H0373-TMA/RECRA

RECRA LabNet

a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere

0051475

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-001
RFW# : 9904L604
SDG# : H0373
SAF# : B99-001

W.O. # : 10985-001-001-9999-00
Date Received: 04-02-99

RECEIVED ESWC AUG 1999

INORGANIC CASE NARRATIVE

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

2. The sample was 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.

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

5. The method blank for Chromium VI was within method criteria.

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

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

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.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

4-26-99
Date

njp\i04-604

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 10 pages.

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

WET CHEMISTRY
METHODS GLOSSARY FOR ANALYSIS OF SOIL/SOLID SAMPLES

	ASTM	SW846	OTHER
%Ash	__ D2216-80		
%Moisture	__ D2216-80		__ ILMO4.0 (e)
%Solids			✓ ILMO4.0 (e)
%Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Corrosivity __by coupon __by pH		__ 1110 (mod)__ 9045	
Cyanide, Total		__ 9010	__ ILMO4.0 (e)
Cyanide, Reactive		__ Sec 7.3	
Density			__ b
Halides, Extractable Organic			__ EPA 600/4/84-008 (mod)
Halides, Total			__ EPA 600/4/84-008 (mod)
EP-Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Carbon, Total Organic (by LOI)			__ c
Oil and Grease		__ 9071A	
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87 (mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1 (mod)
pH, Soil		__ 9045B	
Sulfide, Reactive		__ Sec 7.3	
Specific Gravity	__ D1429-76C		
Sulfur, Total		__ 9056	
TCLP		__ 1311	
TCLV		__ 1311	
Synthetic Precipitation Leach		__ 1312	
Chlorine, Total		__ 9056	
Paint Filter		__ 9095	

Other: Chromium VI Method: SW3060A/7196A

02

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.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 04/13/99

CLIENT: TNU-HANFORD B99-001

RECRA LOT #: 9904L604

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0V114	% Solids	91.4	%	0.01	1.0
		Chromium VI	3.3	MG/KG	0.89	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/13/99

CLIENT: TNU-HANFORD B99-001 RECRA LOT #: 9904L604

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LVI031-MB1	Chromium VI	0.80 u	MG/KG	0.80	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 04/13/99

CLIENT: TNU-HANFORD B99-001

RECRA LOT #: 9904L604

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0V114	Soluble Chromium VI	47.0	3.3	44.4	98.3	1.0
		Insoluble Chromium VI	1370	3.3	1290	106.1	20.0
BLANK10	99LVI031-MB1	Soluble Chromium VI	38.4	0.80u	40.0	96.0	1.0
		Insoluble Chromium VI	1130	0.80u	1160	96.7	20.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 04/13/99

CLIENT: TNU-HANFORD B99-001

RECRA LOT #: 9904L604

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0V114	% Solids	91.4	91.4	0.033	1.0
		Chromium VI	3.3	3.7	13.2	1.0

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-001

DATE RECEIVED: 04/02/99 RFW LOT # :9904L604

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V114						
% SOLIDS	001	S	99L%S049	03/30/99	04/06/99	04/07/99
% SOLIDS	001 REP	S	99L%S049	03/30/99	04/06/99	04/07/99
CHROMIUM VI	001	S	99LVI031	03/30/99	04/06/99	04/06/99
CHROMIUM VI	001 REP	S	99LVI031	03/30/99	04/06/99	04/06/99
CHROMIUM VI	001 MS	S	99LVI031	03/30/99	04/06/99	04/06/99
CHROMIUM VI	001 MSD	S	99LVI031	03/30/99	04/06/99	04/06/99
LAB QC:						
CHROMIUM VI	MB1	S	99LVI031	N/A	04/06/99	04/06/99
CHROMIUM VI	MB1 BS	S	99LVI031	N/A	04/06/99	04/06/99
CHROMIUM VI	MB1 BSD	S	99LVI031	N/A	04/06/99	04/06/99

RECRA LabNet Use Only

99041604

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-001

Est. Final Proj. Sampling Date:

Project #: 10986-001-001-9999-00

Project Contact/Phone: 4/2/99

RECRA Project Manager: 05

QC: spec Del: std TAT: 7 day

Date Rec'd: 4/2/99 Date Due: 4/9/99

Account #:

Refrigerator #		1	3						3								
#/Type Container	Liquid																
	Solid	1g	1g						1g								
Volume	Liquid																
	Solid	125	125						125								
Preservatives																	
ANALYSES REQUESTED		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN							
		RECRA LabNet Use Only															
		0024H	0025H						Met①		ING①						

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
Wt - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0024H	0025H	Met①	ING①
001	BOV114	X	X	S	3/30/99	1045	✓	✓	✓	✓

Special Instructions:

saf # B99-001

COMPOSITE WASTE

DATE/REVISIONS:

Met① = Cr, Pb, Hg.

ING① = ICRG

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

Cooler Temp 5.4 C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: * 4235795242 28

Relinquished by	Received by	Date	Time
Jeder	Jeder	4/2/99	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-001-133	Page 1 of 1

Collector Fahlberg/Kerkow	Company Contact R Coffman	Telephone No. 373-6425	Project Coordinator TRENT, SJ
Price Code 7 days	Data Turnaround		
Project Designation 100 BC Areas - Quick Turn	Sampling Location 100 B/C 116-B-4	SAF No. B99-001	
Ice Chest No. S06	Field Logbook No. EL 1327-02	Method of Shipment Federal Express	
Shipped To ~~TMA~~/RECRA RE 3.30.99	Offsite Property No. A990096	Bill of Lading/Air Bill No. 4235795245228-5.4	
		COA	

POSSIBLE SAMPLE HAZARDS/REMARKS

604

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None						
Type of Container	P	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	20mL	60mL	60mL	60mL	500mL						
SAMPLE ANALYSIS	Activity Scan	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	See item (2) in Special Instructions						

Sample No.	Matrix *	Sample Date	Sample Time										
~~B0V113~~	~~Soil~~		RN 3/26/99										
B0V114	Soil	3.30.99	1045		X	X	X					tie to B0V001	
~~B0V115~~ RE 3.30.99	~~Soil~~												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time 1605	Received By	Date/Time 1605
R Fahlberg / R. Fahlberg	3.30.99	R. f. 1-C	3.30.99
Relinquished By	Date/Time	Received By	Date/Time
R.f. 1-C	4/1/99 1326	R Nielson / R. Nielson	1326 4/1/99
Relinquished By	Date/Time	Received By	Date/Time
R Nielson / R. Nielson	1326 4/1/99	Fed Ex	
Relinquished By	Date/Time	Received By	Date/Time
Fed Ex		Fedex	4/2/99 0930

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) (Chromium, Lead); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Cesium-134, Uranium-238); Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

1-C

25 lbs

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

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

MAY 1999
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-001
RFW# : 9904L604
SDG/SAF# : H0373/B99-001

W.O.# : 10985-001-001-9999-00
Date Received: 04-02-99

METALS CASE NARRATIVE

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

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

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

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

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

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

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

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

9. All laboratory control samples (LCS) were within the laboratory control limits with the exception of Mercury at 145.0%. There is no significant high bias to the associated sample as the result is non-detect. Refer to the Inorganics Laboratory Control Standards Report.

