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Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD
RFW# : 9710L941

W.O.# : 10985-001-001-9999-00
Date Received: 10-24-97

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METALS CASE NARRATIVE

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

2. The sample was prepared and analyzed in accordance with methods checked for 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 control limits.

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

7. The preparation/method blanks for 2 analytes were outside the method criteria. Refer to the Inorganics Method Blank Data Summary.

   The MB 97L2255-MB1 results for Copper and Iron were greater than the Practical Quantitation Limit (PQL) {3.3 x the (IDL) Instrument Detection Level} and sample read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010A other than blank correction as per section 5.5. 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.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 17 pages.

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

10. The matrix spike (MS) recovery for 1 analyte was outside the 80-120% control limits while all matrix spike duplicate (MSD) recoveries were within the 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. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration levels, due to high concentrations of the following analyte:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
BOM340	Cadmium	100	107.8

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

14. 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.

Bruce C Griffin unit leader

for J. Michael Taylor
Vice President and Laboratory Manager
Lionville Analytical Laboratory

12-4-91
Date

skl\m10-941

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

SDG#: H0112
Laboratory Batch: 9710L941

W.O.#: 10985-001-001-9999-00
Collection Dates: 10-21-97

SAMPLE ID	LABORATORY ID
BOM340	9710L941-001

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skl/m10-941.cp

METALS METHODS GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this RFW Lot#: 9710L941

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	✓6010A		__200.7				__99
Antimony	✓6010A	__7041 [5]	__200.7	__204.2			__99
Arsenic	✓6010A	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010A		__200.7				__99
Beryllium	✓6010A		__200.7				__99
Bismuth	__6010A [1]		__200.7 [1]			__1620	__99
Boron	__6010A [1]		__200.7				__99
Cadmium	✓6010A	__7131A [5]	__200.7	__213.2			__99
Calcium	✓6010A		__200.7				__99
Chromium	✓6010A	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	✓6010A		__200.7				__99
Copper	✓6010A	__7211 [5]	__200.7	__220.2			__99
Iron	✓6010A		__200.7				__99
Lead	✓6010A	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010A	__7430 [4]	__200.7			__1620	__99
Magnesium	✓6010A		__200.7				__99
Manganese	✓6010A		__200.7				__99
Mercury	✓7470A [3]	__7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010A		__200.7				__99
Nickel	✓6010A		__200.7				__99
Potassium	✓6010A	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010A [1]		__200.7 [1]			__1620	__99
Selenium	✓6010A	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010A [1]		__200.7			__1620	__99
Silica	__6010A [1]		__200.7			__1620	__99
Silver	✓6010A	__7761 [5]	__200.7	__272.2			__99
Sodium	✓6010A	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010A		__200.7				__99
Thallium	✓6010A	__7841 [5]	__200.7	__279.2__200.9			__99
Tin	__6010A [1]		__200.7				__99
Titanium	__6010A [1]		__200.7				__99
Uranium	__6010A [1]		__200.7 [1]			__1620	__99
Vanadium	✓6010A		__200.7				__99
Zinc	✓6010A		__200.7				__99
Zirconium	__6010A [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

RFW 21-21-033/M-01/97

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

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

4. Flame AA.

5. Graphite Furnace AA.

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

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/19/97

CLIENT: TNU-HANFORD

RECRA LOT #: 9710L041

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	BOM340	Silver, Soluble	5.0	u	UG/L	5.0	1.0
		Aluminum, Soluble	38.2	u	UG/L	38.2	1.0
		Arsenic, Soluble	30.6	u	UG/L	30.6	1.0
		Barium, Soluble	58.5		UG/L	2.5	1.0
		Beryllium, Soluble	0.30	u	UG/L	0.30	1.0
		Calcium, Soluble	47500		UG/L	17.9	1.0
		Cadmium, Soluble	3.8	u	UG/L	3.8	1.0
		Cobalt, Soluble	4.1	u	UG/L	4.1	1.0
		Chromium, Soluble	236		UG/L	3.1	1.0
		Copper, Soluble	7.0		UG/L	4.2	1.0
		Iron, Soluble	14.4		UG/L	5.5	1.0
		Mercury, Soluble	0.10	u	UG/L	0.1	1.0
		Potassium, Soluble	2440		UG/L	498	1.0
		Magnesium, Soluble	9750		UG/L	38.1	1.0
		Manganese, Soluble	1.3	u	UG/L	1.3	1.0
		Sodium, Soluble	5580		UG/L	43.5	1.0
		Nickel, Soluble	10.5	u	UG/L	10.5	1.0
		Lead, Soluble	22.7	u	UG/L	22.7	1.0
		Antimony, Soluble	30.0	u	UG/L	30.0	1.0
		Selenium, Soluble	42.6	u	UG/L	42.6	1.0
		Thallium, Soluble	34.6	u	UG/L	34.6	1.0
		Vanadium, Soluble	4.6	u	UG/L	4.6	1.0
		Zinc, Soluble	8.0		UG/L	1.5	1.0

