, Total	0.54	u	MG/KG	0.54	1.0
		Phosphate by IC	4.0		MG/KG	1.3	1.0
		Chromium VI	0.43	u	MG/KG	0.43	1.0
		Sulfate by IC	34.9		MG/KG	1.3	1.0
		Hydrazine	0.94	u	MG/KG	0.94	1.0
		Nitrate Nitrite	23.9		MG/KG	0.94	5.0
		Ammonia, as N	2.5		MG/KG	1.3	1.0
		pH	8.0		SOIL PH	0.01	1.0
		Sulfide	4.5		MG/KG	2.4	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/04/00

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9911L582

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	B0WN03	% Solids	84.4		%	0.01	1.0
		Chloride by IC	2.9		MG/KG	1.5	1.0
		Fluoride by IC	3.0	u	MG/KG	3.0	1.0
		Nitrite by IC	1.5	u	MG/KG	1.5	1.0
		Nitrate by IC	87		MG/KG	7.4	5.0
		Cyanide, Total	0.59	u	MG/KG	0.59	1.0
		Phosphate by IC	1.6		MG/KG	1.5	1.0
		Chromium VI	0.47	u	MG/KG	0.47	1.0
		Sulfate by IC	29.1		MG/KG	1.5	1.0
		Hydrazine	1.1	u	MG/KG	1.1	1.0
		Nitrate Nitrite	26.7		MG/KG	1.2	5.0
		Ammonia, as N	1.5	u	MG/KG	1.5	1.0
		pH	7.9		SOIL PH	0.01	1.0
		Sulfide	2.4	u	MG/KG	2.4	1.0
-008	B0WN04	% Solids	94.5		%	0.01	1.0
		Chloride by IC	5.9		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	42		MG/KG	1.3	1.0
		Cyanide, Total	0.53	u	MG/KG	0.53	1.0
		Phosphate by IC	3.2		MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	38.3		MG/KG	1.3	1.0
		Hydrazine	0.91	u	MG/KG	0.91	1.0
		Nitrate Nitrite	8.1		MG/KG	0.19	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	7.9		SOIL PH	0.01	1.0
		Sulfide	2.1	u	MG/KG	2.1	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/04/00

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9911L582

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	B0WN05	% Solids	95.8		%	0.01	1.0
		Chloride by IC	1.9		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	7.5		MG/KG	1.3	1.0
		Cyanide, Total	0.52	u	MG/KG	0.52	1.0
		Phosphate by IC	1.5		MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	15.3		MG/KG	1.3	1.0
		Hydrazine	1.1	u	MG/KG	1.1	1.0
		Nitrate Nitrite	1.8		MG/KG	0.19	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	7.5		SOIL PH	0.01	1.0
		Sulfide	2.1	u	MG/KG	2.1	1.0
-010	B0WN06	% Solids	95.9		%	0.01	1.0
		Chloride by IC	1.7		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	7.4		MG/KG	1.3	1.0
		Cyanide, Total	0.52	u	MG/KG	0.52	1.0
		Phosphate by IC	1.4		MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	18.3		MG/KG	1.3	1.0
		Hydrazine	1.0	u	MG/KG	1.0	1.0
		Nitrate Nitrite	1.4		MG/KG	0.18	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	7.9		SOIL PH	0.01	1.0
		Sulfide	2.1	u	MG/KG	2.1	1.0

RECRA LabNet Use Only
99111582

Custody Transfer Record/Lab Work Request

Page 1 of 2

All

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TNU HANFORD B99-078

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: 11/2/99 Date Due: 12/2/99

Account #:

Refrigerator #		1	2													
#/Type Container	Liquid															
	Solid	1g	1g						1g		1g	1g	1g			
Volume	Liquid															
	Solid	250	500						500		120	250	Ltr			
Preservatives																
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H 0GCSC	0625H 0DRO	0PCB					Met①	1CNTO	1HY2N	1PH	Ang①
001	BOWMT1			S	10/28/99	1227	✓	✓	✓					✓	✓	✓	✓	✓
002	2					1219										✓		
003	3					1238										✓		
004	6					1245										✓		
005	BOWNO1					0813										✓		
006	2					0820										✓		
007	3					0829										✓		
008	4					0845										✓		
009	5					0857										✓		
010	6					0903										✓		

RECRA LabNet Use Only

Special Instructions:

saf# B99-078

COMPOSITE WASTE

DATE/REVISIONS:

1. samples 8+9 crossed
2. off on client COC, but
3. rec'd.
4. met① + Ang① see pg 2.
5. Run matrix QC
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. 4.4 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:
*423579531230 → 4.9 °C
1252 → 2.6
1220 *42357953 1241 4.6°C