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

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

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

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

for Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

4-16-99
Date

mld/m04-604

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9904L604

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:**_____

L-WI-033/M-03/98

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 04/09/99

CLIENT: TNU-HANFORD B99-001

RECRA LOT #: 9904L604

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0V114	Chromium, Total	4.9	MG/KG	0.06	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	2.4	MG/KG	0.18	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/09/99

CLIENT: TNU-HANFORD B99-001

RECRA LOT #: 9904L604

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0208-MB1	Chromium, Total	0.12	MG/KG	0.06	1.0
		Lead, Total	0.20	MG/KG	0.18	1.0
BLANK1	99C0100-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 04/09/99

CLIENT: TNU-HANFORD B99-001

RECRA LOT #: 9904L604

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0V114	Chromium, Total	20.7	4.9	16.8	94.0	1.0
		Mercury, Total	0.18	0.02u	0.18	99.4	1.0
		Lead, Total	43.8	2.4	42.1	98.3	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 04/09/99

CLIENT: TNU-HANFORD B99-001

RECRA LOT #: 9904L604

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0V114	Chromium, Total	4.9	4.8	2.1	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Lead, Total	2.4	1.9	23.3	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/09/99

CLIENT: TNU-HANFORD B99-001 RECRA LOT #: 9904L604

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0208-LC1	Chromium, LCS	50.7	50.0	MG/KG	101.4
		Lead, LCS	249	250	MG/KG	99.6
LCS1	99C0100-LC1	Mercury, LCS	1.7	1.2	MG/KG	145.2

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-001

DATE RECEIVED: 04/02/99 RFW LOT # :9904L604

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V114						
CHROMIUM, TOTAL	001	S	99L0208	03/30/99	04/05/99	04/05/99
CHROMIUM, TOTAL	001 REP	S	99L0208	03/30/99	04/05/99	04/05/99
CHROMIUM, TOTAL	001 MS	S	99L0208	03/30/99	04/05/99	04/05/99
MERCURY, TOTAL	001	S	99C0100	03/30/99	04/06/99	04/07/99
MERCURY, TOTAL	001 REP	S	99C0100	03/30/99	04/06/99	04/07/99
MERCURY, TOTAL	001 MS	S	99C0100	03/30/99	04/06/99	04/07/99
LEAD, TOTAL	001	S	99L0208	03/30/99	04/05/99	04/05/99
LEAD, TOTAL	001 REP	S	99L0208	03/30/99	04/05/99	04/05/99
LEAD, TOTAL	001 MS	S	99L0208	03/30/99	04/05/99	04/05/99

LAB QC:

CHROMIUM LABORATORY	LC1 BS	S	99L0208	N/A	04/05/99	04/05/99
CHROMIUM, TOTAL	MB1	S	99L0208	N/A	04/05/99	04/05/99
MERCURY LABORATORY	LC1 BS	S	99C0100	N/A	04/06/99	04/07/99
MERCURY, TOTAL	MB1	S	99C0100	N/A	04/06/99	04/07/99
LEAD LABORATORY	LC1 BS	S	99L0208	N/A	04/05/99	04/05/99
LEAD, TOTAL	MB1	S	99L0208	N/A	04/05/99	04/05/99

RECRA LabNet Use Only
99041604

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-001
Est. Final Proj. Sampling Date:
Project #: 10986-001-001-9999-00
Project Contact/Phone: 4/2/99
RECRA Project Manager: JS
QC: spec Del: std TAT: 7 day
Date Rec'd: 4/2/99 Date Due: 4/9/99
Account #:

Refrigerator #		1	3						3							
#/Type Container	Liquid															
	Solid	1g	1g						1g							
Volume	Liquid															
	Solid	125	125						125							
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	0625H					Met①		ING①					
001	BOV114	X	X	S	3/30/99	1045	✓	✓					✓		✓					

RECRA LabNet Use Only

Special Instructions:
saf # B99-001

COMPOSITE WASTE

011

DATE/REVISIONS:
Met① = Cr, Pb, Hg.
ING① = ICRG

Relinquished by	Received by	Date	Time
Jeder	Jeder	4/2/99	0930

Relinquished 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
Cooler Temp 5.4 C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
* 4235795 24228

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-001-133	Page 1 of 1

Collector Fahlberg/Kerkow	Company Contact R Coffman	Telephone No. 373-6425	Project Coordinator TRENT, SJ	Price Code 7 days	Data Turnaround
Project Designation 100 BC Areas - Quick Turn	Sampling Location 100 B/C 116-B-4		SAF No. B99-001		
Ice Chest No. S06	Field Logbook No. EL 1327-02		Method of Shipment Federal Express		
Shipped To ~~EMA~~/RECRA RE 3.30.99	Offsite Property No. A990096		Bill of Lading/Air Bill No. 4235795244228-5		
			COA		

POSSIBLE SAMPLE HAZARDS/REMARKS

(604)

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None						
Type of Container	P	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	20mL	60mL	60mL	60mL	500mL						
SAMPLE ANALYSIS	Activity Scan	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	See item (2) in Special Instructions						
Sample No. / Matrix * / Sample Date / Sample Time											
~~B0V113~~ / ~~Soil~~ / / RJN 3/26/99											
B0V114 / Soil / 3.30.99 / 1045		X	X	X				tie to B0V001			
~~B0V116~~ RE 3.30.99 / ~~Soil~~											

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By R. Fahlberg / R. Fahlberg 3.30.99	Date/Time 1605	Received By R.F. 1-C	Date/Time 1605 3.30.99
Relinquished By RF 1-C	Date/Time 4/1/99 1326	Received By Kurt Nielson / R. Nielson	Date/Time 1326 4/1/99
Relinquished By Kurt Nielson / R. Nielson	Date/Time 1326 4/1/99	Received By Fed Ex	Date/Time
Relinquished By Fed Ex	Date/Time	Received By Fedex	Date/Time 4/2/99 0930

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) (Chromium, Lead); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Cesium-134, Uranium-238); Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

1-C

25 lbs

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

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

MAY 1999
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-001
RFW #: 9904L604
SDG/SAF #: H0373/B99-001

W.O. #: 10985-001-001-9999-00
Date Received: 04-02-99

SEMIVOLATILE

One (1) soil sample was collected on 03-30-99.