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD

DATE RECEIVED: 10/24/97 RFW LOT # :9710L941

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOM340						
SILVER, SOLUBLE	001	W	97L2255	10/21/97	11/16/97	11/18/97
SILVER, SOLUBLE	001 REP	W	97L2255	10/21/97	11/16/97	11/18/97
SILVER, SOLUBLE	001 MS	W	97L2255	10/21/97	11/16/97	11/18/97
SILVER, SOLUBLE	001 MSD	W	97L2255	10/21/97	11/16/97	11/18/97
ALUMINUM, SOLUBLE	001	W	97L2255	10/21/97	11/16/97	11/18/97
ALUMINUM, SOLUBLE	001 REP	W	97L2255	10/21/97	11/16/97	11/18/97
ALUMINUM, SOLUBLE	001 MS	W	97L2255	10/21/97	11/16/97	11/18/97
ALUMINUM, SOLUBLE	001 MSD	W	97L2255	10/21/97	11/16/97	11/18/97
ARSENIC, SOLUBLE	001	W	97L2255	10/21/97	11/16/97	11/18/97
ARSENIC, SOLUBLE	001 REP	W	97L2255	10/21/97	11/16/97	11/18/97
ARSENIC, SOLUBLE	001 MS	W	97L2255	10/21/97	11/16/97	11/18/97
ARSENIC, SOLUBLE	001 MSD	W	97L2255	10/21/97	11/16/97	11/18/97
BARIUM, SOLUBLE	001	W	97L2255	10/21/97	11/16/97	11/18/97
BARIUM, SOLUBLE	001 REP	W	97L2255	10/21/97	11/16/97	11/18/97
BARIUM, SOLUBLE	001 MS	W	97L2255	10/21/97	11/16/97	11/18/97
BARIUM, SOLUBLE	001 MSD	W	97L2255	10/21/97	11/16/97	11/18/97
BERYLLIUM, SOLUBLE	001	W	97L2255	10/21/97	11/16/97	11/18/97
BERYLLIUM, SOLUBLE	001 REP	W	97L2255	10/21/97	11/16/97	11/18/97
BERYLLIUM, SOLUBLE	001 MS	W	97L2255	10/21/97	11/16/97	11/18/97
BERYLLIUM, SOLUBLE	001 MSD	W	97L2255	10/21/97	11/16/97	11/18/97
CALCIUM, SOLUBLE	001	W	97L2255	10/21/97	11/16/97	11/18/97
CALCIUM, SOLUBLE	001 REP	W	97L2255	10/21/97	11/16/97	11/18/97
CALCIUM, SOLUBLE	001 MS	W	97L2255	10/21/97	11/16/97	11/18/97
CALCIUM, SOLUBLE	001 MSD	W	97L2255	10/21/97	11/16/97	11/18/97
CADMIUM, SOLUBLE	001	W	97L2255	10/21/97	11/16/97	11/18/97
CADMIUM, SOLUBLE	001 REP	W	97L2255	10/21/97	11/16/97	11/18/97
CADMIUM, SOLUBLE	001 MS	W	97L2255	10/21/97	11/16/97	11/18/97
CADMIUM, SOLUBLE	001 MSD	W	97L2255	10/21/97	11/16/97	11/18/97
COBALT, SOLUBLE	001	W	97L2255	10/21/97	11/16/97	11/18/97
COBALT, SOLUBLE	001 REP	W	97L2255	10/21/97	11/16/97	11/18/97
COBALT, SOLUBLE	001 MS	W	97L2255	10/21/97	11/16/97	11/18/97
COBALT, SOLUBLE	001 MSD	W	97L2255	10/21/97	11/16/97	11/18/97
CHROMIUM, SOLUBLE	001	W	97L2255	10/21/97	11/16/97	11/18/97
CHROMIUM, SOLUBLE	001 REP	W	97L2255	10/21/97	11/16/97	11/18/97
CHROMIUM, SOLUBLE	001 MS	W	97L2255	10/21/97	11/16/97	11/18/97