Relinquished by	Received by	Date	Time
[signature]	[signature]	11/2/99	0910

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

RECRA LabNet Use Only
9911L582

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TNU-HANFORD
Est. Final Proj. Sampling Date:
Project #:
Project Contact/Phone #:
RECRA Project Manager:
QC: Del TAT:
Date Rec'd: Date Due:
Account #:

Refrigerator #		1	2										1			
#/Type Container	Liquid															
	Solid	1g	1g							1g	1g	1g	1g			
Volume	Liquid															
	Solid	250	500							500	120	250	1tr			
Preservatives																
ANALYSES REQUESTED		ORGANIC								INORG						
		VOA	BNA	Pest/PCB	Herb					Metal	CN					
		RECRA LabNet Use Only														
		0624 8260	0625 8270	0PCB						Met①	ICN/TO	1HYZN	1PH	Ang①		

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624 8260	0625 8270	0PCB					Met①	ICN/TO	1HYZN	1PH	Ang①			
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	011	BOWN07			S	10/28/99	0910	✓	✓	✓					✓	✓	✓	✓	✓			
	012	1 8			1		0918	✓	✓	✓					✓	✓	✓	✓	✓			

Special Instructions:

DATE/REVISIONS:
1. Met① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg
3. Ang① = IN3N2, ICCL, ICFL, ICSO4, ICNO2,
4. ICNO3, ICPO4, ISFD, IN H3N, ICRG
5.
6.

Relinquished by	Received by	Date	Time
Fed Ex	V. Hardy	11/1/99	0910

Relinquished by	Received by	Date	Time

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

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. _____ °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-146 H0604	Page 1 of 1

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond BP-9	SAF No.: B99-078	
Ice Chest No.: SML-438	Field Logbook No.: EL-1511	Method of Shipment: FED EX 4.4°C	
Shipped To: TMA/RECRA 10-28-99	Offsite Property No.: A00018	Bill of Lading/Air Bill No.: 42357953 1230	
		COA: B20CW1 67K	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

11L582

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time										
Preservation				None	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None		
Type of Container				aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)				1	1	1	1	1	1	1	1		
Volume				60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL		
				Isotopic Uranium	Hydrazine - D1385	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.		
B0WN01	Soil	10-28-99	0813		X	X	X	X	X	X		B0WN01	
B0WN02	S	10-28-99	0820		X	X	X	X	X	X			
B0WN03	S	10-28-99	0829		X	X	X	X	X	X			
~~B0WN04~~	S	10-28-99	0845		X	X	X	X	X	X			
~~B0WN05~~	S	10-28-99	0857		X	X	X	X	X	X			

RT 1008

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Chris/C TRICE 10/28/99 1430	Date/Time	Received By: Ref 3B 10/28/99 1430	Date/Time
Relinquished By: Ref 3B 10/28/99/1800	Date/Time	Received By: Ref 3C 10/28/99/1800	Date/Time
Relinquished By: Ref 3C 11.01.99 0800	Date/Time	Received By: R. Thoren 11.01.99/0800	Date/Time
Relinquished By: R. Thoren 11.01.99/1430	Date/Time	Received By: FEDEX	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: Jensen for VH	Title	Date/Time: 11/2/99 0910
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-148 H0204	Page 1 of 2

Collector Bowers/Trice	Company Contact Chris Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ	Price Code 8N Data Turnaround 45 Days
Project Designation 200 Area Source characterization - 200-CW-1 OU	Sampling Location 200 B pond BP-9		SAF No. B99-078	
Ice Chest No. SML 363	Field Logbook No. EL-1511-1		Method of Shipment FED EX 4.9°C	
Shipped To TMA/RECRA WYB 10-28-99	Offsite Property No. A000018		Bill of Lading/Air Bill No. 42357953 1252	
			COA B20CW1 67K	

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	120mL	120mL	250mL	250mL	500mL	500mL	1000mL
11L582 SAMPLE ANALYSIS		Isotopic Uranium	Nickel-63	Technetium-99	Hydrazine - D1385	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time											
B0WN06	Soil	10-28-99	0903				X		X	X	X	X	X	BW 801
B0WN07	S	10-28-99	0910				X		X	X	X	X	X	BOW80
B0WN08	S	10-28-99	0918				X		X	X	X	X	X	↓