The sample and its associated QC samples were extracted on 04-05-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 04-06-99.

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

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.

2. All required holding times for extraction and analysis were met.

3. A non-target compound was detected in the sample.

4. All surrogate recoveries were within EPA QC limits.

5. All matrix spike recoveries were within EPA QC limits.

6. All blank spike recoveries were within EPA QC limits.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

04-26-99
Date

som\gorup\data\bna\tnu04604.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.

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

GLOSSARY OF BNA DATA

DATA QUALIFIERS

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

mmz\10-94\gloss.bna

GLOSSARY OF BNA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.bna

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

Report Date: 04/07/99 15:12

RFW Batch Number: **9904L604** Client: **TNU-HANFORD B99-001** Work Order: 10985001001 Page: 1a

	Cust ID:	B0V114		B0V114		B0V114		SBLKTO		SBLKTO BS	
Sample Information	RFW#:	001		001 MS		001 MSD		99LE0402-MB1		99LE0402-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	74	%	81	%	84	%	79	%	83	%
	2-Fluorobiphenyl	68	%	67	%	72	%	69	%	67	%
	Terphenyl-d14	72	%	76	%	80	%	84	%	73	%
	Phenol-d5	70	%	70	%	73	%	72	%	68	%
	2-Fluorophenol	57	%	57	%	59	%	58	%	60	%
	2,4,6-Tribromophenol	73	%	84	%	83	%	74	%	80	%
Phenol		360	U	67	%	70	%	330	U	63	%
bis(2-Chloroethyl)ether		360	U	360	U	360	U	330	U	330	U
2-Chlorophenol		360	U	65	%	64	%	330	U	63	%
1,3-Dichlorobenzene		360	U	360	U	360	U	330	U	330	U
1,4-Dichlorobenzene		360	U	65	%	67	%	330	U	65	%
1,2-Dichlorobenzene		360	U	360	U	360	U	330	U	330	U
2-Methylphenol		360	U	360	U	360	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		360	U	360	U	360	U	330	U	330	U
4-Methylphenol		360	U	360	U	360	U	330	U	330	U
N-Nitroso-di-n-propylamine		360	U	90	%	90	%	330	U	85	%
Hexachloroethane		360	U	360	U	360	U	330	U	330	U
Nitrobenzene		360	U	360	U	360	U	330	U	330	U
Isophorone		360	U	360	U	360	U	330	U	330	U
2-Nitrophenol		360	U	360	U	360	U	330	U	330	U
2,4-Dimethylphenol		360	U	360	U	360	U	330	U	330	U
bis(2-Chloroethoxy)methane		360	U	360	U	360	U	330	U	330	U
2,4-Dichlorophenol		360	U	360	U	360	U	330	U	330	U
1,2,4-Trichlorobenzene		360	U	70	%	71	%	330	U	68	%
Naphthalene		360	U	360	U	360	U	330	U	330	U
4-Chloroaniline		360	U	360	U	360	U	330	U	330	U
Hexachlorobutadiene		360	U	360	U	360	U	330	U	330	U
4-Chloro-3-methylphenol		360	U	80	%	79	%	330	U	74	%
2-Methylnaphthalene		360	U	360	U	360	U	330	U	330	U
Hexachlorocyclopentadiene		360	U	360	U	360	U	330	U	330	U
2,4,6-Trichlorophenol		360	U	360	U	360	U	330	U	330	U
2,4,5-Trichlorophenol		910	U	910	U	910	U	840	U	840	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: **9904L604** Client: **TNU-HANFORD B99-001** Work Order: 10985001001 Page: 1b

Cust ID:	B0V114		B0V114		B0V114		SBLKTO		SBLKTO BS	
RFW#:	001		001 MS		001 MSD		99LE0402-MB1		99LE0402-MB1	
2-Chloronaphthalene	360	U	360	U	360	U	330	U	330	U
2-Nitroaniline	910	U	910	U	910	U	840	U	840	U
Dimethylphthalate	360	U	360	U	360	U	330	U	330	U
Acenaphthylene	360	U	360	U	360	U	330	U	330	U
2,6-Dinitrotoluene	360	U	360	U	360	U	330	U	330	U
3-Nitroaniline	910	U	910	U	910	U	840	U	840	U
Acenaphthene	360	U	69	%	71	%	330	U	65	%
2,4-Dinitrophenol	910	U	910	U	910	U	840	U	840	U
4-Nitrophenol	910	U	79	%	77	%	840	U	73	%
Dibenzofuran	360	U	360	U	360	U	330	U	330	U
2,4-Dinitrotoluene	360	U	77	%	76	%	330	U	72	%
Diethylphthalate	360	U	360	U	360	U	330	U	330	U
4-Chlorophenyl-phenylether	360	U	360	U	360	U	330	U	330	U
Fluorene	360	U	360	U	360	U	330	U	330	U
4-Nitroaniline	910	U	910	U	910	U	840	U	840	U
4,6-Dinitro-2-methylphenol	910	U	910	U	910	U	840	U	840	U
N-Nitrosodiphenylamine (1)	360	U	360	U	360	U	330	U	330	U
4-Bromophenyl-phenylether	360	U	360	U	360	U	330	U	330	U
Hexachlorobenzene	360	U	360	U	360	U	330	U	330	U
Pentachlorophenol	910	U	81	%	82	%	840	U	73	%
Phenanthrene	360	U	360	U	360	U	330	U	330	U
Anthracene	360	U	360	U	360	U	330	U	330	U
Carbazole	360	U	360	U	360	U	330	U	330	U
Di-n-butylphthalate	360	U	360	U	360	U	330	U	330	U
Fluoranthene	360	U	360	U	360	U	330	U	330	U
Pyrene	360	U	73	%	81	%	330	U	69	%
Butylbenzylphthalate	360	U	360	U	360	U	330	U	330	U
3,3'-Dichlorobenzidine	360	U	360	U	360	U	330	U	330	U
Benzo(a)anthracene	360	U	360	U	360	U	330	U	330	U
Chrysene	360	U	360	U	360	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	360	U	360	U	360	U	330	U	330	U
Di-n-octyl phthalate	360	U	360	U	360	U	330	U	330	U
Benzo(b)fluoranthene	360	U	360	U	360	U	330	U	330	U
Benzo(k)fluoranthene	360	U	360	U	360	U	330	U	330	U
Benzo(a)pyrene	360	U	360	U	360	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	360	U	360	U	360	U	330	U	330	U
Dibenz(a,h)anthracene	360	U	360	U	360	U	330	U	330	U
Benzo(g,h,i)perylene	360	U	360	U	360	U	330	U	330	U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0V114