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD

DATE RECEIVED: 10/24/97 RFW LOT # :9710L941

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM, SOLUBLE	001 MSD	W	97L2255	10/21/97	11/16/97	11/18/97
COPPER, SOLUBLE	001	W	97L2255	10/21/97	11/16/97	11/18/97
COPPER, SOLUBLE	001 REP	W	97L2255	10/21/97	11/16/97	11/18/97
COPPER, SOLUBLE	001 MS	W	97L2255	10/21/97	11/16/97	11/18/97
COPPER, SOLUBLE	001 MSD	W	97L2255	10/21/97	11/16/97	11/18/97
IRON, SOLUBLE	001	W	97L2255	10/21/97	11/16/97	11/18/97
IRON, SOLUBLE	001 REP	W	97L2255	10/21/97	11/16/97	11/18/97
IRON, SOLUBLE	001 MS	W	97L2255	10/21/97	11/16/97	11/18/97
IRON, SOLUBLE	001 MSD	W	97L2255	10/21/97	11/16/97	11/18/97
MERCURY, SOLUBLE	001	W	97C0816	10/21/97	10/30/97	10/31/97
MERCURY, SOLUBLE	001 REP	W	97C0816	10/21/97	10/30/97	10/31/97
MERCURY, SOLUBLE	001 MS	W	97C0816	10/21/97	10/30/97	10/31/97
MERCURY, SOLUBLE	001 MSD	W	97C0816	10/21/97	10/30/97	10/31/97
POTASSIUM, SOLUBLE	001	W	97L2255	10/21/97	11/16/97	11/18/97
POTASSIUM, SOLUBLE	001 REP	W	97L2255	10/21/97	11/16/97	11/18/97
POTASSIUM, SOLUBLE	001 MS	W	97L2255	10/21/97	11/16/97	11/18/97
POTASSIUM, SOLUBLE	001 MSD	W	97L2255	10/21/97	11/16/97	11/18/97
MAGNESIUM, SOLUBLE	001	W	97L2255	10/21/97	11/16/97	11/18/97
MAGNESIUM, SOLUBLE	001 REP	W	97L2255	10/21/97	11/16/97	11/18/97
MAGNESIUM, SOLUBLE	001 MS	W	97L2255	10/21/97	11/16/97	11/18/97
MAGNESIUM, SOLUBLE	001 MSD	W	97L2255	10/21/97	11/16/97	11/18/97
MANGANESE, SOLUBLE	001	W	97L2255	10/21/97	11/16/97	11/18/97
MANGANESE, SOLUBLE	001 REP	W	97L2255	10/21/97	11/16/97	11/18/97
MANGANESE, SOLUBLE	001 MS	W	97L2255	10/21/97	11/16/97	11/18/97
MANGANESE, SOLUBLE	001 MSD	W	97L2255	10/21/97	11/16/97	11/18/97
SODIUM, SOLUBLE	001	W	97L2255	10/21/97	11/16/97	11/18/97
SODIUM, SOLUBLE	001 REP	W	97L2255	10/21/97	11/16/97	11/18/97
SODIUM, SOLUBLE	001 MS	W	97L2255	10/21/97	11/16/97	11/18/97
SODIUM, SOLUBLE	001 MSD	W	97L2255	10/21/97	11/16/97	11/18/97
NICKEL, SOLUBLE	001	W	97L2255	10/21/97	11/16/97	11/18/97
NICKEL, SOLUBLE	001 REP	W	97L2255	10/21/97	11/16/97	11/18/97
NICKEL, SOLUBLE	001 MS	W	97L2255	10/21/97	11/16/97	11/18/97
NICKEL, SOLUBLE	001 MSD	W	97L2255	10/21/97	11/16/97	11/18/97
LEAD, SOLUBLE	001	W	97L2255	10/21/97	11/16/97	11/18/97
LEAD, SOLUBLE	001 REP	W	97L2255	10/21/97	11/16/97	11/18/97
LEAD, SOLUBLE	001 MS	W	97L2255	10/21/97	11/16/97	11/18/97
LEAD, SOLUBLE	001 MSD	W	97L2255	10/21/97	11/16/97	11/18/97
ANTIMONY, SOLUBLE	001	W	97L2255	10/21/97	11/16/97	11/18/97

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CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ANTIMONY, SOLUBLE	001 REP	W	97L2255	10/21/97	11/16/97	11/18/97
ANTIMONY, SOLUBLE	001 MS	W	97L2255	10/21/97	11/16/97	11/18/97
ANTIMONY, SOLUBLE	001 MSD	W	97L2255	10/21/97	11/16/97	11/18/97
SELENIUM, SOLUBLE	001	W	97L2255	10/21/97	11/16/97	11/18/97
SELENIUM, SOLUBLE	001 REP	W	97L2255	10/21/97	11/16/97	11/18/97
SELENIUM, SOLUBLE	001 MS	W	97L2255	10/21/97	11/16/97	11/18/97
SELENIUM, SOLUBLE	001 MSD	W	97L2255	10/21/97	11/16/97	11/18/97
THALLIUM, SOLUBLE	001	W	97L2255	10/21/97	11/16/97	11/18/97
THALLIUM, SOLUBLE	001 REP	W	97L2255	10/21/97	11/16/97	11/18/97
THALLIUM, SOLUBLE	001 MS	W	97L2255	10/21/97	11/16/97	11/18/97
THALLIUM, SOLUBLE	001 MSD	W	97L2255	10/21/97	11/16/97	11/18/97
VANADIUM, SOLUBLE	001	W	97L2255	10/21/97	11/16/97	11/18/97
VANADIUM, SOLUBLE	001 REP	W	97L2255	10/21/97	11/16/97	11/18/97
VANADIUM, SOLUBLE	001 MS	W	97L2255	10/21/97	11/16/97	11/18/97
VANADIUM, SOLUBLE	001 MSD	W	97L2255	10/21/97	11/16/97	11/18/97
ZINC, SOLUBLE	001	W	97L2255	10/21/97	11/16/97	11/18/97
ZINC, SOLUBLE	001 REP	W	97L2255	10/21/97	11/16/97	11/18/97
ZINC, SOLUBLE	001 MS	W	97L2255	10/21/97	11/16/97	11/18/97
ZINC, SOLUBLE	001 MSD	W	97L2255	10/21/97	11/16/97	11/18/97

LAB QC:

SILVER LABORATORY	LC1 BS	W	97L2255	N/A	11/16/97	11/18/97
SILVER, SOLUBLE	MB1	W	97L2255	N/A	11/16/97	11/18/97
ALUMINUM LABORTORY	LC1 BS	W	97L2255	N/A	11/16/97	11/18/97
ALUMINUM, SOLUBLE	MB1	W	97L2255	N/A	11/16/97	11/18/97
ARSENIC LABORATORY	LC1 BS	W	97L2255	N/A	11/16/97	11/18/97
ARSENIC, SOLUBLE	MB1	W	97L2255	N/A	11/16/97	11/18/97
BARIUM LABORATORY	LC1 BS	W	97L2255	N/A	11/16/97	11/18/97
BARIUM, SOLUBLE	MB1	W	97L2255	N/A	11/16/97	11/18/97
BERYLLIUM LABORATORY	LC1 BS	W	97L2255	N/A	11/16/97	11/18/97
BERYLLIUM, SOLUBLE	MB1	W	97L2255	N/A	11/16/97	11/18/97
CALCIUM LABORATORY	LC1 BS	W	97L2255	N/A	11/16/97	11/18/97
CALCIUM, SOLUBLE	MB1	W	97L2255	N/A	11/16/97	11/18/97
CADMIUM LABORATORY	LC1 BS	W	97L2255	N/A	11/16/97	11/18/97
CADMIUM, SOLUBLE	MB1	W	97L2255	N/A	11/16/97	11/18/97
COBALT LABORATORY	LC1 BS	W	97L2255	N/A	11/16/97	11/18/97
COBALT, SOLUBLE	MB1	W	97L2255	N/A	11/16/97	11/18/97

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INORGANIC ANALYTICAL DATA PACKAGE FOR
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DATE RECEIVED: 10/24/97 RFW LOT # :9710L941

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM LABORATORY	LC1 BS	W	97L2255	N/A	11/16/97	11/18/97
CHROMIUM, SOLUBLE	MB1	W	97L2255	N/A	11/16/97	11/18/97
COPPER LABORATORY	LC1 BS	W	97L2255	N/A	11/16/97	11/18/97
COPPER, SOLUBLE	MB1	W	97L2255	N/A	11/16/97	11/18/97
IRON LABORATORY	LC1 BS	W	97L2255	N/A	11/16/97	11/18/97
IRON, SOLUBLE	MB1	W	97L2255	N/A	11/16/97	11/18/97
MERCURY LABORATORY	LC1 BS	W	97C0816	N/A	10/30/97	10/31/97
MERCURY, TOTAL	MB1	W	97C0816	N/A	10/30/97	10/31/97
POTASSIUM LABORATORY	LC1 BS	W	97L2255	N/A	11/16/97	11/18/97
POTASSIUM, SOLUBLE	MB1	W	97L2255	N/A	11/16/97	11/18/97
MAGNESIUM LABORATORY	LC1 BS	W	97L2255	N/A	11/16/97	11/18/97
MAGNESIUM, SOLUBLE	MB1	W	97L2255	N/A	11/16/97	11/18/97
MANGANESE LABORATORY	LC1 BS	W	97L2255	N/A	11/16/97	11/18/97
MANGANESE, SOLUBLE	MB1	W	97L2255	N/A	11/16/97	11/18/97
SODIUM LABORATORY	LC1 BS	W	97L2255	N/A	11/16/97	11/18/97
SODIUM, SOLUBLE	MB1	W	97L2255	N/A	11/16/97	11/18/97
NICKEL LABORATORY	LC1 BS	W	97L2255	N/A	11/16/97	11/18/97
NICKEL, SOLUBLE	MB1	W	97L2255	N/A	11/16/97	11/18/97
LEAD LABORATORY	LC1 BS	W	97L2255	N/A	11/16/97	11/18/97
LEAD, SOLUBLE	MB1	W	97L2255	N/A	11/16/97	11/18/97
ANTIMONY LABORATORY	LC1 BS	W	97L2255	N/A	11/16/97	11/18/97
ANTIMONY, SOLUBLE	MB1	W	97L2255	N/A	11/16/97	11/18/97
SELENIUM LABORATORY	LC1 BS	W	97L2255	N/A	11/16/97	11/18/97
SELENIUM, SOLUBLE	MB1	W	97L2255	N/A	11/16/97	11/18/97
THALLIUM LABORATORY	LC1 BS	W	97L2255	N/A	11/16/97	11/18/97
THALLIUM, SOLUBLE	MB1	W	97L2255	N/A	11/16/97	11/18/97
VANADIUM LABORATORY	LC1 BS	W	97L2255	N/A	11/16/97	11/18/97
VANADIUM, SOLUBLE	MB1	W	97L2255	N/A	11/16/97	11/18/97
ZINC LABORATORY	LC1 BS	W	97L2255	N/A	11/16/97	11/18/97
ZINC, SOLUBLE	MB1	W	97L2255	N/A	11/16/97	11/18/97

RECRA LabNet Use Only
9710L941

Custody Transfer Record/Lab Work Request

RECRA LabNet

Client: TNU Hanford
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: KC
QC: STD Del: STD TAT: 30 DAY
Date Rec'd: 10/24/97 Date Due: 11/23/97
Account #: TNU Hanford