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Chris / CTRICE	Date/Time: 10/28/99 1430	Received By: Ref 3B	Date/Time: 10/28/99 1430
Relinquished By: Ref 3B	Date/Time: 10-28-99/1800	Received By: Ref 3C	Date/Time: 10/28/99/1800
Relinquished By: Ref 3C	Date/Time: 11.01.99/0800	Received By: R.Thoren	Date/Time: 11.01.99/0800
Relinquished By: RIKKI THOREN / R.Thoren	Date/Time: 11.01.99/0 1430	Received By: FED EX	Date/Time:

SPECIAL INSTRUCTIONS
See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

use BOW801 to ship

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
	[signature] 11.01.99 for VH		11/2/99 0910
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-144 H0604	Page 1 of 1

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: ERC 96 024	Field Logbook No.: EL-1511-1		Method of Shipment: FED EX
Shipped To: TMA/RECRA B23 10-28-99	Offsite Property No.: A000018		Bill of Lading/Air Bill No.: 42357953 1220
			COA: ~~BOW 8C~~ B20CW1 67/C B20 10-28-99

Price Code: 8N

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
11L582 SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
BOWMJ1	Soil	10-28-99	1227		X	X	X	X	X			BOWBC1	
BOWMJ2	S	10-28-99	1219		X	X	X	X	X			↓	
BOWMJ3	S	10-28-99	1238		X	X	X	X	X			↓	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Chris / CTRICE	Date/Time: 10/28/99 1430	Received By: Ref 3B	Date/Time: 10/28/99 1430
Relinquished By: REF 3B	Date/Time: 10/28/99/1800	Received By: Ref 3C	Date/Time: 10/28/99/1800
Relinquished By: Ref 3C	Date/Time: 11.01.99/0800	Received By: RIKKI Thoren R. Thoren	Date/Time: 11.01.99 0800
Relinquished By: RIKKI Thoren R. Thoren	Date/Time: 11.01.99/1430	Received By: FED EX	Date/Time:

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

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

Trip 2.6

LABORATORY SECTION	Received By: Janson for VH	Title	Date/Time: 11/2/99 0910
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-145 H8604	Page 1 of 1

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078	Data Turnaround: 45 Days
Ice Chest No.: SML 429A	Field Logbook No.: EL-1511-1		Method of Shipment: FED EX	
Shipped To: TMA/RECRA DJD 10-28-99	Offsite Property No.: A000018		Bill of Lading/Air Bill No.: 42357953 1241	
			COA: B20CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
11L582 SAMPLE ANALYSIS		Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
BOWMJ6	Soil	10-28-99	1245					X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Cmc/CTRICE	Date/Time: 10/28/99 1430	Received By: Ref 3B	Date/Time: 10/28/99 1430
Relinquished By: REF 3B	Date/Time: 10/28/99/1800	Received By: Ref 3C	Date/Time: 10/28/99/1800
Relinquished By: Ref 3C	Date/Time: 11.01.99/0800	Received By: R. Thoren R. Thoren	Date/Time: 11.01.99/0800
Relinquished By: R. Thoren R. Thoren	Date/Time: 11.01.99/1430	Received By: FED EX	Date/Time:

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

use Bew8C1 to ship

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

Temp 4-6

LABORATORY SECTION	Received By: Janson for VH	Title	Date/Time: 11/2/99 0910
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-078-146 H02604

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond BP-9		SAF No.: B99-078
Ice Chest No.: SML-424-A	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: TMA/RECRA 10-28-99	Offsite Property No.: A000018		Bill of Lading/Air Bill No.: 42357953 1241
			COA: B20CW1 67K

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

11L582

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time										
Preservation				None	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None		
Type of Container				aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)				1	1	1	1	1	1	1	1		
Volume				60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL		
				Isotopic Uranium	Hydrazine - D1385	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.		
BOWN01	Soil	10-28-99	0813		X	X	X	X	X	X		BOWS01	
BOWN02	S	10-28-99	0820		X	X	X	X	X	X			
BOWN03	S	10-28-99	0825		X	X	X	X	X	X			
BOWN04	S	10-28-99	0845		X	X	X	X	X	X			
BOWN05	S	10-28-99	0857		X	X	X	X	X	X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Chris/C TRICE	10/28/99 1430	Ref 3B	10/28/99 1430
Ref 3B	10/28/99/1800	Ref 3C	10/28/99/1800
Ref 3C	11.01.99/0800	R. Thoren (Rikki Thoren)	11.01.99/0800
R. Thoren	11.01.99/1430	FED EX	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

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

Trent 3-6

LABORATORY SECTION	Received By: Janson for VH	Title	Date/Time: 11/2/99 0910
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time