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-001

Matrix: (soil/water) SOIL Lab Sample ID: 9904L604-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A040611

Level: (low/med) LOW Date Received: 04/02/99

% Moisture: 9 decanted: (Y/N) __ Date Extracted: 04/05/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/06/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	24.36	100	JB

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-001

DATE RECEIVED: 04/02/99 RFW LOT # :9904L604

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V114	001	S	99LE0402	03/30/99	04/05/99	04/06/99
B0V114	001 MS	S	99LE0402	03/30/99	04/05/99	04/06/99
B0V114	001 MSD	S	99LE0402	03/30/99	04/05/99	04/06/99
LAB QC:						
SBLKTO	MB1	S	99LE0402	N/A	04/05/99	04/06/99
SBLKTO	MB1 BS	S	99LE0402	N/A	04/05/99	04/06/99

RECRA LabNet Use Only
99041604

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-001
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone: 4/2/99
RECRA Project Manager: OJ
QC: spec Del: std TAT: 7 day
Date Rec'd: 4/2/99 Date Due: 4/9/99
Account #:

Refrigerator #		1	3						3							
#/Type Container	Liquid															
	Solid	1g	1g						1g							
Volume	Liquid															
	Solid	125	125						125							
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
		RECRA LabNet Use Only														
		062AA	625H						Met①		ING①					

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	062AA	625H						Met①		ING①					
001	BOV114	X	X	S	3/30/99	1045	✓	✓						✓		✓					

Special Instructions:
saf # B99-001

COMPOSITE WASTE

DATE/REVISIONS:
Met① = Cr, Pb, Hg.
ING① = ICR6
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
Cooler Temp 5.4 C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
* 4235795 24228

Relinquished by	Received by	Date	Time
Zeder	Zeder	4/2/99	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-001-133	Page 1 of 1

Collector Fahlberg/Kerkow	Company Contact R Coffman	Telephone No. 373-6425	Project Coordinator TRENT, SJ
Project Designation 100 BC Areas - Quick Turn	Sampling Location 100 B/C 116-B-4		SAF No. B99-001
Ice Chest No. 506	Field Logbook No. EL 1327-02		Method of Shipment Federal Express
Shipped To ~~TMA~~/RECRA RE 3.30.99	Offsite Property No. A990096		Bill of Lading/Air Bill No. 4235795242 28-5.4
			COA

Price Code: 7 days

Data Turnaround

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

(604)

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None						
Type of Container	P	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	20mL	60mL	60mL	60mL	500mL						
SAMPLE ANALYSIS	Activity Scan	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	See item (2) in Special Instructions.						

Sample No.	Matrix *	Sample Date	Sample Time										
~~B0V113~~	~~Soil~~		RIN 3/26/99										
B0V114	Soil	3.30.99	1045		X	X	X					tie to B0V001	
~~B0V115~~ RE 3.30.99	~~Soil~~												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By R. Fahlberg / R. Fahlberg 3.30.99	Date/Time 1605	Received By R. F. 1-C	Date/Time 1605 3.30.99
Relinquished By RF. 1-C	Date/Time 4/1/99 1326	Received By Kurt Nielson / R. Nielson	Date/Time 1326 4/1/99
Relinquished By Kurt Nielson / R. Nielson	Date/Time 1326 4/1/99	Received By Fed Ex	Date/Time
Relinquished By Fed ex	Date/Time	Received By Fedex 4/2/99 0930	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) (Chromium, Lead); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Cesium-134, Uranium-238); Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

1-C

25 lbs

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

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

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-001
RFW# : 9904L604
SDG/SAF #: H0373/B99-001

W.O. #: 10985-001-001-9999-00
Date Received: 04-02-99

GC/MS VOLATILE

One (1) soil sample was collected on 03-30-99.

The sample and its associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 04-06-99.

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

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.

2. The sample was analyzed within required holding time.

3. All surrogate recoveries were within EPA QC limits.

4. All matrix spike recoveries were within EPA QC limits.

5. All blank spike recoveries were within EPA QC limits.

6. The method blank contained the common laboratory contaminants Methylene Chloride, Acetone and the target compound Chloromethane at levels less than the CRQL.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

04-23-99
Date

som\group\data\ voa\tnu04604.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 8 pages.

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

GLOSSARY OF VOA DATA

DATA QUALIFIERS

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

mmz\10-94\gloss.voa

GLOSSARY OF VOA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.voa

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 04/08/99 10:54

RFW Batch Number: **9904L604** Client: **TNU-HANFORD B99-001** Work Order: 10985001001 Page: 1a

	Cust ID:	B0V114		B0V114		B0V114		VBLKYQ		VBLKYQ BS	
Sample Information	RFW#:	001		001 MS		001 MSD		99LVN112-MB1		99LVN112-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		0.980		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	100	%	99	%	99	%	94	%	95	%
	Bromofluorobenzene	94	%	102	%	99	%	93	%	98	%
	1,2-Dichloroethane-d4	102	%	91	%	91	%	95	%	96	%
Chloromethane		11	U	11	U	11	U	1	J	10	U
Bromomethane		11	U	11	U	11	U	10	U	10	U
Vinyl Chloride		11	U	11	U	11	U	10	U	10	U
Chloroethane		11	U	11	U	11	U	10	U	10	U
Methylene Chloride		7	B	7	B	5	JB	2	J	2	JB
Acetone		17	B	15	B	17	B	8	J	7	JB
Carbon Disulfide		6	U	6	U	6	U	5	U	5	U
1,1-Dichloroethene		6	U	99	%	100	%	5	U	99	%
1,1-Dichloroethane		6	U	6	U	6	U	5	U	5	U
1,2-Dichloroethene (total)		6	U	6	U	6	U	5	U	5	U
Chloroform		6	U	6	U	6	U	5	U	5	U
1,2-Dichloroethane		6	U	6	U	6	U	5	U	5	U
2-Butanone		11	U	11	U	11	U	10	U	10	U
1,1,1-Trichloroethane		6	U	6	U	6	U	5	U	5	U
Carbon Tetrachloride		6	U	6	U	6	U	5	U	5	U
Bromodichloromethane		6	U	6	U	6	U	5	U	5	U
1,2-Dichloropropane		6	U	6	U	6	U	5	U	5	U
cis-1,3-Dichloropropene		6	U	6	U	6	U	5	U	5	U
Trichloroethene		6	U	115	%	114	%	5	U	111	%
Dibromochloromethane		6	U	6	U	6	U	5	U	5	U
1,1,2-Trichloroethane		6	U	6	U	6	U	5	U	5	U
Benzene		6	U	106	%	104	%	5	U	110	%
Trans-1,3-Dichloropropene		6	U	6	U	6	U	5	U	5	U
Bromoform		6	U	6	U	6	U	5	U	5	U
4-Methyl-2-pentanone		11	U	11	U	11	U	10	U	10	U
2-Hexanone		11	U	11	U	11	U	10	U	10	U
Tetrachloroethene		6	U	6	U	6	U	5	U	5	U
1,1,2,2-Tetrachloroethane		6	U	6	U	6	U	5	U	5	U
Toluene		6	U	111	%	109	%	5	U	113	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: **9904L604** Client: **TNU-HANFORD B99-001** Work Order: 10985001001 Page: 1b