Refrigerator #							3			3								
#/Type Container	Liquid						1P			1P								
	Solid																	
Volume	Liquid						250			250								
	Solid																	
Preservatives							-			HNO3								
ANALYSES REQUESTED →		ORGANIC								INORG								
		VOA	BNA	Pest/PCB	Herb	IC				Metal	CN							
		RECRA LabNet Use Only																
						*				HSL(S)								

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															
001	BOM340	✓	✓	W	10/24/97	1223								✓							
002	↓ 341	✓	✓	W	↓	↓					✓										

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
RSA - Client info
RMSC - Comp

5.9°C SDG - H0112

DATE/REVISIONS:
1. * ICCL, ICFL, ICNO2, ICNO3, ICSO4
2.
3.
4.
5.
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'd Y or N

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

Relinquished by	Received by	Date	Time
Dedell	Yoder	10/24/97	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

017

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

DEC 1997
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD
RFW# : 9710L941
SDG# : H0112

W.O. # : 10985-001-001-9999-00
Date Received: 10-24-97

INORGANIC CASE NARRATIVE

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

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

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

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

5. The method blanks were within method criteria.

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

7. The matrix spike (MS) recoveries were within the 75-125% control limits with the exception of MS for Nitrite. The matrix spike duplicates were within the 20% Relative Percent Difference (RPD) control limit with the exception of Nitrite.

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

Bruce C. Miller unit leader
for J. Michael Taylor
Vice President and Laboratory Manager
Lionville Analytical Laboratory

12-3-97
Date

njp:10-941

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

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

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:_____

RFW 21-21-034/A-08/95

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

a. Standard Methods for the Examination of Water and Waste, 16 ed., (1989).

b. Standard Methods for the Examination of Water and Waste, 17 ed., (1983)

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

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

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

f. Code of Federal Regulations.

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

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/19/97

CLIENT: TNU-HANFORD

RECRA LOT #: 9710L941

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	BOM341	Chloride by IC	10.9	MG/L	1.2	5.0
		Fluoride by IC	0.25 u	MG/L	0.25	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	28	MG/L	1.2	5.0
		Sulfate by IC	48.7	MG/L	1.2	5.0

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

DATE RECEIVED: 10/24/97 RFW LOT # :9710L941

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOM341						
CHLORIDE BY IC	002	W	97LCC097	10/21/97	11/15/97	11/15/97
CHLORIDE BY IC	002 REP	W	97LCC097	10/21/97	11/15/97	11/15/97
CHLORIDE BY IC	002 MS	W	97LCC097	10/21/97	11/15/97	11/15/97
CHLORIDE BY IC	002 MSD	W	97LCC097	10/21/97	11/15/97	11/15/97
FLUORIDE BY IC	002	W	97LFC097	10/21/97	11/15/97	11/15/97
FLUORIDE BY IC	002 REP	W	97LFC097	10/21/97	11/15/97	11/15/97
FLUORIDE BY IC	002 MS	W	97LFC097	10/21/97	11/15/97	11/15/97
FLUORIDE BY IC	002 MSD	W	97LFC097	10/21/97	11/15/97	11/15/97
NITRITE BY IC	002	W	97L2C097	10/21/97	11/15/97	11/15/97
NITRITE BY IC	002 REP	W	97L2C097	10/21/97	11/15/97	11/15/97
NITRITE BY IC	002 MS	W	97L2C097	10/21/97	11/15/97	11/15/97
NITRITE BY IC	002 MSD	W	97L2C097	10/21/97	11/15/97	11/15/97
NITRATE BY IC	002	W	97L3C097	10/21/97	11/15/97	11/15/97
NITRATE BY IC	002 REP	W	97L3C097	10/21/97	11/15/97	11/15/97
NITRATE BY IC	002 MS	W	97L3C097	10/21/97	11/15/97	11/15/97
NITRATE BY IC	002 MSD	W	97L3C097	10/21/97	11/15/97	11/15/97
SULFATE BY IC	002	W	97LSC097	10/21/97	11/15/97	11/15/97
SULFATE BY IC	002 REP	W	97LSC097	10/21/97	11/15/97	11/15/97
SULFATE BY IC	002 MS	W	97LSC097	10/21/97	11/15/97	11/15/97
SULFATE BY IC	002 MSD	W	97LSC097	10/21/97	11/15/97	11/15/97
LAB QC:						
CHLORIDE BY IC	MB1	W	97LCC097	N/A	11/15/97	11/15/97
CHLORIDE BY IC	MB1 BS	W	97LCC097	N/A	11/15/97	11/15/97
FLUORIDE BY IC	MB1	W	97LFC097	N/A	11/15/97	11/15/97
FLUORIDE BY IC	MB1 BS	W	97LFC097	N/A	11/15/97	11/15/97
NITRITE BY IC	MB1	W	97L2C097	N/A	11/15/97	11/15/97
NITRITE BY IC	MB1 BS	W	97L2C097	N/A	11/15/97	11/15/97
NITRATE BY IC	MB1	W	97L3C097	N/A	11/15/97	11/15/97
NITRATE BY IC	MB1 BS	W	97L3C097	N/A	11/15/97	11/15/97
SULFATE BY IC	MB1	W	97LSC097	N/A	11/15/97	11/15/97
SULFATE BY IC	MB1 BS	W	97LSC097	N/A	11/15/97	11/15/97