Cust ID:	B0V114	B0V114	B0V114	VBLKYQ	VBLKYQ BS
RFW#:	001	001 MS	001 MSD	99LVN112-MB1	99LVN112-MB1
Chlorobenzene	6 U	108 %	105 %	5 U	110 %
Ethylbenzene	6 U	6 U	6 U	5 U	5 U
Styrene	6 U	6 U	6 U	5 U	5 U
Xylene (total)	6 U	6 U	6 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-001

DATE RECEIVED: 04/02/99 RFW LOT # :9904L604

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V114	001	S	99LVN112	03/30/99	N/A	04/06/99
B0V114	001 MS	S	99LVN112	03/30/99	N/A	04/06/99
B0V114	001 MSD	S	99LVN112	03/30/99	N/A	04/06/99

LAB QC:

VBLKYQ	MB1	S	99LVN112	N/A	N/A	04/06/99
VBLKYQ	MB1 BS	S	99LVN112	N/A	N/A	04/06/99

RECRA LabNet Use Only
99041604

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-001
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone: 4/2/99
RECRA Project Manager: ~~FS~~ OJ
QC: spec Del: std TAT: 7 day
Date Rec'd: 4/2/99 Date Due: 4/9/99
Account #:

Refrigerator #		1	3						3						
#/Type Container	Liquid														
	Solid	1g	1g						1g						
Volume	Liquid														
	Solid	125	125						125						
Preservatives															
ANALYSES REQUESTED →		ORGANIC							INORG						
		VOA	BNA	Pest/PCB	Herb				Metal	CN					
		RECRA LabNet Use Only													
		0U24H	0U25H						Met①		ING①				

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	0U24H	0U25H						Met①		ING①					
001	BOV114	X	X	S	3/30/99	1045	✓	✓						✓		✓					

Special Instructions:
saf # B99-001

COMPOSITE WASTE

DATE/REVISIONS:
Met① = 1. Cr, Pb, Hg,
ING① = 2. ICRG
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
Jeder	Stoller	4/2/99	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'd Y or N
Cooler Temp. 5.4 C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
* 4235795242 28

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-001-133	Page 1 of 1

Collector: Fahlberg/Kerkow	Company Contact: R Coffman	Telephone No.: 373-6425	Project Coordinator: TRENT, SJ
Price Code: 7 days	Data Turnaround		
Project Designation: 100 BC Areas - Quick Turn	Sampling Location: 100 B/C 116-B-4	SAF No.: B99-001	
Ice Chest No.: 506	Field Logbook No.: EL 1327-02	Method of Shipment: Federal Express	
Shipped To: ~~TMA~~/RECRA RS 3.30.99	Offsite Property No.: A990096	Bill of Lading/Air Bill No.: 4235795524228-5.4	
		COA	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

(604)

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None						
Type of Container	P	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	20mL	60mL	60mL	60mL	500mL						
SAMPLE ANALYSIS	Activity Scan	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	See item (2) in Special Instructions.						

Sample No.	Matrix *	Sample Date	Sample Time										
~~B0V113~~	~~Soil~~		RIN 3/26/99										
B0V114	Soil	3.30.99	1045		X	X	X				tie to B0V001		
~~B0V116~~ RS 3.30.99	~~Soil~~												

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	R. Fahlberg / R. Fahlberg	3.30.99 1605	R. Fahlberg	3.30.99 1605
Relinquished By	R. Fahlberg	4/1/99 1326	R. Nielson / R. Nielson	4/1/99 1326
Relinquished By	R. Nielson / R. Nielson	4/1/99 1326	Fed Ex	
Relinquished By	Fed Ex		Received By	4/2/99 0930
LABORATORY SECTION	Received By		Title	Date/Time
FINAL SAMPLE	Disposal Method			

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) (Chromium, Lead); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Cesium-134, Uranium-238); Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

1-C

25 lbs

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

April 15, 1999

APR 1999
RECEIVED
Data
Log In

Ms. Joan Kessner
3350 George Washington Way
Richland, WA 99352
MSIN: H9-03

Reference: P.O. #TRB-SBB-207925
Thermo Nutech N9-04-017-7711, SDG H0373

Dear Ms. Kessner:

Enclosed is the data report for a single solid sample designated under SAF No. B99-001 received at Thermo Nutech on April 2, 1999. The sample was analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Terrie A. Higgins
Program Manager

/kcj

Enclosure: Data Package

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0373 is comprised of one solid (soil) sample designated under SAF No. B99-001 with a Project Designation of: 100 BC Areas - Quick Turn.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the TNU Sample Receipt Checklist. There was a quick turn-around time requirement for gamma spec, isotopic plutonium, and total strontium. The data for gamma spec was reported by fascimilie on April 8, 1999; isotopic plutonium and total strontium by fascimilie on April 9, isotopic uranium and nickel-63 by fascimilie on April 14, 1999; and americium-241 by fascimilie on April 15, 1999.

2.0 ANALYSIS NOTES

2.1 Nickel-63 Analyses

No problems were encountered during the processing of the samples.

2.2 Total Strontium Analyses

The aliquot for the analysis was reduced for expeditious sample preparation. The resultant increased MDA's reflect the decreased aliquot.

2.3 Isotopic Uranium Analyses

No problems were encountered during the processing of the samples.

2.4 Isotopic Plutonium Analyses

The aliquot for the analysis was reduced for expeditious sample preparation. The resultant increased MDA's reflect the decreased aliquot.

2.5 Americium-241 Analyses

The aliquot for the analysis was reduced for expeditious sample preparation. The resultant increased MDA's reflect the decreased aliquot.

2.6 Gamma Scan Analyses

No problems were encountered during the processing of the samples.