RECRA LabNet Use Only

9710L941

Custody Transfer Record/Lab Work Request

RECRA LabNet

Client: TNU Hanford
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: KC
QC: STD Del: STD TAT: 30 DAY
Date Rec'd: 10/24/97 Date Due: 11/23/97
Account #: TNU Hanford

Refrigerator #								3			3								
#/Type Container	Liquid							1/P			1/P								
	Solid																		
Volume	Liquid							250			250								
	Solid																		
Preservatives								-			HNO3								
ANALYSES REQUESTED →		ORGANIC									INORG								
		VOA	BNA	Pest/PCB	Herb			IC			Metal	CN							
		RECRA LabNet Use Only																	
								*			HSLSO								
											✓								
								✓											

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
001	BOM340	✓	✓	W	10/21/97	1223
002	⊥ 341	✓	✓	W	⊥	⊥

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
RSA - Client info
RMSC - Comp

Cooler temp = 5.9°C SDG - H0112

DATE/REVISIONS:
1. * ICCL, ICFL, ICNO2, ICNO3, ICSO4
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
Jedell	Joder	10/24/97	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

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

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

PAGE 1 Thermo NUtech CHAIN OF CUSTODY ORD # N7-10-078

RCVD: 10/23/97 DUE: 12/04/97 10/23/97 14:56:29 KEEP: 12/04/98 DISP: S

DASH	SAMPLE IDENTIFICATION	STORED	TESTS
01A-W	B0M340	RECRA-LAB	WB028
01B-W	B0M340 MS	RECRA-LAB	WB028
01C-W	B0M340 DUP	RECRA-LAB	WB028
02A-W	B0M341	RECRA-LAB	WB461
02B-W	B0M341 MS	RECRA-LAB	WB461
02C-W	B0M341 DUP	RECRA-LAB	WB461

RELEASED BY	DATE	TRANSFERRED TO	DATE	RECEIVED BY	DATE
Lya Yamato	10/23/97	RECRA-LAB	10/23/97		

The Northwest National Laborat

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C98-003-3

Collector: RZ Steffler	Company Contact: JH KESSNER	Telephone No.: (509) 372-9538	Project Coordinator: FORD, BH
Data Turnaround: 45 Days			
Project Designation: HR31AM(2) GW/SEEPS FY 1998	Sampling Location: HANFORD SITE		SAF No.: C98-003
Ice Chest No.: SMC 372	Field Logbook No.		Method of Shipment: GOVT. VEHICLE
Shipped To: TMA/WESTON	Offsite Property No.: NA		Bill of Lading/Air Bill No.: NA

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage: 4°C

SAMPLE ANALYSIS: SDG H0112

Preservation	None	Cool 4C	HNO3 to pH <2	HNO3 to pH <2	HNO3 to pH <2	HNO3 to pH <2				
Type of Container	G/P	G/P	G/P	G/P	G/P	G/P				
No. of Container(s)	1	1	1	2	2	2				
Volume	20ml	500ml	500ml	1000ml	1000ml	1000ml				
	Activity Scan	See item (1) in Special Instructions	ICP Metals - 6010A (TAL) (F)	Gross Alpha	Gross Beta	Strontium-89,90 -- Sr-90				

Sample No.	Matrix *	Sample Date	Sample Time										
B0M340 (F)	Water	10-21-97	1223			X							
B0M341	Water	↓	↓	X	X		X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: RZ Steffler	Date/Time: 10/22/97 1020	Received By: O-SANGALANG	Date/Time: 10/23/97 1030
Relinquished By: Jedley	Date/Time	Received By: Jedley	Date/Time: 10/24/97 0930
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

TOTAL ACTIVITY EXEMPTION APPLIES

FAX COPIES OF LOG-IN FOR QES AND TMA TO DL STEWART (372-1704) AND JM DUNCAN (372-9052).

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate)

Matrix *

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

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

Thermo NUtec

November 25, 1997

NOV 1997
RECEIVED
Data
Log In

Ms. Doris Ayres
Bechtel Hanford Inc.
1022 Lee Boulevard
Richland, WA 99352

Reference: P.O. #TRB-SBB-207925
Thermo NUtech N7-10-080-7460, SDG H0112

Dear Ms. Ayres:

Enclosed is the data report for the single liquid sample designated as SAF No. C98-003 received at Thermo NUtech on October 23, 1997. The sample was analyzed according to the accompanying chain-of-custody document.

This data package is paginated from 1 through 34.

Please call if you have any questions concerning this data.

Sincerely,

N. Joseph Verville
Program Manager

/jv

Enclosure: Data Package

NOV 1997
RECEIVED
Data
Log In

Case Narrative

1.0 GENERAL

Thermo NUtech Sample Delivery Group H0112 is comprised of the single liquid sample designated as SAF No. C98-003 delivered under project designation HR3IAM (2) GW/SEEPS FY 1998.

The sample was received as stated on the Chain-of-Custody document.

2.0 ANALYSIS NOTES

2.1 Gross Alpha/Gross Beta Analyses

The sample was reanalyzed due to significant beta contamination in the method blank. The reanalysis was performed with new QC samples. No problems were encountered with the reanalyses.

2.2 Strontium-90 Analyses

No problems were encountered with the analyses. All sample MDA's were less than the RDL.

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0112

SAMPLE SUMMARY

SDG 7460
Contact N. Joseph Verville

Client Westinghouse Hanford
Contract TSH-SVV-207925
Case no SDG H0112

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0M341	HANFORD SITE	LIQUID		N710080-01	C98-003	C98-003-3	10/21/97 12:23
Method Blank		LIQUID		N710080-03	C98-003		
Method Blank		LIQUID		N710080-06	C98-003		
Lab Control Sample		LIQUID		N710080-02	C98-003		
Lab Control Sample		LIQUID		N710080-05	C98-003		
Duplicate (N710080-01)	HANFORD SITE	LIQUID		N710080-04	C98-003		10/21/97 12:23
Duplicate (N710080-01)	HANFORD SITE	LIQUID		N710080-07	C98-003		10/21/97 12:23

Lab id TMANC
Protocol WHC-HASM-1
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 11/25/97

N710080-01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0112

DATA SHEET

B0M341

SDG 7460
Contact N. Joseph Verville

Client/Case no Westinghouse Hanford SDG H0112
Case no TSH-SVV-207925

Lab sample id N710080-01
Dept sample id 7460-001
Received 10/23/97

Client sample id B0M341
Location/Matrix HANFORD SITE LIQUID
Collected 10/21/97 12:23
Custody/SAF No C98-003-3 C98-003

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	1.5	0.99	1.2	3.0	J	80A
Gross Beta	12587-47-2	2.1	1.3	2.0	4.0	J	80B
Strontium 90	10098-97-2	0.026	0.10	0.27	2.0	U	Y

Lab id TMANC
Protocol WHC-HASM-1
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 11/25/97

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0112

Test Y	Matrix LIQUID
SDG 7460	
Contact N. Joseph Verville	

METHOD SUMMARY

STRONTIUM 90 IN WATER

BETA COUNTING

Client	Westinghouse Hanford
Contract	TSH-SVV-207925
Case no	SDG H0112

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Strontium 90	
Preparation batch 2785-060						
B0M341	N710080-01			7460-001	U	
BLK (QC ID=27584)	N710080-03			7460-003	U	
LCS (QC ID=27583)	N710080-02			7460-002	ok	
Duplicate (N710080-01)	N710080-04			7460-004	-	U
Nominal values and limits from method				RDLs (pCi/L)	2.0	

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 2785-060	2σ prep error 10.0 %			Reference Lab			Notebook #2785 pg. 060									
B0M341	N710080-01			0.27	1.00			74		200			15	11/05/97	11/05	GRB-225
BLK (QC ID=27584)	N710080-03			0.26	1.00			76		200				11/05/97	11/05	GRB-227
LCS (QC ID=27583)	N710080-02			0.26	1.00			79		200				11/05/97	11/05	GRB-226
Duplicate (N710080-01) (QC ID=27585)	N710080-04			0.44	1.00			44		200			15	11/05/97	11/05	GRB-228
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	MDA	1.31	±	18
FOR 4 SAMPLES	YIELD	68	±	9

Lab id	TMANC
Protocol	WHC-HASM-1
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/25/97

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0112

Test 80A Matrix LIQUID
SDG 7460
Contact N. Joseph Verville

METHOD SUMMARY

GROSS ALPHA IN WATER
GAS PROPORTIONAL COUNTING

Client Westinghouse Hanford
Contract TSH-SVV-207925
Case no SDG H0112

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Gross Alpha		2: Sum, Alpha Emitters	RESULT RATIO (%) 2+1	2σ
Preparation batch 2785-060									
B0M341	N710080-01	80	A1	7460-001	1.5	J			
BLK (QC ID=27682)	N710080-06	80		7460-006	U				
LCS (QC ID=27681)	N710080-05	80		7460-005	ok				
Duplicate (N710080-01)	N710080-07	80		7460-007	ok	U			
Nominal values and limits from method			RDLs (pCi/L)		3.0				
							Average		

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2785-060	2σ prep error 20.0 %			Reference Lab			Notebook #2785 pg. 060									
B0M341	N710080-01	80	A1	1.2	0.300			51		100			34	11/19/97	11/24	GRB-113
BLK (QC ID=27682)	N710080-06	80		1.3	0.300			38		100				11/19/97	11/24	GRB-115
LCS (QC ID=27681)	N710080-05	80		0.91	0.300			38		100				11/19/97	11/24	GRB-114
Duplicate (N710080-01) (QC ID=27691)	N710080-07	80		1.1	0.300			53		100			34	11/19/97	11/24	GRB-116
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 4 SAMPLES
MDA 1.1 ± .33
RESIDUE 45 ± 8

Lab id TMANC
Protocol WHC-HASM-1
Version Ver 1.2
Form DVD-CMS
Version 3.06
Report date 11/25/97