APR 1999
RECEIVED
Data
Log In

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0373

SAMPLE SUMMARY

SDG 7711
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0373

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0V114	100 B/C	SOLID		N904017-01	B99-001	B99-001-133	03/30/99 10:45
Method Blank		SOLID		N904017-03	B99-001		
Lab Control Sample		SOLID		N904017-02	B99-001		
Duplicate (N904017-01)	100 B/C	SOLID		N904017-04	B99-001		03/30/99 10:45

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0373

QC SUMMARY

SDG 7711
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0373

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
7711	B99-001-133	B0V114	SOLID	94.3			03/30/99	0	N904017-01	7711-001
		Method Blank	SOLID						N904017-03	7711-003
		Lab Control Sample	SOLID						N904017-02	7711-002
		Duplicate (N904017-01)	SOLID	94.3			03/30/99	0	N904017-04	7711-004

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0373

SDG 7711
Contact L.A. Johnson

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0373

TEST	MATRIX	METHOD	PREPARATION ERROR BATCH	2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	2851-046	5.0	1			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	2851-046	5.0	1			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	2851-046	5.0	1			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	2851-046	10.0	1			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	2851-046	15.0	1			1	1	1/1		
Liquid Scintillation Counting												
NI_L	SOLID	Nickel 63 in Soil	2851-046	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 04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0373

WORK SUMMARY

SDG 7711
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0373

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0V114			N904017-01	7711-001	AM		04/14/99	04/15/99	TAH	Americium 241 in Soil
100 B/C		SOLID	03/30/99	7711-001	GAM		04/07/99	04/08/99	TAH	Gamma Scan
B99-001-133	B99-001		03/30/99	7711-001	NI_L		04/10/99	04/14/99	TAH	Nickel 63 in Soil
				7711-001	PU		04/08/99	04/09/99	TAH	Plutonium, Isotopic in Solids
				7711-001	SR		04/08/99	04/09/99	TAH	Total Strontium in Soil
				7711-001	U		04/13/99	04/14/99	TAH	Uranium, Isotopic in Soil
Method Blank			N904017-03	7711-003	AM		04/14/99	04/15/99	TAH	Americium 241 in Soil
		SOLID		7711-003	GAM		04/06/99	04/08/99	TAH	Gamma Scan
	B99-001			7711-003	NI_L		04/10/99	04/14/99	TAH	Nickel 63 in Soil
				7711-003	PU		04/08/99	04/09/99	TAH	Plutonium, Isotopic in Solids
				7711-003	SR		04/08/99	04/09/99	TAH	Total Strontium in Soil
				7711-003	U		04/13/99	04/14/99	TAH	Uranium, Isotopic in Soil
Lab Control Sample			N904017-02	7711-002	AM		04/14/99	04/15/99	TAH	Americium 241 in Soil
		SOLID		7711-002	GAM		04/07/99	04/08/99	TAH	Gamma Scan
	B99-001			7711-002	NI_L		04/10/99	04/14/99	TAH	Nickel 63 in Soil
				7711-002	PU		04/08/99	04/09/99	TAH	Plutonium, Isotopic in Solids
				7711-002	SR		04/08/99	04/09/99	TAH	Total Strontium in Soil
				7711-002	U		04/13/99	04/14/99	TAH	Uranium, Isotopic in Soil
Duplicate (N904017-01)			N904017-04	7711-004	AM		04/14/99	04/15/99	TAH	Americium 241 in Soil
100 B/C		SOLID	03/30/99	7711-004	GAM		04/07/99	04/08/99	TAH	Gamma Scan
	B99-001		03/30/99	7711-004	NI_L		04/10/99	04/14/99	TAH	Nickel 63 in Soil
				7711-004	PU		04/08/99	04/09/99	TAH	Plutonium, Isotopic in Solids
				7711-004	SR		04/08/99	04/09/99	TAH	Total Strontium in Soil
				7711-004	U		04/13/99	04/14/99	TAH	Uranium, Isotopic in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0373

SDG 7711
Contact L.A. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0373

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	B99-001	Americium 241 in Soil	AM/CMPLATE	1			1	1	1	4
GAM	B99-001	Gamma Scan	GAMMAHI	1			1	1	1	4
NI_L	B99-001	Nickel 63 in Soil	NI63LSC	1			1	1	1	4
PU	B99-001	Plutonium, Isotopic in Solids	PUPLATE	1			1	1	1	4
SR	B99-001	Total Strontium in Soil		1			1	1	1	4
U	B99-001	Uranium, Isotopic in Soil	UPLATE	1			1	1	1	4
TOTALS				6			6	6	6	24

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0373

N904017-03 Method Blank

METHOD BLANK

SDG	7711	Client/Case no	Hanford SDG-H0373
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N904017-03	Client sample id	Method Blank
Dept sample id	7711-003	Material/Matrix	SOLID
		SAF No	B99-001

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.027	0.036	0.069	0.30	U	U
Uranium 235	15117-96-1	0	0.022	0.083	0.30	U	U
Uranium 238	U-238	0.018	0.018	0.069	0.30	U	U
Plutonium 238	13981-16-3	0	0	0.032	0.050	U	PU
Plutonium 239/240	PU-239/240	0	0	0.032	0.050	U	PU
Nickel 63	13981-37-8	1.50	1.2	1.9	20	U	NI_L
Americium 241	14596-10-2	-0.002	0.010	0.023	0.050	U	AM
Total Strontium	SR-RAD	-0.034	0.14	0.27	1.0	U	SR
Cobalt 60	10198-40-0	U		0.010	0.050	U	GAM
Cesium 134	13967-70-9	U		0.012		U	GAM
Cesium 137	10045-97-3	U		0.010	0.050	U	GAM
Europium 152	14683-23-9	U		0.027	0.10	U	GAM
Europium 154	15585-10-1	U		0.030	0.10	U	GAM
Europium 155	14391-16-3	U		0.020	0.10	U	GAM
Americium 241	14596-10-2	U		0.011		U	GAM
Uranium 238	U-238	U		1.1		U	GAM
Uranium 235	15117-96-1	U		0.036		U	GAM

100 BC Areas-Quick Turn

QC-BLANK 30448

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0373

N904017-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7711

Contact L.A. Johnson

Client/Case no Hanford SDG-H0373

Case no TRB-SBB-207925

Lab sample id N904017-02

Dept sample id 7711-002

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B99-001

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Uranium 233/234	4.60	1.0	0.53	0.30		U	4.75	0.19	97	67-133	80-120
Uranium 235	4.20	0.94	0.23	0.30		U	3.89	0.16	108	62-138	80-120
Uranium 238	5.70	1.1	0.51	0.30		U	4.90	0.20	116	65-135	80-120
Plutonium 238	5.20	0.37	0.033	0.050		PU	5.04	0.20	103	85-115	80-120
Plutonium 239/240	5.60	0.39	0.047	0.050		PU	5.29	0.21	106	85-115	80-120
Nickel 63	140	3.7	2.0	20		NI_L	134	5.4	104	83-117	
Americium 241	4.48	0.34	0.021	0.050		AM	4.80	0.19	93	86-114	80-120
Total Strontium	12.0	0.47	0.19	1.0		SR	11.5	0.46	104	82-118	
Cobalt 60	0.260	0.022	0.012	0.050		GAM	0.307	0.012	85	77-123	80-120
Cesium 137	0.320	0.021	0.015	0.050		GAM	0.348	0.014	92	77-123	80-120

100 BC Areas-Quick Turn

QC-LCS 30447

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0373

N904017-04 B0V114

DUPLICATE

SDG	7711			Client/Case no	Hanford SDG-H0373
Contact	L.A. Johnson			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N904017-04	Lab sample id	N904017-01	Client sample id	B0V114
Dept sample id	7711-004	Dept sample id	7711-001	Location/Matrix	100 B/C SOLID
		Received	03/30/99	Collected	03/30/99 10:45
% solids	94.3	% solids	94.3	Custody/SAF No	B99-001-133 B99-001

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Uranium 233/234	0.540	0.23	0.17	0.30		U	0.568	0.28	0.21		5	99
Uranium 235	0.027	0.054	0.21	0.30	U	U	0	0.065	0.25	U	-	
Uranium 238	0.510	0.23	0.17	0.30		U	0.406	0.22	0.21		23	105
Plutonium 238	-0.033	0.067	0.25	0.050	U	PU	-0.110	0.11	0.53	U	-	
Plutonium 239/240	0	0.066	0.25	0.050	U	PU	-0.110	0.22	0.68	U	-	
Nickel 63	1.90	1.4	2.3	20	U	NI_L	0.856	1.3	2.2	U	-	
Americium 241	0.004	0.018	0.034	0.050	U	AM	-0.005	0.028	0.051	U	-	
Total Strontium	-0.280	1.3	2.6	1.0	U	SR	-0.393	1.4	2.6	U	-	
Potassium 40	8.10	0.79	0.45			GAM	8.32	0.53	0.26		3	36
Cobalt 60	U		0.047	0.050	U	GAM	U		0.026	U	-	
Cesium 134	U		0.046		U	GAM	U		0.033	U	-	
Cesium 137	U		0.042	0.050	U	GAM	U		0.024	U	-	
Europium 152	U		0.085	0.10	U	GAM	U		0.062	U	-	
Europium 154	U		0.13	0.10	U	GAM	U		0.080	U	-	
Europium 155	U		0.13	0.10	U	GAM	U		0.063	U	-	
Radium 226	0.280	0.076	0.079	0.10		GAM	0.306	0.045	0.045		9	55
Radium 228	0.480	0.18	0.18	0.20		GAM	0.572	0.14	0.12		17	72
Thorium 228	0.430	0.045	0.044			GAM	0.381	0.028	0.028		12	37
Thorium 232	0.480	0.18	0.18			GAM	0.572	0.14	0.12		17	72
Americium 241	U		0.035		U	GAM	U		0.058	U	-	
Uranium 238	U		4.9		U	GAM	U		3.2	U	-	
Uranium 235	U		0.11		U	GAM	U		0.093	U	-	

100 BC Areas-Quick Turn

QC-DUP#1 30449

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0373

N904017-01 B0V114

DATA SHEET

SDG	7711	Client/Case no	Hanford SDG-H0373
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N904017-01	Client sample id	B0V114
Dept sample id	7711-001	Location/Matrix	100 B/C SOLID
Received	03/30/99	Collected	03/30/99 10:45
% solids	94.3	Custody/SAF No	B99-001-133 B99-001

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.568	0.28	0.21	0.30		U
Uranium 235	15117-96-1	0	0.065	0.25	0.30	U	U
Uranium 238	U-238	0.406	0.22	0.21	0.30		U
Plutonium 238	13981-16-3	-0.110	0.11	0.53	0.050	U	PU
Plutonium 239/240	PU-239/240	-0.110	0.22	0.68	0.050	U	PU
Nickel 63	13981-37-8	0.856	1.3	2.2	20	U	NI_L
Americium 241	14596-10-2	-0.005	0.028	0.051	0.050	U	AM
Total Strontium	SR-RAD	-0.393	1.4	2.6	1.0	U	SR
Potassium 40	13966-00-2	8.32	0.53	0.26			GAM
Cobalt 60	10198-40-0	U		0.026	0.050	U	GAM
Cesium 134	13967-70-9	U		0.033		U	GAM
Cesium 137	10045-97-3	U		0.024	0.050	U	GAM
Europium 152	14683-23-9	U		0.062	0.10	U	GAM
Europium 154	15585-10-1	U		0.080	0.10	U	GAM
Europium 155	14391-16-3	U		0.063	0.10	U	GAM
Radium 226	13982-63-3	0.306	0.045	0.045	0.10		GAM
Radium 228	15262-20-1	0.572	0.14	0.12	0.20		GAM
Thorium 228	14274-82-9	0.381	0.028	0.028			GAM
Thorium 232	TH-232	0.572	0.14	0.12			GAM
Americium 241	14596-10-2	U		0.058		U	GAM
Uranium 238	U-238	U		3.2		U	GAM
Uranium 235	15117-96-1	U		0.093		U	GAM

100 BC Areas-Quick Turn

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0373

Test AM	Matrix SOLID
SDG 7711	
Contact L.A. Johnson	

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0373	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 2851-046						
B0V114	N904017-01			7711-001	U	
BLK (QC ID=30448)	N904017-03			7711-003	U	
LCS (QC ID=30447)	N904017-02			7711-002	ok	
Duplicate (N904017-01)	N904017-04			7711-004	-	U

Nominal values and limits from method RDLs (pCi/g) 0.050

100 BC Areas-Quick Turn

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2851-046	2σ prep error 5.0 %			Reference Lab Notebook #2851 pg. 046												
B0V114	N904017-01			0.051	0.500			73		668			15	04/14/99	04/14	SS-046
BLK (QC ID=30448)	N904017-03			0.023	1.00			73		664				04/14/99	04/14	SS-057
LCS (QC ID=30447)	N904017-02			0.021	1.00			81		664				04/14/99	04/14	SS-055
Duplicate (N904017-01) (QC ID=30449)	N904017-04			0.034	0.500			78		662			15	04/14/99	04/14	SS-061
Nominal values and limits from method				0.050	1.00			20-105		700	100		180			

PROCEDURES	REFERENCE	AM/CMPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-940	Plutonium Purification, rev 0
	EP-960	Americium-Curium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD				
FOR 4 SAMPLES	MDA	0.032	±	0.027
	YIELD	76	±	8