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0112

Test 80B	Matrix LIQUID
SDG 7460	
Contact N. Joseph Verville	

METHOD SUMMARY

GROSS BETA IN WATER

GAS PROPORTIONAL COUNTING

Client Westinghouse Hanford	
Contract TSH-SVV-207925	
Case no SDG H0112	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Gross Beta		2: Sum, Beta Emitters	RESULT RATIO (%) 2+1	2σ
Preparation batch 2785-060									
B0M341	N710080-01	80	A1	7460-001	2.1	J			
BLK (QC ID=27682)	N710080-06	80		7460-006	U				
LCS (QC ID=27681)	N710080-05	80		7460-005	ok				
Duplicate (N710080-01)	N710080-07	80		7460-007	ok	J			
Nominal values and limits from method				RDLs (pCi/L)	4.0				
							Average		

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2785-060	2σ prep error 15.0 %				Reference Lab		Notebook #2785 pg. 060									
B0M341	N710080-01	80	A1	2.0	0.300			51		100			34	11/19/97	11/24	GRB-113
BLK (QC ID=27682)	N710080-06	80		1.9	0.300			38		100				11/19/97	11/24	GRB-115
LCS (QC ID=27681)	N710080-05	80		2.1	0.300			38		100				11/19/97	11/24	GRB-114
Duplicate (N710080-01) (QC ID=27691)	N710080-07	80		2.3	0.300			53		100			34	11/19/97	11/24	GRB-116
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	MDA	2.1	± .34
FOR 4 SAMPLES	RESIDUE	45	± [illegible]

Lab id	TMANC
Protocol	WHC-HASM-1
Version	Ver 1.[illegible]
Form	DVD-CMS
Version	3.06
Report date	11/25/97

ific Northwest National Laborat

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C98-003-3

Collector RZ Steffler	**Company Contact** JH KESSNER	**Telephone No.** (509) 372-9538	**Project Coordinator** FORD, BH
Data Turnaround 45 Days			
Project Designation HR3IAM(2) GW/SEEPS FY 1998	**Sampling Location** HANFORD SITE		**SAF No.** C98-003
Ice Chest No. SMC 372	**Field Logbook No.**		**Method of Shipment** GOVT. VEHICLE
Shipped To TMA/WESTON	**Offsite Property No.** NA		**Bill of Lading/Air Bill No.** NA

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage 4°C

SAMPLE ANALYSIS SDG H0112

Preservation	None	Cool 4C	HNO3 to pH <2	HNO3 to pH <2	HNO3 to pH <2	HNO3 to pH <2				
Type of Container	G/P	G/P	G/P	G/P	G/P	G/P				
No. of Container(s)	1	1	1	2	2	2				
Volume	20ml	500ml	500ml	1000ml	1000ml	1000ml				
	Activity Scan	See item (1) in Special Instructions	ICP Metals - 6010A (TAL) (F)	Gross Alpha	Gross Beta	Strontium-89,90 -- Sr-90				
Sample No.	Matrix *	Sample Date	Sample Time							
B0M340 (F)	Water	10-21-97	1223			X				
B0M341	Water	↓	↓	X	X		X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By RZ Steffler	Date Time 10/22/97 1020	Received By O-SANGALANG	Date/Time 10/23/97 1030
Relinquished By	Date Time	Received By	Date Time
Relinquished By	Date Time	Received By	Date Time
Relinquished By	Date Time	Received By	Date Time

SPECIAL INSTRUCTIONS

TOTAL ACTIVITY EXEMPTION APPLIES

FAX COPIES OF LOG-IN FOR QES AND TMA TO DL STEWART (372-1704) AND JM DUNCAN (372-9052).

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate)

Matrix *

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

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

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT)
Waste Managment		W98-0-0021

PART I - TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
Northwest	Hanford Operations	Sampling & Mobile Labs

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

Routing Fed Ex 42357950 5406 ☑ Prepaid ☐ Collect

Shipped to Company Address TMA / Hercal 2030 Wright City Richmond State CA Zip Code 94804 Country	Off-site Custodian Dolores Sanchez On-site Custodian K.J. Young Payroll No. 81894

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
1		Poly Cooler SML 372 packed on wet ice Weight 66 lbs C.O.C # C98-003-3, N98-002-2 C98-002-16	

☐ 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) Analyis 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
N/A	N/A	N/A

Location of and Contact for Property (Name/Phone No./Bldg./Area)

DL. Edwards 509-372-2429 325 Hills 600

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
10/22/97	DB8074 / OE300	N/A

Originated By	Date	Authorized By	Date
K.J. Young	10/22/97	[signature]	10-22-97
Property Representative Signature	**Date**	**Property Management Approval**	**Date**
		[signature]	10/22/97

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date
[signature]	10/22/97

DISTRIBUTION (AFTER FINAL SIGNATURES)

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

BC-6001-579 (01/95)

Form 0201

Fed ex

REF: DB8074 OE300 M98-0-0021

PRIORITY OVERNIGHT THU

CAD# 0053292 22OCT97

TRK# 4235 7950 5406 Form 0201 Deliver by: 23OCT97

OAK

94804-CA-US WA JEM