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0373

Test PU	Matrix SOLID
SDG 7711	
Contact L.A. Johnson	

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0373	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 2851-046								
B0V114	N904017-01			7711-001	U		U	
BLK (QC ID=30448)	N904017-03			7711-003	U		U	
LCS (QC ID=30447)	N904017-02			7711-002	ok		ok	
Duplicate (N904017-01)	N904017-04			7711-004	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.050	
100 BC Areas-Quick Turn								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2851-046	2σ prep error 5.0 %			Reference Lab	Notebook #2851 pg. 046											
B0V114	N904017-01			0.68	0.100			42		510			9	04/08/99	04/08	SS-010
BLK (QC ID=30448)	N904017-03			0.032	1.00			58		510				04/08/99	04/08	SS-012
LCS (QC ID=30447)	N904017-02			0.047	1.00			54		510				04/08/99	04/08	SS-011
Duplicate (N904017-01) (QC ID=30449)	N904017-04			0.25	0.100			68		510			9	04/08/99	04/08	SS-013
Nominal values and limits from method				0.050	1.00			20-105		10	100		180			

PROCEDURES	REFERENCE	PUPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-940	Plutonium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD	MDA	0.25	± 0.60
FOR 4 SAMPLES	YIELD	56	± 22

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0373

Test U	Matrix SOLID
SDG 7711	
Contact L.A. Johnson	

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0373	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1+3	2σ	2+3	2σ
Preparation batch 2851-046											
B0V114	N904017-01			7711-001	0.568	U	0.406	140	102	0	16
BLK (QC ID=30448)	N904017-03			7711-003	U	U	U				
LCS (QC ID=30447)	N904017-02			7711-002	ok	ok	ok				
Duplicate (N904017-01)	N904017-04			7711-004	ok	- U	ok	106	66	5	11
Nominal values and limits from method				RDLs (pCi/g)	0.30	0.30	0.30	100		4	
100 BC Areas-Quick Turn							Averages	123		3	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2851-046	2σ prep error 5.0 %				Reference Lab		Notebook #2851 pg. 046									
B0V114	N904017-01			0.25	0.500			82		105			14	04/05/99	04/13	SS-012
BLK (QC ID=30448)	N904017-03			0.083	1.00			85		152				04/05/99	04/13	SS-055
LCS (QC ID=30447)	N904017-02			0.53	1.00			44		105				04/05/99	04/13	SS-013
Duplicate (N904017-01) (QC ID=30449)	N904017-04			0.21	0.500			68		152			14	04/05/99	04/13	SS-056
Nominal values and limits from method				0.30	1.00			30-105		150	100		180			

PROCEDURES	REFERENCE	UPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-910	Uranium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD	MDA	0.27	± 0.38
FOR 4 SAMPLES	YIELD	70	± 37

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0373

Test SR	Matrix SOLID
SDG 7711	
Contact L.A. Johnson	

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0373	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 2851-046						
B0V114	N904017-01			7711-001	U	
BLK (QC ID=30448)	N904017-03			7711-003	U	
LCS (QC ID=30447)	N904017-02			7711-002	ok	
Duplicate (N904017-01)	N904017-04			7711-004	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
100 BC Areas-Quick Turn						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2851-046	2σ prep error 10.0 %			Reference Lab			Notebook #2851 pg. 046									
B0V114	N904017-01			2.6	0.100			95		150			9	04/07/99	04/08	GRB-218
BLK (QC ID=30448)	N904017-03			0.27	1.00			92		150				04/07/99	04/08	GRB-219
LCS (QC ID=30447)	N904017-02			0.19	1.00			93		200				04/07/99	04/08	GRB-229
Duplicate (N904017-01) (QC ID=30449)	N904017-04			2.6	0.100			94		150			9	04/07/99	04/08	GRB-220
Nominal values and limits from method				1.0	1.00					100			180			

PROCEDURES	RP-500	Strontium - Initial Separation, rev 0
	RP-519	Strontium-89,90 Demounting and Yttrium Purification, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES	MDA	1.4	±	2.7
	YIELD	94	±	3

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0373

Test GAM Matrix SOLID
SDG 7711
Contact L.A. Johnson

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0373

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 2851-046								
B0V114	N904017-01			7711-001	U		U	
BLK (QC ID=30448)	N904017-03			7711-003	U		U	
LCS (QC ID=30447)	N904017-02			7711-002	ok		ok	
Duplicate (N904017-01)	N904017-04			7711-004	-	U	-	U
Nominal values and limits from method 100 BC Areas-Quick Turn				RDLs (pCi/g)	0.050		0.050	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2851-046 2σ prep error 15.0 % Reference Lab Notebook #2851 pg. 046																
B0V114	N904017-01			0.026	197					421			8	04/05/99	04/07	JR,04,00
BLK (QC ID=30448)	N904017-03			0.010	750					404				04/05/99	04/06	JR,07,00
LCS (QC ID=30447)	N904017-02			0.015	750					421				04/05/99	04/07	JR,03,00
Duplicate (N904017-01) (QC ID=30449)	N904017-04			0.047	197					604			8	04/05/99	04/07	JR,01,00
Nominal values and limits from method				0.050	750					100			180			

PROCEDURES	REFERENCE	GAMMAHI
	EP-060	Soil Preparation, rev 0
	EP-100	Ge(Li) Preparation for Environmental Samples, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.024 ± 0.033
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0373

Test NI L Matrix SOLID
SDG 7711
Contact L.A. Johnson

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0373

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 2851-046						
B0V114	N904017-01			7711-001	U	
BLK (QC ID=30448)	N904017-03			7711-003	U	
LCS (QC ID=30447)	N904017-02			7711-002	ok	
Duplicate (N904017-01)	N904017-04			7711-004	-	U

Nominal values and limits from method RDLs (pCi/g) 20
100 BC Areas-Quick Turn

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2851-046	2σ prep error 10.0 %			Reference Lab	Notebook #2851 pg. 046											
B0V114	N904017-01			2.2	0.500					100			11	04/09/99	04/10	LSC-005
BLK (QC ID=30448)	N904017-03			1.9	0.500					100				04/09/99	04/10	LSC-005
LCS (QC ID=30447)	N904017-02			2.0	0.500					100				04/09/99	04/10	LSC-005
Duplicate (N904017-01) (QC ID=30449)	N904017-04			2.3	0.500					100			11	04/09/99	04/10	LSC-005
Nominal values and limits from method				20	0.500					10			180			

PROCEDURES	REFERENCE	NI63LSC
	EP-060	Soil Preparation, rev 0
	EP-431	Nickel-63 Purification, rev 0

AVERAGES ± 2 SD MDA 2.1 ± 0.37
FOR 4 SAMPLES YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/15/99